BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF PUBLIC SERVICE COMPANY OF NEW MEXICO'S APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT, OWN, AND OPERATE 30 MEGAWATTS OF BATTERY ENERGY STORAGE FACILITIES	)	**Case No. 25-000__-UT**
PUBLIC SERVICE COMPANY OF NEW MEXICO,	)	
Applicant	)	

DIRECT TESTIMONY

OF

GARY B. BARNARD

August 6, 2025

NMPRC CASE NO. 25-000__-UT
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GARY B. BARNARD

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PUBLIC SERVICE COMPANY OF NEW MEXICO

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AFFIDAVIT

DIRECT TESTIMONY
OF GARY B. BARNARD
NMPRC CASE NO. 25-000__-UT

I. INTRODUCTION AND PURPOSE

Q. Please state your name, title, and business address.

A. My name is Gary B. Barnard. I am the Executive Director, Renewable Generation and Contracts, for PNMR Services Company. My business address is 2401 Aztec Rd, NE, Mail Stop MSZ120, Albuquerque, New Mexico 87107. My testimony is on behalf of Public Service Company of New Mexico ("PNM" or "Company").

Q. Please summarize your educational background and professional qualifications.

A. PNM Exhibit GBB-1 describes my educational and professional qualifications.

Q. Have you previously testified in utility-related proceedings?

A. Yes. I have testified in a number of New Mexico Public Regulation Commission ("NMPRC" or "Commission") cases. For the most recent I presented supplemental testimony before the Commission in PNM's 2025 Renewable Energy Plan in Case No. 24-00207-UT; and direct testimony in both PNM's 2028 Resources Plan in Case No. 24-00271-UT and PNM's Meta Phase IV Resources in Case No. 25-00048-UT.

Q. What is the purpose of your testimony?

A. My testimony addresses: 1) the background and description of PNM's proposed 30 MW battery energy storage system project (the "BESS Project"); 2) the contracting strategy and request for proposal ("RFP") process for the BESS Project; and 3) the estimated capital costs and timing of the BESS Project. My testimony also addresses how the BESS Project meets certain statutory criteria for approval of a certificate of public convenience and necessity ("CCN") for an energy storage system under Section 62-9-1(E) of the Public Utility Act ("PUA").

II. PROJECT BACKGROUND AND DESCRIPTION

Q. Please describe the BESS Project.

A. This project includes the acquisition, installation, and operation of five 6 MW 4-hour Lithium Iron Phosphate ("LFP") battery energy storage systems ("BESS") on five distribution feeders co-located at five existing, PNM-owned solar generation sites. The feeders and site locations are further described by PNM witness Erfan Hakimian.

Q. When will the BESS Project be operational and what is its anticipated useful life?

A. The BESS Project is scheduled to become commercially operational and begin serving customers in June 2027, assuming Commission approval by May 6, 2026. The BESS Project has an expected service life of 20 years.

Q. How will PNM ensure that the BESS deployment will be safe?

A. PNM is deploying this battery system in alignment with the most current industry standards. For this project, PNM has selected the Tesla Megapack, which meets or exceeds all the level codes and standards. Please refer to the Direct Testimony of PNM witness Nicholas Pollman for more explanation of the BESS safety.

III. THE BESS PROJECT PROCUREMENT PROCESS

Q. What contracting structure is PNM using for the BESS Project?

A. For purposes of the BESS Project, PNM is using an Engineering, Procurement and Construction ("EPC") contract with a prime contractor. PNM has contracted with Gridworks as the prime contractor. Gridworks has installed 3.7 GWh of BESS to date. Gridworks is a local Albuquerque, NM company with a long and successful relationship with PNM. Gridworks will fully design, engineer, and install Tesla's domestic battery technology, and upon completion of construction and commissioning, will turn over the fully operational plant to PNM. PNM will then own and operate the plant.

Q. Why was this contract structure chosen for the BESS Project?

A. PNM is contracting with a single prime contractor that has extensive experience with BESS installation to procure and install the batteries. PNM did this to lower its risk and have a single company take the responsibility to ensure a successful implementation.

Q. How has PNM responded to current market conditions in developing the BESS Project?

A. Recent tariffs have had a significant effect on market conditions. The vast majority of all battery cells are manufactured in China. Even Tesla currently sources some battery components from China. As such, PNM has been forced to allow for some tariff-related language and expense to enable the project to go forward.

Q. Please describe the RFP process and timeline for the BESS Project.

A. An RFP was initially issued on January 17, 2025, for up to five energy storage sites with a desired in-service date prior to the summer of 2027. A copy of the RFP is attached as PNM Exhibit GBB-2. The RFP received proposals from three bidders. Proposals were thoroughly evaluated and Gridworks was chosen.

Q. Please describe the RFP bid evaluation process.

A. PNM performed a thorough evaluation process. A scoring panel was assembled comprised of subject matter experts in engineering, contracts, controls, construction and maintenance. Bids were evaluated and scored across six areas: 1) Price, 2) Battery Solution, 3) Contract Acceptance / Commercial Items, 4) Experience, Reputation & Industry Presence, 5) Reporting & Inflation Reduction Act requirements, and 6) Project Execution & Manpower, Schedule. The panel evaluated and compared the core aspects of the three proposals across the six areas. After the panel issued bid clarification questions, prepared comparison documents and scorecards, it selected Gridworks as the best option. Gridworks stood out due to the quality of the Tesla Battery Solution, their industry-leading reputation regarding battery fires, the extensive history of successful PNM projects, and the domestic nature of the manufacturing in the new world of volatile tariff risk.

Q. Please describe the BESS Project costs.

A. The estimated cost for the BESS Project, including engineering, materials, construction, and loads is shown in PNM Table GBB-1 below.

PNM Table GBB-1 – BESS Project Costs

BESS EPC	$ 71,500,000	
Owners Cost (Permitting, Engineering, Metering)	$ 2,050,000	
Interconnection	$ 850,000	
Loads & AFUDC	$ 4,290,000	

Total Estimated Cost	$ 78,690,000	

The project costs do not include any additional percentages for contingencies.

Q. How did PNM determine the estimate for taxes, load, and AFUDC?

A. New Mexico Gross Receipts Tax was part of the bid. The allowance for funds used during construction ("AFUDC") was estimated based upon a 6% interest rate as applied to the Gridworks agreement's cash flow. Administrative and general loads applied to this project are consistent with PNM's current forecasts for administrative expenses.

Q. What if the actual costs exceed the estimated amounts presented in your testimony?

A. As discussed in the Direct Testimony of PNM witness Kyle Sanders, PNM would follow the Commission's Cost Overrun Rule, 17.3.580 NMAC, as it applies to any excess over the $78.7 million cost estimate in this case.

Q. Does the cost estimate in PNM Table GBB-1 account for any available tax credits?

A. No. The cost estimate reflects unsubsidized costs. Under the previously enacted federal Inflation Reduction Act, the BESS Project would potentially qualify for an

investment tax credit between 30 - 40% of the qualifying costs associated with the project. PNM is structuring the BESS Project so that it could qualify for the investment tax credit; this includes requirements for paying the prevailing wage in the construction and maintenance of the project. However, PNM cannot presently determine whether or how much of an investment tax credit it will ultimately be eligible for. As discussed by PNM witness Sanders, any benefits from the tax credit will be provided to PNM's customers and would be addressed by PNM in a general rate case.

Q. Are there concerns with the project execution schedule?

A. There are always concerns with completing projects on schedule in today's environment. The timing of regulatory approval and tariff and tax issues are some risks to the project execution schedule. However, because the Gridworks agreement includes a fixed delivery schedule, these risks for the major equipment supply are currently mitigated. Additionally, because the BESS Project is utility-owned and will be located on existing PNM sites, the project does not have the risks seen by third-party developers associated with site developments, including acquiring interconnection rights or land easements.

Q. Please provide some additional background on Gridworks as the vendor for the BESS Project.

A. Affordable Solar developed a utility-scale division in 2014. That division now operates independently as Gridworks. Gridworks is headquartered in Albuquerque and employs 176 New Mexicans full time. Gridworks has installed over 250 MW of battery energy storage in the state. Nationally, Gridworks has deployed over 1.3 GW / 4 GWh of operational energy storage, with an additional 10 GWh in their construction backlog.

Q. Please generally describe the terms of the Gridworks agreement.

A. The BESS Project is a PNM-owned project with a defined payment and construction schedule. This contract with Gridworks is a turnkey EPC agreement. As explained above in my testimony, PNM is requesting the Commission approve the estimated project cost that is not subject to adjustment for component pricing. Based on this arrangement, the cost risk to PNM customers is limited because the CCN will be subject to the Cost Overrun Rule for any increase in costs.

Q. Please highlight the contractual protections in the Gridworks agreement.

A. The contract, PNM Exhibit GBB-3, includes several provisions to help protect PNM customers. The contract includes liquidated damages for delays in the in-service date of the Project. Delay damages are $200/MW/day (PNM Exhibit GBB-3 Section 15.1). The contract also includes performance guarantees with associated liquidated damages in the amount of $350,000 per MW for contracted energy

storage (PNM Exhibit GBB-3 Section 15.2) in MW, as well as roundtrip energy storage efficiency and storage response delay damages (PNM Exhibit GBB-3 Section 15.3). Also, the contract includes a 12-month warranty period on materials and services, with extended five-year warranties for inverters and a three-year warranty for the containerized BESS equipment. In addition, the contract includes conditions of default along with associated termination rights, including a termination for convenience right on behalf of PNM.

Q. Is the Gridworks agreement the result of a competitive bidding process and is the cost of the BESS Project reasonable?

A. Yes.

Q. Are the non-pricing terms of the Gridworks agreement reasonable and in accord with industry standards for such contracts?

A. Yes.

Q. Please describe the contract provisions relating to non-performance.

A. The default provisions are addressed in the contract. Typically, a default becomes an Event of Default if not cured within the applicable cure period, or immediately if no cure period is specified. Potential Events of Default may include but are not limited to: (1) the sale, dissolution, or abandonment of the facility; (2) failure to

maintain required security; (3) bankruptcy; (4) failure to maintain insurance coverages; and (5) failure to make any payment when due. More details are provided in the contract in PNM Exhibit GBB-3 Section 19.1.

Q. Once the BESS equipment is delivered, how will it be interconnected to PNM's system at the specified locations?

A. The output of the BESS will pass through the system inverters to convert the DC power to AC power. It will subsequently pass through medium-voltage transformers to step the output voltage up to 12.47 kV. At this voltage, the BESS will be tied into the existing solar generation pad-mounted switch, also at 12.47 kV, prior to the output being delivered to the existing solar site interconnection. As a result, there are no material changes to the physical infrastructure associated with the project sites' interconnections with PNM's electrical grid except for additional protection equipment. A separate, bi-directional electrical meter will be provided to monitor and measure the output and charging energy associated with the BESS installation, and those costs are included in PNM's cost.

Q. Are there any additional approvals or permits required to construct and operate the BESS Project?

A. As the project will be constructed on PNM-owned or controlled property within the existing fence line, PNM will file for a modification to the existing site use permits

that allow for the addition of the battery equipment. This significantly streamlines the permitting process. This was a successful approach utilized for the two BESS sites in Case No. 23-00162-UT. In addition, PNM will meet with the local fire marshals to discuss and establish required safety protocols and procedures associated with potential emergency conditions.

Q. Does the Gridworks agreement include requirements for reporting on apprenticeship requirements?

A. Yes. See PNM Exhibit GBB-3 Section 10.6.

Q. What is PNM's estimate for the annual operating and maintenance expense for the BESS Project?

A. A long-term service agreement ("LTSA") for the projects for the first year of operation is valued at $95,000, which includes preventative maintenance, remote operation center support, and spare parts management.

IV. PROJECT IMPLEMENTATION AND CCN CRITERIA

Q. How will PNM ensure optimal deployment of the BESS Project?

A. PNM will utilize a fixed EPC contract and has selected Gridworks for the installation. Gridworks is a highly experienced contractor which has successfully

built 1.3 GW (3.7 GWh) of battery storage systems in the Southwest including multiple projects in New Mexico. Additionally, PNM has successfully deployed the first two distribution battery projects approved in Case No. 23-00162-UT, which were delivered on schedule and will stand as a replicable model for these five sites.

Q. How will PNM mitigate the impacts to the surrounding communities from the BESS Project?

A. By nature of PNM's plan to install the battery systems on the existing PV sites, the impact to the surrounding communities is minimal. These sites are rural, and the BESS equipment is of a similar nature to the PV equipment that is already there. The new equipment will be consolidated and confined to less than one acre on existing 70-100 acre PV sites. PNM will mitigate fire risks through newer LFP battery technology and by utilizing a product which has an industry-leading reputation for fire protection and thermal runaway mitigation.

Q. Are there specific criteria applicable to CCN applications for energy storage systems?

A. Section 62-9-1(E) of the PUA specifically governs the CCN criteria to be met for an energy storage system, which is defined as "methods and technologies used to

store electricity." The BESS Project is a battery energy storage system used to store electricity.

Q. Can you explain how the BESS Project meets certain of these criteria?

A. Yes. The testimonies of the other PNM witnesses in this case explain in detail how these criteria are met. I can add detail regarding one of them below.

Q. Will the BESS Project support diversification of energy resources and enhance grid security as required under Section 62-9-1(E)(4) of the PUA?

A. Yes. These distribution-sited BESS (including the first two deployed last year pursuant to Case No. 23-00162-UT) would be the first energy storage systems on PNM's distribution grid to utilize LFP technology, thereby diversifying PNM assets. It also enhances grid security by improving response time well beyond what gas peaker plants are capable of.

V. CONCLUSION

Q. Please summarize your testimony.

A. PNM intends to implement the BESS Project via a fixed-price EPC contract with prime contractor Gridworks. Gridworks was selected after a robust RFP process

and has extensive experience in implementing BESS solutions throughout the Southwest.

Q. Does this conclude your testimony?

A. Yes.

GCG#534019

Resume of Gary B. Barnard

PNM Exhibit GBB-1

Is contained in the following 3 pages.

GARY B. BARNARD
2401 Aztec Road NE
Albuquerque, NM 87107
(505) 241-2854
email: gbarnar@pnm.com

ACCOMPLISHMENTS

- Developed, managed, sourced, and installed approximately 500MW of utility scale solar projects totaling approximately $950M on schedule and budget.
- Manage the operations and maintenance of 26 solar plants located across the State of NM.
- Responsible for all aspects of the construction of a 40MW gas plant for $60M near Belen NM.
- Direct the contract process for renewable contracts, construction contracts, and maintenance contracts for generation development including the bidding process.
- Developed and implemented Supply Chain planning, infrastructure, metrics, policies, and processes.
- Directed the development and implementation of enterprise wide benchmarks, metrics, and system infrastructure.
- Sourced, identified and captured $3 million in savings from fleet and corporate indirects off a spend amount of $13 million

WORK EXPERIENCE

EXECUTIVE DIRECTOR OF STRATEGIC ENERGY DEVELOPMENT, RENEWABLES AND CONTRACTS, PNMR, Albuquerque, NM 2010-Present
Develops the renewable strategies with a primary focus on solar. Responsible for Facebook renewable relationship including solar construction and wind PPAs. Manage PNM's affiliate renewable activities including solar and partnership development. Directs the generation development organization including utility scale solar generation, gas plant generation, wind and geothermal contracts, Palo Verde Nuclear plant relationships, and the maintenance and operations of the solar facilities. Manage all aspects of solar and gas generation and construction including site identification, technology assessment, environmental compliance, safety, public affairs, sourcing, interconnections, contract negotiations, project management, construction and maintenance. Currently constructing or have completed 137MW of solar at a total cost of approximately $340M. All projects were brought in on budget and schedule. Additionally, constructed a 40MW LM 6000 gas peaking unit. Responsible for wind and geo-thermal contracts in excess of $100M. Responsible for all aspects of renewable and gas generation.

DIRECTOR OF SUPPLY CHAIN CAPABILITIES DEVELOPMENT, PNMR, Albuquerque, NM 2006-2010.
Directed and developed the support services for the Supply Chain organization. These include: technology and systems infrastructure development, fleet and warehouse financial tracking, metrics, benchmarking, data cube, policies, procedures, processes, program management, financial analysis, budgeting, strategic planning and compliance. Supported the development of the centralized supply chain model. Developed job descriptions, interviewed candidates and set up structure for the new organization. Developed draft goals, targets, and operating plan for the organization. Responsible for developing, implementing and ensuring compliance of organizational policies, procedures, processes, systems, and reporting that span the entire organization. Directly managed key managers and responsible for performance management of the entire group. Provided reporting, metrics and benchmarks. Responsible for the strategic and operating plans of the organization. Managed the enterprise wide shared service analytics, benchmarks and metrics tracking.

DIRECTOR OF CORPORATE PROCUREMENT/CONTRACTS/A/P/PR, PNMR, Albuquerque, NM 2003-2006.
Implemented a review of corporate spend and began to update PNMR's procurement process. Sourced and negotiated new contracts with vendors and drove over $3m in savings in several areas of spend including fleet, cell phones, transportation, pagers, office supplies, and others. Created a company wide council of the procurement organizations to begin standardization of processes and savings opportunities. Implemented new processes and tools to standardize critical purchasing and payment functions. Managed the A/P and P/R functions and was able to reduce FTEs and improve process. Responsible for the management and performance of a group in excess of forty individual contributors.

DIRECTOR STRATEGIC PLANNING, IT, & ACCOUNTING SERVICES, BULK POWER SERVICES (subsidiary of Public Service Company of NM), Albuquerque, NM 1999-2003
Promoted to Controller of the new business unit of PNM in 1999, and became responsible for strategic planning and IT in 2000. Responsibilities included: directing the development of the business unit's strategic plan, which consisted of over $1 billion in incremental investments over a five year period, and tracking its implementation. Responsible for all the financial and managerial accounting for an organization that has over $1 billion in revenue, $1.4 billion in assets and over $100 million in net income in 2001. Directed the budget process for the unit, which includes an operating budget in excess of $200 million and a capital budget in excess of $150 million. Managed the development of a financial and accounting group consisting of more than thirty five professionals. Recommended business structures for new organization. Responsible for the business unit's IT strategy and final implementation of a $6 million software accounting system.

DIRECTOR OF MARKETING, **BUSINESS DEVELOPMENT, RATES, TRANSPORTATION, AND NATURAL GAS VEHICLE**S, PNM GAS SERVICES, Albuquerque, NM 1995-1999
Working existing marketing personnel, developed a dedicated commissioned sales force. Increased revenue by over $2.6 million with only five salespeople in one year. Created new product development group that developed and proposed several new products associated with the existing business. Developed and implemented tracking, forecasting, and rewards systems. Additional responsibilities of Rate department and Transportation department added to group after initial success. Designed and implemented new market based rates for natural gas vehicles and gas transportation, and this allowed for opportunities for revenue growth with existing assets. Responsible for a group of 50 contributors. Researched and negotiated corporate alliances for parent.

MANAGER OF BUSINESS PLANNING, PNM GAS SERVICES, Albuquerque, NM 1994-1995
Developed new plans that enhanced market penetration, focus and profitability. Product plans concentrated on immediate opportunities like water pumping, cogeneration, natural gas air conditioning, and others. Developed an updated natural gas vehicle business plan that focused on increasing returns and lowering capital expenditures by several million dollars.

SENIOR MANAGER OF BUSINESS PLANNING, BELLSOUTH ENTERPRISES, Atlanta, GA 1992-1994
Researched new business opportunities for BellSouth Enterprises including: Cable acquisitions, Electronic Commerce, Interactive Video, Video Dial Tone, Transactional Advertising, and Messaging Services. Developed marketing and product plans for new and existing products and services and tracked financial and market performance. Forecasted expenses and usage information for new entities. Prepared presentations on opportunities supporting the strategic direction of information services.

FINANCIAL MANAGER, BELLSOUTH INFORMATION SYSTEMS (BIS), Atlanta, GA 1991-1992.
Responsible for all pricing/planning/financial activities for BIS. Supervised the pricing, costing, budgeting, and billing for this $80 million subsidiary.

PRICING/MARKETING MANAGER, BELLSOUTH INFORMATION SYSTEMS, Atlanta GA. 1988-1991
Set prices for all the company's products. Forecasted revenue growth, product lines sales, and resource requirements. Projected financial performance of products and company Worked with Marketing Vice President in the design of the marketing organization. Developed marketing strategies for major lines of business.

EDUCATION

MBA, EMORY UNIVERSITY, Atlanta, GA 1988

- GPA 3.74 on 4.0 scale
- Merit Fellowship
- Beta Gamma Sigma (Business Honor Society)
- CPSM (Certified Professional in Supply Management) Certification Pending

BA, POLITICAL SCIENCE, UNIVERSITY OF NEW MEXICO, Albuquerque, NM 1986

- GPA 3.83 on 4.0 scale
- Phi Beta Kappa
- Summa Cum Laude
- Merit Fellowship

CERTIFICATIONS/SKILLS

Certified Professional in Supply Management (CPSM)
Member Institute for Supply Management (ISM)
Member Utility Purchasing Management Group (UPMG)
Project Management

2025 Request for Proposal

PNM Exhibit GBB-2

Is contained in the following 10 pages.

Public Service Company of New Mexico (Hereinafter "Company")

Project	Date RFP Re-Issued
PNM Distribution Batteries Phase II	January 17, 2025
	Date Supplier Proposal Due Prior to but no later than Feb. 15, 2025

RFP Attachments

Bid Attachments:

1. Distribution Batteries P2 SOW Attachment A
2. RFP Support Document.zip Attachment B
    a. PNM Metering Standard Rev 8
    b. BESS Single line
    c. Plan A Square
    d. Plan B Long
    e. Addendum E - US Govt Contracts and Federal Awards - PNM
    f. Site Specific DWGs
        i. Alamogordo: Alamogordo AC Plan, Alamogordo Location
        ii. Deming: Deming AC Plan, Deming Location
        iii. Los Lunas: Los Lunas AC Plan, Los Lunas Location
        iv. Rio Communities: Rio Communities AC Plan, Rio Communities Location
        v. San Miguel: San Miguel AC Plan, San Miguel 1 Location

Bid Forms (To be received as part submitted proposal)

Attachment C – Bidder to Provide BUSINESS Proposal
Attachment D – Proposal Form
Attachment E – Commercial Clarifications & Exceptions
Attachment F – Technical Clarifications & Exceptions
Attachment G - Milestone Payment Schedule
Attachment H - Cancellation Schedule

I. RFP CONDITIONS

Responses to Request for Proposals and/or Request for Quotes ("Response(s)") must be submitted using the Jaggaer Sourcing Platform. By submitting a proposal, Supplier is (i) acknowledging that all Buyer Attachments, Q&A Board posts, and RFP description and all other attachments and instructions, have been thoroughly reviewed and Supplier is familiar with and complies with all the RFP conditions and requirements; (ii) making a firm offer to purchase, manufacture and/or provide the equipment or materials described in the RFP, and to provide all Services described in the RFP as applicable; (iii) agreeing that Company may, in its sole discretion, accept or reject, in whole or in part, any or all Responses for any reason at any time after submittal; (iv) agreeing that Company has sole discretion in selecting a buyer, manufacturer or vendor for the equipment or materials or provider of Services; (v) agreeing that Company may, in its sole discretion, discontinue negotiations at any time prior to execution of the agreement that covers the purchase or sale of the equipment and/or materials or for the performance of Services; (vi) acknowledging Supplier's understanding that Company may be required to disclose all or part of any Proposal and related information and materials in the context of a legal or administrative proceeding or as otherwise required by law; and (vii) certifying that the individual submitting the Proposal is duly authorized to legally bind the Supplier.

This RFP is not a contract, nor an offer. Suppliers responding to this RFP receive no rights as a result of the response whatsoever. Company may accept other than the lowest priced Proposal, accept or reject any Proposal in whole or in part, or reject all Proposals with or without notice or reasons, and if no Proposal is accepted, may abandon the work or have the work performed in another manner as Company may elect. Company reserves the right to discontinue negotiations at any time prior to the signing of a definitive contract for any or no reason. All costs incurred by Company and the Supplier as a result of this RFP will be paid by the party incurring the expense. Company will not reimburse any of the Supplier's costs associated with responding to this RFP.

The contract awarded as a result of this RFP, shall be the sole and entire agreement between Company and Supplier. Any terms conflicting with, or in addition to the RFP conditions are considered rejected unless agreed to in writing by Company.

Suppliers responding to this RFP hereby certify that all services, goods including equipment, firmware, software, or any component thereof quoted or proposed are in compliance with any and all laws, statutes, acts, constitutions, ordinances, rules, regulations, orders, decrees, injunctions, licenses, permits, consents, approvals, authorizations, agreements or regulations of any federal, state, tribal or local government, department, office, agency, board or commission having jurisdiction over the Company, Supplier, sub-contractors, the work site or any portion of the goods or services.

Company reserves the right to award any and all Services, goods, and/or assets detailed in this RFP on a local, regional, national or international basis. Company also reserves the right to award none of the Services, goods, and/or assets if it so elects, and/or reserves the right to purchase products and services from other suppliers. Company is therefore under no obligation to buy exclusively from the Supplier who is awarded the contract.

Further, this RFP and your Response will be the basis for and will be incorporated into the contract (which, if applicable, is included in this RFP) between Company and the successful Supplier(s). If included, Supplier is asked to review the enclosed Company standard contract and provide comment to the terms and conditions with your RFP Response. Supplier should redline the attached Agreement Draft if they object to any of the terms and conditions. Do not sign the contract at this time. Responses submitted in support of the RFP shall represent a firm offer to contract. Each representation of fact and promise of future performance therein will be incorporated into the contract as a warranty or covenant. Any statement of fact or promise of future performance that is not intended by the Supplier as a warranty or covenant should be clearly identified.

On July 21, 2016, the Federal Energy Regulatory Commission (FERC) directed the North American Electric Reliability Corporation (NERC) to develop or modify necessary Reliability Standards, to address concerns that relate to supply chain risk management for industrial control system (ICS) hardware and software, as well as computing and networking services associated with Bulk Electric System (BES) operations. In October of 2018, FERC approved the Reliability Standard CIP-013-1, which is effective Oct. 1, 2020. The purpose of this standard is to assess and mitigate cyber security risks to the reliable operation of the BES, by implementing security controls for supply chain risk management of BES Cyber Systems. As part of that assessment process, Supplier is asked to (1) review the Supply Chain Cyber Security Risk Management exhibit included in the agreement templates posted in Jaggaer and redline it if they object to any clauses in the exhibit and (2) complete the supplier risk security mandatory questions in the Jaggaer RFP event. If Supplier is selected as a finalist for this RFP, Supplier will be required to complete a more comprehensive risk security questionnaire.

During the bidding period, Supplier's point of contact will be limited to the contact(s) provided in this RFP in the Supply Chain, Sourcing Department via the Jaggaer platform. Any contact regarding this bid with Company associates other than the Supply Chain, Sourcing Contact may be grounds to disqualify your proposal. Any verbal statements regarding this RFP by any persons other than this point of contact should not be relied upon. Suppliers shall submit any questions regarding the event through this RFP's Jaggaer platform Q&A section. Every effort will be made to respond to your questions within two business days of receipt or as indicated otherwise but no questions will be answered if they are received after the date specified as the deadline for questions in the RFP's schedule. Company, at its option, might choose to share any questions and corresponding responses with all Suppliers if it deems that the additional information will provide further clarification to the RFP requirements. Questions that Supplier believes to be commercially sensitive or confidential must be individually marked as "Confidential". Questions marked "Confidential" will not be shared with other Suppliers unless Company determines that the question is a general, non-sensitive technical or commercial

question. If answers and related documentation posted in the Q&A Board are considered a material change to the RFP requirements or Scope of Work, these will be identified as amendments to this RFP.

Use of Company Logos. The Company name and logo signify the well-known brand image of Company and therefore are invaluable assets. To properly protect this brand image, you may use the Company trade name in your Response to this RFP, but DO NOT use the Company name with the logo, or the logo alone, anywhere in your Proposal.

Suppliers may propose alternatives to what is being requested in the RFP only after providing a bid for what has been outlined in the RFP. Suppliers may submit one or more alternative Responses in addition to a response conforming to the requirements specified in this RFP. Any alternative Responses must be clearly identified and separate from the original Response and must be prepared using the same format specified in this RFP, including the completion of all bid forms associated with the alternative. The supplier will assume full responsibility to demonstrate that the alternative will meet or exceed Company's expectations.

This RFP and its contents will always remain the property of Company. All Responses and related content and materials, once delivered, become the property of Company.

Suppliers are not permitted to make any public announcement or release any information regarding this RFP. Company may at its sole discretion and upon prior written approval, authorize Supplier to issue a news release.
Failure to conform to the required format or meet deadlines will result in disqualification from the bid process. The Supplier will be notified of the disqualification and their proposal will not be considered.

Responses may be withdrawn at any time prior to the event close date via the withdraw and decline options within the RFP Jaggaer system.

Supplier agrees to carry and maintain in effect commercial general liability, or the equivalent, commercial auto liability, worker's compensation, employer's liability insurance, technology errors and omissions, and products liability insurance, and other coverages as noted and required in this RFP. Supplier agrees to ultimately provide a Certificate of Insurance (ACORD form) naming Public Service Company of New Mexico as additional insured and a waiver of subrogation for each policy. If required by the Supply Chain Sourcing Contact, suppliers will be required to provide such proof of insurance, even if Supplier's current insurance levels do not meet these requirements, Any insurance variations from the proposed Agreement Draft are subject to PNM's Risk review and approval.

Supplier will be furnishing goods and/or performing services resulting from this RFP as an independent contractor, and no principal-agent or employer-employee relationship or partnership or joint venture with each other shall be created between Company and Supplier, Supplier's employees, or Supplier's agents. Furthermore, Supplier, its employees and agents shall not hold themselves out as employees or agents of Company.

Supplier represents to Company that it is properly equipped, organized, staffed, financed, experienced, qualified, insured, and licensed to perform the work as specified in this RFP.

II. CORPORATE BACKGROUND

Public Service Company of New Mexico ("PNM") is a wholly owned subsidiary of TXNM Energy. (NYSE: TXNM) based in Albuquerque, N.M. PNM is an electric utility that provides generation, transmission, and distribution service. PNM's retail service territory covers a large area of north central New Mexico, including the cities of Albuquerque, Rio Rancho, and Santa Fe and most of the area around the Rio Grande valley, from Belen to Santa Fe. Other communities served include Lordsburg, Silver City, Deming, Alamogordo, Ruidoso, Tularosa, Clayton, and Las Vegas. PNM also serves several New Mexico pueblos, tribes and nations and numerous unincorporated areas. In total, PNM serves about 530,000 electricity customers statewide.

PNM currently produces nearly 50 percent carbon free energy and has committed to being 100 percent carbon free by 2040, five years ahead of the state's legislated date of 2045, as provided in the Renewable Energy Act, NMSA 1978, §§ 62-16-1 to -10 ("REA"). This commitment will involve PNM's implementation of a combination of energy generation, storage, demand-side and energy efficiency resources over the next 20 years.

III. PROJECT SCOPE, PROJECT REQUIREMENTS AND MANDATORY PROJECT INFORMATION.

a. Scope of Work

This RFP is part of a solicitation process for the purpose of acquiring Lithium-Ion battery energy storage systems (BESS) to help serve PNM's forecast system. PNM is targeting the acquisition of 40 MW of storage capacity across five (5) existing Solar PV sites for its New Mexico portfolio. PNM will only consider complete turnkey EPC solutions built to the details in the attached SOW document, "**Distribution Batteries P2 SOW**".

b. Site Specifications

See the attached documents, "Distribution Batteries P2 SOW".

c. Proposal Requirements

Supplier shall include the following in any Proposal submitted:

(1) The firm-fixed price amount being offered.

(i) Any Gross Receipts Tax and State Sales Tax that will be charged to Company must be listed separately.

(2) The completed Business Proposal

(3) The signature, name and title of a person *authorized* to submit the Proposal on behalf of the Supplier.

(i) If a partnership is submitting the Proposal, the Proposal must be signed by a member having authority to bind the partnership and must identify whether the signing member is a "General Partner" or a "Limited Partner."

(ii) If an individual is submitting the Proposal, the Proposal must be signed by that individual and must identify whether the individual is "Doing Business As" another name or is a "Sole Owner."

(4) If any part of performance of the Services requires one or more contractor's licenses under New Mexico law, a copy of Supplier's current, valid contractor license(s) issued by the New Mexico Construction Industries Division must be submitted as part of Supplier's Proposal. See Section 60-13-12(B) NMSA 1978[1].

[1] It is the obligation of Supplier to determine whether a contractor's license is required and to ensure that Supplier is in possession of such license at the time it submits its Proposal, as required by New Mexico law, including but not limited to Section 60-13-3 and Section 60-13-12 NMSA 1978. Further information regarding classification of licenses in New Mexico is set forth in the New Mexico Administrative Code at Section 14.6.6.1, and additional information may be obtained from the New Mexico Construction Industries Division - http://www.rld.state.nm.us/construction/.

(5) If any part of the performance of the Services requires a professional engineering license in one or more engineering disciplines pursuant to New Mexico law, a copy of Supplier's current, valid professional engineering license(s), issued by the New Mexico Board of Licensure for Professional Engineers and Professional Surveyors must be submitted as part of Supplier's Proposal.[2]

(6) PNM is a supplier of services to the federal government, and as such, must include the following flow down provisions in its contracts that exceed Seven Hundred and Fifty Thousand Dollars ($750,000). Contractor shall comply with all the requirements of FAR 52.219-8 Utilization of Small Business Concerns.

(7) PNM is an equal opportunity employer. If applicable, the Parties hereby incorporate and agree to abide by the requirements set forth in 41 CFR §§ 60-1.4(a), 60-1.4(b), 60-250.5(a) and 41 CFR 60-741.5(a).

(8) The requirements of Section 48 C.F.R. 52.222-54 of the Federal Acquisition Regulations concerning Employment Eligibility Verification ("E-Verify") requirements are hereby incorporated by reference. In addition, Contractor and its subcontractors shall include this provision in all subcontracts and comply with all E-Verify requirements.

(9) PNM will take reasonable precautions and use commercially reasonable efforts to protect any claimed proprietary and confidential information contained in a Proposal, provided that such information is clearly identified by the Respondent as "PROPRIETARY AND CONFIDENTIAL MATERIAL". Notwithstanding the foregoing, PNM in its sole discretion may release such information: (1) to any external contractors for the purpose of evaluating Proposals, but such contractors will be required to observe the same care with respect to disclosure as PNM; (2) to others who have a need for such information for purposes of evaluating the RFP and the Proposals, the RFP process or a final definitive Agreement, including but not limited to the Commission, its employees, staff, consultants and/or agents, and other parties, their consultants and/or agents, or in any Commission proceedings relating thereto; or (3) if PNM is requested or compelled to disclose such information (or portions thereof) (i) pursuant to subpoena or other court or administrative process, (ii) at the direction of any governmental authority with jurisdiction over PNM or the subject matter of this RFP, or (iii) as otherwise required by law. If PNM determines that the release of such information will be made under one of the circumstances set out above, PNM will provide Respondent with written notice. PNM is under no duty or requirement to Respondent to withhold such information or take legal steps to protect the information from disclosure if, in PNM's judgment, there is a need to provide it under the circumstances described above. Under no circumstances will PNM, its parent corporation or affiliates, or any of their directors, officers, management, employees, agents or contractors be liable for any damages resulting from the disclosure of Respondent's claimed proprietary and confidential information during or after the RFP process. By submitting a Proposal in response to this RFP, Respondent acknowledges and agrees to the requirements in this provision concerning confidentiality. In the event PNM uses internal, proprietary projections in its evaluation process, the resulting projections will not be shared with Respondents.

(10) PNM will take reasonable precautions and use commercially reasonable efforts to protect any claimed proprietary and confidential information contained in a Proposal, provided that such information is clearly identified by the Respondent as "PROPRIETARY AND CONFIDENTIAL MATERIAL". Notwithstanding the foregoing, PNM in its sole discretion may release such information: (1) to any external contractors for the purpose of evaluating Proposals, but such contractors will be required to observe the same care with respect to disclosure as PNM; (2) to others who have a need for such information for purposes of evaluating the RFP and the Proposals, the RFP process or a final definitive Agreement, including but not limited to the Commission, its employees, staff, consultants and/or agents, and other parties, their consultants and/or agents, or in any Commission proceedings relating thereto; or (3) if PNM is requested or compelled to disclose such information (or portions thereof) (i) pursuant to subpoena or other court or administrative process, (ii) at the direction of any governmental authority with jurisdiction over PNM or the subject matter of this RFP, or (iii) as otherwise required by law. If PNM

[2] It is the obligation of Supplier to determine whether a professional engineering license in one or more disciplines is required to perform the Services and to ensure that Supplier is in possession of such license at the time it submits its Proposal. New Mexico Administrative Code Rule 16.39.3.12. See also, generally, Sections 61-23-1 through 61-23-24 NMSA 1978 and New Mexico Administrative Code Title 16, Chapter 39, Part 3. Additional information may be obtained directly from the New Mexico Board of Licensure for Professional Engineers and Professional Surveyors - http://www.sblpes.state.nm.us.

determines that the release of such information will be made under one of the circumstances set out above, PNM will provide Respondent with written notice. PNM is under no duty or requirement to Respondent to withhold such information or take legal steps to protect the information from disclosure if, in PNM's judgment, there is a need to provide it under the circumstances described above. Under no circumstances will PNM, its parent corporation or affiliates, or any of their directors, officers, management, employees, agents or contractors be liable for any damages resulting from the disclosure of Respondent's claimed proprietary and confidential information during or after the RFP process. By submitting a Proposal in response to this RFP, Respondent acknowledges and agrees to the requirements in this provision concerning confidentiality. In the event PNM uses internal, proprietary projections in its evaluation process, the resulting projections will not be shared with Respondents.

(11) If the performance of the Services/Work includes construction activities and/or acquisitions of large equipment equal to or greater than $5M dollars in value, supplier must be able to satisfy Company's credit standards to ensure Supplier has adequate financial capability. Company requires qualified Suppliers to have been assigned an investment grade rating S&P's BBB or above, or a Moody's Baa2 or above, or have sufficient equity security to cover Supplier's anticipated delivery obligations under any agreement entered into as a result of this RFP process. If Supplier is unable to satisfy the foregoing credit standards, Supplier might be required to (1) provide a payment bond for the protection of Persons furnishing labor and materials and a performance bond for the protection of PNM that assures full and faithful performance of Contractor in payment of all obligations; or (2) designate a credit support provider/ guarantor (parental guaranty), and if the credit support provider/guarantor is satisfactory to Company, the Supplier will be deemed to have satisfied Company's credit standards. The quality of credit of the proposed credit support provider / guarantor will be evaluated under the same standards as that of the Supplier.

(12) The following items:

X Certificate of Insurance (ACORD form including the appropriate party as additional insured and a waiver of subrogation for each policy per the attached agreement) including the following minimum insurance levels, if checked:

- X Workers Compensation Insurance $1,000,000
- X Commercial General Liability Insurance $1,000,000 per occurrence and $2,000,000 general aggregate
- X Owners and Contractors Protective Liability Insurance $1,000,000
- X Commercial Automobile Liability Insurance $1,000,000
- X Excess Liability Insurance $10,000,000
- X Professional Liability Insurance $1,000,000
- X Property Insurance
- X Technology Errors and Omissions Insurance

INSTRUCTIONS TO SUPPLIERS

A. RFP Responses

1. Supplier's Response and associated documentation must be received by Company according to the requirements described herein.

    a. Supplier agrees to comply with any postings or notices located at Company's premises regarding safety or security.
    b. Supplier Risk Security Screening Questions
    The Supplier Risk Security Screening Questions included in the mandatory Questions section of the RFP's Event in Jaggaer will serve to eliminate high risk vendors from consideration in the RFP process. If Supplier answers 'YES' to questions 1 or 2, no further consideration will be given. If Supplier answers 'YES' to question 3, risk will be assessed and may result in disqualification of consideration. If Supplier answers 'NO' to questions 4-9, no further consideration will be given unless Supplier provides evidence or attestation of plans to remediate such deficiencies.
    c. Responses to this RFP should include the following:
        - Business Proposal which includes the detailed response to all the appropriate questions and statements included in this RFP that will clarify Supplier's understanding and ability to meet the requirements.
        - The Suppliers Detailed explanation of Suppliers assumptions or conditions as imposed on or in the RFP Responses.
        - Agreement with terms and conditions of the agreement template enclosed hereto or list of revisions or exceptions.
        - Supplier's proposal pricing to include all costs associated with the scope of Services, including:
            - All equipment, materials and consumables necessary for a complete and functional solution.
            - All Design, Engineering, Survey, Topo, and Environmental submittals
            - Licensing and training
            - All Permitting unless specified in SOW as PNM
            - Implementation, construction, and commissioning
            - All support services required to meet Company's need dates and functional and technical criteria.
        - Optional diagrams or other attachments that will help clarify the Supplier's proposal if or as needed.
        - Suppliers may propose alternatives to what is being asked for in the RFP only after providing a bid for what has been outlined in the RFP.
        - For EPC Proposals
            - Attachment D – Proposal Form
            - Attachment E – Commercial Clarifications & Exceptions
            - Attachment F – Technical Clarifications & Exceptions
            - Attachment G - Milestone Payment Schedule
            - Attachment H - Cancellation Schedule
            - Description of the Respondent
            - Financial Information / Credit Quality
            - Exceptions / Red-Line Markup to the form Contract (provide in original, native file formats with tracked changes)
            - Identification of all Pricing Terms
            - EPC Contractor Rate Schedule (engineering, construction, field labor, and equipment)
            - Required Licenses
2. The original Response and all written copies must be signed by a person in Supplier's organization authorized to bind the company and needs to be submitted to the Jaggaer system. Include the address and phone number of the respective person.
3. Supplier's interface with the Jaggaer system is briefly summarized as follows:

a. Once access is granted to the RFP's event, all bid documents provided by PNM can be found under "Settings and Content" and in the "Buyer Attachments" folder.
b. All Supplier communications and notifications must be submitted to PNM as a private message utilizing the option "Ask a Question" under the respective event's Q&A Board unless otherwise indicated by PNM's Sourcing team.
c. PNM will respond to all Supplier questions and notifications as a private response within the Q&A Board.
d. Suppliers must submit their full Proposal and related documents by the Response Due Date under "Settings and Content" and in the "Vendor Attachments" folder. Supplier must click on "Submit" to fully transfer the Proposal's documents and make them retrievable by PNM. Not being in "Submitted status" on or prior to the event closure date (Response Due Date), will prevent Supplier from communicating via the Q&A Board.

IV. RFP TIMELINE:

RFP issued to Suppliers	**January 17th, 2025**
Contract issued to Suppliers	**January 29th, 2025**
Pre-Bid Meeting (Online)	**January 29th, 2025**
Response Due Date	**February 15th, 2025**
Successful Bid Announced	**Feb 28th, 2025**
Contract Execution	**March 28th, 2025**
FNTP	**Jan 1st, 2026**
Construction Start	**February 1st, 2026**
Commercial Operation Date	**Dec 1st, 2026**

Notes: The due date of the Supplier's RFP Response must be adhered to strictly. Failure to conform to the required format or failure to meet deadlines may result in disqualification from the bid process. Each party to this RFP recognizes and confirms their previously executed non-disclosure agreement.

The Pre-Bid meeting will discuss how the Bids will be will scored, failure to be present will put the supplier at a disadvantage in the scoring process.

V. PROPOSALS: The bids will be graded and scored based on the two proposals submitted.

A. Business Proposal: The bidders shall provide detailed responses to the following elements in the form of a business proposal submitted as an Attachment.

1. **Battery and BoP Solution:**
    a. **Battery Solution:** The proposal shall provide detailed information requested in the SOW. Bidders will be graded on the overall quality, performance, guarantee, robustness, and durability of the Battery Solution.
    b. **Balance of Plant Equipment:** The proposal shall detail on BOP equipment the bidder will provide as detailed in the scope. How does the BOP will integrate with the Battery? Provide info such as: Single lines showing integration, Product, Model, Manufacturer, Origin, etc. The Battery is only as good as the BOP equipment. Bidders will be graded on the quality, design, nature, origin, and functionality of the BOP equipment.
2. **Project Execution**: Bidders will be graded on the following aspects:
    a. **Execution Plan:** Include a narrative detailing Bidder's approach and process to complete the work defined in the Scope of Services. The PEP shall detail how the bidder plans to execute the work at five separate locations and deliver the individual site on time. The intent in this section is to clearly show the bidder has a sound plan which will deliver a quality result at five separate locations within the required timeframe.
    b. **Manpower/Personnel**: Bidder shall include manpower numbers by title/discipline. As applicable, bidder shall identify numbers of Engineers, Technical Reps, Project Mgrs, Supervisors, QAQC, Safety, Foremen, Craftspeople by discipline, Etc. The credentials and experience of the personnel shall be provided if relevant, resumes, etc. Bidders shall identify if

workforce consists of subcontractor or pool of subcontractors. Bidders' response shall also include the number and type of equipment necessary to complete the work. The intent in this section is to clearly show the bidder has sufficient skilled manpower, equipment, and resources necessary to deliver a quality result at two separate sites within the required time frame.

c. **Schedule**: Bidder to demonstrate ability to meet the Contractor Milestones by providing a clear and detailed schedule. The schedule shall show the logical progression of the work with tasks, minor stages and major milestones. Bidder to include durations for specific tasks in-between stages/ milestones. Schedule to show necessary working hours at the Project Site for the various project stages and total hours necessary to complete the work. Clearly show days of preparation, mobilization, groundbreaking, etc. The intent in this section is to clearly show the bidder has a proper plan with clearly identified milestones that will show if the project falls behind or moves ahead of the provided schedule.

3. **Reporting Requirements:** The reporting requirements for the Inflation Reduction Act and the DOE defined in the SOW is a requirement of the contract. The Bidders will be graded on their ability to demonstrate understanding of the requirements, how the bidder plans on meeting the requirements and what necessary documentation the bidder will provide to PNM to prove the standards and meet the requirements.
4. **Contract Acceptance:** Bidders are required to submit redlines to the supplied contract. The bidders will be graded on Commercial Issues/Exceptions, Terms and Conditions, Contract Redlines, Exceptions to Bid, Commercial Requirements, and other contractual related issues that could signify potential risks or areas of concern. This evaluation will help ensure that all bids are thoroughly vetted for compliance and alignment with the project's objectives and requirements.

5. **Experience, Reputation, Industry Presence:** Please provide any relevant product or company information that demonstrates the exceptionalism of the battery solution or bidder. This includes, recent relevant work, equipment knowledge and experience, work knowledge and experience, experience in the specialized nature of the work, key personnel resumes, awards, accomplishments, accolades, preprinted materials describing technical skills, safety awards, comments of references, market presence, insurance. Bidders will be graded on overall product and construction experience and reputation.

B. Price Proposal

Supplier shall complete and submit Attachment D – Proposal Form included in the RFP event's Bid Forms. Other pricing terms shall be identified in Supplier's proposal as well as in Attachment G - Milestone Payment Schedule and Attachment H - Cancellation Schedule.

VII. CONTRACT TEMPLATE

(PNM Contract will be sent to bidders no later than 1/29/25)

The Supplier **MUST** review the terms and conditions of the attached **AGREEMENT DRAFT.**

The Supplier **MUST** redline the attached Agreement Draft if they object to any of the terms and conditions by inserting proposed language changes and the rationale behind the proposed change.

Additionally, the Supplier must indicate in Attachment E – Commercial Clarifications & Exceptions any and all objections to the Agreement Draft. If Supplier does not take any exceptions to the Contract template, they must enter "no exceptions taken" in Attachment E – Commercial Clarifications & Exceptions.

VIII. OFFEROR INFORMATION

Offeror Name: _____

Address: _____

_____

_____

Phone: _____

Fax: _____

Email: _____

Signature: _____

Name: _____

Title: _____

Date: _____

CONFIRMATION OF PROPOSAL

Responses to Request for Proposals ("Response(s)") must be submitted using Jaggaer. By submitting a proposal or quote bidder is (i) acknowledging that all Buyer Attachments, Q&A Board posts, and RFP description(s) and all other attachments and instructions, have been thoroughly reviewed and Supplier is familiar with all the RFP conditions and requirements; (ii) making a firm offer to purchase, manufacture and/or provide the equipment or materials described in the RFP, and to provide all Services described in the RFP as applicable; (iii) agreeing that Company may, in its sole discretion, accept or reject, in whole or in part, any or all Responses for any reason at any time after submittal; (iv) agreeing that Company has sole discretion in selecting a buyer, manufacturer or vendor for the equipment or materials or provider of Services; (v) agreeing that Company may, in its sole discretion, discontinue negotiations at any time prior to execution of the agreement that covers the purchase or sale of the equipment and/or materials or for the performance of Services; (vi) acknowledging bidder's understanding that Company may be required to disclose all or part of any Proposal and related information and materials in the context of a legal or administrative proceeding or as otherwise required by law; and (vii) certifying that the individual submitting the is duly authorized to legally bind the bidder.

GridWorks EPC Agreement for BESS

PNM Exhibit GBB-3

Is contained in the following 655 pages.

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CONFIDENTIAL

ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT

by and between

PUBLIC SERVICE COMPANY OF NEW MEXICO

and

GRIDWORKS, INC.

dated July 28, 2025

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ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT

This ENGINEERING, PROCUREMENT AND CONSTRUCTION AGREEMENT is made and entered into as of this 28th day of July, 2025 (the "**Effective Date**"), by and between **PUBLIC SERVICE COMPANY OF NEW MEXICO**, a New Mexico corporation ("**Owner**") and **GRIDWORKS, INC.,** a New Mexico corporation ("**Contractor**"). Each entity is sometimes individually referred to herein as a "**Party**" and the entities are sometimes collectively referred to herein as the "**Parties**."

RECITALS

WHEREAS, Owner is developing an five (5) energy storage facilities, each with a maximum discharge capability of 6MW/24MWh each (30 MW total) located across existing Solar PV sites in New Mexico, as more particularly described herein; and

WHEREAS, Owner desires to engage Contractor to design, engineer, procure, install, construct, test and commission the Projects for the Contract Price, and Contractor desires to provide such services, all in accordance with the terms and conditions set forth in this Agreement.

NOW, THEREFORE, in consideration of the sums to be paid to Contractor by Owner and of the covenants and agreements set forth herein, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. DEFINITIONS AND RULES OF INTERPRETATION

1.1. **Definitions.**

For the purposes of this Agreement, the following terms shall have the following meanings:

"**Abandon**" means Contractor's failure or refusal, other than in the event of or resulting from a Force Majeure Event, Change in Law, or Owner-Caused Delay, to continue to diligently pursue or substantially perform the Work for a period longer than thirty (30) consecutive Days and during which period Contractor has, in breach of its obligations under this Agreement: (a) suspended its operations at all Sites; (b) reduced personnel at all Sites; (c) removed required equipment from all Sites; and (d) otherwise conducted its operations such that Contractor would not be capable of maintaining progress sufficient to achieve Substantial Completion of all Projects by the Substantial Completion Guaranteed Date.

"**AC**" means alternating current.

"**AGC**" stands for "Automatic Generation Control" and means energy management system equipment that automatically adjusts the quantity of Charging Energy and Discharge Energy of a Project, including communication circuits to communicate Project operating information to Transmission Provider's representatives on a real-time basis for the purpose of telemetering, supervisory control/data acquisition and voice communications.

"**Affiliate**" means, with respect to a specified Person, any other Person that directly, or indirectly through one or more intermediaries, controls, is under common control with, or is controlled by such

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specified Person. For purposes of this definition, "control" means, with respect to any Person, the ability to control, influence or limit, directly or indirectly, the operations, business decisions or policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

"**Agreement**" means this Engineering, Procurement and Construction Agreement, including all Exhibits and attachments hereto, as the same may be modified, amended or supplemented from time to time in accordance with the terms hereof.

"**Aggregate LD Cap**" has the meaning set forth in Section 30.2(e).

"**Ancillary Services**" means operating reserves, regulation, black-start capability, reactive supply, voltage control, frequency response, and other products associated with electric generation and Energy, each to the extent that a Project is capable of providing such services.

"**Applicable Law**" means and includes any statute, license, law, rule, regulation, code, ordinance, judgment, injunction, arbitral award, decree, writ, legal requirement or order, of any national, federal, provincial, tribal, state or local court or other Governmental Authority, and the official, written judicial interpretations thereof, applicable to (a) a Project, the Work, the ESS, the Sites or the Parties; (b) safety or the prevention of injury to persons or the damage to property on, about or adjacent to a Site or any other location where any other portion of the Work will be performed; (c) labor relations, employee relations, employment discrimination, affirmative action, employee benefits, fair labor standards, family and medical leave, immigration, payment of wages, prevailing wages, hours of employment or other terms and conditions of employment; (d) protection of human health or the environment in the performance of the Work; or (e) emissions, discharges, releases or threatened releases of pollutants, contaminants, chemicals or industrial, toxic or hazardous substances or wastes into the environment which are generally recognized as governing the performance of the Work, the Projects, or the Sites, including, without limitation, ambient air, surface water, groundwater, or land, or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport, or handling of pollutants, contaminants, chemicals, Hazardous Materials or other industrial, toxic materials or wastes, as now or may at any time hereafter be in effect.

"**Applicable Permit(s)**" means each national, state, local or other license, consent, waiver, appraisal, authorization, ruling, exemption, variance, order, judgment, decree, declaration, regulation, certification, filing, recording, permit (including, where applicable, conditional permits) or other approval with, from or of any Governmental Authority, including each and every environmental, construction, operating or occupancy permit, that is required by Applicable Law for the lawful performance of the Work by Contractor or its Subcontractors as set forth in Exhibit C-1 and the Contractor-Acquired Permits set forth in Exhibit C-2.

"Apprentice Requirements" means the apprentice requirements in Sections 48 and 45(b)(8) of the Code and the IRS Guidance.

"**Business Day**" means a day, other than a Saturday or Sunday or a public holiday, on which banks are generally open for the transaction of business in the City of Albuquerque, New Mexico.

"**Capacity LD Cap**" has the meaning set forth in Section 30.2(d).

"**Change In Law**" means the enactment, adoption, promulgation, modification (including a written change in interpretation by a Governmental Authority), or repeal after the Effective Date of any Applicable Law that materially and adversely affects the Work, including, but not limited to, the imposition of, or any change in the imposition of, any export or import customs and other Taxes, tariffs and duties and other similar charges or fees levied or assessed by any jurisdiction; provided, however, that (a) a change in any national, federal, state or provincial income Tax law (or any other Tax law based on income), shall not be a Change In Law pursuant to this Agreement; and (b) the final enactment, modification, amendment or repeal of an Applicable

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Law prior to the Effective Date with an effective date of such action that falls after the Effective Date shall not be a Change In Law pursuant to this Agreement.

"**Change In Work**" means a change in the Work as defined in Section 16.1.

"**Change In Work Form**" means the form prepared in respect of a Change In Work in the form attached hereto as Exhibit Q.

"**Charging Energy**" means the amount of Energy supplied by Transmission Provider at Transmission Provider's cost and in accordance with Industry Standards, and delivered to a Project at the Point of Delivery to be stored at the Project for the purpose of charging the ESS and discharge at a later time, as measured by the Electric Metering Devices, accounting for estimated AC losses (based on methodology agreed to by the Parties) between the Electric Metering Devices and the Point of Delivery that are not already reflected in the metered data.

"**Claim Notice**" has the meaning set forth in Section 23.6.

"**Commercially Reasonable Efforts**" means, with respect to any action required to be made, attempted or taken by a Party under this Agreement, the level of effort in light of the facts known to such Party at the time a decision is made that: (a) can reasonably be expected to accomplish the desired action; and (b) is consistent with Industry Standards and Applicable Law, taking into consideration the costs of such action (including whether such cost is reasonable), the amount of notice of the need to take such action, the duration and type of action and the commercial and regulatory environment in which such action occurs.

"**Commissioning Plan**" has the meaning set forth in Exhibit V.

"**Confidential Information**" has the meaning set forth in Section 24.1.

"**Contract Interest Rate**" has the meaning set forth in Section 6.8.

"**Contract Price**" has the meaning set forth in Section 5.1.

"**Contractor**" has the meaning set forth in the preamble and shall include any of its permitted successors and assigns.

"**Contractor-Acquired Permits**" means the permits, approvals, consents and certifications that Contractor is required to obtain for the performance of the Work including those, if any, set forth in Exhibit C-2.

"**Contractor Credit Support**" means either the Performance Bond or the Warranty Bond or both of them, as the context requires.

"**Contractor Cure Period**" has the meaning set forth in Section 19.2.

"**Contractor Deliverable**" means all of the deliverables set forth on the Contractor Deliverables Table.

"**Contractor Deliverables Table**" means the table of Contractor Deliverables attached hereto as Exhibit B.

"**Contractor Event of Default**" has the meaning set forth in Section 19.1.

"**Contractor Financing Parties**" means (a) any and all lenders providing senior or subordinated construction, interim or long-term debt financing or refinancing to Contractor or its Affiliates or (b) any

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Person providing credit support to Contractor or its Affiliates, in each case, in connection with a Project or a portfolio of projects (including any other Energy Storage System that Contractor is developing for or on behalf of Owner or any Affiliate of Owner), and, in each case, any trustee or agent acting on Contractor's or its Affiliate's behalf.

"**Contractor Hazardous Materials**" has the meaning set forth in Section 27.1.

"**Contractor Indemnitee**" has the meaning set forth in Section 23.3.

"**Contractor Lien**" has the meaning set forth in Section 28.1.

"**Contractor's Invoice**" means an invoice from Contractor to Owner prepared by Contractor and in a form attached as Exhibit S.

"**Contractor's Project Manager**" means the project manager designated by Contractor pursuant to Section 3.4 or any other project manager appointed by Contractor, subject to the consent of Owner, which consent shall not be unreasonably denied or delayed.

"**Contractor's Safety Procedures**" means those procedures and protocols noted on Exhibit D.

"**DC**" means direct current.

"**Defect**" means, as the context requires, any Equipment, engineering, design or installation Work, in each case, that does not conform in any material respect to the standards set forth in this Agreement, the Statement of Work, Applicable Law or the Contractor Deliverables.

"**Defect Warranty**" means the warranties of Contractor under Section 17.1.1.

"**Defect Warranty Period**" has the meaning set forth in Section 17.2.1.

"**Delay LD Cap**" has the meaning set forth in Section 30.2(c).

"**Delay Liquidated Damages**" has the meaning set forth in Section 15.1.

"**Delay Notice**" has the meaning set forth in Section 8.2.1.

"**Delayed ESS Capacity**" has the meaning set forth in Section 15.1.1.

"**Design Warranty**" has the meaning set forth in Section 17.1.2.

"**Design Warranty Period**" has the meaning set forth in Section 17.2.2.

"**Discharge Energy**" means Energy discharged from the ESS and delivered to Transmission Provider at a Point of Delivery, as measured by the Electric Metering Devices, corrected for any estimated electrical losses to a Point of Delivery, based on methodology agreed to by the Parties.

"**Disclosing Party**" has the meaning set forth in Section 24.1.

"**Dispute**" has the meaning set forth in Section 31.1.

"**Dollars**," "**dollars**" or "**$**" means United States Dollars.

"**Effective Date**" has the meaning set forth in the preamble.

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"**Electric Metering Device**" has the meaning set forth in Exhibit V.

"**Energy**" means three-phase, 60-cycle alternating current electric energy, expressed in units of kWh or MWh, delivered to or received from a Project.

"**Energy Storage System**" or "**ESS**" means the energy storage equipment, storage system controller, inverters, transformers, thermal management system, and other equipment necessary to charge, store, and subsequently deliver electricity from a Project to the Point of Delivery.

"**Equipment**" means all materials, supplies, apparatus, devices, equipment, machinery, tools, components, instruments and appliances (other than the Owner-Provided Facilities and Services) that are necessary for Contractor's performance of the Work and are to be incorporated into a Project, whether provided by Contractor or any Subcontractor.

"**Equivalent Full Cycle**" means the equivalent of a full ESS charge/discharge cycle with the associated delivery of Discharge Energy (in MWh) equivalent to the Guaranteed ESS Capacity over a four (4) hour duration. An Equivalent Full Cycle occurs when the total ESS Discharge Energy (in MWh) over a period of time, regardless of the depth of battery discharge or quantity of partial charges/discharges, divided by the product of the Guaranteed ESS Capacity times four (4) hours (in MWh) equals one (1).

"**ESS Capacity**" means the power (expressed in MW as measured at the Point of Delivery) that can be discharged from the ESS for four (4) consecutive hours when starting from the Maximum State of Charge and discharging to the Minimum State of Charge, as determined periodically in accordance with applicable test protocols and procedures set forth in Exhibit V.

"**ESS Capacity Liquidated Damages**" means the amount calculated pursuant to Section 15.2.2 by multiplying the Contract Price by a fraction, the numerator of which shall be equal to the difference between the Guaranteed ESS Capacity and the Tested Capacity and the denominator of which shall be equal to the Guaranteed ESS Capacity.

"**ESS Capacity Liquidated Damages Guarantee**" has the meaning set forth in Section 15.2.

"**ESS Capacity Shortfall Damages**" has the meaning set forth in Section 15.2.

"**ESS Capacity Test**" or "**ECT**" has the meaning set forth in Exhibit V.

"**ESS Commercial Operation**" means that (a) the ESS has been constructed, commissioned, tested, and proven capable of delivering a minimum of ninety-five percent (95%) of the Guaranteed ESS Capacity on a sustained basis (in accordance with Industry Standards) in accordance with the applicable requirements set forth in Exhibit V on any interconnected system; (b) Contractor has completed three (3) successful start-ups of the ESS in accordance with the applicable requirements set forth in Exhibit V and has been available to dispatch continuously for a period of twenty-four (24) hours with controls in auto and synchronized to the Transmission Provider's system; (c) Contractor has obtained all required consents and approvals from Governmental Authorities necessary for its performance of the Work; (d) the ESS Unit Capabilities have been demonstrated through testing in accordance with applicable test protocols and procedures set forth in Exhibit V or by another method acceptable to Owner; and (e) Contractor has satisfactorily completed the Commissioning Tests identified in Exhibit V in accordance with mutually agreed test procedures and other testing in accordance with interconnection agreement requirements; and (f) Owner has received an officer's certificate from Contractor that the Project has been completed in all material respect.

"**ESS Meter Energy In**" means ESS charging energy measured at the ESS Electric Metering Device prior to any compensation, in MWh ("ESS Meter Energy In");

"**ESS Meter Energy Out**" ESS discharge energy measured at the ESS Electric Metering Device prior

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to any compensation, in MWh ("ESS Meter Energy Out").

"**ESS Non-Performance Liquidated Damages**" has the meaning set forth in Section 15.4.

"**ESS Operating Restrictions**" means the operating restrictions of the ESS set forth in Exhibit V.

"**ESS Response Delay**" has the meaning set forth in Exhibit V.

"**ESS Response Delay Damages**" has the meaning set forth in Section 15.4.1.

"**ESS Roundtrip Efficiency**" means the ratio of the delivered Discharge Energy to the delivered Charging Energy, in each case as measured at the ESS Electric Metering Device without adjustment to the Point of Delivery and determined periodically in accordance with applicable test protocols and procedures set forth in Exhibit V.

"**ESS Testing Cure Period**" means the time between the Substantial Completion and the Substantial Completion Guaranteed Date.

"**ESS Unit Capabilities**" has the meaning set forth in Exhibit A-1..

"**Event of Default**" means either a Contractor Event of Default or an Owner Event of Default, as the context may require.

"**Excusable Event**" means an event that adversely affects Contractor's performance of the Work, to the extent such event is attributable to: (a) an Unforeseeable Site Condition, (b) a failure or disruption of a Project (or any system thereof) caused by an event (other than a Force Majeure Event, Change In Law or an Owner-Caused Delay) that is external to the Project and beyond the reasonable control of Contractor (such as a grid outage or disturbance), (c) the occurrence of a Change in Law, (d) the occurrence of an Owner-Caused Delay or (e) a delay in the delivery of the ESS equipment on or before the deadlines for such delivery set forth in the Work Schedule, provided such delay is not due to Contractor failing to finalize the ESS equipment supply agreement within thirty (30) days of receiving the Notice to Proceed.

"**FERC**" means the Federal Energy Regulatory Commission.

"**Final Completion**" means satisfaction by Contractor or waiver by Owner of all of the conditions set forth in Section 14.4 for Final Completion of a Project.

"**Final Completion Date**" has the meaning set forth in Section 14.5.

"**Final Contractor's Invoice**" has the meaning set forth in Section 6.9.

"**Final Payment**" has the meaning set forth in Section 6.9.

"**Force Majeure Event**" means any event, act, condition, or circumstance that prevents a Party from timely performing its obligations under this Agreement and that is not within the reasonable control of, or that is not the result of the negligence, willful and wanton misconduct or intentional misconduct of, the claiming Party and that, by the exercise of reasonable due diligence the claiming Party is unable to overcome or avoid or cause to be avoided. Depending on the facts and circumstances, the following may constitute such an event: including war, terrorist act, riots and public disorder, expropriation, confiscation or nationalization, customs detention or impounding, embargos, or port or canal closures, or blockage of exports of essential equipment by any Governmental authorities imposed after the Effective Date; the action or inaction of a Governmental Authority, fire, floods, explosion, epidemic, quarantine, unusually severe weather conditions that prevent or substantially hinder the safe performance of the Work at a Site or the manufacturing or delivery of equipment or supplies necessary for performance of the Work, or other acts of God including

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natural disasters, earthquakes, hailstorms, ice storms, tornados, typhoons, hurricanes, and landslides; provided, however, that the following shall not constitute a Force Majeure Event:

(a) with respect to Labor Disputes and labor matters, the following shall not constitute a Force Majeure Event: (i) any labor shortage affecting Contractor or any Subcontractor; (ii) any Labor Disputes involving strikes, walkouts, boycotts, or disturbances directed specifically at Contractor or any Subcontractors; or (iii) any labor disturbances, disputes, boycotts or strikes (whether primary or secondary in nature) involving Contractor or any Subcontractors taking place at a Site, or a facility of Contractor or any Subcontractors;

(b) mechanical or equipment failure (so long as such failure was not itself caused by a Force Majeure Event);

(c) normal climatic conditions based on a twenty-five (25) year daily, weekly or monthly weather event at a Site using data published by the National Oceanic and Atmospheric Administration, and with respect to frozen precipitation, the National Snow and Ice Data Center; and

(d) Owner's inability or failure to pay amounts due under this Agreement or to timely deliver any Owner-Provided Facilities and Services.

"**Governmental Authority**" means applicable national, federal, state, tribal, provincial, and local governments and all agencies, authorities, departments, instrumentalities, courts, tribunals, corporations, other authorities lawfully exercising or entitled to exercise any administrative, executive, judicial, legislative, police, regulatory or taxing authority or power, or other subdivisions of any of the foregoing having a regulatory interest in or jurisdiction over the Sites, the Projects, the Work or the Parties, including any non-governmental body administering, regulating or having general oversight over system reliability, safety, the environment, or gas, electricity, or power generation, distribution or transmission, including the North American Electric Reliability Corporation and the Western Electricity Coordinating Council.

"**Guaranteed Charge Ramp Rate**" represents the maximum rate that the ESS can change its input power (in MW per second) as further set forth in Exhibit A-1.

"**Guaranteed Discharge Ramp Rate**" represents the maximum rate that the ESS can change its output power (in MW per second) as further set forth in Exhibit A-1.

"**Guaranteed ESS Capacity**" has the meaning set forth in Exhibit A-1, and represents the amount of energy that the ESS is guaranteed to discharge (in MWh), determined as the product of Guaranteed PMAX and the amount of time the ESS is guaranteed to discharge from the Maximum State of Charge to the Minimum State of Charge at Guaranteed PMAX.

"**Guaranteed ESS Roundtrip Efficiency**" has the meaning set forth in Exhibit A-1, and is determined in accordance with Exhibit V as the ratio of ESS Meter Energy Out and the ESS Meter Energy In for a full battery discharge and charge cycle.

"**Guaranteed Frequency Response Capability**" represents the guaranteed quality of frequency response from the ESS measured as the MW of power output adjustment capability for every 0.1 Hz of grid frequency deviation as further set forth in Exhibit A-1.

"**Guaranteed PMAX**" has the meaning set forth in Exhibit A-1,and represents the amount of power (in MW) that the ESS is guaranteed to discharge for the duration identified in the Guaranteed ESS Capacity.

"**Hazardous Materials**" means any chemical, substance or material regulated or governed by any Applicable Permit, or any substance, emission or material now or hereafter deemed by any Governmental

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Authority to be a "regulated substance," "hazardous material," "hazardous waste," "hazardous constituent," "hazardous substance," "toxic substance," "radioactive substance" or "pesticide".

"**Indemnitee**" means an Owner Indemnitee or a Contractor Indemnitee, as the context may require.

"**Industrial Control Systems (ICS)**" means industrial computer.

"**Industry Standards**" means those practices, methods, techniques, standards and acts engaged in or approved by a significant portion of the utility-scale energy storage industry in the United States, including the practices, methods, techniques, standards and acts which, in the exercise of reasonable judgment are expected to accomplish the result indicated in the Contract Documents consistent with good business practices, reliability, and safety in connection with the design, supply, construction, start-up, testing, and commissioning, or completion of similar work on projects of the same or similar size and type and at similar locations as the Projects and the exercise of that degree of skill, diligence, prudence and foresight that would reasonably be expected from a skilled and experienced licensed engineer or contractor employing generally accepted professional standards with respect to the performance of the Work consistent with Applicable Laws, Applicable Permits, codes and standards, reliability, safety, environmental protection, economy and expediency, and that conform in all material respects to the design, engineering, construction, testing, and other recommendations and guidelines applicable to the Work. Industry Standards is not intended to be the optimum practice, method or acts to the exclusion of all others, but rather is intended to be any of the practices, methods or actions generally accepted in the United States that meet the foregoing standards. To the extent that the standards of construction, workmanship, Equipment and components specified in Exhibit A exceed Industry Standards, then the standards imposed by this Agreement control.

"**Installation Requirements**" has the meaning set forth in Section 17.1.3.

"**Intellectual Property Claim**" means a claim or legal action for unauthorized disclosure or use or infringement of any trade secret, foreign or domestic patent or patent rights, copyright, trademark rights, service mark or other intellectual property (whether or not legally protected or protectable) arising out of Contractor's performance (or that of its Affiliates or Subcontractors) of the Work under this Agreement.

"**Intellectual Property Rights**" means all licenses, trade secrets, copyrights, patents, trademarks, proprietary information or other ownership rights necessary for the ownership, operation, maintenance and decommissioning of the Projects.

"**Interconnection Agreements**" means the fully executed Standard Small Generator Interconnection Agreements (SGIA), including any subsequent additions and amendments, between Owner and Transmission Provider, attached hereto in Exhibit A-4, Interconnection Agreement each individually referred to herein as an "Interconnection Agreement."

"**Interconnection Metering Standard**" means the current metering standards approved by PNM at the start of construction.

"**Interconnection Substations**" means, as set forth in the SGIA, all facilities and equipment described in Attachment 2 of the SGIA, that are part of a Project and located between the Project and the Point of Interconnection, including any modification, addition, or upgrades to such facilities and equipment necessary to physically and electrically interconnect the Project to the Transmission Provider's Transmission System. With respect to the Project, this includes the generator-tie-in 12.47 kV distribution line and facilities that are designed, engineered, supplied, constructed, tested and commissioned as part of the Work to collect the feeds from the ESS, to transform voltage, by means of two (2) or more 690V/12.47kV transformers; and include the appropriate generation-tie-in protective relay equipment, fiber optical cable in conjunction with the transmission line, supporting structures, and all other components as required for electrical interconnection of the Project to the Transmission Provider at the Point of Interconnection / Change of Ownership as shown in Attachment 3 to the SGIA.

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"**Invention**" has the meaning set forth in Section 25.1.

"**Invoice Payment**" has the meaning set forth in Section 6.4.

"IRS" means the Internal Revenue Service or any successor agency.

"IRS Guidance" means IRS guidance for applying the Prevailing Wage Requirements and Apprentice Requirements (including 26 C.F.R. sections 1.45-6, 1.45-7, 1.45-8 and 1.45-12), and any other applicable guidance from the IRS (including any additional guidance in the future from the IRS relating to implementation of the Inflation Reduction Act); provided that if compliance with any future guidance from the IRS increases Contractor's cost of performance or delays Contractor's schedule for performance under the Agreement, Contractor will be entitled to a Change in Work.

"**Issuer**" means a United States surety or a foreign insurer with a United States branch as of the Date of Issuance and for so long as this Bond shall remain in effect, the surety has, and expects to continue to satisfy and maintain, a minimum corporate credit rating of "A-" with A.M. Best, "A-" with S&P, or "A3" with Moody's. Surety shall notify Obligee immediately if its credit rating is decrease.

"ITC" means an investment tax credit under Section 48 or 48E of the Code.

"ITC Recapture Period" means five years starting the day after a Project is placed in service or any subsequent improvement is placed in service for federal income tax purposes.

"**kW**" means one or more kilowatts AC or DC of electricity, as the context requires.

"**kWh**" means kilowatt hour AC unless explicitly referred to as kWh_{DC}.

"**Labor Dispute**" means work stoppages, slowdowns, strikes, disputes, disruptions, boycotts, walkouts and other labor difficulties.

"Laborers or Mechanics" is defined in IRS regulations at 26 C.F.R. Section 1.45-7(d)(8) as updated by any future IRS Guidance.

"Limited Notice to Proceed" or "LNTP" means any notice issued by Owner agreeable to the Parties under which Owner authorizes Contractor to commence the performance of Work prior to the Notice to Proceed Date.

"**Losses**" means, subject to Section 30, any and all actions, suits, judgments claims, demands, costs, charges, expenses, liabilities (including liabilities arising out of the application of the doctrine of strict liability), losses, penalties, injuries, interest or damages, whether arising in equity, at common law, or by statute, or under the law of contract, tort or property, of whatsoever kind and nature, including reasonable attorney fees, court or arbitration costs and fees, expert costs and fees, and expenses and costs of investigation.

"Major Subcontractor" means any Person, including any Supplier, other than Contractor or its Affiliates, that performs Work in excess of Two Hundred Fifty Thousand Dollars ($250,000) in furtherance of Contractor's obligations under this Agreement.

"**Mechanical Completion**" means that a Project is mechanically, electrically and functionally complete and ready for initial operations, adjustment and testing, except for Non-Critical Deficiencies; Mechanical Completion shall not occur before satisfaction of all the following: (a) all systems, including those required for the safe, routine and efficient operation and control have been constructed and commissioned and (b) all systems have been placed into service for the purpose for which the Projects are intended.

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"**Milestone Item**" means a discrete portion of the Work as set forth in Exhibit G.

"**Minimum Gross Capacity**" means the nameplate rating of the ESS as determined by the sum of the AC nameplate ratings of all installed inverters for the ESS, in each case without considering generation, transmission or distribution losses.

"**Monthly Progress Report**" means a written monthly progress report prepared by Contractor in form and content consistent with Section 7.4, "Progress Reporting", or in a form and content as otherwise directed by Owner.

"**MV**" means medium voltage.

"**MW**" means megawatt or one thousand (1,000) kW_{AC}.

"**MWh**" means megawatt hours AC.

"**NMPRC**" mean the New Mexico Public Regulation Commission or any successor agency having jurisdiction over Owner and the Project.

"**NMPRC Approval**" means the issuance of a final order by the NMPRC that (a) is no longer subject to a motion for rehearing or further proceedings on remand; and (b) approves this Contract (i) without materially excluding, limiting or delaying Owner's right to recover from its ratepayers full rate recovery of its costs incurred hereunder or thereunder, (ii) without making such approval subject to material adverse changes to either Party's ability to perform under the Agreement, and (iii) without imposing additional conditions unacceptable to either Owner or Contractor.

"**Non-Critical Deficiencies**" means an item of Work that: (a) Owner or Contractor identifies as requiring completion or containing Defects; (b) does not delay or impede the safe operation of the Project; and (c) does not materially affect the capacity, efficiency, reliability, operability, safety or mechanical or electrical integrity of the Project.

"**Notice**" or "**Notification**" means a written communication between authorized representatives of the Parties required or permitted by this Agreement and conforming to the requirements of Article 29.

"**Notice of Final Completion**" means a Notice from Contractor to Owner stating that Contractor has satisfied the requirements for Final Completion under Section 14.5.

"**Notice of Substantial Completion**" means a Notice from Contractor to Owner stating that Contractor has satisfied the requirements for Substantial Completion under Section 14.3.

"**Notice to Proceed**" or "**NTP**" means a Notice signed by a representative of Owner to Contractor stating that NMPRC Approval and PNM Board of Directors has been received, authorizing Contractor to commence and complete all Work for the Project under this Agreement.

"**Notice to Proceed Date**" means the first Business Day after Owner provides Contractor with the Notice to Proceed for the Project.

"**Notify**" means to provide a Notice or Notification.

"**Operating Personnel**" means the personnel designated by Owner, or by an entity providing operating services for Owner, to operate the Project (including all operators, instrument technicians and supervisors and Owner's contractors (other than Contractor or any Affiliate of Contractor)).

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"**Owner**" has the meaning set forth in the preamble and shall include any of its permitted successors and assigns.

"**Owner-Caused Delay**" means, with respect to the Work, a delay in Contractor's performance of any material item of the Work or to the Work Schedule to the extent actually and demonstrably caused by the performance or failure to perform by Owner including but not limited to any failure by Owner to timely approve Contractor's submittals delivered in connection with this Agreement on or prior to the applicable date as provided in this Agreement (unless a deemed response to such notice is provided for hereunder); any interference in the Work by Owner or Owner's Separate Contractor(s); or, a delay of Owner to complete any of the Owner Critical Path Items, including the Owner-Provided Facilities and Services, such that Contractor can obtain back-feed power as required for commissioning of the Project and in compliance with the Work Schedule; or a delay of the Transmission Provider to timely perform the required work under the Interconnection Agreements necessary for Owner to timely complete and interconnect the Project, provided that such delay is not caused by Contractor.

"**Owner Critical Path Items**" means the items identified in Exhibit G as performance obligations of Owner.

"**Owner Directive**" shall have the meaning set forth in Section 16.7.

"**Owner Event of Default**" has the meaning set forth in Section 19.3.

"**Owner Financing Parties**" means (a) any and all lenders providing senior or subordinated construction, interim or long-term debt financing or refinancing to Owner; (b) any and all equity investors in Owner providing tax equity investment or leveraged lease-financing or refinancing (or any other equity investor that makes a capital contribution to Owner in cash or in kind); or (c) any Person providing credit support to Owner, in each case, in connection with the Project or a portfolio of projects (including the Energy Storage System) and, in each case, any trustee or agent acting on Owner's behalf.

"**Owner Indemnitee**" has the meaning set forth in Section 23.2.

"**Owner-Provided Facilities and Services**" means, within the parameters set forth on Exhibit A-2, (a) the Transmission Provider's Interconnection Facilities, (b) the Project's rights-of-way and easements, and (c) other items to be provided by Owner pursuant to Exhibit A-2.

"**Owner-Provided Information**" means, with respect to the Project, the information or documentation provided by or on behalf of Owner as set forth in Exhibit A-3.

"**Owner Representative**" means the Owner's representative for the Project(s) designated by Owner pursuant to Section 2.1.

"**Owner's Certificate of Final Completion**" means a certificate of Owner certifying that Final Completion has occurred.

"**Owner's Certificate of Substantial Completion**" means a certificate from Owner certifying that Substantial Completion has occurred.

"**Owner's Engineer**" means any engineering firm or firms or other engineer or engineers (which may be employee(s) of Owner) selected and designated by Owner.

"**Owner's Separate Contractors**" means each contractor or other Person that is in direct or indirect contractual privity with Owner and that performs any work in respect of the Project, but excluding Contractor and each Person in direct or indirect contractual privity with Contractor, including in such exclusion each Subcontractor.

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"**Payment Schedule**" means the Payment Schedule attached hereto as Exhibit I.

"**Performance Bond**" means a bond in the form attached hereto as Exhibit M, issued by an Issuer in an amount equal to one hundred percent (100%) of LNTP amount, if applicable. Upon issuance of NTP, a Performance Bond equal to twenty percent (20%) of the Contract Price at NTP will be provided, or such other performance security in form, amount and from an Issuer acceptable to Owner. Any performance bond issued in the amount of LNTP is solely for activities described in LNTP.

"**Performance Test**" means the test to determine the functionality of the ESS as set forth in the Performance Testing description in Exhibit V.

"**Person**" means any natural person, corporation, company, voluntary association, partnership, incorporated organization, trust, limited liability company, joint venture, firm, unincorporated organization, or any other entity or organization, including any Governmental Authority. A Person shall include any officer, director, member, manager, employee or agent of such Person.

"**Point of Delivery**" or "POD" means, unless otherwise modified in accordance with Article 16,the ION meter located in the MV switchgear.

"**Point of Delivery Energy In**" has the meaning set forth in Exhibit V.

"**Point of Delivery Energy Out**" has the meaning set forth in Exhibit V.

"**Point of Interconnection**" or "**POI**" means the point, as set forth in Exhibit A-1.

"**Pre-Existing Contamination**" means any Hazardous Materials present at or under a Site, whether introduced before or after the Effective Date, that are not Contractor Hazardous Materials.

"**Preliminary Notice**" has the meaning set forth in Section 28.3.

"Prevailing Wage Certificate" is defined in Section 10.6(e).

"Prevailing Wage Requirements" means the prevailing wage requirements in Sections 48 and 45(b)(7)(A) of the Code and the IRS Guidance.

"Prevailing Wages" means wages (including fringe benefits) at rates not less than the prevailing rates for the PWA Work labor classifications for the locality or localities in which the PWA Work is performed, as published in general wage determinations by the U.S. Department of Labor pursuant to the Davis-Bacon Act at www.sam.gov/content/wage-determinations (or any successor website) or pursuant to a supplemental wage determination by the U.S. Department of Labor.

"**Projects**" means the Energy Storage Systems and the Interconnection Substations at the Sites, with each individually referred to herein as a "**Project**."

"**Proposed Punchlist**" has the meaning set forth in Section 14.1.1.

"**Punchlist**" has the meaning set forth in Section 14.1.1.

"**Punchlist Amount**" means the cost or estimated cost to complete any Punchlist item as approved or deemed approved by the Parties.

"PWA Work" means the portion of the Work (including any warranty work) that is subject to the Prevailing Wage Requirements and Apprentice Requirements. For the avoidance of doubt, the PWA Work requirements apply to any Laborers or Mechanics employed by Contractor or any of its Subcontractors

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engaging in construction, alteration or repair at a Site or any secondary construction site or support site, including transportation of materials or supplies between locations within a Site and a secondary construction site or dedicated support site and including any warranty repair work or other repair work for which Contractor is responsible under this Agreement.

"Qualified Apprentice" means an individual who is employed by Contractor or any Subcontractor to perform PWA Work at a Site or any secondary construction site or dedicated support site and who is participating in a Qualified Apprenticeship Program.

"Qualified Apprenticeship Program" means a registered apprenticeship program (as defined in 26 C.F.R. section 1.45-8(g)(9)).

"**Receiving Party**" has the meaning set forth in Section 24.1.

"**Remedial Plan**" means a plan prepared by Contractor regarding the actions to be taken and the schedule to remedy failures to meet the Guaranteed ESS Capacity for the Project, as submitted to and approved by Owner pursuant to Article 15.

"**Required Manuals**" means operation and maintenance manuals, which are reasonably necessary to safely and efficiently operate, maintain and shut down the ESS, as set forth on Exhibit B.

"**Sites**" means the sites of the Project, as more particularly described in Exhibit J, and with each site of the Project at times specifically referred to in this Agreement as a "Site" where applicable.

"**Site Assumptions**" means the assumptions relating to the Sites described in Exhibit L.

"**Site Conditions**" means the physical and other conditions at a Site and the surrounding area as a whole, including conditions relating to the environment, transportation, access, waste disposal, handling and storage of materials, the availability and quality of electric power, the availability and quality of water (including raw water), topography, ground surface conditions, subsurface geology, and nature and quantity of surface and subsurface materials (including Hazardous Materials).

"**Site Plan**" means the plan that is part of the design package for the Project as applied to each Site to be developed by Contractor as set forth in Exhibit B.

"**Site Safety Officer**" has the meaning set forth in Section 3.12.

"**Solar Facility**" means the Owner's co-located solar generating plant consisting of photovoltaic arrays, tracking devices, inverters, transformers, and other equipment necessary to collect sunlight and convert it into electricity which, among other things, will be used to charge the ESS per Owner's dispatch elections.

"**Standard Test Conditions**" or "**STC**" has the meaning set forth in Exhibit V.

"**Statement of Work**" means the requirements regarding the Work set forth in Exhibit A-1.

"**Subcontractor**" means any Person, including any Supplier, other than Contractor or its Affiliates, that performs any portion of the Work in furtherance of Contractor's obligations under this Agreement.

"**Substantial Completion**" means the satisfaction of all of the conditions for the Project as set forth in Section 14.2.

"**Substantial Completion Date**" has the meaning set forth in Section 14.3.

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"**Substantial Completion Guaranteed Date**" means the date which is set forth in Exhibit G as the Project Substantial Completion Date, as such date may be adjusted pursuant to the terms hereof.

"**Successfully Run**" means that (i) ESS Capacity Test was completed in accordance with the procedures, conditions and requirements for the proper performance of such test set forth in Exhibit V, (ii) the results from the ESS Capacity Test (taking into account any deviations from the Standard Test Conditions) demonstrate that the Energy Storage System has successfully achieved at least the Guaranteed ESS Capacity as set forth in Exhibit V, and (iii) ESS Unit Capabilities have been verified as meeting the requirements set forth in Exhibit V.

"**Supervisory Control and Data Acquisition System**" or "**SCADA**" has the meaning set forth in Exhibit A-1.

"**Supplier**" means a Person that supplies Equipment directly to Contractor in connection with the performance of the Work.

"**Suspension for Cause**" has the meaning set forth in Section 20.3.2.

"**Suspension for Convenience**" has the meaning set forth in Section 20.3.1.

"**Taxes**" means any and all forms of taxation, charges, duties, imposts, levies and rates whenever imposed by any Governmental Authority, including sales tax, gross receipts tax, use tax, compensating tax, income tax, withholding taxes, corporation tax, franchise taxes, capital gains tax, capital transfer tax, inheritance tax, rates, water rates, value added tax, customs duties, capital duty, excise duties, betterment levy, stamp duty, stamp duty reserve tax, national insurance, payroll, social security or other similar contributions, and generally any tax, duty, impost, levy or rate or other amount and any interest, penalty, fine or other amount due in connection therewith.

"Tax Rate" means the combined statutory federal, state and local income tax rate of Owner.

"**Third-party**" means any and all Persons that are not a party to this Agreement and in all cases excluding: (i) Owner Parties; (ii) any other contractors hired by Owner including operation or maintenance contractors of Owner; (iii) any entity (a) with an equity or security interest in Owner, or their assets or property or a Site, or (b) that seeks to claim any rights, power or privileges of Owner, or (c) that seeks to claim as a third party beneficiary of Owner; (iv) no portion of the Work is "Third-party" property for the purposes of indemnification; and (v) any individual or entity in contractual privity with Owner.

"**Transmission Provider**" has the meaning set forth in Exhibit A-1.

"**Transmission Provider's Interconnection Facilities**" or "**TPIF**" means, as set forth in the SGIA, all facilities and equipment owned, controlled or operated by the Transmission Provider from the transmission system up to the Point of Interconnection as identified in Attachment 3 of the SGIA and shown in Exhibit 2 of Attachment 2 to the SGIA, including any modifications, additions or upgrades to such facilities and equipment.

"**Unforeseeable Site Conditions**" has the meaning set forth in Section 12.1.

"**Unforeseen Protected Flora and Fauna**" means flora and fauna present at a Site which is subject to protection, restriction, special treatment or otherwise addressed under Applicable Laws, including the Endangered Species Act, the presence and specific location of which is not disclosed in the Owner-Provided Information.

"**United States**" means the United States of America.

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"**Waiver and Release Upon Final Payment**" means a written statement of Contractor substantially in the form attached hereto as Exhibit F-1.

"**Waiver and Release Upon Progress Payment**" means a written statement of Contractor substantially in the form attached hereto as Exhibit F-2.

"**Warranty**" means the Defect Warranty or the Design Warranty, as the context requires.

"**Warranty Bond**" means a bond in the form attached hereto as Exhibit M, issued by an Issuer in an amount equal to ten percent (10%) of the Contract Price, or such other performance security in form, amount and from an Issuer acceptable to Owner.

"**Warranty Period**" means the Defect Warranty Period or the Design Warranty Period, as the context requires.

"**Work**" means all of Contractor's obligations set forth in Exhibit A-1.

"**Work Schedule**" means the work schedule for the Projects, attached as Exhibit G, describing the time of completion by Contractor of the Milestone Items and describing the time of completion by Owner of the Owner Critical Path Items.

1.2. **Exhibits.**

This Agreement includes the Exhibits annexed hereto and any reference in this Agreement to an "Exhibit" by letter designation or title shall mean one of the Exhibits identified in the table of contents or otherwise identified in this Agreement and such references shall indicate such Exhibit herein. Each Exhibit attached hereto is incorporated herein in its entirety by this reference.

1.3. **Interpretation.**

(a) Terms defined in a given number, tense or form shall have the corresponding meaning when used in this Agreement with initial capitals in another number, tense or form. The meaning assigned to each term defined herein shall be equally applicable to both the singular and the plural forms of such term and vice versa, and words denoting either gender shall include both genders as the context requires. Where a word or phrase is defined herein, each of its other grammatical forms shall have a corresponding meaning.

(b) The terms such as "hereof," "herein," "hereto," "hereinafter" and other terms of like import are not limited in applicability to the specific provision within which such references are set forth but instead refer to this Agreement taken as a whole.

(c) When a reference is made in this Agreement to an Article, Section, subsection, preamble, recital, schedule or Exhibit, such reference is to an Article, Section, subsection, preamble, recital, schedule or Exhibit of this Agreement unless otherwise specified.

(d) The word "include," "includes," and "including" when used in this Agreement shall be deemed to be followed by the words "without limitation," and, unless otherwise specified, shall not be deemed limited by the specific enumeration of items, but shall be deemed without limitation. The term "or" is not exclusive.

(e) A reference to any Party to this Agreement or any other agreement or document shall include such Party's predecessors, successors and permitted assigns.

(f) The Parties have participated jointly in the negotiation and drafting of this Agreement. Any rule of construction or interpretation otherwise requiring this Agreement to be construed or interpreted

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against any Party by virtue of the authorship of this Agreement shall not apply to the construction and interpretation hereof.

1.4. **Headings.**

All headings or captions contained in this Agreement are for convenience of reference only, do not form a part of this Agreement and shall not affect in any way the meaning or interpretation of this Agreement.

1.5. **Conflicts in Documentation.**

This Agreement, including the Exhibits hereto, shall be taken as mutually explanatory. If either Party becomes aware of an express conflict between the provisions of this Agreement or any Exhibit hereto, such Party shall immediately Notify the other Party of such conflict. In the event of a conflict between any provision within Articles1 through 32 of this Agreement and an Exhibit, the provisions of Exhibits A and H shall take precedence over Articles 1 through 32 of this Agreement, which articles shall in turn take precedence over the remaining Exhibits.

1.6. **Documentation Format.**

This Agreement and all documentation to be supplied hereunder shall be in the English language and all units of measurement in the design process, specifications, drawings and other documents shall be specified in dimensions as customarily used in the United States.

2. RESPONSIBILITIES OF OWNER

Owner shall, at Owner's cost and expense:

2.1. **Owner Representative.**

Designate (by a Notice delivered to Contractor) an Owner Representative, who shall act as the single point of contact on behalf of Owner with respect to the prosecution and scheduling of the Work and any issues relating to this Agreement. Owner may designate a new Owner Representative from time to time by a Notice delivered to Contractor.

2.2. **Operating Personnel.**

Provide Operating Personnel with requisite plant operating experience to provide operating support to Contractor for the testing and commissioning of the ESS as provided in Section 3.18.

2.3. **Applicable Permits.**

Fully comply with Applicable Laws and obtain and comply with all Applicable Permits, including those, if any, set forth in Exhibit C-1, but excluding the Contractor-Acquired Permits. Owner shall provide such reasonable non-financial assistance as Contractor may reasonably request in connection with obtaining any Contractor-Acquired Permits promptly after Contractor's request.

2.4. **Owner-Provided Information.**

Provide the Owner-Provided Information and all information required to be provided by Owner pursuant to Exhibit A-3 for the Projects to Contractor on or prior to the applicable date set forth on Exhibit A-3.

2.5. **Owner's Separate Contractors.**

Retain, at Owner's sole cost, determination and responsibility, Owner's Separate Contractors.

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2.6. **Access to Sites.**

Provide, as of the Notice to Proceed Date for the Energy Storage System, reasonable access to the Sites for the Energy Storage System Work. Contractor shall comply with Contractor's Safety Procedures and with reasonable security procedures (if any) to the extent Owner has provided such security procedures to Contractor.

2.7. **Cooperation.**

Cooperate and cause Owner's Separate Contractors to cooperate with Contractor and the Subcontractors who may be working at or near the Sites.

2.8. **Interconnection.**

Without limiting Contractor's responsibility for the performance of the Work hereunder, Owner shall make all arrangements with the Transmission Provider and the other parties to the Interconnection Agreements as required under the Interconnection Agreements and not included in the Work hereunder to permit the tie-in and interconnection of a Project to the applicable transmission grid**.** Contractor shall provide reasonable assistance to Owner, at no additional cost, to facilitate all arrangements with the Transmission Provider and the other parties to the Interconnection Agreements, when and as reasonably requested by Owner.

2.9. **Owner Parent Guaranty.**

Simultaneously with the execution of this Agreement, Owner shall deliver to Contractor a guaranty of Owner's performance of its obligations under this Agreement duly executed by Public Service Company of New Mexico, in the form attached hereto as Exhibit W.

2.10. **Other Owner Responsibilities.**

Owner shall perform its other duties and responsibilities set forth in this Agreement, including Exhibits A-2, G and I.

3. RESPONSIBILITIES OF CONTRACTOR

Contractor shall:

3.1. **General.**

Perform (or cause to be performed through Subcontractors), furnish and be responsible for all of the Work. Contractor acknowledges and agrees that this Agreement constitutes a fixed price (subject to the terms hereof) obligation to engineer, design, procure, construct, test and commission the Projects.

3.2. **Performance of Work.**

Perform and complete all of the Work in accordance with the terms of this Agreement, Applicable Law and Industry Standards. Contractor shall provide, or cause to be provided through Subcontractors, all necessary labor and supervision to perform the Work.

3.3. **Design and Construction of the Projects.**

Design, engineer and construct the Projects so that it meets the requirements of the Contractor Deliverables, and is capable of operation in compliance with Industry Standards and Applicable Laws in effect at the time of the Substantial Completion.

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3.4. **Contractor's Project Manager.**

Designate (by a Notice delivered to Owner within two (2) Business Days after the issuance of the Notice to Proceed under this Agreement) a Contractor's Project Manager who shall have full responsibility for the prosecution of the Work and shall act as a single point of contact in all matters on behalf of Contractor. Contractor may designate a new Contractor's Project Manager from time to time by a Notice delivered to Owner, subject to Owner's prior written consent, which consent shall not be unreasonably denied or delayed. At all times when Work is in progress at a Site, Contractor's Project Manager or its authorized nominee shall be on that Site so as to properly supervise the Work in progress. Contractor's Project Manager shall be deemed to have full authority to act on behalf of Contractor. Notices given by Owner in writing to Contractor's Project Manager shall be deemed as having been given to Contractor.

3.5. **Utilities and Services.**

3.5.1. Provision of Services.

Install, connect and maintain at its own expense during its performance under this Agreement, all utilities, facilities and services, as set forth in Exhibit A-1 (other than the Owner-Provided Facilities and Services) required for the performance of the Work.

3.5.2. Payment.

Pay when due all construction utility usage charges and arrange with local authorities and utility companies having jurisdiction over a Site for the provision of utilities other than or in excess of the utilities provided as part of the Owner-Provided Facilities and Services.

3.5.3. Supply of Construction Facilities.

Other than the Owner-Provided Facilities and Services, , obtain all supplies or services required for the performance of the Work but which do not form a permanent part of the completed Work.

3.6. **Inspection.**

Perform all inspection and other like services required for performance of the Work, including inspecting all Equipment.

3.7. **Organization.**

Maintain staff that are dedicated to the completion of the Work, and that have the technical and managerial expertise to control and execute the Work in accordance with the requirements of this Agreement. Contractor shall notify Owner prior to taking any action with respect to any Labor Dispute involving any labor union affecting Contractor's performance of the Work at a Site or surrounding area.

3.8. **Contractor-Acquired Permits; Assistance with Owner-Acquired Permits.**

Prepare, apply for, obtain and maintain all Contractor-Acquired Permits. Contractor shall provide such assistance as Owner may reasonably request in connection with obtaining Owner-acquired permits promptly after Owner's written request.

3.9. **Hazardous Materials Disposal System.**

To the extent required by Applicable Law, prepare and maintain accurate and complete documentation of all Contractor Hazardous Materials used by Contractor or Subcontractors at the Sites in connection with the Work, and of the disposal of any such materials, including transportation documentation and the identity of all Subcontractors providing Hazardous Materials disposal services to

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Contractor at the Sites. Copies of all documentation required under this Section 3.9 shall be timely provided to Owner upon Owner's reasonable written request.

3.10. **Maintenance of Sites.**

Maintain the Sites clear of debris, waste material and rubbish. Contractor shall dispose of such debris, waste material and rubbish in accordance with Applicable Law.

3.11. **Site Security.**

Until Final Completion, provide all necessary and reasonably appropriate site security at the Sites for the protection of the Work.

3.12. **Safety.**

During the performance of the Work at a Site, be responsible for the safety oversight of the Persons at the Site and for the safe performance of the Work at the Site, in each case in accordance with Owner's and Contractor's Safety Procedures. By written Notice to Owner prior to commencement of the Work at a Site, Contractor shall designate an officer who shall be responsible for safety issues at the Site ("**Site Safety Officer**"), and Contractor shall ensure that a Site Safety Officer for the Site is designated at all times from the commencement of the Work until Final Completion.

3.13. **Shipping and Storage.**

Arrange for complete handling of all Equipment and Contractor's construction equipment, including quality assurance, shipping, loading, unloading, customs clearance, receiving, any storage required to be provided by Contractor hereunder and claims. In connection with the shipping and storage of all Equipment and Contractor's construction equipment, Contractor shall comply with all relevant manufacturers' requirements in respect of any applicable manufacturer's warranty. Contractor's damage reports describing any damage to Equipment and Contractor's construction equipment during shipping, loading, unloading, customs clearance, receiving and storage shall be available to Owner upon written request.

3.14. **Compliance with Applicable Laws.**

3.14.1. During and in connection with the Work, comply, and cause its Subcontractors to comply, with all Applicable Laws relating to the performance of the Work.

3.15. **Quality Assurance Programs.**

Use effective quality assurance programs throughout the performance of the Work. Prior to commencement of the Work, Contractor shall provide Owner with written copies of its quality assurance programs applicable to the performance of the Work. By written Notice to Owner prior to commencement of the Work for the ESS, Contractor shall designate one or more officers who shall be responsible for quality assurance/quality control issues, and Contractor shall ensure that such an officer is designated at all times from the commencement of the Work until Final Completion. Contractor quality control/quality assurance inspection reports, including reports on inspections of material delivery, shall be available to Owner upon written request, and copies of all such inspection reports shall be provided to Owner as part of the Contractor Deliverables.

3.16. **Contractor Deliverables.**

Issue Contractor Deliverables for Owner review in accordance with Exhibit B.

3.17. **Training of Operating Personnel.**

Commencing no later than two (2) weeks prior to the then anticipated Substantial Completion Date,

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train, or where applicable cause the Subcontractors to train, the designated Operating Personnel in the requirements for the operation of, and safety, general process understanding and procedures for the Projects in accordance with the requirements set forth in Exhibit E.

3.18. **Commissioning Personnel.**

Provide or cause to be provided, experienced installation and commissioning representatives from the Suppliers specified in Exhibit K, together with all necessary supervising personnel, all equipment, tools, construction and temporary material and all other labor necessary for all of the Work to complete commissioning.

3.19. **Contractor Performance Security.**

3.19.1. Performance Bond.

Provide, or cause to be provided, a Performance Bond within ten (10) business days after Owner issues the Limited Notice to Proceed. Provide or cause to be provided at the time Owner issues the Notice to Proceed provided that Owner has provided thirty (30) days' prior written notice of the requirement to provide Contractor Credit Support, the Performance Bond to guarantee the performance of Contractor's obligations hereunder. Contractor shall maintain, or cause to be maintained, the Performance Bond until the Final Completion Date. Subject to any claims made in writing by Owner to Issuer under the Performance Bond prior to the Final Completion Date, the Performance Bond shall terminate and shall cease to be of any force or effect upon Final Completion; and

3.19.2. Warranty Bond.

Provide, or cause to be provided, no later than the Final Completion Date, the Warranty Bond to guarantee the performance of Contractor's warranty obligations hereunder. Contractor shall maintain, or cause to be maintained, the Warranty Bond until the later of the demonstration by Contractor that the ESS Capacity Test conducted pursuant to Section 14.8 have been Successfully Run or one hundred eighty (180) days after the expiry of the Defect Warranty Period. Subject to any claims made in writing by Owner to Issuer under the Warranty Bond prior to its termination, the Warranty Bond shall terminate and shall cease to be of any force or effect upon the later of demonstration by Contractor that the ESS Capacity Test conducted pursuant to Section 14.8 have been Successfully Run or one hundred eighty (180) days after termination of the Defect Warranty Period, as may be extended pursuant to this Agreement.

3.20. **Other Contractor Responsibilities.**

Perform its other duties and responsibilities set forth in this Agreement, including Exhibits A-1, B, C-2, D, E, G, H-1, H-2 and V.

3.21. **Price Allocation Schedule.**

No later than sixty (60) days prior to the anticipated achievement of Substantial Completion, provide a price allocation schedule for the Work and other information reasonably necessary for Owner to maintain segregated accounts for its tax records and fixed asset records (including any Federal Energy Regulatory Commission accounting requirements). Contractor shall provide an updated price allocation schedule for the Projects prior to Final Completion.

4. COVENANTS, WARRANTIES AND REPRESENTATIONS

4.1. **Representations and Warranties of Contractor.**

Contractor represents and warrants as of the Effective Date that:

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4.1.1. Organization, Standing and Qualification.

Contractor is a corporation, duly organized, validly existing and in good standing under the laws of the State of New Mexico, and has full power and authority to execute, deliver and perform its obligations hereunder and to engage in the business it presently conducts and contemplates conducting, and is and will be duly licensed or qualified to do business and in good standing under the laws of each other jurisdiction wherein the nature of the business transacted by it makes such licensing or qualification necessary and where the failure to be licensed or qualified would have a material adverse effect on its ability to perform its obligations hereunder.

4.1.2. Due Authorization; Enforceability.

Contractor has taken all necessary corporate action to authorize, effect and approve this Agreement and this Agreement has been duly authorized, executed and delivered by or on behalf of Contractor and is, upon execution and delivery, the legal, valid and binding obligation of Contractor, enforceable against Contractor in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency or similar laws affecting creditors' rights generally and by general equitable principles.

4.1.3. No Conflict.

The execution, delivery and performance by Contractor of this Agreement will not conflict with or cause any default under: (a) its organizational documents; (b) any indenture, mortgage, chattel mortgage, deed of trust, lease, conditional sales contract, loan or credit arrangement or other similar agreement or instrument to which Contractor is a party or by which it or its properties may be bound or affected; or (c) any Applicable Laws, and will not subject the Energy Storage System or the Projects or any component part thereof or the Sites or any portion thereof to any lien other than as contemplated or permitted by this Agreement.

4.1.4. Government Approvals.

Neither the execution nor delivery by Contractor of this Agreement requires the consent or approval of, or the giving of notice to or registration with, or the taking of any other action in respect of, any Governmental Authority other than with respect to Contractor-Acquired Permits.

4.1.5. No Suits, Proceedings.

There are no actions, suits, proceedings, patent or license infringements, or investigations pending against it in writing at law or in equity before any court (United States or otherwise) or before any Governmental Authority (whether or not covered by insurance) that individually or in the aggregate could result in any materially adverse effect on Contractor's ability to perform its obligations under this Agreement. Contractor has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any Governmental Authority that may result in any such materially adverse effect or such impairment.

4.1.6. Business Practices.

Neither Contractor nor any of its Representatives has made any payment or given anything of value, and Contractor covenants that it will not make any payment or give anything of value, in either case to any government official (including any officer or employee of any Governmental Authority) to influence his, her or its decision or to gain any other advantage for Owner or Contractor in connection with the Work to be performed hereunder. Contractor shall follow Contractor's Code of Business Conduct and Ethics policy with respect to all of the Work. None of Contractor nor any of its employees or agents shall intentionally take any action with respect to this Agreement or any of the Work that violates any Applicable Laws concerning corrupt practices. Contractor shall promptly Notify Owner of any violation of this covenant.

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4.1.7. Owner-Provided Information.

Contractor is entitled to rely on the accuracy and completeness of the Owner-Provided Information. Contractor acknowledges that Owner shall not make any other representation or warranty with respect to the accuracy or completeness of documents or information (including oral statements) or opinions expressed by Owner. Except for the Owner-Provided Information, Contractor will not rely on Owner for any information, data, inferences or conclusions, or other information with respect to any Site Conditions, including the surface conditions of the Sites and the surrounding areas.

4.1.8. Legal Requirements.

Contractor has knowledge of all of the Applicable Laws that must be followed in performing the Work, and covenants that the Work shall be performed in compliance with all Applicable Laws.

4.1.9. Licenses.

Contractor and its Subcontractors and their respective employees who will perform any portion of the Work have and will have all necessary qualifications, certifications and licenses required by Applicable Law to perform the services under this Agreement.

4.1.10. Skills and Knowledge.

Contractor has performed work similar in kind, size and complexity to the Work and possesses the specific training, skills, knowledge, necessary personnel and legal right to perform the Work. Contractor shall provide, in connection with the Work, the standard of care, skill, and diligence normally provided by an experienced contractor in the performance of work similar to the Work and warrants that all such Work shall be performed in accordance with Industry Standards and all Applicable Laws.

4.1.11. Means and Methods.

Contractor shall be responsible for all means, methods, techniques and procedures for performing the Work, and for coordinating all portions of the Work under this Agreement.

4.1.12. Independent Contractor.

Contractor represents that it is an independent contractor, and agrees and understands that neither it nor any of its officers, directors, Affiliates, agents, employees, Subcontractors or Suppliers may act in the name of Owner.

4.1.13. Financial Condition.

Contractor is financially solvent, able to pay its debts as they mature, and possesses sufficient working capital to complete the Work and perform Contractor's obligations required under this Agreement.

4.2. **Representations and Warranties of Owner.**

Owner represents and warrants that:

4.2.1. Organization, Standing and Qualification.

Owner is a corporation duly formed, validly existing, and in good standing under the laws of the State of New Mexico, and has full power and authority to execute, deliver and perform its obligations hereunder and to engage in the business Owner presently conducts and contemplates conducting, and is and will be duly licensed or qualified to do business and in good standing in each

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jurisdiction wherein the nature of the business transacted by it makes such licensing or qualification necessary and where the failure to be licensed or qualified would have a material adverse effect on its ability to perform its obligations hereunder.

4.2.2. Due Authorization; Enforceability.

Owner has taken all necessary corporate action to authorize, effect and approve this Agreement and this Agreement has been duly authorized, executed and delivered by or on behalf of Owner and is, upon execution and delivery, the legal, valid, and binding obligation of Owner, enforceable against Owner in accordance with its terms, except as such enforceability may be limited by applicable bankruptcy, insolvency or similar laws affecting creditors' rights generally and by general equitable principles.

4.2.3. No Conflict.

The execution, delivery and performance by Owner of this Agreement will not conflict with or cause any default under: (a) its organizational documents; (b) any indenture, mortgage, chattel mortgage, deed of trust, lease, conditional sales contract, loan or credit arrangement or other similar agreement or instrument to which Owner is a party or by which it or its properties may be bound or affected; or (c) any Applicable Laws.

4.2.4. Governmental Approvals.

Applicable Permits, set forth in Exhibit C-1, either have been obtained by Owner and are in full force and effect on the Effective Date or will be obtained and will be in full force and effect on or prior to the date on which they are required, under this Agreement and Applicable Law. As used in this Section 4.2.4, Applicable Permits does not include FERC or NMPRC Approvals.

4.2.5. No Suits, Proceedings.

There are no actions, suits, proceedings or investigations pending or, to Owner's knowledge, threatened against it in writing at law or in equity before any court (United States or otherwise) or before any Governmental Authority (whether or not covered by insurance) that individually or in the aggregate could result in any materially adverse effect on Owner's obligations under this Agreement. Owner has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any Governmental Authority that may result in any such materially adverse effect or such impairment.

4.2.6. Land.

Owner holds good and valid title in fee simple in respect of the Sites which is sufficient for the execution of the Work and will provide Contractor and its Subcontractors and suppliers with access necessary to the Sites to perform the Work in accordance with the Work Schedule.

5. COST OF WORK

5.1. **Contract Price.**

Contractor hereby agrees to accept as compensation for the performance of the Work $71,500,00.00 (the "**Contract Price**"). Neither shall the Contract Price be changed nor shall Contractor be entitled to any other compensation, reimbursement of expenses or additional payment of any kind without prior written authorization of Owner or unless otherwise specifically set forth in this Agreement (including the Lithium Index Formula, Assumptions and Illustrations, attached as Exhibit Z, Article 8 and Article 16). Payments shall be made at the times and in the manner provided in Article 6. For the avoidance of doubt, the Contract Price includes all New Mexico gross receipts, compensating, sales, and other similar Taxes, and any Taxes imposed under Applicable Law.

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5.2. **Taxes.**

5.2.1. Reporting and Payment.

Contractor shall timely report and pay all Taxes and contributions for unemployment insurance, old age retirement benefits, pensions, annuities, and similar benefits, which may now or hereafter be imposed on Contractor by law or collective bargaining agreements with respect to persons employed by Contractor for performance of the Work. Subject to the following sentence of this Section 5.2.1, Contractor shall be liable for and shall pay and shall indemnify, defend, and hold harmless Owner, and its Affiliates and its or their respective Representatives from and against any and all such Taxes and contributions or any interest accrued and penalties imposed, and reasonable attorney's fees (including income, margin, franchise, withholding, gross receipts, compensating, sales, use, property and all other Taxes of whatsoever kind and whatsoever nature), excises, assessments, and other charges levied by any governmental agency or authority on Contractor with respect to its performance of the Work, or on any materials, equipment, services, or supplies furnished in the performance of the Work. On all invoices, Contractor shall separately show all New Mexico gross receipts, compensating, sales, and other similar Taxes, provided that in no event will interest or penalties on such Taxes be reimbursable by Owner. Contractor shall also separately itemize services performed outside the State of New Mexico, if any. Contractor shall utilize appropriate New Mexico Nontaxable Transaction Certificates, or similar certificates from other states, where applicable, to minimize such gross receipts, compensating, sales, and other similar Taxes. If the sale of goods or performance of services by Contractor takes place on tribal land, Contractor will comply with applicable state and tribal laws governing the reporting and payment of gross receipts Taxes on those transactions.

5.2.2. Contractor and Owner to Cooperate.

Contractor and Owner shall reasonably cooperate with each other to minimize the Tax liability of both Parties to the extent legally permissible, including separately stating taxable charges on Contractor's Invoices and supplying resale and exemption certificates, if applicable, and other information as reasonably requested, in each case if requested by the applicable taxing authority. In addition, to the extent any exemptions, abatements, production tax credits, advanced energy tax credits, or other credits against or deferrals of any Taxes may be available to Owner or Contractor under Applicable Law, the Parties shall reasonably cooperate in order to secure any such exemptions, abatements, credits against, or deferrals of, such Taxes.

6. TERMS OF PAYMENT.

Payments to Contractor shall be made as follows:

6.1. **Payment Schedule.**

Contractor shall be paid in accordance with the Payment Schedule as set forth in Exhibit I.

6.2. **Progress Assessment.**

Representatives of Contractor and Owner shall periodically, and in any event at least semi-monthly, review the Work completed for the Projects and assess the progress of all Work completed on the Sites and assess the completion of the related Payment Schedule milestones

6.3. **Expedited Payment.**

Owner agrees to make expedited payments for down payments and subsequent purchase payments for the ESS equipment, as described in Exhibit X hereto. Owner agrees to make such expedited payments per the payment schedule of the equipment invoices consistent with Exhibit X, and Contractor is authorized to submit a separate Contractor Invoice for ESS equipment. The Parties agree that any expedited payment made by Owner pursuant to this Section shall be treated as a partial payment of the Contract Price.

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6.4. **Progress Payments.**

On or before the fifth (5th) Business Day of each month following the month in which Notice to Proceed is issued, Contractor shall submit to Owner completed Contractor's Invoices in accordance with Exhibit I (Payment Schedule) reflecting (a) the Work completed through the last Day of the prior month; (b) the portion of the Contract Price corresponding to such Work, as set forth in the Payment Schedule; and (c) updated cash flow. On or following the date that Contractor's completes a Milestone Item identified in the Payment Schedule, Contractor may submit additional Contractor's Invoices, but Contractor shall not otherwise submit more than one Contractor's Invoice per calendar month, except as otherwise permitted pursuant to Section 6.3.

Owner may, by delivering notice thereof to Contractor within five (5) Business Days of receipt of the Contractor's Invoice, (a) reject any Contractor's Invoice that does not satisfy the requirements of this Section (including the requirement to deliver Lien waivers) or (b) dispute in good faith any charge, documentation or other information contained in such Contractor's Invoice. Owner shall include in such notice reasons for such rejection or dispute.

6.4.1. If Owner does not reject the Contractor's Invoice or Contractor delivers a replacement Contractor's Invoice which addresses the reasons for a previous rejection, then Owner shall, by the later of (i) twenty-one (21) Days after Owner's receipt of the original Contractor's Invoice, and (ii) ten (10) Days after Owner's receipt of the corrected Contractor's Invoice, pay to Contractor in current funds, the amount specified therein which is undisputed, by wire transfer to the account specified in writing by Contractor or by such other means mutually agreed by the Parties. With respect to any disputed amounts, Owner shall pay such amounts no later than twenty-one (21) Days following the resolution of such dispute.

6.4.2. Contractor agrees that it shall not include in any Contractor's Invoice sums attributable to Work which Owner or Contractor has rejected or any warranty work performed by Contractor.

6.5. **Payments Not Acceptance of Work.**

No payment made hereunder for Work, nor inspection or verification by Owner of Work for purposes of payment, shall be considered as approval or acceptance of any Work. All payments shall be subject to correction or adjustment in subsequent progress reviews and payments. Contractor's acceptance of any payment, and Owner's payment of any invoiced amount, shall not be deemed to constitute a waiver of amounts that are then in dispute.

6.6. **Contractor's Invoices.**

Each Contractor's Invoice shall be reasonably detailed and shall be accompanied by reasonable supporting documentation with respect to any such Work completed. Contractor shall not request in any Contractor's Invoice the payment of any sum attributable to Work for which Contractor has already been paid. Each Contractor's Invoice (1) shall identify: (i) which activities described on the Payment Schedule for the Work have been completed; (ii) the related milestone payments set forth on the Payment Schedule for the Work that are then due; and (iii) any other known amounts then payable by Owner to Contractor under any provision hereof (without limiting Owner's right to dispute any amounts requested for payment); and (2) shall include (if not previously delivered) a Waiver and Release Upon Progress Payment for payments previously made by Owner pursuant to this Agreement and a conditional form of such waiver for payments to be made pursuant to such Contractor's Invoice. Contractor understands and agrees that any Contractor's Invoice that is inaccurate shall not, to the extent of such deficiency, constitute a valid request for payment.

6.7. **Owner Review.**

Within seven (7) days after Owner receives a Contractor's Invoice and all accompanying

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documentation required by Section 6.4, Owner shall Notify Contractor of the date the Invoice is no longer in dispute, or of the basis for any Dispute. If Owner does not dispute an invoice within such seven (7) day period, then, subject to the terms and conditions set forth herein, Owner shall pay Contractor the full amount of the Contractor's Invoice within twenty-one (21) days of receipt of the invoice and all waivers of liens and claims and other documents to be delivered in connection with such invoice (each an "**Invoice Payment**"); and if Owner fails to do so, then Owner shall pay interest on such amounts due and owing at the rate and for the time period specified from time-to-time in the New Mexico Prompt Payment Act. Only disputed Contractor's Invoices or portions thereof that are corrected shall be treated as a new Contractor Invoice and the following above procedures shall apply.

6.8. **Payments.**

All payments to be made to either Party under this Agreement shall be paid in Dollars and shall be paid electronically (by means of ACH or wire) in immediately available funds by the date due or, if such date is not a Business Day, on the immediately succeeding Business Day. All payments shall be made to such account as may be designated by such Party from time to time by Notice to the other Party in accordance with Article 29; provided, however, that banking transfer instructions have been provided by such Party to the paying Party at least five (5) Business Days before the first payment of the paying Party is due and payable. Except for amounts subject to the New Mexico Prompt Payment Act, which are due as set forth in Section 6.4 and Section 6.7 of this Agreement, all other payments shall be due within thirty (30) days of the paying Party's receipt of the other Party's invoice and any supporting documentation and any delinquent payment, shall bear interest at the prime rate as published in "The Money Rates" Section of The Wall Street Journal (U.S. Edition) until paid, but not to exceed the maximum rate permitted by Applicable Law (the "**Contract Interest Rate**"). The payment of interest unaccompanied by payment of the delinquent amount shall not excuse or cure any Event of Default or delay in such payment. Provided that Owner has timely paid and Contractor has received amounts due and owing to Contractor under this Agreement, Contractor shall be responsible for paying all Subcontractors in connection with the Work completed by such Subcontractor.

6.9. **Final Payment.**

On or after the date on which Contractor delivers to Owner a Notice of Final Completion for the Projects, Contractor shall submit a final Contractor's Invoice (a "**Final Contractor's Invoice**") which shall set forth all amounts due to Contractor that remain unpaid less the Punchlist Amounts of any outstanding Punchlist items. Owner shall pay to Contractor the amount due under such Final Contractor's Invoice for the Projects ("**Final Payment**") in accordance with (a) Section 6.4, except that, if Owner does not dispute the Final Contractor's Invoice, Final Payment will be due ten (10) days after Owner certifies project completion and receives evidence of all waivers of liens and claims and other documents to be delivered in connection with the Final Contractor's Invoice; and (b) Section 6.7.

6.10. **Disputes Regarding Payments.**

Subject to Contractor's rights and remedies under Section 19.3(e), failure by Owner to pay any amount disputed in good faith until resolution of such Dispute in accordance with this Agreement shall not alleviate, diminish, modify or excuse the performance of Contractor or relieve Contractor's obligations to perform hereunder. Contractor's acceptance of any payment (including Final Payment), and Owner's payment of any amount under dispute, shall not be deemed to constitute a waiver of amounts that are then in dispute. Contractor and Owner shall use reasonable efforts to resolve all disputed amounts reasonably expeditiously and in any case in accordance with the provisions of Article 31. No payment made hereunder shall be construed to be acceptance or approval of that part of the Work to which such payment relates or to relieve Contractor of any of its obligations hereunder. If a Contractor's Invoice was properly submitted in accordance with all of the provisions of this Agreement and amounts disputed by Owner in regards to such invoice are later resolved in favor of Contractor, Owner shall pay interest on such disputed amounts due to Contractor at the Contract Interest Rate, from the date on which the payment was originally due pursuant to such invoice until the date such payment was received by Contractor. If Owner elects to pay any portion of any disputed invoice and any

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portion of the amounts so paid by Owner is later resolved in favor of Owner, Contractor shall refund any such payment and pay interest on such payment at the Contract Interest Rate, from the date on which the payment was originally made by Owner until such refunded payment is received by Owner.

7. COMMENCEMENT AND SCHEDULING OF THE WORK

7.1. **Notice to Proceed.**

On the Notice to Proceed Date of the Projects, Contractor shall commence performance of the Work for the Projects and shall diligently prosecute such Work in accordance with the Work Schedule; provided that Delay Liquidated Damages shall be the sole and exclusive remedies of Owner for Contractor's delays in achieving Substantial Completion by the Substantial Completion Guaranteed Date. If the Notice to Proceed Date for the Projects is later than, April 1, 2026 any such delay in the Notice to Proceed Date shall be an Owner-Caused Delay for purposes of this Agreement. If, however, Owner does not issue to Contractor the Notice to Proceed on or before July1, 2026, then Contractor shall have the right to take action pursuant to Section 19.4.

7.2. **Limited Notices to Proceed.**

Prior to the issuance of the Notice to Proceed, Owner shall have the right to issue one or more Limited Notices to Proceed on terms (including payment terms) mutually agreeable to Owner and Contractor directing Contractor to commence and complete any portion of the Work specified in any such Limited Notice to Proceed. Contractor acknowledges that any payments from Owner pursuant to any Limited Notice to Proceed shall be treated as partial payments of the Contract Price, and that Owner shall be given a credit of such amount against any subsequent payments owed by Owner to Contractor pursuant to this Agreement. If Owner requests a LNTP covering engineering and procurement work to be performed in calendar year 2025, the Parties agree to work in good faith to agree on a Limited Notice to Proceed within thirty (30) days after the Effective Date. If a LNTP is forthcoming and Owner has not issued a Limited Notice to Proceed for such work within thirty (30) days after the Effective Date, delay in issuance of a Limited Notice to Proceed shall be an Owner-Caused Delay for purposes of this Agreement. After LNTP is issued, Owner can cancel the project if NMPRC Approval is not granted or has not been received by January 1, 2026. Within 5 days of cancellation, Owner has the right to have all of the long lead items ordered assigned to Owner or its designee. If Owner cancels the project then all payments associated with LNTP are non-refundable but no more payments will be warranted ($0). If Owner or its designee accepts the assignment of the long lead items, those contract terms will be between Owner or its designee and the supplier. Contractor will not be a part of subsequent agreement.

7.3. **Work Schedule.**

Until Final Completion, Contractor shall update the Work Schedule in accordance with the requirements set forth in Exhibit A-1 to reflect the current status of the Work for the Projects. The updates shall be performed and provided to Owner (in electronic form) on a monthly basis as part of the Monthly Progress Report for the Projects. Contractor shall supply to Owner a weekly percentage completion report for major components of the Work on Tuesday of each week commencing on mobilization and continuing through Final Completion.

7.4. **Progress Reporting.**

From and after the Effective Date, Contractor shall prepare a Monthly Progress Report for the Projects and submit it to Owner within five (5) Business Days after the end of each calendar month. In addition, Contractor shall keep, and furnish to Owner at Owner's request, such information as Owner may reasonably require to determine that the Work is progressing according to the Milestone Items in the Work Schedule and for the purpose of confirming that Invoice Payments are due hereunder. For the sake of clarity, Owner agrees that both MS Project and Oracle Primavera are acceptable project scheduling software.

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8. FORCE MAJEURE; EXCUSABLE EVENT

8.1. **Certain Events.**

Excusable Events shall not include usual and foreseeable weather conditions, economic hardships, labor or Equipment shortages or consequences of any changes in general economic conditions, such as inflation, price escalation, interest rates, exchange rates or other factors of general application. Excusable Events also shall not include any delay to the extent resulting from causes within Contractor's or a Subcontractor's reasonable control or to the extent resulting from Contractor's or any Subcontractor's fault or neglect, or that could have been prevented by the exercise of reasonable due diligence by Contractor. Contractor's right to an extension of any Work Schedule and any milestones for an Excusable Event is expressly conditioned on Contractor's compliance with each of the requirements in Section 8.2 (Notice of Force Majeure Event and Excusable Event).

8.2. **Notice of Force Majeure Event and Excusable Event.**

8.2.1. Notice of Force Majeure Event and Excusable Event (other than an Owner-Caused Delay).

If Contractor's ability to perform its obligations under this Agreement is affected by a Force Majeure Event or an Excusable Event (other than an Owner-Caused Delay, it being understood that the Notice requirements for an Owner-Caused Delay are set forth in Section 8.2.2), Contractor shall, promptly its knowledge of the impact of the event, and in any event no more than five (5) Business Days after Contractor's knowledge of the impact of such event, give Notice to Owner (a "**Delay Notice**") of the impact of such event, including what date Contractor became aware of the impact of such event and an estimate of the event's anticipated duration and effect upon the performance of its obligations hereunder, and any action being taken to avoid or minimize its effect. Contractor shall have a continuing obligation to deliver to Owner regular updated reports and any additional documentation and analysis supporting its claim regarding a Force Majeure Event or an Excusable Event (other than an Owner-Caused Delay) promptly after such information is available to Contractor. Contractor's failure to comply with the notice provisions of Section 8.2.1 shall constitute a waiver from relief under Section 8.4 for the period between the required date of Delay Notice and the date when Delay Notice is delivered.

8.2.2. Owner-Caused Delay Notice.

If Contractor wishes to claim an Owner-Caused Delay, Contractor shall Notify Owner of such Owner-Caused Delay within five (5) Business Days after Contractor becomes aware of such delay. Within ten (10) days after the initial Notice, Contractor shall provide Owner demonstrable evidence of the occurrence and duration of such Owner-Caused Delay and, if requested by Owner, such evidence shall be provided by an independent third party reasonably acceptable to Owner and Contractor at the sole cost and expense of Owner (if the independent third party verifies Contractor's assertions) or Contractor (in all other cases).

8.3. **Scope of Suspension; Duty to Mitigate.**

The suspension of, or impact on, performance due to a Force Majeure Event or an Excusable Event shall be of no greater scope and no longer duration than is required by such event. Contractor shall use Commercially Reasonable Efforts:

(a) to mitigate the duration of, and costs arising from, any suspension or delay in, or other impact to the performance of its obligations under this Agreement; and

(b) to continue to perform its obligations hereunder not affected by such event.

When Contractor is able to resume performance of its obligations under this Agreement, Contractor shall

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promptly give Owner Notice to that effect.

8.4. **Contractor's Remedies.**

8.4.1. Force Majeure Event.

As Contractor's remedy for the occurrence of a Force Majeure Event, and provided that Contractor has otherwise materially complied with the applicable obligations it may have under Sections 8.2.1 and 8.3, if a Force Majeure Event occurs: (a) the Work Schedule, Milestone Items, Substantial Completion Guaranteed Date and any related modifications to the Work shall be correspondingly adjusted by the period of time (if any) that Contractor is demonstrably delayed in the performance of the Work as a result of the impact of such Force Majeure Event (including the effect such Force Majeure Event could be expected to have on the schedule for performing the ESS Capacity Tests in order to provide the necessary stabilization period to mitigate any transient effects on the batteries resulting from being stored, idle or unutilized during such Force Majeure Event), and (b) if Contractor's costs increase despite Contractor's efforts to mitigate any such increases pursuant to Section 8.3(a), the Contract Price shall be increased by the actual and reasonably substantiated costs incurred by Contractor (including any reasonable costs incurred by Contractor in connection with the mitigation measures implemented by Contractor pursuant to Section 8.3(a)).

8.4.2. Excusable Event.

As Contractor's remedy for the occurrence of an Excusable Event and provided that Contractor has otherwise materially complied with the applicable provisions of Section 8.2, if an Excusable Event occurs:

(a) the Work Schedule, Milestone Items, Substantial Completion Guaranteed Date and any related modifications to the Work shall be correspondingly adjusted by the period of time (if any) that Contractor is demonstrably delayed in the performance of the Work (including the effect such Excusable Event could be expected to have on the schedule for performing the ESS Capacity Test in order to provide the necessary stabilization period to mitigate any transient effects on the ESS equipment resulting from being stored, idle or unutilized during such Excusable Event) as a result of the impact of such an Excusable Event, and

(b) if Contractor's costs increase despite Contractor's efforts to mitigate any such increases, pursuant to Section 8.3(a), the Contract Price shall be increased by the sum of the actual and reasonably substantiated costs incurred by Contractor (including any (i) reasonable costs incurred by Contractor in connection with the mitigation measures implemented by Contractor pursuant to Section 8.3(a); and (ii) any builder's all-risk deductible that Contractor will be liable for).

8.4.3. Changes In Work.

Upon the occurrence of a Force Majeure Event or an Excusable Event for which Contractor is entitled to a change in the Contract Price, the Work Schedule, the Milestone Items, the Substantial Completion Date or modifications to the Work, Contractor and Owner shall prepare a Change In Work Form in accordance with Article 16.

8.5. **Contractor's Right to Terminate.**

If the Work for a Project is suspended, prevented or delayed, in each case in the aggregate, for more than one hundred and eighty (180) days by reason of Force Majeure Events, or without prejudice to Section 19.3, Excusable Events, Contractor may terminate this Agreement by Notice to Owner. Upon any such termination, Contractor shall be entitled to receive the payments as set forth in Section 19.4(a), and Owner shall be entitled to payments due from Contractor, if any, in accordance with the terms of this Agreement.

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8.6. **Owner's Right to Terminate.**

If the Work for a Project is suspended, prevented or delayed, in each case in the aggregate, for more than one hundred and eighty (180) days by reason of Force Majeure Events or Excusable Events (other than an Owner-Caused Delay), Owner may terminate this Agreement by Notice to Contractor. Upon any such termination, Contractor shall be entitled to receive the payments as set forth in Section 19.4(a), and Owner shall be entitled to payments due from Contractor, if any, in accordance with the terms of this Agreement.

9. SUPPLIERS AND SUBCONTRACTORS

9.1. **Project Suppliers and Subcontractors.**

Contractor may subcontract the performance of portions of the Work. Contractor may only subcontract the performance of portions of the Work to with the Major Subcontractors listed in Exhibit K for the types of services or equipment listed. Should Contractor propose to add a Major Subcontractor after the Effective Date, Contractor shall provide Notice to Owner of such proposed Major Subcontractor and the specific Work the proposed Major Subcontractor will provide. Within fifteen (15) days of such Notice, Owner shall Notify Contractor of its approval or rejection of such proposed Major Subcontractor. If Owner approves, or does not object to, such proposed Major Subcontractor within such fifteen (15) day period, the proposed Major Subcontractor shall be deemed approved and added to Exhibit K. Contractor shall update and amend Exhibit K by Notice to Owner from time to time as necessary to reflect additions or changes thereto. Upon Notice to Contractor, Owner may direct Contractor to remove a Major Subcontractor from Exhibit K if Owner determines that such Major Subcontractor is creating an adverse material impact on a Project. If applicable, Contractor shall employ apprentices as set forth in, and at levels required by, the New Mexico Public Utility Act.

9.2. **Assignment.**

No subcontract or purchase order shall bind or purport to bind Owner, but each subcontract and purchase order with a Subcontractor or Supplier shall provide for assignment of such subcontract or purchase order to Owner or, at Owner's request, to the Owner Financing Parties upon the termination of this Agreement due to a Contractor Event of Default.

10. LABOR RELATIONS

10.1. **General Management of Employees.**

Notwithstanding the provisions of Section 10.2, Contractor shall preserve its rights to exercise and shall exercise its management rights in performing the Work. Such management rights shall include the rights to hire, discharge, promote and transfer employees; to select and remove persons or supervision; to establish and enforce reasonable standards of production; to determine the number of craftsmen necessary to perform a task, job or project; and to establish, maintain and enforce rules and regulations conducive to efficient and productive operations.

10.2. **Labor Disputes.**

Contractor shall use reasonable efforts to adopt policies and practices designed to avoid Labor Disputes, and to minimize the risk of labor-related delays or disruption of the progress of the Work. Contractor shall advise Owner promptly, in writing, of any actual Labor Dispute of which Contractor has knowledge that might materially affect the performance of the Work by Contractor or by any of its Subcontractors or Suppliers, and in accordance with Section 3.7, Contractor shall notify Owner prior to taking any action with respect to any Labor Dispute involving any labor union affecting Contractor's performance of the Work at a Site or surrounding area. Notwithstanding the foregoing, the settlement of Labor Disputes shall be at the discretion of the Party having the difficulty.

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10.3. **Personnel Documents.**

Contractor shall ensure that at the time of hiring, all its personnel and personnel of any Subcontractors performing the Work on the Sites are in possession of all such documents required by Applicable Laws.

10.4. **Prevailing Wages**

(a) Contractor will pay, and cause its Subcontractors to pay, all Laborers and Mechanics who are performing PWA Work, wages at rates (including fringe benefits) not less than the wages assigned to each classification of Laborers and Mechanics by the U.S. Department of Labor, taking into account that the Prevailing Wages that must be paid are locked in as of the Effective Date of this Agreement (or when a supplemental wage determination is issued for any workers for whom there is no established wage on the U.S. Department of Labor website) and that the Prevailing Wages must be updated when a contract is executed for additional, substantial construction, alteration or repair work not within the scope of the original Agreement. Contractor will pay Qualified Apprentices at no less than the wages prescribed for them by their apprenticeship programs.

(b) Contractor will apply for a supplemental wage determination for any missing labor classifications before construction or work on alterations or repairs starts (or promptly thereafter if the need for a supplemental wage determination was not apparent earlier) and include the information required by 26 C.F.R. Section l.45-7(b)(3), as updated by any future IRS Guidance. Contractor will cause the application to be submitted to the U.S. Department of Labor via email at IRAprevailingwage@dol.gov. Any wage approved in a supplemental wage determination issued in response to the submission will be a "Prevailing Wage" as used herein.

(c) If, after the Effective Date, Owner notifies Contractor in writing that (i) Owner reasonably believes that any of the wage rates for specific classifications of PWA Work are not the applicable Prevailing Wages required for Owner to comply with the Prevailing Wage Requirements and provides the Prevailing Wages that it believes apply or (ii) there has been an applicable Prevailing Wage determination by the U.S. Department of Labor, within thirty (30) days after receiving such written notice from Owner, Contractor will raise the wage rates for, and make catch-up payments to, any affected Laborers and Mechanics and retroactively apply such wages to any PWA Work already performed by such Laborers and Mechanics.

(d) Contractor will post in a prominent place where the Laborers and Mechanics doing PWA Work will see it, and keep posted during the entire period any PWA Work is done, a notice with the required Prevailing Wages for the different labor classifications involved in the PWA Work. The notice will include information about how to report any suspected failures to comply with the Prevailing Wage Requirements and Apprentice Requirements

10.5. **Apprentice Requirements**

(a) Pursuant to the New Mexico Apprenticeship Requirements found at NMSA 1978, Section 62-13-16 and the apprenticeship requirements of the Code, in the event that Contractor or any of its Subcontractors employs four (4) or more Laborers and Mechanics to perform any portion of the PWA Work, Contractor will, and will require that such Subcontractors to, (i) employ at least one (1) Qualified Apprentice to perform such PWA Work, (ii) comply with whatever apprentice-to-journey worker ratios are imposed by the apprentice programs supplying Qualified Apprentices, and in the absence of such ratios, by the U.S. Department of Labor or state apprenticeship agency, and (iii) if on-site construction commences prior to January 1, 2026, cause no fewer than seventeen and one-half percent (17.5%), or twenty-five percent (25%) if on-site construction commences on or after January 1, 2026, of the total labor hours of PWA Work performed by Contractor and its Subcontractors to be performed by Qualified Apprentices (the **"Contractor Apprentice Requirements"**).

(b) Contractor will notify Owner promptly if Contractor or any of its Subcontractors if there are

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no available qualified apprentices. In any such event, Contractor will provide Owner with all of the following:

(i.) A copy of the written request submitted to the registered apprenticeship program, including evidence of the date of receipt of such request by such program, such as an email acknowledgment by the apprentice program or a registered mail or courier service delivery receipt, and

(ii.) written evidence that the request was denied or a certificate from Contractor or any affected Subcontractors that the registered apprenticeship program failed to respond to the request for Qualified Apprentices within five (5) Business Days after receiving the request.

(iii.) This exception applies only for up to 365 days at a time and Contractor or the affected Subcontractor must repeat the effort to find Qualified Apprentices by the end of each 365-day period.

10.6. **Compliance, Reporting and Cooperation**

(a) Contractor will ensure each Subcontractor helping with the PWA Work will comply with the same requirements that this Section 10.6 imposes on it.

(b) If New Mexico, the IRS, Treasury, or U.S. Department of Labor issues new or revised regulations or other guidance about the Prevailing Wage Requirements and Apprentice Requirements, the Parties will work in good faith to amend Sections 10.4, 10.5, 10.6 and 10.7 to conform to any new or revised regulations or interpretations or other guidance, but only to the extent that such new or revised regulations or other interpretations or other guidance requires changes to Contractor's obligations hereunder in order for Owner to comply with the Prevailing Wage Requirements or Apprentice Requirements.

(c) Contractor will, and will cause its Subcontractors performing PWA Work to, provide records to Owner containing all the information in 26 C.F.R. Section 1.45-12(b) and (c), as updated by any future IRS Guidance (the **"PWA Records")** and will retain the PWA Records for at least five (5) years and sixty (60) days after Final Completion of the Projects. Under 26 C.F.R. the Section 1.45-12(b) and (c), the PWA Records include: (1) payroll records for each Laborer and Mechanic employed in the construction, alteration or repair of the Projects; (2) identifying information, including the name, last 4 digits of Social Security or tax identification number, telephone number, and email address of each Laborer or Mechanic; (3) the location and description of the Projects; (4) the labor classification that was applied to the Laborer or Mechanic; (5) the hourly rate of wages paid for each applicable labor classification; (6) records to support fringe benefit payments; (7) the total labor hours worked per pay period; (8) the total wages paid for each pay period; (9) records to support wages paid to any Qualified Apprentices, including records to support the registration of the apprentices with a registered apprenticeship program and applicable wage rates and apprentice-to-journeyman ratios prescribed by the program; and (10) the amount and timing of any correction payments. Contractor will provide such PWA Records to Owner at least on a quarterly basis. Such documentation shall be treated as Confidential Information that is only permitted to be shared pursuant to this Agreement.

(d) If at any time Owner reasonably believes that Contractor has not fulfilled the requirements of Section 10.4 or Section 10.5, Owner will notify Contractor promptly in writing.

(e) Promptly after Final Completion, and again promptly after each calendar year that includes any part of the ITC Recapture Period or PTC Period, as applicable, to the extent any work is performed after Final Completion, Contractor will provide Owner a certificate substantially in the form in Exhibit AA (the "**Prevailing Wage Certificate**").

10.7. **Prevailing Wage and Apprentice Indemnities**

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(a) To the extent due to Contractor's or its Subcontractor's failure to comply with Sections 10.4, 10.5 or 10.6, Owner (or any transferee of the ITCs under Section 6418 of the Code) must make cure payments (including penalties) for failure to comply with the Prevailing Wage Requirements or Apprentice Requirements, then Contractor will reimburse Owner for all such cure payments (the "**PWA Indemnity**")**.**

(b) Owner will: (i) provide Contractor with advance notice in writing of the need to make cure payments with a sufficiently reasonable amount of time for Contractor to provide the PWA Records and any other evidence Owner requires to prove Contractor's and its Subcontractors' compliance with the Prevailing Wage Requirements and Apprentice Requirements, and (ii) provide Contractor an opportunity to review and comment on any correspondence and attend any substantive meetings and calls with any Governmental Authority about the alleged failure of Contractor or its Subcontractors to comply with the Prevailing Wage Requirements and Apprentice Requirements. Contractor will pay Owner the PWA Indemnity amount within fifteen (15) Business Days after written notice from Owner and accompanying documentation of the PWA Indemnity amount. However, in the event Contractor disagrees about the need for Owner (or any transferee under Section 6418 of the Code) to make, or the amount of, cure payments to preserve the full ITCs on the Projects, the disagreement will be submitted to a nationally-recognized independent tax counsel or accounting firm, selected jointly by Contractor and Owner, for an opinion. Any opinion that particular Services are not subject to the Wage Requirements or Apprentice Requirements must be at a "will" level.

(c) Owner expects any PWA Indemnity to have to be reported by the Owner as income, and Contractor will gross up the amount of the PWA Indemnity for federal, state and local income taxes by dividing the PWA Indemnity amount by one minus the Tax Rate, unless an independent tax counsel, selected jointly by the Parties, opines at least at a "should" level that the PWA Indemnity is not income to the Owner and is not a reduction in the tax basis that the Owner has in the Projects.

(d) Contractor's obligations under this Section 10.7 will survive for at least five (5) years and sixty (60) days after Final Completion of the Projects.

(e) Notwithstanding any other provision of this Agreement, Contractor is not obligated to reimburse or indemnify Owner for damages associated with compliance with the Apprentice Requirements or Prevailing Wage Requirements (including any asserted loss of tax credits) other than Contractor's PWA Indemnity obligation to make cure payments.

11. INSPECTION

11.1. Right to Reject Work.

At any time prior to Substantial Completion, regardless of whether payment has been made therefor, Owner shall have the right to reject by written notice to Contractor any portion of the Work for the Projects that contains any Defect unless the same constitutes a Non-Critical Deficiency, in which case it shall be included on the Punchlist. Upon such rejection, Contractor shall remedy, at its sole cost and expense (subject to the provisions of Article 8), any such Defect that is identified by Owner in writing as giving rise to such rejection.

11.2. Inspection.

Owner and its Representatives shall have the right to observe and inspect the Projects and the Work at the Sites in a manner that does not interfere with Contractor's performance of the Work. If requested by Owner, Contractor shall arrange for Owner to inspect the facilities of Suppliers, and Contractor shall provide access for Owner to witness the Performance Tests of Equipment at the Sites, such inspections to be arranged at reasonable times and with reasonable advance Notice, at Owner's cost. Owner shall have the right, but not the obligation, to inspect any item of Equipment, including Equipment under fabrication, material, design, construction, service, workmanship or any portion of the Work, provided that disassembly of any completed

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Work that does not contain Defects shall be at Owner's cost. Owner shall not be responsible for Contractor's or Subcontractor's costs to perform any tests elected to be performed by Contractor or Subcontractor or otherwise required by this Agreement. No inspection performed, witnessed, or failed to be performed or witnessed, by Owner, or any recommendation or lack of recommendation from Owner in connection therewith, shall be a waiver of any of Contractor's obligations hereunder or be construed as an approval or acceptance of any Work.

12. SITE CONDITIONS

12.1. Unforeseeable Site Conditions.

It shall be an Excusable Event, and Contractor shall be entitled to request a reasonable Change In Work, to the extent that the actual Site Conditions (including the existence of any Hazardous Materials, any religious, historical or archeological resources, the existence of liens and encumbrances, the presence of endangered or threatened species on a Site, including Unforeseen Protected Flora and Fauna, or any unknown physical conditions at, above or below the surface of the ground) vary materially from the Site Assumptions (such Site Conditions or variance being "**Unforeseeable Site Conditions**"). Contractor shall exercise due care in carrying out the Work to monitor and make itself aware of Site Conditions as the Work progresses, and shall promptly provide Notice to Owner of the discovery of the existence of any conditions at a Site that may create a safety hazard or pose a risk of harm to Owner or any of Owner's Separate Contractors' operations. Contractor shall, promptly upon the discovery of any such condition, cause the Work to be performed in a manner that accounts for such condition while still achieving the quality and safety standards set forth in this Agreement and implement all safety measures reasonably necessary to assure the safety of all persons at or near the Site and to prevent damage to property and bodily injury that might otherwise result as a consequence of continued performance of the Work in a manner that fails to account for such condition.

13. GUARANTEED CAPACITY AND TESTS

13.1. Testing

13.1.1. ESS Capacity Testing.

Contractor shall conduct the ESS Capacity Test in accordance with the approved ESS Capacity Test procedures in Exhibit V. Representatives of Owner, including Owner's Engineer, shall have the right to be present during the ESS Capacity Test.

13.2. Non-Conforming Work.

At any time during and promptly after completion (whether or not successful) of the ESS Capacity Test (or any re-performance of the Capacity Tests or pursuant to the Remedial Plan), Owner shall advise Contractor in writing of any Defect that was discovered by Owner during the Capacity Tests. Contractor shall, at Contractor's sole cost and expense (subject to Article 8), correct any Defect (except if such Defect is a Non-Critical Deficiency, in which case it shall be included on the Punchlist) and promptly provide Notice to Owner that such corrective measures have been completed. Any Dispute regarding the existence or correction of any such Defect shall be resolved pursuant to Article 31.

14. SUBSTANTIAL COMPLETION AND FINAL COMPLETION

14.1. Punchlist

14.1.1. Creation of Punchlist.

When Contractor believes that a Project is ready for testing and commissioning, Contractor and Owner shall jointly walk-down the Energy Storage System, and confer together as to the items which

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should be included on the finalized Punchlist. Contractor shall then prepare and deliver the list of Defects to Owner for its review and approval, ("**Proposed Punchlist**") for the ESS. Such Proposed Punchlist shall include a proposed completion, correction or repair schedule and Punchlist Amount for the completion, correction or repair of such Defects. If Owner does not deliver any changes to the Proposed Punchlist to Contractor within five (5) Business Days after the later to occur of (a) Contractor's submission to Owner of such Proposed Punchlist; and (b) the day that the joint walk-down occurred, then such Proposed Punchlist shall be deemed approved. The Proposed Punchlist that is ultimately approved or deemed to have been approved by Owner for a Project shall be referred to as the "**Punchlist**" for the Project. Neither Owner's approval of a Punchlist, nor Owner's failure to identify Defects to be added to the Punchlist, shall relieve Contractor of sole and complete responsibility for Defects in the Work or Equipment. If the Punchlist for the Project is not finalized by the Substantial Completion Date, the Proposed Punchlist as modified by Owner shall be deemed the Punchlist for the Project for all purposes hereunder until the Parties resolve such Dispute and otherwise finalize the Punchlist for the Project. Contractor shall note on such Punchlist the items under dispute.

14.1.2. Completion of Punchlist.

Contractor shall proceed promptly to complete and correct all items on the Punchlist for the Projects. On a weekly basis after Substantial Completion, Contractor shall revise and update the Punchlist for the Projects to include the date(s) that items listed on such Punchlist are completed by Contractor and accepted by Owner. Notwithstanding any of the foregoing, the items listed on the Punchlist for the Projects shall not be considered complete until Owner shall have inspected such Non-Critical Deficiencies and acknowledged, by notation on the updated Punchlist, that such item of Work is complete. If Owner does not so inspect and deliver such notations on the updated Punchlist to Contractor within seven (7) days after Contractor submits the updated Punchlist containing such Punchlist item to Owner, such Punchlist item for the Projects shall be deemed completed on such seventh (7^{th}) day.

14.2. **Substantial Completion.**

The following are the conditions precedent for an Energy Storage System to achieve Substantial Completion:

(a) the Energy Storage System has achieved Mechanical Completion;

(b) the most recent ESS Capacity Test and test of ESS Unit Capabilities for the Energy Storage System have been Successfully Run;

(c) Contractor shall have paid all undisputed Delay Liquidated Damages for the ESS calculated and due pursuant to Section 15.1; provided that the amount of disputed Delay Liquidated Damages that is ultimately determined to be due and owing shall accrue interest from the Substantial Completion Date at the Contract Interest Rate;

(d) Owner has received all Contractor Deliverables (if any) for the Projects as required to be delivered by the Substantial Completion Date pursuant to the Contractor Deliverables Table, including all Required Manuals identified therein, other than final as built drawings;

(e) the Punchlist for the Project shall be in final form or be deemed approved as provided for in Section 14.1.1 and only Non-Critical Deficiencies remain on the approved Punchlist; and

(f) Contractor shall have delivered all applicable Waivers and Releases Upon Progress Payment from Contractor required to be delivered pursuant to Section 6.6 for the ESS and a Conditional Wavier and Release Upon Progress Payment dated no later than the proposed Substantial Completion Date.

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14.3. **Notice of Substantial Completion.**

When Contractor believes that it has satisfied the provisions of Section 14.2 for a Project, Contractor shall deliver to Owner a Notice of Substantial Completion certifying that all Agreement requirements for Substantial Completion for the Project have been met and specifying the date Contractor believes Substantial Completion occurred. Within ten (10) Business Days after receipt of such Notice, Owner shall inspect all Work hereunder and either (a) accept that Substantial Completion has occurred and deliver to Contractor an Owner's Certificate of Substantial Completion for the Project dated to reflect the Substantial Completion Date, in which case the Substantial Completion Date shall be the date stated in the Notice of Substantial Completion (which date shall not be earlier than the date such certificate was delivered to Owner); or (b) Notify Contractor in writing that Substantial Completion has not been achieved, stating in detail the reasons therefore. Such procedure shall be repeated as necessary until Substantial Completion has been achieved. If Contractor receives a notice under clause (b) above, Contractor shall take the necessary steps to achieve Substantial Completion and the procedures set forth under this Section shall be repeated (but with the period for Owner to respond to Contractor's notice reduced to two (2) Business Days) until such time as the applicable Certificate of Substantial Completion has been signed by Owner. Owner's failure to provide notice under clauses (a) or (b) above within the ten(10) or two (2) Business Day period (as applicable) after notice from Contractor shall be considered Owner-Caused Delay. The "**Substantial Completion Date**" shall be the date determined in accordance with this Section 14.3.

14.4. **Final Completion.**

Final Completion shall be deemed to have occurred only if all of the following have occurred:

(a) Substantial Completion has been achieved and all conditions precedent to Substantial Completion continue to be satisfied;

(b) All Capacity Tests for the Project have been Successfully Run on the most recent performance thereof;

(c) Contractor shall have completed all items on the Punchlist for the Project;

(d) All Contractor's and Subcontractors' personnel, equipment, surplus materials, waste materials, rubbish and construction facilities other than those to which Owner holds title shall have been removed from the Site, and any permanent facilities used by Contractor and the Site shall have been restored to the same condition that such permanent facilities and the Site were in on the Notice to Proceed Date of the Project, ordinary wear and tear excepted;

(e) Owner shall have received all Contractor Deliverables for the Project as set forth on the Contractor Deliverables Table to the extent not already delivered (including final as-built drawings and a supply and listing of spare parts and inventory appropriate for the operation and maintenance of the Energy Storage System in a manner consistent with Industry Standards);

(f) Contractor shall have assigned to Owner, or provided Owner, all warranties or guarantees that Contractor received from Subcontractors to the extent Contractor is obligated to do so under this Agreement;

(g) Contractor shall have delivered such other documents and certificates to Owner in compliance with this Agreement and all Applicable Laws;

(h) Contractor shall have delivered to Owner a Waiver and Release by Contractor Upon Final Payment and a Waiver and Release Upon Final Payment for all Subcontractors for the Project;

(i) Contractor shall have delivered to Owner a Notice of Final Completion that meets the

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requirements set forth in Section 14.5 of this Agreement;

(j) In cooperation with Owner Representative, Contractor shall have restored the Sites, at Contractor's cost, as required to comply with requirements for filing an EPA Notice of Termination of Coverage under NPDES General Permit. This will include drill reseeding areas disturbed by Contractor, including laydown areas. Contractor shall not be responsible for restoring areas disturbed by Owner; and

(k) All other of Contractor's obligations under this Agreement shall have been performed or waived by agreement of the Parties.

14.5. **Notice of Final Completion.**

When Contractor believes that it has achieved Final Completion for a Project, Contractor shall deliver to Owner a Notice of Final Completion stating that Contractor believes it has satisfied the provisions of Section 14.4 for the Project. Within ten (10) Business Days after receipt of the Notice of Final Completion for the Project, Owner may inspect all Work hereunder and either (a) accept that Final Completion has occurred and deliver to Contractor an Owner's Certificate of Final Completion for the Project, in which case the Final Completion Date shall be the date stated in the Owner's Certificate of Final Completion (which date shall not be earlier than the date such Notice was delivered to Owner); or (b) notify Contractor in writing that Final Completion has not been achieved, stating in detail the reasons therefore. If Owner does not so respond to Contractor's Notice of Final Completion within such ten (10) Business Day period, then the Notice of Final Completion shall be deemed approved and the Final Completion Date shall be the date stated in the Notice of Final Completion. If Owner determines that Final Completion has not been achieved and delivers the Notice under the preceding clause (b), Contractor promptly shall take such action, including the performance of additional Work as will achieve Final Completion, and upon completion of such actions shall issue to Owner another Notice of Final Completion pursuant to this Section 14.5 and the provisions of this Section 14.5 shall apply with respect to the new Notice and each subsequent Notice thereafter in the same manner as they applied to the original Notice. The "**Final Completion Date**" of the Project shall be the date determined in accordance with this Section 14.5. Upon Final Completion, Contractor shall deliver the Warranty Bond to Owner and Owner shall simultaneously deliver the Performance Bond to Contractor (if such Performance Bond has not been previously called upon by Owner).

14.6. **Contractor's Access After Substantial Completion and Final Completion.**

Following Substantial Completion, Owner shall provide Contractor with reasonable and timely access to the Energy Storage System, subject to procedures necessary for the operation of the ESS, to: (a) complete all items on the Punchlist for the Project, and (b) satisfy the other requirements for Final Completion. The Parties expect that Contractor shall accomplish any necessary modification, repairs or additional work with minimal interference with commercial operation of the ESS and that reductions in and shut-downs of the ESS or any other portion of the Project's operations will be required only when necessary, taking into consideration the length of the proposed reduction or shut-down, and Owner's obligations and liabilities to customers or others. Provided that the correction of Non-Critical Deficiencies on a Punchlist does not require a shut-down of the ESS or any other portion of such Project, Owner agrees to permit Contractor unrestricted access to the ESS between sunset and sunrise to perform such Work. Notwithstanding the foregoing, should a reduction in or shut-down of the ESS's operations be required to complete any items on a Punchlist, then such reduction or shut-down shall be scheduled at the sole discretion of Owner, and Contractor shall complete such Work during such Owner scheduled reduction or shut-down. Contractor acknowledges that Owner may schedule such reduction or shut-down at any time including off peak hours, nights, weekends and holidays; provided that, in any event, Contractor shall be permitted to schedule such a reduction or shut-down between sunset and sunrise, provided, further, that the ESS is back on-line by sunrise of the next day.

14.7. **Consequences of Acceptance.**

In no event shall (a) Owner's payment for or acceptance of the Work or any Equipment be construed

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as or constitute having satisfied the conditions of Substantial Completion or Final Completion; nor (b) the execution of any accompanying Owner's Notice as set forth in this Article 14 be construed as or constitute a waiver of Owner's rights or Contractor's obligations under this Agreement.

14.8. **Final Capacity Test.**

After Final Completion and prior to the expiry of the Defect Warranty Period, at a time to be agreed by the Parties, Contractor shall conduct an ESS Capacity Test and final verification of ESS Unit Capabilities in accordance with the approved ESS Capacity Test Procedures and Exhibit V. Representatives of Owner, including Owner's Engineer, shall have the right to be present during the above tests performed by Contractor under this Section 14.8. The provisions of Article 13 shall apply *mutatis mutandis* to the conduct of such tests. If Contractor demonstrates that such tests have been Successfully Run, Owner shall return to Contractor all Contractor Credit Support that Owner then holds to the extent that such Contractor Credit Support has not as of such date been previously called upon by Owner.

15. LIQUIDATED DAMAGES

15.1. **Delay Liquidated Damages.**

Contractor understands that if Substantial Completion for the Energy Storage Systems for all Projects does not occur by the Substantial Completion Guaranteed Date, as may be adjusted under this Agreement, Owner will suffer substantial damages, including the loss of operating revenue, incurring costs to purchase replacement power for its customers, additional interest and financing charges on funds obtained by Owner to finance the Work, reduction of return on Owner's equity investment in the Project, penalties and other operating and construction costs and charges. In that event, Contractor shall, subject to the Delay LD Cap and Aggregate LD Cap, be liable for and shall pay to Owner liquidated damages ("**ESS Delay Liquidated Damages**"). Any undisputed amount Contractor is obligated to pay to Owner under this Section 15.1 shall be due and payable within twenty-five (25) calendar days after Owner has invoiced Contractor for such amounts.

15.1.1. ESS Delay Liquidated Damages

If an Energy Storage System fails to meet the requirements for Substantial Completion per Section 14.2 by the Substantial Completion Guaranteed Date, as may be adjusted under this Agreement, ESS Delay Liquidated Damages shall be Two Hundred Dollars ($200) per day per each MW of Delayed ESS Capacity that Contractor fails to achieve Substantial Completion after such Substantial Completion Guaranteed Date, as may be adjusted. "**Delayed ESS Capacity**" is an amount equal to the difference between the Guaranteed ESS Capacity and the ESS Capacity as of the determination date.

15.2. **ESS Capacity Liquidated Damages Guarantee.**

If the Substantial Completion Date is declared before the full Guaranteed ESS Capacity of the Projects has been constructed, commissioned and tested, Contractor shall use commercially reasonable efforts to cause the remaining portion of the Guaranteed ESS Capacity to achieve ESS Commercial Operation. If Contractor has not caused all Delayed ESS Capacity to achieve ESS Commercial Operation on or before the Substantial Completion Guaranteed Date, as may be adjusted under this Agreement, then no later than twenty (20) Days after the Substantial Completion Guaranteed Date, Contractor shall pay to Owner liquidated damages in the amount of Three Hundred Fifty Thousand Dollars ($350,000) per MW of Delayed ESS Capacity (as of the Substantial Completion Guaranteed Date) ("**ESS Capacity Shortfall Damages**") subject to the Limitations set forth in Section 30.2, in which case the Guaranteed PMAX and Guaranteed ESS Capacity will be reduced in an amount equal to the Delayed ESS Capacity for which ESS Capacity Shortfall Damages were timely paid pursuant to this Section 15.2.

15.2.1. **Achievement of Guaranteed ESS Capacity.**

If Contractor achieves the Guaranteed ESS Capacity on or prior to the expiration of the ESS

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Testing Cure Period, as may be adjusted under this Agreement, Contractor may invoice Owner the amount of the ESS Capacity Shortfall Damages Guarantee excluded from the Substantial Completion invoice for the Energy Storage System within five (5) Business Days after the date on which such Guaranteed ESS Capacity was achieved.

15.2.2. **Failure to Achieve Guaranteed ESS Capacity**.

If, however, Contractor fails to achieve the Guaranteed ESS Capacity prior to the expiration of the ESS Testing Cure Period, as may be adjusted under this Agreement, Contractor shall be deemed to have elected to have no further obligation to try to achieve such Guaranteed ESS Capacity for the Energy Storage System. Contractor shall calculate the ESS Capacity Shortfall Damages based on the results from the ESS Test Period, as described in Section 15.2.3 hereto, and Contractor shall deliver to Owner a Notice of such amount. If such amount of ESS Capacity Shortfall Damages is less than the ESS Capacity Liquidated Damages Guarantee, Contractor shall invoice Owner the amount equal to such difference within five (5) Business Days after the date of such Notice. If the ESS Capacity Shortfall Damages calculated by Contractor are greater than the ESS Capacity Liquidated Damages Guarantee, Contractor shall pay to Owner an amount that is equal to the difference between the ESS Capacity Shortfall Damages Guarantee and the ESS Capacity Liquidated Damages calculated by Contractor pursuant to this Section, subject always to the Capacity LD Cap and the Aggregate LD Cap. Any undisputed amount Contractor is obligated to pay to Owner under this Section shall be due and payable within twenty-five (25) calendar days after Owner has invoiced Contractor for such amounts

15.2.3. **ESS Test Period.**

Contractor shall give written notice to Owner of its intent to start testing the Energy Storage System not less than thirty (30) Days prior to the date upon which Contractor expects to begin testing the Energy Storage System. During the Test Period (as defined in Exhibit V), Owner and Contractor shall mutually agree on the timing and delivery of Charging Energy delivered from the Solar Facility or from the grid as reasonably required for purposes of testing and commissioning the Project. Owner shall subsequently redeliver such Charging Energy to Transmission Provider at the Point of Delivery as Discharge Energy.

15.3. **ESS Non-Performance Liquidated Damages.**

ESS Unit Capabilities, including Guaranteed ESS Roundtrip Efficiency, shall be tested and calculated as described in Exhibit V prior to ESS Commercial Operation. Contractor will pay Owner the following liquidated damages ("**ESS Non-Performance Liquidated Damages**") as the sole and exclusive remedy for ESS unit non-performance, including any failure to meet the ESS Unit Capabilities prior to the expiration of the Defect Warranty Period (in each case other than as excused due to (a) a Force Majeure Event, (b) an Owner-Caused Delay, or (c) failure of Transmission Provider to deliver Charging Energy).

15.3.1. **ESS Response Delay Damages**

Pursuant to Section 15.3 and upon failure of Contractor to satisfy the Guaranteed Discharge Ramp Rate, Guaranteed Charge Ramp Rate, or Guaranteed System Latency during Project operation or ESS Unit Capabilities Testing, Contractor shall pay to Owner "ESS Response Delay Damages" equal to Eight Thousand Three Hundred Thirty-Five Dollars ($8,335) per event (each event shall last no longer than three (3) Days). A test method and calculation for the ESS Response Delay is described in Exhibit V herein. In the event that the ESS fails to meet the Guaranteed Frequency Response Capability, Contractor shall pay to Owner an amount equal to Eight Thousand Three Hundred Thirty-Five Dollars ($8,335) per event of failure

15.4. **Access During ESS Testing Cure Period.**

Upon Substantial Completion, Owner shall assume care, custody and control of the Energy Storage System. Notwithstanding the foregoing, during the ESS Testing Cure Period and upon approval of the Remedial Plan, Owner shall provide Contractor with reasonable access to the Project. Contractor shall be

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granted such access, subject to Section 15.5, for purposes of achieving the Guaranteed ESS Capacity and for the period as set forth in the Remedial Plan, to:

(a) perform corrective actions pursuant to the Remedial Plan; and

(b) perform the ESS Capacity Test, as provided in such Remedial Plan.

15.5. **Operations During ESS Testing Cure Period.**

During the ESS Testing Cure Period, Owner shall have the right to operate the applicable Project, including the right to maximize the economic benefits of the Project. Any failure by Owner to provide Contractor with access to the Project as set forth in this Section 15.5 shall not be considered a breach of any covenant, condition, representation or warranty of Owner, and shall not be construed as an Owner Event of Default. Contractor's only remedy for a failure by Owner to provide Contractor with access to the Project as set forth in this Section 15.5 shall be an equitable extension of the ESS Testing Cure Period until such reasonable access is provided.

15.6. **Sole Remedy; Liquidated Damages Not a Penalty.**

The amounts payable by Contractor or withheld by Owner under this Article 15, as limited by Article 30, and the other remedies provided for in this Article 15, shall be the sole and exclusive remedies of Owner for Contractor's delays in achieving Substantial Completion for the Projects by the Substantial Completion Guaranteed Date, or for failure to achieve its Guaranteed ESS Capacity during the ESS Capacity Test, except to the extent arising from a Contractor Event of Default. The Parties agree that Owner's actual damages in the event of such delays or failures would be extremely difficult or impracticable to determine. After negotiation, the Parties have agreed that the ESS Delay Liquidated Damages, the ESS Capacity Shortfall Damages and ESS Non-Performance Liquidated Damages are in the nature of liquidated damages and are a reasonable and appropriate measure of the damages that Owner would incur as a result of such delays or failures, and do not represent a penalty.

15.7. **Enforceability.**

The Parties explicitly agree and intend that the provisions of this Article 15 shall be fully enforceable by any court or arbitration proceeding exercising jurisdiction over any Dispute between the Parties arising under this Agreement. Contractor hereby irrevocably waives any defenses available to it under law or equity relating to the enforceability of the liquidated damages provisions in this Article 15 and other provisions relating thereto. If, notwithstanding the express agreement of the Parties that such provisions of this Article 15 are enforceable at law and equity as between themselves, Contractor attempts to avoid the application of the remedies relating to the liquidated damages in this Article 15 in any Dispute between the Parties and it is determined by any court or arbitrator that Contractor's liability for liquidated damages pursuant to this Article 15 is unenforceable, then the Parties agree that Owner shall have the right to avail itself of any right or remedy available to it in law or equity, including the right to pursue Contractor for actual damages resulting from a breach by Contractor of its contractual obligations, subject to the limitations on liability set forth in Article 30.

16. CHANGES IN THE WORK

16.1. **Change In Work.**

A "**Change In Work**" shall result from one of the following:

(a) changes in the Work required by Owner and permitted by Section 16.2;

(b) the occurrence of a Force Majeure Event or an Excusable Event (as and only to the extent permitted by Sections 8.4.1 or 8.4.2, respectively);

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(c) an Owner Directive, in accordance with Section 16.7;

(d) an Owner requested delay in the Work pursuant to Section 20.3.1;

(e) any reduction or increase in the Minimum Gross Capacity of a Project requested by Owner, subject to Section 16.2; or

(f) any other event or circumstance specifically identified in this Agreement as constituting a Change In Work or entitling either Party to seek a Change In Work or Change In Work Form.

16.2. **By Owner.**

Subject to Section 16.4, Owner shall have the right to make modifications, deletions, accelerations, alterations, suspensions, or additions to the Work; provided, however that, in no event may Owner, without Contractor's prior written consent, make a change in the Work that would (a) reduce or increase the Minimum Gross Capacity of the Energy Storage System or (b) require that any portion of a Project be located at any site other than the Sites unless such change is required by Applicable Law. All such changes shall be made in accordance with this Article 16, shall be documented in accordance with Section 16.4 and shall be considered, for all purposes of this Agreement, as part of the Work.

16.3. **Adjustment to Work Schedule Due to Force Majeure Events or Excusable Events.**

If a Force Majeure Event or an Excusable Event occurs, the Work Schedule, the Milestone Items, the Substantial Completion Guaranteed Date and the Contract Price shall be modified as and to the extent provided in Section 8.4.1 or 8.4.2, as the case may be, and as set forth in the Change In Work Form accepted by Owner.

16.4. **Preparation of Change In Work Form**

16.4.1. Due to Owner Initiated and Other Changes In Work.

Upon the occurrence of any of the events set forth in Section 16.1(a), (d), (e), or (f), Owner or Contractor, as applicable, shall provide the other Party with a Notice of the occurrence of such event, and Contractor shall, as soon as practicable, prepare and submit to Owner a preliminary written estimate relating to the proposed Change In Work, including (a) any projected change in the cost of the performance of the Work and any projected modification of the Contract Price, occasioned by such Change In Work; (b) the effect such Change In Work could be expected to have on the Work Schedule (including the effect such Change In Work could be expected to have on the schedule for performing the ESS Capacity Test in order to provide the necessary stabilization period to mitigate any transient effects on the batteries resulting from being stored, idle or unutilized); and (c) the potential effect of such Change In Work on Contractor's ability to comply with any of its obligations hereunder, including Contractor's warranties and the Guaranteed ESS Capacity. Contractor's cost of any Change shall include and identify all elements of cost and a total lump sum cost using the following guidelines: (i) in the case of any Change (other than a Change resulting from the events set forth in Section 16.1(e), the actual and reasonably substantiated costs incurred by Contractor, and (ii) in the case of any Change resulting from the events set forth in Section 16.1(e) (to a maximum percentage change of ten percent (10%), an amount equal to the pro rata portion of the Contract Price corresponding to each MW of reduction or increase in the Minimum Gross Capacity. The adjustment in the Contract Price specified in this Section 16.4.1 and the Work Schedule shall be the sole adjustment related to such specific Change In Work (to the exclusion of other theories of recovery such as cumulative impact). If the Parties cannot agree to a lump sum adjustment for such Change In Work, then Owner may direct Contractor to perform such Work in accordance with Section 16.7 on a time and materials basis.

16.4.2. Due to Excusable Event or an Event of Force Majeure.

If a Force Majeure Event or an Excusable Event occurs for which Contractor is entitled to an

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adjustment to either the Work Schedule or the Contract Price pursuant to Section 8.4.1 or Section 8.4.2, as applicable, then Contractor shall, as soon as practicable, prepare and submit to Owner in accordance with Section 8.4.3 a proposed Change In Work Form, which shall include (a) any projected change in the Contract Price, occasioned by such Change In Work; and (b) the effect such Change In Work could be expected to have on the Work Schedule (including adjustments necessary regarding the schedule for performing the ESS Capacity Test in order to provide the necessary stabilization period to mitigate a transient effects on the batteries resulting from being stored, idle or unutilized), or any other schedule or dates for performance by Contractor hereunder, in each case all as and to the extent provided in Section 8.4.1 (with respect to a Force Majeure Event) and Section 8.4.2 (with respect to an Excusable Event) and as set forth in the Change In Work Form accepted by Owner. The adjustment in the Contract Price specified in this Section 16.4.2 and the Work Schedule shall be the sole adjustment related to the applicable Force Majeure Event or Excusable Event addressed in such specific Change In Work as and to the extent expressly described in the Change In Work. If the Parties cannot reach agreement on the matters listed in the Change In Work Form submitted pursuant to this Section 16.4.2, then such matter shall be referred to dispute resolution under Article 31.

16.5. **Execution of Change In Work Form.**

If Contractor and Owner reach agreement on the matters that constitute the Change In Work, then the Parties shall execute a Change In Work Form. If the Parties cannot reach agreement on the matters listed in the Change In Work Form submitted pursuant to this Section 16.5, then such matter shall be referred to dispute resolution under Article 31, unless Owner directs Contractor to perform the Change In Work pursuant to an Owner Directive pursuant to Section 16.7.

16.6. **No Obligation or Payment Without Executed Change In Work Form.**

Contractor shall not be obligated to undertake a Change In Work until Contractor has received (a) a Change In Work Form submitted by Contractor and accepted by Owner, except as set forth in Section 16.7, or if immediate action is reasonably required to address an emergency which endangers human health or property; or (b) received a written Owner Directive; or (c) received Notice from Owner indicating that Owner does not believe that Contractor is entitled to a Change in Work with respect to the matters that are the subject of Contractor's Notice of a change or claim, and directing that Contractor proceed with the disputed Work. In the absence of such executed Change In Work Form, except as set forth in Section 16.7 or in the event of such emergency, if Contractor undertakes any changes in the Work, or performs extra work or otherwise incurs added costs, then Contractor shall make any such changes at Contractor's risk and expense and shall not be entitled to any schedule modification or payment hereunder for undertaking such changes (subject to Contractor's right to a Change In Work in the circumstances specified in Sections 8.4.1, 8.4.2 and 8.4.3). Nothing in this Section 16.6 shall be deemed to waive Contractor's or Owner's right to avail itself of the dispute resolution procedures pursuant to Article 31 with respect to disputed Change In Work Forms.

16.7. **Owner Directives.**

If Contractor and Owner are unable to agree on whether a Change In Work has occurred or on the matters described in a Change In Work Form, regardless of whether such Change In Work Form was initiated by Contractor or by Owner, Contractor shall perform the Work as Owner so directs in writing (provided that such work is subject to the limitations set forth in Section 16.2 (an "**Owner Directive**")) on a monthly time-and-materials basis, plus a fee of ten percent (10%) for overhead and general and administrative costs and profit, in accordance with the following procedures:

(a) Contractor shall, as soon as practicable, prepare and submit to Owner a preliminary written estimate relating to the Owner Directive;

(b) the Parties shall then promptly mutually agree on the schedule and other changes in terms and conditions associated with work under the Owner Directive, including the estimate described in clause (a) of this Section 16.7;

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(c) Owner shall assign a "Pending Item Claim Number" to the Work in question and shall issue Contractor a separate Notice to proceed;

(d) Contractor shall proceed to perform the Work identified therein;

(e) Using the "Pending Item Claim Number" to identify the Work identified in the Owner Directive, Contractor shall submit on a monthly basis a Contractor's Invoice to Owner for payment of an amount equal to the sum of the time and materials costs, which may include reasonable allowances for overhead and profit; and

(f) Upon Owner's request, Contractor shall prepare and provide reasonable calculations of any such charges and Subcontractor invoices, time sheets and such other reasonable documents to support such Contractor's Invoice.

Contractor expressly waives any other compensation or relief as a result of such Owner Directive.

16.8. **Disputed Changes In Work.**

Any Disputes regarding a Change In Work Form or whether a Change In Work has occurred or that are otherwise related to a Change In Work shall be subject to the dispute resolution provisions of Article 31.

16.9. **No Suspension.**

Contractor shall not suspend or stop the Work pending resolution of any alleged or proposed Change In Work unless directed by Owner in writing to suspend the Work.

17. WARRANTIES CONCERNING THE WORK

17.1. **Defect and Design Warranties.**

With respect to the Projects, Contractor warrants and guarantees to Owner:

17.1.1. Defect Warranty.

That all Work, including the supply of Equipment furnished by Contractor (and any of its Subcontractors or Suppliers) for the Projects shall:

(a) be free from Defects in material, manufacture and workmanship;

(b) be new and unused (when installed) unless the Parties agree otherwise in advance and in writing;

(c) be of good quality and good condition (when installed);

(d) conform to the applicable requirements of the Statement of Work;

(e) be in compliance with Applicable Law and Industry Standards; and

(f) with respect to Equipment, be free from any charge, lien, security interest or other encumbrance to the extent Contractor has received payment therefore.

(the "**Defect Warranty**").

17.1.2. Design Warranty.

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That the design of the Projects shall conform to Section 1.6 of the Statement of Work, Industry Standards and Applicable Law (the "**Design Warranty**").

17.2. **Warranty Periods**

17.2.1. Defect Warranty Period.

Contractor shall provide the Defect Warranty for a period ending twelve (12) months after the Final Completion Date (the "**Defect Warranty Period**"); provided, however, that the warranty period for any Equipment for the Projects required to be re-performed, repaired, corrected or replaced following discovery of a Defect or other non-compliance with the Defect Warranty during the Defect Warranty Period shall continue until the end of the later of (a) the expiration of the Defect Warranty Period and (b) one (1) year from the date of completion of such repair or replacement. Notwithstanding any other provision of this Section 17.2, the Defect Warranty Period (as the same may be extended pursuant to clause (b) of this Section 17.2.1) shall end no later than twenty-four (24) months after the Final Completion Date.

17.2.2. Design Warranty Period.

Contractor shall provide the Design Warranty applicable to a Project for a period of twelve (12) months commencing on the Final Completion Date for the Project (the "**Design Warranty Period**").

17.3. **Exclusions**

17.3.1. Defect Warranty and Design Warranty.

The Defect Warranty and Design Warranty shall not apply to:

(a) damage to or failure of any Work or Equipment to the extent such damage or failure is directly caused by:

(i) a failure by Owner or its representatives, agents or contractors to maintain or operate such Equipment in accordance with Industry Standards or in accordance with the recommendations set forth in the Required Manuals but only if such failure occurs after the Substantial Completion Date;

(ii) operation of such Equipment by Owner or its representatives, agents or contractors in excess of operating specifications for such Equipment as set forth in the Required Manuals but only if such failure occurs after the Substantial Completion Date;

(iii) a Force Majeure Event or an Excusable Event; and

(b) items that require replacement due to normal wear and tear, normal erosion or corrosion or casualty loss.

17.3.2. Operating Personnel.

Notwithstanding the foregoing, prior to the training of the Operating Personnel provided by Contractor pursuant to Section 3.17, any adverse stress or damage to the Equipment caused by Operating Personnel while under the direction of Contractor shall be the responsibility of Contractor, except to the extent such Operating Personnel's acts or omissions constitute negligence or willful misconduct.

17.4. **Enforcement by Owner; Subcontractor Warranties; Supplier Warranties.**

All Subcontractors', manufacturers', and Suppliers' warranties and guarantees respecting any part of

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the Work, any Equipment, and any materials used therein shall be deemed obtained by Contractor for the benefit of Owner without the necessity of separate transfer or assignment thereof.

17.4.1. Owner's Right to Enforce Warranties.

Commencing on the expiration of the Defect Warranty Period, Owner shall be entitled to enforce all applicable, unexpired original warranties from Subcontractors, and Contractor shall use Commercially Reasonable Efforts, at Owner's cost, to assist Owner in enforcing such warranties, when and as reasonably requested by Owner in writing. In addition, prior to the expiration of such Defect Warranty Period, Owner, at its option and upon prior Notice to Contractor, may enforce the Defect Warranty against any Subcontractor if a Contractor Event of Default exists and this Agreement has been terminated in accordance with Article 19.

17.4.2. Assignment of Warranties by Contractor.

If a Contractor Event of Default exists and this Agreement has been terminated in accordance with Article 19, or otherwise at the end of the Defect Warranty Period, Contractor shall assign all applicable, unexpired and assignable original warranties of all Suppliers to Owner, subject to the terms and conditions of any such remaining warranties of all Suppliers; provided, however, that, notwithstanding such assignment, Contractor shall be entitled to enforce each such warranty through the end of such Defect Warranty Period. Contractor shall use Commercially Reasonable Efforts to cause Owner to be an express third-party beneficiary of all such warranties of the Supplier (but at no additional cost to Contractor or Owner for such warranties). At Owner's request, Contractor shall deliver to Owner, at the end of such Defect Warranty Period, copies of all subcontracts containing such assignable warranties (with reasonable redactions to keep commercial and economic terms confidential).

17.5. **Correction of Defects**

17.5.1. Notice of Warranty Claim.

Promptly upon Owner's Notice to Contractor of the discovery of any failure of the Work to meet the Defect Warranties or Design Warranties, which failure shall have arisen prior to the expiration of the Defect Warranty Period or Design Warranty Period, as applicable, Contractor shall promptly (at Contractor's option and expense), correct, repair or replace the Defect. Any remediation or repair performed by Contractor shall be performed to the standards set forth in this Agreement. Additionally, Contractor shall pay the cost of removing any Defect and the cost of re-performing, repairing, replacing or testing such part of the Work as shall be necessary to cause the Work to conform to the Warranty. The timing of and the work to be completed with respect to any such remediation or repair shall be subject to Owner's approval, such approval not to be unreasonably withheld or delayed. Notwithstanding the foregoing and subject to Section 17.5.3, if any of the Work shall fail to satisfy the Warranty during the Warranty Period, and such failure endangers human health or property or materially and adversely affects the operation of the Project, Contractor shall correct the failure as soon as is practicable. Notwithstanding anything to the contrary herein, Contractor shall have a right to dispute any Defect Warranty claim.

17.5.2. Failure of Contractor to Perform Warranty Work.

Contractor shall be given a reasonable opportunity to perform any Work under its Defect Warranty or Design Warranty under this Article 17. If Contractor does not use its reasonable efforts to promptly proceed to complete the warranty work for the Project, or cause any relevant Subcontractor to proceed to complete such warranty work, required to satisfy any warranty claim properly asserted under the terms of this Article 17, Owner shall, after giving Contractor at least three (3) Business Days' prior Notice of Owner's intent to perform the remedy itself, have the right to perform the necessary warranty work to remedy the warranty claim, or have third parties perform the necessary warranty work and Contractor shall bear the reasonable costs thereof.

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17.5.3. Chronic Failure.

If a chronic failure of any component occurs during the Defect Warranty Period, Contractor will investigate the root cause of the failure and repair, replace or adjust to correct the root cause of the chronic failure in accordance with Industry Standards. For the purpose of this Section 17.5.3, chronic failure shall mean a substantially similar failure to: (a) ten percent (10%) where the number of such components is thirty (30) or more; or (b) thirty-five percent (35%) where the total number of such components is less than thirty (30) but more than two (2). [.

17.6. **Limitations On Warranties.**

EXCEPT FOR THE EXPRESS WARRANTIES AND REPRESENTATIONS SET FORTH IN ARTICLE 4, THIS ARTICLE 17 AND SECTION 18.2.1, CONTRACTOR DOES NOT MAKE ANY OTHER EXPRESS WARRANTIES OR REPRESENTATIONS, OR ANY IMPLIED WARRANTIES OR REPRESENTATIONS, OF ANY KIND, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE. THE REMEDIES PROVIDED FOR IN THIS ARTICLE 17 WITH RESPECT TO ANY WORK WHICH FAILS TO SATISFY THE DEFECT OR DESIGN WARRANTY DURING THE APPLICABLE WARRANTY PERIOD SHALL BE THE SOLE AND EXCLUSIVE REMEDIES OF OWNER AS A RESULT OF SUCH FAILURE.

18. EQUIPMENT IMPORTATION; TITLE

18.1. **Importation of Equipment.**

Contractor or its Subcontractors, at Contractor's own cost and expense, shall make all arrangements, including the processing of all documentation, necessary to import into the United States the Equipment and any other equipment and other items necessary to perform the Work and shall coordinate with the applicable Governmental Authorities in achieving clearance of United States customs for all such Equipment and other items and, to the extent available under Applicable Laws of the United States but without limiting Contractor's liability, for any and all Taxes as specified in Section 5.2.

18.2. **Title**

18.2.1. Condition.

Subject to Section 18.2.2, Contractor warrants good and marketable title, free and clear of all liens, claims, charges, security interests, and encumbrances whatsoever (to the extent Owner's payments to Contractor are made and received by Contractor in accordance with this Agreement and other than those created by Owner or any Owner's Separate Contractor), to all Work, Equipment and other items furnished by Contractor or any of its Subcontractors and that (x) become part of the Projects or (y) are to be used for the operation, maintenance or repair thereof.

18.2.2. Transfer.

Title to all Equipment and all Work provided hereunder for the Projects shall pass in accordance with Section 18.2.1 to Owner upon the earlier of payment for such Equipment or incorporation of such Equipment or Work into the Projects (other than to the extent set forth in Section 19.4(a)); provided, however, that the vesting of title to Owner shall not impose any obligations on Owner or relieve Contractor of any of its obligations hereunder.

18.2.3. Custody During Performance.

The transfer of title shall in no way affect Owner's rights as set forth in any other provision of this Agreement. Contractor shall have care, custody, and control of all Equipment for the Projects and

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exercise due care with respect thereto until the earlier of the Substantial Completion Date or the termination of this Agreement.

18.3 Transfer of Care, Custody and Control.

On and after the Substantial Completion Date or the termination of this Agreement, Owner shall take complete possession and control and shall assume and bear the risk of loss and responsibility for the Projects.

19. DEFAULTS AND REMEDIES

19.1. **Contractor Events of Default.**

Contractor shall be in default of its obligations pursuant to this Agreement upon the occurrence of any one or more events of default set forth below (each, a "**Contractor Event of Default**"):

(a) Contractor becomes insolvent, generally does not pay its debts as they become due, admits in writing its inability to pay its debts, or makes a general assignment for the benefit of creditors, or Contractor commences any case, proceeding or other action seeking reorganization or receivership, or adopts an arrangement with creditors, under any bankruptcy, insolvency, reorganization or similar law of the United States or any state thereof for the relief of creditors or affecting the rights or remedies of creditors generally;

(b) insolvency, receivership, reorganization, or bankruptcy or similar proceedings are commenced against Contractor and such proceeding shall remain undismissed or unstayed for a period of thirty (30) days;

(c) any material representation or warranty made by Contractor herein was false or misleading when made;

(d) Contractor purports to assign or transfer this Agreement or any right or interest herein except in accordance with Article 26;

(e) Contractor fails to maintain any insurance coverages required of it in accordance with Article 21;

(f) Contractor fails to discharge or remove any lien or claim filed against Owner, the Projects or the underlying property, or against any improvements thereof, as and when required by this Agreement;

(g) Contractor fails to make prompt payments due and owing to any Subcontractor, as required by this Agreement or Applicable Law;

(h) Contractor submits a fraudulent claim in an effort to unfairly obtain additional compensation from Owner;

(i) Contractor fails to perform any provision of this Agreement providing for the payment of money to Owner, except for any disputed amounts;

(j) the Substantial Completion Date for all Projects has not occurred by the one hundred sixtieth (160^{th}) day after the Substantial Completion Guaranteed Date of the Projects, as such date may be extended pursuant to the provisions of this Agreement;

(k) except as a result of an Owner Event of Default or a Force Majeure Event, (i) Contractor Abandons the Work and Contractor fails to remedy such breach within ten (10) Business Days after the date on which Contractor first receives a Notice from Owner with respect thereto, or (ii) Contractor fails to commence performance of the Work for a Project within ten (10) Business Days after the Notice to Proceed

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Date of the Projects;

(l) if Contractor Credit Support is invalid for any reason, is no longer in effect or is unenforceable at any time at which Contractor Credit Support is required to be in force; or

(m) Contractor fails to perform any material provision of this Agreement not otherwise addressed in this Section 19.1.

19.2. **Owner's Rights and Remedies.**

If a Contractor Event of Default occurs, subject to Article 30, Owner shall give Contractor Notice and a fourteen (14) days cure period unless a longer or shorter cure period is set forth for a particular Contractor Event of Default in Section 19.1 (each a "**Contractor Cure Period**"). If such breach cannot be remedied within the applicable Contractor Cure Period, such period shall be extended if: (i) curing such failure reasonably requires more than the Contractor Cure Period; and (ii) Contractor commences such cure within such Contractor Cure Period and diligently prosecutes such cure to the satisfaction of Owner. Where an extension is warranted, Owner and Contractor shall use their Commercially Reasonable Efforts to agree upon an appropriate Contractor Cure Period in good faith, provided that the failure to so agree shall not affect the rights and obligations of the Parties hereunder. If Contractor fails to cure the Contractor Event of Default within the applicable Contractor Cure Period or agreed-upon extension, Owner or its assignees shall have the following rights and remedies and may elect to pursue any or all of them, in addition to any other rights and remedies that may be available to Owner hereunder, and Contractor shall have the following obligations:

(a) (i) Owner may terminate this Agreement by giving Notice of such termination to Contractor;

(ii) if Owner terminates this Agreement in accordance with the provisions hereof, Contractor shall withdraw from the Sites, shall assign (to the extent such subcontract may be assigned) to Owner (without recourse to Contractor) such of Contractor's subcontracts as Owner may request in writing, and shall license, in the manner provided herein, to Owner all Intellectual Property Rights of Contractor related to the Work reasonably necessary to permit Owner to complete or cause the completion of the Work, and in connection therewith Contractor authorizes Owner and its respective agents to use such information in completing the Work, shall remove such materials, equipment, tools, and instruments used by and any debris or waste materials generated by Contractor in the performance of the Work as Owner may direct, and Owner may take possession of any or all Contractor Deliverables necessary for completion of the Work (whether or not such Contractor Deliverables are complete); and

(iii) if Owner terminates this Agreement, Owner may seek damages as provided in Section 20.1;

(b) Owner may proceed against the Contractor Credit Support in accordance with its terms;

(c) Subject to the dispute resolution procedures set forth in Article 31, Owner may seek equitable relief solely to cause Contractor to take action, or to refrain from taking action, pursuant to this Agreement, or make restitution of amounts improperly received under this Agreement;

(d) Owner may pursue the dispute resolution procedures set forth in Article 31 to enforce the provisions of this Agreement;

(e) Owner may make such payments as are reasonably required to cure any monetary-related Contractor Event of Default and either offset the cost of such payment against payments otherwise due to Contractor under this Agreement or Contractor shall be otherwise liable to pay and reimburse such amounts plus interest at the Contract Interest Rate to Owner promptly;

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(f) Owner may suspend the Work by giving Notice of such suspension to Contractor; or

(g) Without exercising Owner's termination for default rights, Owner may perform the obligation in respect of which Contractor is in default, all at Contractor's expense, using Owner's own forces or by engaging other contractors.

19.3. **Owner Event of Default.**

Owner shall be in default of its obligations pursuant to this Agreement upon the occurrence of any one or more events of default set forth below (each, an "**Owner Event of Default**"):

(a) Owner becomes insolvent, generally does not pay its debts as they become due, admits in writing its inability to pay its debts, or makes a general assignment for the benefit of creditors, or Owner commences any case, proceeding or other action seeking reorganization or receivership, or adopts an arrangement with creditors, under any bankruptcy, insolvency, reorganization or similar law of the United States or any state thereof for the relief of creditors or affecting the rights or remedies of creditors generally;

(b) insolvency, receivership, reorganization, or bankruptcy or similar proceedings are commenced against Owner and such proceeding shall remain undismissed or unstayed for a period of thirty (30) days;

(c) any material representation or warranty made by Owner herein was false or misleading when made;

(d) Owner purports to assign or transfer this Agreement or any right or interest herein, except in accordance with Article 26;

(e) Owner fails to perform any provision of this Agreement requiring Owner to pay money to Contractor and such failure continues for ten (10) days after Owner has received a Notice from Contractor with respect thereto;

(f) An Owner directed suspension of the Work in excess of 180 days;

(g) Owner fails to perform any material provision of this Agreement not otherwise addressed in this Section 19.3.

19.4. **Contractor's Rights and Remedies.**

If an Owner Event of Default occurs, subject to Article 30, Contractor shall give Owner Notice of such Owner Event of Default and a fourteen (14) day period in which to cure the Owner Event of Default unless a shorter or longer cure period is set forth for a particular Owner Event of Default in Section 19.3 (and which notice, for the avoidance of doubt, is in lieu of, and not in addition to, the cure period set forth in Section 19.3, if any). If the Owner Event of Default is not cured within such cure period, and subject to Article 30, Contractor shall have the following rights and remedies:

(a) to seek equitable relief solely to cause Owner to take action, or refrain from taking action, pursuant to this Agreement, or make restitution of amounts improperly received under this Agreement;

(b) to pursue the dispute resolution procedures set forth in Article 31 to enforce the provisions of this Agreement;

(c) suspend the Work by giving Notice of such suspension to Owner; or

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(d) if the Owner Event of Default is not cured within thirty (30) days of Notice of Owner Event of Default, Contractor may give notice of its intent to terminate this Agreement by giving Notice thereof to Owner, and Contractor may terminate this Agreement, in which case such termination shall be deemed to be a termination for Owner's convenience pursuant to Section 20.2.

20. TERMINATION OR SUSPENSION

20.1. Termination and Damages for Contractor Event of Default.

20.1.1. Consequences of Contractor Event of Default.

In the event of a Contractor Event of Default, and Contractor's failure to cure the Contractor Event of Default as provided by Section 19.2, Owner may terminate Contractor's Work by Notice to Contractor, and without limiting Contractor's right to assert any defenses with respect to such actions or costs Contractor shall be liable to Owner for any and all actual costs and damages to Owner as a result of such Contractor Event of Default, it being understood that, to the extent that the actual costs of completing the Work, including out-of-pocket costs paid by Owner in obtaining a replacement contractor, replacement Equipment or services, or otherwise to perform the Work or for professional services required as a consequence of such Contractor Event of Default, exceed those costs that would have been payable to Contractor but for such Contractor Event of Default, Contractor shall be obligated to pay the difference to Owner, provided, however, that the Parties acknowledge and agree that nothing in this Section 20.1 is intended to, and shall not, increase or otherwise affect Contractor's aggregate limit of liability set forth in Section 30.2(a). Subject to the proviso in the immediately preceding sentence, Contractor shall, in addition to such actual costs, remain liable for Delay Liquidated Damages under Article 15 to the extent accrued prior to the date of termination. In addition, in the event of a Contractor Event of Default, no additional payments to Contractor shall be deemed amounts due or owing until the liability of Contractor is determined in accordance with this Agreement, if any, under this Section 20.1. Upon determination of the total cost of the Work, and costs and damages caused by Contractor Event of Default, Owner shall Notify Contractor in writing of the amount, if any, that Contractor shall pay Owner subject to Contractor's right to assert any defenses with respect to such actions or costs. Contractor acknowledges, subject to Contractor's aggregate limit of liability set forth in Section 30.2(a), that in the event of such a termination, Owner may enter into a contract for the completion of the Projects with substantially the same deliverables, completion deadlines and liquidated damages as are provided for in this Agreement, taking into account additional time required to procure such contract and to allow for transition to a new contractor when determining completion deadlines that may be different from those set forth in this Agreement, and that the cost to complete the Projects in such event may greatly exceed the cost hereunder, including amounts paid to induce any replacement contractor to keep substantially similar completion deadlines, deliverables and liquidated damages as provided for in this Agreement and/or warrant any Work performed by Contractor prior to termination.

20.2. Termination for Convenience.

20.2.1. Termination for Convenience; General.

Owner may in its sole discretion terminate the Work or this Agreement in whole or in part without cause at any time by giving Notice of termination to Contractor, to be effective upon such Notice by Owner or upon such other termination date specifically identified by Owner therein. If Owner terminates such Work without cause or for any cause other than a Contractor Event of Default specified in Section 20.1, then Owner and Contractor shall have the following rights, obligations and duties:

(a) Cancellation Charge.

If such Work is terminated pursuant to this Section 20.2, as total compensation for such Work performed through the effective date of such termination and demobilization of such Work, Owner shall pay to Contractor only: (x) any amount owing under any unpaid, undisputed invoice prior to the

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effective date of such termination; and (y) after the effective date of termination, an amount equal to Contractor's actual, demonstrable and reasonable direct costs (plus five percent (5%) of such costs for overhead and profit) incurred in the demobilization of such Work, plus actual, documented, reasonable and unavoidable non-recoverable third-party costs incurred by Contractor as a direct result of such termination plus five percent (5%) of such costs, including costs of materials for which the Contractor is liable to take delivery of and which could not be disposed and excluding any such cancellation fees of any Affiliates of Contractor, plus or as a direct result of such termination, plus two and one half percent (2.5%) of the Contract Price, as may be adjusted under this Agreement, minus any portion of the Contract Price otherwise paid pursuant to this Agreement, but less salvage value of materials or Equipment which Owner elects not to accept.

(b) Contractor Cooperation.

Contractor shall cooperate with Owner reasonably and in good faith to minimize Contractor's expenses associated with a termination under this Section 20.2, including taking reasonable action requested by Owner to reduce Suppliers' or Subcontractors' cancellation charges in connection with such termination. Promptly upon receipt of the Notice of termination pursuant to this Section 20.2, Contractor shall cease all operations, or cease those operations specified by Owner in the Notice. Contractor shall place no further subcontracts or orders for materials, services, Equipment or facilities, except as necessary to complete any portion of the Work that is not terminated. Contractor shall assign to Owner, if requested, all right, title and interest of Contractor under any subcontracts that Owner elects in writing to accept. Contractor shall terminate all subcontracts that relate to the terminated Work, and that Owner does not elect in writing to accept by assignment. As requested in writing by Owner, Contractor shall, upon termination under this Section 20.2, grant title and, upon Owner's payment of any amount owing under any unpaid, undisputed invoice prior to the effective date of such termination, deliver to Owner the Work in progress, completed Work, supplies, Equipment and material produced or acquired for the terminated Work, and any completed or partially completed plans, drawings, as-built drawings, construction information and other property that, if the Work had been completed, would be required to be delivered to Owner. In relation to the foregoing, Contractor shall take any action that may be reasonably necessary, or that Owner may reasonably direct in writing, in each case at Owner's cost, for the protection and preservation of the Work. Upon any such termination Owner shall return to Contractor all Contractor Credit Support that Owner then holds to the extent that such Contractor Credit Support has not as of the termination date been previously called upon by Owner.

20.2.2. Claims for Payment.

All claims for payment by Contractor under this Section 20.2 must be made within sixty (60) days after the effective date of termination hereunder. Owner shall make payments under this Section 20.2 in accordance with and subject to the requirements of Article 6.

20.3. **Suspension by Owner**

20.3.1. Suspension for Convenience.

Owner may suspend performance of the Work at any time for its convenience by giving five (5) Business Days' advance Notice thereof to Contractor ("**Suspension for Convenience**"). Such Suspension for Convenience shall continue for the period specified in the suspension Notice. The Contract Price shall be adjusted and Contractor shall be entitled to such other relief as provided in Section 20.3.4 to reflect any additional increased costs of and delays to the Work Schedule that Contractor actually and demonstrably suffers or incurs from any such suspension. At any time after the effective date of the suspension, Owner may require Contractor to resume performance of the Work on ten (10) Business Days' Notice.

20.3.2. Suspension for Cause.

(a) Stop Work Suspension for Cause.

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Owner may (i) order Contractor to stop performance immediately of that portion of the Work that causes an imminent danger to life or damage to property or (ii) by giving ten (10) Business Days' advance Notice thereof to Contractor, suspend performance of all or a portion of the Work due to a Contractor Event of Default (each a "**Suspension for Cause**"). If the Work is suspended as a result of a Suspension for Cause, then, without limiting Contractor's right to assert any defenses with respect to such suspension, Contractor shall not be entitled to any schedule extensions or change in the cost of the performance of the Work, pursuant to Article 16, for the associated impact of such Suspension for Cause, except to the extent a Suspension for Cause identified in part (i) above arises as a result of a Force Majeure Event or an Excusable Event. Owner's right to suspend performance of the Work under this Section 20.3.2(a) shall be without prejudice to any other right or remedy Owner may have under this Agreement.

(b)Resumption of Work.

In the case of a Suspension for Cause pursuant to Section 20.3.2(a) once the cause of such Suspension for Cause has been resolved by Contractor in accordance with the instructions of Owner in its Notice of Suspension for Cause as provided above or by other reasonable means identified by Contractor and agreed to by Owner, such agreement not to be unreasonably conditioned, delayed, or withheld, and if this Agreement is still in effect, then if Owner does not re-order the resumption of the suspended portion of the Work after five (5) Business Days' Notice, any further delay to the resumption of the Work shall be considered an Owner-Caused Delay. In the event that any such Suspension for Cause is subsequently determined not to have been properly issued in accordance with the provisions of Section 20.3.2(a), then such suspension shall be deemed to have been a Suspension for Convenience ordered pursuant to Section 20.3.1, and Owner shall make any payments due as a result of the same under such Section.

20.3.3. Contractor's Termination Right.

If, at the end of the suspension period specified pursuant to Section 20.3.1, Owner has not requested a resumption of the Work or has not Notified Contractor of any extension of the suspension period (but in no event beyond one hundred eighty (180) days in the aggregate for all such suspensions), Contractor may, upon ten (10) days' advance Notice to Owner, terminate this Agreement, and such termination shall be deemed to be a termination for Owner's convenience pursuant to Section 20.2, and Contractor's sole and exclusive remedies whether in tort, contract or otherwise against Owner shall be the same as, and shall be strictly limited to, those afforded in Section 20.2.

20.3.4. Extension of Time and Compensation Rights.

In the case of any suspension under Section 20.3.1:

(a) the Work Schedule, Milestone Items and the Substantial Completion Guaranteed Date shall be extended by a period no less than the suspension period, plus a reasonable period for demobilization and remobilization, as mutually agreed upon by Contractor and Owner (plus an additional period, to the extent necessary, to compensate for the effect such suspension could be expected to have on the schedule for performing the ESS Capacity Test in order to provide the necessary stabilization period to mitigate any transient effects on the batteries resulting from being stored, idle or unutilized);

(b) Owner shall pay Contractor for those reasonable costs and cost increases, plus five percent (5%) of such costs, actually incurred during the suspension period that are documented by Contractor to the reasonable satisfaction of Owner, to the extent directly attributable to the suspension, and that are incurred:

(i) for the purpose of safeguarding or storing the Work and the Equipment at the point of fabrication, in transit, or at a Site;

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(ii) for personnel, Subcontractors or Equipment, the payments for which are continued during the suspension period;

(iii) for costs of demobilization and remobilization of Contractor and its Subcontractors, including suspension costs set forth in any subcontract, purchase order or other agreement;

(iv) for rescheduling the Work (including penalties or additional payments to Subcontractors for the same) which may include reasonable allowances for overhead and profit.

20.4. **Claims for Payment.**

All claims by Contractor for compensation or extension of time under Sections 20.3.2 and 20.3.4 must be made within sixty (60) days after Notice from the Owner that the Work has been terminated or the suspension period has ended, respectively.

21. INSURANCE

21.1. **General.**

21.1.1. Contractor Insurances.

Contractor shall procure at its own expense and maintain in full force and effect for the Projects the minimum insurance coverages and limits as required under Section 21.2 of this Agreement, with responsible insurance companies authorized to do business in the United States.

21.1.2. Owner Insurances.

Owner shall procure at its own expense and maintain in full force and effect for the Projects as required under this Agreement, with responsible insurance companies authorized to do business in the United States, the types and limits of insurance as set forth in Section 21.3.

21.1.3. Financial Strength of Insurance Providers.

Such insurance companies shall have an A.M. Best Insurance financial strength rating of A VIII or better in the latest edition of A.M. Best.

21.1.4. Capitalized Terms.

Capitalized terms used in this Article 21 and not otherwise defined in this Agreement shall have the meanings generally ascribed to them in the commercial insurance industry in the United States.

21.1.5. Additional Insurances.

Each Party, at its own cost, may purchase any additional insurance it believes necessary to protect its interests, but these costs cannot be passed on to the other Party.

21.2. **Contractor's Insurance.**

Contractor's obligations to obtain and maintain in full force and effect the insurance policies specified in this Article 21 shall be subject to the specified coverage being available on commercially reasonable terms. If any such coverage is not available, the Parties shall work together to find a mutually acceptable alternative.

21.2.1. Workers' Compensation and Employer's Liability Insurance.

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Contractor shall maintain workers' compensation insurance and such other forms of insurance which Contractor is required to maintain in order to comply with statutory limits under workers' compensation laws of any applicable jurisdiction in the United States (and any other location in which the Work is to be performed), where applicable, and employer's liability (including occupational disease) coverage with limits of at least One Million Dollars ($1,000,000) per accident, One Million Dollars ($1,000,000) for disease, and One Million Dollars ($1,000,000) for each employee, which shall cover all of Contractor's employees, whether full-time, leased, temporary or casual, who are engaged in the Work.

21.2.2. Commercial General Liability Insurance

Contractor shall maintain commercial general liability insurance written on an occurrence basis and with a combined single limit of at least One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) per project annual aggregate and Two Million Dollars ($2,000,000) products and completed operations per project annual aggregate. Aggregate limits shall reinstate annually, be on a per project basis, dedicated entirely to the project or location for which Work is to be provided under this Agreement, and shall not be shared with any other obligations of Contractor. Such insurance shall include coverage for premises/operations liability, for products/completed operations, broad form contractual liability for written contracts, broad form property damage and personal injury liability, and independent contractors liability for Work performed on the Sites and off the Sites. With respect to the performance of construction activities for a Project, Contractor shall maintain extended completed operations coverage, for at least ten (10) years after Owner's final acceptance of the Work for the Project either through policies in force or through an extended reporting period endorsement. Contractor shall certify that such coverage is in place for up to ten (10) years after the Project is completed within thirty (30) days after Contractor's receipt of a written notice from Owner requesting such certification. Such insurance shall provide severability of interests or cross liability provisions permitting one insured to bring a claim against another insured, and shall be endorsed to include Owner and its Affiliates and their respective directors, officers, managers, representatives, agents and employees or any other parties that are related to the Project and that Owner is contractually obligated to include as additional insureds prior to loss, limited only to the extent required, if applicable, by NMSA 1978 § 56-7-1, as amended. Such additional insured status shall apply regardless of the enforceability of the indemnity provisions in this Agreement. Such insurance maintained by Contractor shall be primary with respect to the interest of Owner, and any other insurance or self-insurance maintained by Owner or its Affiliates is in excess and not contributory to Contractor's insurance in all instances regardless of any like insurance that Owner or any of its Affiliates may have. Minimum insurance can be satisfied through a combination of primary and umbrella/excess liability insurance policies.

21.2.3. Commercial Automobile Liability Insurance.

Contractor shall maintain commercial automobile liability insurance (including coverage for owned, non-owned and hired automobiles) covering vehicles used by Contractor in connection with the Work in an amount of at least One Million Dollars ($1,000,000) combined single limit per occurrence for bodily injury and property damage. Contractor's automobile liability insurance coverage shall contain appropriate no-fault insurance provisions or other endorsements in accordance with Applicable Laws. Such insurance shall be endorsed to include Owner and its Affiliates and their respective directors, officers, managers, representatives, agents, employees or any other parties that are related to the Projects and that Owner is contractually obligated to include as additional insureds prior to a loss, limited only to the extent required, if applicable, by NMSA 1978 § 56-7-1, as amended. Such additional insured status shall apply regardless of the enforceability of the indemnity provisions in this Agreement. Such insurance maintained by Contractor shall be primary with respect to the interest of Owner, and any other insurance or self-insurance maintained by Owner or its Affiliates is in excess and not contributory to Contractor's insurance policies in all instances regardless of any like insurance coverage that Owner or any of its Affiliates may have. Minimum insurance can be satisfied through a combination of primary and umbrella/excess liability insurance policies.

21.2.4. Umbrella or Excess Liability Insurance.

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Contractor shall maintain umbrella/excess insurance on an occurrence basis covering claims in excess of the underlying insurance described in Sections 21.2.2 and 21.2.3, in the amount of at least Twenty Million Dollars ($20,000,000) per occurrence in excess of the primary commercial general liability, commercial automobile liability, and employer's liability insurance (with coverage for completed operations for the Projects to be in place throughout the performance of the Work for the Projects and for ten (10) years after Final Completion of the Projects either through policies in force or through an extended reporting period endorsement). Contractor shall certify that such coverage is in place for up to ten (10) years after the Projects are completed within thirty (30) days after Contractor's receipt of a written notice from Owner requesting such certification. Insurance coverages and limits required herein should not in any way limit the extent of Contractor's responsibilities and liabilities specified elsewhere in this Agreement. Such insurance shall be written as follow-form or with an insurance coverage form that provides coverage that is at least as broad as the primary insurance policies, and shall satisfy the maintenance of the required limits either through a single umbrella liability insurance policy or a combination of umbrella liability and excess liability insurance policies.

21.2.5. Professional Liability Insurance.

If the Work includes engineering, architectural, design or other professional services, Contractor shall secure and maintain, professional liability insurance (errors and omissions), with no exclusions for bodily injury or property damage, with a minimum single limit of Five Million Dollars ($5,000,000), per claim and per annual aggregate with coverage remaining in place throughout the performance of the Work. Such insurance may be written on a claims made basis rather than an occurrence basis as long as the policy (a) has a retroactive date prior to the date of Work commencement and (b) is maintained by Contractor throughout the performance of the Work for the Projects and for at least three (3) years after Final Completion of the Project either through ongoing policy renewals or an extended reporting period.

21.2.6. Pollution Liability Insurance.

Contractor shall maintain pollution liability insurance or the equivalent, with a minimum limit of One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) annual aggregate. Such insurance shall include coverage for pollution losses, including but not limited to bodily injury, property damage, and financial loss arising out of Contractor's operations and completed operations and for sudden and gradual pollution arising out of Contractor's performance under this Agreement. Such insurance shall add Owner and its Affiliates and their respective directors, officers, managers, representatives, agents, employees or any other parties that are related to a Project and that Owner is contractually obligated to include as additional insured prior to a loss as an additional insured with respect to Work performed under this Agreement, limited only to the extent required, if applicable, by NMSA 1978§ 56-7-1, as amended.

21.2.7. Equipment, Supplies and Materials.

All equipment, supplies and materials (a) belonging to Contractor or to any of its Subcontractors or (b) used by or on behalf of Contractor or any of its Subcontractors for its performance hereunder which is not intended to become a permanent part of the completed Work shall be brought to and kept at the Sites or a Site at the sole cost, risk and expense of Contractor or such Subcontractor, and Owner shall not be liable for loss or damage thereto.

21.3. **Owner's Insurance.**

Owner's obligation to obtain and maintain in full force and effect the insurance policies specified in this Article 21 shall be subject to the specified coverage being available on commercially reasonable terms. If any such coverage is not available, the Parties shall work together to find a mutually acceptable alternative.

21.3.1. Workers' Compensation Insurance and Employer's Liability Insurance.

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In accordance with the laws of the State of New Mexico, Owner shall maintain in force workers' compensation insurance for all of its employees. Owner shall also maintain employer's liability coverage in an amount of not less than One Million Dollars ($1,000,000) per accident and per employee for disease. In lieu of such insurance, Owner may maintain a self-insurance program meeting the requirements of the State of New Mexico along with the required employer's liability insurance.

21.3.2. Commercial General Liability Insurance

Owner shall maintain commercial general liability insurance written on an occurrence basis and with a combined single limit of One Million Dollars ($1,000,000) per occurrence and Two Million Dollars ($2,000,000) annual aggregate. Such insurance shall include coverage for products/completed operations, broad form contractual liability for written contracts, broad form property damage and personal injury liability, and independent contractor liability. In lieu of the insurance described in this Section 21.3.2, Owner may maintain a self-insurance program or alternative insurance program structure, including a combination of insured/self-insured.

21.3.3. Commercial Automobile Liability Insurance.

Owner shall maintain commercial automobile liability insurance (including coverage for owned, non-owned, and hired automobiles) covering vehicles used by Owner, including the loading or unloading of such vehicles, in an amount of One Million Dollars ($1,000,000) combined single limit per occurrence for bodily injury, and property damage. Owner's automobile liability insurance coverage shall contain appropriate no-fault insurance provisions or other endorsements in accordance with Applicable Laws. In lieu of the insurance described in this Section 21.3.3, Owner may maintain a self-insurance program.

21.3.4. Umbrella or Excess Liability Insurance.

Owner shall maintain umbrella/excess insurance on a claims-made basis covering claims in excess of the underlying insurance described in Sections 21.3.2 and 21.3.3 in the amount of Ten Million Dollars ($10,000,000) per occurrence in excess of the primary commercial general liability, automobile liability, and employer's liability insurance.

21.4. **Builder's All-Risk Insurance.**

A minimum of thirty (30) days prior to Contractor's commencement of its performance of the Work on a Site, Contractor shall obtain and thereafter at all times during performance of the Work for a Project expiring upon Substantial Completion of the Project, maintain, or cause to be maintained, builder's all-risk insurance. The completed value form shall specify the estimated completed value of the Project at the end of construction. The Builder's Risk Policy shall be endorsed to include: (A) named insured status for Owner and Contractor; (B) replacement cost coverage; (C) coverage for materials, supplies and equipment to be incorporated into the Project while such are located on-Site, in transit or while temporarily located off-Site for the purpose of repair, adjustment or storage at the risk of one of the insured parties; (D) permission for partial occupancy or use of the premises; (E) ordinance or law coverage, including (i) coverage for loss to the undamaged portion of the building, (ii) demolition cost coverage, and (iii) increased cost of construction; and (F) a loss payable endorsement naming as loss payees Contractor and Owner as their interests may appear. Such insurance shall provide for a waiver of the insurer's right to subrogate against Owner and Contractor where contractually required. Contractor shall be responsible for payment of any deductible to the extent the loss arises from the negligence of Contractor or its Subcontractors. Owner shall furnish to Contractor prior to commencement of the Project evidence of such coverage being in place including the following as applicable: (i) insurance company name, (ii) policy number, (iii) policy period, (iv) per occurrence and aggregate limits, and (v) deductibles.

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21.5. **Loss Payable**

Losses if any, covered by builder's all-risk shall be payable to Owner, Contractor, or any other parties that are related to the Project and that Contractor is contractually obligated to include as loss payees prior to a loss, as their respective interests may appear. Any insurance claim proceeds shall be applied to the restoration of the Project unless mutually agreed to otherwise by the Owner and Contractor. Any insurance proceeds remaining after payment of all restoration costs shall be applied to the Owner's account.

21.6. **Subcontractor Insurance**

Contractor shall require each of its Major Subcontractors performing work at a Site to obtain, maintain and keep in force during the time during which they are involved in performance of the Work, insurance coverage in accordance with the insurance requirements of Contractor set forth in Sections 21.2.1, 21.2.2, 21.2.3 and 21.2.4; provided, however, that the limits of any such Major Subcontractors' Umbrella Excess Liability Insurance policies otherwise maintained in accordance with the requirements under Section 21.2.4, shall not be less than Two Million Dollars ($2,000,000).

21.7. **Contractor Certificates.**

On or prior to the date that is thirty (30) days after the Notice to Proceed Date of the Projects, Contractor shall furnish to Owner certificates of insurance from each insurance carrier showing that the above required insurance for the Projects is in full force and effect, the amount of the carrier's liability thereunder, copies of all applicable additional insured and waiver of subrogation endorsements, and copies of endorsements from the applicable insurer, further providing that the insurance will not be canceled, materially changed or not renewed until the expiration of at least thirty (30) days (or ten (10) days in the case of cancellation due to non-payment of premiums) after notice of such cancellation, material change or non-renewal has been received by Owner. Contractor shall also be responsible for obtaining certificates of insurance for the insurances required to be maintained by such Major Subcontractor in accordance with Section 21.6 from each of the Major Subcontractors before such Major Subcontractor is allowed to commence Work and provide such certificates to the Owner upon request. Certificates of insurance submitted under this Section 21.7 shall be in form and content reasonably acceptable to Owner and shall provide that Owner and any Owner Financing Parties shall timely receive copies of any notices to Owner or Contractor under such policies of any default or other act or omission by Owner, Contractor or other insured parties that might invalidate, render unenforceable or result in a lapse of such policy in whole or in part. Certificates of each renewal of the insurance should also be delivered to Owner and any Owner Financing Party promptly after receipt.

21.8. **Owner Certificates.**

On or prior to Contractor's commencement of its performance of the Work on a Site, Owner shall furnish to Contractor certificates of insurance from each insurance carrier, showing that the above required insurance is in full force and effect and the amount of the carrier's liability thereunder.

21.9. **Cost of Premium.**

It is expressly agreed and understood that:

(a) the cost of premiums and deductibles for insurance required to be maintained by Contractor as set forth in this Article 21 and all Taxes thereon shall be borne by Contractor, and shall be endorsed to provide that Owner shall have no liability for the payment of any premium thereon; and

(b) that the cost of premiums and deductibles for insurance required to be maintained by Owner as set forth in this Article 21 and all Taxes thereon shall be borne by Owner.

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21.10. **Owner's Rights to Provide Insurances.**

If Contractor fails to provide or maintain any insurance required of it hereunder, Owner shall have the right, but not the obligation, to provide or maintain any such insurance, and to deduct the cost thereof from any amounts due and payable to Contractor (including from any amounts due and payable to Contractor in respect of the Contract Price), or, if there are no such amounts due and payable to Contractor, Contractor shall reimburse Owner for such costs on demand. Should any of the policies required to be maintained by Contractor become unavailable or be canceled for any reason during the period of this Agreement, Contractor shall immediately procure replacement coverage. The failure of Contractor to procure and maintain such replacement coverage (so as to provide continuous coverage) shall constitute a material breach hereunder.

21.11. **No Limitation of Liability.**

The insurance coverages required of Contractor set forth in this Article 21 shall in no way affect, nor are they intended as a limitation of, Contractor's liability with respect to its performance of the Work. Insurance requirements in this Agreement are independent of Contractor's liability under this Agreement. The insurance coverages required of Owner set forth in this Article 21 shall in no way affect, nor are they intended as a limitation of, Owner's liability with respect to its performance of its obligations hereunder.

21.12. **Other Terms and Provisions.**

21.12.1.Omissions; Errors.

It is hereby understood and agreed that the coverages afforded by the insurance policies required of either Party set forth in this Article 21 shall not be invalidated or affected by any unintentional omissions or errors.

21.12.2.Notification.

Contractor and Owner shall Notify the other Party of any and all incidents giving rise to an insurance claim, and otherwise keep the other Party timely apprised of insurance claim proceedings. Contractor shall timely Notify Owner of a builders risk claim and each Party shall provide reasonable assistance in the investigation of any known accident or occurrence involving injury to any person or loss or damage to property, and reasonably cooperate with the companies involved in adjusting any claim by securing and giving evidence, and obtaining the participation and attendance of witnesses, in each case, reasonably required for the investigation or defense of any claim or lawsuit.

22. RISK OF LOSS OR DAMAGE

22.1. **Care, Custody and Control.**

Until the Substantial Completion Date, Contractor shall have care, custody and control of the Project; provided that upon Substantial Completion or the earlier termination of this Agreement and transfer of title to Owner pursuant to Article 18, Owner shall have care, custody and control of the Project to the extent of such transfer of title.

22.2. **Risk of Loss.**

Until the Substantial Completion Date or the early termination of this Agreement as provided in Article 19 or 20, subject to the provisions of this Article 22, Contractor assumes risk of loss, and, without limitation of its right to make claims for relief pursuant to Article 8, full responsibility, for the cost of replacing or repairing any damage to the Project and the applicable Work (including the Equipment) and assumes risk of loss, and full responsibility, for the cost of replacing or repairing any damage to, any maintenance equipment (including temporary materials, equipment and supplies) which is purchased by Contractor for permanent installation in, or for use during the construction of, the Project (other than, for the avoidance of doubt, the

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Transmission Provider's Interconnection Facilities.

22.3. **Risk of Loss After Substantial Completion.**

Owner shall bear the risk of loss for, and full responsibility for, the cost of replacing or repairing any damage to the Project from and after its Substantial Completion Date or upon earlier termination of this Agreement.

23. INDEMNIFICATION

23.1. **Comparative Fault.**

Notwithstanding anything to the contrary herein, and to the extent permitted by Applicable Law, it is the intent of the Parties that where fault is determined to have been joint or contributory, principles of comparative fault will be followed and each Party shall bear the proportionate cost of any loss, damage, expense and liability attributable to such Party's fault.

23.2. **By Contractor.**

Subject to Section 23.1, to the fullest extent permitted by law, Contractor shall defend, indemnify, and hold harmless, Owner and its employees, agents, partners, Affiliates, shareholders, members, directors, officers, managers and permitted assigns (each, an "**Owner Indemnitee**"), from and against the following:

(a) all Losses arising from third-party claims for property damage, personal injury or bodily injury or death to the extent caused by any negligent, willful, reckless or otherwise tortious act or omission (including strict liability) of Contractor or any Subcontractor during the performance of the Work or from Contractor or any Subcontractor failing to perform any of its obligations under this Agreement, or any curative action under any warranty following performance of the Work, of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts such Person may be liable;

(b) all Losses that directly arise out of or result from:

(i) all claims for payment of compensation for Work performed hereunder, whether or not reduced to a lien or mechanics lien, filed by Contractor or any Subcontractors, or other persons performing any portion of the Work, including reasonable attorneys' fees and expenses incurred by any Owner Indemnitee in discharging any Contractor Lien, except to the extent of a breach by Owner in relation to any obligation it has to make a payment under this Agreement;

(ii) employers' liability or workers' compensation claims filed by any employees or agents of Contractor or any of its Subcontractors; and

(iii) all outstanding claims for payment of compensation for Work performed hereunder filed by any Subcontractors that are listed in the Waiver and Release Upon Final Payment, whether or not reduced to a lien or mechanics lien, including reasonable attorneys' fees and expenses incurred by any Owner Indemnitee in discharging any Contractor Lien, except to the extent that any such claims relate to a good faith Dispute between Contractor and Owner;

(c) all Losses arising from third-party claims, including claims by Subcontractors and claims for property damage, personal injury or bodily injury or death that directly or indirectly arise out of or result from the failure of Contractor or any of its Subcontractors to comply with the terms and conditions of Applicable Laws during their performance of the Work;

(d) all fines or penalties issued by any Governmental Authority that directly arise out of or result from the failure of the Projects, as designed, constructed and completed by Contractor or any

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Subcontractor, to be capable as of the Final Completion Date, of operating in compliance with all Applicable Laws or the conditions or provisions of all Applicable Permits (to the extent such Applicable Permits relate to the Work), in each case, as in effect as of the Final Completion Date;

(e) any and all fines, penalties or assessments issued by any Governmental Authority that Owner may incur as a result of executing any applications at Contractor's request;

(f) all Losses arising from claims by any Governmental Authority that directly or indirectly arise out of or result from the failure of Contractor to pay, as and when due, all Taxes, fees or charges of any kind imposed by any Governmental Authority for which Contractor is obligated to pay pursuant to the terms of this Agreement;

(g) all Losses arising from claims by any Governmental Authority claiming Taxes based on gross receipts or on income of Contractor, any of its Subcontractors, or any of their respective agents or employees with respect to any payment for the Work made to or earned by Contractor, any of its Subcontractors, or any of their respective agents or employees under this Agreement; and

(h) all Losses, including claims for property damage or bodily injury or death, whether or not involving damage to the Energy Storage System or a Site, that arise out of or result from the use of Contractor Hazardous Materials (other than arising as a result of unlawful releases or spills described in Section 23.3(f)(ii), whether lawful or unlawful). Such use of or contamination by Contractor Hazardous Materials include:

(i) the storage, transportation, processing or disposal of such Contractor Hazardous Materials; and

(ii) any environmental condition caused by such Contractor Hazardous Materials that is prohibited by Governmental Authorities.

23.3. **By Owner.**

Subject to Section 23.1, Owner shall defend, indemnify and hold harmless Contractor and its employees, agents, partners, Affiliates, shareholders, members, directors, officers, members, managers and permitted assigns (each, a "**Contractor Indemnitee**") from and against the following:

(a) all Losses arising from third-party claims for property damage, personal injury or bodily injury or death to the extent caused by any negligent, willful, reckless or otherwise tortious act or omission (including strict liability) during the performance by Owner of its obligations or failing to perform any of its obligations under this Agreement or any Affiliate, or anyone directly or indirectly employed by either of them, or anyone for whose acts such Person may be liable;

(b) all Losses arising from third-party claims, including claims for property damage, personal injury or bodily injury or death that directly or indirectly arise out of or result from the failure of Owner or any of Owner's Separate Contractors or anyone directly or indirectly employed by any of them (other than Contractor or its Subcontractors), or anyone for whose acts such Person may be liable, to comply with the terms and conditions of Applicable Laws or Applicable Permits;

(c) all Losses arising from claims by any Governmental Authority that directly or indirectly arise out of or result from the failure of Owner to pay, as and when due, all Taxes, fees or charges of any kind imposed by any Governmental Authority for which Owner is obligated to pay pursuant to the terms of this Agreement;

(d) all Losses that directly arise out of or result from employers' liability or workers' compensation claims filed by any employees or agents of Owner; and

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(e) all Losses, including claims for property damage or personal injury or death (including emotional distress) that directly or indirectly arise out of or result from:

(i) the presence or existence of Hazardous Materials (including any Pre-Existing Contamination) at a Site (A) brought onto or generated at a Site on or before the Effective Date; (B) brought onto or generated at a Site by Owner or any of Owner's Separate Contractors (other than Hazardous Materials that were brought onto a Site by or delivered to Contractor or any Subcontractor to be handled by the same in the course of performing the Work); or (C) which migrated onto a Site from another location (other than such Hazardous Materials that were previously in the care, custody or control of Contractor or any Subcontractor), except to the extent the remediation of any such Hazardous Materials is part of the Work; or

(ii) the unlawful release or spill by Owner or its Affiliates or any of Owner's Separate Contractors of Hazardous Materials, such Hazardous Materials otherwise having been brought onto a Site by Contractor or any Subcontractor in accordance with the terms of this Agreement and all Applicable Laws.

23.4. **Patent Infringement and Other Indemnification Rights.**

Contractor shall defend, indemnify, and hold harmless the Owner Indemnitees against all Losses arising from any Intellectual Property Claim. If Owner provides Notice to Contractor of the receipt of any such claim, Contractor shall, at its own expense, settle or defend any such Intellectual Property Claim and pay all damages and costs, including reasonable attorneys' fees, awarded against Owner Indemnitees and at Contractor's option either: (a) procure for Owner, or reimburse Owner for procuring, the right to continue using the infringing service, Equipment or other Work, as the case may be; (b) modify the infringing service, Equipment, or other Work, as the case may be, so that the same becomes non-infringing; or (c) replace the infringing service, Equipment or other Work with non-infringing service, Equipment or other Work, as the case may be. If Owner or Contractor is temporarily or permanently enjoined from completing the Projects or any part thereof, or from the use, operation, or enjoyment of the Projects or any part thereof, as a result of such claim or legal action or any litigation based thereon, then Contractor shall promptly use its Commercially Reasonable Efforts to have such injunction removed and to take one or more of the actions under the preceding clauses (a), (b) or (c), provided, that in no case shall Contractor take any action that adversely affects Owner's continued use and enjoyment of the applicable service, Equipment, or other Work, as the case may be, without the prior written consent of Owner. Owner's acceptance of the Contractor Deliverables, supplied materials and equipment or other component of the Work shall not be construed to relieve Contractor of any obligation hereunder. Notwithstanding any provision of this Agreement to the contrary, no Milestone Item completion date or other key date shall be extended due to any injunction described in this Section 23.4. However, notwithstanding anything in this Agreement to the contrary, Contractor shall not have such indemnity obligations or any other liability hereunder for any Intellectual Property Claim to the extent arising from or in connection with any modification of the Work by Owner or any third party, including Owner's Separate Contractors, Owner's variation from Contractor's recommended procedures for using the Work, or Work manufactured to designs and specifications of Owner. Owner shall indemnify, defend and hold harmless Contractor and the Contractor Indemnitees from and against any and all Losses arising from any Intellectual Property Claim. If any such item is held to constitute an infringement, and the use of such item is required to perform Contractor's work and is enjoined, Owner shall, at its own expense (in addition to owner's indemnification obligation described above and any other remedies Contractor may have under this agreement), either procure the right for Contractor to use the infringing item, or replace the same with a substantially equal but non-infringing item, or modify the same to be non-infringing, provided, however, that any substitute or modified item shall meet all the requirements and be subject to all the provisions of this Agreement.

23.5. **Electronic Data Files.**

Except where any Contractor Deliverable shall be in the form of an electronic data file, any other electronic data files furnished to Owner pursuant to this Agreement are provided only for the convenience of

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Owner. Owner recognizes that such electronic data files not provided to Owner as a Contractor Deliverable may not be adequate or appropriate for Owner's needs. In the case of any discrepancies between the Contractor Deliverable represented by electronic data files and the plotted hardcopy of such files bearing the seal of Contractor's registered professional engineer, the sealed hardcopy shall govern.

23.6. **Claim Notice.**

An Indemnitee shall provide Notice to the indemnifying Party, within ten (10) days after receiving Notice of the commencement of any legal action or of any claims or threatened claims against such Indemnitee in respect of which indemnification may be sought pursuant to the foregoing provisions of this Article 23 or any other provision of this Agreement providing for an indemnity (such Notice, a "**Claim Notice**"). The Indemnitee's failure to give, or tardiness in giving, such Claim Notice will reduce the liability of the indemnifying Party only by the amount of damages attributable to such failure or tardiness, or to the extent the indemnifying Party is prejudiced by such failure or delay, but shall not otherwise relieve the indemnifying Party from any liability that it may have under this Agreement. In case any such claim or legal action shall be made or brought against an Indemnitee and such Indemnitee shall Notify (by sending a Claim Notice) the indemnifying Party thereof, the Indemnitee may by such Claim Notice require the indemnifying Party to assume and control the defense of the claim (other than any Intellectual Property Claim, which shall be controlled by Contractor unless otherwise agreed by the Parties) that is the subject of such Claim Notice, including the employment of counsel reasonably acceptable to the Indemnitee, and the indemnifying Party shall pay all expenses of the conduct of such defense. The Indemnitee shall have the right to employ separate counsel in any such proceeding and to participate in (but not control) the defense of such claim, but the fees and expenses of such counsel shall be borne by the Indemnitee unless the indemnifying Party agrees otherwise; provided, however, that if the named parties to any such proceeding (including any impleaded parties) include both the Indemnitee and the indemnifying Party, and the indemnifying Party requires that the same counsel represent both the Indemnitee and the indemnifying Party, and representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them, then the Indemnitee shall have the right to retain its own counsel at the cost and expense of the indemnifying Party. If the indemnifying Party fails to assume or diligently prosecute the defense of any claim in accordance with the provisions of this Section 23.6, then the Indemnitee shall have the absolute right to control the defense of such claim and the fees and expenses of such defense, including reasonable attorneys' fees of the Indemnitee's counsel and any reasonable amount determined to be owed by Indemnitee pursuant to such claim, shall be borne by the indemnifying Party, provided that the indemnifying Party shall be entitled, at its expense, to participate in (but not control) such defense. Subject to all of the foregoing provisions of this Section 23.6, as between the Parties, (a) the indemnifying Party shall control the settlement of all claims, in coordination with any insurer as required under the applicable insurance policies in Article 21 as to which it has assumed the defense; provided, however, that to the extent the indemnifying Party, in relation to such insurer, controls settlement: (i) such settlement shall include a dismissal with prejudice of the claim and an explicit release from the party bringing such claim or other proceedings of all Indemnitees; and (ii) the indemnifying Party shall not conclude any settlement without the prior approval of the Indemnitee, which approval shall not be unreasonably withheld or delayed; and (b) except as provided in the preceding sentence concerning the indemnifying Party's failure to assume or to diligently prosecute the defense of any claim, no Indemnitee seeking reimbursement pursuant to the foregoing indemnity shall, without the prior written consent of the indemnifying Party, settle, compromise, consent to the entry of any judgment in or otherwise seek to terminate any action, claim, suit, investigation or proceeding for which indemnity is afforded hereunder unless such Indemnitee reasonably believes that the matter in question involves potential criminal liability against such Indemnitee. The Indemnitee shall provide reasonable assistance to the indemnifying Party when the indemnifying Party so requests, at the indemnifying Party's expense, in connection with such legal action or claim, including executing any powers-of-attorney or other documents required by the indemnifying Party with regard to the defense or indemnity obligations.

23.7. **Survival of Indemnity Obligations.**

The indemnities set forth in this Article 23 relating to the Projects shall survive the Final Completion

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Date or the earlier termination of this Agreement for a period expiring two (2) years following the Final Completion Date or said termination, whichever first occurs. All Claim Notices must be delivered, if at all, to the applicable Party prior to the expiration of such two (2) year period. If any Claim Notice is made within such two (2) year period, then the indemnifying period with respect to all claims identified in such Claim Notice (and the indemnity obligation of the Parties hereunder with respect to such claim) shall extend through the final, non-appealable resolution of such claims. For purposes of clarification hereunder, without limiting the other rights granted hereunder to either Party, a Party may enforce the indemnity provisions hereunder pursuant to the provisions of Article 31 without having to declare an Owner Event of Default or a Contractor Event of Default, as applicable.

23.8. **Limitations on Indemnification Obligations.**

Notwithstanding anything to the contrary in this Agreement, no claim for indemnity shall be brought pursuant to this Article 23 until the Losses incurred or suffered by the indemnified Person hereunder exceed Twenty-Five Thousand Dollars ($25,000) in the aggregate, exclusive of Taxes. Once such Losses exceed the threshold set forth in the preceding sentence, the indemnifying Party shall be responsible for all Losses, not merely those Losses in excess of such threshold.

24. CONFIDENTIAL INFORMATION

24.1. **Confidential Information.**

As used in this Agreement, "**Disclosing Party**" refers to Contractor whenever it is disclosing information to Owner and to Owner whenever it is disclosing information to Contractor. "**Receiving Party**" refers to Contractor whenever it is receiving information from Owner and to Owner whenever it is receiving information from Contractor. Each Party shall, and shall use its Commercially Reasonable Efforts to cause its Representatives, as hereinafter defined, and Affiliates to, keep confidential all information marked as "Confidential" in advance of disclosure, as well as proprietary, non-public or confidential information (in any form) concerning the business, operations and assets of Owner or Contractor (as the case may be), or their respective Affiliates provided to the other Party, including the terms and conditions of this Agreement or any related agreement, information or materials prepared in connection with the performance of the Work under this Agreement, or any related subsequent agreement, designs, drawings, specifications, techniques, models, data, documentation, manuals, source code, object code, diagrams, flow charts, research, development, processes, procedures, know-how, manufacturing, development or marketing techniques and materials, development or marketing timetables, strategies and development plans, business plans, customer, supplier or personnel names and other information related to customers, suppliers or personnel, pricing policies and financial information, and other information of a similar nature, whether or not reduced to writing or other tangible form, and any other trade secrets (collectively, "**Confidential Information**"**)**. Confidential Information shall not include information that:

(a) is known to Receiving Party prior to obtaining the same from Disclosing Party as reflected by the written records of Receiving Party;

(b) is in the public domain at the time of disclosure by Disclosing Party;

(c) becomes available to Receiving Party on a non-confidential basis from a source other than Disclosing Party, provided that, to Receiving Party's knowledge, such source is not prohibited from transmitting such information by a contractual, legal, or other obligation;

(d) can be shown by Receiving Party to have been independently developed by its employees, officers, directors, attorneys, auditors, advisors and/or consultants (collectively, "**Representatives**") without access to the Confidential Information;

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(e) is necessary to be disclosed to auditors, taxing authorities, or accountants preparing tax reports and filings;

(f) is required to be disclosed under Applicable Law, stock exchange requirements or by Governmental Authorities, including in connection with any approval sought from, filing with, request for information from, or compliance obligation imposed by, any Governmental Authority; or

(g) is approved for public release by express prior written consent of an authorized officer of Disclosing Party.

24.2. **Use of Confidential Information.**

(a) Receiving Party hereby agrees that it shall use the Confidential Information solely for the purpose of performing its obligations under this Agreement and not in any way detrimental to Disclosing Party, or its Affiliates. Receiving Party agrees to use the same degree of care Receiving Party uses with respect to its own proprietary or confidential information, which in any event shall result in a reasonable standard of care to prevent unauthorized use or disclosure of the Confidential Information. Except as otherwise provided herein, Receiving Party shall keep confidential and not disclose the Confidential Information. Owner and Contractor shall cause each of their Representatives and Subcontractors to become familiar with, and abide by, the terms of this Section 24.2.

(b) Notwithstanding the provisions of this Section 24.2, Receiving Party may disclose any of the Confidential Information if, but only to the extent, that, based upon reasonable advice of counsel, Receiving Party is required to do so by the disclosure requirements of any Applicable Law. Prior to making or permitting any such disclosure, Receiving Party shall provide Disclosing Party with prompt written Notice of any such requirement so that Disclosing Party (with Receiving Party's assistance if and to the extent reasonably requested) may seek a protective order or other appropriate remedy, at Disclosing Party's sole cost and expense, unless such Notice is prohibited by any Applicable Law.

(c) Subject to Section 24.2(b), Receiving Party shall not, without the prior written consent of Disclosing Party, disclose to any third party the fact that such Confidential Information has been made available to Receiving Party. Further, and notwithstanding the foregoing, (i) Contractor may provide any and all information required by (x) its Representatives, Affiliates or then existing Subcontractors and insurance agents that is necessary to complete the Work to such Subcontractors and insurance agents and (y) Contractor Financing Parties and their representatives to the extent necessary to obtain financing for the Work, in each case without the consent of Owner; provided that Contractor shall be responsible for any breaches of any Subcontractors, insurance agents or Contractor Financing Parties of the confidentiality provisions of this Section 24.2; and (ii) Owner may provide any and all information (x) to its Representatives or then existing or prospective successors or assigns; (y) required by its other contractors and insurance agents or insurers that is necessary to perform Owner's obligations under this Agreement; and (z) required by Owner Financing Parties and their representatives, in each case without the consent of Contractor.

24.3. **Return of Confidential Information.**

(a) At any time upon the request of Disclosing Party, Receiving Party shall promptly deliver to Disclosing Party or destroy at Receiving Party's option (with such destruction to be certified by Receiving Party) all documents (and all copies thereof, however stored) furnished to or prepared by Receiving Party that contain Confidential Information and all other documents in Receiving Party possession that contain or that are based on or derived from Confidential Information; provided, however, that the Receiving Party may retain one copy of such Confidential Information solely for the purpose of complying with its audit and document retention policies, and provided, further, that all such retained Confidential Information shall be held subject to the terms and conditions of this Agreement.

(b) Notwithstanding the return or destruction of all or any part of the Confidential

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Information relating to the Projects, the confidentiality provisions set forth in this Agreement shall nevertheless remain in full force and effect with respect to such specific Confidential Information until the date that is three (3) years after the earlier of (i) the Final Completion Date or (ii) the termination of this Agreement.

24.4. **Confidential Information Remedy.**

The Parties acknowledge that the Confidential Information is valuable and unique, and that damages would be an inadequate remedy for breach of this Article 24 and the obligations of each Party under this Article 24 are specifically enforceable. Accordingly, the Parties agree that a breach or threatened breach of this Article 24 by either Party, shall entitle the other Party to seek an injunction preventing such breach, without the necessity of proving the inadequacy of damages or posting any bond. Any such relief shall be in addition to, and not in lieu of, monetary damages or any other legal or equitable remedy available to such Party.

25. INVENTIONS AND LICENSES

25.1. **Invention, License.**

Any idea, invention, work of authorship, drawing, design, formula, algorithm, utility, tool, pattern, compilation, program, device, method, technique, process, improvement, development or discovery (collectively, "**Invention**"), whether or not patentable, copyrightable or entitled to legal protection as a trade secret or otherwise, that Contractor may conceive, make, develop, create, reduce to practice or work on, in whole or in part, in the course of performing the Work, shall be owned and retained by Contractor. Contractor hereby grants, and shall require its Subcontractors to grant, to Owner a paid-up, irrevocable, perpetual, non-transferable (other than to transferees of the Projects), nonexclusive, royalty-free license to use all Inventions, Confidential Information or other proprietary rights, intellectual property and specialized knowledge of Contractor that, in each case, form a part of the Work for Owner's use to the extent reasonably necessary for the operation, maintenance, repair, or decommissioning of the Projects or components thereof, at any time. Notwithstanding the foregoing, Owner can use any Affiliate of Owner or subcontractor or other agent retained by Owner to the extent reasonably necessary to exercise these rights solely on behalf of Owner. Contractor shall, prior to directing any Subcontractor to produce any design or engineering work in connection with the Projects, obtain a valid license of any such Inventions, specialized knowledge or other proprietary property from such Subcontractor in terms substantially similar to those that obligate Contractor to Owner as expressed in this Section 25.1. Except as specifically stated herein, no other license in such patents and proprietary information is granted pursuant to this Agreement.

25.2. **Suitability of Contract Design, Engineering and Computer Programming Information.**

All Contractor Deliverables and computer software for the Projects prepared by Contractor pursuant to this Agreement are instruments of service in respect of the Projects. They are not intended or represented to be suitable for reuse by Owner or others on extensions of the Projects or on any other project. Without any limitation on the provisions set forth in Article 24, any such unauthorized reuse without prior written verification or adaptation by Contractor for the specific purpose intended will be at Owner's sole risk and without liability or legal exposure to Contractor.

25.3. **Contractor Deliverables.**

Subject to Section 25.1, the Contractor Deliverables accumulated or developed by Contractor, its employees or any Subcontractors shall become the property of Owner upon Contractor's receipt of payment of the Contract Price as provided in this Agreement, whether or not delivered by Contractor. Contractor will maintain ownership of all copyrights and other intellectual property contained within the Contractor Deliverables.

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25.4. **Software Licenses.**

To the extent Contractor purchases any software to be incorporated into the Projects, which software is necessary or otherwise desirable for the operation of a Project after Substantial Completion, Contractor shall register Owner as the licensee of such software with the applicable Subcontractor.

26. ASSIGNMENT

26.1. **Assignment to Other Persons.**

Except as otherwise provided in this Section 26.1, neither Party may assign or otherwise transfer this Agreement to any third party without the prior written consent of the other Party; which consent shall not be unreasonably withheld or delayed; provided, however, that nothing in this Agreement shall prevent either Party from engaging Affiliates or subcontractors in connection with the performance of its obligations under this Agreement (other than its respective payment obligations). Notwithstanding the foregoing, (a) Owner may (i) collaterally assign its rights, title and interest under this Agreement to any Owner Financing Party, who may further assign such rights, title and interest under this Agreement in accordance with the foregoing upon foreclosure or (ii) assign its rights, title and interest under this Agreement in connection with a synthetic lease, sale-leaseback or other similar financing arrangement for the Projects and, in each case, in connection therewith, Contractor shall execute and deliver any usual and customary consents, legal opinions or other documents reasonably requested by Owner (which shall include customary additional cure periods for the benefit of Owner Financing Parties (not to exceed, in the aggregate, ten (10) additional Business Days)); provided, however, that (x) Contractor shall not be obligated without a Change in Work to accept any undertaking imposed by any such Owner Financing Party which will increase Contractor's obligations under this Agreement and, (y) if Owner requests that Contractor provide one or more legal opinions, each such opinion will be provided at Owner's cost; and (b) Owner may assign this Agreement to any Affiliate of Owner, provided that such assignment does not impair the applicability or impact of Owner's Parent Guaranty.

26.2. **Indemnitees; Successors and Assigns.**

Upon any assignment by either Party hereunder, the definition of Owner Indemnitee or Contractor Indemnitee, as applicable, shall be deemed modified to include the assignor and permitted assignee under such assignment and each of their respective employees, agents, partners, Affiliates, shareholders, officers, directors, members, managers, successors and assigns.

27. HAZARDOUS MATERIALS

27.1. **Use by Contractor.**

Contractor shall not and shall not permit any of its Subcontractors, directly or indirectly, to permit the manufacture, storage, transmission or presence of any Hazardous Materials on a Site, and Contractor shall not and shall not permit any of its Subcontractors to release, discharge or otherwise dispose of any Hazardous Materials on a Site, in each case, except in accordance with Applicable Law; provided, however, that Contractor or its Subcontractors may bring onto a Site such Hazardous Materials as are necessary to perform the Work ("**Contractor Hazardous Materials**") so long as the same is done in compliance with Applicable Laws. Contractor shall remain responsible and strictly liable for all such Contractor Hazardous Materials brought on to or generated at the Site, unless such release or generation is caused by Owner, any Person for which Owner is responsible, or any third party including Owner's Separate Contractors (each an "Owner Party" and together, the "Owner Parties"), including the management, transportation, storage, labeling, treatment and disposal of all such Contractor Hazardous Materials. Contractor shall notify Owner prior to bringing any Contractor Hazardous Materials onto a Site and shall provide Owner, on-Site at each Site, the following information with respect to any Contractor Hazardous Materials: (a) material safety data sheet; (b) quantity (volume/mass); (c) length of time on the Site; (d) container type; and (e) disposal location if disposed or otherwise managed. Contractor shall require all Subcontractors to provide, for each Site, the information

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required under this Section 27.1 to Owner before bringing any Contractor Hazardous Materials to a Site. Contractor shall exclude the use of lead paint and minimize the use of acetone and chlorinated solvents and similar substances at the Site and shall require all Subcontractors to do likewise.

27.2. **Remediation by Contractor.**

At Contractor's sole cost and expense, Contractor shall conduct and complete all investigations, studies, sampling, testing and remediation of the Site in connection with the release, discharge or presence of Contractor Hazardous Materials unless such release or generation is caused by Owner or any Person for which Owner is responsible, or any third party including Owner's Separate Contractors. Contractor shall promptly comply with all lawful orders and directives of all Governmental Authorities regarding Applicable Laws relating to the use, transportation, storage, handling, presence or release by Contractor, any Subcontractor or any Person acting on its or their behalf or under its or their control of any Contractor Hazardous Materials, except to the extent any such orders or directives are being contested in good faith by appropriate proceedings in connection with the Work. For the avoidance of doubt, Contractor shall have no obligation to transport, store, remediate or otherwise handle any Pre-Existing Contamination or Hazardous Materials brought onto the Site by an Owner Party. Disposal or remediation of any Pre-Existing Hazardous Materials or Hazardous Materials brought on to the Site by an Owner Party and discovered during the course of construction is not included in the Contract Price and Contractor shall be entitled to cost and schedule relief, via Change in Work, to the extent the existence or removal of any such Pre-Existing Hazardous Materials or Hazardous Materials delays or otherwise increases the cost or time of Contractor's performance of the Work. Contractor will promptly notify Owner if any such Pre-Existing Hazardous Materials or Hazardous Materials brought onto the Site by an Owner Party are discovered in the course of the Work. All costs associated with removal and proper disposal of Pre-Existing Hazardous Materials or Hazardous Materials brought onto the Site by an Owner Party will be the responsibility of Owner and Contractor shall have no obligations with respect to such conditions.

27.3. **Notice of Hazardous Materials.**

(a) If Contractor discovers, encounters or is notified of the existence of any contaminated materials or Hazardous Materials at a Site, Contractor shall promptly Notify Owner thereof and restrict access to the area containing such contaminated materials or Hazardous Materials;

(b) If Contractor discovers, encounters or is notified of any spill or release of any Hazardous Materials at a Site:

(i) if such Hazardous Materials are Contractor Hazardous Materials, Contractor shall promptly remove such Hazardous Materials from the Site and remediate the Site in accordance with all Applicable Laws and Applicable Permits (to the extent the Applicable Permits relate to the Work) in each case at Contractor's sole cost and expense, except where such materials were released or spilled by Owner, its Affiliates, or any third party including Owner's Separate Contractors; and

(ii) if such Hazardous Materials are Contractor Hazardous Materials, Contractor shall not be entitled to any extension of time or additional compensation hereunder for any delay or costs incurred by Contractor as a result of the existence of such Contractor Hazardous Materials, except where such materials were released or spilled by Owner, its Affiliates, or any third party including Owner's Separate Contractors.

28. LIEN FILINGS AND CLAIMS

28.1. **Project Liens.**

To the extent Owner has timely paid and Contractor has received amounts due and owing to Contractor under this Agreement, Contractor shall at all times promptly pay for all materials, Equipment, services and labor used in the performance of the Work and shall maintain all Work, materials, Equipment, structures,

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premises, and other property free and clear from all liens, security interests, attachments and other encumbrances created by, through or under, or as a result of any act or omission (or alleged act or omission) of, Contractor or any Supplier or Subcontractor, or other Person providing materials, Equipment, services or labor in the performance of the Work, including common law, contractual, statutory and constitutional mechanic's liens, materialman's liens and labor liens (each a "**Contractor Lien**"). Contractor shall promptly bond, pay or discharge and discharge of record, within twenty (20) days (or such additional time as the Parties agree may reasonably be required) of Contractor's receipt of written notice of a filing of any Contractor Lien. Contractor shall indemnify, defend and hold harmless Owner Indemnitees from and against any and all Losses asserted or awarded against or incurred by such Indemnitees arising out of, resulting from, or relating to, such Contractor Liens. Contractor shall provide Owner upon its written request with reasonable evidence (including executed Lien waivers in form acceptable to Owner) showing that all claims for materials, Equipment, labor, and Suppliers and Subcontractors have been paid in full, or will be paid in full, to the extent Contractor has received amounts due and owing to Contractor under this Agreement.

28.2. **Contractor Failure to Remove Liens.**

If Contractor does not act so as to remove, discharge, bond, cancel or otherwise satisfy a Contractor Lien against Owner Indemnitee(s), a Site, a Project or the improvements thereon within the stated twenty (20) day period (or such additional time as the Parties agree may reasonably be required), then Owner at its sole option may: (1) take by way of offset funds from the Agreement balance sufficient to satisfy the Contractor Lien and to pay all Owner Losses and costs incurred by reason thereof; (2) transfer the Contractor Lien to a bond, at Contractor's expense, including all Owner Losses and costs thereby incurred; or (c) Pay directly to the Contractor Lien claimant, from the Agreement balance, the amount reasonably necessary to cause the removal and discharge of the Contractor Lien, with all costs and attorneys' fees thereby incurred chargeable to Contractor. Contractor shall have the right to contest any such Contractor Lien.

28.3. **Preliminary Notices.**

Contractor shall provide Owner, within fifteen (15) days of receipt thereof, copies of all Preliminary Notices received from potential Contractor Lien claimants in accordance with the Preliminary Notice requirement under New Mexico law intended to preserve Contractor Lien rights in connection with a Project ("**Preliminary Notice**"). With respect to any such Preliminary Notice filed or received in connection with the Work, Owner shall be entitled to request and receive conditional Supplier/Subcontractor interim Waivers and Releases, and Supplier/Subcontractor Waivers and Releases Upon Final Payment, from any Supplier or Subcontractor filing or serving any such Preliminary Notice.

28.4. **Request for Information.**

If any mechanic or materialmen submits a request for information to Owner or Contractor, seeking to obtain information necessary to comply with the Preliminary Notice requirement under New Mexico law, Contractor shall, within five (5) days after such a request is made, provide the requesting mechanic or materialmen with the information required to be included in a Preliminary Notice, and simultaneously provide Owner with Contractor's reply.

29. NOTICES AND COMMUNICATIONS

29.1. **Requirements.**

Any Notice made pursuant to the terms and conditions of this Agreement shall be in writing and deemed effective as follows: (a) if delivered personally, upon delivery; (b) if sent by certified mail, return receipt requested, upon certified receipt; (c) if sent by a recognized overnight mail or courier service, with delivery receipt requested, upon receipt; or (d) if sent by email, upon confirmation in one of the accepted methods in parts (a), (b), (c) (d) of this Section 29.1. To be effective, Notice must be addressed to and sent to the following addresses or to any alternative address which a Party shall identify by means of Notice in accordance with this Agreement:

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If to Contractor:	GRIDWORKS, INC. 3900 Singer Blvd. NE Albuquerque, NM 87106 Attn: Kevin Bassalleck Email: kb@gridworks.com CC: Legal@gridworks.com
If to Owner:	PUBLIC SERVICE COMPANY OF NEW MEXICO 2401 Aztec Rd. NE Albuquerque, NM 87107 Attention: Director of Strategic Energy Planning and Development
With a copy to:	PUBLIC SERVICE COMPANY OF NEW MEXICO 414 Silver Avenue SW Albuquerque, NM 87102 Attention: General Counsel

Nothing contained herein shall preclude the transmission by electronic communication (such as electronic mail) of any communication in the normal course of business and any such transmission may be distributed solely by and between Contractor's Project Manager and the Owner Representative.

29.2. **Representatives.**

Any technical or other communications pertaining to the Work shall be with the Parties' designated representative. Each Party shall Notify the other in writing of the name of such representatives. Contractor's Project Manager and the Owner Representative each shall have knowledge of the Work and be available at all reasonable times for consultation. Each Party's representative shall be authorized on behalf of such Party to administer this Agreement, agree upon procedures for coordinating the efforts of the Parties, and, when appropriate, to furnish information to or receive information from the other Party in matters concerning the Work.

30. LIMITATIONS OF LIABILITY AND REMEDIES

30.1. **Limitations on Damages.**

Except (a) for liquidated damages as expressly set forth in this Agreement, (b) to the extent a termination payment made pursuant to Article 20 constitutes consequential damages, (c) to the extent damages claimed by third parties (*i.e.*, persons which are not Affiliates of Owner or Contractor, respectively) for which Contractor or Owner has a duty to indemnify hereunder as expressly provided in Article 23 are shown to be consequential in nature, and (d) to the extent that a Party has breached any of its obligations set forth in Article 24, notwithstanding anything else in this Agreement to the contrary, no Party (nor that Party's subcontractors) shall be liable to any other Party hereto for any loss, damage or other liability otherwise equivalent to or in the nature of any indirect, incidental, consequential, exemplary, punitive or special damages arising from performing or a failure to perform any obligation under this Agreement, whether such liability arises in contract (including breach, indemnity or warranty), tort (including fault, negligence or strict liability), or otherwise, including for any loss of actual or anticipated profits, loss of revenue, or loss of use or productivity of Equipment, the Energy Storage System or the Projects, downtime costs or revenues or product loss by reason of shutdown or non-operation, increased expense of operation or maintenance of the Equipment or the

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Projects, loss of opportunity, reputation, or goodwill, cost of purchased or replacement power, equipment or systems, increased expense of borrowing or financing and increased cost of capital, claims of customers for such damages, or any governmental fines, penalties or sanctions imposed.

30.2. **Limitations on Contractor's Liability.**

(a) Subject to clause (b) of this Section 30.2, Contractor's liability to Owner and/or Owner Indemnitees under this Agreement, whether such liability arises in contract, tort, warranty or otherwise, shall in no event be greater in the aggregate than an amount equal to one hundred percent (100%) of the Contract Price.

(b) Contractor's limit of liability set forth in Section 30.2(a) shall not apply to (i) Contractor's indemnification obligations under this Agreement with respect to any claim by a third-party (*i.e.*, a person not Affiliates of Owner or Contractor, respectively) for bodily injury, death and property damage; or (ii) any insured claim to the extent that such claim is covered by insurance proceeds actually received from the insurance required to be maintained under this Agreement.

(c) In no event shall Contractor's liability under this Agreement for Delay Liquidated Damages exceed in the aggregate an amount equal to ten percent (10%) of the Contract Price (the "**Delay LD Cap**").

(d) In no event shall Contractor's liability under this Agreement for the aggregate amount of any combination of Capacity Liquidated Damages, ESS Capacity Shortfall Damages and ESS Non-Performance Liquidated Damages exceed in the aggregate an amount equal to fifteen percent (15%) of the Contract Price (the "**Capacity LD Cap**").

(e) Unless otherwise agreed by Contractor in its sole and absolute discretion, in no event shall the aggregate amount of any combination of Delay Liquidated Damages, ESS Capacity Shortfall Damages, ESS Non-Performance Liquidated Damages and Capacity Liquidated Damages exceed in the aggregate an amount equal to twenty percent (20%) of the Contract Price (the "**Aggregate LD Cap**").

30.3. **Limitation on Remedies.**

Except as otherwise provided herein, the rights and remedies of each Party as set forth in this Agreement shall be the exclusive rights or remedies of the Parties.

30.4. **Limitations on Owner's Liability.**

(a) Subject to clause (b) of this Section 30.4, Owner's liability to Contractor and/or Contractor Indemnitees under this Agreement, whether such liability arises in contract, tort, warranty or otherwise, shall in no event be greater in the aggregate than an amount equal to one hundred percent (100%) of the Contract Price.

(b) Owner's limit of liability set forth in Section 30.4(a) shall not apply to (i) Owner's indemnification obligations under this Agreement with respect to any third-party claim; (ii) to Owner's obligation to pay the Contract Price; or (iii) any insured claim to the extent that such claim is covered by insurance proceeds actually received from the insurance required to be maintained under this Agreement.

31. DISPUTES

31.1. **Dispute Resolution.**

Any dispute or matter in question between the Parties arising out of or related to this Agreement (a "**Dispute**") shall be resolved pursuant to the procedures set forth in this Article 31, including whether a particular question is the proper subject of arbitration.

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31.1.1. Dispute Resolution. Initially, Owner and Contractor shall attempt to resolve any Dispute that may arise in connection with this Agreement. If they are unable to resolve the Dispute within twenty (20) days, either Party may, by Notice, refer the Dispute to the senior management of the Parties for resolution. As used in this Article 31, "senior management" means Senior Vice President or other executive officer with comparable management duties and authority. Senior management representatives shall confer or meet to discuss the Dispute within twenty (20) days of the Notice. If the senior management of the Parties is unable to resolve the Dispute within sixty (60) days of the initial Notice, the Dispute may be submitted to mediation upon the demand of either Party.

31.1.2. Arbitrable Disputes. If the Parties do not agree to mediate the Dispute or are unable to resolve the Dispute through mediation and the aggregate amount of the claim (including counterclaims) is One Hundred Thousand Dollars ($100,000) or less, then the Dispute shall be resolved by binding arbitration. Such arbitration shall be governed by the then-prevailing Construction Industry Rules of the American Arbitration Association. A Party electing to submit a Dispute to arbitration shall give the other Party a timely demand for arbitration and shall file the demand and the requisite fee with the American Arbitration Association. Such demand for arbitration shall describe the nature of the Dispute and the amount in controversy. The Parties shall then jointly select an arbitrator in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association; or, if the Parties cannot agree, there shall be three selected pursuant to the applicable rules. Such arbitrator(s) shall be familiar with the construction and electric generation industries. The arbitration shall be held in Albuquerque, New Mexico. Discovery shall be by agreement of the Parties or as ordered by the arbitrator(s), provided that the Parties shall comply with the following minimum discovery requirements: at least one hundred twenty (120) calendar days prior to the arbitration, the Parties shall exchange copies of all exhibits to be used at the arbitration, all Project documents in any way related to the Dispute, a list of witnesses and a summary of the matters as to which each witness is expected to testify. A reasonable number of depositions may be taken. The arbitrator(s) shall decide the Dispute in strict accordance with the Agreement documents and by providing a reasoned award within thirty (30) days of the conclusion of the hearings. The award entered by the arbitrator(s) shall be final, and judgment may be entered upon it in accordance with Applicable Law in any court having jurisdiction thereof. All costs of mediation and arbitration (including the fees of the mediator and arbitrator(s)) shall be split equally by the Parties, except that the Parties shall be responsible for payment of their own attorney fees, expert fees, preparation fees, travel costs, witness fees, photocopying and similar costs. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law of the State of New Mexico. Indemnity claims are not subject to mandatory arbitration.

31.1.3. Litigation of Larger Disputes. If the aggregate amount of the claims in dispute exceeds One Hundred Thousand Dollars ($100,000), then the Parties may agree in writing to submit the matter to binding arbitration; however, failing such a written agreement to arbitrate in accordance with the terms of Section 31.1.2 above, either Party may bring an action in the federal or state courts of New Mexico. This Article 31 shall have no application to claims, or requests for additional compensation or time, if those requests have not been properly preserved for submission to the dispute resolution procedures set forth herein. An arbitration demand shall include all related claims and Disputes then ripe for the dispute resolution procedures set forth herein.

31.1.4. Work Continuation. Contractor agrees that it can be fully compensated by money damages for any breach of this Agreement which may be committed by Owner (other than a breach of confidentiality, in respect of which Contractor shall, in addition to any monetary damages, be entitled to seek specific performance, injunction or any other equitable remedy available to Contractor), and Contractor agrees that no default, act or omission of Owner shall entitle Contractor to terminate or rescind this Agreement, or to suspend, delay, stop or Abandon performance of the Work, except as expressly set forth in this Agreement. Subject to the foregoing, Contractor agrees that it will continue to diligently pursue the Work during the pendency of any Dispute, including any Dispute over payments claimed due and owing by Contractor, provided that Owner continues to timely make payments of undisputed amounts as required under this Agreement.

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31.2. **Waiver of Jury Trial.**

EACH PARTY HEREBY KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVES, AND AGREES TO CAUSE EACH OF ITS RESPECTIVE AFFILIATES TO WAIVE, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY LITIGATION BASED HEREON, OR ARISING OUT OF, UNDER, OR IN CONNECTION WITH, THIS AGREEMENT, OR ANY COURSE OF CONDUCT, COURSE OF DEALING, STATEMENTS (WHETHER ORAL OR WRITTEN) OR ACTIONS OF OWNER OR CONTRACTOR.

32. MISCELLANEOUS

32.1. **Severability.**

The invalidity or unenforceability of any portion or provision of this Agreement shall in no way affect the validity or enforceability of any other portion or provision hereof. Any invalid or unenforceable portion or provision shall be deemed severed from this Agreement and the balance of this Agreement shall be construed and enforced as if this Agreement did not contain such invalid or unenforceable portion or provision. If any such provision of this Agreement is so declared invalid, the Parties shall promptly negotiate in good faith new provisions to eliminate such invalidity and to restore this Agreement as near as possible to its original intent and effect.

32.2. **Governing Law.**

This Agreement shall be governed by the internal laws of the State of New Mexico, excluding its conflict of laws provisions. THE PARTIES ACKNOWLEDGE AND AGREE THAT THE TERMS AND CONDITIONS OF THIS AGREEMENT HAVE BEEN FREELY, FAIRLY AND THOROUGHLY NEGOTIATED.

32.3. **No Oral Modification.**

No oral or written amendment or modification of this Agreement by any officer, agent, member, manager or employee of Contractor or Owner, either before or after execution of this Agreement, shall be of any force or effect unless such amendment or modification is in writing and is signed by a duly authorized representative of the Party to be bound thereby.

32.4. **No Waiver.**

A Party's waiver of any Event of Default, breach or failure to enforce any of the terms, covenants, conditions or other provisions of this Agreement at any time shall not in any way affect, limit, modify or waive that Party's right thereafter to enforce or compel strict compliance with every term, covenant, condition or other provision hereof, any course of dealing or custom of the trade notwithstanding. All waivers must be in writing and signed on behalf of Owner and Contractor in accordance with Section 32.3.

32.5. **Review and Approval.**

Notwithstanding Owner's review or Owner's approval of any items submitted to Owner for review or approval, neither Owner nor any of its representatives or agents reviewing such items, including the Owner's Engineer, shall have any liability for, under or in connection with the items such Person reviews or approves, and Contractor shall remain responsible for the quality and performance of the Work. Owner's review or approval of any items, including the Contractor Deliverables, shall not constitute a waiver of any claim or right that Owner may then or thereafter have against Contractor. Any inspection comment, review or approval of any Contractor Deliverable shall be performed in Owner's sole discretion. The review or approval by Owner of any Subcontractor shall not constitute any approval of the Work undertaken by any such Person, cause Owner to have any responsibility for the actions, the Work, or payment of such Person or to be deemed to be in an employer-employee relationship with any such Subcontractor, or in any way relieve Contractor of its

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responsibilities and obligations under this Agreement.

32.6. **Third Party Beneficiaries.**

The provisions of this Agreement are intended for the sole benefit of Owner and Contractor and there are no third-party beneficiaries hereof (other than the Contractor Indemnitees and the Owner Indemnitees).

32.7. **Further Assurances.**

Owner and Contractor will each use its reasonable efforts to implement the provisions of this Agreement, and for such purpose each, at the reasonable request of the other, will, without further consideration, promptly execute and deliver or cause to be executed and delivered to the other such assistance (including in connection with any financing involving a Project by either Party), or assignments, consents or other instruments in addition to those required by this Agreement, in form and substance satisfactory to the cooperating Party, as the requesting Party may reasonably deem necessary or desirable to implement any provision of this Agreement provided, however, that the Contractor shall not be obligated without a Change in Work to accept any undertaking which will increase the Contractor's obligations under this Agreement and that if Owner requests that Contractor provide one or more legal opinions, each such opinion will be provided at Owner's cost.

32.8. **Record Retention.**

Contractor agrees to retain for a period of three (3) years from the Final Completion Date all material records relating to its performance of the Work for the Project or Contractor's warranty obligations herein related to the Project.

32.9. **Binding on Successors, Etc.**

Subject to Article 26, this Agreement shall be binding on the Parties hereto and on their respective successors, heirs and assigns.

32.10. **Merger of Prior Contracts.**

This Agreement supersedes any other agreements, whether written or oral, that may have been made or entered into between Owner and Contractor or by any office or officer of such Party relating to the Projects, the Energy Storage System or the Work. This Agreement and the Exhibits and other attachments attached hereto constitute the entire agreement between the Parties with respect to the engineering, procurement and construction of the Projects, and there are no other agreements or commitments with respect to each the Projects except as set forth herein and therein.

32.11. **Counterparts.**

This Agreement may be executed in any number of counterparts, and any Party hereto may execute any such counterpart, each of which when executed and delivered shall be deemed to be an original and all of which counterparts taken together shall constitute but one and the same instrument. The Parties agree that the delivery of this Agreement may be effected by means of an exchange of facsimile or emailed signatures with original copies to follow by mail or courier service.

32.12. **Announcements; Publications**

32.12.1.Prior Approval.

Subject to Section 24.2, neither Party shall (either directly or indirectly), and neither Party shall permit any of its Affiliates to, issue or make any public release or announcement with respect to or concerning any matter the subject of, or contemplated by, this Agreement without reasonable prior consultation with the other Party and affording such other Party a reasonable opportunity to provide comments on such

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proposed release or announcement; provided, however, that, subject to the provisions of Section 32.12.2, nothing in this Agreement shall prevent either Party from independently making such public disclosure or filing as it determines in good faith is required by Applicable Law.

32.12.2.Marketing; Advertising.

Notwithstanding anything to the contrary in Section 32.12.1, except as may be restricted or prohibited by Applicable Law, Contractor or any of its Affiliates shall be permitted to show, by photograph or otherwise, in any marketing, advertising or other materials, a Project under construction or as completed (including any related Equipment), without first obtaining the prior consent of Owner. Owner and any Affiliate of Owner shall be permitted to videotape or otherwise record any of the Work, including the installation and/or construction work performed by Contractor hereunder, or show to any other Person any photographs (or similarly recorded images) of such construction or installation Work, without first obtaining the prior written consent of Contractor.

32.13. **Independent Contractor.**

Contractor is an independent contractor, and nothing contained herein shall be construed as constituting any relationship with Owner other than that of owner and independent contractor, except as expressly provided in this Agreement pursuant to which Owner appoints Contractor as Owner's agent, or as creating any relationship whatsoever between Owner and Contractor's employees. Neither Contractor nor any of its employees is or shall be deemed to be an employee of Owner.

32.14. **Audit.**

Contractor shall maintain, in accordance with generally accepted accounting principles consistently applied, records and books of account with respect to all Equipment incorporated into, together with all labor utilized in the performance of, the Work. With respect to any Change In Work performed by Contractor on a reimbursable cost or time and materials basis pursuant to an Owner's Directive, or any claim asserted or investigation commenced by the Taxation and Revenue Department of the State of New Mexico with respect to the Projects, Owner, Owner's Engineer, the Owner Financing Parties, and their authorized representatives shall be entitled to inspect and audit such records and books of account of the Projects related to such costs or claims, as applicable, during normal business hours and upon reasonable advance Notice during the course of the Work and for a period of three (3) years after Final Completion; provided, that the purpose of any such audit shall be only for verification of such costs and Contractor's compliance with and adherence to the provisions of this Agreement and all Applicable Laws; provided, further, that Contractor shall not be required to provide access to those of its costs covered by the fee, allowances, fixed rates, unit prices, lump sum amounts, or of costs which are expressed in terms of percentages of other costs, except to the extent required by a claim asserted or investigation commenced by the Taxation and Revenue Department of the State of New Mexico. Contractor shall retain all such records and books of account for a period of at least three (3) years after the Final Completion Date. Audit data shall not be released by the auditor to parties other than Contractor, Owner, Owner's Engineer, and their respective officers, directors, members, managers, employees, and agents in connection with any such audit, subject to the provisions of Article 24. If, as a result of any audit conducted pursuant to this Section 32.14, the results of such audit indicate that Contractor received more or less than the amount to which it was entitled under this Agreement, either Owner shall pay the additional amount owed to Contractor or Contractor shall refund any overpayment to Owner, as applicable, in either case within ten (10) days of a written request therefor. Owner shall be responsible for all costs and expenses of such audit.

(REMAINDER OF PAGE INTENTIONALLY LEFT BLANK; SIGNATURE PAGE(S) FOLLOW.)

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IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed as of the Effective Date.

PUBLIC SERVICE COMPANY OF NEW MEXICO

By: DocuSigned by: Laurie Williams B87ED845D25E4D9...

Name: Laurie Williams
Title: Sr. Vice President, Integrated Planning and Transmission Development

GRIDWORKS, INC.

By: Signed by: Kevin Bassalleck CFEADAA38706405...

Name: Kevin Bassalleck
Title: President

Exhibit A-1: Contractors Statement of Work

EXHIBIT A-1

Contractor's Statement of Work

1. **Definitions:**

   1.1.

2. **Overview:** The Supplier will be responsible for engineering, procurement and construction (EPC) of 30MW (6MW/24MWH ea.) of storage capacity across five (5) existing Solar PV sites. The sites all similar in the fact that they are PNM owned, exist on PNM owned land, and are sited within the state of New Mexico and outside of city limits. Two example designs, "Square" and "Long", will be furnished that should provide a good basis for bidding that will fit within the fence-line of the proposed PNM solar sites.

   Existing sites include solar arrays, electrical enclosures, internal access roadways, site perimeter fencing as well as available open areas for installation of BESS equipment. Each solar site interconnects to the local transmission provider's distribution system at 12.47 kV.

   Either of the two configurations will fit at the existing sites and the only variability will be the distance of the MV conductors to the POI.

3. **Minimize Footprint:** The sites shall be constructed in a manner that minimizes the footprint and layout of the Battery Enclosures and Equipment in a fashion that keeps both the perimeter and area of the BESS to a minimum. The sites will be enclosed by a ballistic wall (to be done by others) and due to the expense of this, the sites should be laid out in a fashion that can be economically enclosed in a perimeter wall. Additionally, if the footprints are kept below 1 and ¾ of an acre, the necessity of SWPPPs and Dust Permits can be eliminated. Lastly, by keeping the sites below these thresholds, and disturbing a small percentage of the existing site, PNM aims to streamline the permitting process by filing an "amendment" to the existing site use permits for the addition of the battery equipment. The "Square" and "Long" examples illustrate this intent. The examples demonstrate how the sites can be kept to footprints below ¾ acres. The contractors may provide alternate footprints that allow for the same or improved economy of space while achieving proper access to equipment.

4. **Documents:**
   - 4.1. PNM Metering Standard Rev 8
   - 4.2. BESS Single line
   - 4.3. Plan A Square
   - 4.4. Plan B Long
   - 4.5. Addendum E - US Govt Contracts and Federal Awards - PNM Draft 01.09.2025
   - 4.6. Site Specific DWGs
     - 4.6.1. Otero: Otero AC Plan, Alamogordo Location
     - 4.6.2. Deming: Deming AC Plan, Deming Location
     - 4.6.3. Meadow Lake: Meadow Lake AC Plan, Los Lunas Location
     - 4.6.4. Rio Communities: Rio Communities AC Plan, Rio Communities Location
     - 4.6.5. San Miguel: San Miguel AC Plan, San Miguel 1 Location

5. **Design Basis:** Equipment should be designed for a 20-year life. BESS equipment and the installed project as a whole shall be capable of both full load and idle operation over an ambient temperature range of -20F to 110F with the full range of relative humidity.

6. **Ballistic Wall:** A Ballistic Wall is planned to be installed at these BESS sites. Installation of walls will be done by others and is not part of this scope. The location of the walls should be taken into account for in the design of the site. For the purpose of future construction, the proposed area within the wall shall be known as the "BESS YARD". Although not part of the official civil set, a separate drawing shall be provided that clearly locates the wall for future engineering and construction. The civil set should clearly and dimensionally denote the perimeter of the "BESS YARD" to the outer extent of the proposed wall. All conduit depth at the proposed location of the wall should be a minimum of 5' to allow for future wall footing excavation.

7. **Site Locations:** The following locations are where the new battery sites will be located. Each site will have a Google

Earth BESS Location and AC Plan that can be found in the supportive documentation.

7.1. **Otero:** 155 Alamo St, NM 88301, Alamogordo County
  7.1.1. A "Square" footprint appears to fit nicely on the site.
7.2. **Deming**: 65 Coyote Rd, Deming, NM 88030, Luna County, 80 Acres.
  7.2.1. Due to Drainage Ponds, this site is very restrictive, the example footprints will not fit. A condensed site plan will have to be developed based on the "Square" example that only has one access road in the middle, with energy containers on each side.
7.3. **Meadow Lake:** 100 Energy Dr. Los Lunas, NM 87031
  7.3.1. A "Square" footprint appears to fit nicely on the site.
7.4. **San Miguel 1:**250 NM Hwy 250 Las Vegas, NM 87701, San Miguel County, 100 Acres
  7.4.1. A "Square" footprint appears to fit nicely on the site.
7.5. **Rio Communities:** 55 North Navajo Loop Rio Communities, NM 87002, 103 Acres
  7.5.1. A "Long" footprint appears to fit nicely in the Mid North portion of the site.
  7.5.2. Due the length of distance to the POI, extra costs will be necessary for a MV line to the POI.

8. **Construction:** The scope will entail preparation and grading of the site, installation of an access road, installation of the equipment foundations, installation of the conduit runs, off-loading and installation of the BESS equipment, Switchgear Building, Aux Transformer, Aux Panelboard, pulling, connecting, and testing of the electrical equipment and conductors, and commissioning of the equipment to ensure operation. Connecting the Medium voltage conductors at the POI and the connecting the 240v Distribution power will be the work of PNM.
  8.1. **Inflation Reduction Act Reporting Requirement**: This project qualifies for tax benefits and credits provided in the Inflation Reduction Act if the construction labor meets the Inflation Reduction Act Labor Standards. This is a requirement of the contract. The proposal shall clearly state if their construction labor force and all subcontractors meet this standard. The proposal shall detail contractors understanding of the requirement, how the contractor plans on meeting the requirement and what necessary documentation the contractor will provide to prove the standard. Information on the inflation reduction act requirements can be found here: https://www.irs.gov/credits- deductions/prevailing-wage-and-apprenticeship-requirements.
    8.1.1. Will EPC Guarantee they can meet the requirements?
  8.2. **DOE Reporting Requirements:** Two of the five sites in this project are part of a Department of Energy (DOE) grant funded project. As such, contractors and subcontractors working on these two sites will be subject to additional reporting requirements associated with government-funded projects. These include, but are not limited to, requirements from the Davis-Bacon Act, subcontract reporting, and other DOE-specific documentation. All contractors and subcontractors must be prepared to maintain detailed records of work performed, expenses incurred, and wages paid, as these may be subject to audit and verification. Additional details to these requirements can be found in the attached Addendum E reference document.
  8.3. **Areas of disturbance:** The BESS(s) are being constructed on existing PNM sites with existing site use permits. The new systems will be permitted as a modification to the existing site use permit. The area of disturbance should be kept to less than 1 Acre. Additionally, if the sites are kept to less than ¾ acres, no dust permits are required. The sites have existing graded roads and cleared areas that can be used for any necessary parking, staging, laydown areas etc. The sites should be designed so that a 10' buffer on the exterior of the wall is denoted as the extent of the "area of disturbance".
  8.4. **Site prep:** Sites shall be bladed/graded along the access roads and in the BESS yard with-in the area of the proposed wall. The intent in the grading is to remove the brush, ensure the site is sufficiently level to construct the BESS and subsequently cover the entire area within the wall in 6" of gravel.
  8.5. **Access roads:** Access roads from the existing site roads shall be installed. The access roads shall extend into the walled area of the BESS yard and run adjacent to the battery enclosures, so that all enclosures have an immediately adjacent road surface. This will allow for site maintenance, lifting and installing of various equipment, and stable surfaces from which to park. Roads shall be constructed of 6" of crushed rock surfacing on top of tensar bx1100 or geomat equal.
  8.6. **Foundations:** Foundation type and engineering and shall be determined by the EPC. Foundations will be necessary for the following equipment (EPC shall detail actual quantity and type of equipment, this is typical of a 6MW BESS install and is conducive with our existing Solar and BESS sites):

8.6.1. BESS Enclosure Foundations
8.6.2. Inverter/ Transformer Foundations
8.6.3. Switchgear Enclosure Foundation
8.6.4. Auxiliary Transformer Foundation
8.6.5. Auxiliary Panelboard Foundation
8.6.6. **Crushed Rock:** 6" Crushed rock will be installed in all areas within the perimeter of the proposed wall upon completion of construction.

8.7. **Construction Reporting Requirements**: The following written deliverables are required:
8.7.1. Contractor shall submit a written weekly report showing status update of the daily work activities completed.
8.7.2. Photographs of the weekly progress shall be submitted with the report.
8.7.3. Contractor shall submit a final report detailing all the work completed to bring BESS to COD. This report will contain copies of any test reports, checklists, permits, etc. and will include all weekly reports/pictures.

9. **Equipment:** The EPC shall design, engineer, procure and integrate the following components as necessary (EPC shall detail actual quantity and type of equipment, this is typical of a 6MW BESS install and is conducive with our existing Solar and BESS sites)
9.1. Each site will be comprised of six (6) Tesla Megapack MP2XL 4hr (C012 cell spec) BESS units for a total Nameplate System power of 6,255 kW and 25,020 kWh
9.2. Each site will have two (2) medium-voltage pad-mount transformers; final specs to be provided by the EPC

10. **ESS Unit;** ESS Unit meet the requirements below, collectively "**ESS Unit Capabilities**."
10.1. **Guaranteed PMAX**: of 6 MW per site of charging and discharging capability as measured at the Point of Delivery, and as may be adjusted pursuant to Section 15.3
10.2. **Guaranteed ESS Capacity:** discharge ESS at Guaranteed PMAX for Four (4) consecutive hours; starting at the Maximum State of Charge and ending at the Minimum State of Charge
10.3. **Guaranteed ESS Roundtrip Efficiency:** 87.1%; ESS designed for annual ESS Roundtrip Efficiency degradation < 0.5%
10.4. **Guaranteed Discharge Ramp Rate** of Guaranteed PMAX per second measured between 85% State of Charge and 15% State of Charge representing the maximum rate that the ESS can change its output power
10.5. **Guaranteed Charge Ramp Rate** of Guaranteed PMAX per second measured between 15% State of Charge to 85% State of Charge representing the maximum rate that the ESS can change its input power
10.6. **Guaranteed System Latency**: <1 second
10.7. **Guaranteed Frequency Response Capability** of Guaranteed PMAX/0.1Hz
10.8. **Capability to support Ancillary Services** in accordance with the system design and ESS Operating Restrictions, or as otherwise agreed by the Parties in writing

11. Appropriately sized Auxiliary Transformer
11.1. To be specified by the EPC

12. Appropriately Sized Auxiliary Panelboard
12.1. To be specified by the EPC

13. Two Cubical Pad-Mount Switchgear and Enclosure
13.1. Housed in a Conditioned Walk in Enclosure
13.1.1. With sufficient room for 2 Racks of Comms/Metering equipment
13.1.2. With Dual Redundant HVACs
13.1.3. See example single line and plan.
13.2. 15KV, 1200A, 40kA, Breaker

13.2.1. With interlock
13.3. Necessary Protective Relay (SEL 751)
13.4. Necessary Dual Redundant Revenue Grade Meters
13.4.1. SEL 735 Primary Meter
13.4.2. SEL 735 Secondary Meter
13.4.3. With Battery back-up
13.4.4. Per PNM interconnection Metering Standard Rev8
13.5. Necessary Dual Redundant Current Transformer
13.5.1. 1 Set Primary
13.5.2. 1 Set Secondary
13.5.3. Per PNM interconnection Metering Standard Rev8
13.6. Necessary Potential Transformer
13.6.1. Wound PTs, Per PNM interconnection Metering Standard Rev8
13.7. Necessary Dual Redundant Communications Equipment
13.7.1. Primary RTU (Orion MX)
13.7.2. Secondary RTU (Orion MX)
13.7.3. Two Network Switches (Cisco 3300)
13.7.4. 1 Fiber Patch Panel
13.7.5. With Battery Backup
13.8. Necessary GPS Time Clock (SEL 2488,2407 or SEL equivalent)
13.9. Necessary Circuit Protection
13.10. Necessary Surge Arrestors
13.11. Necessary Switchgear thermostats and heaters
13.12. Door Alarms, Temperature Alarms, Smoke Alarms
13.13. Distribution Panel
13.13.1. All house loads (lighting HVAC, Batt Chargers, etc.) are provided by an exterior 240v Power source by means of an appropriately sized distribution panel.
13.13.2. Control Power Transformer not necessary.

14. All necessary Conduit, Conductors, Fiber, Construction Materials, Consumables, and all other balance of material to complete the installation to the POI.

15. **Point of Interconnection:** The Point of Interconnection (POI) shall be at an owner Installed pad mount switchgear between the Existing PV Switchgear (PVCS) Enclosure and the Site Intellirupter. EPC shall be responsible for trenching and installing conduit and MV conductors to this location. PNM shall be responsible for the installation of the SwitchGear and final termination of the conductors.

16. **Communications from the Existing PV SwitchGear Enclosure:** EPC is responsible for trenching and installing conduit and Fiber Communications from the new BESS SwitchGear Building to the Existing PV SwitchGear Enclosure

17. **Distribution Power:** The BESS SwitchGear enclosure will be powered by a “utility drop” distribution power source furnished by contractor. EPC shall trench, lay conduit, and pull conductors to the distribution power source

18. **Electrical Testing:** The EPC shall hire a third-party NETA accredited Testing Company to test all electrical components, including but not limited to: Contactors, Circuit Breakers, LV & MV Electrical Equipment, Liquid-Filled Transformers, Instrument Transformers, Switches, Meters, Relays, Wires/Conductors and functional testing of the Switchgear Breakers. Testing Company will brief the owner on ongoing testing status and findings. Testing company reports will be provided to owners prior to commissioning equipment.

Exhibit A-1: Contractors Statement of Work

19. **Owner Supplied Equipment:** The owner will supply and install the Pad Mounted Switch at the POI and the "utility drop" 240v transformer. The EPC shall be responsible for all other equipment.

20. **Temp and distribution power**: Temp power and distribution power Is responsibility of contractor. The contractor shall arrange for the new service delivery on PNM's behalf in a manner that is conducive to the schedule. Contractor will coordinate and arrange for the physical interconnection of the distribution power feed to the site.

PROPOSED DESIGN DELIVERABLES

SITE CIVIL (GRADING & DRAINAGE) ENGINEERING DESIGN DELIVERABLES

1. Civil (G&D) Drawing Deliverables

FORMAT*	30%	90%	IFC / Record	TITLE
PDF	X	X	X	COVER SHEET (SITE LOCATION, SITE-SPECIFIC APPLICABLE CODES, ENGINEER INFO, OWNER INFO, DRAWING INDEX, ETC.)
PDF	X	X	X	DRAWING INDEX
PDF	X	X	X	LEGEND AND SYMBOLS
PDF	X	X	X	NOTES (GENERAL, CONSTRUCTION, ETC.)
PDF	X	X	X	OVERALL SITE PLAN(S)**
PDF	X	X	X	EXISTING CONDITIONS
PDF		X	X	DEMOLITION PLAN(S) (as applicable)
PDF	X	X	X	GRADING & DRAINAGE PLAN(S)
PDF	X	X	X	SITE ROADS PLAN
PDF		X	X	SECTION PLAN VIEW(S)/DETAILS
PDF		X	X	DRAINAGE DESIGN AND DETAILS
PDF	X	X	X	FENCING PLAN(S)
PDF		X	X	FENCING DETAILS
PDF		X	X	LOW WATER CROSSING DETAIL (as applicable)
PDF		X	X	EROSION AND SEDIMENT CONTROL DESIGN AND DETAILS
PDF		X	X	REFERENCES (as applicable)

*** In addition to final PDF submittals, all files shall be provided in their Native format and shall be considered owned by PNM**

*****This sheet shall include a staging plan for material laydown and construction trailers as well as appropriate temporary access to/from those areas in the 60% submittal.***

2. Civil Documentation Deliverables

The expected document submittals list is as shown below in Table No. 1, are typically applicable for each BESS project. All reports are to be submitted in pdf with the associated
native files used to generate the results. The engineering firm shall review the scope of

studies to ensure that project specific needs are met. Final Studies/Reports are to be stamped by the EOR.

Table 1: Civil Engineering Documentation Submittals

Study Title*	**30%**	**90%**	**IFC**
Basis of Design	X		
Hydrology Report	X(Exhibits)	X	X(Final)
SPCC		X	X
SWPPP**		X	X

If significant changes are made during the design progression, the engineering firm will be required to update and resubmit impacted submittals.

****If required by AHJ***

BESS YARD ELECTRICAL ENGINEERING

DESIGN DELIVERABLES

1. BESS Yard Electrical Drawing Deliverables

FORMAT*	30%	90%	IFC/Record	TITLE
PDF	X	X	X	ELECTRICAL COVERSHEET
PDF	X	X	X	ELECTRICAL LEGEND
PDF	X	X	X	SITE PLAN - OVERALL
PDF	X	X	X	SITE PLAN - BESS YARD (DELIVERABLE TO INCLUDE TYPICAL BESS BLOCK LAYOUT ON SITE PLAN OR SEPARATE DRAWING)
PDF	X	X	X	MV ROUTING PLAN(S)
PDF	X	X	X	DC ROUTING PLAN(S) (AS APPLICABLE)
PDF	X	X	X	AUXILIARY POWER DISTRIBUTION EQUIPMENT PHYSICAL LAYOUT
PDF	X	X	X	ONE-LINE DIAGRAM(S) - MV & LV (AC & DC AS APPLICABLE)
PDF		X	X	ONE-LINE DIAGRAM(S) - AUXILIARY POWER DISTRIBUTION
PDF		X	X	CABLE & CONDUIT SCHEDULE(S)
PDF		X	X	PANEL SCHEDULE(S) - AUXILIARY POWER DISTRIBUTION
PDF	X	X	X	GROUNDING PLAN
PDF		X	X	CABLE ROUTING PLAN(S) (BESS LV, MV, FIBER HOME RUNS. INCLUSIVE ALSO OF BESS YARD AUXILIARY POWER DISTRIBUTION)
PDF		X	X	GROUNDING DETAILS
PDF		X	X	TRENCH DETAILS
PDF		X	X	TERMINATION DETAILS – MV & LV
PDF		X	X	ILLUMINATION PLAN & DETAILS

**** In addition to final PDF submittals, all files shall be provided in their Native format and shall be considered owned by PNM**

2. Electrical Documentation Deliverables

Table No. 2 shows the expected studies and document submittals list. All reports are to be submitted in PDF with the associated native files used to generate the results. The engineering firm shall review the scope of studies to ensure that project-specific needs are met. The EOR must stamp IFP and final studies.

Table 2: Electrical Engineering Documentation Deliverables

Document*	**Preferred Software**	**30%**	**90%/IFC**
Basis of Design		X	
Cable Ampacity Study	Cymcap	X	X
Short Circuit study	ETAP	X	X
Load Flow Study (Includes Reactive Power and Energy Loss)	ETAP	X	X
Grounding Study (IEEE 80)	WinIGS		X
Insulation Coordination Study	ETAP OR IEEE		X
Arc Flash Study	ETAP		X
Lightning Risk Assessment	NFPA 780		
Illumination Study	Visual Lighting		

If significant changes are made during the design progression, the engineering firm will be required to update and resubmit intermediate studies.

BESS YARD STRUCTURAL ENGINEERING

DESIGN DELIVERABLES

1. BESS Yard Structural Drawing Deliverables

FORMAT**	30%	90%	IFC/Record	TITLE
PDF	X	X	X	COVER SHEET
PDF	X	X	X	DRAWING INDEX
PDF	X	X	X	LEGEND AND SYMBOLS
PDF	X	X	X	OVERALL SITE FOUNDATION PLAN*
PDF		X	X	DETAILED FOUNDATION PLAN(S)*
PDF		X	X	FOUNDATION LAYOUT WITH TOP OF FOUNDATION (TOC, TOP OF PILE, ETC.) ELEVATION VALUES*
PDF	X	X	X	FOUNDATION SCHEDULE*
PDF		X	X	FOUNDATION AND SUPPORT FRAME/RACK DESIGN DETAILS*
PDF		X	X	SECTION/ELEVATION VIEWS (EQUIP. WITH SUPPORTING RACKS AND FOUNDATIONS) *
PDF		X	X	WALL/FENCING/GATE FOUNDATION AND STRUCTURAL CONNECTION DETAILS
PDF		X	X	STRUCTURAL DETAILS TO ACCOMMODATE ELECTRICAL AND CIVIL DESIGN FEATURES, AS APPLICABLE*

Including as applicable to project but not limited to foundations for the following: BESS equipment, transformers, other electrical equipment, cable trays, communication equipment, fire detection/protection equipment, light poles, wall/fencing and gates with structural connections.

***** In addition to final PDF submittals, all files shall be provided in their Native format and shall be considered owned by PNM**

2. Structural Documentation Deliverables

The expected document submittals list is as shown below in Table No. 3. All reports are to be submitted in pdf with the associated native files used to generate the results. IFP and IFC Structural Calculations documents must be stamped by the EOR.

Table 3: Structural Engineering Document Submittals

Title	Initial*
Basis of design	At inception of design
Structural Calculations	60% submittal

If significant changes are made during the design progression, the engineering firm will be required to update and resubmit impacted deliverables.

SCADA

DESIGN DELIVERABLES

1. SCADA Drawing Deliverables

FORMAT*	30%	90%	IFC/ Record	TITLE
	~3-4 weeks post Electrical Submittal			
PDF	X	X	X	COVER SHEET
PDF	X	X	X	DRAWING INDEX
PDF	X	X	X	LEGEND AND SYMBOLS
PDF	X	X	X	GENERAL NOTES
PDF	X	X	X	NETWORK DIAGRAM
PDF	X	X	X	PLANT COMMUNICATIONS PLAN
PDF	X	X	X	SCADA RACK LAYOUT
PDF	X	X	X	FNE LAYOUT
PDF	X	X	X	SCADA RACK WIRING DIAGRAM
PDF	X	X	X	FNE WIRING DIAGRAM
PDF	X	X	X	TERMINATION DETAILS
PDF	X	X	X	MET STATION DETAIL (PV ONLY)

****Actual drawing titles/names and organization may vary from SCADA vendor to vendor, but overall content shall align.***

2. SCADA Documentation Deliverables

The expected submittals list is as shown below in Table No. 4.

Table 8: SCADA Documentation Deliverables

Deliverable	Initial**
Equipment Datasheets	90%
Equipment IP Addressing	90%
Master Points List*	90%
Testing and Commissioning Plan	IFC

Incorporates 3rd party points as needed

****If significant changes occur during design progression, updates to impacted documents shall be submitted accordingly.***

EXCLUSIONS*

DESIGN DELIVERABLES

NERC Studies

Initial Geotechnical Investigation

Operations SPCC (Post COD)

Secondary Oil Containment

Above exclusions can be incorporated in Gridworks scope upon request, at an additional price

EXHIBIT C PERMITS

The sites are fully owned by PNM and have existing Permits for the Solar Generation equipment. The contractor shall seek to modify (and be responsible for the modification there of) the existing site use permits for the addition of the battery equipment at the sites. This is pursuant to the contractor maintaining a footprint of the new BESS less than ¾ of an acre per Exhibit A-1. By keeping the new BESS additions below ¾ acres, the requirement for SWPPP and Dust permits is eliminated. If contractor cannot keep disturbed land to below ¾ acres, contractor will be required to pursue the necessary permits. PNM shall authorize the contractor to be its agent for any required applications regarding the Site Use Modification or otherwise.

Site Use Modifications will require submittals such as (but not limited to) grading and drainage plans, site plans, elevation plans, and other information and documentation that the contractor shall provide as part of the overall engineering and permitting effort.

Owner has successfully implemented this permitting approach with the first two Dist Battery sites in Bernalillo and Valancia counties and believes it is the most viable option that does not require any significant permitting. However, if any of the Authorities having Jurisdiction require any Archaeological / Biological studies, SWPPPs, Fugitive Dust, Grading, Fuel Storage, Access, Trailer, NPDES, or other Permits of any kind, it will be incumbent on the contractor to pursue such permits as an Agent of PNM.

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EXHIBIT D

SAFETY MANUAL

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EH&S MANUAL

Affordable Solar Installation, Inc., DBA Gridworks
4840 Pan American E Fwy NE
Albuquerque, NM 87109

Original Draft Date - May 13, 2020

Policy Revisions

Original Policy Name	Rev Date	New Policy Name/#	Location/Link
LOTO	2/23/22	LOTO	Page 112 this document
Drugs and Alcohol	5/4/22	Drug and Alcohol Policy #009	Gridworks EHS Manual - Drug-Alcohol Policy Rev4 FINAL.pdf
Modified Duty for Work Related Injuries (formerly pg. 12)	5/4/22	Return to Work Policy #035	Gridworks EHS Manual - Return To Work Policy Rev2 FINAL.pdf
NEW POLICY	5/4/22	Stop Work Authority #039	Gridworks EHS Manual - Stop Work Authority FINAL.pdf
Employee Warning Notice for Safety Violations & Form (formerly pg. 15-17)	5/4/22	Disciplinary Policy for Safety Violations #007	Gridworks EHS Manual - Disciplinary Policy for Safety Violations FINAL.pdf
SAFETY FIRST REWARDS PROGRAM (formerly pg. 105)	N/A	Policy Eliminated per OSHA LOI	N/A
Incident Reporting	5/5/22	Same	Policy updated in this document
COVID Response Policy	5/5/22	Same	Policy updated in this document

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Affordable Solar Installation, Inc., DBA Gridworks

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Affordable Solar Installation, Inc., DBA Gridworks

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar Installation, Inc., DBA Gridworks

Gridworks Commitment to Safety

Employees, contractors, and guests:

Affordable Solar Installation, Inc. does business (DBA) as Gridworks; all references to Affordable Solar and/or Gridworks in our EH&S policies are all to be treated as the same.

At Gridworks our goal is to conduct business responsibly and to protect the health and safety of our employees, contractors, visitors, and to protect the environment. We are committed to continuous improvement of our environmental, health, and safety (EH&S) performance throughout our operations.

Although creating a safe workplace begins with our management team, it involves every employee and contractor we have. We need to work together to achieve the common goal of an accident and injury free workplace.

As our commitment to safety and the environment, we review our safety policies often and revise them as our company grows and expands operations. We in the process of reviewing all our EH&S policies and revising them. As we do that, we will document the change(s) on the first page of this document.

The following document contains the majority of our EH&S policies and should be combined with the updated EH&S polices listed on Page 1 of this document; together they encompass the entire EH&S manual of Gridworks.

Best regards,

Amy Gants, Director of EH&S
amy.gants@gridworks.energy
307-231-0025

Gridworks' employees: Please use the link(s) to get the updated policies on page 1 of this document and include them with this document as our entire EH&S manual. If you have questions regarding a policy in this manual or an updated policy, please reach out to Amy Gants, Director of EH&S.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar Installation, Inc., DBA Gridworks

TITLE: BASIC SAFETY PRINCIPLES AND RULES, POLICY 001

PURPOSE: The information in this policy states the basic safety principles and safety rules that are to be followed by all Affordable Solar employees.

SCOPE:

The information in this policy applies to all Affordable Solar employees on how to work safely, provide a safe workspace and general safety practices.

RESPONSIBILITY:

Affordable Solar believes that accidents can be prevented, and that employees and property can be protected from controllable hazards. Employees are required to comply with the basic safety principles and rules set forth by Affordable Solar.

POLICY/PROCEDURE:
To reduce any injury potential to employees, our business partners, and visitors, Affordable Solar requires that employees follow basic safety and accident prevention principles and rules:

1. Report any injury to your supervisor immediately.
2. Wear proper PPE.
3. Wear a uniform consisting of a shirt with at least a 4" sleeve and denim pants.
4. Use safe lifting techniques.
5. Ask for help if an object is too heavy.
6. Only authorized personnel may use material handling devices and equipment.
7. Follow forklift and heavy equipment safety rules.
8. Maintain good housekeeping. Keep work area clean and clutter free.
10. Never make changes on equipment to bypass safety devices.
11. Make sure that electrical tools are properly grounded and that no electrical hazard exists from standing water.
12. Horseplay is prohibited.
13. Smoking is allowed only in authorized areas.
14. Use approved ladders to climb.
16. Refrain from use of narcotics and alcohol in compliance with company policies.
17. Identify the location of the first aid kit.
18. Locate fire evacuation routes.
19. Observe all safety signs.

Refer to Return to Work Policy #035 before allowing injured employees to return to work

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TITLE: INCIDENT REPORTING, POLICY 002

PURPOSE: The purpose of this procedure is to establish a standard system for the REPORTING of incidents involving Affordable Solar property, equipment, and employees.

REPORTS will be conducted for the following reasons.

- Injury/First Aid: incidents involving employee injury.
- Equipment/Operational: incidents involving material handling equipment (forklifts, front-end loaders, cranes, tuggers, etc.).
- Environmental: incidents involving hazardous material spills or releases (hydraulic fluid spill, Freon release, etc.).
- Vehicular: incidents involving motor vehicles (rental cars and commercial vehicles used for work).
- Fire.
- Vandalism and Theft.
- Near Miss: incidents in which an injury or adverse outcome was possible but did not occur.
- Incidents involving non-Affordable Solar property, equipment, and/or personnel.

SCOPE: The information in this policy applies to all Affordable Solar Employees, Management, supervisors, or designee, including the Safety department.

RESPONSIBILITY:

- Employees are responsible for reporting all work-related incidents to their supervisor immediately.
- The Supervisor or Designee is responsible for a follow-up action regarding unsafe conditions or unsafe actions of an employee.
- The Supervisor or Designee is responsible for notifying their Manager and the Safety Dept. immediately.
- The Supervisor or Designee is responsible for the completion of the incident report within 24 hours. The Supervisor or Designee must ensure that the incident report reaches Safety Dept.
  within 24 hours following the incident.
- The onsite supervisor or designee is responsible for arranging transportation for any injured person to the nearest Concentra clinic or other approved heath care facility.
- In the event of an emergency, call 911 for EMS.

PROCEDURE:

In case of emergency-dial 911

- Employees are to report all identified unsafe conditions, unsafe actions, and work-related incidents to their supervisor as soon as safely possible.
- Employees are to report all work-related incidents resulting in first aid or injury to their Supervisor immediately. Failure to report in incident may result in the denial of claims under workman's comp law.
- Employees must report all near misses to their supervisor immediately. Near misses identify symptoms of bigger problems and must be corrected before an injury or property damage occurs.
- The Supervisor or Designee will notify the Manager and Safety Dept of all work-related incidents immediately.
- The Supervisor will complete an initial incident report with input from employee involved in the incident. **(Appendix A).**

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- For incidents involving employee injury, follow the steps found on the Emergency flow chart form **(Appendix B)** posted and in site plans.
- For incidents involving injury, the Safety Dept will notify the workers' compensation insurance carrier and obtain a claim number.
- Employees needing treatment for an injury shall be directed to the closest OCC-MED facility for evaluation. **For non-life-threatening injuries, employees must be brought to the nearest Concentra occupational health clinic. Questions about where they are should be directed to Amy Gants, director of EH&S or Angela Valdez, HR.**
- For incidents involving injury, the supervisor, or designee is required to document the occurrence, even if the injured party refuses treatment at that time.
- Violation of any item of this policy will result in a disciplinary action up to and including termination.

APPENDICES:

Appendix A – Affordable Solar Initial Accident/Incident Report
Appendix C – Witness Statement
Appendix D – Affordable Solar Initial Damage/Environmental Report

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Appendix A

Employee Initial INJURY Report

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FOR DOCUMENTING AN INCIDENT INVOLVING INJURY TO PERSON(S) DATE_____

Person filling out the report	Report Number_____
Employee name	Employee ID
Position	Supervisor
Phone number	Job Name

Who was injured?
Name of injured person (IP)
Position of IP (IE, laborer, supervisor).
Supervisor of IP.
Phone number of IP.
Address of IP.
Status of IP as of this report?
Who was notified of this report?

Mechanics of injury
Is this an automobile injury?
What task was being performed at the time of injury?
What location did the injury happen at?
What equipment was involved in the injury?
Witnesses with phone numbers.
Witnesses Cont.
Was any property damaged?

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Description of incident

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Sketch of location, related to the incident

Signature Date Signed

Approved Locations:

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- **Concentra Urgent Care Albuquerque Locations**
  - Singer location – 3811 Commons Ave NE Albuquerque, NM. 87109
    Phone-505-345-9599
    Open Monday – Friday 8-5

  - Northpointe – 5700 Harper Dr NE, Albuquerque, NM. 87109
    Phone 505-832-9166 Open
    Monday – Friday 8-5

  - Menaul – 3101 Menaul Blvd NE. Albuquerque, NM. 87107
    Phone 505-842-5151
    Open Monday – Friday 8-5

- **Concentra Urgent Care – Santa Fe, NM**
  - 720 St Michaels Dr STE C, Santa Fe, NM 87505
    (505) 438-9402
    Open Monday – Friday 8-5

New Mexico Employees must go to a ASI/Gridworks approved provider for the first 60 days after an injury.

- **If the injury is life-threatening CALL 911** and have the employee brought to the nearest emergency room for treatment.
  - If the injury was life-threatening and the employee was taken to a nearby hospital, all follow-up visits after release from the hospital must be with a company approved Concentra office for the first 60 days.
- ALL non-life-threatening injuries must be taken to the nearest Concentra occupational health and/or Urgent care clinic.
  - There are several locations in Albuquerque and one in Santa Fe.
  - If you are working closer to El Paso, TX, bring the employee to an El Paso location even if the jobsite is in New Mexico.

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Appendix C

Witness Statement

Name		**DATE:**	
Employee #:		**Location:**	
PHONE:		**Supervisor**	

In your own words please describe the incident.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Note: All investigations are done with one goal in mind, how to protect People and Property from recurring injury, thank you for your help in making Affordable Solar safer for everyone!

Signature _____ **Date** _____

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Appendix D

Initial DAMAGE report

For recording DAMAGE to property with no bodily harm. **DATE_____**

Employee name	Employee ID
Position	Supervisor
Phone number	Job Name

What Item was Damaged?

Were the police called? If yes, Police report number.

Was property belonging to other people damaged?

Describe the property.

Was damage caused by third party?

Was damage due to weather or natural forces?

Was clean up performed of damaged items?

At what location did the damage occur?

What time did the damage take place?

What task was being performed while the damage occurred?

Who was present when damage occurred?

What could be done to prevent the damage from happening again?

Can the damaged item be repaired?

What is needed to replace the damaged item?

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Description of how the damage occurred.

Signature Date

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Sketch of people, place, and things related to the incident

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TITLE: INCIDENT INVESTIGATION, POLICY 003

PURPOSE: The purpose of this procedure is to establish a standard system for the INVESTIGATION of incidents involving Affordable Solar property, equipment, and employees.

INVESTIGATIONS will be conducted for the following reasons.

1. Injury/First Aid: incidents involving employee injury.
2. Equipment/Operational: incidents involving material handling equipment (forklifts, front-end loaders, cranes, tuggers, etc.).
3. Environmental: incidents involving hazardous material spills or releases (hydraulic fluid spill, Freon release, etc.).
4. Vehicular: incidents involving motor vehicles (rental cars and commercial vehicles used for work).
5. Fire.
6. Vandalism and Theft.
7. Near Miss: incidents in which an injury or adverse outcome was possible but did not occur.
8. Incidents involving non-Affordable Solar property, equipment, and/or personnel.

SCOPE: The information in this policy applies to all Affordable Solar Management, Supervisors, or Designee, oversight shall be managed by the ES&H Department.

RESPONSIBILITY:

- Management shall direct all personnel to participate and assist with any investigation, stressing that integrity and honesty is expected during the process.
- The Supervisor or Designee will be responsible for all follow-up actions resulting from an investigation.
- The Supervisor or Designee is responsible for notifying the ES&H department of any near miss situations within 24 hours of the event.
- The Supervisor or Designee is responsible for the completion of the incident report within 24 hours. The Supervisor or Designee must ensure that the incident report reaches Safety Dept. within 24 hours following the incident.
- All investigations shall be completed within a timely manner to allow for discussion, action items, and resolution as needed.

PROCEDURE:

In case of emergency-dial 911

- Employees are to report all identified unsafe conditions, unsafe actions, and work-related incidents to their supervisor as soon as safely possible.
- Employees are to report all work-related incidents resulting in first aid or injury to their Supervisor immediately. Failure to report any incident may result in the denial of claims under workman's comp law.
- Employees must report all near misses to their supervisor immediately. Near misses identify symptoms of bigger problems and must be corrected before an injury or property damage occurs.
- The Supervisor or Designee will notify the Manager and Safety Dept of all work-related incidents immediately.
- The ES&H person will start the investigation process by informing affected employees of the need for witness statements, site plans, and descriptions of the incident.
- All reporting directives from the reporting policy 002 shall be followed first. This investigation policy 003 is in addition and separate from reporting.

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- No blame shall be assessed during the investigation. The purpose of an investigation shall be to prevent the event from happening again.
- A root cause shall be identified by all investigations. All root causes will be discussed by Management and ES&H. A full report with recommendations for mitigation will follow the discussion as part of the corrective actions.
- Upper Management shall have full access to all investigation documents and statements.
- Supervisors and designees will have ES&H accompanied access to the investigation documents. Non-management employees will not have access to any documents due to release of information restrictions.
- Violation of any item of this policy will result in a disciplinary action up to and including termination.

APPENDICES:

Appendix E – Affordable Solar Investigation Form

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Appendix E

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ACCIDENT/INCIDENT INVESTIGATION REPORT

To be completed by Management, Supervisor, or ES&H personnel.
Turn in this report to ES&H within 24 hours.

GENERAL INFORMATION Complete *this section for all accidents/incidents.*

Injury Equip/Operational Environmental Near Miss Non-Medical Vehicular Fire Theft

Lost Time/# of Days

NAME OF EMPLOYEE			BEGINNING DATE
EMPLOYER (Address if other than Affordable Solar)			ENDING DATE
EMPLOYEE'S BIRTHDATE			CLASSIFICATION
EMPLOYEE'S SUPERVISOR		PHONE #	AGE: SEX: M F
DATE OF ACCIDENT	TIME OF ACCIDENT	LOCATION	CITY
WITNESSES			
WERE PICTURES TAKEN? NO YES	IF YES, HOW MANY?	BY WHOM?	

OPERATIONAL - VEHICULAR/EQUIPMENT INCIDENT INFORMATION ONLY

DRIVER'S LICENSE #	TYPE OF CERTIFICATION	EXPIRATION DATE
VEHICLE/EQUIPMENT #	TYPE OF VEHICLE	LICENSE PLATE #

DID OPERATOR RECEIVE TRAFFIC CITATION? NO YES UNKNOWN

DID THE OTHER OPERATOR RECEIVE TRAFFIC CITATION? NO YES UNKNOWN

WAS THE ACCIDENT PREVENTABLE BY DRIVER/OPERATOR? NO YES

WAS DOD SURPLUS PROPERTY INVOLVED? NO YES IF YES, TYPE: DTID:

WAS NON-DOD SURPLUS PROPERTY INVOLVED? NO YES IF YES, TYPE:

OWNER'S NAME (Non-Affordable Solar property)	OPERATOR'S NAME (Non-Affordable Solar property)	
PHONE #	LICENSE #	STATE

WRITTEN DESCRIPTION OF ACCIDENT/INCIDENT *Who, what, when, where, why and how?*

(B USE ACK OF FORM TO COMPLETE IF NECESSARY)

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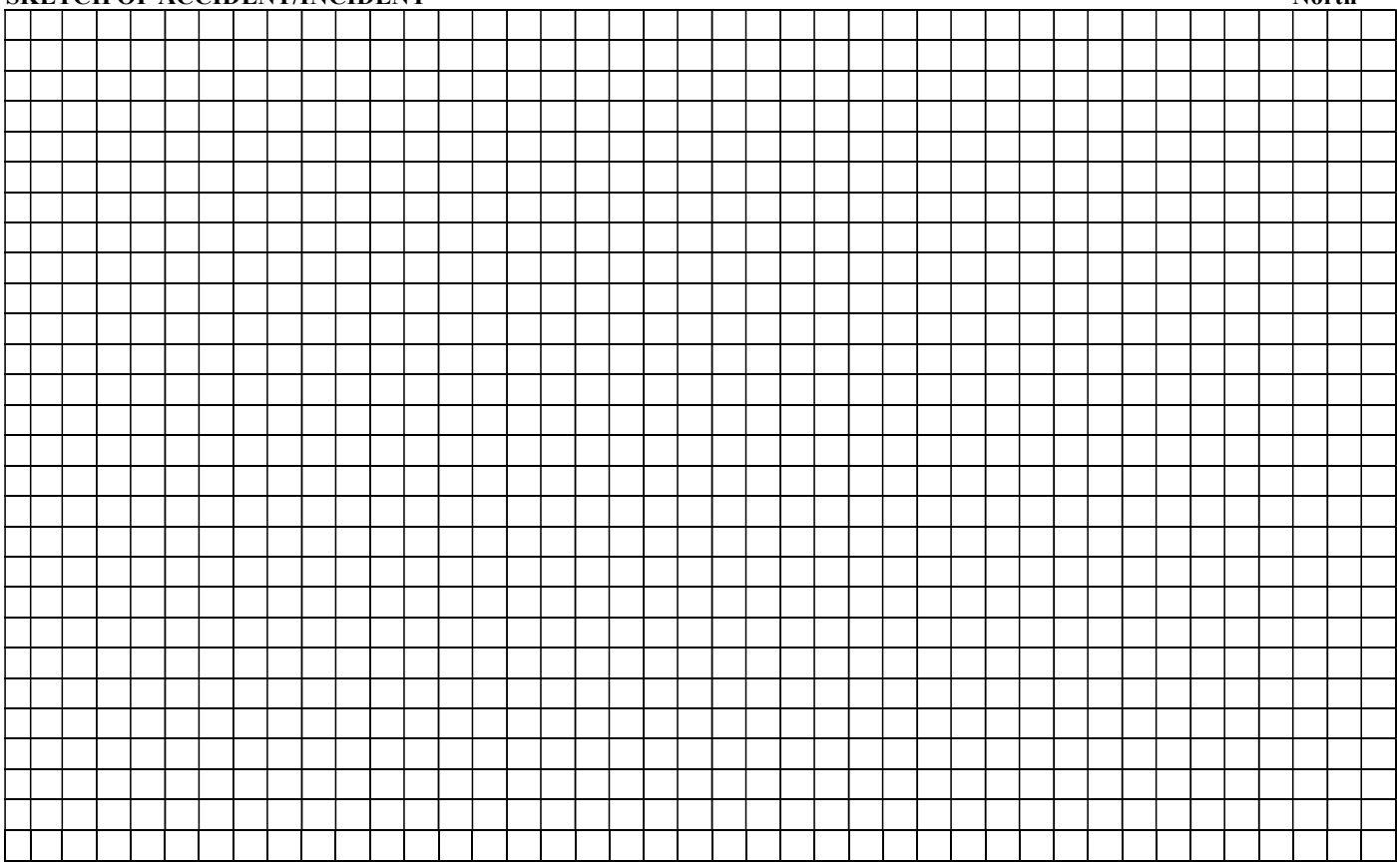
SKETCH OF ACCIDENT/INCIDENT

North



SIGNATURE OF INVESTIGATOR

Printed Name and Title	Signature	Date

COPIES TO: EH&S Manager, and Dept. Manager

Root cause and model used for interpretation.

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Instructions for Completing the Affordable Solar Accident/Incident Investigation Report, Appendix E

I. GENERAL INFORMATION

This form is to be completed by Management only.

1. **Type of Accident:** Place a check in the box corresponding with the correct type of accident.
   - Injury/First Aid: Incidents in which an employee is injured
   - Equipment/Operational: Incidents involving Affordable Solar operated equipment (e.g., forklifts)
   - Environmental: Incidents involving chemical spills or releases
   - Near Miss: Incidents in which an injury or damage to property was avoided but possible
   - Vehicular: Incidents involving personnel vehicles (e.g., rental cars)
   - Fire: Incidents involving fire
   - Theft: Incidents involving theft or attempted theft

   Note: If the Incident is more than one type, then multiple boxes may be checked.

2. **Name of Employee:** The name of the employee involved in the incident. If more than one employee is involved, an incident report must be filled out for each employee.

3. **Employer:** If the employee is an Affordable Solar employee, simply put "Affordable Solar ." If the employee is a temp, then place the temp agency's name and address in this block.

4. Employee's Birth **date:** The date of birth of the involved employee.

5. **Classification:** The job title of the involved employee. For temp employees, put the job title for which they were performing job functions. (e.g., warehouse specialist, etc.)

6. **Employee's Supervisor**: The name of the employee's supervisor. For temporary employees, put the name of the Affordable Solar employee who is acting as their supervisor.

7. **Phone #:** Best Phone number to reach employee at.

8. **Age & Sex:** Age and sex of involved employee.

9. **Date of Accident:** The date in which the incident occurred.

10. **T**ime of accident: The time at which the incident occurred. If the time is estimation, write "approximately" or "approx." in the provided space.

11. **Location:** The Affordable Solar site at which the accident occurred.

12. **City:** The City and State in which the accident occurred.

13. **Witnesses:** List all people who witnessed the incident. Be sure to get written statements from all witnesses listed.

14. **Were pictures taken?** Check whether or not pictures are taken, write who took them, and put down how many were taken. Pictures should always be taken in cases involving injury and property damage. Pictures of chemical spills should be taken **AFTER** the spill is contained (do not put yourself in danger to take pictures).

II. OPERATIONAL-VEHICULAR/EQUIPMENT INCIDENT INFORMATION

1. Driver's License #: If the incident involved an over-the-road motor vehicle, such as a rental car, put down the involved employee's driver's license number.

2. **Type of Certification:** List the type of certification the involved employee has that authorizes him to operate the equipment that was involved in the incident. (For example, if the involved employee was authorized to drive a 15K forklift, place that in this space. This will help in the investigation if the employee was authorized for a 15K but driving a 25K)

3. **Expiration Date:** The expiration date of the type of certification of the involved employee. See #2.

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Instructions for Completing the Affordable Solar Accident/Incident Investigation Report

4. **Vehicle/Equipment #:** The vehicle or equipment number of involved equipment, if applicable.

5. **Type of Vehicle:** The type of vehicle involved in the incident.

6. **License Plate #:** The license plate number of any over-the-road motor vehicles that were involved in the incident.

7. **Did the operator receive a traffic citation?**
   - Yes, if a citation was given to the involved employee by an officer of the federal, state, local authorities.
   - No, if no citation was given or if this question is not applicable to the incident.

8. **Did the other operator receive a traffic citation?** (for incidents involving Affordable Solar personnel and Non-Affordable Solar personnel)
   - Yes, if a citation was given to the other operator by an officer of the federal, state, local authorities.
   - No, if no citation was given or if this question is not applicable to the incident.

9. **Was the accident preventable by driver/operator?** (applies to Affordable Solar employees only)
   - Yes, if evidence shows that steps could have been taken to avoid the incident. (this is **NOT** an opinion question)
   - No, if evidence shows that any steps taken to avoid the incident would have failed.

10. **Was Affordable Solar property involved?**
    - Yes, if the Affordable Solar property was involved in the incident. For the purposes of this report only, sold property is considered Affordable Solar property until it leaves the site.
    - No, if non-Affordable Solar property was involved in the incident.

11. Owner's Name (Non-**Affordable Solar Property)**
12. Operators Name (Non-**Affordable Solar property):** The operator's name of any non-Affordable Solar property that was involved in the incident.

13. **Phone #:** The non-Affordable Solar property owner's phone number.

14. **License #:** The non-Affordable Solar property operator's driver's license number.

15. **State:** The state which issued the driver's license to the non-Affordable Solar property operator.

III. WRITTEN DESCRIPTION OF ACCIDENT/INCIDENT

1. **Who, what, when, where, why, and how?**
   - Write a full description of the incident, making sure all of these questions are answered. Be as specific as possible and use the space provided on the second page if necessary. This space is for the investigator's findings, so written statements should be on separate pages and not written in this section. Questions should be directed to the EH&S Director.

2. **Root Cause(s) of this Accident/Incident**
   - Root cause shines a light on deficiencies that may not be readily noticeable on a day to day basis. By evaluating the entire worksite and all involved, a root cause can be identified, once identified, modifiers and barriers can be put in place to prevent future incidents. Questions should be directed to the EH&S Dept.

3. **Actions Taken, with Completion Dates, to Prevent Recurrence**
   - Detail what steps are being taken to prevent another occurrence of this incident. Give completion dates and responsible parties for all listed actions.

4. **Sketch of Accident/Incident**
   - Sketch the scene to document the "big picture" of how the incident happened.

IV. SIGNATURE OF INVESTIGATOR

1. Once the investigation is completed, print your name and title, then sign and date in the spaces provided.
2. Make sure that copies of the completed investigation are sent to the EH&S Manager and Dept. Manager.

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EH&S OPERATING POLICIES AND PROCEDURES

Affordable Solar

TITLE: MODIFIED DUTY FOR WORK RELATED INJURIES POLICY 004

PURPOSE: to aid workers with recovery or after care following an incident.

Affordable Solar workers' compensation benefit has several goals:

- To provide employees with access to quality medical care for work-related injuries.
- To speed recovery through the use of modified duty and return injured employees to full duty as soon as possible.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:

- Supervisors or Designee will provide modified duty to accommodate return to work restrictions for employees who were injured at work.
- Employees are responsible for obtaining and providing a return to work release from the medical provider before they can return to work.
- Employees are responsible for providing an updated return to work release and physician's notes to the Supervisor and the EH&S Dept. after each visit to the physician during the recovery process.

PROCEDURE:

Employees injured due to a work-related incident will be provided with duties that meets physical limitations established by a physician.

1. The employee must provide the Supervisor or Designee with a return to work release before returning to work. The return to work release may return the employee to work full-duty or modified duty. Modified duty places restrictions on the tasks (e.g., limits on how much you can lift, how long you can sit or stand, use of your hands, etc.) the employee is capable of doing in the course of their work.

2. If an employee is returned to work modified duty, Affordable Solar will make every effort to find work within the restrictions specified by the medical provider.

3. As the employee recovers, the medical provider will periodically evaluate the employee's recovery progress and will update the restrictions. As this occurs, Affordable Solar will match the task with the ability of the employee.

4. During the recovery process, the employee will provide the Supervisor and EH&S Dept. with updated return to work evaluations.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

TITLE: EMPLOYEE SAFETY TRAINING POLICY 005

PURPOSE: To ensure the highest quality of work being performed by continuing to train our employees in the latest safety techniques available.

Employee safety training is an essential element of the Affordable Solar business operation. Employees need basic safety training on the tools, equipment, and skills used to perform their jobs in a safe manner. The intended outcome of employee safety training is a heightened awareness of safety rules and principles that will reduce any potential injury to Affordable Solar employees, customers, and visitors.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:

- EH&S Department will provide, coordinate, and/or moderate employee safety training as deemed necessary based on their safety assessments.
- Supervisor will support and enforce safety training.
- Employees are expected to actively participate in the safety meetings.

PROCEDURE:

1. Supervisor or their Designee will guide new and temporary employees through the Affordable Solar Safety Orientation.
2. Supervisor will complete the Safety Orientation Checklist and place it in the employee file.
3. Supervisor or their Designee will provide safety training for each piece of material handling equipment and or devices that the employee may be required to use.
4. Supervisor or their Designee will conduct safety meetings for all employees.
5. the trainer in charge will document the training on the Safety Training Form and forward it to the ES&H Department.
6. Supervisor will maintain a file of each safety meeting.

APPENDIX:

Appendix F - Safety Training Form

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EH&S OPERATING POLICIES AND PROCEDURES

Affordable Solar

Appendix F

SAFETY TRAINING FORM

Trainer:_____ **Date:**_____

Topic:_____

Attendee Names and Signatures:

These signatures indicate that these employees have completed training in the topic listed above:

Trainer Signature_____

(Attach any training materials used during the session.)

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EH&S OPERATING POLICIES AND PROCEDURES
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TITLE: EMPLOYEE WARNING NOTICE FOR SAFETY VIOLATIONS POLICY 006

Replaced by Disciplinary Policy for Safety Violations #009

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Replaced by Disciplinary Policy for Safety Violations #009

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Affordable Solar
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Appendix G

EMPLOYEE SAFETY VIOLATIONS WARNING FORM

Employee Name: _____Date of Warning: _____

Location: _____

TYPE OF VIOLATION

Failure to follow instructions: _____
Carelessness willful damage to material/equipment: _____
Violation of Company Policy or Procedures: _____
Other: _____

PREVIOUS:

	ORAL	WRITTEN	DATE	BY WHOM
1st Warning				
2nd Warning				

Employer Statement:

Date of Incident: / / Time: am/pm

Employee Statement: I agree /disagree

Action to be taken:

____Warning ____Suspension _____Dismissal ____Other
Consequence should incident occur again:

I have read this Employee Warning Notice and understand it.

Signature of Employee Date

Signature of Supervisor Issuing the Warning Date

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

TITLE: PERSONAL PROTECTIVE EQUIPMENT (PPE) POLICY 007

PURPOSE: To provide an administrative barrier of protection policy instructing employees to use PPE against hazards that cannot be mitigated away fully or are unrecognizable until they pose a risk.

Affordable Solar shall furnish to each of its employees' employment and a place of employment which is free from recognized hazards that can cause death or serious physical harm to its employees. Each Affordable Solar employee shall comply with all applicable occupational safety and health standards and rules, regulations. Therefore, Affordable Solar shall ensure that personal protective equipment (PPE) for eyes, face, head, and extremities is provided, used, and maintained in reliable condition whenever it is necessary by reason of workplace hazard, which may cause injury or impairment of body function through impact or physical contact. This program defines the safety requirements as they pertain to personal protective equipment. Affordable Solar PPE program is written to comply with the OSHA Personal Protective Equipment Standard 29 CFR §1910.132-138 Subpart I.

SCOPE:

This PPE program applies to all Affordable Solar personnel and visitors in applicable facilities and Affordable Solar operations. PPE is designed to protect the employees from health and safety hazards that cannot practically be removed from the work environment. It is the last means of defense. PPE should be used only when the hazards cannot be eliminated through engineering and/or administrative controls.

DEFINITIONS:

- Goggle is a device, with contour-shaped eyecups or facial contact with plastic lenses, worn over the eyes for protection of the eyes and eye sockets.
- Safety Glasses is a protective eyewear with side shields made of thick shatter resistant plastic that shield the eyes from flying debris.
- Hardhat is a rigid device worn to provide protection for the head against impact, flying particles, or electric shock, or any combination thereof, which is held in place by a suitable suspension.
- Suspension – is the internal cradle of the helmet which holds it in place on the head and is made up of headband and crown straps.
- Safety-toe boots/safety boots are durable boots made of leather or rubber that have a composite reinforcement in the toe to protect the foot against falling objects.
- High Visibility Vest is made of highly reflective neon material worn over clothes and used in places where workers need greater visibility due to inclement weather or work in approaching MHE traffic areas.
- Employee – for the purposes of the PPE program an employee is any person who receives compensation for work performed at Affordable Solar assignments.
- Job Hazard Analysis (JHA) is a technique that focuses on job tasks as a way to identify hazards before they occur. The JHA focuses on the relationship between the worker, the task, the tools, and the work environment.
- Personal Protective Equipment (PPE) is designed to protect individuals from workplace hazards, which may cause injury or impairment of body function through absorption, or physical contact (e.g., gloves, eye protection, safety boots, and head protection).

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- Personal Protective Equipment Plan is a written program developed and implemented which sets forth procedures to provide, use and maintain PPE in reliable condition whenever it is necessary by reason of workplace hazard.

1. RESPONSIBILITY:

1.1. Supervisors:

1.1.1. Supervisors and the employee who performs the job shall evaluate anticipated work conditions via a Job Hazard Analysis (JHA) in their respective areas to determine what, if any, PPE is required to protect the worker while performing his/her job duties.

1.1.2. The JHA should be a commonsense approach based on observation of existing work practices, hazards, and knowledge of PPE requirements. EH&S Staff is available to provide technical assistance.

1.1.3. Identification of hazards includes consideration of the following basic hazard categories:

1.1.3.1. Impact
1.1.3.2. Compression (pinch points)
1.1.3.3. Chemical

1.1.4. Once work place hazards have been identified and consideration given to the nature of the hazards and potential for exposure to multiple hazards, the Supervisor or their designate shall make a decision concerning the type of PPE to be selected and purchase the following PPE accordingly:

1.1.4.1. Hard hats
1.1.4.2. High visibility vests
1.1.4.3. Safety glasses
1.1.4.4. Flash protective gear
1.1.4.5. Goggles
1.1.4.6. Gloves

1.1.5. Work boots shall be required at Affordable Solar.

1.1.6. Jobs where exposure conditions have changed shall be re-evaluated by the Site Mangers or their designate and the employee performing the job to determine PPE needs.

1.1.7. Job Hazard Analysis must be performed as follows:

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1.1.7.1. Upon Contract completion, before work begins.
1.1.7.2. Whenever work conditions change, or employee is reassigned to perform other duties
1.1.7.3. On annual basis

1.1.8. Supervisor or their designate and the employee must document JHA in writing using JHA form.

1.1.9. Supervisor or their designate must train employees in the proper use of PPE. (see section # 8 for specific training requirement)

1.1.10. Supervisor must ensure that appropriate PPE is always worn by employees.

1.1.11. Supervisor must review how PPE is issued and keep records to control equipment misuse, and any equipment deficiencies. Once PPE is found to be deficient, it must be taken out of service. Before the employee can resume work, he/she must be issued working PPE that is able to provide the minimum safety protection for the employee.

1.1.12. Supervisor will replace, at no charge to the employee the following provided PPE which is defective or damaged in use:

1.1.12.1. Hard hat
1.1.12.2. Safety glasses
1.1.12.3. Safety Goggles
1.1.12.4 Gloves as required by task
1.1.12.5. High Visibility Vests

1.2. Employees

1.2.1. All Affordable Solar employees at affected areas of operation will be required to understand and properly wear the provided PPE when work assignment or operations present the risk of exposure to observed or potential hazards.

1.2.2. Employees are responsible to inspect the provided PPE each day before the start of their shift. Employees shall notify their Supervisor if, upon inspection the provided PPE is found to be defective or damaged. Employees shall not perform any work duty that requires PPE until the defective or damaged PPE is replaced with properly working PPE.

1.2.3. Employees are responsible for the safekeeping and maintenance of the personal protective equipment.

1.2.4. Employees shall inform their supervisor whenever a need arises to use PPE for which the employee has not received training, or when a condition exists where adequate PPE is not available.

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EH&S OPERATING POLICIES AND PROCEDURES
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1.3. Environmental Health and Safety Department (EH&S)

1.3.1. EH&S shall be responsible for the overall design and administration of the PPE program.

1.3.2. EH&S shall on yearly basis review and evaluate the PPE program and make changes as required.

2. PPE Selection

2.1. Selection of PPE shall be based upon provision of a level of protection greater than the minimum required to protect the exposed employee from the potential or observed hazards.

2.1.1. Eye and Face Protection

2.1.1.1. Where eye and face protection are required the selected protection shall be adequate to protect against machines or operations, which create the risk of eye or face due to physical or chemical agents.

2.1.1.2. The following personnel shall be required to wear safety glasses as means of personal protective equipment:

2.1.1.2.1. All personnel.
2.1.1.2.2. Anyone walking or working in the work area.
2.1.1.2.3. Customers entering the work area.
2.1.1.2.4. All other visiting personnel.

2.1.1.3. The following personnel shall be required to wear goggles and face shields:

2.1.1.3.1. All personnel engaged in demolition saw or asphalt cutting operations.

2.1.1.4. Hazards associated with the potential for flying objects shall utilize eye protection with side shields.

2.1.1.5. Eye and face protection must comply with ANSI Z87.1-1989 (R1998) standards.

2.1.1.6. Personnel who are required to wear safety eyewear and need prescription lenses to conduct their work shall be provided with protective eyewear that can be worn over the employee's prescription lenses

3. Head Protection

3.1.1. Employees working in areas where there is the possible danger of head injury from the impact of falling or flying objects, striking against objects, or any combination of these hazards will be protected by protective hard hats.

3.1.2. The following personnel shall be required to wear head protection:

3.1.2.1. All personnel.
3.1.2.2. Anyone walking or working in the work area.
3.1.2.3. All visiting personnel.

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3.1.3. All head protection shall comply with the specifications contained in ANSI Z89.1-1997.

3.1.4. ANSI Z89.1-1997 breaks protective headwear into the following classes:

3.1.4.1. Class A helmets provide impact, penetration resistance and electrical protection up to 2,200 Volts.
3.1.4.2. Class B helmets provide impact, penetration resistance and electrical protection up to 20,000 Volts.
3.1.4.3. Class C helmets provide only impact and penetration resistance.

Affordable Solar Inc Employees shall use class B hard hats with no exceptions. No other type or designation of hard hat is authorized.

3.1.5. Bump caps are not recognized by OSHA, ANSI or Affordable Solar for general exposure and are not a valid form of head protection under this program.

3.1.6. Hard hats may not be altered in a way that will reduce their efficiency. Typical prohibited alteration include painting, drilling holes in the shell, application of metal jewelry, etc. Hats with these alterations or excessive scratches will be replaced.

4. Foot Protection

4.1. Employees who are exposed to hazards that may cause foot injuries due to falling or rolling objects, objects piercing the sole, wetness, slipping or any combination thereof identified by the JHA, shall be required to use safety footwear.

4.2. All protective footwear shall comply with ANSI Z41-1999.

4.3. The following employees shall be required to wear protective footwear:

4.3.1. All Affordable Solar personnel performing job related duties outside the scope of corporate office setting.
4.3.2. All personnel visiting work area.
4.3.3. Anyone walking through work area.

4.4. All protective footwear shall have the following features to be used on ASI field locations:
4.4.1. Six (6) inch upper height, the boot upper must be over the ankle.
4.4.2. Must have a defined heal with tread for traction and support. No slick bottom boots.
4.4.3. Boots must be in good condition with no rips or tears on the toes, must have good tread and no openings that allow direct penetration to the foot.
4.4.4. If performing a task that requires toe or shank protection it shall be in the form of composite protection. Steel toes and shanks conduct electricity and are not allowed in our profession.
4.4.5. In order to be included in the boot repayment program, the old pair of boots will need to be turned in for conformation that new boots are needed. This does not apply to the first pair for a new hire.

5. Body Protection

5.1. Employees working with chemicals or materials that can cause damage to the skin or that can be absorbed through the skin shall be provided with appropriate protective clothing (i.e. acid aprons for checking water levels on batteries).

5.1.1. Clothing must be suitable for both the weather and the work, and shall include at

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minimum:

5.1.1.1. A shirt with at least a 4" sleeve is required.
5.1.1.2. If working with chemicals, a full length chemical resistant sleeve is required.
5.1.1.2. Full-length trousers in good condition with no holes, tears, or rips. No sagging or low riding pants that may allow for contamination.

6. Hand Protection

6.1. Hand protection must be selected, provided and worn when employees are exposed to hazards such as skin absorption of harmful substances or chemical burns, energized electrical equipment and sharps.

6.2. The Job Hazard Assessment will define when hand protection must be used, and the type of glove required.

7. High Visibility Vests

7.1. High visibility vests have been identified as an additional form of protection necessary at Affordable Solar. The minimum level of vest shall be a level 3 vest with reflective markings.

7.2. The following personnel shall be required to wear high visibility vest when performing work related duties at all job sites:

7.2.1. Affordable Solar operations employees, sub-contractors, temporary personnel, visitors, (any personnel on ASI project site)

8. Training

8.1. The Supervisor or designate shall provide training/retraining to each employee who is required to use PPE for his/her job function.

8.1.1.Each employee shall be trained to know and understand the following:

8.1.1.1. When is PPE necessary?
8.1.1.2. What PPE is necessary?
8.1.1.3. How to don or put on the PPE.
8.1.1.4. How to doff or remove the PPE.
8.1.1.5. Limitations of the PPE.
8.1.1.6. Proper maintenance of PPE.
8.1.1.7. Useful life of PPE.
8.1.1.8. Proper disposal of PPE.

8.2. Each employee required to wear PPE must demonstrate his/her understanding of the training elements listed above, before being allowed to perform work requiring the use of PPE.

8.2.1. The Supervisor or their designate must provide training as follows:

8.2.1.1. Upon an employee's initial assignment to a work area or an activity that requires PPE.
8.2.1.2. When changes in the workplace render previous PPE training obsolete.
8.2.1.3. When there are changes to the selected types of PPE, which render previous training obsolete.

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8.2.1.4. When Employees no longer demonstrate proficiency with their assigned PPE.

11. Recordkeeping

11.1. The Supervisor or designate must verify through written certification that all areas under his/her jurisdiction have been assessed for hazards requiring PPE. This certification shall contain the location of the assessment, the date and the job title of the job assessed.

11.2. The Supervisor or designate shall verify that each employee who is required to wear PPE, has received and understood the required training listed in Section # 8.

11.3. Training Records shall include:

11.3.1. Date of training session
11.3.2. Site name and location
11.3.3. Employee Job Title
11.3.4. Employee Signature
11.3.5. Supervisor Signature

11.4. Training records shall be maintained at each site and available for inspection.

12. Appendices:

Appendix H - Job Hazard Analysis
Appendix I - Personal Protective Equipment Notification/Training acknowledgment

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar
HAZARD ASSESSMENT CERTIFICATION FORM

APPENDIX H

Date:	Site name:
Assessment Conducted by :(supervisor name)	
Task Name: (print)	
Task related to which construction point? (print)	

Hazard Assessment and Selection of Personal Protective Equipment

1. **Overhead Hazards** –

   Hazards to consider include:
   - Suspended loads that could fall
   - Overhead beams or loads that could be struck
   - Sharp objects or corners at head level
   - Crane operations

Hazards Identified:

Head Protection

Hardhat	Yes ☐	No ☐
○ **Type B** (impact and penetration resistant, plus high-voltage electrical insulation)		

2. **Eye and Face Hazards** –

   Hazards to consider:
   - Chemical splashes
   - Dust
   - Projectiles
   - Scrap yard operations

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Hazards Identified:

Eye Protection

Safety Glasses	Yes ☐	No ☐
Safety Goggles	Yes ☐	No ☐
Face Shields	Yes ☐	No ☐

3. **Hand Hazards** –

Hazards to consider
- Chemical

Hazards Identified:

Hand Protection

○ **Standard leather or foam palm**	Yes ☐	No ☐
○ **Impact resistant**	Yes ☐	No ☐
○ **Chemical Resistant**	Yes ☐	No ☐

4. **Foot Hazards** –

Hazards to consider include:
- Heavy material handled by employees
- MHE operation
- Sharp edges pr points (puncture risk)
- Slippery conditions
- Wet Conditions

Hazards Identified:

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Foot Protection

Safety Shoes	Yes □	No □
Types:		
☒ Toe Protection	□	□
☒ Metatarsal protection	□	□
☒ Puncture Resistant	□	□
☒ Electrical Insulation	□	□
☒ Other (Explain)	□	□

5. <u>Body protection</u>

Hazards to consider include:
☒ Low visibility

Hazards Identified:

Body protection

High Visibility Vest	Yes □	No □

6. <u>Other Identified Safety and/or Health Hazards</u> –

Hazards Identified:

Recommended Protection:

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EH&S OPERATING POLICIES AND PROCEDURES
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APPENDIX I

APPENDIX I

PERSONAL PROTECTIVE EQUIPMENT TRAINING
CERTIFICATION

Site _____ Date _____

Employee Name _____

Employee Job Title _____

Note: A Job Hazard Analysis for the Job Title and Site(s) for this employee must be attached.

EMPLOYEE:

I hereby certify that I have been trained by my supervisor on the hazards associated with my job. My supervisor has instructed me in the following areas in accordance with OSHA Standard 1910.132:

- What PPE is necessary
- When PPE is necessary
- How to properly put on, remove, adjust, and wear PPE
- Limitations of PPE
- The proper care, maintenance, useful life, and disposal of the PPE

_____ _____
Employee Signature Date

SUPERVISOR:

I hereby certify that I have trained the above-named employee on the hazards associated with the requirements and duties of his/her job. I also certify that I have instructed the above-named employee in the following areas in accordance with OSHA Standard 1910.132:

- What PPE is necessary
- When PPE is necessary
- How to properly put on, remove, adjust, and wear PPE
- Limitations of PPE
- The proper care, maintenance, useful life, and disposal of the PPE

_____ _____
Supervisor Signature Date

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Affordable Solar

I, _____ (Supervisor name) certify that the above inspection was performed to the best of my knowledge and ability, recommended PPE is based on the hazards present at this time.

_____ (Supervisor Signature) _____
(Date)

I, _____ (Emp. Name) certify that the above inspection was performed and the job hazards and PPE requirements were explained to me in detail. I have been given the chance to ask questions, and the answers are to my satisfaction.

_____ (Emp. Signature) _____
(Date)

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

TITLE: RESPIRATORY PROTECTION PROGRAM POLICY 008
(OSHA 29 CFR 1910.134; ANSI Z88.2-1992)

PURPOSE: The purpose of this program is to ensure that proper respiratory protection is provided and used, when necessary, to protect the health of all employees from respiratory hazards. Respirators are to be use only where the engineering control of inhalation hazards is not feasible, while engineering controls are being installed, or in emergencies.

SCOPE:

The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:

The EH&S department is responsible for overall implementation, management and support of out Respiratory Protection Program. This includes:

1. Procedures for selecting respirators for use in the workplace;
2. Medical evaluation of employees required to use respirators;
3. Fit testing procedure for tight fitting respirators;
4. Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;
5. Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding and otherwise maintaining respirators;
6. Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere supplying respirators;
7. Training of employees in the reparatory hazards to which they are potentially exposed during routine and emergency situations;
8. Training of employees in the proper use of respirators, including putting on and removing them, any limitations on their use and their maintenance; and
9. Procedures for regularly evaluating the effectiveness of the program.

The employees who use respirators are responsible for:
1. Using them in accordance with the instructions and training received;
2. Properly inspecting respirators before each use;
3. Cleaning and storage after each use;
4. Immediately reporting any malfunction or defect of their respirator to their supervisor or the company safety director or designee;
5. Ensuring that facial hair, which can come between the sealing surface of the face piece and the face or that interferes with the valve function, is not present.

Selection of respirators:
The Director of the EH & S department or designated person will select only respirators that are certified by the National Institute for Occupational Safety and Health (NIOSH) which must be used in compliance with the conditions of its certification.

The Director of EH & S department or designee will identify and evaluate the **respiratory**

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hazards in the workplace, including a reasonable estimate of employee exposures and identification of the contaminant's chemical state and physical form. Where exposure cannot be identified or reasonably estimated, the atmosphere shall be considered immediately dangerous to life or health (IDLH).

Respirators for IDLH atmospheres:

1. Approved respirators:

A. Full face piece pressure demand self-contained breathing apparatus (SCBA) certified by NIOSH for minimum service life or thirty minutes, or B. Combination full facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

2. All oxygen-deficient atmospheres (less than 19.5% 02 by volume) shall be considered IDLH. IDLH conditions require an oxygen supplying respirator such as an SCBA.

Respirators for non-IDLH atmospheres:

(1) respirator is equipped with an end-of-service life indicator (ESLI) certified by NIOSH for the contaminants, or (2) if there is no ESLI appropriate for conditions of employer's workplace, the employer implements a change schedule for canisters and cartridges that will ensure that they are changed before the end of their service life and describes in the respirator program the information and data relied upon and basis for the change schedule and reliance on the data.

For **protection** against particulate ASI shall provide:

An air-purifying respirator equipped with high efficiency particulate air (HEPA) filters certified by NIOSH under 30 CFR Part 11 or with filters certified for particulates under 42 CFR Part 84; or C. An air-purifying respirator equipped with any filter certified for particulates by
NIOSH for contaminants consisting primarily of particulates with mass median aerodynamic diameters of at least 2 micrometers.

E. Medical Evaluation

EH& S department must provide a medical evaluation to determine employee's ability to use a respirator before fit testing and use.

EH& S department must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire (information required is contained in mandatory Appendix C).

EH&S department must obtain a **written** recommendation regarding the employee's ability to use the respirator from the PLHCP.

Additional medical evaluations are required under certain circumstances,

e.g.: Employee reports medical signs or symptoms related to ability to use

respirator; PLHCP, program administrator, or supervisor recommends

evaluation;

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Information from the respirator program, including observation made during fit testing and program evaluation, indicates a need; or Change occurs in workplace conditions that may substantially increase the physiological burden on the employee.

Annual review of medical status is not required.

Fit Testing

All employees using a negative or positive pressure tight-fitting facepiece respirator must pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT). Fit testing is required prior to initial use, whenever a different respirator facepiece is used, and at least annually thereafter.
An additional fit test is required whenever the employee reports, or the employer or PLHCP makes visual observations of, changes in the employee's physical condition that could affect respirator fit (e.g. facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight).

The fit test shall be administered using as OSHA-accepted QLFT or QNFT protocol, as contained in mandatory Appendix A to 29 CFR 1910.134.

Use of Respirators

Tight-fitting respirators shall not be worn by employees who have facial hair or any condition that comes between the sealing surface of the facepiece and the face or that interferes with valve function.

Personal protective equipment shall be worn in such a manner that does not interfere with the seal of the facepiece to the face of the user.

Employees shall perform a user seal check each time they put on a tight-fitting respirator using the procedures in mandatory Appendix B-1 (29 CFR 1910.134) or equally effective manufacturer's procedures.

Procedures for respirator used in IDLH atmosphere are stated. In addition to these requirements,
interior structural firefighting requires the use of SCBAs and a protective practice known as "2- in/2-out"--at least two employees must enter and remain in visual or voice contact with one another at all times, and at least two employees must be located outside. (Note that this is not meant to preclude firefighters from performing emergency rescue before an entire team is assembled.)

Maintenance and Care Respirators

Respirators must be cleaned and disinfected using the procedures in Appendix B, or equally effective manufacturer's procedures at the following intervals:

1. As often as necessary to maintain a sanitary condition for exclusive use respirators.
2. Before being worn by different individuals when issued to more than one employee.
3. After each use for emergency use respirators and those used in fit testing and training.

Identification of Filters, Cartridges, and Canisters

All filters, cartridges and canisters used in the workplace must be labeled and color coded with the NIOSH approved label.

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The label must not be removed and must remain legible.

Training and Information

The EH &S department must provide effective training to respirator users, including:

1. Why the respirator is necessary and how proper fit, use, or maintenance can compromise the protective effect of the respirator.
2. Limitations and capabilities of the respirator.
3. Use in emergency situations.
4. How to inspect, put on and remove, use and check the seals.
5. Procedures for maintenance and storage.
6. Recognition of medical signs and symptoms that may limit or prevent effective use.
7. General requirement of the Respirator Standard (29 CFR 1910.134) Training required prior to initial use, unless acceptable training has been provided by another employer
within the past 12 months.

Retraining required annually and when:

1. Workplace conditions change.
2. New types of respirators are used, or
3. Inadequacies in the employee's knowledge or use indicates need. 4. The basic advisory information in Appendix D, 29 CFR 1910.134 shall be provided to employees who wear
respirators when their use is not required by workplace atmospheric conditions or by the employer.

Program Evaluation

The EH & S Department must conduct evaluation of the workplace as necessary to ensure proper implementation of the program and consult with employees to ensure proper use.

Record keeping

Records of medical evaluation must be retained and made available per 29 CFR

1910.1020. A record of fit tests must be established and retained until the next fit test.

A **written** copy of the current program must be

retained.

Appendix D to Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard.

Respirators are an effective method of **protection** against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and **protection** for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does

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not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirator's limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use somebody else's respirator.

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EH&S OPERATING POLICIES AND PROCEDURES
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PROCEDURES Affordable Solar

TITLE: HAZARD COMMUNICATION (HAZCOM) PLAN
YOUR RIGHT TO KNOW POLICY 009

REFERENCE: 29 CFR 1910.1200

PURPOSE: The Occupational Safety and Health Administration (OSHA) require employers to develop a written plan to communicate with employees about the hazards of particular chemicals used in the workplace.

SCOPE:
The information in this Hazard Communication plan applies to all Affordable Solar employees who may be exposed to hazardous materials under normal workday conditions or during an emergency situation.

This written hazard communication plan is located in the Affordable Solar office and available for review by Affordable Solar employees.

RESPONSIBILITY:
It is the responsibility of Affordable Solar to:

- Provide work sites with a copy of the Affordable Solar Hazard Communication Plan
- Provide hazard communication training to new employees
- Verify that an annual chemical inventory is performed
- Verify that Material Safety Data Sheets are available for employee review

It is the responsibility of the Supervisor to:

- Complete the annual chemical inventory
- Update the Material Safety Data Sheets
- Select PPE to protect employees
- Require employees to use selected PPE
- Inform and train employees

It is the responsibility of the employee to use hazardous materials in a safe manner and use the PPE provided to them.

HAZARD COMMUNICATION PLAN

Table of Contents

1. Overview
2. Container Labeling
3. Material Safety Data Sheets (MSDS)
4. Employee Information And Training
5. Inventory List Of Hazardous Chemicals
6. Non-Routine Tasks
7. Outside Contractors

1. OVERVIEW

The Hazard Communication Standards requires chemical manufacturers and importers to assess the hazards of the chemicals, which they produce or import. Affordable Solar must in turn provide information to its personnel about the hazardous chemicals to which employees are exposed by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training.

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2. CONTAINER LABELING

The chemical manufacturer, importer, or distributor is required to have each container of hazardous chemicals leaving their workplace labeled, tagged or marked with the following information:

- Identity of the hazardous chemical;
- Appropriate hazard warnings, and
- Name and address of the chemical manufacturer, importer, or other responsible party.

Employees are not to work with any substance without proper authorization. Employees are directed to ask the site manager or designee to identify the associated hazards and information concerning proper use. The labels on incoming containers of hazardous chemicals are not to be removed or defaced.

3. MATERIAL SAFETY DATA SHEETS (MSDS)

Chemicals that may be received and stored are to have an accompanying material safety data sheet (MSDS). The copies of any MSDS that are received with incoming shipments of the sealed containers of hazardous chemicals shall be readily accessible during each work shift to employees when they are in their work area.

Affordable Solar employees are not to bring any hazardous chemicals or materials to the job site without first getting approval from their supervisor and obtaining the appropriate SDS.

Affordable Solar shall maintain in the workplace copies of the required SDS for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area. The Supervisor is responsible for updating SDS upon the addition of new chemicals. Affordable Solar shall have a Safety Data Sheet in the workplace for each hazardous chemical stored or used.

If a product requiring a SDS is received without the accompanying SDS, then the Affordable Solar Supervisor is to call the manufacturer of that chemical and request a

SDS to be sent. The Supervisor is responsible to ensure that the required information can immediately be obtained in an emergency.

4. EMPLOYEE INFORMATION AND TRAINING:

Affordable Solar shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignments, and whenever a new physical hazard or health hazard is introduced into their work area.

5. CHEMICAL INVENTORY

Affordable Solar will conduct an annual chemical inventory. Chemicals found during the inventory will be listed by name and manufacturer. The list can be found in the front of the SDS binder. Detailed information about the physical and health effects of each chemical is included in a Safety Data Sheet. Safety Data Sheets are readily available to employees in their work areas.

6. NON ROUTINE TASKS

Affordable Solar has not identified any non-routine tasks at this time.

7. OUTSIDE CONTRACTORS

It is the responsibility of the Supervisor to provide contractors and their employees with the following information if they may be exposed to hazardous chemicals in our workplace:

- the identity of the chemicals,
- how to review material safety data sheets,
- an explanation of the container, and

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- safe work practices to prevent exposure.

The Supervisor will also obtain a Safety Data Sheet for any hazardous chemical a contractor brings into the workplace.

Appendix J – Chemical Inventory Sheet

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APPENDIX J

CHEMICAL INVENTORY FOR YEAR: _____

SITE NAME AND LOCATION_____

CHEMICAL NAME	MANUFACTURER

Name and Title of Person Completing Inventory **Date**

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TITLE: FIRE SAFETY PLAN

POLICY 010

REFERENCE: 29 CFR 1910.38

PURPOSE:
OSHA standards require employers to provide proper exits, firefighting equipment, emergency plans, and employee training to prevent fire deaths and injuries in the workplace.

SCOPE:
The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:
- It is the responsibility of the EH&S department to develop and distribute the fire plan to all Affordable Solar employees.
- It is the responsibility of the Supervisor to train all site employees in their site-specific fire safety plan.
- Supervisors are responsible for training employees in the use of fire extinguishers.
- Supervisors are responsible for training employees in the evacuation plan.
- Employees are responsible for following fire prevention rules at all times.
- Employees are responsible for giving special attention to all smoke and fire alarms.

FIRE SAFETY PLAN

Table of Contents

1. Building Exits
2. Portable Fire Extinguisher Rules
3. Emergency Evacuation Plan
4. Fire Prevention Plan
5. Fire Drill

1. BUILDING AND PROJECT SITE EXITS

1.1. Each workplace must have at least two means of escape remote from each other to be used in a fire emergency.
1.2. Fire egress must not be blocked or locked to prevent emergency use when employees are within the buildings.
1.3. Exit routes from buildings or project sites must be clear and free of obstructions and properly marked with signs designating exits from the building or project site.

2. PORTABLE FIRE EXTINGUISHER

2.1. Each workplace building must have the proper type of fire extinguishers for the fire hazards present.
2.2. Employees expected or anticipated to use fire extinguishers must be instructed in the hazards of fighting fire, how to properly operate the fire extinguishers available, and what procedures to follow in alerting others to the fire emergency. Training will be provided by the Supervisor.
2.3. Portable fire extinguishers are to be maintained and inspected upon placement at site and inspected during weekly site walks. An outside company will inspect all fire extinguishers annually.
2.4. Portable fire extinguishers on the Material Handling equipment are to be maintained and

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inspected monthly.

2.5. Employees shall know the location of fire extinguishers in their work area.
2.6. Employees are required to be familiar use and practical application of portable fire extinguishers in their area.
2.7. All fire extinguishers should be conspicuously located and unobstructed.
2.8. Training on fire extinguisher use shall be given to new employees and on an annual basis as part of the weekly safety meeting.

3. EMERGENCY EVACUATION PLAN

3.1. Take prompt action if a fire should occur.
3.2. Sound the alarm.
3.3. Tell/alert others about the fire via voice communication or cell phone.
3.4. Do not fight a fire that is too large or dangerous.
3.5. Evacuation routes, assembly areas, and information regarding appropriate emergency telephone numbers must be posted and easily located.
3.6. Employees will meet in a pre-determined Affordable Solar assembly area.
3.7. Use stairways as an escape route in multi-story structures.
3.8. Never use elevators during a fire emergency.
3.9. The last person out of a room must close the door to prevent the fire from spreading.

4. FIRE PREVENTION PLAN

4.1. Smoking is prohibited in all Affordable Solar occupied buildings.
4.2. Oily rags must be stored in properly labeled covered metal containers for disposal in accordance with federal, state and site requirements.
4.3. Flammable and combustible liquids must be handled only in UL or FM approved and properly labeled safety cans.
4.4. Heat producing equipment must be properly maintained and kept clean of accumulations of flammable residues. Flammables are not to be stored close to these pieces of equipment.
4.5. Open flames are not allowed without hot work permit.
4.6. Never leave an extinguished fire unattended. Keep a fire watch until the fire department arrives.

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TITLE: FIRST AID KITS

POLICY 011

REFERENCE: 29 CFR 1910.151

PURPOSE: To provide adequate first aid supplies to Affordable Solar employees while at any work location.

SCOPE:
The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITIES:
- The Supervisor or Designated person is responsible for ensuring that a first aid kit is available at the worksite and that each first aid kit is adequately equipped with supplies.
- An infirmary, clinic, or hospital is in near proximity to the workplace. First aid kits are provided for minor injuries not requiring medical treatment. Employees are responsible for providing their own first aid care.

PROCEDURE:
1. First aid kits are required at all Affordable Solar work sites.
2. First aid kits shall be conveniently located so that they are accessible to all Affordable Solar employees during work time.
3. The Supervisor or Designated person will inspect first aid kits at least annually to determine if it is adequately stocked.
4. Replacement supplies or first aid kits will be purchased through the Safety Department.
5. Employees shall report the need to use first aid supplies to the Supervisor and use sign out sheet.
6. When an injury requires treatment beyond basic first aid, employee and the supervisor will seek medical attention and/or treatment and will follow the procedures set forth on the Emergency Contact Information Form (EHSOP -3 Appendix - B)
7. The Supervisor or Designated person will complete an incident report for injury requiring first aid, injury requiring medical treatment or near miss if applicable.

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TITLE: BLOODBORNE PATHOGENS – EXPOSURE CONTROL PLAN

POLICY 012

REFERENCE: 29 CFR 1910.1030

PURPOSE:
According to the concept of Universal Precautions, all human blood components, and other potentially infectious materials are treated and handled as if known to be infectious for HIV, HBV and other bloodborne pathogens. The purpose of this plan is to reduce the risk of occupational exposure to bloodborne pathogens, and/or other potentially infectious materials, and to provide a safe work environment to all employees in compliance with federal and state regulations.

SCOPE:
This plan covers employees who could, as a result of performing their job duties, come in contact with bloodborne pathogens and other potentially infectious materials. The only circumstance under which Affordable Solar employees are anticipated to come in contact with bloodborne pathogens and other potentially infectious materials are when rendering first aid and CPR or cleaning up after the accident.

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1. **Responsibility**
2. **Procedures**
3. **Exposure Control Plan**
4. **Personal Protective Equipment**
5. **Housekeeping**
6. **Hepatitis B Vaccination**
7. **Post Exposure evaluation and Follow-up**
8. **Employee Training**
9. **Recordkeeping**
10. **Annual Evaluation**
11. **Appendices**

1 RESPOSIBILITY:

1.1 The EH&S Department is responsible for training employees in the hazards associated with bloodborne pathogens and the control measures available to reduce exposure.

1.2 The Supervisor or their Designees are responsible for ensuring that a bloodborne pathogen kit is available at the worksite and that the kit is adequately equipped with supplies.

1.3 Employees are responsible for becoming familiar with the contents of the bloodborne pathogen kit.

1.3.1 Employees are responsible for becoming familiar with proper use of the materials contained in the bloodborne pathogen kit.

1.3.2 First aid and CPR assistance is rendered by Affordable Solar employees on a completely voluntary basis.

1.3.3 Employees are responsible for understanding and complying with all phases of the Affordable Solar policies and procedures for situations involving bloodborne pathogens and other potentially infectious materials.

1.3.4 Employees with no formal first aid training must be instructed to maintain a

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"hands off" practice in the event of an emergency. These employees should contact a first aid responder as quickly as possible.

2 PROCEDURES:

2.1 Supervisor or Designee will notify Manager and EH&S Dept of all incidents involving exposure to bloodborne pathogens or other potentially infectious materials.

2.2 Employees are to report all incidents involving exposure to the bloodborne pathogens or other infectious materials.

2.3 Supervisor or Designee must complete and incident report (SOP-3 Appendix A) and Exposure Incident Form (SOP – 10 Appendix D)

2.4 Procedures described in this policy apply as follows:

2.4.1 To all employees who have been trained in first aid and may come in contact with bloodborne pathogens and other infectious materials while carrying out first aid and/or CPR.

2.4.2 To any employee who cleans up after a spill of blood or other potentially infectious materials following and illness or injury incident.

3 EXPOSURE CONTROL PLAN

The following engineering and work practice controls are employed to minimize exposure to human bloodborne pathogens and other potentially infections materials.

3.1 No employee shall render medical treatment beyond first aid.

3.2 Gloves must be worn whenever there is a possibility of contact with human blood or other body fluids.

3.3 Masks must be worn whenever there is a possibility of splattering of human blood or body fluids.

3.4 Aprons must be worn if soiling of exposed skin or clothing is likely.

3.5 To minimize the risks of exchange of body fluids during resuscitation procedures, pocket masks or mechanical ventilation devices are available in bloodborne pathogen kits.

3.6 Spills of blood or blood contaminating body fluids shall be cleaned up using materials provided in the bloodborne pathogen kit. The contaminated item shall be put into the biohazard bag for proper disposal.

3.7 Individuals who have open lesions, dermatitis, or other skin irritations should not participate in direct victim care activities and should not handle contaminated items. If emergency situation requires participation, these individuals should double glove.

3.8 Sharp objects represent the greatest risk for exposure. Use tweezers to remove glass or other sharps from the victim. Use broom and dust pan to clean up contaminated glass or other sharp objects.

3.9 Gloves shall not be reused. Exam gloves must be disposed of after only one use.

3.10 Employees shall wash hands and any other skin with soap and water immediately after contact with blood or other potentially infectious materials.

3.11 If water is not available, antiseptic hand cleaner and towelettes shall be used.

4 PERSONAL PROTECTIVE EQUIPMENT

4.1 Bloodborne Pathogen Kit is provided at no cost to employees or to the site. They are placed in an easily accessible location usually next to the First Aid Kits.

4.2 The Bloodborne Pathogen Kit includes personal protective equipment as follows:

4.2.1 Protective exam gloves
4.2.2 Protective eye wear
4.2.3 Shoe covers
4.2.4 Apron
4.2.5 Isolation mask
4.2.6 Antiseptic wipes

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4.3 The Bloodborne Pathogen Kit includes clean-up items as follows:
- 4.3.1 Absorbent powder.
- 4.3.2 Scoops/Scrapers.
- 4.3.3 Disposable red biohazard bags with ties.
- 4.3.4 Disposable towels.

5 HOUSEKEEPING:

5.1 Surface cleaning and disinfecting.

5.1.1 All surfaces will be properly cleaned and disinfected immediately or as soon as possible after contact with blood and/or body fluids. Surfaces are disinfected using a mixture of 1 (one) part sodium hypochlorite (household bleach) diluted with 10 (ten) parts water.

5.2 Infectious waste disposal.

5.2.1 All materials which are contaminated with blood or other potentially infectious materials shall be collected in a color-coded container for disposal. The color shall be orange-red and the container shall be identified with the Biohazard label.

5.2.2 Any area where an injury occurred and has caused the area to be contaminated with blood or other potentially infectious materials shall be cleaned and disinfected immediately using materials provided in the Bloodborne Pathogen Kit. All clean-up items will be placed in the special collection container for proper disposal.

5.3 Laundry:

5.3.1 Contaminated laundry such as work clothes, will be placed in a labeled and color coded (orange) plastic bag for transportation to the cleaners, in accordance with the following:

5.3.1.1 If laundry is wet and presents a potential for leakage, a second bag will be placed over the first to prevent further contamination during handling, storage, or transportation.

5.3.1.2 Any employee's personal clothing that is contaminated with blood and /or other potentially infectious materials will be removed before the employee leaves. The clothing will be sent to be laundered or replaced and paid for by the site.

6 POST EXPOSURE EVALUATION AND FOLLOW-UP:

All employees who have had occupational exposure to blood and/or body fluids are offered a confidential medical follow-up evaluation, vaccination, and post-exposure medical management at no cost. The follow-up is performed under the employee's personal physician according to the following provisions:

6.1 The employee's personal physician is provided with a copy of the OSHA 29 CFR 1910.1030 Bloodborne Pathogens Standard and a description of the employee's duties.

6.2 The employee's personal physician will complete the Bloodborne Pathogens Occupational Exposure Record (Appendix B). This record is used to document the route(s) of exposure, if known, the circumstances under which the exposure occurred, and all follow-up actions taken.

6.3 If the source patient can be determined, permission will be obtained before collecting and testing the source patient's blood. The testing will determine the presence of HBV or HIV. Any information obtained from the evaluation of the source patient's blood will remain strictly confidential.

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Note: The source patient can refuse to submit to any blood test.

6.4 The blood of the exposed employee will be tested for HBV and HIV status as soon as possible after exposure. At the request of the employee, actual antibody or antigen testing of the blood serum may be done at that time or at a later date.

6.5 The site will obtain and provide to the exposed employee a copy of the physician's written report within 15 working days. The evaluation includes specific findings or diagnoses, which are relevant to the employee's ability to receive the HBV vaccination. The treating physician will discuss the HBV symptoms and methods of treatment with the employee. All other findings and diagnoses will remain confidential.

7 EMPLOYEE TRAINING :

7.1 Training is provided to those employees who are First Aid/CPR trained and all other employees who may, in the course of their normal employment be required to handle, come in contact with, or dispose of any materials containing contaminated or potentially contaminated blood and/or body fluids.

7.2 Training is provided upon employee's job assignment and on annual basis thereafter.

7.3 Training will also be provided to any other employees who may be occupationally exposed to blood, body fluids, or other potentially infectious materials.

7.4 Training is performed on annual basis and shall include the following topics:

7.4.1 A review of the OSHA 29 CFR 1910.1030 Bloodborne Pathogens Standard and a brief explanation of its contents.

7.4.2 A general explanation of the symptoms of bloodborne disease, modes of transmission, infection control, and the appropriate steps to be taken to avoid contact with blood, body fluids, or other potentially infectious materials.

7.4.3 An explanation of the post exposure procedure, who to report to and other accident related information.

7.5 The Bloodborne Pathogen Training shall be documented on the Affordable Solar Training form by the Supervisor. The Bloodborne Pathogen Training forms shall be kept at EH&S Dept training file.

7.6 Training records shall be maintained for 3 years from the date on which the training occurred.

8 RECORD KEEPING:

8.1 Medical Records

8.1.1 All post-exposure records with respect to this program are maintained by Human Resources for the duration of employment plus thirty (30) years in accordance with 29 CFR 1910.1020. This information is kept in the employees' medical file.

8.1.2 The employee's medical file shall include the following:

8.1.2.1 A copy of the employee's Hepatitis B vaccination record and medical records relative to the employee's ability to receive the HBV vaccination.

8.1.2.2 A copy of the Bloodborne Pathogens Occupational Exposure Record, the physician's examination, medical testing and all follow-up reports.

8.2 OSHA Recordkeeping

8.2.1 Exposure incidents in which the employee is exposed to blood and/or body fluids are entered on the OSHA 300 log.

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9 ANNUAL EVALUATION:

The Affordable Solar Bloodborne Pathogens Program will be evaluated annually by the EH&S Department using the Bloodborne Pathogens Program Annual Audit. (Appendix C).

10 APPENDICES:

Appendix K: Bloodborne Pathogens Occupational Exposure Record
Appendix L: Bloodborne Pathogens Annual Evaluation
Appendix M: Exposure Incident Form

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APPENDIX K BLOODBORNE PATHOGENS OCCUPATIONAL EXPOSURE RECORD

Name of Exposed Employee:_____

Department:_____

Pre-Exposure Hepatitis Vaccination:

Date Given:_____

Date refused:_____

Date Booster Given:_____

Date of Exposure:_____

Location of Exposure Incident:_____

Route of Exposure:_____

Description of Incident:_____

What personal protective equipment was used:_____

Serological Testing for HBV or HIV dates:
1st_____2nd_____3rd_____

Medical Evaluation Date:_____

Name of source individual_____

Source Individual Tested for HBV or HIV Date:_____

Date of written medical opinion_____

Medical opinion performed by_____

Exposed Employee's Signature_____

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APPENDIX L
BLOODBORNE PATHOGENS PROGRAM
ANNUAL EVALUATION

Appendix L

On an annual basis, Affordable Solar written Bloodborne Pathogens Plan is evaluated by the EHS department to determine if the sites are adhering to the written plan, as well as the OSHA, 29 CFR 1910.1030 Bloodborne Pathogens Standard. This documented will be maintained by the EH&S department indefinitely.

	Program Areas To Be Evaluated	**Requires Updating**		**Date Update Complete**
		YES	**NO**	
1	Has your written program been reviewed and updated within the last year?			
2	Has a list of job classifications in which all of the employees have exposure been developed and updated?			
3	Have employees followed the established work practice controls that have been established?			
4	Have all affected employees received annual training on the requirements of the Bloodborne Pathogens Standards?			
5	Is the training documented?			
	Have employees who are exposed or potentially exposed to blood and/or body fluids been offered the Hepatitis B vaccination?			
6	Have employees who are exposed or potentially exposed to blood and/or body fluids that have declined the Hepatitis B vaccination signed the Hepatitis B vaccination Declination Form?			
7	Other			
Signature:		Date:		

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APPENDIX M

EXPOSURE INCIDENT FORM

In the event of an exposure incident, two forms must be completed: (1) the Employer's First Report *of Injury* *f*orm for worker's compensation, and (2) the information on this form, as required by OSHA. The information provided below is intended to assist in evaluating the control methods used and to prevent future employee exposures.

Name of Person_____Department_____

Incident Date_____Time_____

Incident: Mark in each column, as appropriate

Incident:	**Injury type:**	**Body Part Injured:**
☐ Cut:	☐ Abrasion:	☐ Finger:
☐ Exposure:	☐ Laceration:	☐ Hand:
☐ Body Fluids:	☐ Puncture:	☐ Arm:
☐ Infectious Material:	☐ Mucus Membrane:	☐ Eye:
☐ Other_____	☐ Other_____	☐ Other_____

Description of Incident:
Protective equipment used:

☐ Gloves:	☐ Protective Sleeves:	☐ Other:
☐ Goggles:	☐ Lab Coat:	
☐ Face Mask/shield:	☐ Gown:	

Seen by:

☐ UEHC:
☐ No Medical Treatment Sought
☐ Emergency Treatment Center

What changes need to be made to prevent reoccurrence?

Report prepared by:_____

Position_____

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TITLE: HOUSEKEEPING

POLICY 013

PURPOSE:
Work areas are to be clean, orderly, and well lit. This reduces the potential for slips, trips, falls and struck-by accidents.

SCOPE:
The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:
Good housekeeping is everyone's responsibility.

PROCEDURE:
Good housekeeping is basic for a safe work environment as it prevents incidents and fires while creating a business-like workplace. When a site is clean and neat, it is easier for employees to find the tools and materials needed to do the job efficiently. Good housekeeping also makes it easier to respond or evacuate out of a work area during an emergency situation.

1. Employees shall keep the project site and surrounding grounds clean and free from trash and debris.
2. All trash will be deposited in the proper disposal containers.
3. Work areas will be kept clean, especially near walkways.
4. Walkways will be kept clear of material and debris.
5. Remove or bend protruding nails from lumber and other debris daily.
6. The area around stairs and ladders must be kept clear of material and debris.
7. Never block an exit path or doorway.
8. Never block fire extinguishers, electric panels, or the eye wash station.
9. Materials, tools and equipment must be stored in a stable position to prevent rolling or falling.
10. Spills of oil and grease must be cleaned using site-specific spill response procedure.
11. Oily rags must be placed in approved metal fireproof containers.
12. At shift end, all work areas shall be cleaned, trash picked up, trashcans emptied, and floors swept.
13. All excess materials shall be staged away from foot or vehicle traffic areas.

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TITLE: MANUAL LIFTING

POLICY 014

PURPOSE:
Despite the availability of lifting equipment, we still must physically lift and move objects from place to place. By observing some simple precautions, you can avoid injury and make your work easier.

SCOPE:
The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:
Employees are expected to comply with the safe lifting principles and rules set forth by Affordable Solar .

PROCEDURE:
Employees can reduce injuries by minimizing any materials handling, using mechanical devices and equipment for assistance whenever possible and following proper lifting techniques.

Employees should practice these lifting principles:

1. Make a preliminary "lift" to make sure that the load lifts easily with your lifting capacity. If it does not, get help.
2. Create a balanced base of support by using one foot ahead and one foot behind to get the weight in close.
3. Stand close to the load and bend your knees.
4. Lift with legs.
5. Keep head high, chin tucked in.
6. Keep your back as straight as possible.
7. Walk; never run, while carrying materials.
8. Never twist your body when carrying any material. Pivot with the load.
9. Never carry material with your vision obstructed.
10. Do not twist your back while moving material. Keep shoulders in line with your hips.
11. Do not bend forward at the waist with work in a low position.
12. Do not reach with a heavy load.

Musculoskeletal Disorders (MSD)
Constant manual handling with improper form puts you at risk of developing MSDs. You should always follow proper lifting procedures, but should signs and symptoms of a MSD occur, notify your supervisor and the EH&S Department immediately. Early reporting is the most effective way to avoid long-lasting problems. For more on MSDs, refer to EHSOP 21: Office Ergonomics.

1. Put one foot up and change positions often when standing for log periods of time.
2. Keep work at a comfortable height.
3. Stand, if possible on a cushioned mat.
4. Change stressful positions frequently.
5. Any questions or concerns should be addressed with your supervisor and/or the EH&S Department as soon as possible.

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TITLE: POWERED INDUSTRIAL TRUCK PROGRAM (Forklifts)

POLICY 015

REFERENCE: 29 CFR 1910.178; 29 CFR 1926.600; 29 CFR 1926.602; ANSI B56.1-1969

PURPOSE:
The purpose of the Powered Industrial Truck Program is to provide safety rules and guidelines for the safe operation of powered industrial trucks. This plan is written to comply with the OSHA powered industrial truck standards, 29 CFR 1910.178; 29 CFR 1926.600; and 29 CFR 1926.602

SCOPE:
The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:

Operators are responsible for:
1. Successfully completing all training and testing required to be an authorized operator of a powered industrial truck.
2. Operating all powered industrial trucks in a safe manner consistent with Affordable Solar established guidelines.
3. Inspecting all powered industrial trucks at the beginning of each shift and completing the daily inspection checklist.
4. Reporting an unsafe operating condition to the responsible person and red tagging the truck.
5. Communicating with the motor vehicle driver before and after loading or unloading.
6. Communicating to the motor vehicle driver that it is strictly prohibited to move a vehicle's cab or trailer during loading or unloading.
7. Verifying that:
    a. The driver of the motor vehicle has restrained the vehicle using a wheel chock; Note: Chocking is not required for vehicles being provided "tailgate service" only.
    b. The engine has been turned off and the keys are in the driver's possession;;
    c. The transmission is in low gear or park, and the parking brake is engaged.

Operator Evaluators are responsible for:
1. Evaluating every trainee adequately.
2. Notifying the Supervisor of the trainee's pass/fail result in a timely manner.
3. Providing the EH&S Department with copies of the test, evaluation form, and rules sheet within 24 hours after a certification has been granted.
4. Providing EH&S Department with the name and immediate supervisors name of the employee being certified.

Managers and Supervisors are responsible for:
1. Ensuring that all operator candidates including full time, part-time and temporary employees who are expected to operate powered industrial trucks have received training and are certified.
2. Assuring that all operators of Powered Industrial trucks have proper certification as outlined in section 7 of this policy.
3. Maintaining powered industrial trucks according to the manufacturer's recommendations.
4. Notifying the appropriate contact person when powered industrial trucks need repair.

EH&S Department is responsible for:
1. Writing, maintaining, reviewing and evaluating the Powered Industrial Truck Program.
2. Issuing powered industrial truck licenses to employees who have been certified as an operator.

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3. Being a resource to all personnel when questions about this program arise.

POWERED INDUSTRIAL TRUCK PROGRAM

Table Of Contents

1. General Requirements
2. Designated locations
3. Safety Guards
4. Fuel Handling and Storage
5. Batteries – Changing and charging
6. Trucks and railroad cars
7. Operator Training
8. Truck Operations
9. Traveling
10. Loading
11. Operation of the truck
12. Maintenance of Industrial Trucks
13. Evaluation
14. Appendices

General Requirements:

1.1. Only trained, authorized, and certified personnel are permitted to operate a powered industrial truck.

1.2. Documentation of the training and certification of forklift operators will be filed and stored in the EH&S Department safety files.

1.3. The Fair Labors Standard Act prohibits workers under age 18 from using forklifts in general industry. 29 CFR 570.58

1.4. Powered industrial trucks which need repair or are defective or unsafe in any way shall be red tagged and removed from service until repaired.

1.5. All powered industrial trucks acquired and used after February 15, 1972, shall meet the design and construction requirements of ANSI B56.1-1969.

1.6. No modifications or additions, which affect capacity and safe operation, may be made. Should modifications or additions become needed, a request for modification or addition shall be submitted to the responsible truck owner. Capacity, operation, and maintenance instruction plates, tags or decals shall be changed accordingly.

1.7. No modification to the seat or truck frame shall be conducted by a Affordable Solar employee. Needed modifications shall be requested of the responsible truck owner in writing.

1.8. If the truck is equipped with extra front-end attachments, it shall be marked to identify the attachments, and show the appropriate weight of the truck attachment combination at maximum elevation with the load laterally centered.

1.9. All Powered Industrial Truck nameplates and markings shall be maintained in legible condition.

2. Designated classes of trucks and locations of use

Before a powered industrial truck can be operated in an area, the atmosphere, environment or location shall be classified to determine the proper class and selection of powered industrial truck. Affordable Solar are currently classified as general warehouse facilities, or indoor and outdoor locations containing ordinary combustible materials. Therefore, all classes of powered industrial trucks may be used, provided that weight capacity requirements are met.

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3. Safety Guards – Overhead, Backrest, Restraints

3.1. High lift rider trucks shall be fitted with an overhead guard manufactured in accordance with ANSI B56.1-1969.
3.2. Powered industrial trucks used for handling small objects or unbanded units shall be equipped with a vertical load backrest extension manufactured in accordance with ANSI B56.1-1969.
3.3. If the powered industrial truck is equipped with an operator restraint system, the operator shall use it.
3.4. Do not jump from an overturning, sit-down type forklift. Stay with the truck if lateral or longitudinal tip over occurs. Hold on firmly and lean in the opposite direction of the overturn.
3.5. Exit from a stand-up type forklift with rear-entry access by stepping backward if a lateral tip over occurs

4. Fuel Handling and Storage:

4.1. The storage and handling of **liquid fuels** such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30-2008).
4.2. The storage and handling of liquefied petroleum **gas fuels** shall be in accordance with NFPA Storage and Handling of Liquefied petroleum Gases Code (NFPA No. 58-2011).
4.3. Fuel tanks shall not be filled while the truck is running.

5. Battery Changing and Charging Requirements:

5.1. Batteries shall be changed or charged only by personnel who are trained and authorized to perform these jobs.
5.2. Follow all applicable manufacturers' process instructions when changing, charging, cleaning and/or performing any routine maintenance on batteries.
5.3. Battery charging installations shall be done in designated areas.
5.4. Facilities shall be provided for:
5.4.1. flushing and neutralizing spilled electrolyte;
5.4.2. fire protection;
5.4.3. protecting charging apparatus from damage by trucks, and
5.4.4. adequate ventilation for dispersal of fumes from off-gassing batteries.
5.5. Appropriate personal protective equipment shall be worn while charging/watering batteries such as a face shield, acid gloves, and acid aprons.
5.6. When charging batteries, acid shall be poured into water; water shall not be poured into acid.
5.7. Powered industrial trucks shall be properly positioned and brake applied before attempting to charge batteries.
5.8. When charging batteries, the vent caps shall be kept in place to avoid electrolyte spray. Care shall be taken to assure the vent caps are functioning.
5.9. The battery (or compartment) cover(s) shall be open to dissipate heat and fumes.
5.10. Precautions shall be taken to prevent sources of ignition such as open flames, sparks or electric arcs in battery charging areas.
5.11. Smoking is prohibited in the charging area.
5.12. Tools and other metallic objects shall be kept away from the top of uncovered batteries.
5.13. Do not use open flames to check electrolyte level in storage batteries.

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6. Trucks and railroad cars

6.1. The brakes of motor vehicle trucks shall be set and wheel chocks, placed under the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks.

6.2. Wheel stops or other recognized positive protection will be provided to prevent railroad cars from moving during loading or unloading operations.

6.3. Fixed jacks may be necessary to support a semitrailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor.

7. Operator Training, Evaluation, Certification and Recertification

7.1. All Affordable Solar operator candidates, including full time, part-time and temporary employees operating material handling equipment must be certified by Affordable Solar regardless of prior certification by other agencies.

7.2. Prior to operating a powered industrial truck (except for training purposes) potential operators of powered industrial trucks shall successfully complete a Powered Industrial Truck Safety training course that complies with OSHA requirements for powered industrial truck training.

7.3. Trainees may operate a powered industrial truck only under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence and where such operation does not endanger the trainee or other employees.

7.4. Training must consist of formal training and practical application. Formal training may be lecture, discussion, video tape, written material, or a combination thereof. Practical training will include an evaluation of the operator's performance.

7.5. All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

7.6. Powered industrial truck operators shall receive initial training in the following topics:

- 7.6.1. Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
- 7.6.2. Differences between the truck and the automobile;
- 7.6.3. Truck controls and instrumentation: where they are located, what they do, and how they work;
- 7.6.4. Engine or motor operation;
- 7.6.5. Steering and maneuvering;
- 7.6.6. Visibility (including restrictions due to loading);
- 7.6.7. Fork and attachment adaptation, operation, and use limitations;
- 7.6.8. Vehicle capacity;
- 7.6.9. Vehicle stability;
- 7.6.10. Any vehicle inspection and maintenance that the operator will be required to perform;
- 7.6.11. Refueling and/or charging and recharging of batteries;
- 7.6.12. Operating limitations;
- 7.6.13. Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.
- 7.6.14. Surface conditions where the vehicle will be operated;
- 7.6.15. Composition of loads to be carried and load stability;
- 7.6.16. Load manipulation, stacking, and unstacking;
- 7.6.17. Pedestrian traffic in areas where the vehicle will be operated;
- 7.6.18. Narrow aisles and other restricted places where the vehicle will be operated;
- 7.6.19. Hazardous (classified) locations where the vehicle will be operated;
- 7.6.20. Ramps and other sloped surfaces that could affect the vehicle's stability;

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7.6.21. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;

7.6.22. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

7.6.23. Once training is complete, the trainee will take the Affordable Solar Forklift Operator Test (Appendix A). The trainee must pass the Affordable Solar Forklift Operator Test with a score of eighty percent (80%) or better to pass.

7.7. Operator Evaluation

7.7.1. Each operator's performance shall be evaluated by a competent person who has the knowledge, training, and experience to evaluate a trainee.

7.7.2. The performance evaluation details are as follows:

7.7.2.1. The evaluator shall observe the trainee actually operating the equipment.

7.7.2.2. The Affordable Solar Forklift Operator Evaluation Form (Appendix B) is to be used to document the trainee's evaluation.

7.7.2.3. Trainee observed operating equipment in an unsafe manner during the evaluation will not be certified.

7.8 Certification:

7.8.1 After training has been completed, and a passing evaluation performed, the trainee will sign the Affordable Solar Operator Rules (Appendix C).

7.8.2 All three (3) documents will be forwarded to the EH&S Department.

7.8.3 A "Certification of Authorization to Operate" shall be issued by the EH&S Department. This certificate shall include the operator's name, date of certification, and the name of the evaluator.

7.8.4 The Operator will carry the "Certification of Authorization to Operate" on his/her person during work hours.

7.8.5 The certification documentation will be kept on file at the site.

7.8.6 This certification documentation will also be kept on file by the EH&S Department.

7.9 Refresher training and evaluation:

7.9.1 Operators shall be retrained and re-evaluated when the operator has been observed operating the vehicle in an unsafe manner, the operator has been involved in an accident or near-miss incident, new equipment is introduced, existing equipment is modified, or new hazards are introduced.

7.9.2 Operators shall be recertified at least once every 3 years.

7.9.3 Recertification includes a review of forklift training, a written test, an evaluation, and an updated Affordable Solar Forklift Operator Rules sheet.

7.9.4 All three (3) documents will be forwarded to the EH&S Department.

7.9.5 The procedure for certification of operators as outlined above will be followed.

8. Truck Operations

8.1. Powered industrial trucks shall not be driven up to anyone standing in front of a fixed object.

8.2. No one may stand or pass under the elevated portion of a powered industrial truck, whether loaded or empty.

8.3. Affordable Solar employees will not at any time use a powered industrial truck to lift or elevate personnel.

8.4. Unauthorized personnel shall not be permitted to ride on powered industrial trucks.

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8.5. Arms or legs shall not be placed between the uprights of the mast or outside the running lines of the powered industrial truck.
8.6. When leaving a powered industrial truck unattended, lower the load engaging means, neutralize controls, shut off power, and set brakes. Whenever a powered industrial truck is parked or left on an incline, at least one wheel shall be blocked or chocked.
8.6.1. **Note:** A powered industrial truck is unattended when the operator is 25 feet or more away or out of the view of the truck.
8.6.2. If the operator has dismounted, and is within 25 feet of the truck still in view, the load engaging means shall be fully lowered, the controls neutralized, and the brakes set to prevent movement.
8.7. Powered industrial trucks shall be operated safely away from edges on elevated ramps or platforms.
8.8. Powered industrial trucks shall not be used for opening or closing freight doors.
8.9. Chocking is required for every vehicle parked in the service yard being loaded or unloaded by a powered industrial truck (chock both front and back of wheel).
8.9.1 Note: Chocking is not required for vehicles being provided "tailgate service" only.
8.10. A spotter shall be used when loading customer vehicles and there is more than one Affordable Solar employee on-site. The spotter can be a permanent or temporary employee. The spotter must be qualified to perform the duties of a spotter.
8.11. The flooring of vehicles shall be checked for cracks, holes, or weaknesses before a forklift is driven onto it.
8.12. Portable ramps shall be secured to trailers and chocked to prevent moving while being used. Operators shall ensure that ramps are properly secured before driving onto the ramps.
8.13. Sufficient headroom or clearance shall be maintained under overhead installations (lights, pipes, sprinkler systems, etc.).
8.14. Fire rated corridors/aisle ways, access to stairways, and fire equipment shall be kept clear.
8.15. Prior to operating any communication device (i.e. portable or cell phones), the operator shall place any load in a safe and secure position, the truck shall be stopped and the brakes shall be applied.

9. Traveling

9.1. Traffic regulations shall be observed as follows:
9.1.1. Driver is required to stop at main aisle ways and blind corners,
9.1.2. Driver is required to slowdown at cross aisles, and
9.1.3. Driver is required to sound a horn at ALL intersections and blind corners.
9.2. Approximately three truck lengths shall be maintained from the powered industrial truck ahead.
9.3. Passing other powered industrial trucks traveling in the same direction at intersections, blind spots, or other dangerous locations is prohibited.
9.4. The operator shall keep a clear view of the path of travel or have a spotter.
9.5. If the load being carried obstructs forward view, the driver shall travel with the load trailing. (i.e. driving in reverse)
9.6. Grades shall be ascended and descended slowly and according to surface conditions.
9.7. The loaded powered industrial truck shall be driven with the load upgrade when driving on ascending or descending grades greater than 10%.
9.8. On all grades, the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

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9.9. The powered industrial truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.
9.10. Stunt play and horseplay are prohibited.
9.11. The operator shall slow down before entering wet and slippery floors.
9.12. Dockboards shall be properly secured before they are driven over.
9.13. Operators shall confirm dockboard capacity.
9.14. Dockboards shall be driven over carefully and slowly.
9.15. Dockboard capacity shall never be exceeded.
9.16. DO NOT accelerate on dock boards.
9.17. Avoid running over loose objects on the roadway surface.
9.18. While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. EXCEPT when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.
9.19. Railroad tracks shall be crossed diagonally when possible. Powered industrial trucks shall not be parked within 8 feet (2.4 m) of the center of active railroad tracks.
9.20. Minimum 10 feet (3 m) clearance shall be maintained in all directions from overhead electric lines.
9.21. When operating powered industrial trucks on roadways subject to public access, turns shall be signaled with appropriate electronic or hand signals.

10. Loading

10.1. Only stable, secured and safely arranged loads shall be handled. Exercise caution when handling loads which cannot be centered.
10.2. Only handle loads within the rated capacity of the powered industrial truck. Forks should be as wide as possible to stabilize the load.
10.3. Long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
10.4. Trucks with attachments shall be operated as partially loaded even when empty.
10.5. A load-engaging means (forks) shall be placed as far as possible under the load. The mast shall be carefully tilted backward to stabilize the load.
10.6. When tilting the load forward or backward use extreme care, particularly when high tiering. Ensure powered industrial truck is NOT in motion.
10.7. Tilting forward with load engaging means elevated is prohibited EXCEPT to pick up a load.
10.8. An elevated load shall not be tilted forward EXCEPT when the load is in a deposit position over a rack or stack.
10.9. When stacking or tiering, use only enough backward tilt to stabilize the load.

11. Maintenance and Inspection of industrial trucks

11.1. Powered industrial trucks shall not be altered in any of the following ways:
11.1.1. so that the relative positions of the various parts are different from what they were when originally received from the manufacturer;
11.1.2. by the addition of extra parts not provided by the manufacturer or;
11.1.3. by the elimination of any parts.
11.2 Additional counter weighting of powered industrial trucks shall not be done.
11.3 Forklift Maintenance - Inspection Procedures:
11.3.1 Each operator shall complete a visual and operational inspection of the powered industrial truck prior to use.

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11.3.2 The inspection shall be documented on the Affordable Solar Daily Checklist (Appendix D) at the start of each day.

11.3.2.1 **NOTE:** Checklists shall be maintained in a specific file at the Affordable Solar site for which the operator is documented as employed.

11.3.2.2 Correspondence regarding a maintenance request, or a repair request must be attached to the checklist.

11.3.3 If the powered industrial truck fails the inspection, it will be reported to the appropriate truck owner for corrective action.

11.3.4 If you need to correct an entry on a checklist draw a line through it and put your initials next to it.

12. **Evaluation**

Affordable Solar will review and evaluate the written powered industrial truck program on an annual basis, or when changes occur to 29 CFR 1910.178 that prompt revision of this document, or when facility operational changes occur that require a revision of this document.

13. **Violations**

13.1. Violations of any rules pertaining to the safe operation of the powered industrial truck shall be subject to strict disciplinary actions up to and including termination.

13.2. Forklift Safety Violation procedure is outlined in SOP #5, Paragraph 2.

14. Appendices:

Appendix N – Forklift Operator Test
Appendix O – Forklift Operator Evaluation Form
Appendix P – Forklift Operators Rules
Appendix Q – Operator's Daily Checklist

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APPENDIX N FORKLIFT OPERATOR TEST

Employee name:_____ Date:_____

Administered by:_____ Site:_____

TRUE or FALSE

_____ 1. Operators should check their trucks at the beginning of each shift.
_____ 2. Operators must face the direction in which the machine is traveling.
_____ 3. When faced with a suddenly shifting load, the best procedure is to slowly lower it for re- positioning.
_____ 4. Most forklift hydraulics can lift in excess of their rated capacities, but it is not safe because of tip-over.
_____ 5. If your forklift is in need of safety repair, it is best to stop immediately and take it out of service.
_____ 6. Repairs to industrial trucks should be made only by personnel trained and authorized to make them.
_____ 7. If you are not able to see because of a large load in front of you, it is better to drive backwards than to try and see around it on one side.
_____ 8. Under no condition should anyone be permitted under the elevated forks or load.
_____ 9. Smoking is permissible in refueling areas providing you see no leaking fuel.
_____ 10. It is a common practice to go up a ramp with the forks and the load up front.
_____ 11. When loading a highway truck or trailer, its wheels should be chocked or blocked even though the driver says the brakes are set.
_____ 12. The low center of gravity of most forklifts will prevent them from tipping over on turns.
_____ 13. Forklift users shall not eliminate any parts, alter their relative positions, or add counter-weight to trucks.
_____ 14. When traveling with a load, the most secure position for the load is mast tilted slightly forward.
_____ 15. A good objective of forklift safety training is zero accidents and injuries for all personnel.
_____ 16. Site hazards include high storage, docks, dark areas, intersections, pedestrians, and uneven loads.
_____ 17. Driving with obstructed view or elevated load is OK over short distances and level surfaces.
_____ 18. It is required by forklift operators to carry their forklift operator license on their person when operating a forklift.
_____ 19. It is permissible to overload the truck by 25% if additional counterweights are used.
_____ 20. When parking your truck, forks are to be 12 inches off the ground.

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APPENDIX O
AFFORDABLE SOLAR FORKLIFT OPERATOR EVALUATION FORM

Employee Name:_____ Date: _____

Administered by:_____

Driving Evaluation
YES or NO

_____ 1. Complete Daily forklift checklist and requirements.

_____ 2. Mount/ dismount the forklift using the 3 point.

_____ 3. Seatbelt requirement

_____ 4. Fork height 6" off the ground while traveling.

_____ 5. Demonstrate forward and reverse with equipment.

_____6. Stop and honk before proceeding through an intersection.

_____7. Demonstrate the use of hydraulic controls (lift, lower, tilt, side, and shift).

_____8. Stop and lowers load before traveling

_____9. Lower forks/ turn key off and remove key.

_____10. Set brake.

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APPENDIX P FORKLIFT OPERATOR RULES

1. Inspections must be performed at the beginning of each day. Forklift daily checklist sheet must be filled out and kept on filing.
2. Passengers are never allowed on forklifts
3. Seatbelts must be worn at all times while operating forklifts
4. Only trained and authorized personnel shall drive or refuel forklifts.
5. All accidents must be reported immediately, regardless of how minor.
6. Horseplay, reckless driving and excessive speed are prohibited.
7. Horns must be sounded (1) at all intersections, (2) when you see pedestrians (they have the right of way) and (3) when you see other trucks.
8. At all times prior to backing up, look to insure there is no one or nothing behind you.
9. Arms and legs are to be kept within the running lines of the forklift. The cage is for your protection.
10. Driving with load elevated is prohibited.
11. Loads must not be adjusted while moving.
12. If view is obscured, drive in reverse. Do not lift load high enough to see under.
13. Forks must be fully lowered when parked. Forks on the ground.
14. Forklift drivers must assure over-the-road trucks are chocked before entering them.
15. Forklift drivers must assure dock boards are anchored and sound before driving over them.
16. Drivers must adjust to driving conditions. Slow on wet surfaces.
17. Forklifts must not be left running while unattended. (Unattended means within 25 feet or out-of-sight).
18. The tilt mechanism is not to be operated after the load is lifted, except to deposit the load in a rack.
19. Forklift must not be driven into areas prohibited to traffic.
20. Drivers should have a valid driver's license (automobile) in order to drive a forklift.

THESE RULES ARE NOT ALL-INCLUSIVE; DRIVERS ARE RESPONSIBLE FOR ADHERENCE TO ALL RULES PRESENTED. VIOLATION OF ANY OF THESE RULES MAY RESULT IN DISCIPLINE UP TO AND INCLUDING TERMINATION.

_____ _____

Print Name Name

_____ _____

Signature Date

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Appendix Q

Operators daily checklist

As a forklift operator, pre-operation inspections should be part of your daily routine. Pre-Operation inspections help not only increase the longevity of your forklift, but also help decrease accidents due to component failure while operating it.

Exterior Inspection

*Be sure forklift is parked on a level surface, brake is applied, forks are lowered to the ground and the key switch is off before beginning the inspection.

- ☐ No Visible coolant or oil leaks
- ☐ Brake fluid levels are appropriate
- ☐ Engine oil is appropriate
- ☐ Good Tire pressure, No damage, cracks, or wear
- ☐ No Loose hub nuts
- ☐ No Dirt, Damage or Cracks on lamps
- ☐ Coolant levels are appropriate
- ☐ Hydraulic oil levels are appropriate
- ☐ No Damage, bends, looseness, or chain tension to forks or backrest

On-vehicle Inspection

- ☐ Mast, forks, lift chains, hydraulics and carriage operates properly
- ☐ Back mirror is in good condition
- ☐ Brake and clutch pedals function properly
- ☐ Parking brake lever is effective
- ☐ Proper operation of each gauge
- ☐ No abnormal noise, vibration, emission color or emission smell
- ☐ Lamps turn on and off
- ☐ No loose steering
- ☐ Horn works properly with no interference
- ☐ OPS Indicator lighting operates effectively

Date of Inspection_____

Inspected By_____

PASS FAIL

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TITLE: HEARING PROTECTION PROGRAM

POLICY 016

REFERENCE: 29 CFR 1910.95 - Noise

PURPOSE: The primary goal of the Affordable Solar Hearing Conservation Program is to reduce, and eventually eliminate hearing loss due to workplace noise exposures.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:

The **Office of Environmental Health (EH&S)** is responsible for developing, implementing, and administering the Hearing Conservation Program.
Additional responsibilities include:

- Identification of work areas and equipment within Affordable Solar facilities where noise levels equal or exceed 85 dBA.
- Identification, through personnel monitoring, of Affordable Solar employees whose noise exposure level equals or exceeds an 8-hour TWA of 85 dBA. Notification of employee exposure measurements is sent to the employee, the employee's supervisor and to Occupational Medicine and Health Service for inclusion in annual audiology program.
- Noise surveys and/or noise dosimetry must be conducted to determine which areas require warning signs;
- Training of employees in the need for, proper use and care of hearing protection devices. The training must include the following topics:
    1. Noise induced hearing loss;
    2. Recognizing hazardous noise;
    3. Symptoms of overexposure to noise;
    4. Hearing protection devices advantages & limitations;
    5. Selection, fitting, use and maintenance of hearing protection devices;
    6. Explanation of noise measurement procedures;
    7. Hearing conservation program requirements.
- Identification of noise control measures (including engineering and administrative controls) and recommendations.

Site Managers

It is the responsibility of Site Managers to ensure that all of their employees exposed to noise levels equal to or greater than 85 dBA have access to appropriate hearing protective devices in the work area and enroll those employee(s) in the Hearing Conservation Program if identified as having an 8-hour TWA equal to or exceeding 85 dBA. Site Managers are responsible for enforcing the use of hearing protective devices and engineering and administrative controls in designated noise hazardous areas and dispensing ear muffs when necessary as well as maintaining a supply of disposable ear plugs.
The Site Manager must ensure that the following are maintained:

- Signs posted at the entrance to any work area where noise levels equal or exceed 85 dBA
- Supply hearing protection to his/her employee(s) at no cost to the employee(s);
- Enforcement of the wearing of hearing protection in the designated areas using established disciplinary procedures;
- Hearing Protection Devices are used and maintained as originally intended and in accordance with instructions provided.

The Site Manager is also responsible for coordinating and scheduling Hearing Conservation Program training for all employees at their site who participate in the Hearing Conservation Program with EH & S Department.

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Employees

Employees are responsible for wearing and maintaining hearing protective devices as instructed. Employees enrolled in the Affordable Solar Hearing Conservation Program must also participate in annual training programs and the medical surveillance program, which includes baseline and annual audiometric testing.

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1. Identification of Hazardous Noise Areas
2. Noise Measurements and Exposure Assessments
3. Area Measurements
4. Personnel Monitoring
5. Re-monitoring of Hazardous Noise Area
6. Re-monitoring Doe to Change
7. Engineering and Administrative Controls
8. Personal Protective Equipment
9. Types of Hearing Devices
10. Selection of Hearing Protection Devices
11. Issuance of Hearing Protective Devices
12. Use of Hearing Protective Devices
13. Maintenance of Hearing Protective Devices
14. Hearing Protection Performance Information
15. Medical Surveillance
16. Training
17. Recordkeeping

1. IDENTIFICATION OF HAZARDOUS NOISE AREAS

The Department of Environmental Health and Safety (EH&S) will identify work areas within Affordable Solar facilities where noise levels equal or exceed 85 dBA. Signs will be posted at the entrance to any work area where noise levels exceed 85 dBA, requiring anyone entering the area to wear proper hearing protection. Personnel who work in these areas shall have hearing protection supplied to them, shall be instructed in its proper use, and be required to wear this equipment when in these identified areas. It is the responsibility of the area supervisor to ensure that these precautions are maintained.

2. NOISE MEASUREMENTS AND EXPOSURE ASSESSMENTS

All noise monitoring will be conducted by EH&S. The monitoring of employees for noise exposure is made up of two parts, area and personal monitoring. Area measurements are generally obtained first. If noise levels are at or above 85 dBA, personal monitoring using dosimeters is then performed. Sample data sheets will be used to record monitoring data for both area and personal noise monitoring results. EH&S will provide observation of the monitoring to employees who work in the area.

3. AREA MEASUREMENTS

In an area survey, measurements of environmental noise levels are recorded using a sound level meter to identify work areas where employees' exposures may be above hazardous levels, and where more thorough exposure monitoring may be needed. Area monitoring is conducted using a calibrated sound level meter set to the A scale, slow response. Within the area of interest, several different locations will be measured. Typical measurement locations would include:

- In the hearing zone at the employee's normal work location.
- Next to the noise source(s).
- At the entrance(s) to the work area.
- At other locations within the area where the employee might work.

A rough sketch of the area will be included with the results showing the locations where the noise readings were obtained.

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If the noise levels are below 85 dBA on a time-weighted average basis in the area, no further routine monitoring will be required for that area. Should any of the noise measurements equal or exceed 85 dBA, records shall be maintained as to the noise levels recorded, where they were taken, and the source(s) of the noise. These records shall be updated at least once every two years to determine if any changes have occurred that would warrant re-monitoring of exposed personnel. If any of the measurements equal or exceed a noise level of 85 dBA, employees who work in or near the high noise area or equipment shall have their noise exposure determined through personnel monitoring using dosimeters.

4. PERSONNEL MONITORING

Determination of the noise exposure level will be accomplished using calibrated noise dosimeters. Each employee to be monitored will have a dosimeter placed on him/her at the beginning of his/her normal work shift with the microphone placed in the "hearing zone". The dosimeter will be worn for the full duration of the work shift while the employee performs his/her normal work routine. At the end of the work shift, the dosimeter will be removed and information printed out as soon as possible. Background information will be collected from each employee detailing job description, unusual job activities, etc., for the time period sampled. Those employees whose noise exposure equal or exceeds 85 dBA on an 8-hour TWA(Total Weighted Average) will be referred to the designated Center of Occupational Medicine Service for inclusion in the Hearing Conservation Program.

5. RE-MONITORING OF HAZARDOUS NOISE AREAS

All areas where noise levels equal or exceed 85 dBA shall be re-monitored at least every two years. Whenever an employee exhibits a standard threshold shift, as determined by designated Center of Occupational Medicine, the employee's work place shall be re-monitored to identify and rectify the cause.

6. RE-MONITORING DUE TO CHANGES

Any area with noise levels that equal or exceed 85 dBA shall also be re-monitored whenever a change in production process, equipment, or controls increase the noise exposure such that additional employees are exposed to noise levels at or above 85 dBA on a time-weighted average basis. Areas where the noise levels have dropped below 85 dBA due to alterations in equipment, controls or process changes may be eliminated from the monitoring program after a period of two months.

7. ENGINEERING AND ADMINISTRATIVE CONTROLS

The primary means of reducing or eliminating personnel exposure to hazardous noise is through the application of engineering controls.

7.1 Engineering controls are defined as any modification or replacement of equipment, or related physical change at the noise source or along the transmission path that reduces the noise level at the employee's ear. Engineering controls such as mufflers on heavy equipment exhausts or on air release valves are required where possible.

7.2 Administrative controls are defined as changes in the work schedule or operations which reduce noise exposure. If engineering solutions cannot reduce the noise, administrative controls such as increasing the distance between the noise source and the worker or rotation of jobs between workers in the high noise area should be used if possible.

The use of engineering and administrative controls should reduce noise exposure to the point where the hazard to hearing is eliminated or at least more manageable.

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8. **PERSONAL PROTECTIVE EQUIPMENT**

Hearing protective devices (ear plugs, muffs, etc.) shall be the permanent solution only when engineering or administrative controls are considered to be infeasible or cost prohibitive. Hearing protective devices are defined as any device that can be worn to reduce the level of sound entering the ear. Hearing protective devices shall be worn by all personnel when they must enter or work in an area where the operations generate noise levels of:

- Greater than 85 dBA sound levels and/or;
- 120 dB peak sound pressure level or greater.

9. **TYPES OF HEARING PROTECTIVE DEVICES**

9.1 **Insert Type Earplugs:** A device designed to provide an air-tight seal with the ear canal. There are three types of insert earplugs - premolded, formable, and custom earplugs.

9.1.1 **Premolded Earplugs:** Premolded earplugs are pliable devices of fixed proportions. Two standard styles, single flange and triple flange, come in various sizes, and will fit most people. Personnel responsible for fitting and dispensing earplugs will train users on proper insertion, wear, and care. While premolded earplugs are reusable, they may deteriorate and should be replaced periodically.

9.1.2 **Formable:** Formable earplugs come in just one size. Some are made of material which, after being compressed and inserted, expands to form a seal in the ear canal. When properly inserted, they provide noise attenuation values that are similar to those from correctly fitted premolded earplugs. Individual units may procure approved formable earplugs. Supervisors must instruct users in the proper use of these earplugs as part of the annual education program. Each earplug must be held in place while it expands enough to remain firmly seated. A set of earplugs with a cord attached is available. These earplugs may be washed and therefore are reusable, but will have to be replaced after two or three weeks or when they no longer form an airtight seal when properly inserted.

9.1.3 **Custom Molded Earplugs**: A small percentage of the population cannot be fitted with standard premolded or formable earplugs. Custom earplugs can be made to fit the exact size and shape of the individual's ear canal. Individuals needing custom earplugs will be referred to an audiologist.

9.2 **Earmuffs:** Earmuffs are devices worn around the ear to reduce the level of noise that reaches the ear. Their effectiveness depends on an air tight seal between the cushion and the head.

10. **SELECTION OF HEARING PROTECTIVE DEVICES**

Employees will be given the opportunity to select hearing protective devices from a variety of suitable ones provided by the Office of Environmental Health and Safety. In all cases the chosen hearing protectors shall have a Noise Reduction Ratio high enough to reduce the noise at the ear drum to 85 dBA or lower.

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11. **ISSUANCE OF HEARING PROTECTIVE DEVICES**

The issuance of hearing protective devices is handled through EH&S Supervisor. EH&S will issue and fit the initial hearing protective devices (foam inserts, disposables). Instruction on the proper use and care of earplugs and earmuffs will be provided whenever Hearing Protection Devices are dispensed. Personnel requiring earmuffs in addition to earplugs will be informed of this requirement and educated on the importance of using proper hearing protection. The Site Manager will dispense ear muffs when necessary and will maintain a supply of disposable earplugs.

12. **USE OF HEARING PROTECTIVE DEVICES**

1. Always use and maintain Hearing Protection Devices as originally intended and in accordance with instructions provided.
2. Earmuff performance may be degraded by anything that compromises the cushion-to-circumaural flesh seal. This includes other pieces of personal protective equipment such as eyewear, masks, faceshields, and helmets.

13. **MAINTENANCE OF HEARING PROTECTIVE DEVICES**

1. Reusable earplugs, such as the triple flange or formable devices should be washed in lukewarm water using hand soap, rinsed in clean water, and dried thoroughly before use. Wet or damp earplugs should not be placed in their containers. Cleaning should be done after each use and prior to another employee wearing the same Hearing Protection Devices.
2. Earmuff cushions should be kept clean. The plastic or foam cushions may be cleaned in the same way as earplugs, but the inside of the muff should not get wet. When not in use, ear muffs should be placed in open air to allow moisture that may have been absorbed into the cups to evaporate.

14. **HEARING PROTECTION PERFORMANCE INFORMATION**

The maximum of sound attenuation one gets when wearing hearing protection devices is limited by human body and bone conduction mechanisms. Even though a particular device may provide outstanding values of noise attenuation the actual noise reductions may be less because of the noise surrounding the head and body bypasses the hearing protector and is transmitted through tissue and bone pathways to the inner ear.

15. **MEDICAL SURVEILLANCE**

15.1 **Notification:**
Upon identification of employees whose 8-hour TWA (Total Weighted Average) equals or exceeds 85 dBA, EH&S will inform the employee(s), Occupational Medicine and the employees' Supervisor, in writing, of the need to enroll certain employee(s) in the Hearing Conservation Program. Information supplied to Occupational Medicine will include the employee(s) name, supervisor's name, telephone number, and the noise levels recorded in the employee's work area, including dosimetry data. It will be the responsibility of the Supervisor to enroll his/her employee in the Hearing Conservation Program.

In work locations where either through administrative or engineering controls, noise levels are found to have fallen such that the employee's 8-hour TWA (Total Weighted Average) is below 85 dBA, EH&S shall notify the employees, designated Center of Occupational Medicine and the employee's Supervisor, by memo, that the employees working in that area are no longer required to be enrolled in the Hearing Conservation Program. The final decision as to an employee's enrollment status will be left with the Office of Environmental Health and Safety.
The results of area and personal monitoring shall be forwarded to Occupational Medicine upon completion of the noise surveys.

Any personnel experiencing difficulty in wearing assigned hearing protection (i.e., irritation of the canals, pain) will be advised to immediately report this to their supervisor and make arrangements to go to Occupational Medicine for evaluation as soon as possible.

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16. **AUDIOMETRIC TESTING**

Affordable Solar and a Designated Occupational Medicine Service have the responsibility for administering the Audiometric Testing Program portion of the Affordable Solar Conservation Program. The object of the audiometric testing program is to identify workers who are beginning to lose their hearing and to intervene before the hearing loss becomes worse. Audiometric testing will be provided to all employees whenever employee noise exposures equal or exceed an 8-hr. time-weighted average (TWA) of 85 dBA. Annual retesting will be performed for all personnel enrolled in the Hearing Conservation Medical Surveillance Program.

17. **TRAINING**

17.1 The training and education program will provide information about the adverse effects of noise and how to prevent noise-induced hearing loss. At a minimum, all training will cover the following topics:

- Noise-induced hearing loss;
- Recognizing hazardous noise;
- Symptoms of overexposure to hazardous noise;
- Hearing protection devices - advantages and limitations.
- Selection, fitting, use, and maintenance of Hearing Protection Devices.
- Explanation of noise measurement procedures.
- Hearing conservation program requirements.

17.2 Employees will also be provided with copies of the OSHA noise standard (29 CFR 1910.95) and other handouts describing the Affordable Solar Hearing Conservation Program.

17.3 Affordable Solar employees shall be encouraged to use hearing protective sevices when they are exposed to hazardous noise during activities at home; e.g., from lawn mowers, chain saws, etc.

17.4 The Office of Environmental Health and Safety will provide annual refresher training. Supervisors must contact EH&S to schedule training for new personnel assigned to work in noisy environments and for retraining of current personnel.

18. **RECORDKEEPING**

Hearing Conservation Program records will include the following:

Medical Evaluation and Audiograms (Concentra)
Training Records (EH&S)
Hearing Conservation Program Manual (EH&S)

Hazard Evaluations (EH &S)

All non-medical records (ex., work area and equipment surveys) will be maintained for a period of five years. Results of hearing tests and medical evaluations performed for hearing conservation purposes as well as noise exposure documentation shall be recorded and shall be a permanent part of an employee's health record.

All personnel who routinely work in designated hazardous noise areas shall be identified and a current roster of such personnel shall be maintained by EH&S and Occupational Medicine, and updated periodically.

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TITLE: MOTOR VEHICLE OPERATION PROGRAM

POLICY 017

PURPOSE: Affordable Solar employees may operate their personal vehicles for company business. RPC employees may also be requested to travel, requiring the use of a company vehicle and employees may need to operate a commercial motor vehicle.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY: It is the employee's responsibility to comply with state laws, Affordable Solar policy, and safety rules while operating a motor vehicle on company business.

PROCEDURE:

1. Company policy requires all motor vehicle operators and all passengers to properly fasten their seat belts while operating any motor vehicle on company business. Failure to do so could result in disciplinary action, up to and including termination.
2. Periodically, Affordable Solar supervisors, at their discretion, may visually check employee's driver licenses, motor vehicle registration and insurance cards.
3. EH&S and supervisor's may inspect company vehicles for cleanliness. Having a company vehicle is a privilege; the vehicle shall be maintained regularly by scheduling time with the Maintenance Department, and the vehicle shall be kept presentable at all times.
4. Employees involved in a motor vehicle incident on company business are to report the incident immediately to their supervisor and the Affordable Solar EH&S Department.
5. Employees involved in a motor vehicle incident on company business are to complete a Affordable Solar incident report.
6. Any Affordable Solar employee operating a motor vehicle while on company business, may be subject to disciplinary action, up to and including termination, for deliberate failure to comply with state laws and/or Affordable Solar policy and/or safety rules.

Operating a Commercial Motor Vehicle - DOT Medical Certification

Pursuant to 49 CFR Part 390.5 and 49 CFR Part 391.41, Affordable Solar employees shall not operate a commercial motor vehicle without obtaining a proper medical examiner's certificate stating that he/she is physically qualified to operate a commercial motor vehicle. A commercial motor vehicle is a vehicle with a gross vehicle weight rating of 10,001 or more. In order to obtain a DOT Medical Certificate, the employee must do the following:

1. Obtain approval from his/her supervisor to get a DOT Medical Certificate.
2. Contact a local medical examiner (physician) who performs DOT Medical Certificate exams and make an appointment.
3. Complete the examination and receive the DOT Medical Certificate.
4. Pay for the medical examination.
5. Submit an expense/reimbursement form to his/her supervisor for full reimbursement of examination charges.
6. Submit a copy of the DOT Medical Certificate to the EH&S Department for recordkeeping purposes.
7. A copy of the DOT Medical Certificate must be kept on the employee's person at all times while operating a commercial motor vehicle for Affordable Solar . Anyone failing to adhere to this requirement will be subject to disciplinary actions.

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TITLE: PAINTING SAFE PRACTICES

POLICY 018

PURPOSE: The purpose of the PAINTING Safe Practices is to protect the worker when working with paints and the painting process. This plan is written to comply with the OSHA rules.

SCOPE: The information in this policy applies to all Affordable Solar employees and supervisors performing duties at any locations.

RESPONSIBILITY: It is the responsibility of the Supervisor to provide PPE based on the Hazard Assessment form APPENDIX H.

POLICY AND PROCEDURE:

Painting

1. When painting with a brush on or near live parts energized at 5,000 volts or above, the brush shall be attached to an approved insulated stick.

2. When painting in areas lacking adequate ventilation, workers shall wear properly fitted organic/particulate half-face respirators. Employees performing this task must notify safety personnel and review Rule 406 Respiratory Protection.

3. Smoking is prohibited within 25 feet of spray painting operations.

4. Spray painting shall not be allowed near live wires unless barriers are placed between the spray gun and live parts.

5. Spray painting pressure tanks shall be equipped with pressure relief valves and gauges.

6. When adequate air supply is not available or short-term exposure limits are exceeded, air-supplied respirators shall be worn.

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TITLE: REMOTE LOCATION (LONE WORKER POLICY)

POLICY 018

PURPOSE: Affordable Solar has work sites that are with only one or two employees. Periodically, an employee is requested to travel to perform work at an unmanned site. This procedure has been developed as a safety measure for employees working at the remote locations.

SCOPE: The information in this policy applies to all Affordable Solar employees and supervisors performing duties at the remote locations.

RESPONSIBILITY: It is the responsibility of the Supervisor to provide means of communication for employee working alone or at a remote location.

POLICY AND PROCEDURE:

1. When only one employee is assigned to work at the remote location site:
   1.1. The Affordable Solar employee will contact their supervisor upon arrival at the site, throughout the day, and upon departing the site.
   1.2. The Affordable Solar employee will carry a cell phone on their person.
   1.3. The Affordable Solar employee will carry on their person **AN EMERGENCY CONTACT LIST** and will program it into his/her cell phone. The contact list will contain the name and telephone number of the direct supervisor, the EH&S Department, and the main office.

2. When two employees are assigned to work at the remote location site:
   2.1. When a site has at least two employees, the employees will carry on their person either a cell phone or a radio to communicate with each other.
   2.2. If the location provides an office for the employees, all safety postings, including the Emergency Contact List are required.
   2.3. If the location does not provide an office for the employees, then the guidelines for "when only one employee is assigned to a work site" apply.

As a reminder: No matter how remote the location is, all Company, Federal, and State regulations apply. Carelessness by an employee will result in disciplinary actions.

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TITLE: SLIP, TRIP, AND FALL PREVENTION

POLICY 020

REFERENCES: OSHA 29 CFR 1910.21, 22, and 23

PURPOSE: This procedure/practice is designed to help employees identify slip, trip and fall hazards and prevent injuries resulting from such hazards.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:
- Supervisors are responsible to follow up with corrective action on identified reported slip, trip and fall hazards.
- Employees are responsible to clean spills promptly, avoid carrying heavy loads, and be diligent in keeping debris from the walk/work areas. Employees are expected to use ladders properly.

PROCEDURES AND PRACTICES:
Slip, trip and fall accidents include falls incurred in the buildings and on the grounds, they are identified as falls on the same floor level or simple falls to the ground, floor, and stairs.

The following list includes examples of common causes for slips, trips and falls in the workplace:

1. Housekeeping and Maintenance Practices
   - 1.1. Accumulation of clutter and waste.
   - 1.2. Improper storage of material and equipment.
   - 1.3. Spills.
   - 1.4. Extension cords, conduits, cables, and hoses across walking surfaces.
   - 1.5. Loose and unsecured floor mats, carpets, and coverings.
   - 1.6. Damaged or missing flooring materials.
   - 1.7. Stairs and ramps with loose or missing handrails.
   - 1.8. Inadequate lighting.

2. Walking and Working Surface Conditions
   - 2.1. Slippery, wet or icy walking surfaces.
   - 2.2. Uneven walking surfaces.
   - 2.3. Surface changes such as carpet to tile or level to slope.
   - 2.4. Surface protrusions or depressions such as thresholds, cover plates, and gratings.

3. Work Practices
   - 3.1. Wearing inappropriate footwear for the task.
   - 3.2. Carrying items that obstruct view.
   - 3.3. Rushing to complete work.

4. Personal Behavior
   - 4.1. Wearing improperly fitted, loose, or undone footwear or clothing.
   - 4.2. Cutting through areas not designated or intended as walkways.
   - 4.3. Horseplay and running in the workplace.
   - 4.4. Not paying attention.

5. Report slip, trip and fall hazards immediately. Why?
   - 5.1. Immediate reporting of the hazard allows for prompt corrective action.
   - 5.2. Ensures a safe and healthy workplace
   - 5.3. Eliminates injuries in the workplace.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

TITLE: HAND AND PORTABLE POWER TOOLS

POLICY 021

REFERENCE: 29 CFR 1910.243-244

PURPOSE: The purpose of this procedure is to prevent injury to Affordable Solar employees from the improper use of hand and power tools and /or from the use of damaged or defective tools.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITIES:

- Affordable Solar is responsible for the safe condition of tools and equipment used by employees.
- Employees are responsible for properly using and maintaining tools.

PROCEDURE:

Affordable Solar strictly enforces safe use and application of hand and portable power tools. All tools shall be used in the way they were designed and intended to be used by the manufacturer.

General Rules:

1. Use the right tool for the job.
2. Always use the proper personal protective equipment.
3. Wear proper clothing. Loose clothing or jewelry can become caught in moving parts.
4. Perform pre-work inspections of tools and machines to ensure they are working properly.
5. All hand and power tools furnished by Affordable Solar must be in safe working condition.
6. Employees should comply with manufacture's instructions for use.
7. Damaged or defective tools should be tagged out of service and turned over to your supervisor for repair.
8. All employees using hand and power tools should be trained in their use and safe operations. ***Training must be documented and a copy of the training must be sent to the EH&S department.***
9. Any tools that are designed to have guards and handles are required to have those guards and handles unaltered and in place at all times.
10. Electrical power tools and equipment should be properly grounded or double insulated. Always use Ground Fault Circuit lnterrupters (GFCI's).
11. Do not use electrical power tools or equipment while standing in water.
12. Power tools should never be carried, raised, or lowered by the electrical cord or hose.
13. Never yank the cord or the hose to disconnect it from the receptacle or extension cord.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar Installation, Inc., DBA Gridworks

TITLE: DRUGS AND ALCOHOL POLICY

REPLACED BY GRIDWORKS' DRUG AND ALCOHOL POLICY #009

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar Installation, Inc., DBA Gridworks

TITLE: OFFICE SAFETY POLICY

POLICY 023

PURPOSE: Offices can pose a number of hazards. Among them are dangers from floor surfaces, stairs, chairs, filing cabinets, office machinery, sharp objects, and falls. Slips, trips and falls are the most common types of job related accidents experienced by office workers.

SCOPE: The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY Employees are expected to comply with the Office Safety principles and rules set forth by Affordable Solar .

PROCEDURE:
The following safety practices should help reduce office-related accidents:

1. Keep aisles and walkways clear.
2. Practice good housekeeping.
3. Walk, do not run.
4. Clean up spilled liquids immediately, after determining that a hazardous substance is not involved.
5. Avoid wet floors whenever possible. If you must walk on a wet floor, slow down, shorten your stride, point your toes slightly outward, and make wide turns.
6. When walking in rain, wear shoes that provide added traction.
7. Take extra care when walking from a carpeted area to a smooth hard surface.
8. Secure loose carpeting and cut loose threads.
9. Take your time and watch where you are going, especially when you are rounding a corner.
10. Carry loads of reasonable size so that your vision is not obstructed.
11. Use handrails on stairways.
12. Never run electrical or communication cords across walkways.
13. Never run electrical cords under carpet.
14. Never leave file cabinet drawers open.
15. To keep filing cabinet from toppling over, open only one drawer at a time and file all heavy materials in the bottom drawer of a filing cabinet.
16. Always use a ladder or stepstool to reach an object over your head.
17. Never stand on swivel chairs or desks.
18. When sitting down in a chair, look at the chair, grasp the chair armrests with your hands, and then lower yourself into the chair.
19. Replace or repair broken chairs.
20. When placing a ladder in front of a door, secure the door so no one can open it from either side.
21. Never leave objects on staircases.
22. Employees involved in handling of heavy materials should be trained in proper lifting methods.
23. Office machine repairs should only be made by competent service personnel.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar Installation, Inc., DBA Gridworks

TITLE: SAFETY AUDIT POLICY

POLICY 024

PURPOSE: The EH&S Dept. will conduct periodic, scheduled and unscheduled reviews at each site for the purpose of identifying supplemental training needs, reviewing the company's safety program compliance, and measuring the effectiveness of the safety training program.

SCOPE: The information in this policy applies to all Affordable Solar sites.

RESPONSIBILITY:
- It is the responsibility of the EH&S Department to conduct the safety audit.
- It is the responsibility of the Supervisor to manage the job site in an "ongoing readiness" mode for any regulatory inspection.
- It is the responsibility of the Manager to assist Supervisor with compliance issues.

PROCEDURE:
The Safety Audit will consist of the following elements:
- A review of the work site's safety program compliance;
- A report of the findings;
- An assessment of training needs; and
- A measurement tool for the effectiveness of the safety training program.

Review of Work Site Safety Compliance
A review of the work site's safety compliance will be determined by an administrative review and a site walk through.

The Administrative Review is an examination of the documents supporting all safety policies and procedures. The Administrative review must include the examination of all required postings, files, checklists, records, and manuals.

The site walk through is a visual inspection performed to observe or identify items out of compliance, unsafe conditions and unsafe actions. The site walk through will include offices, warehouses, and outside yards, job sites manned by Affordable Solar employees.

Upon completion of the document review and the site walk through, the EH&S department representative will confer with the Supervisor regarding any deficiencies found.

Reporting
The Safety Audit form will be sent to the Manager. Following a site safety audit the EH&S department representative will complete a trip report. The trip report is sent to the Manager. The trip report includes: a summary of the compliance issues identified at each site visited; a summary of training provided and; supplemental training plans required (if any).

Assessment of Training Needs
The EH&S department representative will interview several employees while visiting the job site to measure safety training knowledge and competency. The EH&S department representative will review the job site's performance deficiencies against weekly safety training provided to determine if supplemental training is needed.

If deemed appropriate, the EH&S representative will provide "on the spot refresher training". If the training assessment needs appear to be more extensive, a supplemental training plan will be developed for the site.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar Installation, Inc., DBA Gridworks

Measuring the effectiveness of Affordable Solar Safety Program

The EH&S Department will conduct Safety Audits at manned Affordable Solar sites. The EH&S department will identify trends, analyze their cause, develop and implement possible solutions to improve safety programs through the use of the Safety Audit Tool.

A quarterly report is submitted to Management summarizing the safety audits conducted during the quarter. The report summarizes the number of sites visited, the number of training topics covered on a spot refresher training basis and the number of supplemental training plans implemented. The quarterly report also summarizes the number of incidents reported with specific emphasis on material handling equipment incidents and OSHA recordable incidents.

Appendix R – Safety Audit

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APPENDIX R

Affordable Solar Weekly Safety Inspection Report **Date:**

Inspected By: **Job:**

	Poor	Fair	Good	N/A	
1. Job Information					
Foreman has nearest medical facility paperwork.					
Weekly safety meetings are up to date.					
Work areas are properly signed and barricaded.					
First aid are supplies readily available.					
Potable drinking water and toilet facilities are on site.					
2. Housekeeping					
General cleanliness of work area is good.					
Waste containers are provided and used.					
Passageways and walkways are clear.					
3. Fire Prevention					
Adequate fire extinguishers are checked and accessible.					
Fire blankets are readily available, used, and in good condition.					
4. Electrical					
Extension cords or attachment cords are in good operating condition.					
Welding leads are in good operating condition.					
Electrical cords and welding leads are protected from damage.					
Lock out/ Tag out procedures are being followed.					
Circuits shut down are being tested before work begins.					
5. Hand/Power/Powder Actuated Tools					
Hand tools are inspected regularly.					
Are all guards are properly in place and functional.					
The right tool is being used for the job at hand.					
Operators of powder actuated tools are licensed.					
Damaged tools have been taken out of service.					
6. Fall Protection					
Safety cables and rails are secured properly.					
Employees exposed to fall hazards are tied off.					
Employees working below are protected from falling objects.					
Employees working above 6' are protected from falling by guardrails, safety nets, and/or personal fall arrest systems.					

	Poor	Fair	Good	N/A	
7. Ladders					
Ladders extend at least 36" above landing.					
Ladders are secured to prevent slipping, sliding, and falling.					
Damaged ladders are taken out of service.					
Stepladders are being used in fully opened position.					
Aluminum or wooden ladders aren't being used.					
Nobody is stepping above top 2 rungs of ladder.					

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8. Scaffolding					
All scaffolding is inspected daily.					
Scaffolding is erected on sound sturdy footing.					
Scaffolding is tied to structure as required?					
Guardrails, intermediate rails, toe boards, and screens are place.					
Planking is sound and sturdy.					
Proper access is provided.					
Employees below are protected from falling objects.					

9. Floor or Wall Openings					
All floor or deck openings are planked over or barricaded.					
Perimeter protection is in place.					
Deck planks are secured.					
Materials are stored away from edge.					

10. Material Handling					
Materials are properly stored and/or stacked.					
Employees are using proper lifting techniques.					
Tag lines are being used on all material being lifted.					
Proper number of workers are being used for each operation.					

11. Welding & Burning					
Gas cylinders are stored upright, and secured.					
Proper separating distance between fuels and oxygen are adequate. (min. 25')					
Welding shields and/or goggles being used?					
Fire extinguishers are within 30' of hot work area.					
Hot work equipment is in good working condition.					

12. Cranes					
Outriggers are extended and swing radius barricade is in place.					
Employees are kept from under suspended loads.					

	Poor	Fair	Good	N/A	
Chains, straps, and all other rigging is inspected before each use.					
Planking is being used under outriggers to prevent crane from sinking in soft ground.					
Hand signal charts are on foremans truck.					

13. Aerial and Forklift Equipment					
Employees are standing on platform not railing.					
Equipment is being operated safely.					
Employees are wearing seatbelts.					
Material is being lifted in a safe manner.					
Employees are tied off in any lift going outside its wheelbase?					
Lock out/ Tag out procedure is in use on any machinery that is broken or could cause injury to the employee or equipment.					

14. Personal Protective Equipment					

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Harnesses and hard hats are being inspected for damage and experation.					
Hard hats are being worn.					
Safety glasses are being worn along with a face shield while grinding.					
Leather work boots or approved footwear is being worn.					
Hearing protection is being worn when required.					
Reflective vests or shirts are being worn when required.					

15. Vehicles					
Vehicles with an obstructed view have a backup alarm or spotter being used.					
All vehicles and equipment have seatbelts.					
There is a fire extinguisher on all equipment and vehicles.					

16. Unsafe Acts or Practices observed:

Signature: _____ **Date:** _____

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

TITLE: OSHA RECORDKEEPING PROGRAM

POLICY 025

REFERENCE: OSHA - 29 CFR 1904

PURPOSE:
Records provide employers and OSHA with statistical data to enable safety programs to determine where emphasis should be placed in order to mitigate or eliminate injuries or accidents in the future. The OSHA Recordkeeping Standard establishes uniform requirements to make sure that the illnesses and injuries sustained in the U.S. workplaces are evaluated, and that this information is properly collected, compiled, retained, analyzed, and transmitted to all affected workers and to OSHA.

SCOPE:
The information in this policy applies to all Affordable Solar employees.

RESPONSIBILITY:
The EH&S Department is solely responsible for all facets of this program and has full authority to make necessary decisions to ensure success of the program. The EH&S Department will develop written detailed instructions covering each of the basic elements in this program, and is the sole entity authorized to amend these instructions.

THE WRITTEN OSHA RECORDKEEPING PROGRAM

Table of Contents

1. Introduction
2. General Recordkeeping Requirements
3. Log and Summary of Injuries and Illnesses
4. Supplementary Record
5. Annual Summary
6. Records Retention
7. Access to Records
8. Fatality/Multiple Hospital Accidents
9. Change of Ownership
10. Petitions for Recordkeeping Exceptions
11. Employees Not in Fixed Establishments
12. Statistical Program
13. Recordability and Classification
14. Annual OSHA Injury and Illness Surveys

1. Introduction:

OSHA's standard practice instruction provides for recordkeeping and reporting requirements covered under 29 CFR 1904 as necessary or appropriate for developing information regarding the causes and prevention of occupational accidents and illnesses, and for maintaining a program of collection, compilation, and analysis of occupational safety and health statistics both for this company and as part of the national system for analysis of occupational safety and health.

Affordable Solar will develop and maintain a written OSHA Recordkeeping program. Affordable Solar will review and evaluate this standard practice instruction on an annual basis, or when changes occur to 29 CFR 1904 that prompt revision of this document, or when facility operational changes occur that require a revision of this document. Effective implementation of this program requires support from all levels of management within this company.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

2. General Recordkeeping Requirements:

This section provides for recordkeeping and reporting by Affordable Solar covered under 29 CFR 1904 as necessary or appropriate for developing information regarding the causes and prevention of occupational accidents and illnesses, and for maintaining a program of collection, compilation, and analysis of occupational safety and health statistics both for this company and as part of the national system for analysis of occupational safety and health. Records shall be established on a calendar year basis.

2.1. Affordable Solar will report under 29 CFR 1904.39 concerning fatalities or multiple hospitalization accidents.

2.2. Affordable Solar will maintain a log of occupational injuries and illnesses under 29 CFR 1904.4 and make reports under 29 CFR 1904.42 upon being notified in writing by the Bureau of Labor Statistics that the employer has been selected to participate in a statistical survey of occupational injuries and illnesses.

3. Log And Summary Of Occupational Injuries And Illnesses (OSHA 300).

The log will be used for classifying occupational injuries and illnesses, and for noting the extent of each case. The log shows when the occupational injury or illness occurred, to whom, the regular job of the injured or ill person at the time of the injury, illness, or exposure, the department in which the person was employed, the kind of injury or illness, how much time was lost, whether the case resulted in a fatality, etc. This employer shall:

3.1. Maintain a log and summary of all recordable occupational injuries and illnesses by calendar year.

3.1.1. The form will be updated to include newly discovered cases and to reflect changes which occur in recorded cases after the end of the calendar year. Although all OSHA injury and illness records will be retained, only the log must be updated by Affordable Solar . If, during the 5-year retention period, there is a change in the extent or outcome of an injury or illness which affects an entry on a previous year's log, then the first entry will be lined out and a corrected entry made on that log. New entries for previously unrecorded cases that are discovered will also be documented. Log totals will also be modified to reflect these changes.

3.2. Enter each recordable injury and illness on the log and summary as early as practicable but no later than 7 working days after receiving information that a recordable injury or illness has occurred. For this purpose OSHA Form No. 301 or an equivalent which is as readable and comprehensible to a person not familiar with it will be used. The log and summary shall be completed in the detail provided in the form and instructions on form OSHA No. 300.

3.3. If Affordable Solar elects to maintain the log of occupational injuries and illnesses at a place other than this establishment or by means of data-processing equipment, or both, it will meet the following criteria:

3.3.1. There will be available at the place where the log is maintained sufficient information to complete the log to a date within 7 working days after receiving information that a recordable case has occurred.

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Affordable Solar

4. Supplementary record (OSHA 301).

In addition to the log of occupational injuries and illnesses (OSHA 300) Affordable Solar shall have available for inspection at each of our sites within 7 working days after receiving information that a recordable case has occurred, a supplementary record for each occupational injury or illness for that establishment. The record shall be completed in the detail prescribed in the instructions accompanying Occupational Safety and Health Administration OSHA Form No. 301. Workmen's compensation, insurance, or other acceptable alternative records may be used if they contain the information required by OSHA Form No. 301 (according to OSHA). Affordable Solar has an established Accident/Incident Investigation Report as an acceptable alternative to the OSHA Form No. 301.

4.1. For all incidents, the Affordable Solar Accident/Incident Investigation Report shall be filled out completely and a copy sent to the EH&S for review no later than twenty-four (24) hours following the incident.

5. Annual summary.

Affordable Solar shall post an annual summary of occupational injuries and illnesses for each facility under our control. This summary shall consist of a copy of the year's totals from the form OSHA No. 300 and the following information from that form:

5.1. Calendar year covered.

5.2. Company Name and establishment address.

5.3. Certification signature, title, and date.

5.4. A form OSHA No. 300A shall be used in presenting the summary. If no injuries or illnesses occurred in the year, zeros will be entered on the totals line, and the form posted.

5.5. The summary shall be completed by February 1 of each calendar year. Affordable Solar , or more specifically the EH&S Department, supervises the preparation of the log and summary of occupational injuries and illnesses. The Company Executive shall certify that the annual summary of occupational injuries and illnesses is true and complete. The certification shall be accomplished by affixing the signature of the Company Executive at the bottom of the last page of the log and summary or by appending a separate statement to the log and summary certifying that the summary is true and complete.

5.6. Affordable Solar shall post a copy of the establishment's summary at each facility in the manner required under 29 CFR 1904.32(b)(6). The summary covering the previous calendar year shall be posted no later than February 1, and shall remain in place until April 30. For employees who do not primarily report or work at a fixed site belonging to this company, or who do not report to any fixed site on a regular basis this posting requirement will be satisfied by presenting or mailing a copy of the summary during the month of February of the following year to each such employee who receives pay during that month.

***NOTE:** For multi-establishment employers: It will not be necessary to post summaries for those establishments where operations have closed down during the calendar year.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

6. Records retention.

Records maintained by Affordable Solar will be retained for the following time periods following the end of the year to which they relate.

6.1. Log and summary of all recordable occupational injuries and illnesses (OSHA 300 and 300A) as described in 29 CFR 1904.33. Retained for 5 years.

6.2. Supplementary records (OSHA 301 or equivalent) for each occupational injury or illness for this facility as described in 29 CFR 1904.33. Retained for 5 years.

6.3. Employee exposure and medical records for company employees as described in 29 CFR 1910.9. Retained for 30 years after termination of employment.

6.4. Noise exposure measurement records as described in 29 CFR 1910.10. Retained for 25 years.

6.5. Audiometric test records as described in 29 CFR 1910.10. Retained for the duration of the affected employee's employment.

7. Access To Records.

Affordable Solar shall provide, upon request, records provided for in 29 CFR 1904.7, 1904.29, and 1904.32 , for inspection and copying by any representative of the Secretary of Labor for the purpose of carrying out the provisions of the OSHA act, and by representatives of the Secretary of Health, Education, and Welfare, or by any representative of a State accorded jurisdiction for occupational safety and health inspections or for statistical compilation.

7.1. The log and summary of all recordable occupational injuries and illnesses (OSHA No. 300 and 301) will, upon request, be made available to any employee, former employee, and to their representatives for examination and copying in a reasonable manner and at reasonable times. The employee, former employee, and their representatives shall have access to the log for any establishment in which the employee is or has been employed.

8. **Reporting Of Fatality Or Multiple Hospitalization Accidents.**

Within 8 hours after the occurrence of an employment accident which is fatal to one or more employees or which results in hospitalization of three or more employees, Affordable Solar shall report the accident either orally or in writing to the nearest office of the Area Director of the Occupational Safety and Health Administration, U.S. Department of Labor (1-800-321-OSHA). The reporting may be by telephone or telegraph. The report shall relate the circumstances of the accident, the number of fatalities, and the extent of all injuries. It is understood that the Area Director may require such additional reports, in writing or otherwise, as he/she deems necessary, concerning the accident.

9. Change Of Ownership.

Should this company change ownership, the company shall notify the buyers of the requirement to preserve those records, if any, of the prior ownership which are required to be kept.

10. Petitions For Recordkeeping Exceptions.

Should Affordable Solar wish to maintain records in a manner different from that required, the company will submit a petition containing the information specified by the Regional Commissioner of the Bureau of Labor Statistics in the region occupied by our corporate offices.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

11. Statistical Program.

Affordable Solar will comply with all requirements to maintain, provide, and use statistical summaries. Affordable Solar shall promptly complete the form in accordance with the instructions contained therein, and return it in accordance with the instructions.

12. Recordability And Classification.

The following decision logic will be followed when determining incident recordability and classification:

12.1. Determine whether a case occurred (death, injury, illness).

12.2. Establish that the case was work related. An incident is work related when one of the following conditions are met:

12.2.1. Case resulting from an event or exposure in the work environment. In addition to the physical location, equipment or materials used in the course of an employee's work are also considered part of the employee's work environment.

12.2.2. Case resulting from an event or exposure in other locations where employees are engaged in work-related activities or are present as a condition of their employment.

12.3. Establishing that the case was not work related. An incident is not work related when one of the following conditions are met:

12.3.1. An employee is off duty on our premises as a member of the general public and not as an employee.

12.3.2. An employee has symptoms that merely surface on company premises, but are the result of a nonwork-related event or exposure off the premises.

12.4. Determine if the case is an illness or injury.

12.4.1. Illness cases. Illnesses usually result from a long term exposure, or cases where the illness does not develop as the result of an instantaneous event. This concept of illness includes acute illnesses which result from exposures of relatively short duration.

12.4.2. Injury cases. Injuries are only required to be recorded when they require medical attention (other than first aid). Injuries are usually caused by instantaneous events in the work environment. Cases resulting from anything other than instantaneous events are considered illnesses. This concept of illness includes acute illnesses which result from exposures of relatively short duration.

12.5. Determine if the Injury is a Recordable case. If the case is an injury, decide if it is recordable. The following criteria will be used as a basis for recordability. The case will be recorded if the employee has:

12.5.1. A work related injury.
12.5.2. Medical treatment other than first aid.
12.5.3. Has a loss of consciousness.
12.5.4. Experiences restriction of work or motion.
12.5.5. Been transferred to another job title or department as a result of the injury.

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12.6. Determine if the Illness is a Recordable case. Generally, occupationally induced illness should be recorded as a separate entry on the OSHA 300 (or equivalent) log. However, certain illnesses, such as silicosis, may have prolonged effects which recur over time. The recurrence of these symptoms will not be recorded as new cases on the OSHA forms. The recurrence of symptoms of previous illness may require adjustments of entries on the log for previously recorded illnesses to reflect possible change in the extent or outcome of the particular case. Where it is unclear if an entry should be made, contact the EH&S on advice for proper annotation.

12.7. Evaluate the Extent of Recordable cases. Once Affordable Solar decides that a recordable injury or illness has occurred, the case must be evaluated to determine its extent or outcome. There are three categories that OSHA recognizes as recordable cases. Every recordable case will be placed in only one of the following categories:

12.7.1. Fatalities. All work fatalities must be recorded, regardless of the time between the injury and the death, or the length of the illness.

12.7.2. Lost Workday cases. You must count the number of calendar days the employee was unable to work as a result of the injury or illness, regardless of whether or not the employee was scheduled to work on those day(s). You are not required to keep track of the number of calendar days away from work if the injury or illness resulted in more than 180 calendar days away from work and/or days of job transfer or restriction.

12.7.3. Cases not resulting in death or lost workdays. These cases consist of the relatively less serious injuries and illnesses which satisfy the criteria for recordability but which do not result in death or require the affected employee to have days away from work or days of restricted work activity beyond the date of injury or onset of illness.

13. <u>Annual OSHA Injury And Illness Surveys.</u>

OSHA has the authority to collect establishment-specific data on different work places. These surveys require employers to report information to OSHA that is contained in records that employers are required to create and maintain pursuant to 29 CFR 1904.41, and the number of workers they employed and hours their employees worked during designated periods.

13.1. Affordable Solar will, upon receipt of OSHA's Annual Survey Form, report to OSHA or OSHA's designee the number of workers Affordable Solar employed and number of hours worked by the employees for periods designated in the survey form and such information as OSHA may request from records pursuant to 29 CFR part 1904.41.

13.2. Survey reports will be sent to OSHA by mail or other means described in the Survey Form within 30 calendar days, or the time stated in the Survey Form, which ever is longer.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar
TITLE: HAZARDOUS MATERIALS SPILL PROCEDURE

POLICY 026

PURPOSE:
During the course of work, there may be occasions where Affordable Solar employees may be exposed to material that has spilled out of resalable property, such as gasoline, diesel, or engine oil. This procedure is written as part of the general awareness training given to Affordable Solar employees so that they may identify, notify, and contain a small hazardous materials spill.

SCOPE:
The information in this policy applies to all Affordable Solar employees who may be exposed to hazardous materials under an emergency situation.

RESPONSIBILITY:
- It is the Supervisor's responsibility to post the Hazardous Materials Spill Procedure for all employees to read.
- It is the employees' responsibility to become familiar with their site specific hazardous materials pill procedure.

POLICY/PROCEDURE:
In case of a spill/leak of a hazardous material, Affordable Solar employees must strictly adhere to the following procedure for identifying, notifying, containing, and reporting, a small spill:

1. Note the extent of the spill.
2. Restrict the area of the spill.
3. Apply approved absorbent material as necessary. (Not dirt)
4. Notify EH&S Department of any/all spills or questionable situations.
5. Document the spill on an incident report. Take photographs of the event.
6. Forward the Affordable Solar incident report with pictures to the EH&S Department within **24 hours of incident occurrence**.

Training:
Affordable Solar shall provide employees with effective information and training on hazardous materials spill procedure in their work areas. The spill procedure **must be posted** at each work site. (Appendix A –Site Specific Spill Procedure Form)

Appendix:

Appendix S – Site Specific Spill Procedure Form

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

APPENDIX S

SITE SPECIFIC
HAZARDOUS MATERIALS SPILL PROCEDURE FORM

SITE: _____

POC (where applicable) Phone Number

Manager Phone Number

EH&S Manager Phone Number

Cleanup company contacted Time and Date

Contact for Cleanup Company Phone Number

Description of spill

****

Spill Check list

1. Restrict the area
2. Apply approved absorbent material as necessary (Not dirt)
3. Notify EH&S Department
4. Complete incident report and provide sketches of the area
5. Forward incident report to EH&S Department

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TITLE: CRANE SAFETY PROGRAM

POLICY 027

REFERENCE: 29 CFR 1910.179; 29 CFR 1926.550; 29 CFR 1926.602

PURPOSE:
The purpose of the Crane Safety Program is to provide safety rules and guidelines for the safe operation of cranes with bucket, magnet and grapple attachments.

Cranes are covered by the OSHA crane standard which defines a crane as, "…a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine…A power-operated crane means a crane whose mechanism is driven by electric, air, hydraulic or internal combustion means." 29 CFR 1910.179 (a)(1) and (a)(9).

SCOPE:
This program is intended for use by Crane Operators working for Affordable Solar and employees working in the area where cranes are operated.

RESPONSIBILITY:
All Affordable Solar employees are required to wear a hard hat when working in or around an operating crane.

Operators are responsible for:
1. Successfully completing all training and testing required to be an authorized operator of a crane.
2. Operating all cranes in a safe manner consistent with Affordable Solar established guidelines.
3. Inspecting all cranes at the beginning of each operator's first use and completing the daily inspection checklist.
4. Reporting an unsafe operating condition to the crane owner.
5. Communicating with the motor vehicle driver before and after loading or unloading.

Operator Evaluators are responsible for:
1. Evaluating every trainee adequately.
2. Notifying the Supervisor of the trainee's pass/fail result in a timely manner.
3. Providing the trainee's site and the EH&S Department with copies of the test, evaluation form, and rules sheet within 24 hours after a certification has been granted.

Manager and Supervisors are responsible for
1. Ensuring that all operator candidates including full time, part-time and temporary employees who are expected to operate a crane have received training and are certified.
2. No person is eligible to operate a crane without proper certification outlined in Section 8 of this policy.
3. Maintaining the crane according to the manufacturer's recommendations.
4. Notifying the appropriate contact person when the crane needs repair.

EH&S Department is responsible for:
1. Writing, maintaining, reviewing and evaluating the Crane Procedure.
2. Issuing crane licenses to employees who have been certified as an operator,
3. Being a resource to all personnel when questions about this program arise.

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CRANE PROCEDURE

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2. Barricades and Swing Radius Protection
3. Power Lines
4. Stability
5. Load Rating Chart
6. Operation of the Crane
7. Operator Training
8. Appendices

1. General Requirements:

1.1. Only trained, authorized, and certified personnel are permitted to operate a crane.
1.2. Documentation of the training and certification of crane operators will be filed and stored in the EH&S Department safety files.
1.3. The Fair Labors Standard Act prohibits workers under the age of 18 from using cranes in general industry. 29 CFR 570.58
1.4. Cranes which need repair or are defective or unsafe in any way shall be reported to the owner and removed from service until repaired.
1.5. Equipment must comply with the manufacture's specifications and limitations. All attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacture.
1.6. Without notifying the manufacture and obtaining written approval, OSHA strictly forbids modifications of, or additions to equipment, which affect the capacity or safe operation.
1.7. No modifications or additions, which affect capacity and safe operation, may be made. Should modifications or additions become needed, a request for modification or addition shall be submitted to the crane owner.
Capacity, operation, and maintenance instruction plates, tags or decals shall be changed accordingly.
1.8. The rated load of the crane shall be plainly marked on **EACH** side of the crane.
1.9. Access to the cab shall be by a conveniently placed fixed ladder, stairs, or platform requiring no step over any gap exceeding 12 inches.

2. Barricades and Swing Radius Protection

2.1. Barricades must be set up to protect employee's form being struck or crushed by the rotating superstructure of the crane.
2.2. Accessible areas within the swing radius of the rear of the crane, either permanently or temporarily mounted, shall be used.
2.3. Special attention must be given to guarding of the swing radius when near buildings or other structures.

3. Power Lines

3.1. The OSHA Standard contains specific requirement for the safe use of cranes close to overhead power lines. The preferred method of ensuring maximum safety is to:

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3.1.1. Ensure all electrical distribution and transmission lines are de-energized and visibly grounded.
3.1.2. If this is not possible, cranes may operate close to power lines only if clearances in the below charts are observed.

Voltage	Minimum Clearance
50 kV or below	10 feet
Over 50 kV	10 feet + 0.4 for each 1 kV over 50kV or twice the length of the line insulator but never less than 10 feet,

3.2 When in transit with no load and boom lowered, the equipment clearance must be:

Voltage	Minimum Clearance
Less the 50 kV	Minimum of 4 feet
Over 50 kV up to and including 342 kV	Minimum of 10 feet
Over 345 kV up to and including 750 kV	Minimum of 16 feet

A designated "clearance" observer must be present to give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by sight.

3.3 Other Safety Recommendations
Other Safety recommendations when working around power lines include:
3.3.1 Use nonconductive taglines, rather than direct contact, to stabilize the load.
3.3.2 Use insulating boots and gloves when workers connect the load or contact the crane while in the vicinity of overhead lines.
3.3.3 If the crane contacts power lines, employee should not touch the crane, load, and must discontinue using tag lines.
3.3.4 Employees should move away from the operations immediately to a safe location.
3.3.5 The operator should remain at the controls, and shall not jump from the crane. The cab is grounded and will provide greater protection than attempting to jump for the crane.

4. Stability
4.1. A crane's load ratings are generally developed for operations, (i.e., a level, firm surface). Unleveled surfaces or soft ground should be avoided. When soft ground is encountered, mats, outrigger pads, and/or cribbing should be used to distribute a crane's load and maintain a level, stable condition.
4.2. The crane should be "level".
4.2.1. On hydraulic cranes, using single bubble level mounted inside the operator's cab does this.
4.2.2. **NOTE*: If a crane is out of level by three degrees or more - most manufactures' state that the capacities identified in the load chart should be reduced by 50%.***
4.3. The outriggers when applicable should be fully extended.

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4.3.1. **NOTE:** Note that newer crane models are equipped with load charts specifically for fully extend, ½ extended, and retracted outriggers as well as a load chart for picking off of rubber without the use of outriggers.
4.3.2. Check outrigger pads to ensure that they are sized accordingly.
4.3.3. Outrigger pads should be built to sufficient material to withstand deflection/failure during use.

4.4 Path of intended travel must also be capable of supporting the crane and its load.

5. Load Rating Chart

5.1. A durable rating chart(s) with legible letters and figures must be attached to the crane in a location accessible to the operator while at the controls. The rating chart(s) shall contain the following:
5.1.1. A full complete range of manufacturer's crane loading ratings at all stated operating radii.
5.1.2. Operational equipment on the crane such as outriggers and extra counterweight which affect ratings.
5.1.3. A work area chart for which capacities are listed in the load rating chart, i.e., over side, over rear, over front, extended outriggers, ½ extended outriggers, retracted out riggers, and for picking off rubber without use of outriggers.
5.1.4. Weights of auxiliary equipment, i.e., load block, jibs, and boom extensions.
5.1.5. A clearly distinguishable list of rating based on structural, hydraulic or other factors rather than stability.
5.1.6. A list of no-load work areas.
5.1.7. A description of hoist line reeving requirements on the chart or in the operator's manual.

6. Operating Procedures:

6.1. All Affordable Solar employees are required to wear a hard hat when working in or around an operating crane. Other PPE selection and determination will be in compliance with SOP-6 Personal Protective Equipment.
6.2. Passengers
6.2.1. No one except the operator should be allowed on the crane when it is in operation.
6.2.2. The operator shall not hoist, lower, swing, or travel while anyone is on the load of hook. This includes riding a bare hook or a load of material.
6.3. During hoisting care shall be taken that:
6.3.1. There is no sudden acceleration or deceleration of the moving load;
6.3.2. The load does not contact any obstructions.
6.4. Cranes shall not be used for side pulls except when specifically authorized by a responsible person who has determined that the stability of the crane is not thereby endangered and that various parts of the crane will not be overstressed.
6.5. The employer shall require that the operator avoids carrying loads over people.
6.6. The operator shall test the brakes each time a load approaches the rated load capacity. The brakes shall be tested by raising the load a few inches and applying the brakes.
6.7. The employer shall insure that the operator does not leave his position at the controls while the load is suspended.
6.8. Whenever the equipment is parked, the parking brake shall be set.

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6.9. All bidirectional machines shall be equipped with a horn, distinguishable from the surrounding noise level, which shall be operated as needed when the machine is moving in either direction.

6.10. The horn shall be maintained in an operative condition.

6.11. No employer shall permit earthmoving equipment which has an obstructed view to the rear to be used in reverse gear unless the equipment has in operation a reverse signal alarm, distinguishable from the surrounding noise level or an employee signals that it is safe to do so.

6.12. Hand Signals

6.12.1. The signal person and the crane operator must be familiar with the hand signals required by the ANSI standard for the crane type you are operating.

6.12.2. A chart illustrating the hand signals for the type of crane being operated shall be posted on the outside of the operator's cab of the crane.

6.13 Field of Vision

6.13.1 Check for any broken or cracked window glass that may affect the view of the operator.

6.13.2 Cab widows must be made of safety glass, or equivalent, with no visible distortions, and/or cracks that would interfere with safe operations.

6.13.3 If visible distortion and/or cracks are noted during the inspection, the operator should contact their supervisor to obtain a replacement window.

6.14 Placards

6.14.1 Check that rated load capacities, recommended operating speeds, special hazard warnings or instructions, i.e., electrical power line clearance requirements are posted and visible to the operator while at the control station.

7.5.3. Check the condition to the floats, and check that they are securely attached. Floats must have the capacity to be securely attached to the outriggers.

7.5.4. Outriggers, when used, shall be extended and tires shall be off the operations.

7.6. Brakes and Operator Aids

7.6.1. Inspection and test all breaks and clutches for proper adjustment and operations.

7.6.2. Always inspect boom hoist lockout and other operator aids, such ad anti-two-block devices and load moment indicators (LMI), for proper operation and calibration daily.

7.6.3. While the engine is running, check all gauges and warning lights for proper readings and operate all controls to see that they are functioning properly.

7.7. Cab

7.7.1. Check that inspection and maintenance records, operator's manual and appropriate load charts for the loads being lifted are present.

7.7.2. Check that the cab is clean and free for clutter.

7.7.3. Check that all controls are labeled as to their function.

7.7.4. Check that they are free to return to the neutral position when released unless designed to do otherwise.

7.7.5. Check that all gauges and warning lights are operable.

7.7.6. Check signal horn and back up alarms.

7.7.7. Check service/parking brake for proper operation.

7.7.8. Check that the seat is securely attached and the cab door operates smoothly.

7.8. Fire Extinguisher

7.8.1. An accessible fire extinguisher 10 pounds ABC rating, or higher, shall be located in all operator cabs.

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TITLE: TERM CONTRACTORS (Sub-Contractors) Program

POLICY 028

PURPOSE: To establish a standard system for Affordable Solar Term Contractor.

SCOPE:
Each Affordable Solar contractor is responsible for complying with this policy and all provisions for Federal and State Environmental Health and Safety regulations and applicable standards.

RESPONSIBILITY:
Each Contractor is responsible to use good professional judgment while performing services for Affordable Solar .

All accidents/incidents involving Contractors must be promptly reported to the Affordable Solar Supervisor and EH&S Department with proper documentation.

The Contractor and Affordable Solar Supervisor are responsible for completing the Incident Investigation Report. (see Section-3A)

Contractors are responsible for the safe operation of equipment at all times. The operator is responsible for ensuring that the equipment is in safe operating condition before beginning its operation. In addition, the operator is responsible for checking for the proper functions of required safety devices prior to use. Operators must report any defects or malfunctions to the Affordable Solar Supervisor immediately.

Contractors shall permit only qualified employees', by documented training and/or certification, to operate equipment and machinery.

Each Contractor shall be directly responsible for payment to Affordable Solar on any equipment damaged by their employees.

Contractors are responsible to wear proper personal protective equipment required by the Affordable Solar job site and any State or Federal Regulations.

Also refer to Disciplinary Policy for Safety Violations #009

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TITLE: SAFETY FIRST REWARDS PROGRAM

Policy Eliminated

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PROGRAM ADMINISTRATION PROCESS

1. Employees will submit their safety tips and positive observation of another co-worker to the EH&S Department via internet email or voicemail.
2. Supervisor or designees will submit incident reports to the EH&S department within time frame identified in SOP-3.
3. EH&S Department will keep track of the points earned by the employees.
4. EH&S Department will quarterly tabulate points earned by Affordable Solar sites and provide Managers with a progress report.
5. EH&S department will quarterly and annually identify sites with the highest points earned and will administer awards accordingly.

AWARD PERIOD

The period for earning the Certificate of Safety Excellence is based on working a full 12 months. January 1 – December 31, minus vacation and holiday's.

RESULTS REASSESSMENTS

Program effectiveness results will be assessed annually.

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TITLE: RECEIPT AND HANDLING OF COMPRESSED GAS CYLINDERS

POLICY 030

REFERENCE: 29 CFR 1910.101, 29 CFR 1910.253 (b), NFPA 55
Compressed Gas Association (CGA) Pamphlets: C-6-1986, C-8-1962, P-1-1965

PURPOSE:
Serious accidents may result from the misuse, abuse, or mishandling of compressed gas cylinders. The purpose of this policy is to establish safe work practices for safe handling and storage of compressed gas cylinders.

SCOPE:
The information in this policy applies to all employees who in the course of their regular duties may occasionally receive and handle compressed gas cylinders.

RESPONSIBILITIES:

It is the responsibility of the EH&S Department to establish safe work practices for occasional receipt and handling of the compressed gas cylinders.

It is the responsibility of the Supervisor to implement developed work practices at each site involved in occasional receipt and handling of the compressed gas cylinders.

It is the responsibility of the employees to follow all safe work practices for receipt storage and handling of compressed gas cylinders outlined in this policy.

PROCEDURES:

1.0 Identification and Labeling

- 1.1 The contents of any compressed gas cylinder whether FULL of EMPTY must be clearly identified.
- 1.2 A durable label should be provided that cannot be removed from the cylinder.
- 1.3 No compressed gas cylinder should be accepted that does not legibly identify its contents by name.
  - 1.3.1 Color-coding is not a reliable means of identification; cylinder colors vary from supplier to supplier, and labels on caps have no value because many caps are interchangeable.
- 1.4 If the labeling on the cylinder becomes unclear, the cylinder should be immediately returned.

2.0 Transporting Gas cylinders

- 2.1 This section applied to all sites that may on occasion receive and handle compressed gas cylinders
- 2.2 It is the policy to receive only those compressed gas cylinders that have been emptied.
- 2.3 Only trained personnel should move the cylinders.
- 2.4 Only one cylinder should be handled (moved) at a time.

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2.5 Cylinder safety caps should be securely affixed during transport. A cylinder's cap should be screwed all the way down on the cylinder's neck ring and should fit securely.
2.6 Do not lift cylinders by the cap. The cap is for valve protection only.
2.7 Always use cylinder cart to move compressed gas cylinders. Always strap the gas cylinder to the cart in an upright position.
2.8 Never Slide, drag or roll cylinders on a cylinder edge.

3.0 Storage of Compressed gas cylinders

3.1 "NO SMOKING" signs must be posted in all areas where cylinders are being stored.
3.2 Always secure cylinders whether EMPTY or FULL, to prevent them from falling. Secure individual cylinders by chaining or strapping them to a wall, or other fixed support. For locations where more than one cylinder is located, appropriate racks or cages must be used.
3.3 Cylinders should never be dropped or struck violently.
3.4 Caps used for valve protection should be kept on the cylinders at all times.
3.5 Cylinders should be stored in a well-ventilated area away from flames, sparks, or any sources of heat or ignition. Keep cylinder away form electrical circuits.
3.6 Cylinders should never be exposed to an open flame or to any temperature above 125ºF.
3.7 Empty Oxygen cylinders should be stored in an area that is at least 20 feet away from any flammable or combustible materials or separated from them by a non-combustible barrier at least 5 feet high.
3.8 Empty cylinders may be stored outdoors in appropriate racks or cages, but they should be protected from the ground to prevent corrosion.
3.9 Where extreme temperatures prevail, cylinders should be stored so they are protected from the direct rays of the sun.
3.10 Cylinders should not be exposed to continuous dampness or stored near salt or other corrosive chemicals or fumes. Corrosion may damage cylinders and cause their valve protection caps to stick.
3.11 Always mark empty cylinders with a prominent sign saying "EMPTY".

4.0 Personal Protective Equipment

4.1 Always use PPE when handling compressed gas cylinders.

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TITLE: STEEL ERECTION

POLICY 031

REFERENCE: 29 CFR 1926 Subpart R

PURPOSE

Affordable Solar must meet the requirements of OSHA's Steel Erection standard. Affordable Solar policy to protect our employees from the hazards associated with steel erection activities.

SCOPE

This policy applies to all Affordable Solar employees and subcontractors working within controlled job sites.

GENERAL

The Erection Plan addresses the phases of erection, procedures and equipment that will be used to best insure the erectors safety. The fall protection plan addresses the use of other than conventional fall protection at a number of areas on the project, as well as identifying specific activities that require non-conventional means of fall protection. These areas include:

- connection activity (point of erection)
- leading edge work
- un-protected sides or edges

RESPONSIBILITY:

1.1. Supervisors:

1.1.1. The assigned Competent Person is responsible for continual observational safety checks of work operations and to enforce safety policy and procedures.

1.1.2. Competent Person – It is the responsibility of Affordable Solar to designate a competent person to implement this plan. The competent person shall:

1.1.2.1. Inspect the jobsite daily for hazards

1.1.2.2. Correct any hazards identified

1.1.2.3. Notify the employees of correct procedures to be used to avoid identified hazards

1.1.2.4. Remain on the jobsite at all times that work is being performed under this plan.

1.1.2.5. The competent person is authorized to take prompt corrective measures and to make timely changes to this plan in order to insure the employee's safety.

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1.2. Employee

1.2.1. It is the responsibility of the employee to:

1.2.1.1. Understand and to adhere to the procedures of this plan and to follow the instructions of the competent person

1.2.1.2. Notify management of any unsafe or hazardous conditions or acts that may cause injury to either themselves or any other employees.

1.2.1.3. Employees are instructed not to perform any tasks that they feel are hazardous

1.2.1.4. Any changes to the fall protection plan must be approved by the Safety Dept.

1.2.1.5. Site Specific Conditions:

1.2.2. Equipment Required

1.2.2.1. Note – Crew assigned to the project must receive boom lift training prior to operating the boom lift

1.2.2.2. Only authorized and certified Fork truck operators are allowed to operate the Fork Trucks.

1.2.2.3. Erection Plan Phases

1.2.2.4. For the purpose of this plan 2 connectors will be designated and trained in the safe application of the plan.

1.2.2.5. Designated Connectors:

1.2.2.6. Name:

1.2.2.7. Name:

1.2.2.8. Where possible all connections will be performed from the platform of the scissor lifts. Connectors are instructed to attach their Personal Fall Arrest system to the rafter or other secure anchorage prior to leaving the guardrail protection of the scissor lift. Only when it exposes the connector to additional fall hazards of to fall hazards for a longer period of time, may these connectors have the authority to walkout without conventional fall protection. In all cases possible, personnel baskets will be strategically placed as catch baskets.

2. Fall Protection Systems to be used

2.1. Employees working on working surfaces at more than 15 feet are required to be protected by compliant guardrails or be wearing a personal fall arrest system (PFAS) connected to a compliant anchor.

2.1.1. Designated connectors must wear a PFAS at all times when working above 15 feet and attached to a compliant anchor when feasible.

2.1.2. Where conventional fall protection is infeasible or creates a greater hazard at the leading edge and during initial connecting activity, Affordable Solar plan to do the work using a safety monitoring system and expose only a minimum number of employees for the time necessary to actually accomplish the job. The maximum number of workers to be monitored by one safety monitor is 3. Affordable Solar is designating the following trained employees as designated erectors and they are permitted to enter the controlled access zones and work without the use of conventional fall protection.

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2.1.3. For the purposes of leading edge work, leather shoes will be recommended.
2.1.4. Safety Monitor / Competent Person:
2.1.5. Only individuals with the appropriate experience, skills, and training will be authorized as designated erectors.
2.1.5.1. All employees that will be working as designated erectors under the safety monitoring system shall have been trained and instructed in the following areas:
2.1.5.1.1. Recognition of the fall hazards in the work area (at the leading edge and when making initial connections)
2.1.5.1.2. Avoidance of fall hazards using established work practices which have been made known to the employees
2.1.5.1.3. Recognition of unsafe practices or working conditions that could lead to a fall, such as windy conditions.
2.1.5.1.4. The function, use, and operation of safety monitoring systems, guardrail systems, body harness systems control zones and other protection to be used.
2.1.5.1.5. The correct procedure for erecting, maintaining, disassembling and inspecting these systems.
2.1.5.1.6. Knowledge of the construction sequence or erection plan

2.2. A conference will take place prior to starting work involving all members of the erection crew, and material handling crew.

2.2.1 This conference will be conducted by the supervisor in charge of the project. During the pre-work conference, erection procedures and sequences pertinent to this job will be thoroughly discussed and safety practices to be used throughout the project will be specified. Further, all personnel will be informed that the controlled access zones are off limits to all personnel other than those designated erectors specifically trained to work in that area.

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TITLE: CONTROL OF HAZARDOUS ENERGY, LOCKOUT TAGOUT

POLICY 031

REFERENCE: 29 CFR 1910. 147

PURPOSE:

Affordable Solar Installation recognizes that energy isolation is an extremely important process to control accidental release of stored energy and considers energy isolation or Lock Out / Tag Out a critical risk activity. Therefore, we have created this program to provide guidelines that will help prevent the unexpected start-up, and/or release of stored energy while being serviced or maintained. Site Specific protocols will be enforced.

SCOPE:

This program applies not only to Affordable Solar Installation employees and our subcontractors, but all personnel that are authorized to perform maintenance and service activities on equipment or processes which present energy hazards and to any employees who are affected by these activities at Jicarilla 2 / West Solar Site. Examples of energy sources are but are not limited to:

- Electrical
- Mechanical
- Hydraulic
- Pneumatic
- Thermal
- Residual stored energy
- Gravity
- Pressurized liquids or gases
- Chemicals located within plant equipment, vessels, tanks, lines, and/or silos

RESPONSIBILITY:

Project Managers / site superintendent shall be responsible for ensuring employees comply with this program.

Supervisors shall:

- Ensure that employees who are authorized to service equipment have received general lockout/Tagout training, as well as specific energy isolation training on any individual piece of equipment or machine that is to be locked or tagged.
- Assign locks, if applicable, or tags to authorized employees.
- Coordinate activities of contractors that may affect Lockout/Tagout and energy control programs within the facility or on equipment.
- Ensure that only authorized employee's service equipment or machinery requiring Lockout/Tagout.

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- Forward copies of the training forms to the Safety Department.

Employees shall be responsible for:

- Complying with this program.
- Following safe shutdown and start-up programs.
- Communicating activities to affected employees and other authorized employees, as appropriate.
- Ensuring the security of their own lock and key.
- Advising their supervisor when equipment needs servicing and following the directions of the authorized employee affecting the use of that equipment.

The Safety Department shall develop and maintain the Energy Isolation Program and shall audit and review the effectiveness of the program at least annually.

OBJECTIVE

This program is designed to supplement the complete elimination of stored energy by administering a lock-out protocol as a secondary method of isolating machines or equipment from energy sources. If tags are used, additional steps shall be taken as necessary to provide the equivalent safety available from the use of a lock-out device.

The objective of this program is to identify the hazards of uncontrolled energy and establish programs for safe Lockout/Tagout operations.

DEFINITIONS:

- **Affected employee** -- An employee whose job requires him or her to operate or use a machine or piece of equipment on which service or maintenance is being performed under Energy Isolation, or whose job requires him or her to work in an area in which such service or maintenance is being performed. Affected employees must be informed when lockout/tagout is being performed.

- **Authorized employee --** An employee who performs service or maintenance on machines and equipment. Energy Isolation is used by these employees for their self-protection. This employee shall have direct and complete knowledge of the equipment that they are shutting down and understand all of the potential energy sources and the magnitude of each source.

- **Energized --** Machines and equipment are energized when they are connected to an energy source or they contain residual or stored energy.

- **Energy --** The movement or possibility of movement in equipment or machinery. Whether the power switch is on or off, energy always is present in any powered equipment.

- **Energy isolating device --** Any mechanical device that physically prevents the transmission or release of energy. These include, but are not limited to, manually operated electrical circuit breakers, disconnect switches, line valves and blocks.

  NOTE: Push buttons, selector switches, and other control circuit type devices are not energy isolating devices.

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- **Energy source --** Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy.

- **Energy control program --** A written document that contains those items of information an authorized employee needs to know in order to safely control hazardous energy during servicing or maintenance of machines or equipment.

- **Lock-out --** The placement of a lock-out device on an energy isolating device, in accordance with an established program, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lock-out device is removed.

- **Lock-out device --** Any device that uses positive means, such as a lock with either a key or combination, to hold an energy isolating device in a safe position, thereby preventing the energizing of machinery or equipment. When properly installed, a blank flange or bolted slip blind are considered equivalent to lock-out devices.

- **Normal production operations --** The utilization of machine or piece of equipment to perform its intended production function.

- **Servicing and/or maintenance --** Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming machines or equipment, and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or start-up of the equipment or release of hazardous energy

- **Setting up --** Any work performed to prepare a machine or piece of equipment to perform its normal production operation.

- **Tagout --** The placement of a tagout device on any energy isolating device, in accordance with an established program, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

- **Tagout device --** Any prominent warning device, such as a tag and a means of attachment that can be securely fastened to an energy isolating device in accordance with an established program. The tag indicates that the machine or equipment to which it is attached is not to be operated until the tagout device is removed in accordance with the energy control program.

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PROGRAM & SAFE WORK PROCEDURES:

1. Methods of lock and tag identification

1.1 Lockout/Tagout devices shall be standardized within each facility in at least color, shape or size, and shall be durable for withstanding the environment to which they are exposed for the maximum period of time exposure is expected.

1.2 Identifiable devices shall indicate the identity of the:

1.2.1 Locks, which are numbered sequentially (1, 2, 3, etc.), will be used, if available. If locks are used, one key shall be issued to the employee and the second key shall be destroyed. This maintains the "One Lock / One Person / One Key" integrity and minimizes accidental or unintentional lock removal.

1.2.2 Tags - For tag-out devices, a standardized print and format shall be used. The print shall be legible and understandable to employees. The information on the tag shall be the employee and company name; crew; supervisor; phone number; equipment being worked upon and reason for lockout. Photos attached to custom tags are recommended but not required. Tags shall be secured by a nylon self-locking tie, or attached with the LOTO lock which requires either cutting the nylon self-locking tie or opening of the LOTO lock in order to remove.

2. Periodic inspections

2.1 Periodic inspections shall be conducted at least annually and shall be performed by an authorized employee other than those utilizing the energy control program under inspection. The purpose of each inspection shall be to:

2.1.1 Identify and correct any deviations or inadequacies observed.

2.1.2 Review each authorized employee's responsibilities under the Energy Control Program.

2.1.3 Review the limitations of tags if tag-outs are used.

2.2 Acquiring locks and tags

2.2.1 Supervisors shall provide the necessary equipment to perform lock-out and tag-out procedures.

3. Energy Isolation Program – shutdown

3.1 All electrically powered equipment or power circuits shall be De-energized before any work is performed. All circuits shall be locked out or other measures taken which shall prevent the equipment from being energized without the knowledge of the individual(s) working on it.

3.2 The authorized employee shall make a survey to locate and identify isolating devices to be certain which switch (s), or other energy isolating devices apply to the equipment to be locked out or tagged out.

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NOTE: If more than one hazardous energy source (including stored) and/or means of disconnect (electrical, mechanical, or others) may be involved, Section 5.4.1 shall be followed; otherwise, Section 5.4.2 shall apply.

3.3 Affected employees shall be notified that the Energy Isolation Program system will be utilized and the reason.

3.4 If the machine or equipment is operating, it shall be shut down by the normal stopping program. This shall usually be done by depressing the stop button, opening the toggle switch, etc. In addition, the employee shutting down the machine shall ensure that stored energy is dissipated or properly restrained.

3.5 The nearest power / energy source or supply (breaker, switch, circuit, valve or similar) shall be identified, turned off or disconnected to isolate the equipment from being energized. Alternate power sources shall also be identified and disconnected. Affected personnel shall have the opportunity to witness and take part in this process.

3.6 The switch, valve, or other energy isolating devices(s) shall be operated to release any stored energy and to assure that the equipment is isolated from its energy sources(s) and no alternate or back fed sources exist.

3.7 Energy Isolation device application

3.7.1 Locks/UV Rated Cable Ties and tags shall be affixed to each energy-isolating device only by an authorized employee and each authorized employee shall apply their own individual lock.

3.7.2 Locks/UV Rated Cable Ties and tags shall be singularly identified.

3.7.3 Locks/UV Rated Cable Ties and tags shall be affixed in a manner that will hold the energy isolating devices in a safe or off position.

3.7.4 Tags that cannot be affixed directly to the energy-isolating device shall be located as safely as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.

3.7.5 After isolation devices have been applied the equipment or system shall be tested to verify isolation and zero energy.

3.8 All personnel that need to work on or in proximity to the equipment shall place a lock or UV rated Cable Tie or lock out device. For situations where multiple persons or companies need to work on the equipment, a lock out box may be utilized in which the lock out supervisor or Energy Control Coordinator affixes their lock on the lock out device and places all of the lock out key(s) into the lock box and affected personnel may place their locks on the box instead of the lock out device. The lockout supervisor or Energy Control Coordinator shall over see this process.

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3.9 All personnel that have a need to apply a lock to the equipment shall be recorded on a log maintained by the lock out supervisor or Energy Control Coordinator. For general notification, the name and description of the equipment that has been locked or tagged out may be recorded on a bulletin board.

3.10 In the event of a shift change the lock out supervisor or Energy Control Coordinators shall oversee the lock removal process and the application of the locks of the oncoming employees. This care and Control will be transferred from the outgoing and oncoming shift's supervisors or Energy Control Coordinators.

4. Energy Isolation Program - start-up

4.1 After the servicing and/or maintenance is complete and equipment is ready for normal production operations, the area around the machines or equipment shall be checked to ensure that no one is exposed to an uncontrolled energy source.

4.2 After tools have been removed from the machine or equipment, guards have been reinstalled, and employees are in the clear, lock-out or tag-out devices shall be removed and the affected employees shall be notified of the removal.

4.3 Lockout/Tagout devices shall be removed from each energy isolating device only by the employee who applied it.

4.4 In the event that a start-up is necessary and an employee leaves a lock applied and is not on the project site, the lock out supervisor or Energy Control Coordinator may remove the affected employee's lock if all of the following conditions are met:

- 4.4.1 The equipment or controlled area has been thoroughly walked down to ensure that the employee is not present in or near the equipment or controlled area.
- 4.4.2 Verification is made that the employee is not at the facility.
- 4.4.3 All reasonable efforts are made to contact the employee in to verify that they are away from the facility and to inform them that their lock is going to be removed in their absence;
- 4.4.4 The site Project Manager and client / owner Project Manager have been informed and authorize the lock removal.
- 4.4.5 Upon returning to the facility, if allowed, the employee is informed that his/her lock has been removed.

4.5 Testing or positioning machines, equipment, or components

- 4.5.1 In situations where Energy Isolation devices are temporarily removed from the energy isolating device and the machine equipment energized to test or position the machine, equipment or component, this sequence of actions shall be followed:
  - 4.5.1.1 The machine or equipment shall be cleared of tools and materials.
  - 4.5.1.2 Employees shall be removed from the machine or equipment area.
  - 4.5.1.3 Energy Isolation devices shall be removed.
  - 4.5.1.4 Energizing shall be completed, and testing or positioning shall be conducted.

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4.5.1.5 Systems shall be De energized and energy control measures shall be reapplied in accordance with the shutdown programs described in this section.

4.6 Informing outside contractors

4.6.1 The supervisor shall inform outside contractors of the elements of this program and obtain information regarding their Energy Isolation program. This information shall then be conveyed by the supervisor to affected (Company) employees

TRAINING

4.7 All employees shall receive general lockout/tag-out/tryout training by an instructor that has updated NFPA 70e certification, as part of their orientation, as well as specific energy isolation training on any individual piece of equipment or machine that is to be locked or tagged prior to working on that piece of isolated equipment.

4.8 Training shall include the following information at a minimum:

4.8.1 The recognition of potential energy sources, the possible magnitude of each energy source, and the means and methods to control each source.

4.8.2 The purpose and use of energy control procedures.

4.8.3 The procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

4.8.4 The limitations and requirements of tag-out as an exclusive means of energy isolation.

4.8.5 Retraining shall be provided whenever there is a change in job assignments that necessitate additional training, change in equipment or systems, new hazards or control procedures.

4.8.6 Retraining shall also be provided when the annual evaluation or routine observation indicates that there is a reason to believe that the execution of the program or employee knowledge is inadequate.

4.8.7 Training shall be documented to include the employee's name, last 4 digits of the social security number or other unique identifier, date, name of the person conducting the training.

4.9 TRAINING AND COMPETENCIES:

4.9.1 In general, the level of training provided must be adequate for the tasks involved in order to insure that work is performed in a safe manner:

4.9.2 QUALIFIED and AUTHORIZED PERSONS shall be trained and knowledgeable of the construction and operation of the equipment and the hazards involved.

4.9.3 NON-QUALIFIED and AFFECTED employees shall be trained in any safety-related practices necessary to ENSURE their safety, but are not

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authorized to work on or near ENERGIZED parts nor have exposures to the potential release of energy from any form of ENERGY SOURCE.

4.9.4 The Employer shall determine that each employee is complying with the safety-related work practices required here-in through:

4.9.4.1 Regular Supervision, and
4.9.4.2 PERIODIC INSPECTIONS (Appendix C)

4.9.5 Employees shall receive LOTO training annually and shall receive additional training if:
4.9.5.1 Either supervision or PERIODIC INSPECTIONS identify a deficiency.
4.9.5.2 New technology or equipment is applied or if procedures are changed.
4.9.5.3 The employee must apply LOTO PROCEDURES not normally used during his/her regular job duties.
4.9.5.4 Employees performing LOTO PROCEDURES less than once a year should be retrained before performance of work.

4.9.6 LOTO training shall be either of classroom type or on the job and must be documented in either case.

4.9.7 LOTO training shall:
4.9.7.1 Establish the employee's proficiency in the LOTO PROCEDURES. The employer shall CERTIFY the employee performing ENERGY ISOLATION PROCEDURES clearly understands the scope, purpose, authorization, rules and techniques to be utilized for the control of the ENERGY SOURCE.

4.10 Records of training shall be maintained on each AUTHORIZED PERSON.

4.10.1 Training shall be provided annually for all ASI employees to ensure that the purpose and function of the energy control program are understood and the knowledge and skills required for the safe application and usage are acquired by the employees. The training shall be documented and shall consist of:
4.10.2 The Lockout/Tagout procedures including:

4.10.2.1Scope
4.10.2.2Clearance request & requestor procedures
4.10.2.3Clearance steps & application
4.10.2.4Clearance documentation
4.10.2.5Testing & inspection
4.10.2.6Definitions

4.10.3 The type and magnitude of the energy available in the workplace
4.10.4 The limits and functions of the different LOTO devices
4.10.5 Safety related work practices involved in performing work task

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4.11 New employees or employees transferred from other areas shall receive training specific to the sections above before the employee participates in any activities detailed therein.

Affected employees shall be instructed about the procedure and about the restrictions relating to attempts to restart or re-energize machines or equipment which are locked out or Hold Carded.

4.11.1 In addition:

4.11.1.1 Qualified employees shall complete the requirements of Regulated Generation Electrical Safe Work Practices Employee Training on an annual basis.

4.11.1.2 Qualified employees applying electrical and non-electrical isolation procedures shall be trained, qualified and certified in the application of those procedures.

ISOLATION FOR ELECTRICAL TESTING OF LOW VOLTAGE MCC CONTROL CIRCUITS:

It is recognized that:

- Instrument/Electrical (I/E) personnel will need to complete electrical testing on 480 control circuits fed from MCCs (buckets) during the course of normal maintenance procedures or subsequent to new construction or renovation.
- In this case, the "Primary Disconnect" (the molded case circuit breaker located in the MCC bucket, etc.) will need to be closed in order to energize the controls and test the circuit. This must be achieved without voiding CLEARANCE integrity for those who are protected from the potential release of hazardous energy by the isolation of the "Primary Disconnect".
- For this situation, CLEARANCE may be transferred from the original point of isolation to the disconnected circuit leads. The requester must contact and satisfy all other personnel who currently have CLEARANCE applied to the equipment that testing may be completed in a safe manner that will not void their CLEARANCE and that the point of electrical isolation is being transferred to the disconnected leads from the breaker. Each of these personnel must contact the AA to accept the testing under their CLEARANCE before the requester may be allowed to conduct the testing.
- Documentation of this activity shall be accomplished through use of the "Lockout/Tagout Variance" form in Appendix E.

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TEMPORARY GROUNDING FOR THE PROTECTION OF EMPLOYEES

In general, only QUALIFIED Instrument/Electrical (I/E), or Substation Maintenance Personnel responsible for the application of grounds and grounding devices shall apply grounds at Regulated Generation facilities. **Grounding practices shall be consistent with the Health and Safety Manual.**

1. Grounding for Electrical Protection:

1.1 Hold Cards shall be applied to the grounds.
1.2 Operations personnel shall be responsible for installation or removal of grounds only when ground application is made with a switching device such as ground disconnects or switchgear ground and test device. When safety grounds cannot be applied with a switching device, appropriate QUALIFIED maintenance personnel will apply and remove the safety grounds.

2. Static Grounds:

2.1 Any personnel specifically QUALIFIED may complete specific grounding operations on tools and equipment for the purpose of grounding for static protection.
2.2 Hold Cards shall not be required for the purpose of grounding for static protection.

LOCKOUT OF NON-GENERATING EQUIPMENT

If an energy isolating device of non-generation equipment is capable of being locked, then it shall be locked. Tracking of locked equipment shall be accomplished per section Hold Card Description – A.3.b. Isolation tracking of locked, non-generation equipment by means of the MTCM may be waived by the plant management for maintenance shop tools used on a routine basis. The energy isolation procedures outlined herein do not preclude any requirements under NFPA-70E.

This procedure establishes specific Lockout criteria for hazardous energy isolation of **non-generation**, transmission and distribution equipment. Specifically, it applies to the control of energy during servicing and/or maintenance of non-generation machines and equipment that can be locked out, i.e., machines or equipment in which the unexpected energization or start-up, or release of stored energy could cause injury to employees.

NOTE – Exception to the above: If an energy isolating device is not capable of being locked out, the Hold Card procedure shall be followed. Any non-generation equipment that is replaced undergoes major repairs, renovation, or modification shall be designed to accept a lockout device.

Routine operation of non-generating equipment, i.e. servicing and/or maintenance, are not covered by this procedure unless:

- An employee is required to remove or bypass a guard or other safety device, or
- An employee is required to place any part of their body into the point of operation or where an associated danger zone exists during a machine operating cycle.

NOTE – Exception to the above: Minor tool changes and adjustments, and other minor servicing activities that take place during normal operations of the affected component are not covered by the procedure if they are routine, repetitive, and integral to the use of the equipment for operation, provided that the work is performed using alternative measures which provide effective protection.

Work on 120/220 volt cord and plug connected electric equipment for which exposure to the hazards

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of unexpected energization or start-up is controlled by unplugging the equipment from the energy source does not require lockout as long as the plug is under the exclusive control of the employee performing such work (line of site).

CAUTION – Cord and plug connectors greater than 220 volts cannot be disconnected unless the energy source to the plug has been isolated and locked out per the procedures stipulated by this document

Employee Responsibility

- AUTHORIZED PERSONS are required to lockout and tagout machinery and equipment and restore it to service in accordance with OSHA requirements and Regulated Generation's Lockout, Tagout procedures.
- No employee shall attempt to start, energize, or use any machine or piece of equipment that is locked or tagged out.
- Each employee must comply at all times with provisions of this lockout, tagout program, the OSHA lockout, tagout standards, and all rules, regulations and orders that are applicable to their own actions and conduct.

Lock Identification: See Appendix F.

Lockout Procedures

Electrical Lockout

1. Request
   1.1 Requester contacts the "Administrative Authority" and requests electrical clearance on **non-generation** equipment.
   1.2 Requester shall give a reason for the clearance request of this equipment.

2 Order
   2.1 Only the major points of isolation shall have a lock applied. For example, the 480 volt breaker will be locked, but the control switch would not be locked.
   2.2 If the equipment or device can be removed from service, the Administrative Authority will have equipment isolated and locked with Operation's lock and Hold Card. The lock shall be applied to a safety lockout hasp.
   2.3 An Operation's lock, when used, will be first on and last off. While the Operation's lock is on an energy isolating device, the lock's key shall be maintained by the AA in a designated area and shall have a hold card affixed to the lock as a means of identification.

3 Order Complete
   3.1 After the designated AUTHORIZED PERSON has performed the necessary functions and the Operation's lock is in place, they shall report to the AA that the equipment has been locked and carded.

4 Request Granted
   4.1 After the card is logged in the appropriate log, the AA will issue clearance authority to the requester that they may now hang their lock.
   4.2 The requester will hang their individual lock.

NOTE – If more then one individual is required to service or maintain machinery or equipment, each employee shall follow the above procedure and request clearance and hang their lock.

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Mechanical Lockout

- Shall be the same as Electrical Lockout.
- Valves for water, hydraulic pressure, or other sources of energy shall be locked when applicable. When there are double valves, at least one shall be locked.

Restoring Equipment To Service

When the job is completed and the equipment is all clear, the holder of the clearance authority shall remove their identified lock and notify the "Administrative Authority". The AA may then order the Operation's lock to be removed if appropriate.

Inspect the work area to ensure that:

- all non-essential items have been removed
- the machine or equipment components are operationally intact
- no personnel are exposed to any hazards

After all locks have been removed and the area has been inspected, the MTCM (if required) may be restored and equipment made ready for testing and/or normal service.

New Construction Lockout Procedures and Authority

Turn Key Projects

This shall be defined as projects such as the addition of a new generation unit, large pollution control retrofit project, or other large scale projects not managed by the Stations. This option may be applied with the approval of the Plant General Manager and the Director of the department managing the Turn Key Project and requires the approval of both.

1. The General Contractor for the major project shall act as the Lockout Authority and shall supply CLEARANCE AUTHORITY, SWITCHING AUTHORITY and QUALIFIED PERSONS consistent with this ASI Regulated Generation Lockout Tagout Policy.
2. All contract employees and ASI personnel shall request and receive clearance on equipment through lockout procedures from the general contractor's Administrative Authority until the Facility Manager has accepted the transfer of authority over the equipment or system from the general contractor.
3. A specific list of the equipment transferred to the authority of the Plant General Manager shall be maintained by the facility's Administrative Authority, the department managing the Turn Key Project, and the general contractor's Administrative Authority to ensure that effective Energy Isolation and Lockout Authority is maintained for all equipment during the entire project.

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EH&S OPERATING POLICIES AND PROCEDURES
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Operational Control and Lock-Out/Tag-Out Authority at Generating Stations

Purpose

Generating Stations generate power into the Transmission/Distribution Systems and receive auxiliary power from the Transmission/Distribution Systems. The purpose of this document is to define Operational Control and Lock-Out/Tag-Out Authority (LOTA) of assets needed to generate power into the Transmission/Distribution Systems and receive auxiliary power from the Transmission/Distribution Systems. This document will also define additional requirements for LOTA of assets/operating equipment at generating stations.

Operational Control and Lock-Out/Tag-Out Authority

- Transmission System Control Center (TSCC) shall have operational control and lock-out/tag-out authority of all assets at or above 69KV. Generation shall have operational control and lock-out authority of generation owned assets below 69KV.

- Operational control does not necessarily define who actually operates the asset. Operational control defines control responsibility. TSCC has, for example, operational control of the Mill Creek 345KV generator primary circuit breakers. TSCC grants Mill Creek the permission to close a 345KV breaker during the synchronization of a generating unit to the Transmission System.

- TSCC and Generation shall have joint operational control and joint lock-out authority of all Transmission interface assets and some Distribution interface assets. An interface asset in this document is defined as a Transmission or Distribution assets that when carded provides clearance and isolation of generation assets from the Transmission or Distribution System. Appendix A lists Transmission interface assets with shared operational control and shared lock-out authority.

Some generating plants have auxiliary loads that are powered from Distribution lines. Distribution Dispatch have sole operational control and sole lock-out/tag-out authority of the last overhead Distribution lines disconnect (interface assets) feeding a Generation load. Generation and Distribution Dispatch will have joint operational control and joint lock-out authority of non-overhead interface assets disconnects.

All interface assets can only be operated after notification of Generation and TSCC or Generation and ASI Distribution Dispatch. If an interface asset can be energized from both Generation and Transmission/Distribution, clearance must be given from both Generation and Transmission/Distribution before maintenance can begin on an interface asset.

Employees and/or contractors that are performing work on an asset and require clearance from the lock-out/tag-out authority for that asset shall follow the policy and procedures of the respective lock-out/tag-out authority. When the work involves an asset that has energy sources under the responsibility of multiple lock-out/tag-out authorities, the PERSON IN CHARGE of the work shall obtain clearance from each authority before starting work. When more than one department (Generation/Transmission/Distribution) requests clearance for the same asset at the same time, the PERSON IN CHARGE from each department will request and obtain separate clearance from each authority involved. For example, a Distribution employee in charge of work on Transmission interface assets during a unit outage will request and obtain required clearance from the TSCC and the local plant authority. That Distribution employee will not work under the clearance obtained by a Generation employee. Personal grounds can only be added while having clearance on an asset. Personal grounds must be removed before releasing clearance back to the lock-out/tag-out authority.

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APPENDIX T

LOCKOUT/TAGOUT PROCEDURE ACKNOWLEDGMENT
For Contractors to designate "PERSON IN CHARGE"

I, _____, affirm that I am the duly

AUTHORIZED _____ of

_____; (hereinafter the "Independent Contractor") and as such, have full authority to bind the Independent Contractor. On behalf of the Independent Contractor, I acknowledge that the Independent Contractor is fully aware of the LOCKOUT/TAGOUT Procedure and will strictly observe its requirements. In the event that the Independent contractor should ever breach this procedure, such breach will provide ASI with a right to immediately terminate any contract or agreement relating to goods or services being supplied by the Independent Contractor at the

_____ Generating Station. In the event the Independent Contractor uses subcontractors in supplying such goods or services, the Independent Contractor shall be jointly and severally responsible for compliance by such subcontractors with the LOCKOUT/TAGOUT Procedure.

List below those persons authorized to Hold Card:

Name	24hr Phone Number	Signature
Name	24hr Phone Number	Signature
Name	24hr Phone Number	Signature
Name	24hr Phone Number	Signature
Name	24hr Phone Number	Signature

Work dates from _____ to _____

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Appendix U

Periodic Inspection Certificate

Pursuant to 29 CFR 1910.147 (c)(6) the employer shall conduct a periodic inspection of the energy control procedures at least annually to ensure the procedures and requirements of the Control of Hazardous Energy standard are being followed.

Date of periodic inspection: _____

Name of authorized employee conducting the inspection:

_____

Pursuant to 29 CFR 1910.147(c)(6)(i)(A) the inspection shall be performed by authorized employee other than one who actually uses the energy control procedures being inspected.

SPECIFIC IDENTFIER OF MACHINE OR EQUIPMENT

Pursuant to 29CFR1910.147(c)(6)(ii) the employer shall identify each and every machine or piece of equipment on which energy control procedures are being utilized.

Specific identifying characteristic or number: _____

_____

_____

EMPLOYEES(S) PERFORMING LOCKOUT/TAGOUT PROCEDURES

Pursuant to 29 CFR 1910. 147c (6)(i)(c) & (d) Where Lockout and/or Tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities (job duties) under the energy control procedure being inspected.

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Employee name(s)	Employee(s) signature

Deficiencies Revealed as a Result of the Inspection	**Corrective Actions Taken**

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APPENDIX V

Lockout / Tagout of Radiation Sources to Prevent Employee Exposure

1. The facility's RSO (Radiation Safety Officer), or in their absence, a QUALIFIED User, shall be contacted before beginning work on or around nuclear devices where it is possible for any portion of an individual's body to receive exposure to the radiation beam from the device.
2. Where the RSO determines that exposures are possible during the proposed work process, the RSO (or designated QUALIFIED User under the radiation Safety Standard) shall switch the radiation source to its closed or off position and apply any specific testing required under the Radiation Safety Requirements to ENSURE its isolation.
3. An AUTHORIZED PERSON shall apply a lock or a Hold Card to the closed and tested radiation source for the AA.
   - 3.1 Tagout shall be applied to radiation sources associated with GENERATION EQUIPMENT.
   - 3.2 Lockout shall be applied to radiation sources associated with NON-GENERATION EQUIPMENT and all Marine Standard related equipment.
4. All workers with potential exposures must request CLEARANCE through established procedures. Then and only then will the employees be allowed to start that portion of their work where exposures have been deemed possible by the RSO.
5. When the workers have completed their tasks and released their CLEARANCES through established procedures the AA shall inform the RSO/QUALIFIED User that the job is complete. The AA shall then designate an AUTHORIZED PERSON to remove the Hold Card and lock.

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APPENDIX W

ASI
Lockout/Tagout Variance

Location: _____ Unit: _____
Work task: _____ Date: _____

Description of work:

Reason for variance:

Description of variance and duration requested:
_____

_____	_____
Manager requesting variance	Department Supervision
_____	_____
Safety Officer	Senior crew member on equipment
_____	_____
Senior crew member on equipment	Senior crew member on equipment
_____	_____
Senior crew member on equipment	Senior crew member on equipment
_____	_____
Superintendent	OPS Manager/Appointed Designee

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APPENDIX X

Lock Identification

1. Physical Description

   1.1 Only locks designed for the purpose of LOCKOUT shall be used. Any person who is aware of any lock being used for lockout that does not satisfy the following requirements must immediately report the finding to their Supervisor. That Supervisor shall take immediate steps to ENSURE that the lock in question meets the proper requirements or that a suitable replacement lock is provided.
   1.2 These locks have been determined to be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
   1.3 These locks are of such construction as to prevent removal when in place by any means (other than the regular key) without the use of excessive force or unusual techniques (such as with the use of bolt cutters or other metal-cutting tools).

2. Identification

   2.1 Each person's lock(s) shall be uniquely keyed.
   2.2 There shall be **no** master key.
   2.3 Locks are identified as:

   - Operation's locks shall be uniform in color.
   - Locks for the Maintenance Groups (Mechanical, Instrument, Electrical) can be any color as determined by the facility.
   - All personal locks shall be identified by having the employee's name on the lock.

3. Each facility will maintain an ample number of locks, and supply as needed to their AUTHORIZED PERSONS.

   It is required that whenever locks are used to provide energy isolation, that Hold Cards with MTCM s be issued first. Persons placing their personal lock(s) must first have signed on the MTCM and received CLEARANCE.

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Appendix Y

SPECIFIC ENERGY CONTROL PROCEDURES
FOR EACH PIECE OR TYPE OF MACHINE OR EQUIPMENT

Procedure Number: _____ Date: _____

Completed By: _____

Machine(s) or Equipment utilizing this procedure: _____

Number of Locks required: _____

Other Lockout Devices required:_____

PROCEDURES FOR CONTROLLING HAZARDOUS ENERGY

1. Source(s) of Hazardous Energy (Check (✓) all that apply).

___Electrical	____Natural Gas	____Springs
___Hydraulic	____Gravity	____Steam
___Chemical	____Pneumatic	____Thermal
___Other: _____		

2. Notify affected employees that the machine/equipment is about to be shut down and locked out.

Specific Instructions:

3. Shut down the machine/equipment using normal stopping procedures.

Specific Instructions:

_____

4. Isolate all energy sources listed above.

Specific Instructions:

_____

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Appendix Z

Lockout Removal Record

Date:_____Time: _____ Equipment: _____

Name of Lock owner/Originator:_____

Has the Owner/Originator been located? Yes / No

If No, Why? _____

Reason Lock was not removed:

_____

_____

_____

Name of person cutting or removing lock/tag/lockout devices:

_____

I, certify that equipment / process and personnel safety have been assured and that the above lock/tag/lockout device may be safely removed.

Signature: _____

Job Title: _____

The above listed lock owner/ originator was informed that his/her lock had been removed on (date) _____

By (name & job title)_____

_____

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Appendix AA

CONTROL OF HAZARDOUS ENERGIES- ABANDONED LOCK REMOVAL FORM					
This form is to be used any time a Lockout/Tagout (LOTO) device is to be removed by someone other than the person who placed the LOTO device. The person removing the LOTO device must be directed to do so by management. Failure to follow and document the appropriate steps to remove a LOTO device can result in disciplinary action up to and including termination.					
DATE:			**TIME:**		
1.	**Name of LOTO device owner whose lock/tag is to be removed:**				
2.	**LOTO device owner's cell phone/ contact info:**				
3.	**LOTO device owner's Supervisor:**				
4.	**Document attempt to contact LOTO device owner.**				
	DATE/TIME		**METHOD OF ATTEMPTED CONTACT**	**RESULT**	
	1.				
	2.				
	3.				
5.	**Reason for removing lock (LOTO device owner is absent from work, has family emergency and can't remove lock, or is no longer with company)**				
6.	**Evaluate the entire affected system to ensure employees' safety before LOTO device is removed. LOTO device(s) removed by:**				
	Removed by (Print):		**Observed by (Print):**		
	Supervisor's (or designee) Signature:		**Authorized Employee's Signature:**		
	Date/Time::		**Date/Time:**		
7.	**EHS Representative informed (i.e. email or phone call/message) that an ABANDONED LOTO device is going to be removed and abandoned lock removal form is completely filled out.**				
	EHS Representative Notified:				
	Date:		**Time:**		
Method of notifying LOTO device original owner and their supervisor that the LOTO device was removed prior to beginning their next shift					

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Appendix BB

- **ASI's LOTO procedures have been reviewed**
  - **All power sources have been identified**
  - **Each employee's duties have been identified**
  - **Emergency Procedures have been reviewed**
  - **A person who is currently certified in CPR and FirstAid has been identified**

Date In	Date Out	Employee Name	Panel/ Equipment	Circuits	Lock Number

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TITLE: WORKPLACE VIOLENCE PREVENTION POLICY

POLICY 033

PURPOSE:
It is the intent of Affordable Solar to provide a safe and secure environment for all employees, visitors and contractors by establishing preventative measures, holding perpetrators responsible, and providing assistance and support to victims.

SCOPE:
This policy specifically addresses the Affordable Solar position on the prevention, and management of violence to provide a safe working environment for all employees at all Affordable Solar owned, controlled, or leased properties.

RESPONSIBILITY:
Affordable Solar does not tolerate acts of violence or hostility committed by or against employees, temporary employment agency workers, contractual workers, visitors, customers, or other third parties on Affordable Solar owned, controlled, or leased properties, or while conducting Affordable Solar business at other locations.

It is the responsibility of all Affordable Solar employees to take any threat or violent act seriously and to report acts of violence or threats to the appropriate authorities as set forth in this policy.

Human Resources will coordinate employee-related preventative measures, including conducting criminal conviction checks n accordance with Affordable Solar policy, providing awareness programs to new employees, coordinating referrals to the employee assistance program.

EH & S Department will:

- Develop and coordinate the Affordable Solar emergency response plans,
- Develop and coordinate a plan for awareness and training programs for employees.

It is the responsibility of Affordable Solar to:

- Provide, develop and maintain the Workplace Violence Prevention Program
- Verify that training has been provided to each employee.

It is the responsibility of management to:

- Utilize management strategies to identify and prevent incidents of workplace violence.
- Reduce the effects of violence on victims
- Provide consequences to those who threaten or perpetrate violence.
-

It is the responsibility of the employees to:

- Comply with all procedures outlined in this policy.

All Affordable Solar managers, and employees are responsible for reporting indications of possible hostile behavior, and must not be subjected to any acts of retaliation for reporting concerns.

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Affordable Solar will use all available resources such as law enforcement, all applicable human resources and policies in responding to alleged acts of violence.

1. DEFINITIONS:

An **at-risk individual** is defined as an employee, or other person who is a potential target or victim.

Assault is committed when one person
1. Tries to or does physically strike another,
2. Acts in a threatening manner to put another in fear of immediate harm.

Aggravated assault is defined as a completed or attempted attack with a weapon and an attack without a weapon in which the victim is seriously injured.

Affordable Solar property is defined as any location, either permanent or temporary, owned or leased by Affordable Solar . This includes, but is not limited to, the buildings, grounds, and the surrounding perimeters, including the parking lots, field locations, and alternate work locations.

A **credible threat** of violence is defined as a knowing and willful statement or course of conduct that would cause a reasonable person to believe that he or she is under thereat of death or serious bodily injury or harm. A course of conduct is any series of acts over a period of time, however short, that evidences a continuity or purpose such as following or stalking and individual to or from the workplace, telephone calls to the employee, and correspondence with the employee or student, whether by public or private mail, e-mail, interoffice mail, or fax.

Firearms are defined as any gun, rifle, pistol, or handgun designed to fire bullets, BBs, pellets, or shots, including paint balls, regardless of the propellant used.

An **intimidation** is engaging in actions that include, but are not limited to stalking or behavior intended to frighten, coerce, or induce duress.

Physical Attack is unwanted or hostile physical contact such as hitting, fighting, pushing, shoving or throwing objects.

Property damage is intentional damage to property and includes property owned or leased by Affordable Solar employees, visitors, temporary agency employees performing work for Affordable Solar .

Sexual Assault is defined as any forcible sexual activity that occurs without the consent of the victim. It includes, but is not limited to, unwanted kissing and fondling, forcible vaginal, oral, or anal intercourse, and forcible penetration with an object or finger.

Consent is an agreement reached without force, coercion, or intimidation between persons. Forcible sexual activity occurs when consent is not reached or when the victim is mentally incapacitated or physically helpless.

Stalking is defined as repeatedly contacting another person when the contact is unwanted. Additionally, the contact may cause the other person reasonable apprehension of imminent physical harm or cause substantial impairment of the other person's ability to perform the activities required of daily life. Contact includes, but is not limited to communicating with (either in person, by

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phone or computer) or remaining in the physical presence of the other person.

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Third parties are individuals who are not Affordable Solar employees, such as relatives, acquaintances, contractual workers, vendors, visitors, customers or strangers.

A **threat** is the expression of intent to cause physical harm. An expression constitutes a threat without regard to whether the party communicating the threat has the present ability to carry it out, and without regard to whether the expression is contingent, conditional, or future.

Violence includes, but is not limited to, intimidation, threats, physical attack, domestic violence or property damage, and includes acts of violence committed by Affordable Solar employees, customers, relatives, acquaintances or strangers against Affordable Solar employees in the workplace but does not include lawful acts of self defense or the defense of others.

Weapons are defined as any instrument of combat, or any object not designed as an instrument of combat but carried for the purpose of inflicting or threatening bodily injury. Examples include but are not limited to firearms, knives with fixed bladed or pocket knives with blades longer than four inches, razor, metal knuckles, blackjacks, hatchets, bows and arrows, nun chahkas, foils, or any explosive or incendiary device.

2. PROHIBITED CONDUCT AND SANCTIONS:

2.1 Prohibited conduct includes, but is not limited to intentionally:

- 2.1.1 Injuring another person physically;
- 2.1.2 Engaging in verbal or physical behavior that creates a reasonable fear of injury to an identifiable person;
- 2.1.3 Engaging in verbal or physical behavior that subjects an identifiable individual; to extreme emotional distress;
- 2.1.4 Engaging in threatening or violent behavior based on race, ethnicity, gender, sexual orientation, or other protected status;
- 2.1.5 Defacing or damaging property;
- 2.1.6 Threatening to injure an individual or to damage property;
- 2.1.7 Committing injurious or threatening acts related to sexual assault, stalking, dating or domestic violence or sexual harassment;
- 2.1.8 Brandishing a weapon or firearm; and
- 2.1.9 Retaliating against any individual who, in good faith, reports a violation of this policy.

2.2 Individuals who violate this policy may also be subject to arrest for trespass and/or violation of the appropriate state criminal statute.

3. DEFUSING VIOLENT BEHAVIOR:

3.1 The following are the techniques recommended to defuse violent behavior.

- 3.1.1 Use a calm, non-confrontational approach.
- 3.1.2 Ask the person how can help them.
- 3.1.3 Focus on their behavior not the person.
- 3.1.4 Maintain a safe distance from the person
- 3.1.5 Do not touch the person, argue with him/her, or make any aggressive movements.
- 3.1.6 If is safe to do so, alert other persons in the area of the workplace violence incident and evacuate them from the area.
- 3.1.7 Call 911 in situation that threatens human life and/or property, and requires immediate attention.

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4. REPORTING INCIDENTS:

4.1 Any individual who believes there is an immediate danger to the health or safety of any member of the Affordable Solar should call 911.

4.2 General questions about Affordable Solar Violence Prevention Policy should be directed to:

- 4.2.1 EH&S Department
- 4.2.2 Human Resources Department

5. INCIDENT INVESTIGATION AND DOCUMENTATION

5.1 Every incident at allegation shall be reported to management and to the Department of Environmental Health and Safety.

5.2 All workplace violence incidents should be investigated by the first-line supervisors or appropriate management

5.3 The manager or supervisor will immediately take the appropriate actions as necessary, such as removing the person making the threats from the work area until the situation is resolved

5.4 For serious threats or acts of violence Security and the law enforcement authorities.

5.5 The supervisor or manager shall complete a Incident report and forward it to the EH&S and HR departments.

6. TRAINING:

6.1 The Workplace Violence Prevention training will be provided to all Affordable Solar employees.

6.2 Training will be provided initially to all new employees upon hire and at a minimum once annually in a form of Weekly Safety Training Program.

6.3 The training shall include the following topics:

- 6.3.1 Overview of the workplace violence prevention policy.
- 6.3.2 Recognition of the workplace violence warning signs.
- 6.3.3 Techniques for defusing violent behavior.

7. RECORD KEEPING

7.1 Workplace violence prevention Program records shall be maintained by the department of EH& S Dept.

7.2 Workplace violence incident reports shall be maintained by EH&S department,

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TITLE: ELECTRICAL SAFETY PROGRAM

POLICY 034

REFERENCE: 29 CFR 1910.331 through 1910.335

PURPOSE:
The purpose of this policy is to establish safe work practices that are intended to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts.

SCOPE:
The information in this Electrical Safety Policy applies to all employees who may be exposed a release of electrical energy.

RESPONSIBILITY:
It is the responsibility of Affordable Solar to:

- Provide work sites with a copy of the Electrical Safety Policy
- Provide Electrical safety training to all new employees

It is the responsibility of the Supervisor to:

- Select PPE to protect employees
- Require employees to use selected PPE
- Inform and train employees.

DEFINITIONS:

Electric shock and burns – An electric shock occurs when electric current passes through the body. This can happen when touching an energized part. If the electric current passes across the hest or head, death can result. At high voltages, severe burns can result.

Arc-Blast Burns – An electric arc flash can occur if a conductive object gets too close to a high-amp current source or by equipment failure. The arc can heat up the air to temperatures as high as 35,000 F, and vaporize metal in the equipment. The ark flash can cause severe skin burns by direct heat exposure and by igniting clothing.

Arc-Blast Impacts – The heating of air and vaporization of metal creates a pressure wave that can damage hearing and cause memory loss (from concussion) and other injuries. Flying metal parts are also a hazard.

Falls – Electric shocks and arc blasts can cause falls, especially from ladders or unguarded scaffolding.

Energy Source – Any source of electrical energy

Exposed Electrical Parts – Energized parts that can be inadvertently touched or approached nearer than a safe distance by a person. Examples include bare wiring, frayed wiring.

Ground Fault Circuit Interrupt (GFCI) – is an electrical device which protects personnel by detecting potentially hazardous ground faults and quickly disconnecting power from the circuit. A potentially dangerous ground fault is any amount of current above the level that may deliver a dangerous shock. Any current over 8 mA is considered potentially dangerous depending on the path the current takes, the amount of time exposed to the shock, and the physical condition of the person receiving the shock.

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Ground – a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth or to some conducting body that serves in place of the earth.

Conductors – are the wires and cables that carry electricity. Conductors are wrapped in insulators – electricity resistant materials like rubber, plastic, and glass that keep the electric current on its pass and prevent accidents

PERSONAL PROTECTIVE EQUIPMENT

Affordable Solar will provide personal protective equipment for use by employees working in areas where they could be exposed to electrical hazards. Employees are required to observe the following procedures fro PPE use:

2.1 PPE use is mandatory when contact with exposed electrical sources is likely.
2.2 Only use PPE that is designed fro the work being performed.
2.3 Inspect and test all PPE prior to use.

EMPLOYEE TRAINING

Employees not authorized to perform work on electrical equipment and components will be trained in general electrical safety precautions for the purpose of hazard awareness. The following electrical safety rules apply to unqualified employees:

a. Unqualified employees are not to conduct any electrical repairs.
b. All electrical hazards must be reported to the Site Manager immediately.
c. Equipment must not be operated there is an electrical hazard.
d. Electrical equipment must not come in contact with water.
e. Use of cords or plugs that are missing the "ground "prong is prohibited.
f. Never overload electrical receptacle.
g. Do not bend a 3-pronged plug or force it into a 2 –pronged outlet.
h. Use only wiring approved for use in outdoor or wet areas, and plug into ground fault circuit interrupters (GFCIs)
a. Do not touch anything electrical with wet hands or while in a wet area. Wear rubber gloves and rubber boots as protections.
i. Don't contact anything electrical with anything metal.
j. Use insulated, nonconductive tools around power sources.

PORTABLE ELECTRICAL EQUIPMENT AND EXTENSION CORDS.

The following requirements apply to the use of cord-and-plug-connected equipment and flexible cord sets (extension cords)

4.1 Extension cords may only be used to provide temporary power.
4.2 Portable cord-and plug connected equipment and extension cords must be visually inspected before use for external defects such as loose parts, deformed and missing pins, or damage to outer jacket or insulation, and fro possible internal damage such as pinched or crushed outer jacket.
4.3 All defective cords or cord-and –plug-connected equipment must be removed from service and no person may use it until it is repaired and tested to endure it is safe for use.
4.4 Extension cords must be three-wire type.
4.5 The use of job made extension cords is forbidden.
4.6 Flexible electric cords connected to equipment may not be used for raising or lowering the equipment.
4.7 Flexible cords may not be run through windows and doors.
4.8 Flexible cords may not be run above ceilings or inside through walls, ceilings or floors and may not be fastened with staples or otherwise hung in such a fashion as to damage the outer jacket or insulation.
4.9 Cords must be covered by a cord protector or tape when they extend into a walkway or other path of travel to avoid creating a trip hazard.

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WET OR DAMP LOCATIONS

Work in wet or damp work locations (i.e., areas surrounded or near water or other liquids) should not be performed unless it is absolutely critical. Electrical work should be postponed until the liquid can be cleaned up. The following special precautions must be incorporated while performing work in damp locations:

5.1 Electrical cords used in damp locations must have Ground Fault Circuit Interrupters (GFCIs)

5.2 Remove standing water before beginning work. **Work is prohibited in areas where there is standing water.**

5.3 Do not use electrical extension cords in wet or damp locations.

5.4 Keep electrical cords away from standing water.

MATERIAL HANDLING EQUIPMENT AND OVERHEAD POWER LINES

When work must be performed near overhead power lines, the following guidelines shall be observed.

6.1 Ensure electrical distribution and transmission lines are de-energized and visibly grounded.

6.2 If this is not possible, operated close to power lines only if the clearances in the chart below are observed.

Voltage	Minimum Clearance
50 kV or below	10 feet
Over 50 kV	10 feet + 0.4 for each 1 kV over 50 kV or twice the length of the line insulator but never les than 10 feet

6.3 When material handling equipment is in transit with no load, the clearance must be observed according to the chart below.

Voltage	Minimum Clearance
Less than 50 kV	Minimum of 4 feet
Over 50 kV up to and including 342 kV	Minimum of 10 feet
Over 345 kV up to and including 750 kV	Minimum of 16 feet

6.4 If the power line is down or falls on your vehicle and you are trapped do not step outside you vehicle. Stay in your vehicle until help arrives. If people try to help, you must tell them to stay away. Contact local power company.

STANDARD AC VOLTAGES

The standard alternating current voltages in substations and on lines and equipment are as follows:

7.1 Distribution Voltages

- 120 volts
- 120/240 volts
- 120/208 Y
- 240 volts
- 277/480 Y
- 480 volts
- 2,400/4,160 Y
- 7,200 volts

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- 7,200/12,470 Y
- 13,200/23,000 Y
- 13,800/24,000 Y
- 14,400/24,540 Y
- 19,900/34,500 Y

7.2 Transmission Voltages

- 69 kV
- 115 kV
- 138 kV
- 345 kV

CLASSIFICATION OF CIRCUITS

8.1 The following circuits come within the 0-5,000 volt classification:

- 120 volt two-wire secondary
- 120/240-480 secondaries
- 240 volt three-phase three-wire power circuits
- 120/240 volt three-phase four-wire delta secondaries
- 120/208 volt three-phase four wire wye secondaries
- 277/480 volt three-phase four-wire wye secondaries
- 380 volt, 480 volt and 550 volt three-phase three-wire power circuits
- 2,400 volt and 4,160 volt primaries
- 125 volt, 250 volt, 550 volt, 600 volt and 1,200 volt D.C. circuits

8.2 . The following circuits come within the 5,000 to 15,000 volt circuit classification:

- 7,200 volt phase to phase
- 7,200 volt phase to ground
- 12,470 volt wye-connected, or
- 12,470 delta-connected circuits

METHOD OF GROUNDING LINES AND APPARATUS

9.1 All phase conductors shall be tested for voltage and grounded with approved grounding devices. However, where work is to be done on only one pole of an

H-frame line 60 kV and above, it will be permissible to test for voltage and ground with approved grounding devices only the conductors to be worked on provided the grounding devices are installed on the pole on which the work is to be done. In addition, the appropriate minimum approach distance to any un-grounded conductor must be maintained.

9.2 When applying grounding devices, the ground connections shall always be made first, then the closest phase to the employee, second closest, etc. In removing the grounding device, the reverse procedure shall be followed, first removing the connection farthest from the employee, then next farthest, with the connection closest to the employee removed last. After all the connections to the phase wires have been removed, the ground connections may be removed.

9.3 Employees shall at all times exercise care in applying grounding devices. All connecting surfaces shall be brushed (or serrated jaws used) to ensure a good connection exists during the grounding process. Employees shall stand where they will not be involved if an arc develops and where they will not be in

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danger of a whipping motion of the ground lead during a fault. Keep lead slack to a minimum. (Note: Never coil a grounding device jumper. If slack must be removed either get a shorter device or gather together without coiling).

9.4 When it is necessary to ground lines above energized circuits, the following preliminary precautions shall be taken according to the voltage of the energized circuit:

9.4.1. Circuits of 5,000 volts and below shall be covered with approved insulated protective devices.
9.4.2. Circuits carrying voltages from 5,000 to 15,000 volts shall either be moved out to a safe distance with live line tools or they shall be covered with approved insulated protective devices.

9.5 The safest way to temporarily ground overhead distribution lines and devices is to create an equipotential zone (EPZ) by using personal protective grounds. The EPZ method of grounding is the installation of temporary grounds installed from the system neutral or alternate ground source, to a grounding cluster bracket on the structure or pole below the worker's feet, to a phase conductor, and from phase conductor to phase conductor creating a zone of equal potential between the worker and anything within reach. However, there will be situations where this is impossible or creates a greater hazard. In these situations, personal protective grounds shall be installed on both sides and as close to the work site as possible. In these situations rubber gloves shall be used by workers.

9.6 Verify that existing pole grounds are connected to the neutral and/or shield wire. Visually inspect for broken, loose, or bad connections and repair when necessary.

GROUND WIRES AND GROUNDING NEUTRALS

10.1 Rural Line on Transmission and Shields Type Construction

Where the overhead shield wire on transmission and shielded type distribution circuits are used for the neutral on unshielded distribution circuits, taps shall not be made to the pole ground wire, but shall be tied separately to the shield wire or neutral. Stranded wire shall be used in making the connection to shield wires.

10.2 Overhead and URD Ground Wire or Neutral Wires

Employees shall avoid cutting the overhead and URD ground wire or neutral wires of any kind, or opening joints in them without first bridging the section to be opened with wire of suitable size, as this could cause the ground wire or neutral to become energized at full line potential.

10.3 Pole Grounds on Line

Employees shall not open the ground wire on poles without bridging the section to be opened.

10.4 Substation Grounds and Transformer Neutrals

When work is to be done on ground wires in substations, employees shall avoid cutting or opening joints in the wires of the grounding system without first bridging the section to be opened with a grounding clamp or with wire of suitable size. If it becomes necessary to open the ground bus leading to the neutral of a wye-connected power transformer bank, particular care shall be taken to bridge the section to be opened with wire or cable of capacity equal to that of the ground bus.

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GROUND TESTING

11.1 In testing secondary and lightning arrester grounds on circuits carrying from 0 to 5,000 volts, where the ground is left tied to the arrester while the test is being made, the tester shall use insulated test clips and wear rubber gloves to protect from shock or burns due to a defective ground or lightning arrester.

11.2 In making tests as above on circuits carrying 5,000 volts and above, the tester shall use rubber gloves on grid grounds. When testing isolated grounds, approved hot-sticks shall be used to make initial connection, and then if a difference of potential is not detected, rubber gloves may be used to make permanent connections for the test.

TESTING DELTA CONNECTED SYSTEMS FOR GROUNDS

Delta connected primaries shall be tested for accidental grounds once every six months under the supervision of the line supervisor of the area grounds shall be located and removed as soon as possible.

LIVE LINE MAINTENANCE RULES:

Approved live line tools shall be used when it is necessary to work on energized lines carrying more than 5,000 volts or with the use of an aerial basket truck as outlined in rules regarding Aerial Basket Devices.

12.1 All live line tools, including fuse sticks, shotguns and “extendo” sticks shall be cleaned, inspected and dielectrically tested every two years. Any stick failing the visual or dielectric test shall be either immediately repaired or retested, or discarded.

The nature of live line maintenance work is such that it would be difficult to govern it by hard and fast rules; therefore, the supervisor shall use their ingenuity to devise safe methods on the points not covered by live line rules. The entire responsibility of the safety of employees engaged in live line work, as well as the enforcement of the following rules, rests with the supervisor.

12.2 Before live line work is started, a briefing shall be held setting forth the plan of operation and specifying the type of tools and equipment to be used.

- 12.2.1 The supervisor shall make a thorough inspection of poles, structures, or towers adjacent to work locations making sure that the condition of tie wires, pins, and hardware are intact.
- 12.2.2 The supervisor shall determine that adequate clearance exists between the conductor and any object.
- 12.2.3 If the work to be done is on an angle, the supervisor shall arrange to take care of strains. In addition, the supervisor shall arrange for blocks to be used on the ends of the link stick ropes so the conductor can be moved slowly and carefully.
- 12.2.4 Link sticks shall be tied off to suitable anchors on all regular live line setups. In no case shall they be tied to a car or truck unless the motor is stopped, the ignition key removed, and the brakes set. The supervisor shall keep the key in their pocket until all lines are removed from the vehicle.

12.3 The supervisor and employees shall inspect all tools before beginning work. Each tool shall be wiped clean and visually inspected for defects before use each day. No defective tools or equipment shall be used.

- 12.3.1 Any tool found to have a defect that would affect the insulating qualities or mechanical integrity of the tool shall be immediately removed from service and sent to the manufacturer for repairs. Before putting back into service the stick shall be cleaned, inspected and dielectrically tested. If repairs cannot be made, the tool shall be

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discarded immediately.

Tools shall be kept clean and dry. All live line tools shall be of fiberglass construction and have the manufacturer's certification and a current inspection and test date visible and shall be able to withstand the following minimum test: 100,000 volts per foot of length for 5 minutes.

12.3.4 All live line tools shall be of fiberglass construction and have the manufacturer's certification and a current inspection and test date visible and shall be able to withstand the following minimum test: 100,000 volts per foot of length for 5 minutes.

12.4 Employees shall not depend on warnings from the feel of current, which may creep over the tools. All live line tools shall be equipped with safe distance markers to indicate how far out on the sticks they can safely hold them. The marker shall be located from the conductor end of the sticks as follows:

- Up to 66 kV 4 feet
- 66 to 115 kV 5 feet
- 115 to 138 kV 6 feet
- 138 to 345 kV 8 feet

Link sticks shall be at least 4 feet long for 66 kV and below, 6 feet for 66 kV to 138 kV and 9 feet for 138 to 345 kV. Employees shall not reach beyond these markers when engaged in live line work.

12.5 The supervisor shall not do any work, but shall watch the employees closely, and advise them as necessary.

12.6 Safe working distances from all energized wires, as set forth in Rule-518 shall be maintained by employees at all times. In congested locations where this is impossible, a clearance shall be obtained.

12.7 The supervisor shall plan the work carefully, and if in doubt, the supervisor shall not proceed until the work can be done safely.

12.8 Close cooperation shall be obtained from every worker on the job. No high tempered or fractious worker shall ever be assigned to „live line“ work.

12.9 Haste inconsistent with safety shall not be permitted.

12.10 Unnecessary conversation shall not be allowed, as this would distract attention, cause confusion and create a hazard.

12.11 In untying and tying conductors on pin type insulators, one worker shall work at a time and the other shall steady the conductor with approved hold sticks.

12.12 In untying conductors, the workers shall cut the tie wires off short or roll them up in a ball so they will not contact pins, cross arms, poles, ground wires or other conductors.

12.13 Every precaution shall be used in moving about on a pole. No employee shall change position without advising the other of his/her intentions.

12.147 In removing link stick lines („fuzz lines“) from energized conductors, the employee shall take hold of the link stick rope and pull the link stick to the employee before taking hold of the stick.

12.15 The supervisor shall be positive that an emergency exists before beginning live line work in wet weather, and then extraordinary care shall be used to prevent ropes from swinging against conductors.

12.16 Live line maintenance work shall not be done at night unless absolutely necessary.

12.17 Employees shall not allow a rope to lie across energized conductors.

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STRINGING AND SALVAGING WIRE

13.1 Prior to stringing or removing de-energized conductors, a tailboard conference shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to be followed, crossover methods to be employed, and clearance authorization, if needed.

13.1.1. Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving an induced voltage buildup, the conductor being installed or removed shall be grounded.

13.1.2. If crossing another line, the existing line shall both be de-energized and grounded on both sides of the crossover, or the line being strung or removed shall be considered and worked as energized. When crossing over energized conductors in excess of 600 volts, rope nets or guard structures shall be installed, unless provisions are made to isolate or insulate the employees or the energized conductor. Where practical, the automatic reclosing feature of the circuit-interrupting device shall be made inoperative. In addition, the line being strung shall be grounded on either side of the crossover and worked as energized.

13.1.3. Conductors being strung or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tie lines, or other means to prevent accidental contact with energized circuits.

13.2.4. Guard structures shall be of adequate dimension and strength to prevent accidental contact with energized conductors.

13.2.5. Catch-off anchors, rigging, and hoists shall be of ample capacity to prevent loss of lines.

a) The manufacturer's load rating shall not be exceeded for stringing lines, pulling lines, sock connections, and all load bearing hardware and accessories.
b) Pulling lines and accessories shall be inspected regularly and replaced or repaired when damaged or when dependability is questionable.
c) 'Quick Sleeve' type splices shall not be relied upon when pulling conductors in or out.

13.2.6. Conductor grips shall not be used on wire rope unless designed for this application.

13.2.7. While the conductor or pulling line is being pulled (in motion) employees shall not be permitted directly under overhead operations, nor shall any employee be permitted on the cross arm.

13.2.8. A transmission clipping crew shall have a minimum of two structures clipped in between the crew and conductor being sagged. When working on bare conductors, clipping and tying crews shall follow approved grounding procedures in Rule-530. The grounds shall remain intact until the conductors are clipped in, except on deadend structures.

13.2.9. When adverse weather occurs, work from structures shall be discontinued, except when making emergency repairs. Stringing and clipping operations shall be discontinued during the progress of an electrical storm in the immediate vicinity. (See Rule 105-E)

13.2.10. Reel handling equipment, including pulling and braking machines, shall have ample capacity, operate smoothly, and be leveled and aligned in accordance with the manufacturer's operating instructions.

a. Reliable communications between the reel tender and pulling rig operator shall be provided.
b. Each pull shall be snubbed or dead-ended at both ends and grounded before subsequent pulls.

13.2.11. During in-pulling or wire removal, the pulling shall be slow and steady to prevent swinging. The wire shall be watched carefully to prevent it from hanging on tree limbs, weeds and other obstructions.

13.2.12. No employee shall be permitted to touch or attempt to handle any conductor or wire on the pole or ground without rubber gloves.

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13.2.13. Pay-out reels.

a. Adequate braking shall be used with all pay-out reels. Employees shall not touch or attempt to stop the revolving reel except with the brake.
b. The inside end of the coil of wire, where this end is accessible, shall be securely fastened to the reel to prevent the wire from getting loose when all the wire has been paid out.
c. If the inside end of the coil cannot be secured, a tail rope shall be fastened securely to the wire before the end is reached to prevent it from getting loose.

13.3 Stringing Wire Over or Near Energized Apparatus or Conductors and Crossing Highways.

13.3.1. Before stringing operations are begun, a tailboard conference will be held pointing out all hazards and equipment and material needed to safely perform the job.

13.3.2. When stringing adjacent to energized lines or apparatus, the tension stringing method or other methods, which preclude unintentional contact between the lines being pulled, and any employee, shall be used.

13.3.3. All pulling and tension equipment shall be isolated, insulated, or effectively grounded.

13.3.4. A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor, sub-conductor and overhead ground conductor during stringing operations.

13.3.5. During stringing operations, each bare conductor, sub-conductor and overhead ground conductor shall be grounded at the first structure adjacent to both the tensioning and pulling setup and in increments so that no point is more than 2 miles from a ground.

a. The grounds shall be left in place until the conductor installation is completed (tied or clipped in).
b. Such grounds shall be removed as the last phase of aerial cleanup.
c. Except for moving type grounds, the grounds shall be placed and removed with a hot-stick.

13.3.6. Conductors, sub-conductors and overhead ground conductors shall be grounded at all deadend or catch-off points.

13.3.7. All conductors, sub-conductors and overhead ground conductors shall be bonded to the tower at any isolated tower where work is being performed.

a. Work on deadend towers shall require grounding on all de-energized lines.
b. Grounds may be removed as soon as the work is completed, provided that the line is not left open-circuited at the isolated tower at which work is being completed.

13.3.8. When performing work from the structures, clipping crews and all others working on conductors, sub-conductors or overhead ground conductors shall be protected by individual grounds installed at each work location.

13.3.9. When it becomes necessary to splice conductors at ground level, a ground shall be located at each side and within 10 feet of the working area. The two ends to be spliced shall be bonded to each other.

13.3.10. All employees engaged in stringing or removing wire over or around energized lines or apparatus shall wear rubber gloves at all times.

13.3.11. When conditions prevent the above grounding procedures, conductor equipment shall be considered energized and worked as such.

a. Trucks, pulling reels and tension setups shall be insulated or barricaded.
b. The reel attendant shall stand on an insulated stool, mat or blanket and wear rubber gloves.

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13.3.12. Guard structures or other suitable means shall be provided where crossing energized lines, highways or streets.

a. Adequate warning signs and flaggers shall be provided at all highway, road and street crossings.
b. Where possible, a pull rope of sufficient strength and length shall be used to pull in conductors.

13.4. Removing or Salvaging Wires

The general precautions for stringing wires apply equally to the removing of wires. However, where at all practicable, the wire to be removed shall be pulled out and laid flat on the ground, with a trail rope attached, before any attempt is made to reel it up on a take-up reel or coil it by hand, except where power driven take-up reels are used. If the latter method is used, a trail rope shall be attached to the trailing end of the conductor.

13.5 Definitions

13.5.1. Sub-conductor means any one conductor of a group of bundled conductors.
13.5.2. Each work location means each pole, structure or tower.

RUNNING AND REPAIRING SERVICES

14.1 Employees shall wear rubber gloves when connecting, disconnecting or repairing energized services.

14.2 Service wires shall be permanently attached to the customer's building before they are attached to the pole. It is permissible to transfer an energized service from a construction loop to a building, provided the ends of the conductors are properly taped and a set of blocks or a fiber hoist can be attached to a safe support for removing and pulling the service. Services may be pulled while standing on a ladder provided the ladder is securely tied and the employee is wearing fall protection. Two employees shall do the work when unusual or hazardous conditions exist.

14.3 Employees shall be particularly careful in stringing services to avoid any undue hazard associated with the close proximity to primaries, and to avoid locations for the service where the service wires might fall across conductors of a higher voltage.

14.4 Service wires shall never be installed on transformer poles unless a minimum separation of fifteen (15) inches can be maintained between the service wires and the energized primary conductors or cutout.

14.5 Two employees shall be used in stringing services from a transformer pole where the primary jumpers extend below the secondary wires.

14.6 When the employee is making connections to secondary buses, the neutral wire shall be connected first and the connection to the energized wires last. The procedure shall be reversed when disconnecting services.

14.7 Prior to any service being connected to a new or replaced transformer, the voltages and ratings of that transformer shall be thoroughly checked by the technician. First, the technician shall verify the service requirements. Second, the technician shall check the nameplates and labels on the transformer to ensure that the correct transformer has been installed. Third, the technician shall energize the transformer and check the secondary voltage for accuracy before attaching the transformer to the local services.

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PHASING OR TYING CIRCUITS TOGETHER:

15.1 When work is undertaken that requires the replacement of any air switch either overhead or underground, or moving underground cable placement that might change the original phasing, no switch shall be operated until phasing has been checked with an approved phase meter. Additionally, phasing shall be checked before the replacement of any switch is complete even if the switch does not require any operation to complete the installation, i.e. if the switch is a normally open switch.

15.2 Before tying circuits fed from two different sources together, contact the dispatcher for instructions.

15.3 When phasing and tying circuits together, reclosing devices controlling circuits shall be placed in the disabled position.

HANDLING HIGH VOLTAGE TEST EQUIPMENT:

16.1 When it is necessary to test transformers and other equipment for short circuits, open circuits and grounds, and a step-up transformer is used, the following procedures shall be followed:

16.1.1. The fuses in the low voltage circuit of the step-up transformer shall not be larger than ten amperes rating unless large equipment is being tested. The circuit shall be controlled with a double pole switch so that both wires feeding to the step-up transformer will be killed when the switch is open. The high voltage leads from the test transformer to the apparatus being tested shall be kept insulated from the surface on which the test employees are standing. The high voltage wire which has to be handled during the test shall be attached to the end of at least a six (6) foot live line pole, and the employees handling the pole shall hold it near the opposite end.

16.1.2. Employees are positively prohibited from handling energized high voltage with their hands. (See Rule-518) The step-up transformer circuit shall be de-energized and grounded each time it is necessary to handle the wires to make connections incidental to the test, except where the wire is attached to the insulated stick.

SERVICING AND MAINTAINING STORAGE BATTERIES:

17.1 Face shields, aprons, and rubber gloves shall be worn by employees handling acids or batteries.

17.2 Smoking, lighted blowtorches, etc., shall not be permitted around batteries. The battery room shall be well ventilated at all times.

17.3 Cleaning batteries or terminals with brushes or other devices, which may short out the cell, shall not be permitted. (Glass jars have exploded from ignition of hydrogen-oxygen mixture in a cell by a spark from a short on the terminals).

17.4 When doing work on batteries where contact with the electrolyte is made, a container with baking soda and water shall be provided to neutralize the electrolyte on the hands and tools.

17.5 For further information on servicing and maintaining storage batteries, see the manufacturers‟ instructions.

CONTINUITY TEST

Continuity testers shall be used only on de-energized services to identify unintentional grounds or short circuits and to identify the neutral conductor.

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TITLE: FALL PROTECTION PROGRAM

PO0LICY 035

REFERENCE: 1910 Subpart D – Walking and working Surfaces:
Walking-Working Surfaces, 29 CFR 1910.22
Guarding Floor and Wall Openings and Holes, 29 CFR 1910.23
Portable Wood Ladders, 29 CFR 1910.25
Portable Metal Ladders, 29 CFR 1910.25
Fixed Ladders, 29 CFR 1910.27
1910 Subpart F – Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms: Powered Platforms for building maintenance, 29 CFR 1910.66
Vehicle-mounted elevated and rotating work platforms, 29 CFR 1910.67
1910 Subpart I – Personal Protective Equipment.

PURPOSE:
The purpose of the Fall Protection Guideline is to ensure the safety and well being of persons working on and/or for the Affordable Solar , full time, part time, temporary employees, regardless of the type of work.

SCOPE:
This program covers the maintenance, repair, replacement, alteration, demolition, and new construction. The Fall Protection program shall be incorporated into all work activity involving employees of Affordable Solar when working at a level 6 feet or more above lower level. Fall Protection Safeguards shall be incorporated into any work situation where the height of a lower level is 6 feet or more. Fall protection shall be required on or around dangerous equipment, elevated platforms, excavations, hoist areas, open holes or access, leading edge work, pits, ramps and runways, roof scaffolding, skylights, stacks, staging tanks, unprotected sides and edges, wells, and other applicable locations.

RESPONSIBILITY:

It is the responsibility of Affordable Solar to:
- Provide develop and maintain the Fall Protection Program.
- Verify that training has been provided to each employee who is required to work at a level of 6 feet or more above lower level.

It is the responsibility of Supervisor to:
- Train employees on specific procedures of Fall Protection Program.
- Make sure that all Fall Protection Program Procedures are followed
- Make sure that only trained employees are assigned to work that requires use of fall protection equipment

It is the responsibility of the employees to:
- Follow all procedures outlined in this policy.

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2. Procedures
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4. Recordkeeping

1 **DEFINITIONS**:

Work Area: the portion of a walking/working surface where job duties are being performed.
Unprotected Sides and Edges: any side or edge (except entrances to points of access) of a walking/working surface (e.g. floor, roof, ramp, or runway) where there is no wall or guardrail system at least 39 inches (1.0 m) high.
Walking/Working Surface: any surface, whether horizontal or vertical, on which an employee walks or works, including, but not limited to floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel, but excluding ladders, vehicles, or trailers on which employees must be located in order to perform their duties.
Ramps, Runways, and other Walkways – every employee on a ramp, runway or walkway $\geq$ 6' above a lower level shall be protected from falling by a guardrail system with appropriate mid and top rails, as well as toe boards.
Toeboard – A vertical barrier erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials.
Standard Railing – A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons.
Stairs, Stairways – A series of steps leading from one level or floor to another, or leading to platforms, pits, crossovers. A series of steps and landings having three or more risers constitutes stairs or stairways.
Ladders – A ladder is an appliance usually consisting of two side rails joined at regular intervals by cross-pieces called steps, runs, or cleats, on which a person may step in ascending or descending.
Platform – An extended step or landing breaking a continuous run of stairs.
PPE – Personal Protective Equipment

2 **GENERAL REQUIRMENTS:**

2.1 Housekeeping applies to all permanent Affordable Solar worksites.
- 2.1.1 All floors shall be maintained in a clean and dry condition.
- 2.1.2 All floor surfaces and passage ways must be maintained free from protruding nails, splinters, holes or loose floorboards.

2.2 Aisles and passageways
- 2.2.1 Sufficient safe clearance shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made by material handling equipment.
- 2.2.2 Aisles and passageways must be kept clear and good repairs, with no abstraction across or in aisles that could create a hazard.

3 GUARDING FLOOR AND WALL OPENINGS AND HOLES:

3.1 Protection for floor openings.
- 3.1.1 Every stairway, ladder way, hatchway and chute floor opening, and other types of floor openings, should be protected by standard railings on exposed sides.
- 3.1.2 Every manhole floor opening should be guarded by a cover, attendant, or by removable standard railings.
- 3.1.3 Open-sided floors, runways, platforms, wall openings and holes with grater than a 4 foot drop should be guarded. A toe board should be used if beneath

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the open sides, passing persons, or if there is a risk of falling materials.

4 ELEVATED SURFACES:

4.1 OSHA's directive on Fall Protection in General Industry defines a platform as any elevated surface designed or used primarily as a walking or working surface upon which employees are required or allowed to walk or work while performing assigned tasks on a predictable and regular basis (work performed once every two weeks or for a minimum of 4 man-hours during any 4 weeks period).

4.2 In situations where workers are exposed to falls form an elevated surface other than a 'predictable and regular basis' PPE is required 29 CFR 1910.132

5 PORTABLE AND FIXED LADDERS:

5.1 Portable ladders.

5.1.1 All ladders must be maintained in usable and safe conditions at all times.

5.1.2 Ladders must be inspected regularly, depending on use and exposure frequency.

5.1.3 All damaged portable ladders must be taken out of service and marked as defective until repaired.

5.2 Fixed ladders

5.2.1 Fixed ladders more than 20 feet high be equipped with fall protection devices (cages, wells or ladder safety devices).

5.2.2 When ladders are used to climb to heights exceeding 20 feet, landing platforms should also be provided for each 30 feet of height or fraction thereof, except when no other fall protection devices are provided, platforms shall be provided for each 20 feet of height or fraction thereof.

5.2.3 To provide safe access to the ladder, all landing platforms should be equipped with standard railings and toe board and should not be less than 24 inches in width and 30 inches in length.

6 AERIAL DEVICES AND LIFTS

6.1 The aerial devices or lifts which elevate workers to jobsites above ground using a platform must comply with the following guidelines.

6.1.1 Only trained persons are authorized to operate an aerial lift.

6.1.2 Employees must stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

6.1.3 A body belt or harness shall be worn and lanyard attached to the boom or basket when working from an aerial lift.

7 FALL PROTECTION EQUIPMENT

7.1 All worksites shall be evaluated to determine fall protection hazards.

7.2 Job hazard evaluation shall be documented in writing and updated whenever conditions change, or when new procedure or new equipment is introduced to the worksite.

7.3 When other means of fall protection cannot be used PPE is required.

7.4 If needed the Affordable Solar must provide employees with PPE that properly fits each affected employee.

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8 TRAINING

8.1 Each Affordable Solar employee who may be exposed to fall hazards will be trained to recognize the hazards and the procedures to follow to minimize the hazards. The Manager or designee will provide the training. Training must include the following:

- 8.1.1 Identification of fall hazards in the work area.
- 8.1.2 Proper procedures for erecting, maintaining, disabling and inspecting the fall protection systems used at the worksite.
- 8.1.3 Instructions on proper use and operations of the fall protection systems used at worksite.
- 8.1.4 Types of rescue procedures to follow in case of a fall.
- 8.1.5 Overview of OSHA fall protection standard.

8.2 A training record will be maintained for each employee. The record will contain the name of the employee trained, date of training and the signatures of the person who conducted the training and the employee being trained.

8.3 Retraining shall be performed is there is a change in the fall protection system being used or if an employee's actions demonstrate that the employee has not retained the understanding or skills important to fall protection.

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TITLE: FALL PROTECTION PROGRAM ADDENDUM

POLICY 035A

PURPOSE

This is a statement of official **Affordable Solar** policy to establish a means to analyze elevated work tasks and determine appropriate personal protection against falls in accordance with Occupational Safety and Health Administration (OSHA) regulations:

"Fall Protection," 29 CFR 1926 Subpart M

"Walking and Working Surfaces," 29 CFR 1910 Subpart D

"Powered Platforms, Man lifts, and Vehicle-Mounted Platforms," 29 CFR 1910 Subpart F

"Scaffolds," 29 CFR 1926 Subpart L

"Telecommunications," 29 CFR 1910.268 Subpart R

SCOPE

The Affordable Solar fall Protection Program shall apply to all employees who are exposed to unprotected sides or edges of surfaces that present a falling hazard of four feet or more to a lower level. Employees will not be required, nor allowed to perform any duties which require the employee to get closer than six feet to an unprotected edge, platform, and walkway of any building or utilize elevated equipment unless the employee is properly secured from falling.

Exceptions to this requirement include the working sides of loading docks and exposed perimeters of entertainment stages. Employees may use portable ladders without fall protection equipment up to sixty feet. Employees may work on scaffolds and aerial lifts up to 6 feet in height and on the edge of an excavation up to 6 feet in depth without fall protection.

Additionally, the Fall Protection Program shall apply to all employees in order to minimize slips, trips and falls on the same elevation. All employees shall control fall hazards in their work area by maintaining good housekeeping and shall report conditions that may lead to slips, trips and falls to the appropriate facilities maintenance unit.

Contractors for Affordable Solar are required to comply with all applicable OSHA regulations and shall have their own fall protection program.

Definitions

Aerial lift device: means equipment such as powered platforms, vehicle-mounted elevated and rotating work platforms, extensible boom platforms, aerial ladders, articulating boom platforms, vertical towers and powered industrial truck platforms.

Anchor point: A secure point of attachment for lifelines, lanyards or deceleration (grabbing) devices.

Body belt: A strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline, or deceleration (grabbing) device. **Body belts are prohibited at AFFORDABLE**

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Body harness (also referred as Full-body harness): An interconnected set of straps that may be secured about a person in a manner that distributes the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with a means for attaching the harness to other components of a personal fall arrest system.

Connector: A device that is used to connect parts of a personal fall arrest system together (i.e. D-rings, and snaphooks).

Competent person: A person who is capable of recognizing existing and predictable hazards and has the authority to take corrective action. A Competent person also means a person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof as well as in their application and use with related equipment. To be considered a competent person, an 8-hour training class must be completed for general fall protection and an additional 4-hour training class must be completed for scaffolds. To be considered a competent person for equipment inspections, the manufacturer's training guidelines shall be followed.

Deceleration device: Any mechanism, such as a rope, grabbing device, ripstitch lanyard, specially woven lanyard or automatic self-retracting lifeline/lanyard, which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limits the energy imposed on an employee during fall arrest.

Deceleration distance: The additional vertical distance a falling person travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which a deceleration device begins to operate.

Designated area: a space which has a perimeter barrier erected to warn employees when they approach an unprotected side or edge, and serves also to designate an area where work may be performed without additional fall protection.

Fixed ladder: means a ladder, including an individual rung ladder, which is permanently attached to a structure, building, or equipment. It does not include ship's stairs or manhole steps.

Guard rail: A barrier erected to prevent personnel from falling to lower levels.

Hole: A void or gap 2 inches or more in its least dimension in a floor, roof, or other walking/working surface.

Horizontal lifeline: a flexible line between two horizontal fixed anchorages to which a fall arrest device is connected.

Infeasible: means that it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.

Ladder: a device typically used to gain access to a different elevation consisting of two or more structural members crossed by rungs, steps, or cleats.

Lanyard: A flexible line of rope or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchor point.

Lower levels: Those areas or surfaces to which and employee can fall. Such areas include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits tanks, material, water, equipment, structures, or portions thereof.

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Low-slope roof: means a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).

Mechanical equipment: means all motor or human propelled wheeled equipment used for roofing work, except wheelbarrows and mopcarts.

Opening: A gap or void 30 inches or more high and 18 inches or more wide in a wall or partition, through which personnel can fall to a lower level.

Positioning device system: is a body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Personal fall arrest system: means a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Qualified Climber: a person who by virtue of physical capabilities, training, work experience and job assignment who is authorized by the employer to routinely climb fixed ladders and step bolts on structures such as towers and poles that do not have ladder protection devices such as cages and rest platforms.

Qualified person: one with a recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specifications in the subject work, project or product.

Restraint line: a device which is attached between the employee and an anchorage to prevent the employee from walking or falling off an elevated surface.

Roof: means the exterior surface on the top of a building.

Roofing work: means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

Rope grab (grabbing device): A deceleration device that travels on a lifeline and automatically, by friction, engages the lifeline and locks to arrest a fall.

Scaffold: means any temporary elevated or suspended platform, at its supporting structures, used for supporting employees or materials or both.

Self-retracting lifeline/lanyard: A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal movement and which, after onset of a fall, automatically locks the drum and arrests the fall(usually within two feet or less).

Standard railing: A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons.

Steep roof: means a roof having a slope greater than 4 in 12 (vertical to horizontal).

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Snap hook: A connector consisting of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released automatically closes to retain the object. **Only locking snap hooks are permitted at Affordable Solar** .

Toeboard: A low protective barrier that prevents material and equipment from falling to lower levels and which protects personnel from falling.

Tie-Off: A procedure of connecting directly or indirectly to an anchorage point.

Unprotected sides and edges: means any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high.

Vertical Lifeline: A component consisting of a flexible line for connection to an anchor point at one end to hang vertically and that serves as a means for connecting other components of a personal fall arrest system to the anchor point.

Walking/working surface: means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, form work and concrete reinforcing steel but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Work area: means that portion of a walking/working surface where job duties are being performed.

1. Policy

1.1. Affordable Solar is dedicated to providing safe work facilities for students, employees, and visitors, and complying with federal and state occupational health and safety standards. Administrators, faculty, staff and students all share a responsibility to reduce the hazards associated with falls.

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1.2. Fall hazards must first be controlled through engineering controls if feasible. When engineering controls are not feasible, then personal fall arrest systems, administrative controls and training must be instituted.

2. Duties and Responsibilities

2.1. Management

2.1.1. Designate and empower individuals who will act as competent and/or qualified persons who will be responsible for the preparation and implementation of the Fall Protection Program (See Appendix for Specific Duties of Competent Persons and Duties of Qualified Persons);
2.1.2. Ensure that employees who will act as competent and/or qualified persons are adequately trained and/or qualified;
2.1.3. Provide administrative and financial support for this program within individual departments; and
2.1.4. Ensure the Fall Protection Program is implemented and maintained within the department.

2.2. Designated Competent Persons

2.2.1. Implement all aspects of the program for work areas under their control; Receive training for "competent person" as defined by OSHA for fall protection;
2.2.2. Act as the "competent person" for job sites under their control that contain fall hazards;
2.2.3. Evaluate fall hazards in work areas under their control; and
2.2.4. Ensure that employees are informed, trained, and provided with the appropriate fall protection systems and equipment to be protected from potential fall hazards associated with job tasks.

2.3. Designated Qualified Persons

2.3.1. Maintain professional certification or other requirements in their subject field;
2.3.2. Provide design, analysis, evaluation and specification in their subject field;
2.3.3. Maintain records of their designs, analyses, evaluations, and specifications according to the requirements of the Fall Protection Program.

2.4. Supervisors

2.4.1. Ensure that employees are informed, trained, and provided with the appropriate fall protection systems and equipment to be protected from potential fall hazards associated with job tasks; and
2.4.2. Coordinate the correction of fall hazards brought to their attention by employees; and
2.4.3. Complete a "First Report of Injury" report and produce any additional documentation needed to investigate and work related injuries and illnesses.

2.5. Employees

2.5.1. Comply with the Fall Protection Program and any further safety recommendation provided by the supervisor and/or EH&S regarding fall protection;
2.5.2. Complete fall protection training requirements and request further instruction if unclear;
2.5.3. Conduct assigned tasks in a safe manner and wear all assigned personal protection

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equipment; and

2.5.4. Report any unsafe or unhealthy work conditions and job related injuries or illnesses to the supervisor immediately.

3. Environmental Health Safety Department (EH&S)

3.1. Provide technical information and assist departments in implementing an effective fall protection program;
3.2. Provide technical information and assist Facilities Management Architecture, Engineering, and Construction in designing controls for fall protection into projects;
3.3. Provide and/or coordinate fall protection instruction as needed;
3.4. Investigate and document all reported accidents that are related to fall hazards, recommending corrective actions; and
3.5. Review and revise the Fall Protection Program, as needed for compliance with applicable regulations.

4. Information and Training

4.1. Affordable Solar employees who work on Ladders:

4.1.1. All Affordable Solar Employees who use ladders with a working height of six feet or more shall be knowledgeable of the following:

4.1.1.1. How to inspect ladders for visible defects; and
4.1.1.2. How to use ladders properly.

4.2. Affordable Solar employees who use Fall Protection Personal Protective Equipment to control fall hazards in their work area:

4.2.1. The application limits of the equipment:
4.2.2. The proper hook-up, anchoring and tie-off techniques including determination of elongation and deceleration distance;
4.2.3. Methods of use; and
4.2.4. Inspection and storage of equipment.

4.3. Affordable Solar employees who use Aerial Lifts: Employees should be knowledgeable of the following:

4.3.1. The manufacturer's operating instructions;
4.3.2. Pre-start inspection of the lift;
4.3.3. Inspection of the work area for dangerous conditions such as uneven surfaces, overhead obstructions such as power lines, and severe weather;
4.3.4. Load capacities of the equipment;
4.3.5. How to safely move the equipment;
4.3.6. How to prevent falls and use appropriate fall protection personal protective equipment; and
4.3.7. Minimum safe approach distances to energized power lines.

4.4. Affordable Solar employees who work on Scaffolds: Specific training is required in the following:

4.4.1. The nature of any electrical hazards, fall hazards and falling object hazards in the work

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area;

4.4.2. The correct procedures for dealing with electrical hazards and for erecting, maintaining, and dissembling the fall protection systems and falling object protection systems being used;

4.4.3. The proper use of the scaffold, and the proper handling of materials on the scaffold; and

4.4.4. The maximum intended load and the load carrying capacities of the scaffolds.

4.5. Affordable Solar employees Assigned as Fall Protection Competent Persons:

4.5.1. Supervisors who act as the competent person for a work area or job site shall be trained and certified through a qualified fall protection training program (8 hours) to be qualified and knowledgeable of the following:

4.5.1.1. The nature of falls in the work area;

4.5.1.2. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems used;

4.5.1.3. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used;

4.5.1.4. The role of each employee in the safety monitoring system when this system is used;

4.5.1.5. The limitations on the use of mechanical equipment during the performance of roofing work on low sloped roofs;

4.5.1.6. The correct procedures for the handling and storage of equipment and material, and the erection of overhead protection;

4.5.1.7. The role of employees in fall protection plans; and

4.5.1.8. The appropriate OSHA standards.

4.6. Company name Employees Assigned as Scaffold Competent Persons:

4.6.1. Supervisors who act as the competent person in the use of scaffolding shall be additionally trained and certified through a scaffold competent person training program (4 hours) to be qualified and knowledgeable of the following:

4.6.1.1. The proper selection of scaffold for the task based upon the type of work to be conducted and the working load to be supported;

4.6.1.2. The correct procedures for the erection of scaffolds;

4.6.1.3. The correct procedures for the dismantling of scaffolds;

4.6.1.4. The correct procedures for the moving of scaffolds;

4.6.1.5. The correct procedures for the altering of scaffolds; and

4.6.1.6. The OSHA standards.

4.7. Company name Employees Assigned as Qualified Climbers:

4.7.1. Employees who routinely climb fixed ladders, step bolts or similar climbing devices on towers and poles where ladder safety devices are not provided shall meet the following requirements:

4.7.1.1. Shall be physically capable;

4.7.1.2. Shall have successfully completed a training or apprenticeship program that

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covers hands-on training for the safe climbing of ladders or step bolts; and

4.7.1.3. Shall be protected by a fall protection system when reaching their work position.

4.8. Employees will require retraining under any of the following conditions:

4.8.1. Changes in the workplace render previous training obsolete;

4.8.2. Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

4.8.3. Inadequacies in an employee's knowledge of use of fall protection systems or equipment or observed behavior indicate that the employee has not retained the required training.

4.9. EH&S

4.9.1. EH&S shall maintain a written training certification record containing the following information:

4.9.1.1. The name of the employee trained;

4.9.1.2. The name of the person who conducted the training; and

4.9.1.3. The date of the training for Competent Persons in Fall Protection and Scaffolds, and Qualified Climber.

4.9.2. The written certification record shall contain the following information:

4.9.2.1. The name of the employee trained;

4.9.2.2. The date of training; and

4.9.2.3. The signature of the person who conducted the training.

5. Fall Hazards

5.1. Each department shall be responsible to inspect for potential fall hazards and to have each potential fall hazard evaluated by a competent person.

5.1.1. Falls may be classified into three general categories:

5.1.1.1. Slips, trips and falls on the same level;

5.1.1.2. Falls on stairs; and

5.1.1.3. Falls from elevations.

5.1.2. Slips and trips are generally caused by a lack of good housekeeping and inadequate maintenance of walking and working surfaces. Employees should keep their area clean and orderly.

5.1.3. If they are not equipped to eliminate a hazard, they should contact the appropriate maintenance personnel to correct the problem. These hazards may include icy sidewalks, wet floors, torn floor coverings and stair treads, and missing or broken hand rails and guard rails.

5.2. Fall hazards from elevations include, but are not limited to, unprotected sides and edges of roofs, excavations, skylights, floor holes, wall openings, and all other walking or working surfaces where personnel can possibly fall four feet or more to a lower level.

5.2.1. Personnel should alert their supervisors to potential fall hazards not already identified and controlled. The following are fall hazards which require protection.

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5.2.1.1. Open sided floors, platforms, and runways four feet or more in height.
5.2.1.2. Open sided floors, ramps, walkways etc. that are adjacent to or above dangerous operations must be guarded regardless of height.
5.2.1.3. Wall openings from where there is a drop of more than 4 feet.
5.2.1.4. Open windows from which there is a drop of more than 4 feet and the bottom of the window is less than 3 feet above the floor or platform.

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5.2.1.5. Hatchways and chutes floor openings.
5.2.1.6. Any opening more than 4 feet in elevation where a significant portion of the body is leaning over or through to perform work.
5.2.1.7. Skylights that are even with the roof surface, or that may otherwise serve as a walking/working surface.
5.2.1.8. Scaffolds over 6 feet.
5.2.1.9. Aerial lift devices.

5.3. Protection from overhead falling hazards must be provided.

5.3.1. Placement of toe boards and the use of hard hats shall be required.
5.3.2. Equipment shall not be stored within four feet of an unprotected edge.
5.3.3. Canopy structures may be required in high traffic areas.
5.3.4. The area to which objects could fall must be barricaded and individuals not equipped with hard hats prohibited from entering.

6. Engineering Controls:

A competent person must determine if engineering controls can eliminate or lessen the hazard of the work area or job site. Engineering controls shall be provided where possible to minimize fall hazards. Engineering controls of fall hazards consist of the following:

6.1. Guardrails and Toeboards: These requirements apply to temporary controls on job sites as well as permanent fixtures in general work areas.

6.1.1. The A standard railing consists of a top rail, mid rail, and posts and is 42 inches high from the top of the rail to the floor, platform, runway or ramp. Nominal height of the mid rail is 21 inches;
6.1.2. Standard toe boards must be a minimum of 4 inches high (3 << inches for construction), no more than 1/4 inch clearance to the floor. If a mesh material is used, the opening must be less that 1 inch;
6.1.3. The anchoring of posts and framing of members for railings of all types must be of such construction that the completed structure is capable of withstanding a load of 200 pounds applied in any direction at any point on the top rail;
6.1.4. Guardrail systems have a surface that prevents injuries such as punctures and lacerations and prevents snagging of clothing; and
6.1.5. When guardrail systems are in hoisting areas, a chain gate or removable guardrail section shall be in place when not being used.

6.2. Skylights

6.2.1. The Skylights that may be used at a walking or working surface must be protected by a standard railing, standard skylight screen, grill work with 4 by 4 inch openings or slatwork with 2-inch openings; and

6.2.2. Standard skylight screens must be capable of withstanding minimum load of 200 pounds applied perpendicular to any point on the screen and will not deflect under ordinary loads and impacts and break glass.

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6.3. Covers

6.3.1. Covers for holes, including grates, shall be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time;
6.3.2. Covers located on roadways and vehicular aisles shall be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over it;
6.3.3. All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment, or employees;
6.3.4. Covers shall be marked with the word "Hole" or "Cover" to provide warning of the hazard when it is not readily apparent; and
6.3.5. While a cover is not in place, the pit or trap opening shall be constantly attended by someone or shall be protected on all exposed sides by removable standard railings.

7. Fall Protection Personal Protective Equipment

7.1. Personal protective equipment shall be used to minimize fall hazards where engineering controls do not eliminate the hazard or in conjunction with engineering controls.

7.1.1. Fall protection equipment is divided into five functional categories:

7.1.1.1. Fall Arrest,
7.1.1.2. Positioning,
7.1.1.3. Suspension,
7.1.1.4. Retrieval and
7.1.1.5. Restraint.

7.2. Fall Arrest

7.2.1. The use of a personal fall arrest system is the required personal protective equipment for fall hazards at the **company name**.
7.2.2. A personal fall arrest system consists of a full-body harness, lanyard, and anchor point OR a full-body harness, lanyard, lifeline, anchor point, and deceleration/grabbing device.
7.2.3. All fall protection equipment shall meet or exceed appropriate American National Standards Institute (ANSI) standards.
7.2.4. **Company name** employees shall use only commercially manufactured equipment specifically designed for fall protection and certified by a nationally recognized testing laboratory.
7.2.5. All fall protection equipment must bear the marking of the manufacturer and approvals for specified use. Requirements for a personal fall arrest system include but are not limited to the following:

7.3. Body Harness

7.3.1. Only full-body harnesses shall be used. The use of a body belt is prohibited.

7.4. Connecting Device /Shock-absorbing lanyards and lifelines

7.4.1. Lanyards and lifelines shall have a minimum breaking strength of 5000 pounds;
7.4.2. Lanyards shall not exceed six feet in length. Lanyards used on aerial lift devices should not exceed 4 feet in length to reduce slack;

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7.4.3. Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body harnesses shall be made from synthetic fibers;
7.4.4. Connecting assemblies shall have a minimum tensile strength of 5,000 pounds;
7.4.5. Self-retracting lifelines and lanyards shall have a tensile strength of at least 3000 pounds and limit free fall to two feet or less (5,000 pounds for ripstich lanyards, and tearing and deforming lanyards);
7.4.6. Personal fall arrest systems shall limit the maximum arresting forces to 1800 pounds with a full body harness;
7.4.7. The maximum free fall distance is six feet for all systems;
7.4.8. The maximum deceleration distance is 3.5 feet;
7.4.9. Personal fall arrest systems shall have sufficient strength to withstand twice the potential impact energy of the falling employee;

7.4.10. Lifelines shall be protected against cutting and abrasions;
7.4.11. Horizontal lifelines shall be designed, installed and used under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of two. On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline; and
7.4.12. Each employee shall be attached to a separate lifeline when vertical lifelines are used. On suspended scaffolds or similar work platforms with horizontal lifelines which may become
7.4.13. vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline.

7.5. Anchorage /Anchorage point and anchorage connector

7.5.1. Anchorages used for personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms and be capable of supporting at least 5000 pounds per employee attached, or shall be designed, installed (temporarily or permanently), and used as part of a complete fall arrest system which maintains a factor of two and under the supervision of a qualified person;
7.5.2. A qualified person shall determine all anchor points, both temporary and permanent. Permanent anchor points shall be properly marked;
7.5.3. Personal fall arrest systems shall not be attached to guardrail systems, nor shall the be attached to hoists except as specified in other regulations; and

7.6. Positioning

7.6.1. A positioning device is not a substitute for a personal arrest system and is limited to use as system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.
7.6.2. Where positioning device is used, it shall comply with the following:
7.6.2.1. Only a full-body harness shall be worn as part of a positioning device system. Bodybelts alone are not acceptable;
7.6.2.2. Positioning devices shall be rigged such that a free fall cannot be more than 2 feet; and
7.6.2.3. Positioning devices shall be secured to an anchorage point capable of supporting at least twice the potential impact load of an employee's fall or 3,000 lbs, whichever is greater.

7.6.3.**Suspension**

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7.6.3.1. Personal suspension systems are used for window washing and painting and are designed to lower and support a worker to perform tasks. The components of a suspension system are:

7.6.3.1.1. Full-Body Harness;
7.6.3.1.2. Workline;
7.6.3.1.3. Anchorage; and
7.6.3.1.4. Positioning device such as a boatwains chair.scaffold. Since the suspension system components are not designed to arrest a free fall, a back-up fall arrest system should be used in conjunction with the personal suspension system that would activate only if the worker were to experience a free fall.

7.7. Retrieval

7.7.1. Personal retrieval systems are used for confined space entry and on-entry rescue. Refer to the Company name *Confined Spaces Plan* for information on confined spaces entry. Personal retrieval systems consist of the following:

7.7.1.1. Full body hardness;
7.7.1.2. Retractable lifeline/rescue unit; and
7.7.1.3. Tripod.

7.8. Restraint

7.8.1. A restraint line is a device which is attached between the employee and an anchorage point to prevent the employee from walking or falling off an elevated surface. It does not support an employee at an elevated surface, but rather, prevents the employee from leaving the elevated surface or work position.

Prompt rescue shall be provided for personnel who have fallen by contacting 9-1-1 or radioing for help. No work shall be performed where an emergency cannot be immediately observed and prompt rescue assistance summoned.

7.9.2 Any other personal protective equipment deemed necessary for the task under the Personal Protective Equipment Standard must be worn. This includes but is not limited to hard hats, gloves, safety glasses, and steel toed boots. Hard hats shall be worn within an area beneath elevated work where objects could fall from a height and strike a worker. Refer to the *UM Personal Protective Equipment Program* for more information.

8 Equipment Inspections and Maintenance

8.9 Impact Loading

8.9.2 Any fall arrest system or component that has been used to arrest a fall (impact loading) shall be immediately removed from service until is inspected and determined by a competent person to be undamaged.

8.10 Inspection

8.10.2 Visual equipment inspections shall be conducted by personnel prior to each use. If, upon inspection, a piece of equipment shows any signs of wear it must immediately be removed from service and the supervisor notified.

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8.11 **Maintenance** :

8.11.2 When needed, fall protection devices should be washed in warm water using a mild detergent, rinsed thoroughly in clean warm water and allowed to dry at room temperature.

8.11.3 Stow equipment in clean area away from strong sunlight and extreme temperatures which could degrade materials.

8.11.4 Check the manufacturer's recommendations for cleaning, maintenance and storage information.

9 Roofing:

The hazards associated with work on roofs includes falling through openings and falling off edges. The protection of openings is discussed in the engineering controls section of this program. Effective roof work fall protection techniques are intended to protect workers while providing the mobility and comfort necessary to perform work tasks. Several techniques are available and are described below.

9.1 **Low-slope or Flat Roofs** :

9.1.1 Each employee engaged in roofing activities on low-slope roofs, with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, warning line system and safety net system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system. Or, on roofs 50-feet (15.25 m) or less in width the use of a safety monitoring system alone [i.e. without the warning line system] is permitted.

9.2 **Steep roofs**

9.2.1 Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

9.3 **Personal Fall Arrest System**

9.3.1 The system of choice for fall protection on roofs is the personal fall arrest system;

9.3.2 Requirements for personal fall arrest systems are found in the Fall Protection Personal Protection Equipment section of this program; and

9.3.3 Personal fall arrest systems for roof work must be designed by a qualified person.

9.4 **Designated Areas**

As an alternative to installing guardrails, a designated area may be established. The following condition and requirements must be met in order to use designated areas in lieu of other fall protection measures:
The work must be of a temporary nature, such as maintenance on roof top equipment;

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9.4.1 Designated areas shall be established only on surfaces that have a slope from horizontal of 10 degrees or less; and

9.4.2 The designated area shall consist of an area surrounded by a rope, wire, or chain and supporting stanchions.

9.4.2.1 After being erected with the line attached, stanchions shall be capable or resisting, without tipping over, a force of at least 16 pounds applied horizontally against the stanchion;

9.4.2.2 The line shall have a minimum breaking or tensile strength or 500 pounds;

9.4.2.3 The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over;

9.4.2.4 The line shall be installed in such a manner that its lowest point is no less that 34 inches nor more than 39 inches from the work surface;

9.4.2.5 The line forming the designated area shall be clearly visible from any unobstructed location within the designated area up to 25 feet away;

9.4.2.6 The stanchions shall be erected as close to the work area as is permitted by the task;

9.4.2.7 The perimeter of the designated area shall be erected no less than 6 feet from the unprotected side or edge; and

9.4.2.8 Access to the designated area shall be by a clear path formed by two lines attached to stanchions.

10 Scaffolds

10.1 Use of Scaffolds

10.1.1 **Selection** The proper scaffold selected for the task by the competent person is based upon the type of work to be conducted and the working load to be supported.

10.1.1.1 Light duty scaffolds are intended for workers and tools only. The design load should be that it will support a working load of 25 pounds per square foot;

10.1.1.2 Medium duty scaffolds are intended for workers, tools and construction materials. The design load should be that it will support a working load of 50 pounds per square foot; and

10.1.1.3 Heavy duty scaffolds are intended for workers, tools, stored materials, and construction materials. The design load of the scaffold should be that it will support a working load of 75 pounds per square foot.

10.1.1.4 All scaffolds must be capable of supporting at least four times the design load.

10.2 General Requirements

10.2.1 Fall protection is required for all scaffold use 6 feet above a lower level.

10.2.2 All scaffolds, where work is conducted in excess of 6 feet in height, shall have 4 inch toeboards;

10.2.3 A scaffold shall not be moved while personnel are on it;

10.2.4 Follow all manufacturer's guidelines and special warnings if the scaffold is commercially produced;

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10.2.5 The maximum work level height shall not exceed 4 times the least base dimension of the scaffold. Example: a four foot by six foot scaffold cannot exceed sixteen feet in height at the work platform level;
10.2.6 The minimum working platform width is two feet;
10.2.7 The supporting structure for the scaffold must be rigidly braced, using adequate cross bracing or diagonal bracing with rigid platforms at each work level;
10.2.8 Working platforms should have a nonslip surface;
10.2.9 Scaffolds should be used only on an even surface;
10.2.10 The platform surface should be kept clear of extraneous tools and materials;
10.2.11 The work level platform shall be wood, aluminum, plywood planking, steel or expanded metal for the full width of the scaffold, except for necessary protected openings
10.2.12 Work platforms shall be secured in position;
10.2.13 All work platform planking shall be in compliance with OSHA 1926.453(a)(3)(v). Wood shall be compliance grade lumber. Planks shall be overlapped a minimum of 12 inches and extended over supports 6 - 12 inches;
10.2.14 Follow all manufacturer guidelines in the assembly of the scaffold. Do not use or assemble the scaffold, if unsure of the correct assembly procedure;
10.2.15 Hard hats must be worn within an area beneath elevated work where objects could fall from a height and strike a worker; and
10.2.16 Mobile scaffolds shall not be moved unless the surface of travel is within 3 degrees of level and free of pits, holes and obstructions, and the employee on the scaffold has advanced knowledge of the movement.
10.2.17 **Inspection of Scaffolds** Prior to the use of any scaffold, an inspection must be conducted, and then daily during usage of the scaffold.

10.2.17.1 Carefully examine the scaffold for broken or missing cross bracing, broken supporting structure, working platform, and other damaged parts. In addition, all walking and working surfaces must be free of grease, oil, paint, or other slippery substances;
10.2.17.2 The scaffold should be equipped with positive wheel lock casters that are secured in place; The joint between working platform and supporting structure must be tight, and all hardware and fittings should be attached firmly. Movable parts should operate freely without binding or undue play;
10.2.17.3 All wood parts must be free of sharp edges and splinters. Visually inspect the scaffold to be free of shakes, warpage, decay or other irregularities. Metal parts must be free of sharp edges, burrs and corrosion. Inspect for dents or bends in supporting structure, cross braces and walking/working surfaces;
10.2.17.4 Check all working platform to support structure connections, hardware connections and rivets. If a scaffold tips over, inspect the scaffold for damage before continuing work; and
10.2.17.5 Damaged scaffolds must be withdrawn from service and either repaired or destroyed. When a defect or unsafe condition is found, personnel shall tag or mark the scaffold so that it will not be used until corrective action is taken. Defective or unsafe situations shall be reported to the supervisor. Field repairs and the fabrication of improvised scaffolds are prohibited.

10.3 **Maintenance of Scaffolds**

10.3.1 All scaffold repairs must be done by a qualified person.

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10.4 **Storage of Scaffolds**

10.4.1 Scaffolds should be disassembled prior to storage.
10.4.2 Scaffolds should be stored where they can be inspected easily and can be reached without causing accidents. The storage area should be well ventilated and away from sources of heat and moisture.

11 Aerial Lifts

11.1 Aerial lifts include the following types of vehicle mounted aerial devices used to elevate personnel to job sites above ground:

11.1.1 **Articulating boom platforms** are designed to reach up and over obstacles.
11.1.2 **Extensible or telescoping boom platforms** may extend over one hundred feet.
11.1.3 **Vehicle mounted bucket lifts** are used to repair utility lines.
11.1.4 **Scissor lifts** extend into the air via a series of crisscross supports.
11.1.5 **Personal man lifts** are lightweight and designed for one person to use indoor.

11.2 **Specific requirements**

11.2.1 Aerial ladders shall be secured in the lower traveling position before the truck is moved for highway travel;
11.2.2 Lift controls shall be tested each day prior to use;
11.2.3 Only personnel authorized by a fall protection competent person shall operate an aerial lift:
11.2.4 Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position;
11.2.5 A full-body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift (exception: a harness is not required in a scissor lift or personal man lift with surrounding guardrail system and closing gate or latch chain);
11.2.6 Belting off to an adjacent pole structure, or equipment while working from an aerial lift shall not be permitted;
11.2.7 Boom and basket load limits specified by the manufacturer shall not be exceeded;
11.2.8 The brakes shall be set and when outriggers are used, they shall be positioned on pads or other solid surface. Wheel chocks shall be installed when using an aerial lift on an incline;
11.2.9 An aerial lift truck shall not be moved when the boom is elevated in a working position, except for equipment which is specifically designed for this type of operation;

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11.2.10 Articulating and extensible boom platforms shall have both platform and ground controls; and

11.2.11 Before moving an aerial lift for travel, the boom shall be inspected to ensure that it is properly cradled and outriggers are in the stowed position.

11.3 **Minimum Safe Approach Distances (M.S.A.D)** The minimum safe approach distances to energized power lines and parts must be maintained.

Voltage Range (phase to phase)	Minimum Safe Approach Distance (Feet)
0 to 300 V	Avoid Contact
Over 300V to 50 kV	10

12 Portable Ladders/Use of Portable Ladders

12.1 The proper ladder must be selected for the task. General rules include the following:

12.1.1 The ladder chosen must be long enough to provide access to the work area without necessitating standing on the top two steps of a stepladder or the top three rungs of a straight ladder;

12.1.2 The ladder selected must be sufficient for the weight of the employee plus the weight of any tools and materials:

- Type 1A-Extra-heavy industrial ladder will support 300 lbs.
- Type 1-Heavy-duty industrial ladder will support 250 lbs.
- Type 2-Medium-duty commercial ladder will support 225 lbs.
- Type 3-Light-duty household ladder will support 200 lbs.;

12.1.3 When a straight ladder is used to gain access to a roof, the side rails should extend at least three feet above the support point at the eave, gutter, or roof line;

12.1.4 Never splice together short ladders to form a longer ladder;

12.1.5 Never place ladders on boxes, barrels, or other unstable bases for additional height;

12.1.6 Ladders must be placed on level surfaces. Although ladder feet or shoes provide an important measure of safety, they cannot compensate for uneven ground unless they are designed with adjustable feet;

12.1.7 Be alert to slippery surfaces. Nonslip bases are not a substitute for safety in placing, lashing, or holding a ladder on oily, metal, concrete, or other slippery surfaces;

12.1.8 Do not use ladders for unintended purposes;

12.1.9 Do not use a metal ladder when working on or near electrical equipment;

12.1.10 The distance from the bottom of a straight ladder to its support wall shall be one-quarter the working length of the ladder;

12.1.11 Where possible, straight ladders should be secured with a rope or wire at the top and blocked at the bottom;

12.1.12 The top two steps and platform of a stepladder shall not be used, and the top three rungs of a straight ladder shall not be used;

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12.1.13 Do not over-reach, jump or slide a ladder while on it. Ladders shall not be moved, shifted, or extended while occupied;
12.1.14 Always face the ladder and use both hands while ascending or descending.
12.1.15 Tools or materials should be raised by means of a rope after the climber has reached the working position. Carrying heavy loads up or down ladders is prohibited;
12.1.16 Barricades and warning signs should be posted when ladders are placed near doors or other locations where they could be struck;
12.1.17 Two workers shall handle and set up all extension ladders;
12.1.18 Ladders should not be used by more than one person at a time unless they are designed for such use;
12.1.19 The bracing on the back side rails of stepladders is designed only for increasing stability, not for climbing;
12.1.20 Ladders shall not be used horizontally as platforms, runways, or scaffolds.
12.1.21 Extension ladders must have proper overlap.

- Three foot overlap for 32 foot ladder;
- Four foot overlap for 32 to 36 foot ladder;
- Five foot overlap for 36 to 48 foot ladder; and
- Six foot overlap for 48 foot ladder.

12.1.22 Make certain that both automatic locks of the extension ladder are in proper position before ascending the ladder;
12.1.23 Straight ladders and stepladders that exceed 10 feet may be held by another person for steadying;
12.1.24 The area around the top and bottom of the ladder shall be kept clear; and
12.1.25 Hard hats must be worn within an area beneath elevated work where objects could fall from a height and strike a worker.

12.2 **Inspection of Ladders Prior to use of any ladder, an inspection must be performed:**

12.2.1 Carefully examine the ladder for broken or missing rungs or cleats, broken side rails, and other damaged parts;
12.2.2 All cleats, rungs, and side rails must be free of grease, oil, paint, or other slippery substances;
12.2.3 The ladder should be equipped with feet that are secured in place;
12.2.4 The joint between steps and side rails must be tight, and all hardware and fittings should be attached firmly. Movable parts should operate freely without binding or undue play;
12.2.5 All wood parts must be free of sharp edges and splinters;
12.2.6 Visually inspect the ladder to be free of shakes, warpage, decay or other irregularities;
12.2.7 Metal ladders must be free of sharp edges, burrs and corrosion;
12.2.8 Inspect for dents or bends in side rails, rungs or cleats;
12.2.9 Check step to side rail connections, hardware connections and rivets; and
12.2.10 If a ladder tips over, inspect the ladder for damage before continuing work.

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12.3 Maintenance of Ladders

12.3.1 Damaged ladders must be withdrawn from service and either repaired or destroyed.
12.3.2 When a defect or unsafe condition is found, personnel should tag or mark the ladder so that it will not be used until the corrective action is taken.
12.3.3 Defective or unsafe conditions must be reported to the supervisor.
12.3.4 Field repairs and the fabrication of improvised ladders is prohibited.
12.3.5 Never try to straighten a bent or bowed ladder. Remove it from service immediately.
12.3.6 Do not paint wooden ladders with solid color paints. This may mask cracks in the wood and make them hard to see. Clear wood preservative can be used to protect bare wood.
12.3.7 If exposed to greases, oils or other slippery substances, the ladder must be cleaned of the substance with solvents or steam. If the slippery substance is not completely removed, the ladder must be removed from service.

12.4 Storage of Ladders

12.4.1 Ladders should be stored where they can be inspected easily and can be reached without causing accidents.

13 Fixed Ladders and Stairs

13.1 Fixed Ladders

13.1.1 Fixed ladders should be designed to withstand a single concentrated load of at least 200 lbs;
13.1.2 Rungs of metal ladders must have minimal diameter of three quarters inch. Rungs must be at least 16 inches wide, be spaced 12 inches apart;
13.1.3 Fixed Ladders, when their location so demands, must be painted or treated with a preservative to resist deterioration;
13.1.4 The preferred pitch for a safe descent is 75 to 90 degrees. Ladders with 90 degree pitch must have two and one half feet of clearance on the climbing side. There must be a three foot clearance on ladders with a 75 degree pitch;
13.1.5 There must be at least a seven inch clearance in back of the ladder to provide adequate toe space;
13.1.6 There must be a clear width of 15 inches on each side of the center line of the ladder, unless the ladder is equipped with a cage or well;
13.1.7 Fixed ladders must have cages if they are longer than 20 feet. Landing platforms must be provided on ladders greater than 20 feet long. A platform is required every 30 feet for caged ladders and every 20 feet for unprotected ladders; and
13.1.8 Side rails must extend at least 42 inches above the landing.

13.2 Fixed industrial stairs

13.2.1 The following applies to all stairs around equipment, machinery, tanks etc. They do not apply to stairs used for fire exits:
13.2.2 Riser height and tread width of fixed industrial stairs should be uniform throughout any flight of stairs. All treads must be reasonably slip resistant;
13.2.3 The minimum permissible width of a stairway is 22 inches;
13.2.4 The angle to the horizontal made by the stairs must be between 30 and 50 degrees;
13.2.5 All stairs should be adequately lighted; and

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13.2.6 If the tread is less than 9 inches wide the risers should be open.

13.3 **Flights of stairs having four or more risers**:

13.3.1 A stair railing is required on each opened side;
13.3.2 If the stairway is less than 44 inches wide and both sides are enclosed, at least one handrail is required, preferably on the right side descending;
13.3.3 If the stairway is greater than 44 inches wide a handrail is required on each enclosed side;
13.3.4 If the stairway is greater than 88 inches wide an intermediate stair railing located midway is required;
13.3.5 The vertical height of a stair railing must be 30 to 34 inches, and it must be of construction similar to the standard guard railing; and
13.3.6 Spiral stairways are not permitted except for special limited usage and secondary access situations where it is not practical to provide a conventional stairway.

13.4 **Embedded Stairs**

13.4.1 Individual steps used for access or egress, embedded in the walls of risers or the conical top sections of manholes must be safe, well constructed, and installed in accordance with good engineering practices;
13.4.2 Individual rungs or steps must be uniformly spaced from 12 to 16.5 inches; and
13.4.3 The use of steps in personal access holes should be designed to prevent the foot from sliding off the end.

13.5 **Alternating Tread Stairs**

13.5.1 Alternating tread type stairs are permitted if they are installed, used, and maintained according to the manufacturer's recommendations:

13.5.1.1 The stair must be installed at an angle of 70 degrees or less; and
13.5.1.2 The stairs must be equipped with a handrail at each side to assist the workers in climbing or descending.

14 Walking and Working Surfaces

14.1 In general, all areas of the workplace should be kept clean, orderly, sanitary, and as dry as possible. These guidelines apply to work areas, passageways, store rooms, and service rooms:

14.1.1 All spills should be cleaned promptly. Floors in work areas must be kept free of scraps, chips, oil spills, and other debris;
14.1.2 Boxes, chairs, buckets, desks or any other device not specifically intended for use in extending reach shall not be used;
14.1.3 Areas which are constantly wet should have non-slip surfaces or mats where workers may walk or work. Where wet processes are used good drainage must be maintained;
14.1.4 Every floor, working place, and passageway must be maintained free from protruding nails, splinters, holes, and loose boards;
14.1.5 Where mechanical handling equipment is used, such as lift trucks, sufficient safe clearance must be provided for foot and vehicular traffic;
14.1.6 No obstructions that could create a hazard are permitted in aisles. All permanent

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aisles must be easily recognizable; and

14.1.7 As a general condition, a standard toe board and guard rail are required where ever people walk near or beneath the open sides of a platform or similar structures; where things could fall from a structure; or where things could fall from a structure into machinery below.

Duties Requiring a "Competent Person"

Subject	Standard	Activity
Scaffolds	1926.450	Competent person means a person who, because of training and experience, is capable of identifying hazardous or dangerous conditions, of training employees to identify such conditions, and who has authorization to take prompt corrective measures to eliminate them.
Walking-Working Surfaces	1910.28	Erect tube and coupler scaffolds
Walking-Working Surfaces	1910.28	Erect tubular welded frame scaffolds
Walking-Working Surfaces	1910.28	Mason's adjustable multiple-point suspension scaffolds shall be installed or relocated in accordance with instruction of a registered professional engineer and supervised by a competent person
Walking-Working Surfaces	1910.28	Stone setters' adjustable multiple point suspension scaffolds shall be installed or relocated in accordance with instruction of a registered professional engineer and supervised by a competent person
Fall Protection	1926.502	Certify safety net systems
Fall Protection	1926.502	Inspect personal fall arrest systems and components subjected to impact loading immediately after use to determine if they are undamaged and suitable for use.
Fall Protection	1926.502	Perform the duties of the Safety Monitor when a Safety Monitor System is used
Fall Protection	1926 502	Supervise the implementation of a fall protection plan prepared by a qualified person when conventional fall protection equipment is infeasible.
Fall Protection	1926 503	Provide training to employees who are exposed to fall hazards
Scaffolds	1926.451	Supervise the erection, movement, dismantling, or altering of all scaffolds. The competent person shall determine the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds.
Scaffolds	1926.451	Inspect scaffolds and scaffold components before each work shift and after any occurrence which could affect a scaffold's structural integrity
Scaffolds	1926.451	Supervise the installation and relocation of mason's adjustable multiple-point scaffold.

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Telecommunications	1910.268	Inspect personal protective devices, tools and equipments
Telecommunications	1910.268	Inspect and check ladders for adequate strength, good condition and that they are secured properly

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Duties Requiring a "Qualified Person"

Subject	Standard	Activity
Scaffolds	1926.450	Qualified person means one with a recognized degree or professional certificate and extensive knowledge and experience in the subject field who is capable of design, analysis, evaluation and specifications in the subject work, project or product.
Walking-Working Surfaces	1910.30	Only the manufacturer of a scaffold or his qualified designated agent shall be permitted to erect or supervise the erection of scaffolds exceeding 50 feet in height
Scaffolds	1926.451	Scaffolds shall be designed by a qualified person and shall be constructed and loaded in accordance with that design.
Scaffolds	1926.454	Each employee who performs work while on a scaffold shall be trained by a person qualified in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the procedures to control hazards
Fall Protection	1926.503	A fall protection plan (used when conventional fall protection equipment is infeasible) shall be prepared by a qualified person and developed specifically for the site.
Fall Protection	1926.502	Anchorages used for personal fall arrest systems shall support at least 5000 pounds per employee or shall be designed, installed and used under the supervision of a qualified person.

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TITLE: EMERGENCY PREPAREDNESS PLAN

POLICY 036

REF: 29CFR 1910.38 and 29CFR 1910.165

PURPOSE:
The purpose of the Emergency Preparedness Plan is to provide clearly defined procedures to protect Affordable Solar employees and assets, to limit or contain the extent of damage to facilities and property, to permit communication systems to function despite suspension of normal operating conditions and in general, to enable our employees to respond in a safe, orderly and efficient manner.

SCOPE:
The information in this policy applies to all Affordable Solar employees.
The scope of this plan is to define emergency situations, and provide specific preventive and response procedures to avoid and cope with emergencies in a safe, orderly and efficient manner.

RESPONSIBILITIES:

- It is the responsibility of the EH&S department to develop and distribute the emergency preparedness plan to all Affordable Solar employees.
- It is the responsibility of the Supervisor to train all employees in the emergency preparedness plan as it pertains to the site.
- Employees are responsible for taking any alert or notification of emergency seriously and to act according to the corresponding emergency action plan.

EMERGENCY PREPAREDNESS PLAN

Table of Contents

1. Emergency Action Planning
2. Reporting A Potential Emergency
3. Building Evacuation
4. Fire Plan – See EH&S SOP 8 Fire Safety Plan
5. Flood Plan
6. Chemical Spill Response Plan – See EH&S SOP 24 Hazardous Waste/Spill Procedure
7. Workplace Violence Plan – See EH&S SOP 32 Workplace Violence and Prevention Program
8. Employee Injury – See EH&S SOP 3 Incident Reporting

EMERGENCY ACTION PLANNING

1 The objectives of all emergency planning and actions include:
- 1.1 Keeping an emergency or crisis event from expanding into a disaster
- 1.2 Getting back to a normal state of operation from an emergency quickly
- 1.3 Maintaining safety for all employees and customers during an emergency condition.

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2 Emergency Management officials classify disasters by four main causes or hazard groups:
- 2.1 Natural disasters – natural hazards caused by weather including floods, tornados, and severe storms
- 2.2 Technological disasters – technical hazards caused by man-made technology as when a tanker accident releases a toxic gas or a radiation leak.
- 2.3 Civil disruption or violence – civil disasters caused by disruption or violence, such as bombings or the intentional release of harmful viruses
- 2.4 Long-term or ecological changes – ecological disasters that cause a long-term change in the Earth, such as rising levels of the ocean due to melting of the ice caps.

3 The EH&S Department has conducted a hazard assessment of potential disasters that may affect employees and operations at Affordable Solar job sites. The following emergency action plans were selected and developed as a result of the hazard assessment.

REPORTING A POTENTIAL EMERGENCY

1 For Police, Fire, and Medical Emergencies call **911** and provide the requested information.
2 Provide the following information as well:
- 2.1 Your name
- 2.2 Your location and telephone extension
- 2.3 Type of emergency
- 2.4 Special directions (if any)

PROJECT SITE EVACUATION

1 Any decision to evacuate the project site will normally be made by Management.
2 If the emergency is immediately-life threatening or threatens to damage a significant portion of the job site, the Affordable Solar Supervisor with approval of the Manager will make the decision to evacuate.
3 Employees may be notified to evacuate the project site or through direct communication from Management.
4 Employees are to:
- 4.1 Secure the work area.
- 4.2 Turn off electrical equipment.

5 Employees are to congregate at the designated meeting location or to a safe location, away from the affected building.

FIRE PLAN

See EHSOP-8 Fire Safety Plan

FLOOD ACTION PLAN

1. A flood is an inundation of a normally dry area caused by an increased water level in an established watercourse, such as a river, stream, or drainage ditch, or ponding of water at or near the point where the rain fell. Floods can occur anytime during the year. However, many occur seasonally after winter snow melts or heavy rainfall in spring and summer. Flash floods can strike any time and any place with little or no warning.

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2. Flood preparation guidelines:
   2.1. Know which areas of your job site are at greatest risk for flooding.
   2.2. Plan and practice an emergency evacuation in case of a flood. Know where to go for higher ground.
   2.3. Learn what steps, if any, needed to be taken in the event that gas, electric, and/or water main lines are shut off.
   2.4. Frequently back-up all computer information. Keep back-ups in a flood-safe location.
   2.5. Keep important documents in a safe place that is easily transportable.
   2.6. Know the location of emergency equipment, such as the fire extinguisher and first-aid kit.
   2.7. Understand the difference between a flood watch and a flood warning.

3. Flooding watch
   3.1. A flood watch indicates that flash flooding or flooding is possible within the designated WATCH area – be ALERT. It is issued to inform the public and cooperating agencies that current and developing weather conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.
   3.2. Verify Affordable Solar employee contact information.
   3.3. Verify all storm drains located within the Affordable Solar warehouse and yard is free from debris and obstruction, if applicable.

4. Flood Warning
   4.1. A flood warning indicates that flash flooding or flooding is already occurring or imminent within the designated WARNING area- take necessary precautions at once. When a flood warning is issued for you area, act quickly. Get out of areas subject to flooding and avoid where flooding has already occurred
   4.2. Place the appropriate flood barriers (sand bags or flood gates) at designated points and position emergency pumps, if applicable.
   4.3. Shut down and secure office equipment and property.
   4.4. Request Information Systems to backup computer system.
   4.5. Notify employees of procedures for reporting to work following the flood for recovery operations.
   4.6. Evacuate
   4.7. Do not attempt to walk or drive through water of unknown depth.
   4.8. Abandon any stalled vehicle.

5. After the flood
   5.1. Wear protective boots and gloves to avoid contact with floodwater. Floodwater may contain oils, chemicals, raw sewage, biohazard organisms, or electrical charges due to downed power lines.
   5.2. Listen to local news broadcasts to insure tap water is safe to drink.
   5.3. Document damages by photos and written descriptions. Keep detailed records of the cleanup costs.
   5.4. Report all losses to your Manager and the EH&S department.

CHEMICAL SPILL RESPONSE PLAN -
See EHSOP-24 – Hazardous Waste /Spill Procedure

WORKPLACE VIOLENCE PLAN
See EHSOP-33 – Workplace Violence Prevention Program

EMPLOYEE INJURY

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See EHSOP-3 – Incident Reporting

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TITLE: WELDING SAFETY & HOT WORK

POLICY 037

REFERENCE: 29 CFR 1910

PURPOSE
Affordable Solar shall furnish to each employee employment and a place of employment that is free from recognized hazards that are causing or likely to cause death or serious physical harm. Each employee shall comply with all applicable occupational safety and health standards, rules and regulations. This program specifically is intended as a guide for the safe use of welding and burning equipment.

SCOPE
This policy applies to all Affordable Solar and subcontractors working within controlled job sites.

GENERAL
"Hot work" means riveting, welding, flame cutting or other fire or spark – producing operation. Only properly trained and instructed employees will be permitted to use electric, oxygen and fuel gas welding, burning and cutting equipment. Supervisors will also be trained in these safety requirements so that they can effectively oversee, manage and enforce safe work operations.

Employees will be protected from radiant energy eye hazards by spectacles, cup goggles, helmets, hand shields or face shields with filter lenses. Filter lenses will have an appropriate shade number, as indicated in the following table for the work performed. Variations of one or two shade numbers are permissible to suit individual preferences.

Operation	Shade No
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 -6 inches	4 or 5
Heavy cutting, over 6 inches	5 or 6
Light gas welding, up to 1/8"	4 or 5
Medium gas welding, 1/9 – ½	5 or 6
Heavy gas welding, over ½	6 or 8
Shielded metal-arc welding 1/16 to 5/32 – inch electrodes	10
Inert-gas metal-arc welding *non-ferrous) 1/16 – 5/32 inch electrodes	11
Shielded metal-arc welding: 3/16 – ¼ inch electrodes	12

RESPONSIBILITY:

1.1. Supervisors:

1.1.1. Authorization from the Supervisor or in the shop, the supervisor in charge, before cutting or welding is permitted. The area where hot work will be performed will be inspected by the Supervisor or supervisor in charge. The supervisor will designate precautions to be followed in granting authorization to proceed preferably in the form or a written permit.

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1.1.2. To the extent possible, hot work will be performed in designated locations that are free of hazards.

1.1.3. Hot work will not be performed in flammable or potentially flammable atmospheres, on or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a designated person has tested the atmosphere inside the equipment or tanks and determined that it is not hazardous.

1.1.4. Regarding fire hazards, if the object to be welded or cut cannot readily be moved, all moveable fire hazards in the vicinity will be taken to a safe place.

1.1.5. When hot work must be performed in a location that is not free of fire hazards, all necessary precautions will be taken to confine heat, sparks, and slag so that they cannot contact flammable or combustible material. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards will be used to confine the heat sparks and slag and to protect the immovable fire hazards.

1.1.6. Inspect all leads torches, hoses, gauges and other equipment daily before use.

1.1.7. The employee should report any equipment defect or safety hazard to the supervisor and the use of the equipment will be discontinued until its safety has been assured. Repairs will be made only by qualified personnel.

1.1.8. Never heat an object lying flat on a concrete floor. Be sure to provide an air space between the material and the floor, as concrete will explode under extreme heat.

1.2. Electric Arc Welding and Cutting:

1.2.1. Employee designated to operate arc welding equipment will have been properly instructed and qualified to operate such equipment. Employee assigned to operate or maintain arc welding equipment will be acquainted with both company rules and OSHA requirements.

1.2.2. Employee performing gas shielded arc welding will comply with Recommended Safe Practices for Gas-Shielded Arc Welding, A6.1-1966, American Welding Society.

1.2.3. All work will have a separate and adequate ground.

1.2.4. Welding leads will not be placed in aisles, stairways or landings where they will present tripping hazards. Excessive leads and hoses should be avoided.

1.2.5. Arc welding and cutting cables will be insulated, flexible and capable of handling the maximum current required by the operations, taking into account the duty cycles.

1.2.6. Only cable free from repair or splice for 10 feet from the electrode holder will be used unless insulated connectors or splices with insulating quality equal to that of the cable are provided.

1.2.7. Before use, arc welding and cutting machine frames will be grounded, either through a third wire in the cable containing the circuit conductor or through a separate wire at the source of the current. Grounding circuits will have resistance low enough to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

1.2.8. When electrode holders are left unattended, electrodes will be removed and holders placed to prevent employee injury.

1.2.9. Arc welding or cutting equipment having a functional defect will not be used.

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2. Gas Welding & Cutting:

2.1. Compressed gas cylinders:
- 2.1.1. Will have valve protection caps in place except when in use, hooked up or secured fro movement. Oil will not be used to lubricate caps:
- 2.1.2. Will be hoisted only while secured, as on a cradle or pallet, and will not be hoisted by mallet, choker sling or cylinder caps.
- 2.1.3. Will be moved only by tilting or rolling on their bottom edges.
- 2.1.4. Will be secured when moved by vehicle.
- 2.1.5. Will be secured while in use
- 2.1.6. Will have valves closed when cylinders are empty, being moved or stored.
- 2.1.7. Will be stored so that oxygen cylinders are separated from fuel gas cylinders and combustible materials by either a minimum distance of 20 feet or a barrier having a fire –resistance rating of 30 minutes.
- 2.1.8. Will not have objects that might either damage the safety device or obstruct the valve placed on top of the cylinder when in use.

2.2. Fuel gas will be used only as follows:
- 2.2.1 Before regulators are connected to cylinder valves, the valves will be opened slightly (cracked) and closed immediately to clear away dust or dirt. Valves will not be cracked if gas could reach possible sources of ignition.
- 2.2.2 Cylinder valves will be opened slowly to prevent regulator damage and will not be opened more than 1 ½ turns. Any special wrench required for emergency closing will be positioned on the valve stem during cylinder use. For "manifold" or coupled cylinders, at least one wrench will be immediately available. Nothing will be placed on top of a cylinder or associated when the cylinder is in use.
- 2.2.3 Pressure-reducing regulators will be attached to cylinder valves when cylinders are supplying torches or devices equipped with shut-off valves.
- 2.2.4 Cylinder valves will be closed and gas released from the regulator or manifold before regulators are removed.
- 2.2.5 Leaking fuel gas cylinder valves will be closed and the gland nut tightened, if the leak continues, the cylinder will be tagged, removed from service, and moved to a location where the leak will not be hazardous. If a regulator attached to a valve stops a leak, the cylinder need not be removed from the workplace but will be tagged and may not be used again before it is repaired.
- 2.2.6 When oxygen and fuel gas hoses are taped together, not more than four (4) of each 12 inches will be taped.
- 2.2.7 Hose will be inspected before use. Hose subjected to flashback or showing evidence of severe wear or damage will be tested to twice the normal working pressure but not less than 200 psi before reuse. Defective hose will not be used.
- 2.2.8 Torches will be inspected before each use for leaking shut-off valves, hose couplings and tip connections. Torches with such defects will not be used.

3. Fire Watch Requirements:

3.1. Fire watchers will be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist.
- 3.1.1. Appreciable combustible material, in building construction or contents closer than 35 feet to the point of operation.
- 3.1.2. Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.
- 3.1.3. Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

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3.2. Fire watchers will have fire extinguishing equipment readily available and be trained in its use. They will be familiar with facilities for sounding an alarm in the event of a fire. They will watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch will be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

3.1.4. Fire watches will be trained at the worksite by the Supervisor. Training is to be documented.

3.1.5. Training will be done when employees are initially fired and annually thereafter.

3.1.6. Refer to Appendix A of this section for specific policies and procedures regarding Fire Watch assignment and responsibilities.

4. Health Precautions & Ventilation

4.1 The following requirements have been established on the basis of the following factors in arc and gas welding which govern the amount of contamination to which welders may be exposed.

4.1.1. Dimensions of space in which welding is to be done

4.1.2. Number of welders

4.1.3. Possible evolution of hazardous fumes, gases, or dust according to the metals involved.

4.1.4. When welding must be performed in a space entirely screened on all sides, the screens will be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted that they are about 2 feet above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

5. First Aid

5.1 First aid equipment will be available at all times in areas where hot work, welding, cutting or brazing are being performed.

5.1.1. All injuries will be reported as soon as possible for medical attention.

5.1.2. First aid will be rendered until medical attention can be provided.

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TITLE: UNDERGROUND SAFETY PRACTICES AND PROCEDURES

POLICY 038

PURPOSE

The following rules were designed especially for underground installations, but are to be considered as a supplement to other rules now in existence as outlined in earlier sections of this manual.

Since one of the obvious disadvantages of working on underground systems is the confined working area and close clearances with exposure to all types of grounded equipment, it is necessary to use every precaution to avoid contact with energized equipment.

There is a safe way of doing every job, and these rules will aid employees in the maintenance of underground systems safely.

GENERAL

1. Only qualified personnel shall be allowed to troubleshoot on underground primary distribution systems. It is recommended that at least two employees be present for troubleshooting on primary underground distribution systems where practical. One employee may be allowed to troubleshoot if, in the opinion of the employee's supervisor, it is safe and reasonable for the employee to work alone.

2. B. Before any work is performed on underground systems the employees involved should locate all identification signs or tags and identify cable sections. They should obtain and familiarize themselves with circuit maps located at terminal poles or dispatch points conveniently located in or near the underground system. Both terminals of each primary or secondary cable run must be physically identified. Primary cable sections between any two terminal points will be marked and identified with permanent I.D. tags. Secondary cables will be marked and identified with permanent I.D. tags on both the source and load end of a cable section in plain visible view. Secondary pedestals will be identified.

3. C. Employees are responsible for seeing that all unauthorized persons leave the work area and that they remain clear of all hazards connected with the job.

4. D. When it is necessary for employees to leave the work area it is the employees' responsibility to see that all transformer doors or equipment compartments are closed to keep unauthorized persons clear of hazardous equipment. MAKE SURE ALL LOCKS ARE IN PLACE AND LOCKED. Test all locks by pulling on them.

5. E. Only one energized secondary or service conductor within a secondary enclosure shall be worked on at any time. Protective equipment shall be used to isolate it from all others.

6. Service connections, including temporary services, inside pad mount transformers may be worked energized. If the work cannot be done safely by covering up or barricading and using other proper rubber protective equipment then de-energize the transformer, test for voltage and ground out with approved grounding devices.

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7. Faulted or suspected faulted underground transformers shall be re-energized from a remote location only. When attempting re-energization, all personnel and the public should be kept well clear of the transformer. Transformer failure can result in serious injury and property damage.

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RUBBER GLOVE USE

1. Rubber gloves shall be worn when energized primary or secondary cables are handled in any way. Precautions must be taken never to handle primary cables above the stress cone.

2. Rubber gloves shall be worn when working on energized secondaries and services.

3. Rubber gloves shall be worn when working on, or contacting a neutral.

4. Before unlocking any energized padmount or submersible enclosure, rubber gloves must be worn. Use 20 kV gloves on 7.2 kV and 14.4 kV systems.

5. The use of rubber gloves on underground systems is not to allow contact with any energized primary equipment but is to provide protection against accidental contact.

6. When work is to be performed in any enclosure such as padmounts, submersible vaults, pedestals or other enclosures containing energized equipment, rubber gloves shall be worn when unlocking, and must not be removed until after the work is complete and the enclosure is locked.

7. Rubber gloves may be removed when working on such equipment only after the equipment has been de-energized and grounded out with approved grounding devices.

8. Rubber gloves must be worn if any part of the equipment remains energized even though adjacent equipment has been removed from service and grounded out (i.e., when the primary portion of a padmount remains energized after de-energizing and grounding out the secondary compartment, rubber gloves must remain on).

OPENING AND CLOSING UNDERGROUND CIRCUITS

1. Company switching procedures shall be followed when sectionalizing underground systems. Any variations to the established switching procedures must be cleared with the Chief Dispatcher. **THE DISPATCHING PROCEDURES OUTLINED IN SECTION VI SHALL APPLY TO BOTH UNDERGROUND AND OVERHEAD ELECTRICAL SYSTEMS.**

2. When a fuse is blown or a sectionalizing device is found open on an underground system, a patrol and visual check for obvious faults or hazards shall precede the circuit being reclosed.

3. No energized cable section shall be physically inspected for possible faults. The cable section must be de-energized, tested for voltage and grounded, or tested with appropriate and approved cable testing equipment.

4. Any cable section which has been installed, replaced or repaired shall first be tested with appropriate and approved cable testing equipment before it is energized. If the test indicates the cable is not faulted, the following methods shall be used to energize the cable section:

    a. Fused disconnect, oil circuit recloser, or gang operated air switch at the dip pole.
    b. Gang operated air switch, arc quenching disconnect apparatus, padmount fused disconnect or load break elbow in switch cabinets or padmount transformer.
    c. If any of the above devices are used, other than the dip pole, the fused disconnect or padmount disconnect, all automatic reclosing devices applicable to the circuit, shall be turned off.

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5. The Company provides suitable protective equipment and it is the employees' responsibility to see that such devices are in satisfactory condition before using them. Safety glasses and clip-on face shields shall be used for switching operations as described in 703-D, above and as necessary for normal switching conditions.

6. An approved hot-stick and rubber gloves shall both be used when switches in an energized circuit are opened or closed.

7. When doing energized switching on underground distribution it is recommended that at least two workers be present.

GROUNDING UNDERGROUND CIRCUITS

NOTE: A HIGH VOLTAGE CHARGE CAN REMAIN IN AN UNDERGROUND CABLE AFTER IT HAS BEEN DISCONNECTED AND A STATIC-TYPE ARC CAN OCCUR WHEN GROUNDS ARE APPLIED TO CONDUCTORS

1. Before attempting to ground underground circuits:
    a. A visible open break shall be obtained.
    b. A voltage test shall be made:
        1) With a regular voltmeter on the secondary provided only secondaries are to be worked on.
        2) With a phasing voltmeter (AB Chance type) or other approved device on the primary.
    c. After determining that no voltage is present, a clearance may be issued in accordance with Safety Manual Rule 609-C before grounds may be applied and work begun.

2. All underground circuits or apparatus, regardless of voltage, shall be considered as energized unless they have been de-energized, tested for voltage and grounded with approved grounding devices.

3. Before working in a secondary compartment of padmounted transformers, the transformer disconnect fuse shall be opened and removed with an approved hot-stick; then isolate the primary compartment with a suitable barrier, test the secondary terminals for voltage and ground with an approved grounding device prior to work.

4. When it is necessary to perform work on a primary cable between the terminal points, the cable must be de-energized, tested for voltage and grounded at both terminal points. Before handling or cutting a primary cable, the cable must first be spiked with an approved spiking clamp and cable. The ground side shall be connected to an approved ground source and the spike shall be applied with an approved 8-foot hot stick.

5. Work on a de-energized cable termination may be done without using rubber gloves,

6. For specific methods and procedures see Personal Protective Grounding Rules 528, 529 and 530.

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Excavating

1. Prior to excavation, an effort shall be made to determine whether underground installations will be encountered.

    a. Utility companies shall be contacted and advised of proposed work prior to the start of the actual excavation.
    b. When the excavation approaches the estimated location of such installation, the exact location shall be determined.
    c. When uncovered, proper supports shall be provided for the excavating installation.

2. Excavations shall be inspected by competent persons.
    a. Before entering.
    b. After rain or other hazard-increasing occurrences.
    c. Protection against cave-ins shall be used if necessary.

3. Supporting systems shall be designed by a qualified person and shall meet accepted engineering requirements.

4. Trees, boulders, or other surface objects located so as to create a hazard shall be removed or made safe before excavating is begun.

5. If the stability of adjoining buildings is endangered, shoring, bracing, or underpinning shall be provided. Such precautions shall be inspected daily or more often as needed.

6. Banks more than 5 feet high shall be shored, laid back to a stable slope, or some other equivalent means of protection shall be provided. Banks less than 5 feet in depth shall also be effectively protected when examination of the ground indicates hazardous earth movement may be expected.

7. Supports shall be designed by a qualified person when excavation is in excess of 20 feet in depth, adjacent to structures or improvements, or are subject to vibration or ground water.

8. In excavations which employees may be required to enter, excavated or other materials shall be effectively stored and retained at least 2 feet or more from the edge of the excavation.

9. In locations where oxygen deficiency or gaseous conditions are possible, air in the excavation shall be tested prior to entry.

10. When excavations are to be left open, approved warning devices, barriers and barricades shall be placed to properly protect the public and employees.

11. It is recommended that efforts be made to excavate trenches to accommodate the work expected for the day.

12. When excavating, ditching or clearing a right of way, workers shall be spaced far enough apart to work safely without striking.

13. When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located so as to require no more than 25 feet of lateral travel.

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14. Excavation equipment shall never be oiled, greased, or refueled while the motor is running. The gasoline tank shall be filled from approved safety-type cans or pumps.

15. Operators shall keep workers and bystanders a safe distance from any machines while they are in operation.

16. Employees shall never attempt to clear the bucket or discharge chute while the equipment is in operation.

17. Employees shall not be permitted under loads handled by power shovels, derricks or hoists.

18. Ditching machines shall not be used on slopes or inclines without first preparing the right-of-way to prevent overturning.

19. If it is necessary to leave excavating equipment unattended, the blade-bucket or scoop shall be lowered to the ground and the ignition system locked.

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TITLE: CONFINED SPACE ENTRY

POLICY 039

PURPOSE

This section provides a uniform practice for TNMP employees, protects their health and reduces the probability of injury while working in confined spaces. These rules provide guidelines for workers to recognize, enter, and work in confined spaces.

DEFINITIONS

A. CONFINED SPACE
A confined space is defined as an area which:
1. Is large enough and so confined that an employee can bodily enter and perform assigned work.
2. Has limited or restricted means for entry or exit (for example tanks, vessels, silos, storage bins, hoppers, transformers, regulators, circuit breakers, vaults/manholes and pits, are spaces that may have limited means of entry and exit).
3. Is not designed for continuous employee occupancy.

B. PERMIT-REQUIRED CONFINED SPACE
A confined space that has one or more of the following characteristics:
1. Contains or has the potential to contain a hazardous atmosphere.
2. Contains a material that has the potential for engulfing an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or by a floor which slopes downward and tapers to a smaller cross-section, or
4. Contains any other recognized serious safety or health hazard.

C. NON-PERMIT-CONFINED SPACE

A non-permit-confined space means a confined space that does not contain, or with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

D. ENTRY SUPERVISOR

A person capable (by education and/or training) of anticipating, recognizing and evaluating hazardous or unsafe conditions in a particular confined space. This person shall be responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, authorizing entry, overseeing entry operations and terminating entry as necessary. An entry supervisor shall have received training in:
1. Respiratory Protection
2. Hazardous Materials TNMP Safety Manual Section XIV Page 4 Revised 07/15/2010
3. Confined Spaces
4. Atmospheric Testing/Monitoring Instrument Training
5. Rescue Practices

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E. ATTENDANT
An individual stationed outside one or more permit spaces who monitors and maintains an accurate account of the authorized entrants and performs all attendant's duties as outlined. An attendant shall have training in:
1. Respiratory Protection
2. Hazardous Materials
3. Confined Spaces
4. Atmospheric Testing/Monitoring Instrument Training
5. Rescue Practices

F. AUTHORIZED ENTRANT
An employee who must be authorized by the entry supervisor to enter a permit space. All authorized entrants shall receive training in:
1. Respiratory Protection
2. Hazardous Materials
3. Confined Spaces
4. Atmospheric Testing/Monitoring Instrument Training
5. Rescue Practices

G. RESCUE PLAN
Confined space entries (both permit-required and non-permit-required) are only performed after the pre-entry elimination of most hazards including electrical, moving parts, engulfment, and hazardous atmospheres (such as toxic or flammable, oxygen deficient or oxygen enriched). The only remaining hazard that cannot be eliminated is an internal configuration that may trap the entrant, such as those found inside large transformers, in which rescue procedures must be planned accordingly.
1. All confined space entry sites shall have at least one attendant present that is trained in first aid and CPR.
2. The entry permit shall contain information on methods of summoning outside services (fire and/or ambulance) if needed in aiding the rescue effort and for transportation to medical facilities.
3. Attendants, and other confined space trained personnel, may perform rescue of entrants who cannot exit on their own due to injury or entrapment caused by the internal configuration of the space.
4. Rescue equipment shall be provided at all confined space sites: TNMP Safety Manual Section XIV Page 5 Revised 07/15/2010

    a. Below ground vaults: ladder
    b. Manholes, breakers, and transformers: full body harness, rescue wristlets, rescue tripod, mechanical retrieval line, nylon slings for other anchor tie-off points (steel, bus, or bushings).

PERMIT SYSTEM

A. Entry into a permit entry space shall be by permit only. The permit certifies in writing that the space atmosphere has been evaluated and specifies that acceptable entry conditions exist. The entry supervisor shall be responsible for the completion of the entry permit, and the overall accountability for safe entry operations.
B. A copy of the active permit shall be maintained at the permit entry space location. Upon completion of the job, the original entry location copy and a copy of any related clearances shall be retained.

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Note: Completed permits shall be retained for at least one (1) year to facilitate the review of the permit-required confined space program as required by OSHA 1910.146.

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C. ALTERNATE PROCEDURES

1. If the only hazard posed by the permit space is an actual or potential atmospheric hazard, the requirements of the entry permit and the need for an attendant may be suspended provided all the conditions set forth in items #2 through #7 below are met.
2. The only hazard posed by the space is an actual or potential atmospheric hazard.
3. It can be demonstrated that continuous forced air ventilation alone is sufficient to maintain the space safe for entry.
4. Monitoring and inspection data are developed that supports #1 and #2 above.
5. If initial entry is required to obtain the above data, it shall be performed in full compliance with the permit space entry program.
6. All determinations and supporting data are documented and made available to each employee who enters the permit space. **Note: The entry permit may be used to document the supporting data.**
7. Entry into the permit space is performed in accordance with the following requirements:
   a. Any conditions making it unsafe to remove an entrance cover shall be eliminated before the cover is removed.
   b. A railing or other temporary barrier that will prevent an accidental fall through the opening, and that will protect the employee working in the space from foreign objects entering the space, shall properly guard all openings.
   c. The internal atmosphere shall be tested prior to entry with a calibrated direct reading instrument in the following order: TNMP Safety Manual Section XIV Page 6 Revised 07/15/2010
      1) Oxygen level,
      2) Flammable gases & vapors, and
      3) Potential toxic air contaminates.

      For safe entry, the atmospheric oxygen concentration shall not read below 19.5% nor above 23.5%; flammable gas or vapors shall not read in excess of 10% of its Lower Flammable Limit (LFL); and toxic air contaminates shall read below published Permissible Exposure Limits (PEL).
   d. There may be no hazardous atmosphere in the space while being occupied by an employee.
   e. Continuous forced air ventilation from a blower (750 cfm minimum) must be used as follows.
      1) Forced air ventilation must remove any hazardous atmosphere prior to entry.
      2) Forced air ventilation shall be so directed as to ventilate the immediate area in which the employee is working and shall continue until all employees have left the space.
      3) The air supply shall be from a clean source and shall not increase the hazards within the space.
   f. The atmosphere within the space shall be continuously tested as necessary.
   g. If a hazardous atmosphere is detected during entry
      1) The space shall be evacuated immediately.
      2) The space shall be evaluated to determine the cause and nature of the hazardous atmosphere before any subsequent entry.
   h. The entry supervisor shall verify that the space is safe for entry and that all measures required by this section have been taken. The entry permit serves as date, location of the space, and signature of the person providing the certification and shall be made available to each employee entering the space prior to entry.

D. RECLASSIFICATION PROCEDURE

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1. If the permit space poses no actual or potential atmospheric hazards, and if all hazards within the space are eliminated, the space may be reclassified as a non-permit confined space. The procedures under which the reclassification of a permit-confined space may be accomplished are set forth in #2 through #4 below.
2. If the permit space poses no actual or potential atmospheric hazard and if all hazards within the space have been eliminated without entry into the space, the space may be reclassified as a non-permit space for as long as the non-atmospheric hazards remain eliminated.
3. If it is necessary to enter the permit space to eliminate the hazards, entry shall be performed in compliance with the permit space entry program.
   Note: Control of atmospheric hazards by forced ventilation does not constitute elimination of hazards.
4. The basis for determining that all hazards have been eliminated shall be documented by completing the entry permit which certifies and contains the date, location of the space, and signature of the person making the determination. This certification shall be made available to each employee entering the space.
5. If hazards arise within a permit space that has been declassified to a non-permit space, all employees shall immediately exit the space. The space shall then be re-evaluated to determine whether it must be reclassified to a permit space.

TESTING, MONITORING, AND VENTILATION

A. Entry into a permit space shall be prohibited unless the atmosphere has been tested with a calibrated direct reading instrument for the following conditions in the order given.
   1. Oxygen content,
   2. Flammable gases and vapors, and
   3. Potential toxic air contaminates.

B. Monitoring of a permit entry space shall be done continuously and documented on the entry permit. Non-permit entry space monitoring will also be done as determined by the entry supervisor.

C. Oxygen shall never be used for ventilation.

D. In atmospheres Immediately Dangerous to Life and Health (IDLH), positive pressure self-contained breathing apparatus (SCBA) or an air line with an escape pack shall be used. The attendant shall have suitable reserve equipment.

E. Before cleaning the interior of any tank, the contents shall be drained off, and the clean-out doors shall be opened. All pockets in tanks or pits, where hazardous vapors can collect, shall be ventilated.

F. If atmospheric tests indicate the atmosphere is combustible, entry shall not be made until the space is ventilated and the atmosphere is determined, by testing, to be safe. Thereafter, continuous ventilation shall be provided and continuous monitoring applied.
   Note: There may be no hazardous atmosphere within the space whenever any employee is inside the space.

PERSONAL PROTECTIVE EQUIPMENT

The environment and planned activities in a confined space will determine what type of personal protective equipment is needed to perform the work in a safe manner.

LIGHTING

A. Any temporary lighting used in a permit entry space subject to potentially explosive atmospheres shall be an explosion proof type.

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B. Any temporary lighting in a permit entry space shall be a 12-volt or less extension light or battery powered portable light or be served through a ground fault circuit interrupter.
C. Each employee entering a confined space shall have a flashlight if loss of installed lighting poses a hazard.

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SPECIFIC PERMIT REUQIRED CONFINED SPACE REQUIREMENTS

A. When an employee enters a permitted entry space, a retrieval system consisting of a chest or full body harness with a retrieval line attached, shall be worn by the authorized entrant unless the retrieval equipment would increase the overall risk of entry, or would not contribute to the rescue of the entrant.
B. An attendant shall be required to maintain communications (visual, voice, or signal wire) with the authorized entrants, and to monitor the activities inside and outside the space, to determine if it is safe for the entrants to remain in the space.
C. If any employee will be working in a vertical type permit space more than 5 feet deep, a mechanical retrieval device shall be provided before work begins to enable the attendant to perform a non-entry rescue if necessary.

WORK GENERATED HAZARDS

A. A cylinder or welding power source used in a permit entry space shall be placed, and secured, outside of the space where work is being performed.
B. When welding or cutting in a permit entry space, the torch valves and gas and oxygen supply valves outside the permit entry space shall be shut off overnight or any other prolonged period when work is suspended. Where practical, torches and hoses shall be removed from the permit entry space.
C. When stick electrodes are used in a permit entry space and welding is suspended during any prolonged period, the electrode shall be removed from the holder and the machine shut off. TNMP Safety Manual Section XIV Page 9 Revised 07/15/2010
D. Air Replacement: All welding and cutting operations performed in a permit entry space shall be adequately ventilated to prevent accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to the helpers and others in the immediate area.

CONTROL OF ENERGY SOURCES

The provisions of the Safety Manual Section VI, Dispatching, shall be implemented to control or eliminate energy sources - mechanical and electrical - that can reasonably be expected to create a hazard.

ACCESS AND EGRESS

Adequate means shall be provided and used for safe access into and egress from confined spaces.

TNMP currently has, but is not limited to, the following identified confined spaces.
1409 Vaults

Below ground vaults are considered non-permit entry confined spaces if the following precautions are considered and followed prior to entry:

A. The entire vault cover shall be removed from any vault to be entered. Covers shall be removed with a truck where possible.
    1. The following atmospheric monitoring shall be conducted in the order given:
        a. The atmosphere shall be tested for oxygen content and it shall not be less than 19.5% and not more than 23.5%.
        b. The internal atmosphere shall be tested for flammable gas, and it must not exceed 10% of its Lower Flammable Limit (LFL).

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c. The internal atmosphere shall be tested for toxic gases, if known, or suspected in the area, and shall not exceed published Permissible Exposure Levels (PEL).
d. When the above atmospheric conditions are met without forced ventilation, the vault may be entered as a non-permit space provided all other non-atmospheric hazards are eliminated and #2 through #6 below are followed.

2. Eliminate electrical and mechanical hazards that can reasonably be expected to create a hazard.
3. Orange safety mesh shall be installed around any open vault to provide a distinct boundary between work and non-work areas.
4. Water and debris shall be pumped out of the vault using a trash pump. This pump will have at least an 8 horsepower motor, a 3-inch by 15-foot non-conductive suction hose and a 3-inch by 50-foot discharge hose. **Note: Electric pumps shall not be used.**
5. A fiberglass ladder shall be used for entrance and exit to a vault and if possible should be left in place while the employee is in the vault.
6. No more than two employees shall be in the isolated vault at one time and one employee shall be on the ground level at all times.

B. Below ground vaults that fail the initial atmospheric tests shall have forced ventilation applied to reach acceptable conditions and continuous ventilation and monitoring is required throughout the occupancy of the vault. Entry shall be according to the alternate procedures as outlined in Rule1401-C.

C. Below ground vaults containing hazards other than atmospheric will be considered permit entry confined spaces.

MANHOLES

Manholes defined as a below ground space with a 20 inch to 30 inch diameter entry hole are considered permit entry confined spaces and shall be entered using appropriate procedures.

BREAKERS

Breakers, if large enough and so configured that an employee can bodily enter and perform assigned work, are normally considered non-permit confined spaces. This only applies when all hazards within the breaker can be eliminated; there is no hazardous atmosphere, and all energy sources are controlled. If forced ventilation is applied then continuous ventilation and monitoring is required, and entry shall be according to the alternate procedures as outlined in Rule1401-C.

TRANSFORMERS

Transformers, if large enough and so configured that an employee can bodily enter and perform assigned work, are considered permit entry confined spaces. This is due to the internal configuration that could trap or prevent movement of an entrant. Any work or entry into a transformer shall be performed with the full permit-required confined spaces program requirements. Body harnesses and an attached retrieval line are not required to be worn in all cases if the employer can demonstrate that they are not feasible (i.e., if they are a greater hazard or would not contribute to the rescue of an entrant-they are not required). However, every site shall have a rescue tripod, a mechanical retrieval line, body harness and/or rescue wristlets, and nylon slings for anchors to aid in the retrieval of an entrant if the need arises. **Note: Any hot work such as welding, cutting, soldering, burning, etc., to be performed inside transformers or breakers must be performed under the permit-required confined space procedures.**

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar
FIRE WATCH AND FIRE PREVENTION POLICY

POLICY 040

1. Purpose & Scope

   1.1 To establish methods and guidelines for the training of employees in fire watch and fire protection
   1.2 This policy applies to all employees within Affordable Solar .

2. Introduction

   2.1 Affordable Solar is responsible for the development and maintenance of an effective fire protection and prevention program at each job site throughout all phases of the construction, repair, alteration, or any work. This training policy is intended for employee working as Fire watch during burning or welding performed during these activities.

3. Requirements

   3.1 Fire Watches will be trained at the worksite by the Supervisor.
   3.2 Training is to be documented.
   3.3 Training will be done when employees are initially hired and annually thereafter.

4. Training Program Content

   4.1 Cause and Prevention
      4.1.1 Fires do not just happen. They are caused by carelessness in operating equipment, handling hazardous materials and personal habits, such as smoking. Even though these actions are not usually deliberate, this still does not lessen the results.
      4.1.2 Only employees can protect themselves against these hazards by learning carefully how to prevent fires.
      4.1.3 The three main components of fire prevention are:
      4.1.4 Be alert for trouble before a fire starts.
      4.1.5 Eliminate unsafe habits that can lead to fires.
      4.1.6 Conduct a fire prevention investigation of your work area prior to work start to remove any potential fire hazards.

5. General Fire Prevention Rules

   5.1 Employees will become familiar with the four classes of fire, their burning characteristics and the proper extinguishing agent for each;
      5.1.1 Class A fires involve normal combustibles such as wood or paper, water is proper extinguisher.
      5.1.2 Class B fires involves oils and flammable liquids. CO2 and dry chemicals are the correct extinguishers.
      5.1.3 Class C fires involve electrical equipment. CO2 and dry chemicals are the correct extinguishers. Never use water on fires involving energized electrical equipment to avoid electrical shock and spreading of fire.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

5.1.4 Class D fires involve combustible metals and require special approved extinguishing agents.

5.2 Employees must never tamper with or move fire fighting equipment except for actual use.

5.3 Report any equipment defects to your supervisor.

5.4 Employees must know the location and proper operation of all protective fire equipment in the vicinity of their work areas.

5.5 Material and supplies must be stored carefully to prevent falling, spilling, etc.

5.6 All chemicals and solvents must be kept in properly labeled and approved containers.

5.7 Used rags must be kept in metal or metal containers having metal covers.

5.8 Never use flammable liquids for cleaning purposes.

5.9 To extinguish a clothing fire on yourself or another person, DROP to the ground AND ROLL to cause a smothering effect or use a fire blanket or other means if available.

5.10 Know primary and secondary exit routes from your area. Know site specific codes for emergency pages.

6. Fire Extinguisher & Other General Information

6.1 DO NOT ATTEMPT TO FIGHT A FIRE IF:

6.1.1 You do no know what is burning

6.1.2 The fire is spreading rapidly out of control.

6.1.3 The fire is between you and your exit or escape path

6.1.4 You don't have adequate equipment

6.1.5 You might inhale toxic smoke.

6.2 Employees whose work assignment may require them to use a fire extinguisher shall be trained in such use prior to the job assignment.

6.3 All fire extinguishers shall be placed in conspicuous locations near the work area. Know where the nearest fire extinguisher is located, the type of fire it should be used on and how to operate it.

6.4 Any fire extinguisher that has been used shall be returned to the Supervisor for replacement.

6.5 Keep work areas clean and orderly, free of trash and debris.

6.6 Smoking is not allowed on the project except in areas designated as smoking areas.

7. Fire Watch for Welding & Cutting Operations

7.1 Fire Watch employee shall be aware that welding sparks can travel as far as 35 feet. Safe procedures prior to and during welding operations are:

7.1.1 Ensure that the area has been checked by an authorized person with a meter for flammable gases and vapors.

7.1.2 Remove any combustibles such as paper, rags, etc

7.1.3 Have a fire extinguisher and misting hose (if required) on hand

7.1.4 Assure that proper PPE is on hand and being used and

7.1.5 Remain 30 minutes after spark producing and welding operations are over to assure that no smoldering or fires break out.

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EH&S OPERATING POLICIES AND PROCEDURES
Affordable Solar

COVID 19 RESPONSE POLICY

POLICY 040

The health and safety guidance for COVID-19 Infection Prevention is derived from local sources and is subject to change. Specific guidance, policies, and procedures will be communicated based upon the specific project location and will be applicable to the state, local, and Affordable Solar Installation, Inc. best practices.

COVID response will be reviewed as part of pre-job and ongoing jobsite hazard analysis and, if appropriate for the location, prevention measures will be included in the site specific EH&S plan and Emergency Response Plan (EAP.

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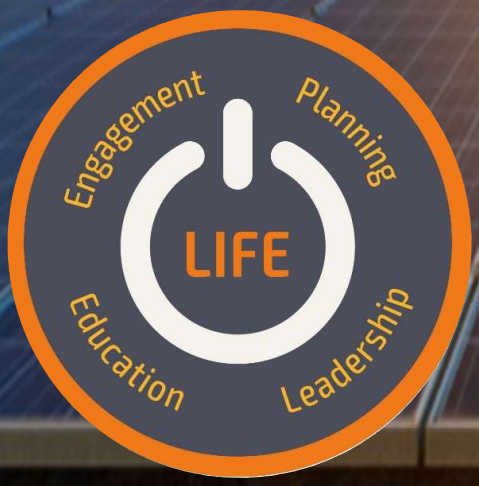
gridWORKS

EHS Project Execution Plan

(Site Specific Safety Plan)

//Project Name//

TEMPLATE



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gridWORKS

//Enter Project Name//

gridWORKS

ENVIRONMENTAL, HEALTH, AND SAFETY POLICY

At Gridworks, we prioritize the health, safety, and well-being of our employees, contractors, visitors, and the communities in which we operate. We are committed to fostering a culture of safety excellence through proactive measures, continuous improvement, and empowering our workforce to take ownership of their safety and that of their colleagues. Our Health and Safety Policy is founded on the following principles:

LEADERSHIP COMMITMENT: Our leadership team is fully committed to providing a safe and healthy work environment by setting clear expectations, allocating necessary resources, and demonstrating visible leadership in safety matters.

RISK MANAGEMENT: We identify, assess, and mitigate risks associated with our operations through comprehensive risk assessments, regular inspections, and proactive hazard identification processes.

TRAINING AND COMPETENCE: We ensure that all employees and contractors receive appropriate training, instruction, and supervision to perform their tasks safely and effectively. We promote continuous learning and development to enhance safety competence at all levels.

COMPLIANCE: We comply with all relevant health and safety legislation, regulations, and industry standards. We strive to exceed minimum requirements and adopt best practices to improve our safety performance continually.

COMMUNICATION AND CONSULTATION: We foster open communication channels to encourage active participation and collaboration in health and safety matters. We value feedback from our workforce and stakeholders to drive continuous improvement initiatives.

INCIDENT REPORTING AND INVESTIGATION: We promote a reporting culture where all incidents, near misses, and hazards are promptly reported, investigated, and analyzed to identify root causes and implement effective corrective actions.

STOP WORK AUTHORITY: Every individual at Gridworks has the right and responsibility to exercise Stop Work Authority when they encounter any situation that poses an imminent risk to health, safety, or the environment. This authority empowers employees to intervene, cease work, and address the concern immediately to prevent potential harm.

CONTINUOUS IMPROVEMENT: We are committed to continually reviewing and improving our health and safety performance through regular audits, performance metrics analysis, and feedback mechanisms.

EMERGENCY PREPAREDNESS: We maintain emergency response plans, conduct regular drills, and provide appropriate training to respond effectively to emergencies and minimize their impact on personnel, property, and the environment.

ENVIRONMENTAL STEWARDSHIP: We integrate environmental considerations into our health and safety management systems to minimize environmental impacts and contribute to sustainable development.

At Gridworks, safety is not just a priority but a core value guiding our daily actions. By adhering to this Environmental, Health, and Safety Policy, we strive to create a workplace where everyone returns home safely and in good health.

Bob Bellemare
Chief Executive Officer

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1.0 INTRODUCTION

Gridworks provides turnkey solar and energy storage solutions for developers and utility clients through engineering, procurement, and construction (EPC) and operations and maintenance (O&M). Our proprietary technologies streamline the EPC process, saving time and money. We are also sought after for our ability to engage in creative problem-solving for early-stage renewables development.

We approach our work with passion, ingenuity, and integrity. We don't cut corners—not in our team of in-house experts, the ingenuity of our designs, our collaboration with industry partners, or our customer service. We strive to be the best in everything we do. Gridworks strongly believes agility, quality, and reliability are critical to long-lasting relationships and to the overall health of our industry.

This Project Specific EHS Plan outlines Gridworks' EHS processes, standards, and procedures for the //Project Name//

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2.0 OVERVIEW

2.1 PURPOSE

This Project EHS Plan identifies and presents the requirements and execution strategies for the //Project Name//

2.2 APPLICATION

This Project EHS Plan applies to work activities and personnel under the control of Gridworks and its subcontractors. The senior-most Project Lead is responsible for the consistent implementation and success of this Project EHS Plan.

2.3 OBJECTIVES

The Project's objectives in implementing this Project EHS Plan are to:

- Provide requirements to execute Gridworks EHS Policy commitment to continually improving health and safety performance and how those requirements will be met.
- Require personal responsibility and accountability for the management of health and safety.
- Incorporate the highest recognized health and safety standards into engineering, design, and work processes implemented at all Company-managed workplaces.
- Adopt other recognized standards and relevant statutory provisions as the basis upon which Gridworks develops its high standards.
- Provide effective training, efficient communication, and continuous performance review.

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2.4 ABOUT

This Project EHS Plan is written to comply with the U.S. Occupational Safety and Health (OSHA) standards.

This Project EHS Plan includes excerpts from and references to numerous regulations, codes, and standards. This Project EHS Plan does not state the requirements of the regulations, codes, and standards in their entirety; as such, they are incorporated by reference. Persons or organizations using this Project EHS Plan will familiarize themselves with appropriate regulations, codes, and standards.

In an unusual circumstance where an EHS requirement is not feasible for the situation or presents a greater risk to the worker, a written justification for an exception will be submitted for approval to the Project Management Team and the Director of EHS.

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2.5 PROJECT DESCRIPTION

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3.0 ADMINISTRATIVE

3.1 MANAGEMENT REVIEW

Senior Project Management will conduct an EHS Management Review, at least quarterly and more frequently if required.

The review will consider:

- EHS risks and opportunities
- How well the EHS policy and EHS Objectives and Targets are being met
- Trending of performance for both leading and lagging EHS indicators
- Identifying opportunities for continual EHS improvement
- Revisions to the Project's EHS requirements
- Review the adequacy of resources for maintaining an effective health and safety program

Decisions from the EHS Management Review will include:

- Required actions to achieve the objectives; and
- Continual improvement opportunities.

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3.2 EHS STAFFING

Gridworks will provide a full-time EHS Lead to assist in implementing the Gridworks EHS Safety Culture and ensure compliance with client EHS requirements. The Project Lead will ensure that staffing resources are available to implement the Gridworks EHS program effectively.

The Project Lead will also ensure that subcontractors with more than 35 employees on-site also provide a full-time EHS representative.

3.3 ROLES AND RESPONSIBILITIES

Additional responsibilities of the roles identified within this section are described in relevant sections of this Project EHS Plan.

3.3.1 Project Manager

The Project Manager will:

- Provide resources to develop a site-specific Project EHS Plan that minimizes impacts to the environment and protects our employees, subcontractors, clients, communities, and others who could be affected by our activities

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- Provide an environment that protects all personnel associated with the project and the general public
- Provide resources to support the Project EHS Plan
- Review proposals and approve the allocation of resources for practical and effective EHS initiatives
- Execute additional Mandatory Company Requirements specific to the Project Director as identified within this Project EHS Plan

3.3.2 Site Manager (Construction Manager)

The Site Manager will:

- Coordinate the development of effective EHS programs that minimize impacts to the environment and protect our employees, subcontractors, clients, communities, and others who could be affected by our activities
- Implement and provide overall direction and support of this Project EHS Plan by:
  - Providing adequate EHS resources, facilities, and initiatives
  - Holding supervision accountable for implementation and performance
  - Including personal EHS involvement and performance in performance appraisals
  - Encouraging the proactive involvement of all workers
  - Ensuring that orientations are presented by a member of management and EHS (or a designee)
  - Ensuring appropriate skills training is provided to workers and that they understand their EHS responsibilities
  - Using leading and lagging EHS indicators to improve performance
  - Expedite the final solution or outcome of recommendations that are identified in the EHS-related reviews

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3.3.3 Supervision (Line Management)

Supervision will:

- Plan and direct the work following the Project EHS Plan.
- Possess a comprehensive knowledge of EHS rules pertaining to his/her job.
- Verify that each worker under his/her supervision has:
  - Received an initial safety orientation;
  - A working knowledge of the applicable safe work practices and understands of the rules and regulations; and
  - Access to the Project EHS Plan and additional work planning documentation.
- Consistently enforce EHS rules and regulations.

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- Supervise the training of new workers, either personally or with the assistance of experienced craftsmen, until he/she demonstrates the ability to work safely and efficiently.
- Monitor workers' performance to ensure the use of safe work practices.
- Develop pre-task planning documentation that effectively analyzes work activity hazards and associated control measures
- Lead effective pre-task meetings that engage workers to participate
- Consult with the EHS Representative on EHS and incident management issues.
- Conduct scheduled and unscheduled assessments of the work areas.
- Investigate and report all incidents in their respective areas of responsibility.
- Apply appropriate disciplinary actions to address breaches of the Project EHS Plan.
- Conduct toolbox meetings.
- Be visible in the workplace and acknowledge proactive EHS performance.
- Take appropriate remedial action on substandard EHS items and maintain zero tolerance for unsafe acts.
- Promptly notify his/her direct Supervisor and the Project EHS representative concerning work areas where unique hazards exist and special assistance is required.
- Promptly report to his/her direct Supervision of all cases of workers who, in his/her opinion, are not qualified for the work to which they have been assigned or who engage in unsafe work practices.
- Periodically re-analyze work methods to establish necessary EHS work methods and to simplify job processes.
- Assist EHS in the preparation of departmental or project safe work practices.
- Be responsible for housekeeping in his/her department and for using and maintaining all personal protective devices, equipment, and safeguards.

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3.3.4 Project EHS Lead

- Monitor and report on execution of the Project EHS Plan.
- Coordinate orientation inductions and EHS training.
- Verify that first-aid and emergency resources and procedures are in place.
- Verify that safety data sheets (SDSs) are maintained.
- Attend EHS Committee meetings and consult with the Project Lead(s) on EHS issues.
- Report all hazards to their Supervision or the Project Lead.
- Inform personnel in the area of Company EHS issues.
- Promote EHS education, awareness, and engagement.
- Conduct unscheduled and scheduled assessments of work areas.
- Participate in area assessments with area supervision regularly.
- Coordinate the EHS Committees and represent the work group.
- Coordinate appropriate orientation for personnel commencing employment.
- Coordinate EHS training for personnel as appropriate.
- Participate in investigations relating to EHS issues.
- Coordinate and participate in thorough investigations of all incidents and prepare reports as appropriate.

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- Coordinate audits to eliminate conditions and work practices that are hazardous to the job.
- Review and monitor procedures.
- Encourage hazard identification and reporting by all project personnel.
- Arrange for new workers to read and sign the Employee EHS Responsibilities.

3.3.5 All Personnel

All Personnel will:

- Comply with and constructively participate in the EHS program; this involvement may include some aspects of planning, problem-solving, priority setting, training, and improving work practices.

- Work within competencies held.
- Immediately report injuries, incidents, near misses, and hazards to supervision.
- Inform supervision or management of any unsafe act or condition they observe.
- Provide ideas and suggestions to improve safety.
- Adhere to procedures to protect their safety, their fellow workers' safety, and the general public's safety.
- Analyze the work scope (conduct and or assist with JHAs and PTPs) to identify and assess hazards and to provide for the development of safe work methods.
- Comply with all safe working directions given in the workplace.
- Not misuse or damage any equipment.
- Wear all appropriate protective clothing and equipment.
- Keep the work area orderly and comply immediately with any lawful directive Gridworks or Client gives.
- Ensure that Daily toolbox meetings, PTP meetings (and signed by crews), Stretch and Flex activities are completed before starting any work activities

TEMPLATE

3.4 SUBCONTRACTOR SELECTION, ALIGNMENT, AND MANAGEMENT

Selecting subcontractors who align with Gridworks' and the client's EHS philosophy and culture provides a safer work environment and enhances project execution.

The Project Lead will ensure that Subcontractor EHS prequalifications are evaluated by an EHS Evaluator before awarding contracts.

Contractors will be evaluated for EHS qualifications using the Company's risk-based approach that considers recent injury/illness metrics, regulatory compliance, program elements, and other regionally relevant information. The contractor's qualifications will be evaluated by the EHS Evaluator using the EHS Prequalification Tool in accordance with Company Contractor Prequalification (3004-00) requirements. Results of the evaluation will be returned to the Subcontract Administrator for review with the Project Lead via the HSE Prequalification Tool

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The EHS Project Lead will ensure alignment and consistency between this Project EHS Plan and the Project's Standard Contract Attachment 1 – Subcontractor EHS Requirements.

The Subcontracts team and the Project Manager will ensure the Project's Subcontractor EHS Requirements are included in the contracts.

The EHS Project Lead will review and approve or reject the EHS Plans of contractors who elect to use their equivalent programs.

The EHS Project Lead will conduct the EHS portion of the Subcontractor preconstruction/kick-off meeting.

The EHS Project Lead or a designee will accompany the Contractor on a site tour to review and confirm awareness of potential hazards following the premobilization/kick-off meeting.

The Project Lead, EHS Project Lead, and Subcontracts Administrator will enforce the EHS requirements and obligations of the contract and related documents.

The Project Lead and EHS Project Lead will monitor Contractor performance using assessments, observations, and leading/lagging indicators, as described in this Project EHS Plan.

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The following table summarizes the evaluation criteria for injury and illness statistics:

TRIR:	
1.5 or less	*Satisfactory*
4.0 or less, greater than 1.5 8.0 or less, greater than 4.	*Satisfactory With Advisory Notice* *Satisfactory With Corrective Action Plan*
Greater than 8.0	*Unsatisfactory*
DART rate:	
1.0 or less	*Satisfactory*
2.0 or less, greater than 1.0	*Satisfactory With Advisory Notice*
5.0 or less, greater than 2.0	*Satisfactory With Corrective Action Plan*
Greater than 5.0	*Unsatisfactory*
EMR (or WCB):	
1.0 or less	*Satisfactory*
1.15 or less, greater than 1.0	*Satisfactory With Advisory Notice*
Greater than 1.15	*Satisfactory With Corrective Action Plan*

Contractors or subcontractors reporting a work-related fatality within the last three years should have, as a minimum, to be considered *Satisfactory*, either a self-imposed or Gridworks-mandated CAP to address the cause(s) of the incident. The Director of EHS, along with the VP of Project Execution and the client, will determine whether a contractor or subcontractor experiencing a fatality should be rated as *Satisfactory (with CAP)* or *Unsatisfactory* for EHS performance.

Before the start of Work, Subcontractor and all its Subcontractors shall submit the following to the Project Management Team for review and acceptance:

- Site Specific Safety Plan (submitted via Hammertech)

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- Emergency Response Plans (Submitted via Hammertech)
- Job Hazard Analysis for the entire Scope of Work (Submitted via Hammertech)
- Records related to the designation of Competent Persons (Submitted via Hammertech)
- Certification in writing that all equipment to be used on the project site meets all applicable EHS regulations
- EHS Department Organizational Chart
- CV's of all candidates for EHS Positions

3.5 SUBSTANCE ABUSE PREVENTION AND SMOKING POLICY

Gridworks is firmly committed to ensuring the health, safety, and well-being of its employees, clients, and the public. Gridworks has established a strong commitment to maintain a drug and alcohol-free workforce. Our goal is to ensure that all employees, at all times, can perform their duties safely and efficiently.

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3.5.1 Drug and Alcohol Policy

Gridworks prohibits the unlawful possession, use, or distribution of mood-altering drugs and alcohol by employees on Gridworks sites and/or their clients' work sites or in Company vehicles.

- Any illegal substance found in the workplace will be confiscated and turned over to the appropriate law enforcement agency immediately.
- Any employee reporting to work under the influence of, or in possession of, mood altering drugs or alcohol will have provided Gridworks with cause for immediate termination.

3.5.2 Chemical Screening

The Project will conduct post-offer/pre-employment, for cause/reasonable suspicion, random, and post-incident screenings. The Project may establish other types of testing based on contract requirements.
Drug/alcohol screenings and searches will be conducted with as much privacy and discretion as possible. Chemical screening procedures will maximize worker privacy and protect against sample adulteration. Direct observation is prohibited. Indirect observation is permitted only if the initial sample is outside the normal temperature range or if the laboratory identifies the sample as low specific gravity or low creatinine.

3.5.3 For Cause/ Reasonable Suspicion

Workers reasonably suspected of using or being under the influence of Illicit substances or alcohol as manifested through deteriorating job performance, uncharacteristic behavior, safety violations, mood swings, falling asleep, inability to respond to questions appropriately, the odor of alcohol on the breath or person, inappropriate or aggressive behavior, or other credible

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evidence are subject to chemical and alcohol screening at the Project Lead's discretion. The worker may be suspended, with or without pay, pending receipt of the test results.

3.5.4 Post Incident Screening

After involvement in an incident resulting in, or requiring medical treatment for an injury, or damage to equipment or property, workers will be required to submit to Chemical Screening, including synthetic drugs and / or alcohol, in the following situations:

- When post-incident screening is required by a regulatory agency (such as the United States Department of Transportation) or worker's compensation program; OR
- When a reasonable possibility exists that drug and/or alcohol use may have caused or contributed to the incident.

3.5.5 SMOKING AND VAPING

Smoking and Vaping on on this project is not permitted as per client requirements

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3.6 TRAINING AND ORIENTATION

The EHS Project EHS Lead will develop a matrix that identifies required training subjects by exposure groups, tracks individual workers' training completion, and identifies refresher intervals. Gridworks EHS Training Matrix may be used for this purpose.
Subcontractors may be included in the matrix or develop their own method for meeting the requirement. The EHS Project Lead or designee must audit contactor training and tracking methods to ensure compliance.
Supervision will verify that workers complete required training before assigning them related work tasks.
Supervision will receive copies of the matrix, or alternate methods will be used to identify individual worker training completion before work is assigned (such as qualification cards, hard hat stickers, etc..)
Workers will alert their Supervisor if they have not received adequate training for their assigned work.
Visitors to the site who are not expected to return and are not performing physical work tasks do not have to take site orientation. They must, however, be supervised 100% of the time during all site walks by someone having an Evelyn orientation sticker.

3.6.1 Orientation

Workers will receive orientation before conducting work tasks at the Project. All new project employees will complete an online registration and profile creation on the Hammertech App

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(Gridworks EHS Management Software platform) followed by the Gridworks General Safety Orientation Video. Upon completion of the video, the employee will complete a test prior to obtaining approval to work onsite. Within the Hammertech app, the employee will sign to understand the orientation content and accept to meet the expectations. Information on employee participation shall

Upon arriving at the site, the EHS manager will confirm the employee's registration into Hammertech and verify the successful completion of the EHS test. The employee will then participate in the Site-Specific Orientation to review the site-specific rules, clients' expectations, and the project's Emergency Response Plan (refer to the Site-Specific Emergency Response Plan). All participants of the site specific orientation will sign the attendance roster for recordkeeping.

Upon completion of the Site Specific Safety orientation, employees will receive a sticker on their hardhat to serve as visible evidence in the field for having completed the orientation.

Visitors to the site who are not expected to return and are not performing physical work tasks do not have to take site orientation. However, they must be supervised 100% of the time during all site walks by someone with an Evelyn orientation sticker.

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3.6.2 Competent/ Qualified Person Designation

Competent Persons will be capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to workers and will have authorization to take prompt corrective measures to eliminate them.

Qualified Persons will, by possessing a recognized degree, certificate, or professional standing, or who, by extensive knowledge, training, and experience, successfully demonstrate their ability to solve or resolve problems relating to a given subject matter, the work, or the project.

The Project Lead will designate Competent Persons and Qualified Persons as required.

The Competent/Qualified Person Designation form documents individual designation(s).

Each employer shall complete the Competent/ Qualified Designation form, which will be uploaded to Hammertech for recordkeeping. Such document will be sent to all subcontractors attached to the Hammertech Welcome email.

Personnel responsible for directing work are expected to have extensive safety training, such as the 30-hour OSHA Construction training or equivalent. Other personnel performing construction duties on site are expected to at least have basic safety training, such as the OSHA 10-hour Construction Course or equivalent. Trade-specific functional equivalent training is acceptable.

3.6.3 Toolbox Meetings

Supervision will conduct documented weekly Toolbox Safety Meetings with their craft workers.

The EHS Project Lead will develop Weekly Toolbox Meeting content. Content should include:

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- Review of compliance/management safety inspections conducted since the last safety meeting
- Review of violations to assist in the correction of hazards
- Evaluation of incident investigation conducted since the last safety meeting to determine if the cause of the unsafe acts or unsafe conditions involved were properly identified and corrected
- Review of incident/injury/illness experience
- Review of EHS communications
- Lessons learned from incidents and root causes
- Review of current job-specific JHAs
- Review of upcoming JHAs
- Review of specific job safety concerns
- Review of chemical SDS information
- Project-specific or plant-specific procedures
- Review of pertinent announcements, correspondence, notes from Supervisor meetings, and other topics specifically relating to the group

3.6.4 EHS Topic

The Meeting Moderator will begin meetings with five or more attendees with an EHS Topic. This includes office meetings and training.
EHS topics are designed to be covered in 3-5 minutes and are intended to help attendees focus on this core Company value. An EHS topic does not constitute a “safety meeting”.

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3.7 WORKFORCE ENGAGEMENT

3.7.1 Leadership in Action

The Project will implement the Leadership in Action workforce engagement program.

The Leadership in Action Program aims to further engage workers and Supervisors in identifying and controlling hazards in the workplace to strengthen the on-site EHS culture. This is achieved by developing workers' awareness of risks, hazard communication skills, and teamwork to resolve hazardous acts and conditions.
Training on the program will be provided to the Project Management Team before mobilization to site. The program consists of weekly EHS walk-downs of the site by the

Project Management team and contractors leadership to identify hazards and situations that could possibly lead to a serios injury to an employee.

3.7.2 Hazard Reporting and Safe Work Observations

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The Project Lead will ensure that Power-up Cards (hazard reporting cards) are available to all Project personnel by placing them in the work areas where they can be easily accessible.
Supervisory and Management personnel will have the ability to complete field observations via the Hammertech System mobile app.
Supervision will ensure follow-up actions from Power Up Cards and observations completed via the HammerTech app.
Workers will use Power up Cards to document and notify management of unplanned events, unsafe conditions, and unsafe behaviors.
Workers will document hazards and near misses using the Hazard Reporting Card or by discussing them with their supervisor and including the issue during the post-Pre Task Plan (PTP) meetings.
Workers may provide their names on the cards to receive a response or complete them anonymously.

3.7.3 EHS Committee

TEMPLATE

The Project Lead will establish an EHS Committee and appoint a workforce representative.
Project EHS and Project Management will establish an EHS committee and develop the committee's charter.
The Project EHS Committee will include the following:

- Project Lead (chairperson)
- EHS Project Lead
- Project craft worker representatives
- Contractor management nominees
- Contractor craft worker representatives

The Project Lead and EHS Project Lead will canvas for a worker EHS representative(s). The representative(s) will be given sufficient time away from their roles to meet and communicate with the workforce on EHS matters separate from management.
The Project EHS Committee will meet at a minimum of monthly.
Examples of Project EHS Committee functions include:

- Monitor leading and lagging indicators of Project EHS performance and identify trends.
- Develop improvement plans to prevent work-related injuries, illnesses, and environmental impacts.
- Consider measures of training and promotion of EHS.
- Review standards, rules, and procedures relating to EHS to be implemented at the workplace and suggest enhancements.
- Review work-related injuries, illnesses, and environmental incidents and make recommendations to prevent recurrence.
- Review assessment and audit results and recommend correcting unsatisfactory performance levels.
- Initiate programs to raise and maintain interest in the workplace EHS program.

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- Maintain records of meetings, including any recommendations.

3.7.4 Resolving EHS Concerns and Issues

All workers and Contractor personnel will be allowed to voice concerns and issues without fear of reprisal.
Personal "stop work authority" is granted to and implemented as required by Company workers and supported by all levels of supervision and management. Contractor workers have stop work authority in imminent danger unless their employer grants them full stop work authority.
Workers may contact Project EHS at any time to discuss EHS concerns. Such concerns may be provided orally or in writing using a Hazard Reporting Card. Workers may request confidentiality or anonymity, which will be honored.
Personal stop work authority will be included in orientation.

3.8 STOP WORK AUTHORITY

TEMPLATE

Workers have Stop Work Authority to halt a task or operation when a hazard, unsafe act, unsafe condition, or concerns/questions related to the control of EHS risk(s) exist, such as:

- Misunderstanding of the plan
- Concern with the plan
- Change in plan

Workers will resume work after the issues and concerns about an EHS-related work stoppage have been adequately addressed.

3.8.1 Stop Work Process

Workers will use their Stop Work Authority when warranted, support the stop-work actions of others, and properly report all stop-work actions.

- When a person chooses to exercise their authority to stop work, the following steps should be followed:
- Immediately notify the affected person(s) who may be in an imminent danger situation
- Notify the Supervisor as soon as possible
    - If the affected person(s) are not at immediate risk, the stop-work action should be coordinated through the Supervisor
- The Supervisor (or other initiator) will positively stop work actions by providing a brief introduction and stating the intent to stop work and the reason for doing so
    - It may be necessary to remove person(s) from the area, stabilize the situation, and make the area as safe as possible
- The involved workers will discuss and gain agreement on the stop-work issue

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- After careful consideration, a determination will be made either to proceed as-is or to take action to resolve the issue to all affected persons' satisfaction before resuming work
- If the issue cannot be resolved immediately, work must be suspended until proper resolution is achieved
    - The Project Lead will make the final determination when opinions differ regarding the validity of the stop work issue or adequacy of the resolution actions,
- Positive feedback will be given to the initiator and affected workers regarding the resolution of the stop-work issue

Site Leadership will:

- Create a culture where Stop Work Authority is exercised freely
- Establish a clear expectation to exercise a stop-work action
- Resolve stop work conflicts when they arise
- Hold those accountable who choose not to comply with established Stop Work Authority expectations and requirements
-

Supervision will create a culture where:

- Stop Work Authority is exercised freely
- Requests for stop work actions to resolve issues before operations resume are honored
- Proactive participation is recognized
- All stop work actions are properly reported with required follow-up completed

TEMPLATE

Retribution or intimidation directed at an individual or Company for exercising their Stop Work Authority will not be tolerated and is subject to disciplinary action. Personnel will not be disciplined for reporting unsafe conditions or work practices.
Actions taken in response to someone exercising their Stop Work Authority will be consistent with the Resolving EHS Concerns and Issues requirements of this Project EHS Plan.

Supervision will review reports of stop-work actions to:

- Measure participation
- Determine the quality of actions and follow-up
- Trend common issues and identify opportunities for improvement
- Facilitate sharing of learning
- Support recognition programs for positive behavior

In support of Supervision, EHS is responsible for monitoring compliance with the requirements of this program, maintenance of associated documents, processes, and training materials, identification of trends, and sharing of lessons learned.

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3.9 DISCIPLINARY PROCESS

The disciplinary process is in place to consistently provide management and supervision with a uniform application of disciplinary action for EHS violations at the Project. All disciplinary actions must comply with Gridworks Human Resource policies.
The Project Lead will take immediate corrective action when safe work practices are not adhered to prevent injuries to workers or damage to property or the environment.
An investigation will be conducted before disciplinary action for an EHS violation is taken. The Project Lead will include hazard elimination and disciplinary action up to and including termination in response to EHS infractions.
The investigation results need to confirm that the Project EHS Plan and EHS Procedures have not failed the worker and that the worker intended and knowingly violated safe operating procedures before administering disciplinary action. Before administering disciplinary action, the investigation will provide evidence that the individual had:

- Sufficient supervision
- Suitable training
- Adequate tools for the role
- Sufficient work planning was conducted

If these aspects cannot be evidenced, then the Project EHS Plan will be revisited for improvement and no disciplinary action will be taken against the worker.

3.9.1 Discipline

The EHS Project Lead may recommend the type of discipline to be applied but will not administer the discipline themselves. If satisfactory results are not achieved after working through the Project Lead, the EHS Project Lead may contact the Gridworks Director of Safety and Director of Projects.

TEMPLATE

3.10 INCIDENT REPORTING AND INVESTIGATION

All EHS incidents (hereafter referred to as “incidents”) will be reported to the Gridworks Project Management Team, which will, in turn, report them to the client's on-site representative and EHS lead. Workers have the right and responsibility to report incidents as soon as practicable after becoming aware of them.
Workers will report incidents to one or more in the following order of preference:

- Immediate Supervision
- An EHS Representative
- Supervisor's Supervisor (and up the reporting structure if necessary)
- HR representative

The Company will not retaliate against workers for reporting an injury, illness, or other incident or raising an EHS concern. Gridworks prohibits any such retaliation, which includes taking

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disciplinary action against an individual who has reported an incident without evidence of a specific violation (refer to Disciplinary Process).

3.10.1 Incident Severity

The Project EHS Lead, in conjunction with the company Director of EHS, will determine the actual and potential severity of each incident.
The actual and potential severity of incidents, including near misses, will be determined in accordance with the figure below:

SEVERITY LEVEL		PEOPLE	ENVIRONMENT / COMMUNITY	EQUIPMENT / PROPERTY
High Severity	4	Fatality(ies)	Long-term (multi-year) impacts to air, surface/groundwater, or soil; OR Legal liability for related consequences (such as remediation); OR Widespread areas, including offsite areas or community affected; OR Adverse publicity/media coverage	Extensive losses of high-value equipment/property OR Losses exceeding $1,000,000; OR Major unplanned impact on project budget and schedule
	3	Long-term, life-altering injury or illness resulting in permanent total or partial disability *Examples: amputation including bone, severe disfigurement, paralysis, loss of limb/organ/vision/hearing*	Lasting up to one year impacts to air, surface/groundwater, or soil; OR Offsite area/community affected; OR Notice of violation, citation, or fine from regulatory authority; OR Likely adverse publicity/media coverage	Losses of equipment that cannot be readily replaced OR Losses exceeding $100,000; OR Significant unplanned impact on project budget and schedule
2		Injury or illness that requires medical treatment or results in temporary disability or loss of function *Examples: deep laceration, object embedded in the eye, bone fracture, concussion, dislocation, an injury requiring surgery*	Temporary, up to one month, impacts to air, surface/groundwater, or soil limited to the project site; OR Breach of regulatory requirement or limit; OR Events that are reportable to regulatory authorities OR Potential adverse publicity/media coverage	Loss of equipment that can be readily replaced; OR Losses exceeding $10,000; OR Minor impact on project budget
1		Injury or illness requiring first aid treatment only. *Examples: minor cuts, bruises, sprains, strains, abrasions, irritation, inflammation, object in eye removed by flushing*	No direct impact to air, surface/groundwater, or soil; OR Effects restricted within buildings or containment structures; AND No adverse publicity / media coverage	No impact on equipment functionality. Minor, cosmetic damage; OR Repair costs easily covered by normal project operating budget
0		No impact	No impact	No impact

TEMPLATE

3.10.2 Incident Response

The Project Lead (Project Manager or Site Manager) will ensure that incidents are responded to according to the requirements of this Project EHS Plan.
Incident response activities will be managed based on incident severity. Response activities will be based on the actual and potential severity, as understood based on the information available at the time. If, during the investigation, it is determined that the incident was more severe, additional response activities will be taken accordingly.

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3.10.3 Initial Notification

The Project EHS Lead will initiate Initial Notification activities per the requirements of this Project's EHS Plan.
Initial notification will be provided via Gridworks Preliminary Incident Notification form, where the event's basic details are summarized. Upon completion of the document, it shall be sent via email to safetyincidents@gridworks.com, the Project Management Team, and the client EHS representative.

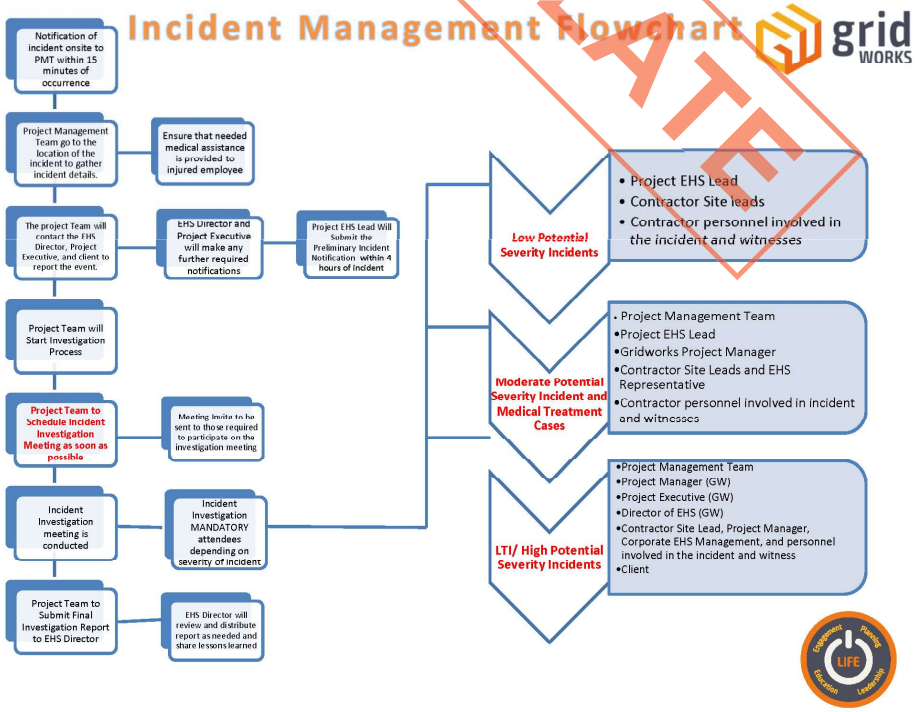
3.10.4 Investigation

The Project EHS Lead will initiate investigations as soon as reasonably practical following an incident and document investigation findings using Gridworks Incident Reporting and Investigation Forms.
Corrective and preventive actions stemming from incident investigations will be tracked to completion. Corrective action plans will include at minimum:

- A description of the action to be executed
- The party responsible for executing the action
- The date the action is due

The following Incident Investigation Flowchart is to be used as a reference.

TEMPLATE



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3.10.5 Incident Investigation Summary

An incident investigation summary will be prepared in conjunction with the Law Department using the Incident Investigation Summary form and reviewed in a meeting with the Chief Executive Officer.

3.10.6 EHS Incident Lessons Learned

EHS Incident Lessons Learned are used to communicate significant incidents across the organization.
EHS Incident Alerts will be developed as follows:

- Project EHS will use the EHS Lessons Learned Template to develop a first draft for submission to the Director of Safety
- The Director of Safety will review and revise as necessary the EHS Lessons Learned document and submit to the Legal Department for review
- Corporate EHS will coordinate to have it uploaded to the EHS Lessons Learned Library and distributed to all Gridworks Project Management Teams.

EHS Lessons Learned will include basic facts about the incident/near miss, a description, the sequence of events, contributing factors identified by the incident investigation, and actions recommended to prevent recurrence. Sensitive information, including the names of individuals involved or impacted by the incident, personal medical information, disciplinary actions, Client and Contractor names/logos, etc. will be omitted.

TEMPLATE

3.11 EMERGENCY PREPAREDNESS AND RESPONSE

The EHS Project Lead will develop a written Emergency Response Plan (ERP) that includes signals and alarms, communications, actions, responsibilities, evacuation routes, assembly points, and personnel accounting.
The EHS Project Lead will consider existing emergency plans (such as client, owner, other contractors on the Project, etc.) throughout the lifecycle of the ERP. Adoption of, and/or coverage under, a client or another Contractor's ERP is acceptable, provided the following criteria are met:

- The ERP covers emergencies/conditions that are reasonably anticipated based on the project scope;
- The "Owner" of the ERP agrees;
- Workers are trained in the ERP; and
- Workers participate in drills, including post-drill analysis and feedback.

The Project Lead will designate and train the appropriate number of workers to assist in the safe and orderly emergency evacuation of workers before implementing the ERP.

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Personnel will participate in drills, including post-drill analysis and feedback.
The EHS Project Lead will distribute pertinent information about emergency signals, evacuation routes, assembly points, and alarms using the most effective methods for the Project (such as wallet cards, signs, orientations, bulletin boards, or worker meetings).
The EHS Project Lead will ensure that emergency-related events are reported, investigated, and documented in accordance with the Incident Reporting and Investigation requirements.
The Project Lead will monitor compliance with the requirements of the ERP.
Workers will be informed of the exact location of eyewash stations.

3.12 INJURY AND ILLNESS MANAGEMENT

The Injury and Illness Management requirements outline the health risk management controls that will be employed to mitigate potential health impacts during construction activities.

These requirements are designed to integrate appropriate health risk controls into Project construction activities. They provide an outline of the specific responsibilities and documentation to be maintained to facilitate internal and external auditing.

TEMPLATE

The Project Lead will ensure that first-aid supplies are approved by a consulting physician, medical providers, or recognized standard.

The Project Lead will ensure that first-aid services are available and that a qualified first-aid responder is available for each shift and at each required location.

The Project Lead will ensure that critical incident management processes are executed as needed and that incident response timelines are followed.

The Project Lead will ensure personnel case management is in place and that a Return-to-Work Plan is developed for those unable to return to work for five days or more.

The Project Lead will ensure demobilization, defusing, and debriefing activities are followed.

The Project Lead will ensure proper permissions are obtained relative to injured/ill personnel.

The EHS Project Lead will liaise with healthcare providers and insurance Company representatives.

The Project Lead will ensure medical treatment management is followed.

The EHS Project Lead will complete necessary reporting, documentation, and reporting to management in accordance with Incident Reporting and Investigation.

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The EHS Project Lead will hold an alignment session with insurance providers' claims representatives during the pre-mobilization stage or when the Project undergoes a management change.

The Project Lead will ensure that a complete investigation of all work-related injuries/illnesses is conducted as soon as they are reported to the Company, as required by Incident Reporting and Investigation.
The Project EHS Lead will make ensure that all on site workers understand that if an ambulance is needed, they shall immediately call 911. All members onsite shall understand that they have this right and they shall use is as needed. In the event that 911 is contgacted by personnel on the field, they shall also know that they need to inform Gridworks Project Management Team immediately.

3.12.1 Medical Services

As Per Emergency Response Plan

3.12.2 First Aid

TEMPLATE

When First-aid services are unavailable (such as off-shift, overtime, remote locations, etc.), at least one person who holds a current first-aid certificate (validated by the record at training services) will be assigned to provide emergency first aid for all shifts and at each required location.
A valid first-aid certificate may be acquired through the site training organization or from recognized agencies such as the American Red Cross.
First-aid supplies, including Bloodborne Pathogen (BBP) kits, will be readily accessible to the individual designated to provide emergency medical response. These can be found at the Project Management Team Environmental, Health, and Safety Office. Additionally firt aid supplies will be readily available at all project offices.
All project pick up trucks must also be equipped with first aid kits in addition to fire extinguishers.
First-aid kits will be promptly restocked when depleted.
A documented monthly inspection will be performed to ensure the integrity of the first-aid supplies.
Automated External Defibrillator (AED) will also be available onsite.

3.12.3 Case Management

When an injury requires off-site medical treatment, the Gridworks EHS Project Lead must be notified and meet the worker and Supervisor at the offsite healthcare provider location. Gridworks EHS Representative will provide case management services for Company personnel. Similar case management will be available for Subcontractor workers to the extent possible.

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Responsibilities

Managers/Supervisors Responsibilities

- Notify Project EHS and arrange to meet at the healthcare facility when a worker has reported an injury or illness.
- Accompany the injured/ill worker to the healthcare facility or local hospital emergency room whenever the worker is being assessed due to an occupational injury/illness.
- Follow up with the injured/ill worker to ensure reassessments are completed when scheduled or earlier if appropriate.
- If a worker seeks offsite medical care, review the worker's work release from the offsite healthcare provider before allowing the worker to return to work.
- If a worker notifies you that he/she cannot report to work because of a work-related injury or illness, arrange to meet the worker at the designated healthcare facility.
- In conjunction with healthcare providers, request additional medical assessment or diagnosis of occupational injuries/illnesses, if required.

Project EHS Responsibilities

- Meet the injured/ill worker and their Supervisor at the offsite healthcare.
- Upon arrival, evaluate the situation and decide if the Supervisor may leave.
- Interface with the injured/ill worker and the healthcare provider regarding return-to-work options.
- Communicate outcomes of incidents and changes to the Gridworks Director of EHS
- Maintain and manage incident data retrieval and reporting.
- Administer the workers' compensation program.

TEMPLATE

Return-To-Work

Consistent with medical advice, employers must assist workers in remaining in the workplace or returning to work as soon as possible if injured or ill.
Specifically, the requirements usually include, but are not limited to, the following:

- Provided it is safe and practicable to do so, injured or ill workers will be returned to work in the shortest possible time.
- If the shortest time to return to work is not possible, the worker will be returned to suitable alternative or selected duties that do not jeopardize their well-being or the well-being of others.
- Managers and Supervisors will assist their employers in meeting responsibilities, including, where practical, immediately reporting all injuries/illnesses to their immediate Supervisor.
- The Project Lead and each Contractor will appoint a "Return-to-Work Coordinator" who will act as a liaison officer in all rehabilitation cases.

Liaison with Offsite Healthcare Providers

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Initial contact with healthcare providers for rehabilitation or return-to-work plans may be through the Supervisor. This contact is to fully inform the healthcare provider of the project rehabilitation and return-to-work policy and the availability of alternate/selected duties for injured/ill workers.
Ongoing liaison for rehabilitation/return-to-work plans will be through the appointed Return-to-Work Coordinator. An injured or ill worker will be offered alternative/selected duties to keep the worker in the workplace.
Each Subcontractor must contact the project Return-to-Work Coordinator when commencing work to explain the Contractor's rehabilitation/return-to-work program and the availability of alternative duties for their workers.

Return-to-Work Plan

The employer and the injured/ill worker will jointly prepare the return-to-work plan in cooperation with the treating professional.
The Project Lead or designee will approve the return-to-work plan.
The following details must be included in a return-to-work plan for injured/ill workers:

- Project name
- Project address
- Name, address, telephone number, date of birth, and occupation of the injured/ill worker and the date of injury/illness
- Name of Return-to-Work Coordinator
- Name, address, telephone, and fax number of the primary offsite healthcare provider
- Completed Injured Employee Job Description
- An Offer of Suitable Employment at the workplace if the worker cannot perform pre-injury/illness employment
- Estimated date when the worker will be fit to return to work and the hours of work
- Date the return-to-work schedule will be reviewed
- Details of medical restrictions on capacity to return to work
- Rehabilitation services necessary to facilitate the worker's return to, or maintenance at, work following the injury/illness
- Details of other assistance or healthcare services that will be provided to facilitate the worker's return to, or maintenance at, work following the injury/illness
- Details of actions taken to reduce the risk of further injury/illness once the worker has returned to suitable work following the injury/illness
- Signatures of the injured/ill worker and the Return-to-Work Coordinator
- Return-to-work plans should be scheduled for review approximately every 2 weeks after the commencement of the plan.

TEMPLATE

3.13 PRE-TASK PLANNING AND RISK ANALYSIS

Pre-task planning and risk analysis define structured methods of identifying hazards and assessing risk and require developing work procedures to mitigate those risks.

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The project will adopt a "whole life" approach to pre-task planning for EHS from the commencement of the Project through commissioning and handover to the Client. All workers are responsible for hazard and risk identification and management.

Key Company workers (such as construction supervision, craft, and EHS), Clients, and Contractors (if contract work) should be involved in the pre-task planning process. Involvement may include pre-task walkthroughs, JHA development participation, or input/changes recognized during pre-task meetings.

The Project Lead will ensure that the project:

- Uses a series of hazard studies to identify, analyze, and manage areas of risk or hazard
- Assesses the risks that identified hazards pose to workers and subsequently establishes a measure of risk and determines a priority for corrective action
- Monitors the identified control measures regularly to confirm compliance

Engineering will provide technical support or pre-task planning assistance to ensure compliance with codes, standards, and regulations.

Supervision will:

- Ensure that required training and permits are completed for applicable items on the known or potential hazards list, and document competency and/or qualification
- Ensure that current pre-task planning documents are at the worksite and updated as conditions and workforce change
- Compile information necessary to complete the pre-task planning process

The EHS Project Lead will:

- Provide safety and health-related program guidance for pre-task planning.
- Ensure a pre-task walkthrough of the Project has been completed by Supervision before the start of work.
- Review and evaluate hazardous material and/or hazardous processes that create potential worker exposure. Processes may include, but are not limited to:
    - Welding or cutting
    - Confined spaces
    - Coating application/removal
    - Sandblasting
    - Chemical use

TEMPLATE

3.13.1 Hazard Identification

The Project will conduct assessments to provide a system for recognizing hazardous conditions and correcting them. The data collected while performing assessments will be used to identify hazards and barriers to working safely and in an environmentally protective manner and

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address them. The data will also be tracked as a proactive measure of acceptable EHS behavior on the site. Reports and safe work observation information will be shared with workers at Toolbox safety meetings.

3.13.2 Assessment

The risk assessment step is the part of the process that assesses the probability (likelihood) and consequences (severity) of hazards that have been identified. Projects will estimate the probability and consequences of each hazard and allocate it as a priority for corrective action. Risk assessment should consider:

- The chances (probability) of an incident happening;
- If an incident does happen, the chances that someone will be hurt and
- The extent of equipment or environmental damage and how severe it would be.

The risk level depends on the exposure to the hazard and the probability and consequences of an event occurring.

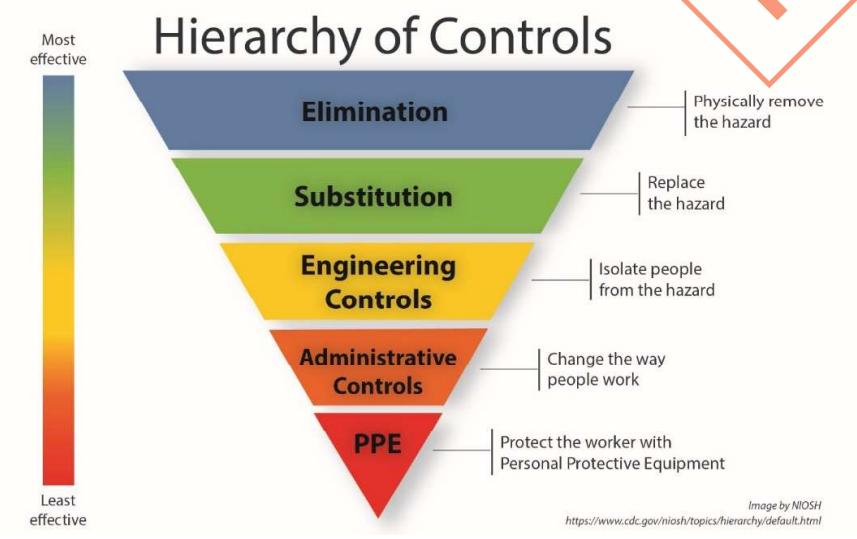
TEMPLATE

3.13.3 Control

Control is the stage in the process of determining and implementing appropriate measures to control risk.

Hierarchy of Controls

Having identified the potential hazards, the Project will further identify solutions to those hazards. Refer to the figure below for preferred hierarchy of controls, starting with the most preferred (Elimination) to the least preferred (PPE).



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Evaluation

The Project will monitor the effectiveness of introduced controls to confirm that the previously identified risk(s) are being reduced. Evaluation may involve repeating the process of hazard identification, risk assessment, and risk control to verify that all risks to health and safety from a particular hazard have been controlled as far as is practicable; however, this depends on the hazard, the nature of the assessed risks, and on the control measures used.
Where the evaluations of risk control measures reveal some remaining risk, the process continues until risk is minimized as far as practicable.

Continuous Hazard Identification

Audits and assessments will monitor the pre-task planning process to verify that the process is working effectively, analyses are modified as necessary, hazards are being mitigated, and control measures are appropriate and implemented.

TEMPLATE

3.13.4 Job Hazard Analysis

The JHA is a process that identifies hazards associated with each step of a job and develops solutions for each hazard that will either eliminate or control the risk. The project will apply the JHA process to a project work scope before EHS procedures are developed.
The Project Lead will ensure that a comprehensive Jo Hazard Analysis (JHA), including the Risk Analysis portion, is conducted for each activity involving a High-Risk Operation and for each activity with high potential severity, history of incident occurrence, or non-routine activities.
JHA development should also be considered when workers raise concerns about a job.
Supervision will use the JHA to identify known or potential environmental or otherwise hazards related to a scope of work.
The supervisor responsible for the work is ultimately responsible for developing the JHA, but more than one person will perform the JHA to provide a greater breadth of technical competence. There is not an optimum number of persons required to conduct a JHA; however, fewer rather than more are preferred. Ideally, the JHA Team will include:

- Supervision
- Worker(s) experienced in the task
- Other workers who will be performing the work
- Specialists (such as EHS representatives, engineers, and industrial hygienists) as required

Review

The Site or Construction Manager will review and approve the JHA before the start of work when hazards identified in the JHA process pose a high or very high residual risk (after control measures are identified).
The EHS Project Lead will review and approve JHAs after the documents have been signed by appropriate supervision.

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Another EHS representative not involved in preparing the documents should review and approve them; a review with recommendations to change these documents is not considered involvement in preparation.
Workers will sign the JHA to indicate that they understand and will comply with the JHA.

3.13.5 Pre-Task Plan

The Pre-Task Plan (PTP) is the process of identifying and communicating to each worker the task steps to be completed, the hazards and risks associated with the task, and the safe work practices to be applied to complete the task safely and in an environmentally acceptable manner.
Supervision conducts the PTP process with workers daily, before each new work assignment begins, when conditions change, and when a worker arrives late to ensure that the contents of the pre-task planning document(s) are communicated and discussed with affected workers before entering the work site or initiating work.

TEMPLATE

The PTP process includes the following steps:

- Foreman receives the task assignment
- Foreman develops the PTP with the task crew during the pre-task meeting, which includes:
    - Overview of general task information
    - Identification of emergency procedures
    - Identification of:
        - High Risk Operations relevant to the task
        - Inspections required as related to the task (such as rigging or equipment)
        - Permits required before beginning the task (such as hot work or confined space entry)
        - Additional control plans that may be required
        - Other required measures (such as barricades, signs, tags, or rescue plans)
    - Description of the specific task steps and associated hazards and controls
    - Determination of the line of fire hazards and the most effective prevention controls associated with those hazards
    - Determination of required PPE
    - Assignment of competencies required for the task
    - Acknowledgement by each crew member that they have participated in the day's PTP
        - If additional crew members are assigned to the task, the Foreman will review the PTP with those workers, and their signatures will be added to the PTP.

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Supervision will provide the required PPE and other equipment to complete the work task safely.

Management PTP Participation

The Project Lead will validate the completion of the PTP process daily and institute a process to verify quality.
Management will complete the Management PTP Participation of the PTP if they participate in the PTP or verify the work is being conducted in accordance with the PTP.

3.14 PERMIT TO WORK

TEMPLATE

A Permit to Work (PTW) is issued before starting work to verify that adequate planning has been completed to conduct the work safely.

The following activities require an activity-specific permit even if the permit-to-work process is not used:

- Confined space
- Energized electrical work
- Welding, cutting, burning (hot work)
- Critical lift
- Access to high voltage areas (such as substations and yards)
- Working near overhead/adjacent power lines
- Excavations

3.15 ASSESMENTS AND AUDITS

A key element to the success of an EHS program is ongoing assessment and audit. EHS monitoring will be conducted by the Project to ensure that Gridworks EHS requirements are properly executed, and to verify compliance with local regulatory requirements.
EHS monitoring by Corporate EHS may be conducted, without notice at the Project regardless of apparent success or failure as reflected in the analysis of required EHS reports.

3.15.1 Weekly Assessment

Supervision (Foremen, General Foremen, Superintendents, Site or Construction Manager, and other appropriate field support staff) and the Project Lead will conduct EHS assessments on a weekly basis. Where practical, a minimum of two people will participate in each assessment.

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The Project Lead will develop a weekly assessment schedule. The schedule will designate individuals performing the assessments and the areas and/or processes to be assessed. The EHS Project Lead will maintain the weekly assessment schedule and track participation.

Supervisory Assessments: The Project Lead will make provision for Supervision to conduct one EHS assessment per week and an additional assessment per 40 craft workers.

Site Leadership Assessments: The Project Lead will conduct or participate in at least one weekly EHS assessment.

Supervision will use a standard format to execute, document, and score the assessment.
Each participant will sign the completed assessment and provide it to the Project Lead within 24 hours of completing it.
The Project Lead and EHS Project Lead will develop a tracking system to record the status of corrective actions.
The Project Lead will promptly investigate all areas where low assessment scores have been noted, take the necessary corrective action, and address all safety-related infractions and recommendations.
The Project Lead will ensure that the results of assessments are communicated to workers via the scheduled Toolbox Meetings together with the results of remedial actions taken.

TEMPLATE

3.15.2 Executive Management Team Member EHS Site Tours

The Project Lead will provide and assist visiting Executive Management Team Members with performing a EHS Site Tour.

3.15.3 Corporate Audits

Gridworks Corporate Director of EHS (or his delegate) will perform at least one Corporate EHS Audit for the project's life. Additional Audits could be performed at the request of the Project Management Team, the Project Executive, or the client, or when the project has suffered a concerning amount of incidents and injuries.

The assigned auditor will contact the Project Lead to schedule the audit date, coordinate the opening conference, and arrange site access for the audit team.
If document reviews are part of the audit, and if those documents can be provided before the audit, this notification will also request copies and/or electronic access to those documents.
The opening conference will be conducted on day one. The opening conference aims to introduce the auditors and confirm the purpose, scope, and schedule for the audit.
Typical audit activities include reviewing documentation, the team's observation of activities in the field, and interviews with project workers.

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At the completion of audit activities, the audit team will compile notes to review with Project Management during a closing conference, which will be the last formal activity of the audit. Attendees include relevant project workers, the audit team, and those interviewed, as appropriate. The purpose of the meeting is to allow the audit team to present a synopsis of the audit findings.

3.15.4 Regulatory EHS Inspections Performed by Outside Agencies

The Project Lead, the EHS Project Lead, and the Client will be notified when an outside regulatory compliance officer (RCO) arrives at the Project. In addition, the following Company representatives will be notified:

- Gridworks Director Of Safety
- Gridworks Director of Projects

The Project Lead (or designee) and the EHS Project Lead will be the primary participants and the primary points of contact for regulatory inspections. The Project Lead will designate two alternates (in the absence of the primaries) to participate in the regulatory inspection.

By validating credentials, The highest-ranking management official will determine whether the individual is a bonafide RCO before he/she allows them to enter or inspect the premises. An employer will not abuse this right to delay the inspection entry; however, the inspector may be asked to wait a few minutes while the highest available management official of Gridworks or the Client is notified.
In the event that another person or persons accompany the RCO, the employer may also examine their credentials to determine whether they are appropriate regulatory representatives.

RCO(s) are typically authorized by agencies to perform the following:

- Upon presentation and verification of credentials, enter any work area without delay, at any reasonable time, and without advance notice.
- Inspect the place and conditions of employment, equipment, machinery, devices, and the processes or methods being used.
- Check recordkeeping procedures and investigate incidents.
- Take photographs and collect samples or evidence.
- Confer privately with workers of their choice concerning conditions or procedures. Review their findings with the designated management representatives.
- Issue citations resulting from the inspection. Such notice will be submitted in writing following completion of the inspection.
- Reenter the premises to determine that correction of violations has been made within the time established.

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3.16 EHS PERFORMANCE

Performance objectives and targets are developed annually by Gridworks and adopted as a minimum by the Project. The EHS Objectives and Targets are issued annually detailing the corporate objectives and targets, including leading and lagging indicators.

3.16.1 Objectives and Targets

The Project Lead will incorporate the Gridworks EHS Objectives and Targets as a minimum and develop additional site-specific objectives and targets based on their needs, environmental conditions and performance.

3.16.2 Leading Indicators

TEMPLATE

The Project Lead includes the following core leading indicators:

- EHS Audits conducted by Company EHS
- EHS Training Completion
- Supervisory Participation in EHS Weekly Assessments (refer to Weekly Assessments)
- Site Leadership Participation in EHS Weekly Assessments (refer to Weekly Assessments)
- Potential Severity of Incidents (refer to Potential Severity)

3.16.3 Lagging Indicators

Incident data will be tracked and analyzed to measure and improve performance.

Incidence rates will be calculated for all operations and used as indicators of EHS performance.

The Project Lead includes the following core lagging indicators include:

- Total recordable case incidence rate (TCIR)
- Days away, restricted and transferred case incidence rate (DART)
- High potential severity incidence rate (HPSIR)
- Regulatory Infractions (violations, citations, penalties, etc.)

Incident data will be analyzed periodically to identify trends and inform future incident prevention efforts as part of office/project and overall Company continual improvement processes.

Analysis will include consideration of the potential severity of incidents and will not be based solely upon injury/illness recordkeeping classifications.

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3.17 PRE-COMMISSIONING AND COMMISSIONING

The pre-commissioning and commissioning requirements are intended to prevent unexpected energization, startup, and uncontrolled energy releases that could cause injury to persons and/or damage to equipment. The site construction and commissioning teams are ultimately responsible for implementing the requirements for systems and equipment under their respective jurisdictional control. The requirements provide centralized control over LOTOs to ensure personnel safety at all levels.

3.17.1 Requirements

To undertake any work in a module or area during any period of the commissioning phase (pre-, cold, or hot), a specific PTW (refer to the Permit to Work requirements) will be developed and approved that covers the management of the various associated hazards. This process checks that the responsible area Supervisor, the Project Lead, or the superintendent is always fully aware of those entering his/her area of responsibility and all work being undertaken.

TEMPLATE

A 24-hour notice will be provided to appropriate workers before services are live for pre-commissioning and commissioning purposes.

All low-voltage systems will be regarded as live at all times unless an authorized person proves otherwise.

The commissioning manager will establish and maintain a safe work environment throughout the execution and all project phases.

The Commissioning Manager will report to the Project Lead for organizational requirements.

3.17.2 Ownership Identification of Modules and Systems

The four distinct phases to the completion of a project are as follows:

- Construction Phase
- Commissioning Home Office Planning
- Pre-Commissioning (Cold/No Load)
- Commissioning (Hot/Load) Phase

Construction Phase

During the construction phase, there is no specific ownership identification of any module.

Commissioning Phase

Permit to Work

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It will be noted that work activities that would appear to introduce no new hazard on their own may introduce a higher risk into the work area and adjacent areas. Therefore, it is essential to view the issue of a Permit to Work in relation to all other work being undertaken in the immediate work area and those remote areas likely to be affected.
Once the construction Contractor has completed the installation of an item of equipment or system, the Project Lead will be notified that the equipment is available for pre-commissioning. Ownership of the equipment or system will be transferred to the Commissioning Manager.

Hazardous Energy Control

A Danger – Do Not Operate Tag (Controlling Organization) and lock will be used to protect workers.
Involved workers will affix their individual Danger-Authorized Worker Tag.
Only the worker can remove his/her Danger Tag/lock.

3.17.3 Identification and Notification of Live Services

TEMPLATE

Identification

Hazardous materials services will be identified in accordance with the applicable standards.

Additionally, all services including those mentioned above when energized/livened will be marked with the appropriate colored tags as defined in the PCM.

The spacing of live service identification markers will be no more than 26 feet (7.9 meters) apart, except on uninterrupted runs, where the spacing may be up to 98 feet (29.9 meters).

High Voltage Identification

All live high-voltage lines will be identified with markers stating, "Danger Live Cables."

Low-Voltage Equipment Identification

All live low-voltage equipment such as control panels, motor control centers, and junction boxes) will be identified with markers (such as "Danger 440 Volts").

Notification

Notification will be by a brief description of the service to be energized together with (where applicable) a description of the commissioning work to be performed and an approximate duration.

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4.0 INDUSTRIAL HYGIENE

4.1 BLOODBORNE PATHOGENS

These requirements provide the necessary precautions to be taken by workers who have reasonably anticipated job-related contact with blood or other potentially infectious materials.

4.1.1 Controls

Engineering Controls

Engineering controls will be used as the primary method of reducing worker exposure to harmful substances.
At a minimum, the following controls will be implemented:

- Isolation or containment of the hazard
- Disposable, puncture-resistant containers that are closeable and leak-proof on the sides and bottom and properly labeled with the universal biohazard symbol will be used for urine, used needles, blades, sharps, and other one-time-use treatment implements. These containers will be placed in the use area.
- Hand-washing facilities with anti-bacterial soap and running water will be made available. If running water cannot be supplied, germicide hand wipes will be provided.
- Appropriate and accessible PPE will be used.

TEMPLATE

Work Practice Controls

Work practice controls will be established to reduce the likelihood of exposure when a task is being performed.
Tasks that involve handling implements or utensils, use of public or shared bathroom facilities or telephones, and personal contacts such as handshaking are also not considered occupational exposure.
Examples of some work practice controls include the following:

- Universal precautions will be in effect in all occupational exposures.
- Recapping of needles or other sharps by hand is not allowed.
- Pipetting or suctioning by mouth (siphoning) is forbidden.
- Storing food or drink is forbidden in areas of potential occupational exposure.
- Eating, drinking, and smoking are forbidden in areas of potential occupational exposure.

Workers who perform janitorial services will wear rubber or latex gloves at all times when cleaning or emptying trash cans to protect against normal bacteria.

A worker's exposure is not considered occupational when the normal work routine involves no exposure to blood, body fluids, or tissues.

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4.2 RESPIRATORY PROTECTION

Respiratory protection will be used to control occupational diseases caused by breathing air contaminated with harmful dust, fogs, fumes, mists, gases, smoke, vapors, and sprays.

The Project Lead will implement this respiratory protection program and ensure workers requiring respirator use are properly trained, medically evaluated, as required by regulation, and fit tested to the make, model and size respirator being worn.

Supervision will enforce the respiratory protection program.

The EHS Project Lead will provide initial and as-needed training to workers required to wear respiratory protection.

Training will include the selection of a properly fitting facepiece and the trial wearing of each type of respirator to be used.

TEMPLATE

4.3 HEARING PROTECTION

The EHS Project Lead will monitor noise levels to identify work areas or specific equipment that exceed 85 dBA (A-weighted decibels).

Project EHS will:

- Conduct documented noise surveys and exposure monitoring
- Assist line management in completing JHAs and STAs, or other hazard identification processes to identify operations that may potentially expose workers to 85 dBA TWA or more or an equivalent noise dose
- Recommend engineering and administrative controls and evaluate their effectiveness
- Recommend appropriate types of hearing protection and evaluate their effectiveness in controlling exposure
- Review and approve purchase requests for hearing protection
- Conduct walk-through surveys to determine changes in work activities or equipment that could affect noise exposure and document qualitative assessments of noise hazards
- Assist supervision in reporting exposure monitoring results and other information to affected workers

Supervision will:

- Determine which job assignments could expose a worker to noise levels

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- Ensure workers are trained on the effects of noise exposure and the proper use of earplugs and/or earmuffs for workers who work in areas exceeding 85 dBA
- Implement engineering and administrative controls to reduce worker exposures to 85 dBA or less where feasible
- Provide and enforce the use of adequate earplugs and/or earmuffs for workers who work in areas exceeding 85 dBA

4.4 HAZARD COMMUNICATIONS

Safety data sheets (SDSs) are the primary documents on which the hazard communication program is based.
The EHS Project Lead will develop a written hazard communication program in compliance with site-specific regulations.
Workers will be provided with access to the hazard communication program.

TEMPLATE

4.4.1 Safety Data Sheets

The EHS Project Lead will develop and implement a site-specific SDS program for managing SDSs for products used and stored at the project.

SDSs will be legible and accurately represent the product.

Product SDSs should be periodically reviewed or within the dated three calendar years to ensure the information on the label of the data sheet for a substance or mixture is based, even if no new or significant information has been provided with respect to the substance.

Workers will have ready access to review and copy the SDSs for materials they work with.

An inventory list of the names of hazardous materials used in the project will be maintained.

Procurement, Shipping, and Receiving, or the Contractor will provide EHS with a current copy of the SDS, or adequate product information to obtain an SDS.

EHS will reject products that do not meet the requirement of an acceptable SDS.

Line management will ensure that hazardous materials received have legible SDSs before use.

4.4.2 Labeling

All contractors should develop a list of all chemicals used on the project, gather Safety Data Sheets (SDS) for those materials, follow the Globally Harmonized System's (GHS) labeling system for all materials.

Manufacturer's Label

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A manufacturer's label will be attached to hazardous material containers.

Additional labeling need not be applied to the container if the manufacturer's label is legible and contains the following information in English and in the primary language spoken by the workforce:

- Manufacturer name and address
- Identity of the material
- Associated health and safety hazards
-

The product will be returned to the manufacturer if the information is not included on the manufacturer's label, or disposed of in accordance with applicable local/in-country requirements.

Secondary Container Labeling

Workers will label secondary containers (such as pots, buckets, or pans) that are filled daily with a hazardous material.

Labeling is not required for single-use soak pans, paint pots, or buckets used for "immediate use" and not reused with the same product on subsequent days. If it is uncertain if labeling is required, the container should be labeled or the Gridworks EHS Representative called for assistance.

TEMPLATE

4.5 CRYSTALLINE SILICA EXPOSURE

Crystalline silica is present in substantial quantities in sand, concrete, sandstone, granite, bricks, and cinder blocks. Exposure to crystalline silica is commonly found on, but not limited to involvement in:

- Grinding on concrete outdoors without grinder manufacturer-supplied dust control
- Sawing on concrete or masonry, dry
- Sawing on asphalt, dry
- Breaking up (demolishing) concrete using a backhoe
- Jack hammering or chipping on concrete or masonry
- Rock crushing
- Housekeeping tasks (sweeping, cleaning with pressurized air, etc.)
- Pouring sand, such as at a cement plant
- Other activities that generate visible clouds of silica dust

Crystalline silica exposures from occupationally-derived silica sources are a health hazard to the human respiratory system. Airborne silica caused by sand storms and other weather-related events does not appear to be a health threat to normally healthy individuals.

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If there is a reasonable expectation of exposure, the EHS Project Lead will develop a site-specific Crystalline Silica Control Plan (SECP). This plan will specify the PPE requirements for silica dust exposure, but at a minimum, employees taking part in any activity that produces silica dust will be required to wear NIOSH-rated N95 or higher respirators. Additional controls and measures will be implemented as defined on OSHA's 1926.1153 Table 1-Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica..

4.5 SANITATION FACILITIES

4.5.1 Washing Facilities

The Project Lead will provide sanitary accommodations that meet or exceed accepted local standards of care proximity and placement.

The Project Lead will:

- Provide and maintain washing facilities in a sanitary condition that meets or exceeds accepted local standards of care, proximity, and placement, and the following minimum requirements based on the size of the project workforce.
- Sinks or basins used for washing will be provided in the vicinity of each toilet at the project
- Sinks or basins used for washing will be provided in the vicinity of eating facilities
- Mobile work crews and those working at normally unattended work locations will have transportation readily available to nearby washing facilities
- Washing facilities will be equipped with ordinary soap, water, and paper towels or with special compounds designed specifically to remove harmful chemicals and other contaminants from the skin

TEMPLATE

General washing facilities for other workers should be appropriately provided throughout the site.

4.5.2 Toilet Facilities

The Project Lead will provide toilet facilities maintained in a sanitary condition and the following minimum requirements, based on the size of the project workforce as specified below.

NUMBER OF WORKERS	MINIMUM NUMBER OF FACILITIES
20 or fewer	1 toilet seat
20 - 200	1 toilet seat and 1 urinal per 40 workers
200 or more	1 toilet seat and 1 urinal per 50 workers

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The Project Lead will:

- Provide sanitation services for all toilet facilities used by personnel, including cleaning and servicing on a scheduled basis, that will prevent the facilities from becoming unsanitary and unusable. Toilets will be provided with an adequate supply of toilet paper.
- Include a toilet seat and a urinal in each sanitation unit unless specifically designed for women's use only.
- Units will be placed on a firm, level ground, good and accessible for cleaning, emptying, and maintenance activities
- Units will be protected from exposure to vehicle/equipment
- Units will be secured from tipping in high winds
- Portable hand wash facilities shall be provided accordingly
    - Monitor the portable sanitation unit site conditions and periodically inspect them for hazards
- Access at entrances will be maintained free from tripping hazards and be well drained
- Immediately remove toilet facilities that have become inoperable due to water supply, plumbing problems, or full and cannot be used in a sanitary manner
- Separate toilet facilities will be provided for men and women

TEMPLATE

4.6 HEAT AND COLD STRESS MANAGEMENT

The EHS Project Lead will develop a specific written Heat Stress Plan when temperatures become higher than 80°F for whatever reason (natural weather conditions or industrial heat sources).

The EHS Project Lead will develop a specific written Cold Stress Plan to prevent frostbite and allow workers to warm up when work is performed in conditions that expose workers to wind chill below 5°F.

Supervision will communicate the Heat and Cold Stress Plan to workers.

Workers will be trained in the Heat and Cold Stress Plan.

Supervision will implement the Heat and Cold Stress Plan so workers do not develop heat or cold-related illnesses.

Supervision will assess tasks to identify possible work practices or environments that could cause heat or cold stress.

Supervision will consider the potential severe heat or cold stress impacts on workers and the management of those impacts in their daily pre-task planning.

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Supervision will monitor workers for compliance with the Heat and Cold Stress Plans.

Project Management will ensure compliance with the Heat and Cold Stress Plans.

The EHS Project Lead will include response procedures for heat and cold-related emergencies in the project ERP.

In situations where heavy physical workloads must be performed when the heat index exceeds 90°F (32°C), the following will be provided at a minimum to allow workers to rest and cool down. Additional precautions may need to be implemented as workload and/or heat index increase, in areas with limited ventilation, or when working near hot equipment or additional heat sources.

- Shaded break areas with fans, misters, swamp coolers, air conditioning or other cooling means.
- Provide adjusted break schedules for resting and drinking water more frequently
- Conduct work using the buddy system

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5.0 INDUSTRIAL AND CONSTRUCTION SAFETY

5.1 PERSONAL PROTECTIVE EQUIPMENT

The EHS Project Lead will perform a hazard assessment to determine hazards that require using PPE before commencing work.
Workers and visitors will wear long-sleeved shirts, long pants/trousers, and safety footwear in addition to issued Personal Protective Equipment (PPE) to protect them from workplace hazards that cannot be eliminated or reduced to an acceptable level by other controls.
The use of PPE for protection against the hazards identified will be enforced.
The minimum PPE required for workers before accessing industrial (non-office) work environments includes:

- Long-sleeved shirt
- Long pants/trousers
- Safety footwear that covers the ankle
- Hard hat (meeting ANSI/ISEA Z89.1-2014)
- Eye protection appropriate for the task (safety glasses that meet the ANSI Z87.1-2020).
- High visibility clothing or vest worn at least on the upper body and meeting ANSI/ISEA 107-2020 standards for daytime and nighttime visual conspicuity
- Gloves appropriate for the task (general-duty work gloves at a minimum)
    - Gloves will not be worn around rotating machinery or where the hazard assessment shows increased risk from wearing gloves.

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Long hair will be tied back and secured to prevent entanglement.
A lanyard worn around the neck, such as one used to display a badge, access card, identification, etc., will be designed to safely break free of the wearer if it becomes entangled in equipment or machinery.
Required PPE shall be provided in a variety of sizes and styles to ensure a proper fit for the full range of diverse personnel in the project.

5.1.1 Head Protection

Workers will wear a hard hat that is in good condition and meets applicable regulatory compliance standards (ANSI/ISEA Z89.1-2014).
Alteration of hard hats is prohibited.
Hard hats will be worn with “brim to the front.” The typical exception is for welders whose hard hats may have to be reversed to accommodate welding shields while performing welding operations. If hard hats cannot be worn during welding operations, alternate means of overhead protection will be provided. When not welding, welders wear hard hats with brims to the front.

5.1.2 Eye and Face Protection

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Workers and visitors will wear safety eyewear with side shields ¬ designated “high impact” ¬ that is in good condition and meets applicable standards (ANSI Z87.1-2020) in all work areas except offices.

Prescription glasses must meet the applicable standards. Cover-all glasses or goggles will be required for prescription glasses that do not.

Additional eye and face protection (such as goggles, face shields, welding shields, etc.) will be required when engaged in operations including, but not limited to, welding, burning, grinding, chipping, handling chemicals (such as corrosive liquids or molten materials), drilling overhead, using powder-actuated tools, operating lasers, and pouring concrete.

Workers and visitors may wear photo-gray safety lenses, except where prohibited. Permanently tinted lenses may only be worn in outside work areas.

Contact lenses are permitted unless indicated otherwise by area signage.

TEMPLATE

5.1.3 Foot Protection

Workers will wear substantial protective footwear. Substantial footwear is footwear made from leather or equally firm material that excludes high heels, open toes, sandals, and a cloth or athletic footwear.

Appropriate footwear will be based upon scope of work and activities to be performed; however, construction workers (craft and direct Supervisors) are required to wear safety-toed work boots that conform to American Society of Testing and Material (ASTM) F241205/F241305 standard, or similar.

Additional foot protection (such as metatarsal guards) will be worn when operating equipment including, but not limited to: tamps, jackhammers, and line-trimmers.

5.1.4 Hand Protection

Workers will wear general duty gloves, at a minimum, except when working around rotating machinery where the hazard assessment shows an increase in risk from wearing gloves.

Gloves shall be provided and worn when handling material that could burn, cut, tear, or cause injury to the skin.

Wearing rings and watches is strongly discouraged. Jewelry can catch and cause injuries when climbing, handling materials, or working with machinery.

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5.1.5 Inspection

Workers will inspect PPE before use to ensure it is fit for use.

Defective or damaged PPE will be immediately removed from use and repaired or disposed of in accordance with the manufacturer's specifications.

5.1.6 Workforce Identification

Role	Hardhat Color	Hi-Vis Vest Color
EHS	White	Yellow
Management	White	Yellow
Superintendents	White	Yellow
General Foreman	White	Yellow
Foreman	Orange	Yellow
Crafts	Yellow	Orange
Rigger	Yellow	Red
Emergency Responders	Blue	Blue

TEMPLATE

5.2 FIRE PREVENTION AND PROTECTION

The fire prevention and protection program intends to ensure that a fire does not occur, cause an unacceptable onsite or offsite release of hazardous material, or threaten worker health or safety, public health or safety, or the environment.

The Project Lead will:

- Document project requirements regarding storage and use of flammable liquids and gases
- Enforce the implementation of the fire prevention and protection program
- Provide approved containers for flammable liquids and cloths, rags, and waste soaked with flammable liquids
- Inform the building manager/client in advance of planned tests, inspections, and modifications or maintenance activities that could result in impairment of fire protection systems
- Prohibit smoking in areas where fire hazards may exist and install "No Smoking" signs
- Investigate and take corrective actions to prevent the recurrence of fires
- Designate and ensure training of workers for each area to be responsible for implementing necessary elements of this program and to perform monthly fire protection checks
- Report all fires to the onsite or client fire department if one exists

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- Report unplanned or emergency fire protection system or equipment impairments to the building manager/client

The EHS Project Lead will:

- Study and confirm that Client emergency plans adequately protect Gridworks workers in the event of a fire
- Coordinate the fire prevention and protection program
- Participate in fire incident investigations
- Act as the technical fire protection contact
- Retain a basic understanding of the fire protection systems and provide fire prevention inspection briefings, as requested, to building managers or their designees

Supervision will:

- Limit accumulation of combustible materials to the quantity required for current needs
- Ensure trash and rag containers are emptied daily
- Develop specific fire protection checklists that incorporate applicable systems in conjunction with the EHS Project Lead
- Conduct fire inspections
- Ensure findings of inspections are promptly mitigated

TEMPLATE

Workers will:

- Not block fire lanes
- Smoke only in designated areas
- Separate combustibles from ignition sources
- Minimize indoor stockpiles of combustible construction materials
- Dispose of empty crates and containers as soon as possible
- Use noncombustible or fire-retardant materials whenever possible
- Conduct welding, cutting, burning, and other heat-producing activities in accordance with the Hot Work (Welding, Cutting, and Burning) requirements
- Install electrical wiring and equipment in accordance with applicable standards
- Report potential fire hazards to their immediate supervisor or the area monitor
- Immediately report fires by activating a fire alarm pull box and calling the emergency line
- Notify their immediate Supervisor of any fires
- Utilize fire extinguishers as trained if a fire occurs

5.1.1 Portable Fire Extinguishers

Fire extinguishers are considered first-response devices designed for use on small fires.

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A fire extinguisher rated not less than 3A will be provided for every 3,000 square feet (270 square meters) of protected building area and in each yard storage area. The travel distance to any fire extinguisher will not exceed 75 feet (22.9 meters) (or as designated by the authority having jurisdiction) from any protected area inside or outside a building.

Extinguishers rated at least 10B will be provided within 50 feet (15.2 meters) of any area in which more than 5 gallons (19 liters) of flammable liquids or 5 pounds (2.3 kilograms) of flammable gas are being used. This does not apply to motor vehicle fuel tanks.

Carbon tetrachloride extinguishers are prohibited.

Extinguishers will be conspicuously located and marked, readily accessible, and immediately available in case of fire. Extinguishers will be installed on hangers or in the brackets provided, and at the appropriate height according to the authority having jurisdiction.
Fire extinguishers required during work or scaffolds will be readily available (within reach) to the workers.

TEMPLATE

Fire extinguishers will be inspected when initially placed into service, monthly thereafter, and more frequently as required. The following items will be verified through inspection:

- The extinguisher has a designated location
- Integrity of the extinguisher's mounting
- The extinguisher is visible
- Extinguisher is accessible
- Operating instructions on the nameplate are legible and facing outward
- Safety seals and tamper indicators not broken or missing
- Fullness as determined by weighing or "hefting"
- The extinguisher has no obvious signs of physical damage, corrosion, or Leakage
- Hose is in good condition
- Nozzle is in good condition
- Pressure gauge reading or indicator is in the operable range or position
- Tires, wheels, and carriage in good condition (for units with wheels)
- Comprehensive maintenance has been performed in the last 6 years (the date of the last hydro-comprehensive maintenance or the date the unit was placed into service – date is usually found on a label on the case)
- Hydrostatic test has been performed in the last 12 years (the date of the last hydro or the date the unit was placed into service – date is usually found stamped into the case or on a label on the case).

Durable inspection tags will be securely attached to the extinguishers. They will provide the inspection date, maintenance test, recharge date, and the initials or signature of the person who performed the inspection.

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Stored pressure fire extinguishers that require 12-year hydrostatic testing will be emptied every six years and subjected to applicable maintenance procedures.

A discharged fire extinguisher will be immediately removed from service.

5.3 HOUSEKEEPING

Supervision will periodically inspect each work area to ensure the housekeeping expectations are met.

Supervision assumes overall responsibility for housekeeping. Work areas will be kept clean to the extent the nature of the work allows, including, but not limited to:

- Maintaining organized and uncluttered work areas and work surfaces
- Preventing the accumulation of trash, waste materials, debris, and other tripping hazards
- Leaving areas in a safe condition before leaving the work area for break, lunch, shift, etc.
- Providing safe access to and from the work area
- Replacing barricades or safety chains
- Removing tools and other items from walkways
- Arranging materials stably so that they do not protrude into walking surfaces
- Placing materials stored above work surfaces back from edges or behind protective barriers to protect workers below
- Cleaning the work area after completion of a job
- Cleaning and sweeping in a manner that minimizes the contamination of the air with dust or particulate matter
- Maintaining floor/walking surfaces in a dry condition as far as practicable
- Cleaning up spills or mark the area with safety barricades until the spill can be cleaned up
- Ensuring that the work area does not pose a risk to people who may enter the area
- Micro trash in all areas will also be kept at bay.

TEMPLATE

When it is necessary that items must span walking and working surfaces, proper methods of support and/or protection will be used. Hoses and electrical conductors that cross aisles or passageways must be covered or suspended overhead so that they do not pose a tripping or entanglement hazard.

Floors, working surfaces, and passageways will be kept free from protruding nails, splinters, loose boards, and openings.

Exits, fire alarm boxes, fire extinguishing equipment, electrical disconnect panels, and other emergency equipment must be kept clear of obstructions at all times.

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Littering anywhere on the Project or Client property is prohibited, and subject to disciplinary action.

5.4 BARRICADES, SIGNS, AND TAGS

Worker failure to comply with safety signs, tags, or barricades will result in appropriate disciplinary action in accordance with the Disciplinary Process requirements of this Project EHS Plan.

5.4.1 Barricades

Barricades are required in accordance with Excavation, Trenching, and Shoring and Fall Protection, edges of platforms, and certain types of overhead work.
Barricade tape will be accompanied with signs or tags to clearly communicate the hazard and include the following:

- Date placed
- Name of supervisor who placed the barricade
- Hazards associated with the barricade

TEMPLATE

Tags will be removed after the condition that prompted their placement is resolved.

As soon as hazards have been mitigated barricade tape and signs will be removed by the person, or supervisor of the person, who placed them. This action will reinforce the importance of barricades, improve access, and reduce clutter.

Warning Barricades

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Warning barricades will serve to alert personnel in the area that a hazard is present, but offer no physical protection.

Warning barricades will be set back 6 feet (1.8 meters) minimum from the hazard

- If 6 feet (1.8 meters) is not feasible, a protective barricade should be used
- If the hazard is a potential fall of 6 feet (1.8 meters) or more, refer to the Fall Protection requirements section of this Project EHS Plan.

Barricade Tape

Barricade tape will be of a color or combination of colors that convey the appropriate level of hazard. Refer to figure below.

BARRICADE TAPE COLOR	PURPOSE	ENTRY PERMISSION	USES
Yellow/Black	Caution to indicate to workers that a potential hazard exists	No permission required	Excavation 1 to 4 feet (0.3 to 1.2 meters) in depth Identification of trip hazards and low-hanging objects Material storage on the site
Red	Danger and that a potential serious hazard may be present	Assigned Workers Workers with barricade owner permission	Overhead work Live electrical components Scaffold under construction Around the swing radius of equipment with a rotating superstructure Excavations 4 feet (1.2 meters) or more in-depth Equipment under commissioning control
Magenta (Purple) and Yellow	Dangers associated with radiation and that possible exposure may be present	Assigned Workers Workers with barricade owner permission	X-ray work being performed

TEMPLATE

Barricade tape will be installed to enclose the specific area to be protected. In general, passageways will not be blocked. If passageways or accessways will be blocked, coordinate with Project Management for possible alternatives.

Tape will be installed in a secure and neat manner that will maintain a height of between 40 and 45 inches from the floor or ground surface.
"Hurricane" fence (or equal) is required for areas accessible to the public.

5.4.2 Signs

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Signs will be placed in strategic and prominent locations to warn against hazard, or in combination with barricade tape/fencing.

Danger signs will be used where a serious hazard exists. Danger signs have a predominantly red upper panel with black outlined borders and a white lower panel for additional lettering.

Caution signs will be used to warn against potential hazards or to caution against unsafe practices. Caution signs are predominantly yellow with a black upper panel and borders and a lower panel for additional lettering.

TEMPLATE

5.4.3 Tags

Danger tags are used for warning workers of defective tools or equipment.

Danger tags will not be used as a substitute for signs.

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5.5 MANUAL HANDLING

Manual handling operations include transporting or supporting a load, including lifting, lowering, putting down, pushing, pulling, carrying, or moving by hand or by bodily force.

Workers have a duty to make full and proper use of any information, tools, or services provided by an employer in connection with manual handling.

Project Lead will verify that tasks will be assessed for the risk of injury or harm from manual handling.
The Project Lead will verify that tasks involving hazardous manual handling are identified before:

- Tasks involving manual handling are undertaken for the first time in the workplace
- Alterations are made to objects used in a workplace or to systems of work that include a task involving manual handling, including a change in the place where that task is carried out
- New or additional information about hazardous manual handling being associated with a task becomes available
- An occurrence of a musculoskeletal disorder in a workplace is reported by, or on behalf of, a worker.

TEMPLATE

5.6 TOOLS, EQUIPMENT, AND SHOP FACILITIES

No modifications or additions that affect tool capacity or safe operation will be made without the manufacturer's written approval. If the manufacturer will not approve modifications or changes, written approval from a registered professional engineer or the EHS Project Lead may be considered. If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals will be changed accordingly.

Hazardous materials used in the workplace will be stored in approved safety cans and inside flammable storage containers when not in use. Only a one-day supply will be permitted in the work area outside of an approved storage cabinet.

Equipment subject to tipping over or moving (vibrating) off tables will be secured to prevent movement.

Warning signs or labels will be placed on equipment as required for safe operation, including wearing the appropriate PPE.

Operational safety interlocks will be used on all equipment as required (such as power brakes/presses, shears, and drill presses).

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Workers will not be permitted behind equipment without the operator's knowledge until the equipment is shut down.

Supervision will ensure that hand and portable power tools covered by this program are:
Inspected before use

- Tagged, or if found defective, identified as defective and turned in for repair or replacement
- In conformance with manufacturer's specifications and equipped with required guards
- Disconnected from their energy source when relocating the tool to a new work area, changing attachments, or conducting repairs/maintenance on the tool
- Not hoisted or carried by attached hoses or electrical cords
- Used with appropriate eye, face, hand, foot, hearing, and respiratory protection
- Connected to ground-fault circuit interrupter (GFCI) / Residual Currency Device (RCD)
- Supervision will ensure that hand tools are maintained and used properly and that:
- Workers keep hands and other body parts clear of the point of operation (blade, bit, etc.) at all times while the tool is connected to its energy source.
- Wrenches with sprung jaws are not used.
- Impact tools (such as drift pins, wedges, and chisels) are kept free of mushroomed heads.
- Portable power saws and grinders are equipped with approved blade or wheel guards.
- Blades and wheels have the proper rating and revolutions per minute for the tool.
- Wooden handles of tools are kept free of splinters or cracks and are kept tight in the tool.
- Workers using hand and power tools exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists vapors, or gases are provided with particular PPE necessary to protect them from the hazard.
- Damaged and mis-operating equipment is tagged out of service and not to be used until repaired.

TEMPLATE

Supervision will ensure that portable electrical tools are:

- Double-insulated or grounded in accordance with the Electrical requirements.
- UL-listed, 115 or 220-volt AC or AC/DC marked accordingly by the manufacturer.
- Equipped with a constant pressure switch that shuts off power when the operator releases pressure.
- Hand-held power grinders with wheels 2 inches (5.1 centimeters) or less in diameter, and routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jig saws with blade shanks ¼ inch (0.6 centimeters) wide or less, may be equipped with a positive "ON-OFF" switch.

Supervision will ensure that portable pneumatic tools are equipped with:

- A tool retainer to prevent the tool from being ejected

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  - A safety device on the muzzle nailers and staplers that operates at more than 690kPa (100 psi) pressure and has an automatic fastener feed to prevent unexpected ejection of the fasteners
- A pressure reduction device to prevent hoses with an inside diameter of ½ inch (1.3 centimeters) or greater from whipping in the event of hose failure
- A "Deadman" switch
- A positive means to secure the tool to the hose or whip to prevent the tool from becoming accidentally expelled

Supervisors will ensure that:

- Operators of power-actuated tools are qualified (and "licensed" if applicable) in accordance with the manufacturer's instructions and that qualification is documented.
- Power-actuated tools and loads are locked in a container, stored in a safe place when not used, and accessible only to authorized workers.
- Tools are operated in strict accordance with the manufacturer's instructions. Only the types of fastener and powder loads recommended by the tool manufacturer are used.
- Potential exposure to lead is assessed in accordance with the Lead section.
- Workers working with grinding machines, cut-off machines, or other applications for abrasive wheels are trained in their safe operation and maintenance.
  - 9-inch (22.9 centimeter) or greater grinders are prohibited.
- Rotating tools and equipment missing shields and gards are to be tagged out of service and not used until repaired.
- Disciplinary action is taken with employees that remove protective guards from tools and equipment.

TEMPLATE

Workers using powder-actuated tools will:

- Inspect and test the tool in accordance with the testing methods recommended by the manufacturer to determine if it is in proper working condition before use.
- Verify what is on the other side of the material(s) being fastened.
- Confirm the line of fire to ensure that no one may be struck if the fastener penetrates completely through the work surface before driving a fastener.
- Use the correct shield, guard, and/or attachments specified by the manufacturer.
- Not drive fasteners into very hard or brittle materials, including cast iron, glazed tile, hardened steel, glass block, natural rock, hollow tile, or face brick.
- Not drive fasteners into easily penetrated materials or materials of questionable resistance unless backed by a material that prevents the fastener from passing completely through the other side.
- Not load tools until just before the intended firing time.
- Not point loaded or empty tools at any person.
- Keep hands clear of the open barrel end.

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- Hold the tool perpendicular to the work surface when fastening into any material, except for specific applications recommended by the tool manufacturer.
- Holds the tool firmly against the work surface for a period of 30 seconds and then follows the explicit instructions set forth by the tool manufacturer in the event of a misfire.
- Post a sign that reads “POWDER-ACTUATED TOOL IN USE”, or similar, in plain sight that meets the following criteria:
- Not use in an explosive or flammable atmosphere.
- Verify that tools are inspected, cleaned, maintained, and tested after each 1,000 fastenings.
- Documentation of each inspection, cleaning, and testing is retained in the workplace.
- Handle and dispose of cartridges according to the SDS when misfired.

Workers using abrasive wheels and tools will:

- Handle and store in a manner that prevents damage to the wheels.
- Abrasive wheels to be placed in a manner that prevents foreign material such as dirt from collecting on them.
- Not modify or alter abrasive wheels and the mounting hardware or components of machines on which they are mounted.
- Use the correct size and type of abrasive wheel for the machine on which they are to be mounted and for the work to be performed.
- Ring test abrasive wheels before mounting, and visually inspect before use daily.
- Run new wheels after mounting for a minimum of 1 minute at full speed before work is applied or workers stand in front of, or in line with, the wheel.
- Ensure that guards are in place. Willful removal of

TEMPLATE

5.7 EXCAVATION AND TRENCHING

An excavation is any man-made cut, cavity, or depression in the Earth’s surface formed by earth removal.
A trench is defined as a narrow excavation (in relation to its length) made below the ground's surface.

The Project Management Team will issue a Ground Disturbance Permit before the start of workto subcontractors performing the activity. A request for underground utility locate must be completed by contqacting 811 prior to requesting a Ground IDsturbance permit from the Project Management Team.

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Workers will not work in excavations in which there is accumulated water or where water is accumulating unless adequate precautions have been taken to protect workers against the hazards of water accumulation.

A Competent Person will monitor the removal activities to ensure proper operation If water accumulation is controlled or prevented by water removal equipment.

Each worker in an excavation will be protected from cave-ins by adequate and approved protective systems.

Protective systems will resist all intended loads or could reasonably be expected to be applied or transmitted to the system.

All excavations' sides, slopes, and faces will be scaled, benched, rock-bolted, wire-meshed, or secured by other approved equally effective means. Portable boxes or sliding trench shields may be used instead of shoring or sloping. Such boxes or shields will be of strength at least equivalent to the sheeting or shoring required for the composition of the soil or material in which the trench is being made.

TEMPLATE

All trenches and excavations 4 feet (1.2 meters) or deeper will be assessed regularly for designation as confined spaces in accordance with the Confined Space requirements of this Project's EHS Plan. Designation, monitoring, emergency preparedness, etc., will be implemented based on entry permit requirements.

Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation will be tested before workers enter excavations greater than 4 feet (1.22 m) in depth.

In trenches, 4 feet (1.2 meters) or more in-depth, ladders, steps, ramps, or other safe means of access/egress will be provided and located to require no more than 25 feet (7.6 meters) of lateral travel for workers. If ladders are used, the ladder will extend 3 feet (.9 meter) above the original surface of the ground and will be secured.

Workers will be protected from excavated or other materials and equipment that could pose a hazard by falling or rolling into excavations. Protection will be provided by placing and keeping such materials or equipment at least 2 feet (0.68 meters) from the edge of the excavation, by using retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by combining both.

Excavation areas, as well as adjacent areas, will be inspected by a Competent Person before work starts on every shift, after every rainfall, as soil conditions change, and as needed throughout the shift where worker exposure can be reasonably anticipated

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5.8 HOT WORK

Before starting hot work operations, a hot work permit and Area Assessment will be completed and signed by a Hot Work Authorized Permit Issuer and the Hot Work Supervisor.

Workers will perform hot work operations in a designated hot work area unless the task requires it to be performed in an operational/construction environment (non-designated hot work area).

Before the commencement of hot work operations, supervision will be completed, and an area assessment will be performed where hot work is to take place.

During the Area Assessment, the Supervisor will:

- Survey the area to identify combustible materials and hazardous areas at the worksite and prepare the worksite for the job.
- Material that ignites and burns is considered combustible. The most common materials likely to become involved in the fire include:
    - Combustible building construction, such as floors, partitions, and roofs
    - Combustible groundcover such as grass and brush
    - Combustible contents such as wood, paper, textiles, plastics, chemicals, and flammable liquids and gases

    - Perform one of the following actions if combustibles are present in the work area:
        - Relocate the job.
        - Move the combustible materials at least 35 feet (10.7 meters) away from the work.
        - Protect the combustible materials within 35 feet (10.7 meters) of the work by using non-combustible/FR covers, shields, or blankets or, if appropriate, wet the materials.

- Provide a trained and dedicated Fire Watch person for each hot work job and ensure that they know (only when applicable)
    - Area to be watched
    - Potential fire hazards (to personnel and property)
    - Appropriate emergency procedures and actions
    - Methods for sounding the alarm(s)
    - Process for manually activating fire suppression systems
    - Location of the portable fire extinguisher
    - Must remain in the area for 30 minutes after hot work has been completed.

- Provide the fire watch/standby person with a fully charged and operable fire extinguisher and/or other extinguishing agent(s) appropriate for conditions as specified on the hot work permit.
- Ensure that the necessary workers are ready to begin work

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Prior to the commencement of hot work operations, hot work personnel will verify:

- Hot work equipment used (such as torches, regulators, pressure-reducing valves, and manifolds) is listed or approved by a nationally recognized testing laboratory for the intended use.
- Oxygen-fueled gas systems (such as oxygen/acetylene welders) have listed or approved backflow valves, flash arrestors, and pressure relief devices.
- Combustibles in contact with the metal are protected from ignition caused by ambient heat conduction, or that they are too far from the heat source to be a risk if the hot work is performed on pipes or other metal.

5.9 WORKING AT HEIGHT

Supervisors responsible for planning work will consider eliminating fall hazards or substituting work methods with those that pose no exposure to fall hazards when feasible.

Workers will use guardrail systems as the primary fall prevention system for walking/working surfaces and similar locations.

Workers will guard wall openings and open-sided platforms as soon as practical during construction.

Supervisors provide stairs, ladders, or ramps for elevated areas that are used routinely.

TEMPLATE

5.9.1 Personal Fall Arrest Systems

Workers will wear a PFAS when engineered barriers/administrative controls are not feasible or when directed by pre-job planning as an added layer of protection.

A PFAS consists of three components: A Class III full-body harness with a deceleration device (such as a shock-absorbing lanyard or inertia reel) attached to a suitable attachment point.

All components of a PFAS must have a minimum breaking strength of 5,000 pounds (22.2 kN).

Each harness and lanyard will have a label that displays the manufacturing date. If this label is missing, illegible, or torn, the harness shall be taken out of service and destroyed.

The Harness and Lanyard should not be used beyond the manufacturer's specified date.

A Competent Person will inspect out-of-date equipment and destroy out-of-date harnesses and lanyards that do not pass inspection.

Workers shall inspect all components of the PFAS before each use.

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Lanyards used in PFAS will be designed and used to limit a person's fall to no more than 6 feet (1.8 meters). The lanyard or reel will be attached to a suitable anchorage at all times while the person is in an exposed position. At times, this requirement may necessitate the use of 2 lanyards so that one can be left attached while the second is being moved to the next anchorage, otherwise known as "100% tie off".

Safety harnesses and lanyard assemblies can withstand a tensile loading of 5,000 pounds (22.3 kgs) force without cracking, breaking, or taking a permanent deformation.

PFAS components will be used only for the worker's protection and not for hoisting materials unless approved by the manufacturer. Conversely, equipment and components used for hoisting materials cannot be used for fall protection.

Workers will remove from service PFAS equipment exposed to impact loading. Additionally, any harnesses and Lanyards shall be taken out of service and destroyed if any of the belts, loops, lugs are damaged or modified.

PFAS shall not be used if the belts or harnesses are soaked with oil or covered with paint.

TEMPLATE

5.9.2 Lanyards

Workers will use lanyards that meet the following requirements:

- The maximum length of a lanyard is 6 feet (1.8 meters) in length, and it will be equipped with self-locking hooks on each end
- Snap hooks will be of a double-locking design to prevent accidental disengagement
- The lanyard will be equipped with an energy absorber
- Knots will not be tied in a lanyard (knots reduce the strength of the lanyard)

Lanyards will:

- Be secured and attached to the harness to prevent tripping when not in use
- Not be dragged
- Not be hooked back to their self unless designed for that purpose

5.9.3 Retractable Lifelines

Workers will use retractable lifelines under the following conditions:

- The worker has been trained to use a retractable lifeline correctly
- The retractable lifeline is being used in conjunction with a complete fall-arrest system
- The system is configured as per manufacturers specifications

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- The equipment is being inspected and serviced as required under the manufacturers and site-specific maintenance program
- The equipment has passed a pre-use inspection
- Only one worker uses a retractable lifeline at a time

5.9.4 Training

A Competent Person will train workers potentially exposed to fall hazards prior to issuance of personal fall protection equipment, or participation in work with fall hazards mitigated by administrative controls.

Training will be documented according to Training and Orientation section of this Project HSE Plan. Training includes (at least) the following topics:

- General requirements of Fall Protection
- Recognition of fall hazards
- Nature of fall hazards
- Correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used to include review of manufacturer literature or product information sheets
- Use and operations of guardrail systems, PFAS, warning-line systems, safety monitoring systems, controlled access zones, and other protection used
- Anchoring and attachment techniques
- Limitations on use of mechanical equipment during work on low sloped roofs
- Correct procedures for handling and storage of equipment and materials, and the erection of overhead protection
- Role of workers in fall protection work plans

TEMPLATE

5.10 PORTABLE LADDERS

Ladders will:

- Be designed and constructed to a recognized international standard
- Have rungs and steps that are:
  - Slip-resistant by design or coated with a skid-resistant material
  - Fixed to prevent turning or rolling when stepped on

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    - Uniformly spaced as follows:
        - Portable ladders are 10 to 12 inches (25.4 to 30.5 centimeters)
        - Step stools are 8 to 12 inches (20.3 to 30.5 centimeters)
- Have safety feet equipped with nonslip bases to help prevent slipping
- Have components with smooth surfaces to prevent punctures lacerations, and to prevent snagging clothing
- Have metal spreaders or locking devices on stepladders to hold the ladder in an open position during use
- Fiberglass ladders must not be painted for they can cover cracks and prevent dull inspection. Painted ladders shall not be used on site

5.10.1 SELECTION

TEMPLATE

Workers will select ladders that are:

- The right height for elevated work
- Specifically rated and designed for the task

Ladders will be selected as to not interfere with performance of the work.

The following types of ladders are prohibited:

- Wooden or aluminum ladders
- Straight ladders longer than 20 feet
- Extension ladders longer than 30 feet when fully extended

5.10.2 INSPECTION

Ladders will be inspected monthly, pre-use, and when conditions change (such as being dropped, or moved from a dirty area to a clean area).

A Competent Person will perform a general inspection of ladders for visible defects at least once each month, and following any occurrence that could affect the safe use.

Workers will inspect ladders for the following before use:

- Broken or missing rungs, cleats, or steps
- Bent, broken, or split side rails
- Corroded or missing components
- Worn bolts, rivets, and the holes in the ladder where the bolts or rivets pass through
- Mechanical features
- Ropes on the ladder (fraying, wear, or weather-damaged)
- Feet (range of motion)

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- Bent or damaged extension ladder latches or stepladder locking braces
- Missing ladder ratings labels

When deficiencies are noted:

- Immediately remove defective ladders from service and tag with “DANGER – DO NOT USE”
- Destroy ladders destined for disposal

5.11 AERIAL LIFTS AND ELEVATING WORK PLATFORMS

Aerial lifts and elevating work platforms (hereafter referred to as lifts) are used for equipment that provides a guard-railed platform for personnel to work in elevated locations (such as scissors lifts, articulating boom lifts, and truck-mounted lifts).

TEMPLATE

A Competent Lift Operator will perform an initial documented inspection of lifts received for use through purchase, contract obligations, or rental to verify that there are no mechanical defects or safety deficiencies before use.

A Lift Operator will perform a daily documented inspection before use. If any deficiencies are found, the lift must be immediately tagged out of service.

The Lift Operator will terminate operation and contact supervision if a lift becomes deficient during operation.

Lift Operators will wear a full-body harness and lanyard and attach them to an approved anchorage on the lift's boom or basket.

Lift Operators will use fall protection in scissors lifts when the manufacturer has provided a designated anchorage point and has specified in the operating manual that fall protection is required.

Lift Operators will not attach fall protection system lanyards to an adjacent pole, structure, or equipment while in a lift.

All lifts must contain the manufacturers document box while in operation

Lift Operators and Ground Observers will control the area where lift operations are conducted. Lift Operators will provide safety barricades around lifts operated in restricted areas, in accordance with the Barricades, Signs, and Tags requirements of this Project EHS Plan, so that personnel cannot be caught between rotating equipment and adjacent fixed objects.

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5.12 CRANE OPERATIONS AND RIGGING

5.12.1 CRANE OPERATOR

The site will validate that Crane Operators have received the required certification and qualification to safely operate the make, model, and boom configuration (such as main boom, fixed jib, and luffing jib) of each specific crane they are assigned to operate.

Government, union-sponsored apprenticeship programs or military craft training can be accepted. In such cases, the Crane Operator will present a signed and dated certificate of graduation from the respective training program on the organization's "letterhead" or a wallet card to the Crane Operator Skills Assessor for verification. The Site Manager may elect to require additional formal training or testing.

Crane Operators will possess training and licenses/certifications from an external (3rd party) source such as the National Commission for the Certification of Crane Operators (NCCCO) or the National Center for Construction Education and Research (NCCER).

Crane operator credentials shall be submitted with the crane lift package as described below.

Crane and rigging equipment will be used in accordance with the manufacturer's load limits and operating instructions. In the absence of the manufacturer's instructions, a qualified engineer will provide direction.

Crane and rigging equipment structural support, stability, and environmental operating conditions will be in accordance with the manufacturer's recommendations or per qualified person evaluation.

The Lift Supervisor will suspend operations if changes or conditions occur that would cause a deviation from the approved plans and/or permits.

The Lift Supervisor will shut down lift operations if the equipment is not in proper working condition. Operations will not proceed until hazards or concerns are rectified and the safe operation of the equipment is assured.

A Qualified Rigger will assist the operator in moving and setting up load-handling equipment.

A Qualified Rigger will be required when workers are hooking, unhooking, guiding a load, or making the initial connection of a load to a component or structure. All lifts covered by this plan must have at least one Qualified Rigger present during lifting activities.

A Competent Signal Person will be assigned to communicate with the Crane Operator(s) throughout all stages of the rigging and lifting process.

The Signal Person will not perform other roles such as Rigger.

The Signal Person will consult Qualified Rigger for cases beyond their knowledge.

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Crane Operators will refuse to initiate a lift if there is reason to believe the lift may be unsafe.

Once the concern(s) have been reported to supervision and the hazards are rectified, the crane may operation may proceed.

Lifts will not be made in winds that exceed the manufacturer's recommendation, or in winds 20 mph or greater.

5.12.2 Qualified Rigger

The Qualified Rigger will meet the definition of a Competent Rigger and have an accredited external (3rd party) organization certification. The Qualified Rigger will also have the experience that aligns with the scope of the project's rigging activities.

The Qualified Rigger will possess a thorough understanding of:

- Rigging hardware capacities
- Operation, capabilities, and limitations of cranes
- Crane dynamics involved in swinging, raising, lowering, and stopping loads
- Hand, voice, and other types of signals associated with crane functions
- Pre-use inspection of wire rope and other rigging equipment
- Problem solving related to rigging loads
- Effects on loads caused by boom deflection while hoisting loads

TEMPLATE

The Project Management team will approve training and licenses/certifications from an external (3rd party) source that is recognized, accredited, and approved by such as the NCCCO or NCCER.
Rigger credentials must be submitted with the crane lift package as described below.
Rigging equipment or hardware (rigging) will be inspected initially, quarterly, monthly, and before each use. Rigging equipment includes, but is not limited to slings, shackles, lashing, lifting attachments and accessories, cranes hooks, etc.

Motor vehicles and unauthorized workers will not access areas associated with a heavy rigging or transport activity.

5.12.3 CRITICAL LIFTS

A documented Critical Lift Plan must be submitted for review and approval at least 15 working days before the lift date.

Critical Lifts are described as follows:

- Loads 75% of single crane capacity or greater

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- Any part of the crane or load within 33' of energized power lines
- Tandem Lifts

Standard Lift Plans must be submitted ten days before the lift date for review and approval. Lift plans must be detailed and include comprehensive erection drawings that define all major elements of the lifting and rigging activity, including the following:

- Total weight to be lifted, including load blocks and rigging hardware
- A scale plan view showing the locations of lifting equipment, lifted items, and their relationship with any potential obstructions
- A scale elevation view that shows the relationship and clearances between the lifting equipment, lifted items, and potential obstructions
- Lifting and tailing hookups, including shackle, sling, and spreader bar sizes, lengths, and capacities
- A description of the configuration of the cranes indicating model number, boom length, boom type, auxiliary counterweights, parts of load line, jib, length, type, offset, etc.
- Crane capacities based on the actual working radii and the crane configuration
- A description of the placement of crane mats, guy lines, earth fill, or any other items required for the safe execution of the lift
- A description of any "holds" that must be placed on existing plant structures or equipment that would interfere with the lift plan
- Copies of relevant sections from load charts and manufacturer's information, such as weight of load blocks, travel/swing restrictions, etc., specific to the actual crane/load handling equipment being used
- A detailed written description that adequately describes any part of the lift not made clear by the drawings
- Documentation for any special design rigging equipment such as spreader bars, lifting lugs, etc. that states the:
    - Design code used for the design and fabrication of such items
    - Working load limits, and any restrictions to angles of slings or other operational parameters that need to be followed

TEMPLATE

5.12.4 Documentation

The following documentation (as a minimum) will be stored in the crane during operation:

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- Completed pre-shift inspection
- Most recent Annual Crane Inspection
- Operating manual
- Load chart (printed or electronic – shall correspond with the configuration and serial number of the crane it is being applied with)
- Critical lift permit(s) and any associated rigging drawings

This information will correspond with the configuration and serial number of the crane it is being applied.

5.13 POWERED INDUSTRIAL TRUCKS (FORKLIFTS)

TEMPLATE

Forklift Operators will provide evidence of training, qualifications/certifications, and proficiency where a nationally recognized license or certificate is required.

Minimum qualifications of a Forklift Operator include, but are not limited to:

- Possess a valid state/country driver's license
    - All restrictions of the potential Forklift Operator's driver's license are applicable to operating forklifts
        - Project EHS will be advised of any change to the status of a Forklift Operator's license (such as cancellation or suspension).
        - The Forklift Operator will not operate forklifts for the project after his/her state/country driver's license is suspended, revoked, or otherwise affected.
    - A copy of the license will be maintained in the worker's personnel file
- Be designated by the Project Lead to drive
- Be mentally alert and possess the physical ability to operate a forklift safely
- Display a responsible attitude

In addition, Forklift Operators may also be required to attend additional training or successfully pass a skills test/performance evaluation before being assigned duties as a forklift operator.

Where a nationally recognized license or certificate is not required, Forklift Operators will successfully complete a training or retraining program conducted by a trainer knowledgeable and proficient on the operation of the forklift the employee is to operate before being assigned the work.
A Competent Forklift Operator will perform a periodic documented inspection.

A Forklift Operator will perform a daily documented inspection prior to use.

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The Forklift Operator will terminate operation and contact supervision if a forklift becomes deficient during operation.

Forklifts must contain the mfr's document box or pouch while in operation.

Forklift operations in congested areas will require the use of a spotter.

5.14 MOTORIZED HEAVY EQUIPMENT

Motorized heavy equipment (hereafter referred to as equipment) includes, but is not limited to the following:

- Backhoes
- Bulldozers
- Concrete pump trucks
- Creter cranes
- Dump trucks
- Earth movers
- Excavators
- Front-end loaders
- Hydraulic excavators (Grad-all)
- Road graders
- Rollers/compactors
- Scrapers (pans)
- Service/re-fueling trucks
- Skid-steer loaders
- Tractors
- Trucks 2 tons (gross vehicle weight) or greater
- Vehicle Mounted Air tuggers
- Vibrating compactors
- Water carts/trucks

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Training as required herein is considered supplemental for motorized heavy equipment controlled by more specific requirements

Heavy Equipment Operators will provide evidence of training, qualifications/certifications, and proficiency where a nationally recognized license or certificate is required.

Heavy Equipment Operators will be trained, assessed, and authorized as competent before performing required tasks on respective equipment/vehicles. Assessments will be completed in accordance with the relevant national standards.

Minimum qualifications of a Heavy Equipment Operator include, but are not limited to:

- Possess a valid state driver's license

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    - All restrictions on the potential Heavy Equipment Operator's driver's license apply to operating forklifts
        - Project EHS will be advised of any change to the status of a Heavy Equipment Operator's driver's license (such as cancellation or suspension)
        - The Heavy Equipment Operator will not operate equipment for the project after his/her state/country driver's license is suspended, revoked, or otherwise affected
- A copy of the license will be maintained in the worker's personnel file
- An operator will have the appropriate endorsement for the type of equipment being driven
- Be designated by the Project Lead to drive and Provide evidence of training, qualifications and/or certifications
- Where a state/nationally recognized license or certificate is not required, the Project will comply with Motorized Heavy Equipment Training and Authorization

Heavy Equipment Operators may also be required to attend additional training or successfully pass a skills test/performance evaluation before being assigned duties as an Heavy Equipment Operator.

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5.14.1 Equipment

Overhead guards and Roll Over-Protection Systems (ROPS) are required.
Equipment will be equipped with the following:

- Operator's manual
- Pre-start checklist record booklet or forms
- Functioning back-up alarm
- Functioning horn
- Seat belt
- Fire extinguisher
- Spill kit
- First Aid Kit
- All manufacturer required/installed safety devices, such as:
    - Warning lights
    - Operator cab glass (Clean and clear of chips/cracks)
    - Electronic overload protection
- Rated capacity plates are attached

Equipment will not be operated without fully functional safety devices.

Motorized heavy equipment will be equipped with Roll Over Protective Structures (ROPS). ROPSs will meet minimum performance requirements of applicable regulations, codes,

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and standards. Equipment with ROPSs will also be equipped with seat restraints to be worn by the operator while the unit is in operation.
All equipment being mobilized to site must be registerd on Gridworks Hammertech app. Once mobilized to site, equipment must be inspected by Gridworks EHS team prior to use.
When heavy equipment is backing up or working in congested areas, spotters are required to assist the operator. Spotters must maintain a minimum distance of 15 feet from any piece of equipment.

5.15 ELECTRICAL SAFETY

The application includes workers whose activities create a higher-than-normal risk of contact with electrically energized parts of at least 50 volts. Workers face a "higher than normal" risk of contact if they are intentionally exposed to energized parts, whether they are classified as "electrical workers" or not.

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Supervision will confirm that energized electrical conductors and circuit parts are in an electrically safe work condition (ESWC) before performing work when the following conditions exist:

- The worker is within the Limited Approach Boundary
- The worker interacts with equipment where conductors or circuit parts are not exposed but an increased likelihood of injury from an exposure to an arc flash hazard exists.

Workers will lock, tag, and try conductors and parts of electrical equipment that have been de-energized in accordance with the Hazardous Energy Control (LOTO) requirements of this Project EHS Plan prior to performing work.

Workers will utilize ground fault protection for all temporary wiring installations.
GFCIs will be used on 120 volt, 15 and 20 amp single phase circuits as specified below:

- In damp or wet (standing water) work areas
- Outdoors
- Industrial, maintenance and or construction field, cord and plug applications
- When using portable, electric hand tools with cord/plug connectors
- For receptacles that are not part of the permanent structure wiring (including extension cords)

Workers may use GFCIs or an assured grounding program for receptacles other than 120 volt, 15, 20, and 30 amps.
GFCIs will be used for all circuits on which portable electrical hand tools are used when an assured grounding program is not in place.
Approved GFCIs will be listed and marked by a recognized testing laboratory or the mark of another government-approved agency.

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Extension cords are an acceptable means of extending power provided they do not contribute to overload, are protected from damage, are used with GFCI protection, and are removed when not used.
Extension cords may not be plugged into other extension cords except when allowed by the manufacturer.
Extension cords should be elevated when possible 7' above the walking-working surface, secured with non-metallic straps or hangers to help prevent damage and trip hazards. An option can be to run them along the wall or to secure them with trip strips or molded guards to help prevent damage and minimize tripping hazard potential.

5.15.1 DE-ENERGIZING LIVE PARTS

Exposed energized electrical conductors or circuit parts at 50 volts or greater to which personnel might be exposed will be put into an electrically safe work condition before personnel are exposed to and or work on them unless it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

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If de-energized but not locked and tagged out, or if some exposed components are de-energized while others in the same compartment are not, the working area and the parts will be treated as live electrical work and either put into an electrically safe work condition or guarded, except equipment with a cord and plug that is under the direct control of the worker performing the work.

5.15.2 Work on Exposed Energized Electrical Parts

Only authorized persons will work on electric circuit parts or equipment that have not been de-energized. Workers who work on or near exposed energized electrical parts of 50 volts or more will comply with OSHA regulations 29CFR1920 Subpart S—1920.269 and NFPA 70E (2024) or applicable state codes.

When working on exposed electrical conductors or circuit parts that are or might become energized, it can be demonstrated that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations for reasons indicated in Section 130.2(A) NFPA 70E (2024), and lockout/tagout devices cannot be applied, then Sections 130.2(B) through 130.5 of NFPA 70E (2024) will apply to the work.
An electrical hazard risk assessment will be performed by qualified persons before work is started on or near exposed energized electrical conductors or circuit parts or where an electrical hazard exists, such as provided in Annex F of NFPA 70E (2024).

A shock risk assessment, as specified in Section 130.4, NFPA 70E (2024) , will be performed by qualified persons to determine the voltage to which personnel will be exposed, boundary requirements, and the PPE necessary to minimize the possibility of electrical shock to

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personnel. Approach boundaries for shock hazards are provided in NFPA 70E (2024) Table 130.4(E)(a) & Table 130.4(E)(b) Approach Boundaries to Energized Electrical Equipment.

An arc flash risk assessment conducted by an electrical engineer, as specified in Section 130.5, NFPA 70E (2024), and per IEEE 1584 will be performed, as required. The analysis will determine the arc flash boundary, the incident energy at the working distance, and the PPE that personnel within the Arc Flash Protection Boundary shall use:

5.15.3 Selection of PPE when required for various tasks

Where selected instead of the incident energy analysis of 130.5(C)(1), Table 130.7(C)(7)(A)/(b) and Table 130.7(C)(15)(B) will be used to determine the arc flash PPE category and requirements for the use of rubber insulating gloves and insulated and insulating hand tools for a task. The assumed maximum short-circuit current capacities and maximum fault clearing times for various tasks are also listed in these tables for functions not listed, or for power systems with greater than the assumed maximum short-circuit current capacity or with longer than the assumed maximum fault clearing times, an incident energy analysis will be required in accordance with 130.5(C)(1) of NFPA70E (2024). Table 130.7(C)(15)(c) lists the requirements for protective clothing and other protective equipment based on Arc flash PPE categories 1 through 4.

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5.15.4 Energized Electrical Work Permit

An approved EWP will be required when working within the restricted approach boundary, or when increased likelihood of injury from an exposure to arc flash exists.
The EWP is not required to:

- Perform testing, trouble shooting, and voltage measuring and zero energy checks for isolated systems or components.
- Installation of safety barriers where the risk of electrical shock or burn is unlikely.
-

Applicable PPE will still be required to protect those working inside the arc flash boundary. EWPs will be developed for only the time necessary to complete the work — typically no more than a week, and should never exceed a 30-day period. A new EWP will be processed if the permit expires before work is completed.

5.15.5 Protective Clothing

The electrical system will be analyzed to determine the appropriate category of PPE. Once this has been determined, personnel will maintain and use the PPE.

- Protective equipment will be maintained in a safe, reliable condition.
- Protective equipment will be stored and used according to the manufacturer's recommendation.

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- Protective items that become contaminated with grease, oil, or flammable liquids and combustible materials will not be used.
- If protective equipment certification expires (gloves, mats, and hot sticks) the equipment will be tagged and removed from service until recertified.

Standards for PPE will conform to Table 130.7(C)(15)(c) of NFPA 70E (2024).

Workers exposed to potential arc flash hazards will not wear clothing containing meltable material, such as polyester or nylon, at or inside the arc flash protection boundary unless the clothing meets the requirements of ASTM 1506 or local in-country requirements / authority have jurisdiction. Incidental amounts of elastic in non-melting fabric underwear or socks will be permitted.
Hair and beard nets, ear warmers, and head covers will not be worn unless they are made of arc-rated material.
If the back of a worker's head is inside the arc flash boundary, it will be appropriately protected with an arc rated hood or balaclava depending on the incident energy.
Leather gloves used for arc flash protection <10 cal will be made entirely of .03 inches / .7 mm thick leather. If lined they will be lined with non-flammable / non melting fabric. Greater than 10 cal protection requires voltage rated rubber gloves with leather protectors or arc rated gloves.

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Protective Clothing

Workers within the arc flash protection boundary will wear arc rated protective clothing and other PPE in accordance with the findings of the arc flash risk assessment. Protected areas may include the following:

- Head, face, neck, and chin
- Eyes and Ears
- Full body
- Hand, arm foot and leg

Protective Clothing and PPE (Category 1)

Arc-rated clothing, minimum arc rating of 4 cal/cm2:

- Arc-rated long-sleeve shirt and pants or arc-rated coverall
- Arc-rated face shield or arc flash suit hood
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves
- Leather footwear
-

Protective Clothing and PPE (Category 2)

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Arc-rated clothing, minimum arc rating of 8 cal/cm2:

- Arc-rated long-sleeve shirt and pants or arc-rated coverall
- Arc-rated flash suit hood or arc-rated face shield and arc-rated balaclava
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves
- Leather footwear
-

Protective Clothing and PPE (Category 3)

Arc-rated clothing selected so that the system arc rating meets the required minimum arc rating of 25 cal/cm2:

- Arc-rated long-sleeve shirt (AR)
- Arc-rated pants (AR)
- Arc-rated coverall (AR)
- Arc-rated arc flash suit jacket
- Arc-rated arc flash suit pants
- Arc-rated arc flash suit hood
- Arc-rated gloves
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (ear canal inserts)
- Leather footwear
-

Protective Clothing and PPE (Category 4)

Arc-rated clothing selected so that the system arc rating meets the required minimum arc rating of 40 cal/cm2:

- Arc-rated long-sleeve shirt
- Arc-rated pants
- Arc-rated coverall (AR)
- Arc-rated arc flash suit jacket
- Arc-rated arc flash suit pants
- Arc-rated arc flash suit hood
- Arc-rated gloves
- Arc-rated jacket, parka, rainwear, or hard hat liner (AN)

Protective Equipment:

- Hard hat
- Safety glasses or safety goggles
- Hearing protection (ear canal inserts)
- Leather footwear

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Protective Equipment

Item(s) to be used will be inspected before each use to verify the item is in satisfactory condition and has been tested as required.
Rubber protective equipment (gloves) will be inspected, sterilized, and tested at 6 month intervals.
Hot sticks and voltage rated mats will be tested if they are damaged in any way and or at least every 12 months and date stamped at that time.
Voltage-rated tools will be inspected for defects and surface contamination (such as moisture) before each use. Insulated tools alone will not be relied upon for complete protection.
Workers will be briefed on the use of insulating rubber gloves prior to use. The Checklist for Insulating Rubber Gloves includes basic outline for initial briefings and on the job training.
An AED (automatic external defibrillator) and trained personnel shall be available for EWP work and switching crews. AED and CPR refresher training is required every 12 months for those in the stand by observation role. First aid training is required.

5.12.6 Access

Barricades will be used in conjunction with safety signs where it is necessary to prevent or limit worker access to work areas containing live parts. Conductive barricades will not be used where it may cause an electrical hazard. Barricades will be placed no closer than the limited approach or arc flash protection boundary, choosing the one that provides the appropriate level of protection for both hazards.
If signs and barricades do not provide sufficient warning and protection from electrical hazards, an attendant will be stationed to warn and protect workers. The primary duty and responsibility of an attendant will be to prevent unauthorized personnel from entering the area where exposure to an electrical hazard exists. The attendant will remain in the area as long as the potential for hazard exposure exists.

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5.12.7 Calculating/ Determining Incident Energy

In addition to the shock risk assessment, an arc flash risk assessment will determine the arc flash protection boundary and the amount of incident energy that could be impressed on a worker as a work task is being performed.

A calculated or computed incident energy analysis will provide an installation-specific analysis of the incident energy that a worker would be exposed if an arc flash incident did occur. This focused information will allow the selection of PPE based on the conditions associated with the task being performed on a specific piece of electrical equipment.
Electrical arc flash hazards will be considered in pre-job planning for work at or beyond the arc flash, as well as limited and restricted approach boundaries. An authorized electrical person will determine arc flash incident energy and arc flash boundaries (using the National Fire

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Protection Association [NFPA] 70E standard or Institute of Electrical and Electronics Engineers [IEEE] 1584).
Documents, methods and calculations used to complete arc flash risk assessments will be maintained and readily available to those with a need to review.

All body parts closer to an arc flash hazard than the arc flash boundary will be protected from the potential thermal effects of the hazard. The arc flash boundary will be established at the point where the amount of incident energy that a worker could be exposed to is 1.2 cal/cm2 or greater. The arc flash boundary is the first issue to be determined by an arc flash risk assessment. The arc flash boundary defines the point at which arc-rated PPE is necessary to avoid a second-degree burn. All body parts of a worker are required to be protected.

Workers who operate circuit breakers, electrical disconnect switches, and motor control center controllers with doors closed and all covers in place (not exposed to energized electrical conductors) will wear, as a minimum:

- Non-melting or Untreated Natural Fiber (such as untreated cotton, wool, rayon, or silk, or blends of these materials) Shirt (long sleeve)
- Pants (long)
- Protective Equipment
- Safety glasses or safety goggles (SR)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves

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Arc-rated face shields will be worn at or beyond the arc flash protection boundary when potential arc incident energy is 4 cal/cm2 or greater up to 8 cal/cm (PPE Cat. 1).

Arc-rated flash suit hood or arc-rated face shield with arc rated balaclava will be worn at or inside the arc flash protection boundary when potential arc incident energy is 8 cal/cm2 or greater, up to 25 cal/cm (PPE Cat. 2)

Arc-rated flash suit hood will be worn at or inside the arc flash protection boundary when potential arc incident energy is 25 cal/cm2 or greater (PPE Cat. 3 and 4).

Incident energy exceeding 40 cal/cm2 will require either engineering controls to reduce the exposure level to 40 cal/cm2 or less. Standard arc flash PPE alone is not considered adequate protection for a worker exposed to incident energy levels greater than 40 cal/cm2.

If the calculations indicate that incident energy is 40 cal/cm2 or greater, the pressure wave might be hazardous. When pressure waves may be hazardous the work will only be performed when engineering controls to reduce the exposure level to 40 cal/cm2 or less are implemented or an ESWC is established. In some instances, creating an ESWC might require some exposure to a thermal hazard exceeding 40 cal/cm2. Processes, such as mechanical or electrically controlled remote switching equipment, will be implemented in order to reduce the risk to an acceptable level.

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An authorized backup person will be required for work on or near energized components. Working alone on energized circuits or components is prohibited. The backup person observes the worker to ensure that clearances are maintained and will perform electrical emergency rescue. The authorized backup person will be CPR and AED certified, trained in emergency procedures and rescue methods and it is recommended that they also be trained in first aid. The authorized backup person will know where the electrical disconnect is located and should be equipped with a sheppard's hook or nonconductive tool that can be used to free a person from an energized circuit should it become necessary.

5.16 WORKING NEAR OVERHEAD POWER LINE

All lines will be considered energized unless the authority or utility Company owning the lines indicates in writing that they are not energized and that the lines are grounded at the point of operation.

A Working Near Energized Power Lines Permit will be approved and issued before work commences within 33 feet (10.1 meters) of an energized overhead power line. If the permit to work process is in use, a Permit to Work is required in addition to the Working Near Energized Power Lines Permit.

The Electrical Superintendent will sign the Working Near Energized Power Lines Permit allowing work to proceed within the 33 feet (10.1 meter) distance to an overhead power line.
The Electrical Superintendent will verify that the authority has been granted to allow work within the 33 feet (10.2 meter) limit of overhead power lines.
If the work cannot be performed in a safe manner, the permit will not be issued

TEMPLATE

5.16.1 WORKING DISTANCES

Cranes

Supervision will assign a trained spotter when moving a crane and there is a potential for any part of the crane (or load) to come within 20 feet (6.1 meters) of an energized power line
Cranes will not be assembled, disassembled, or operated when there is the potential for any part of the crane to come within "x" feet of an energized power line as follows:

- Up to 350 kV x = 20 feet (6.1 meters)
- 351 kV to 1000 kV x = 50 feet (15.2 meters)
- Over 1000 kV x = the distance determined by the utility owner, or a registered professional engineer who is a Qualified Person with respect to electrical power transmission and distribution.

Equipment Other Than Cranes

No equipment will be erected or operated under any circumstances when any part of the equipment is closer than 10 feet (3.1 meters) of energized electrical distribution lines rated 50 kV or below, unless:

- The lines have been de-energized and are grounded at the point of work, or

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- Insulating barriers, that are not part of the equipment, have been erected.

For lines rated over 50 kV, the minimum clearance between lines and any part of the equipment or load will be 10 feet (3.1 meters), plus 0.4 inches (1.02 centimeters) for each kilovolt over 50 kV or twice the length of the line insulator.

5.17 HAZARDOUS ENERGY CONTROL (LOCKOUT/ TAGOUT)

Before starting work, hazardous energy control operations are assessed using the JHA or equivalent. Completion of a JHA and associated risk assessment is required for this.

The JHA or equivalent will address the following (when applicable):

- Scope of work to be performed
- Coordination with high-voltage electrical distribution isolation with the utility having jurisdiction to isolate circuits, lock/tag/install grounding cables
- Coordination with authority having jurisdiction of any fire protection systems which will be impaired due to the de-energization and isolation
- Coordination with other work groups affected by the de-energization and isolation
- Identification of boundaries including the energy sources or hazardous materials that will be isolated

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Use machine-specific Energy Control Procedures (ECP), controlled documents, drawings and field walk downs to identify equipment or system energy sources when establishing boundaries. If used, drawings and documents will always be verified with a field walk down.

Authorized workers control all hazardous energy sources and stored energy sources prior to working on the equipment or system. Work on energized systems or equipment is prohibited except in circumstances where such work will be performed "live" (such as testing and troubleshooting).
If an isolating device cannot be locked, then protection equivalent to that provided by locks will be established and a tag(s) will be used to ensure that the equivalent protection is maintained.

Examples of protection equivalent to locks and tags that prevent a system from being energized include:

- Removing an isolating circuit element or fuse
- Blocking switch controls
- Opening extra circuit disconnects

When a lock cannot be applied along with a tag, the tagout devices, including their means of attachment, are durable and substantial enough to prevent inadvertent or accidental removal. Tagout attachment devices are of a non-reusable type, attachable by hand, self-

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locking, and non-releasable with a minimum unlocking strength of not less than 50 pounds force (222.4 newtons) and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

Equipment or components with locks or tags attached are not removed from their installed location. If a locked/tagged component is removed (such as during demolition, replacement, or rework), the isolation boundaries are adjusted so that any locks and tags may be properly cleared from the component that is to be removed.

Lockout devices are substantial enough to prevent removal without excessive force (bolt cutters) or unusual techniques (metal cutting tools).

Authorized workers are supplied with uniquely identified locks and associated hardware. Only single-keyed locks are authorized for lockout. The worker maintains control of the key(s) for any lock(s) used.

Each authorized worker installs personal lock(s) and Danger Tag(s) before starting work and removes them when leaving that work assignment. No authorized worker performs activities under the provisions of another's lock and tag. Should it become necessary to remove an authorized worker's lock and tag due to absence from the site, the Removal of Authorized Worker Lock and Tag When Absent From Site process is used.

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A safe condition check is performed by the authorized worker before commencing work on the equipment or system.
No authorized worker will install a lock and tag on any system without notifying the controlling organization, unless a simple lockout/tagout is used, or the JHA or permit to work specifically addresses this issue.

5.17.1 Training

Affected workers receive initial orientation that includes the following elements:

- Instruction on the definition of an Affected Worker and Authorized Worker
- Instruction that the installation and removal of a lock and tag is conducted only with proper authorization as required herein
- Instruction on limitations of tagout when a lock cannot be used
- Discussion of the disciplinary actions that may result from violation of requirements specified herein

Authorized Workers receive training that includes the following elements:

- All elements in the affected worker orientation
- The Hazardous Energy Control progra
- Limitations of just "tagging out" a component (compared to locking and tagging)
- Methods for recognizing types and magnitude of hazards existing in their work area
- Means to control and isolate these hazards

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- Proper performance to determine the safety of the area where the work is to be performed, as identified herein

Project Site LOTO Administrator is responsible for:

- All elements in the affected worker orientation
- All elements in the authorized worker training
- Application of the Hazardous Energy Control requirements
- Facility systems, controls, and configuration processes appropriate to the work involving the lockout/tagout

Refresher training in the provisions of these requirements are presented to authorized and affected workers annually.
Projects may elect to use a challenge test in lieu of a formal lesson plan.
Workers are provided appropriate retraining whenever there is a significant change in work assignment, a new hazard is identified, or there is a revision to these requirements.

TEMPLATE

5.18 MOTOR VEHICLE OPERATIONS

These requirements apply to all personnel operating a motor vehicle (Company owned/leased or personally owned vehicle) to conduct Company business. They do not include the use of personal vehicles for daily commute to/from work.

Motor Vehicles include, but are not limited to the following:

- Automobiles
- Trucks less than 2 tons GVW
- 4-wheelers or Quads (“Mules”)

** Golf Carts are not authorized for use at Gridworks Sites*

Drivers will not drive for more than 11 consecutive hours.

If Drivers will be expected to drive for extended periods of time (>6 hours), driving fatigue will be evaluated and minimized. Local or Client regulations regarding maximum driving time limits will be followed. In order to avoid driving fatigue, Company sites and offices shall consider the following:

- Work Schedule
- Breaks and long hour driving avoidance
- Driving at night
- Flexible alternatives to manage fatigue, such as overnight stay
- Rest before driving
- Educating drivers about early signs of fatigue and effective strategies to manage fatigue

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A hazard/risk assessment associated with the travel route will be conducted for remote locations where security risks are an issue. The risk assessment will include, but is not limited to:

- Road construction
- Traffic conditions
- Road surface
- Weather
- Altitude
- Community impact
- Security concerns

Company vehicles will be equipped with appropriate emergency equipment in the event the driver experiences mechanical difficulty, loss or shifting load or a crash on the road. Emergency equipment will include, but is not limited to:

- First-Aid kit
- Flashlight
- Reflective safety vest
- Fire extinguisher
- Reflective triangles / flares

TEMPLATE

Vehicles will be equipped with emergency warning devices and equipment, and drivers will be instructed in the correct placement of these devices around the disabled vehicle.

Drivers will not alter Company-owned vehicles in any manner.

Company owned/leased vehicles will be inspected on a regular basis in accordance with the vehicle manufacture's recommendations, regulatory requirements and recognized standard practices

The Driver will visually check the vehicle prior to each use.

Drivers and passengers will utilize safety belts at all times when the vehicle is in motion.

Safety belts must be adjusted and used properly to protect the occupants. Users should consult the vehicle manual on the proper method of use and adjustment.

Drivers will minimize distractions that may impact their ability to safely operate the vehicle.

Distractions include, but are not limited to:

- Mobile Devices
- Passengers
- Eating and drinking
- Vehicle features such as entertainment, climate, navigation systems, etc.

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- Events and objects outside the vehicle

Hands-free may be used by the vehicle operator, with discretion, depending on driving conditions.

Hands-free Mobile Device use for long or extended phone conversations while driving is discouraged.

When Mobile Devices are permitted for use at Projects, personal use of Mobile Devices will be restricted to designated break areas.

Drivers will visually check their vehicle prior to each use. When defects are reported, the vehicle shall be repaired by a qualified automotive service technician. Safety-related defects shall be repaired before the vehicle is placed back in service with appropriate records maintained

TEMPLATE

5.19 WILDLIFE

Wildlife refers to undomesticated animal species but has come to include all organisms that grow or live wild in an area without being introduced by humans. Wildlife was also synonymous with game: those birds and mammals hunted for sport. Wildlife can be found in all ecosystems. Deserts, plains, grasslands, woodlands, forests, and other areas, including the most developed urban areas, all have distinct forms of wildlife. While the term in popular culture usually refers to animals that are untouched by human factors, most scientists agree that much wildlife is affected by human activities. Some wildlife threaten human safety, health, property, and quality of life. However, many wild animals, even the dangerous ones, have value to human beings. This value might be economic, educational, or emotional in nature.

- If you observe wildlife, you should give the animal space.
- Do not crowd wild animals, if they feel trapped, they will defend themselves
- Do not touch or catch the wildlife.
    - Watch hand placement as spiders and other stinging insect tend to be under pallets and other structures.
    - Snakes tend to be under pallets and wooden items and will bite attempting to pick up these items.
- You should not injure or kill any wildlife
    - Any wildlife observed will be considered protected.
- If you locate any wild including snakes in your work area that may need to be removed, contact the safety department and they will determine if the animals will be removed.

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    - Do not throw objects at animals, molest them or attempt to catch them
- Some circumstances will require leaving animals alone and allowing them to move along at their own.
- If bitten or attacked notify safety immediately
    - No matter the size of a bite or sting they are considered an injury and must be reported to the Safety Department.

Common wildlife that could be encountered in the Galveston County Area includes:

- Skunks
- Raccoons
- Opossums
- Coyotes
- Snakes

Skunks

TEMPLATE

When you encounter a skunk, you should remain calm and back away slowly and steadily. If the skunk hasn't sprayed yet, it may raise its tail, stomp its feet, or stand on its hind legs. You should avoid panicking, turning your back, making sudden movements, or running. Instead, try to put about 10 feet between yourself and the skunk so you're out of range of its spray.

Raccoons

Raccoons are nocturnal animals, so encounters during the day are rare. IF you encounter a racoon, keep your distance an walk away. If they do not go away, animal control companies shall be called to assist.

Opposums

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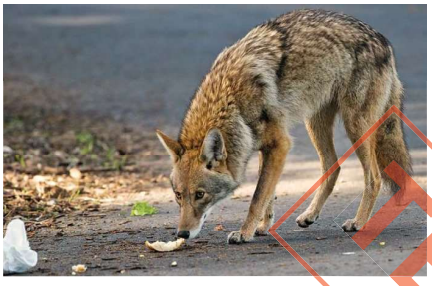
Opossums are generally docile and non-aggressive, and prefer to avoid confrontation. If you encounter one, just leave it alone and they will run away

Coyote



TEMPLATE

Coyotes are a challenge to many communities within the Galveston County. Coyotes rarely attach people, but to reduce the chance of encouters with them always secure garbage and do not leave food laying in the work areas. Like many other species already mentioned, leftover foods is the main reason that attracts these animals. If you encounter one of them, just try to scare them away by beig as loud as possible while waiving your arms. Do not run away or turn your back to them.

Snakes

Several types of venomous snakes can be found in the area. Timber rattlesnakes, copperheads, and cottonmouths are all found these these areas. If you encounter a snake you should immediately distance yourself from the snake. If possible keep visual contact on the snake, and call a **snake control** expert to remove the snake from your home or business. Project may contact Snake Removal League City at 832-789-4194.

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Attachments:

1. Emergency Response Plan
2. Heat Stress Control Plam
3. Gridworks Hurricane Preparedness Plan
4. Incident Management Forms

TEMPLATE

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EXHIBIT E

OPERATING PERSONNEL TRAINING PROGRAM

Docusign Envelope ID: 4CEAED38-E2AA-4FC2-B57E-2E27EDFCB74F

1. GENERAL

Contractor shall conduct Site-specific training for Owner assigned Operating Personnel for the Project. The training course for the Project shall be conducted two times to accommodate two shifts of Operating Personnel. Each of the two groups shall receive training in alternate weeks. Training specific to the Interconnection Substation is limited to a one-time event based upon an agreed data and time.

Each course shall be conducted during a standard 8-hour day and shall take 1 day. Classroom training will be augmented by field reinforcement of the instruction topics. Each classroom training session shall be instructed in an air-conditioned classroom with the appropriate visual aids. The training program will cover all proper aspects of knowledge required by the individual disciplines to allow them to competently operate, troubleshoot, and maintain all Project process and utility systems.

Owner shall advise one month in advance of each training program course of the number of Operating Personnel attending each session. A training program sign-up sheet for the Project shall document Owner's personnel attendance and Contractor's instructor(s). Contractor will submit its proposed training schedule, training course outline and training manual for Owner's review in accordance with the provisions of this Agreement.

Owner shall ensure that all Owner Operating Personnel attendees (i) are adequately pre-trained in all safety aspects of an industrial electrical generation facility as required by Governmental Authorities and Applicable Laws and (ii) shall arrive at the classroom with all appropriate personal protective equipment required for field training at the Site.

2. SITE-SPECIFIC TRAINING

The Operating Personnel training program will encompass on-Site training for the Project.

2.1. Owner Responsibility

Provide training facilities for the Site which present an environment conducive to learning (heat, light, noise level and air conditioned and be furnished with an LCD projector or equivalent screen, white boards and markers and podium). Each Operating Personnel attendee's desk/table shall afford working space for training manuals and the associated C size drawings.

2.2. Contractor Responsibility

Contractor shall:

2.2.1. Prepare all classroom and training materials.

2.2.2. Provide hard and soft copies of training materials in sufficient quantities to allow all participants to have their own set of documents.

2.2.3. Schedule and coordinate all classroom-training courses.

2.2.4. Provide instruction, lesson plans, final exam, review and field instruction.

2.2.5. Display larger drawings of the general arrangements and plot plans for orientation and discussion.

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2.3. Training Topics

2.3.1. PV Systems

Contractor shall describe the process and discuss the principles of operation for the PV Power Plant.

Contractor shall provide experienced instructors to conduct its training program for the PV Power Plant, which shall consist of classroom sessions bolstered by system walk downs and examinations. The course curriculum for the PV Power Plant shall include design considerations. The following outline of topics shall typically be covered:

2.3.1.1. Introduction

2.3.1.2. Personnel safety

2.3.1.3. PV systems and ESS

2.3.1.4. Utilities

2.3.1.5. Commissioning and startup

2.3.1.6. SCADA

2.3.2. Interconnection Substation

2.3.2.1. Substation automation

2.4. Lesson Format

Each session shall typically include the following information:

- Lesson objectives
- Design basis and list of resources
- System overview with drawings
- Component description with supporting documentation (figures, tables, graphs, etc.)

2.5. Lesson Content

2.5.1. Lesson objectives - major information the Operating Personnel attendee is expected to learn and retain from the lesson shall be presented. Referenced materials utilized in the training session shall be displayed. Listed references shall include page numbers in manuals, diagram and/or drawing numbers, and appropriate procedure of section numbers.

2.5.2. System overview with drawings - this section will include a brief description of the intended use of the system.

2.5.3. Component description with supporting documentation - this section will include information on the major components in the system. Tables, figures, drawings and design details will also be provided.

2.5.4. Principles of operation, including start-up and shutdown procedures - various operational modes of the system and documents will be presented, including:

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- operating philosophy
- start-up
- normal operation
- normal and emergency shutdown
- recognizing and handling abnormal operating conditions (troubleshooting)

2.5.5. Walk-downs - walk-downs will be conducted to familiarize the students with the physical location and appearance of equipment and to clarify equipment features, controls, and displays.

2.5.6. Examinations - Contractor will provide a “final” exam at the end of each session to test the knowledge of each Operating Personnel attendee. Contractor will provide to the Owner the results of this examination. Each Operating Personnel attendee will receive a certificate indicating their attendance of the training program. A complete list of attendees will be provided by Contractor to Owner for training tracking purposes for the Project.

EXHIBIT F, F-1, F-2

LIEN WAIVER AND RELEASES

CONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: $ _____

Check Payable To: _____

Exceptions

This document does not affect any of the following:
(1) Retentions.
(2) Extras for which the claimant has not received payment.
(3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:
Date(s) of waiver and release: _____
Amount(s) of unpaid progress payment(s): $ _____
(4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

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CONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: $ _____

Check Payable To: _____

Exceptions

This document does not affect any of the following:

Disputed claims for extras in the amount of: $

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

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UNCONDITIONAL WAIVER AND RELEASE ON PROGRESS PAYMENT

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment:

$_____

Exceptions

This document does not affect any of the following:
(1) Retentions.
(2) Extras for which the claimant has not received payment.
(3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

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UNCONDITIONAL WAIVER AND RELEASE ON FINAL PAYMENT

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Identifying Information

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions

This document does not affect any of the following:

Disputed claims for extras in the Amount of: $ _____

Signature

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

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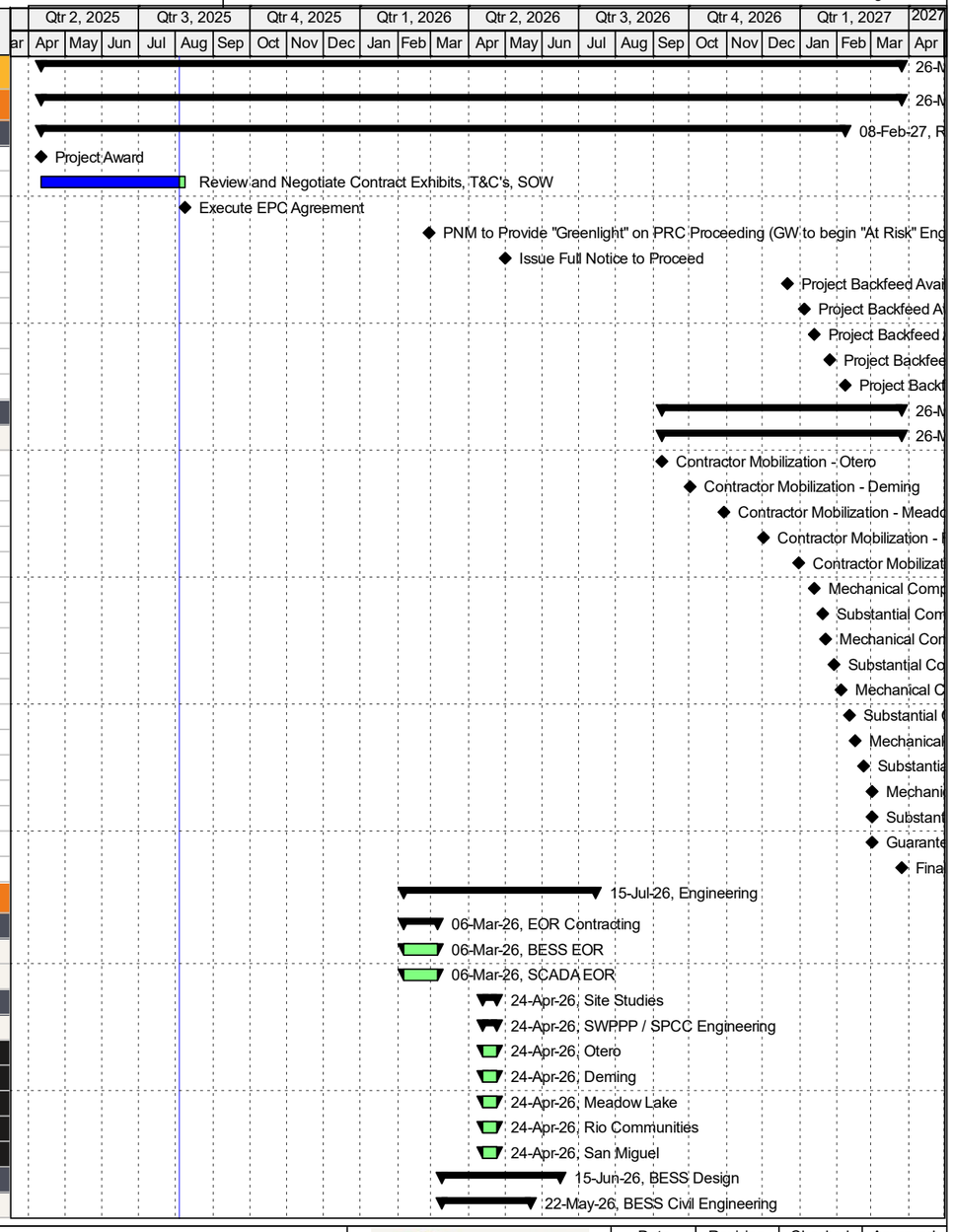
Activity ID	Activity Name	Remaining Duration	Start	Finish
Distribution Phase II - PNM - 30MWac		413.00	11-Apr-25 A	26-Mar-27
Project Milestones		413.00	11-Apr-25 A	26-Mar-27
Required Owner Deliverables		378.00	11-Apr-25 A	08-Feb-27
PA - 1 - 1000	Project Award	0.00	11-Apr-25 A	
PA - 1 - 1003	Review and Negotiate Contract Exhibits, T&C's, SOW	5.00	11-Apr-25 A	08-Aug-25
PA - 1 - 1003.1	Execute EPC Agreement	0.00		08-Aug-25
PA - 1 - 1001.1	PNM to Provide "Greenlight" on PRC Proceeding (GW to begin "At Risk" Engineering)	0.00		27-Feb-26*
PA - 1 - 1004	Issue Full Notice to Proceed	0.00		01-May-26*
PA - 1 - 1005.1	Project Backfeed Available to BESS Arrays (Otero)	0.00	21-Dec-26	
PA - 1 - 1005.2	Project Backfeed Available to BESS Arrays (Deming)	0.00	04-Jan-27	
PA - 1 - 1005.3	Project Backfeed Available to BESS Arrays (Meadow Lake)	0.00	13-Jan-27	
PA - 1 - 1005.4	Project Backfeed Available to BESS Arrays (Rio Communities)	0.00	26-Jan-27	
PA - 1 - 1005.5	Project Backfeed Available to BESS Arrays (San Miguel)	0.00	08-Feb-27	
Exhibit Milestones		165.00	08-Sep-26	26-Mar-27
Project Milestones		165.00	08-Sep-26	26-Mar-27
PA - 2 - 1000.1	Contractor Mobilization - Otero	0.00	08-Sep-26*	
PA - 2 - 1000.2	Contractor Mobilization - Deming	0.00	02-Oct-26	
PA - 2 - 1000.3	Contractor Mobilization - Meadow Lake	0.00	30-Oct-26	
PA - 2 - 1000.4	Contractor Mobilization - Rio Communities	0.00	01-Dec-26	
PA - 2 - 1000.5	Contractor Mobilization - San Miguel	0.00	31-Dec-26	
PA - 2 - 1008.1	Mechanical Completion - Otero	0.00		12-Jan-27
PA - 2 - 1009.1	Substantial Completion - Otero	0.00		19-Jan-27
PA - 2 - 1008.2	Mechanical Completion - Deming	0.00		22-Jan-27
PA - 2 - 1009.2	Substantial Completion - Deming	0.00		29-Jan-27
PA - 2 - 1008.3	Mechanical Completion - Meadow Lake	0.00		03-Feb-27
PA - 2 - 1009.3	Substantial Completion - Meadow Lake	0.00		10-Feb-27
PA - 2 - 1008.4	Mechanical Completion - Rio Communities	0.00		16-Feb-27
PA - 2 - 1009.4	Substantial Completion - Rio Communities	0.00		22-Feb-27
PA - 2 - 1008.5	Mechanical Completion - San Miguel	0.00		01-Mar-27
PA - 2 - 1009.5	Substantial Completion - San Miguel	0.00		01-Mar-27
PA - 2 - 1010	Guaranteed Substantial Completion - All Projects	0.00		01-Mar-27
PA - 2 - 1011	Final Completion - All Projects	0.00		26-Mar-27
Engineering		110.00	06-Feb-26	15-Jul-26
EOR Contracting		20.00	06-Feb-26	06-Mar-26
BESS EOR		20.00	06-Feb-26	06-Mar-26
SCADA EOR		20.00	06-Feb-26	06-Mar-26
Site Studies		10.00	13-Apr-26	24-Apr-26
SWPPP / SPCC Engineering		10.00	13-Apr-26	24-Apr-26
Otero		10.00	13-Apr-26	24-Apr-26
Deming		10.00	13-Apr-26	24-Apr-26
Meadow Lake		10.00	13-Apr-26	24-Apr-26
Rio Communities		10.00	13-Apr-26	24-Apr-26
San Miguel		10.00	13-Apr-26	24-Apr-26
BESS Design		70.00	09-Mar-26	15-Jun-26
BESS Civil Engineering		55.00	09-Mar-26	22-May-26



Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Data Date: 04-Aug-25
Run Date: 05-Aug-25

Distribution Phase II - PNM - 30MWac
Preliminary Summary Schedule

Date	Revision	Checked	Approved
	Rev5		

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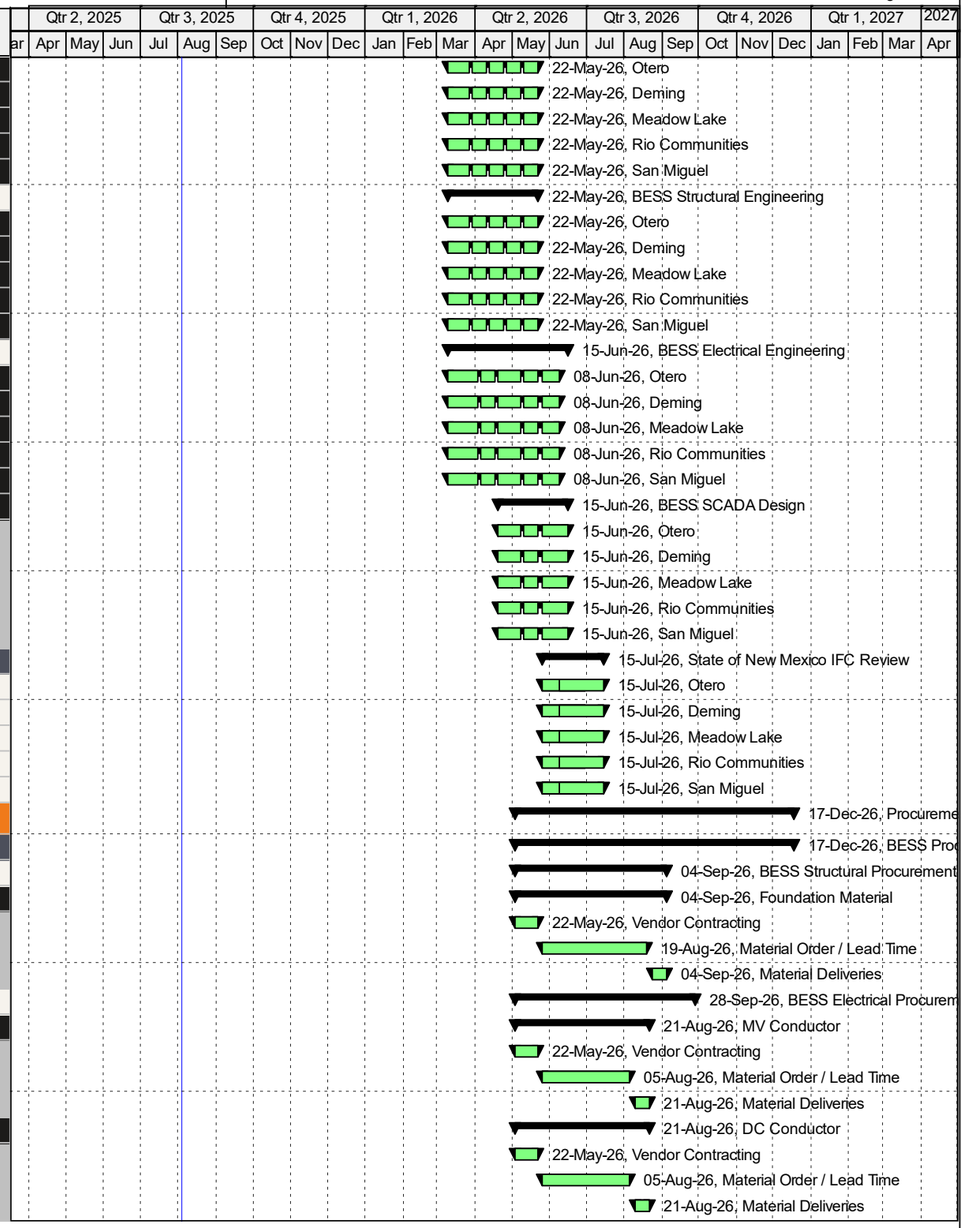
Activity ID	Activity Name	Remaining Duration	Start	Finish
	Otero	55.00	09-Mar-26	22-May-26
	Deming	55.00	09-Mar-26	22-May-26
	Meadow Lake	55.00	09-Mar-26	22-May-26
	Rio Communities	55.00	09-Mar-26	22-May-26
	San Miguel	55.00	09-Mar-26	22-May-26
	BESS Structural Engineering	55.00	09-Mar-26	22-May-26
	Otero	55.00	09-Mar-26	22-May-26
	Deming	55.00	09-Mar-26	22-May-26
	Meadow Lake	55.00	09-Mar-26	22-May-26
	Rio Communities	55.00	09-Mar-26	22-May-26
	San Miguel	55.00	09-Mar-26	22-May-26
	BESS Electrical Engineering	70.00	09-Mar-26	15-Jun-26
	Otero	65.00	09-Mar-26	08-Jun-26
	Deming	65.00	09-Mar-26	08-Jun-26
	Meadow Lake	65.00	09-Mar-26	08-Jun-26
	Rio Communities	65.00	09-Mar-26	08-Jun-26
	San Miguel	65.00	09-Mar-26	08-Jun-26
	BESS SCADA Design	40.00	20-Apr-26	15-Jun-26
	Otero	40.00	20-Apr-26	15-Jun-26
	Deming	40.00	20-Apr-26	15-Jun-26
	Meadow Lake	40.00	20-Apr-26	15-Jun-26
	Rio Communities	40.00	20-Apr-26	15-Jun-26
	San Miguel	40.00	20-Apr-26	15-Jun-26
	State of New Mexico IFC Review	35.00	26-May-26	15-Jul-26
	Otero	35.00	26-May-26	15-Jul-26
	Deming	35.00	26-May-26	15-Jul-26
	Meadow Lake	35.00	26-May-26	15-Jul-26
	Rio Communities	35.00	26-May-26	15-Jul-26
	San Miguel	35.00	26-May-26	15-Jul-26
	Procurement	157.00	04-May-26	17-Dec-26
	BESS Procurement	157.00	04-May-26	17-Dec-26
	BESS Structural Procurement	87.00	04-May-26	04-Sep-26
	Foundation Material	87.00	04-May-26	04-Sep-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	60.00	26-May-26	19-Aug-26
	Material Deliveries	10.00	24-Aug-26	04-Sep-26
	BESS Electrical Procurement	102.00	04-May-26	28-Sep-26
	MV Conductor	77.00	04-May-26	21-Aug-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	50.00	26-May-26	05-Aug-26
	Material Deliveries	10.00	10-Aug-26	21-Aug-26
	DC Conductor	77.00	04-May-26	21-Aug-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	50.00	26-May-26	05-Aug-26
	Material Deliveries	10.00	10-Aug-26	21-Aug-26



Actual Work
Remaining Work
Critical Remaining Work
Milestone
Summary

Data Date: 04-Aug-25
Run Date: 05-Aug-25

Distribution Phase II - PNM - 30MWac
Preliminary Summary Schedule

Date	Revision	Checked	Approved
	Rev5		

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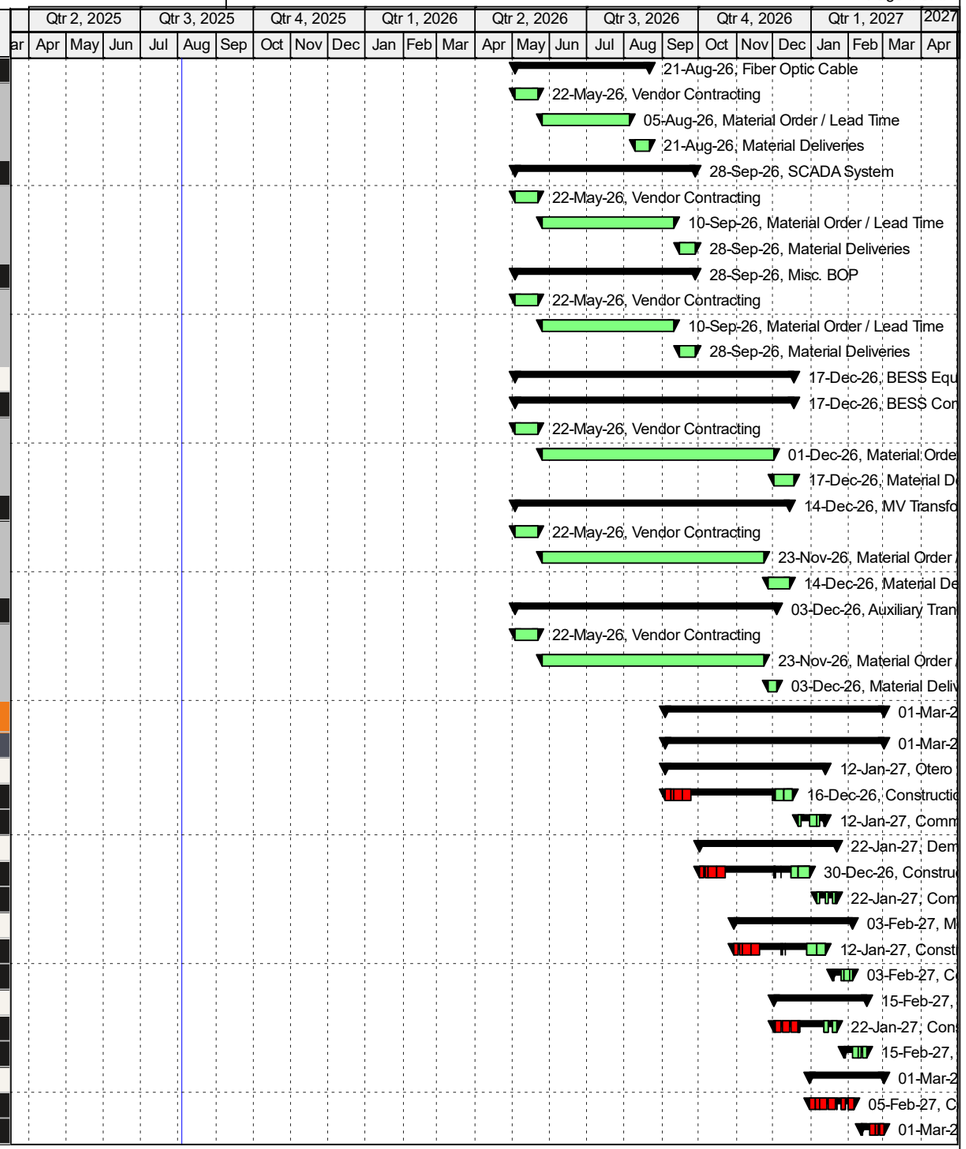
Activity ID	Activity Name	Remaining Duration	Start	Finish
	Fiber Optic Cable	77.00	04-May-26	21-Aug-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	50.00	26-May-26	05-Aug-26
	Material Deliveries	10.00	10-Aug-26	21-Aug-26
	SCADA System	102.00	04-May-26	28-Sep-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	75.00	26-May-26	10-Sep-26
	Material Deliveries	10.00	15-Sep-26	28-Sep-26
	Misc. BOP	102.00	04-May-26	28-Sep-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	75.00	26-May-26	10-Sep-26
	Material Deliveries	10.00	15-Sep-26	28-Sep-26
	BESS Equipment Procurement	157.00	04-May-26	17-Dec-26
	BESS Containers	157.00	04-May-26	17-Dec-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	130.00	26-May-26	01-Dec-26
	Material Deliveries	12.00	02-Dec-26	17-Dec-26
	MV Transformers	154.00	04-May-26	14-Dec-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	125.00	26-May-26	23-Nov-26
	Material Deliveries	12.00	27-Nov-26	14-Dec-26
	Auxiliary Tranformers	147.00	04-May-26	03-Dec-26
	Vendor Contracting	15.00	04-May-26	22-May-26
	Material Order / Lead Time	125.00	26-May-26	23-Nov-26
	Material Deliveries	5.00	27-Nov-26	03-Dec-26
	Construction	122.00	03-Sep-26	01-Mar-27
	BESS Construction	122.00	03-Sep-26	01-Mar-27
	Otero	88.00	03-Sep-26	12-Jan-27
	Construction	72.00	03-Sep-26	16-Dec-26
	Commissioning	13.00	22-Dec-26	12-Jan-27
	Deming	76.00	02-Oct-26	22-Jan-27
	Construction	60.00	02-Oct-26	30-Dec-26
	Commissioning	13.00	06-Jan-27	22-Jan-27
	Meadow Lake	64.00	30-Oct-26	03-Feb-27
	Construction	48.00	30-Oct-26	12-Jan-27
	Commissioning	13.00	18-Jan-27	03-Feb-27
	Rio Communities	52.00	01-Dec-26	15-Feb-27
	Construction	36.00	01-Dec-26	22-Jan-27
	Commissioning	13.00	28-Jan-27	15-Feb-27
	San Miguel	42.00	31-Dec-26	01-Mar-27
	Construction	26.00	31-Dec-26	05-Feb-27
	Commissioning	13.00	11-Feb-27	01-Mar-27



Actual Work
Remaining Work
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Distribution Phase II - PNM - 30MWac
Preliminary Summary Schedule

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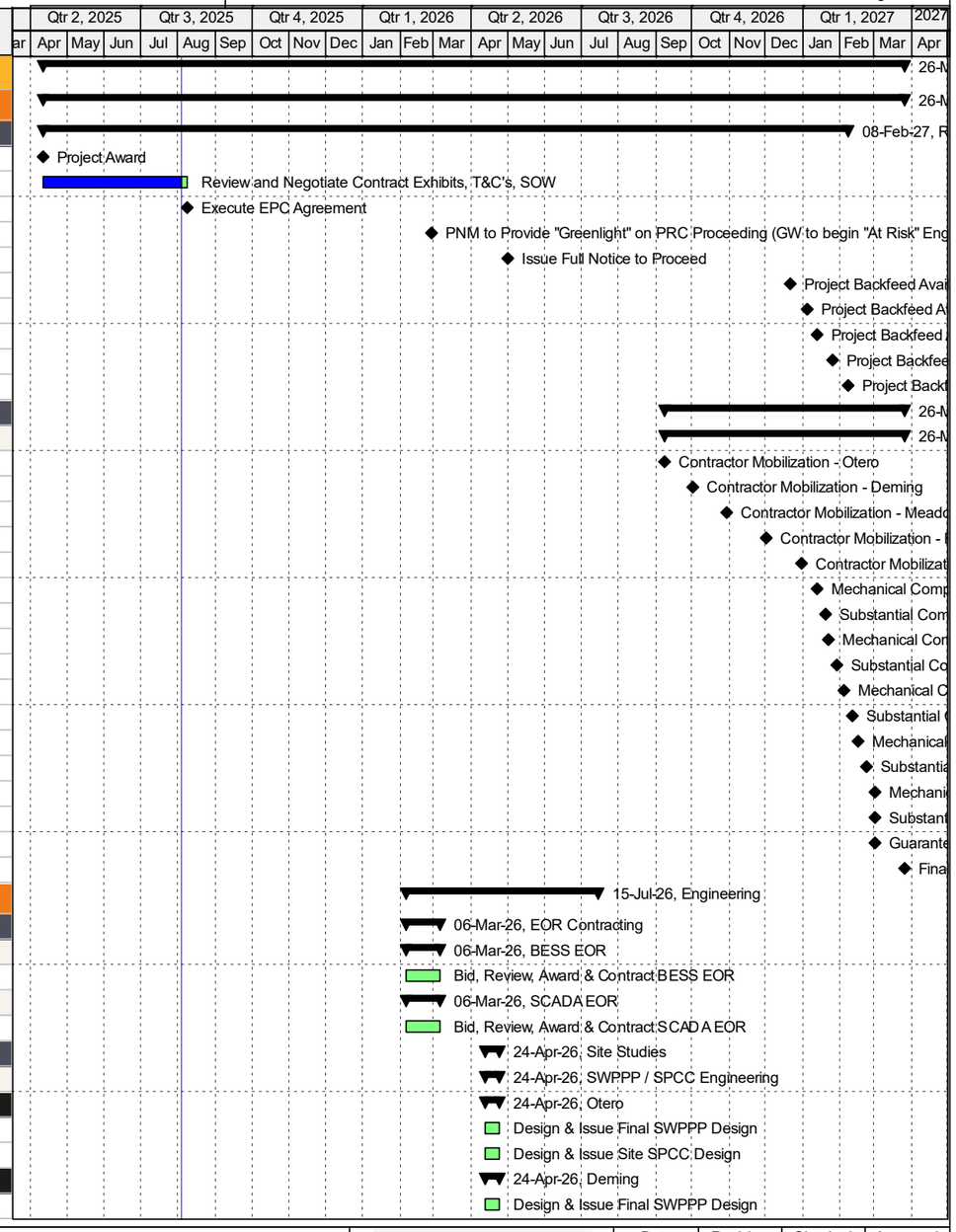
Activity ID	Activity Name	Remaining Duration	Start	Finish
Distribution Phase II - PNM - 30MWac		413.00	11-Apr-25 A	26-Mar-27
Project Milestones		413.00	11-Apr-25 A	26-Mar-27
Required Owner Deliverables		378.00	11-Apr-25 A	08-Feb-27
PA - 1 - 1000	Project Award	0.00	11-Apr-25 A	
PA - 1 - 1003	Review and Negotiate Contract Exhibits, T&C's, SOW	5.00	11-Apr-25 A	08-Aug-25
PA - 1 - 1003.1	Execute EPC Agreement	0.00		08-Aug-25
PA - 1 - 1001.1	PNM to Provide "Greenlight" on PRC Proceeding (GW to begin "At Risk" Engineering)	0.00		27-Feb-26*
PA - 1 - 1004	Issue Full Notice to Proceed	0.00		01-May-26*
PA - 1 - 1005.1	Project Backfeed Available to BESS Arrays (Otero)	0.00	21-Dec-26	
PA - 1 - 1005.2	Project Backfeed Available to BESS Arrays (Deming)	0.00	04-Jan-27	
PA - 1 - 1005.3	Project Backfeed Available to BESS Arrays (Meadow Lake)	0.00	13-Jan-27	
PA - 1 - 1005.4	Project Backfeed Available to BESS Arrays (Rio Communities)	0.00	26-Jan-27	
PA - 1 - 1005.5	Project Backfeed Available to BESS Arrays (San Miguel)	0.00	08-Feb-27	
Exhibit Milestones		165.00	08-Sep-26	26-Mar-27
Project Milestones		165.00	08-Sep-26	26-Mar-27
PA - 2 - 1000.1	Contractor Mobilization - Otero	0.00	08-Sep-26*	
PA - 2 - 1000.2	Contractor Mobilization - Deming	0.00	02-Oct-26	
PA - 2 - 1000.3	Contractor Mobilization - Meadow Lake	0.00	30-Oct-26	
PA - 2 - 1000.4	Contractor Mobilization - Rio Communities	0.00	01-Dec-26	
PA - 2 - 1000.5	Contractor Mobilization - San Miguel	0.00	31-Dec-26	
PA - 2 - 1008.1	Mechanical Completion - Otero	0.00		12-Jan-27
PA - 2 - 1009.1	Substantial Completion - Otero	0.00		19-Jan-27
PA - 2 - 1008.2	Mechanical Completion - Deming	0.00		22-Jan-27
PA - 2 - 1009.2	Substantial Completion - Deming	0.00		29-Jan-27
PA - 2 - 1008.3	Mechanical Completion - Meadow Lake	0.00		03-Feb-27
PA - 2 - 1009.3	Substantial Completion - Meadow Lake	0.00		10-Feb-27
PA - 2 - 1008.4	Mechanical Completion - Rio Communities	0.00		16-Feb-27
PA - 2 - 1009.4	Substantial Completion - Rio Communities	0.00		22-Feb-27
PA - 2 - 1008.5	Mechanical Completion - San Miguel	0.00		01-Mar-27
PA - 2 - 1009.5	Substantial Completion - San Miguel	0.00		01-Mar-27
PA - 2 - 1010	Guaranteed Substantial Completion - All Projects	0.00		01-Mar-27
PA - 2 - 1011	Final Completion - All Projects	0.00		26-Mar-27
Engineering		110.00	06-Feb-26	15-Jul-26
EOR Contracting		20.00	06-Feb-26	06-Mar-26
BESS EOR		20.00	06-Feb-26	06-Mar-26
ENG - 1 - 2000	Bid, Review, Award & Contract BESS EOR	20.00	06-Feb-26	06-Mar-26
SCADA EOR		20.00	06-Feb-26	06-Mar-26
ENG - 1 - 3000	Bid, Review, Award & Contract SCADA EOR	20.00	06-Feb-26	06-Mar-26
Site Studies		10.00	13-Apr-26	24-Apr-26
SWPPP / SPCC Engineering		10.00	13-Apr-26	24-Apr-26
Otero		10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2100.1	Design & Issue Final SWPPP Design	10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2101	Design & Issue Site SPCC Design	10.00	13-Apr-26	24-Apr-26
Deming		10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2200.1	Design & Issue Final SWPPP Design	10.00	13-Apr-26	24-Apr-26



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Distribution Phase II - PNM - 30MWac
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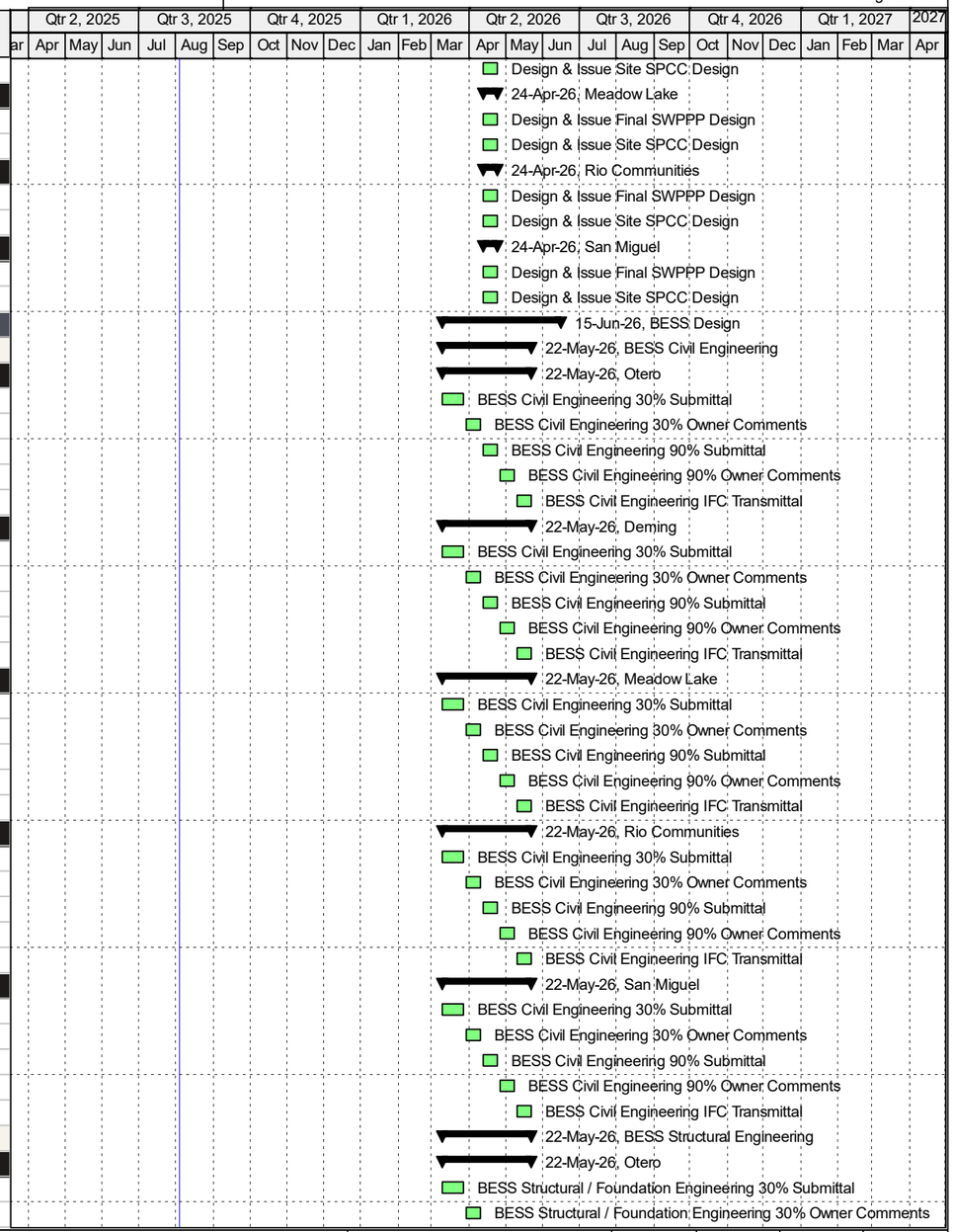
Activity ID	Activity Name	Remaining Duration	Start	Finish
ENG - 2 - 2201	Design & Issue Site SPCC Design	10.00	13-Apr-26	24-Apr-26
Meadow Lake		10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2300.1	Design & Issue Final SWPPP Design	10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2301	Design & Issue Site SPCC Design	10.00	13-Apr-26	24-Apr-26
Rio Communities		10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2400.1	Design & Issue Final SWPPP Design	10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2401	Design & Issue Site SPCC Design	10.00	13-Apr-26	24-Apr-26
San Miguel		10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2500.1	Design & Issue Final SWPPP Design	10.00	13-Apr-26	24-Apr-26
ENG - 2 - 2501	Design & Issue Site SPCC Design	10.00	13-Apr-26	24-Apr-26
BESS Design		70.00	09-Mar-26	15-Jun-26
BESS Civil Engineering		55.00	09-Mar-26	22-May-26
Otero		55.00	09-Mar-26	22-May-26
ENG - 4 - 1100	BESS Civil Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 1101	BESS Civil Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 1104	BESS Civil Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 1105	BESS Civil Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 1106	BESS Civil Engineering IFC Transmittal	10.00	11-May-26	22-May-26
Deming		55.00	09-Mar-26	22-May-26
ENG - 4 - 1200	BESS Civil Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 1201	BESS Civil Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 1204	BESS Civil Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 1205	BESS Civil Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 1206	BESS Civil Engineering IFC Transmittal	10.00	11-May-26	22-May-26
Meadow Lake		55.00	09-Mar-26	22-May-26
ENG - 4 - 1300	BESS Civil Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 1301	BESS Civil Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 1304	BESS Civil Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 1305	BESS Civil Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 1306	BESS Civil Engineering IFC Transmittal	10.00	11-May-26	22-May-26
Rio Communities		55.00	09-Mar-26	22-May-26
ENG - 4 - 1400	BESS Civil Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 1401	BESS Civil Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 1404	BESS Civil Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 1405	BESS Civil Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 1406	BESS Civil Engineering IFC Transmittal	10.00	11-May-26	22-May-26
San Miguel		55.00	09-Mar-26	22-May-26
ENG - 4 - 1500	BESS Civil Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 1501	BESS Civil Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 1504	BESS Civil Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 1505	BESS Civil Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 1506	BESS Civil Engineering IFC Transmittal	10.00	11-May-26	22-May-26
BESS Structural Engineering		55.00	09-Mar-26	22-May-26
Otero		55.00	09-Mar-26	22-May-26
ENG - 4 - 2100	BESS Structural / Foundation Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 2101	BESS Structural / Foundation Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26



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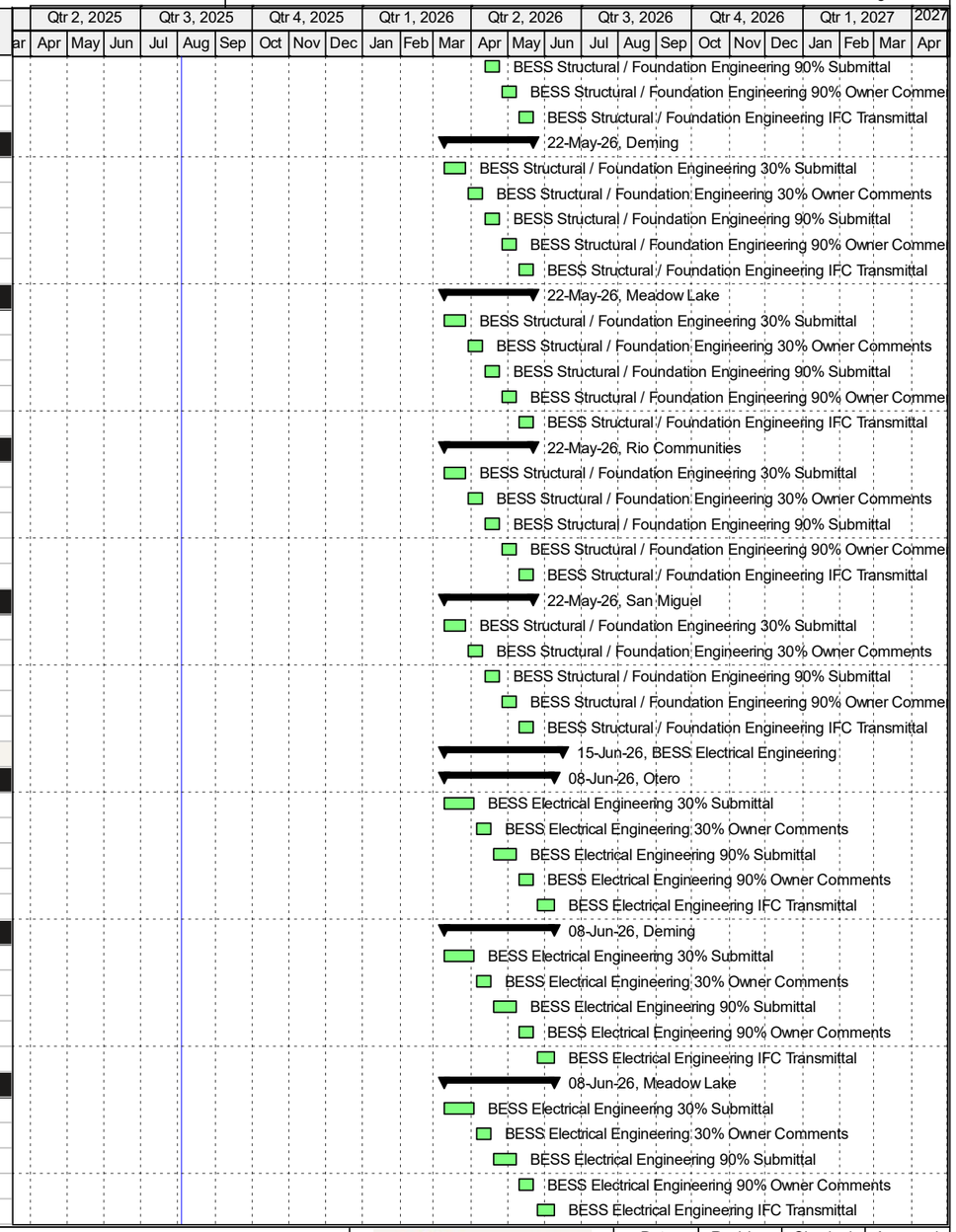
Activity ID	Activity Name	Remaining Duration	Start	Finish
ENG - 4 - 2104	BESS Structural / Foundation Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 2105	BESS Structural / Foundation Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 2106	BESS Structural / Foundation Engineering IFC Transmittal	10.00	11-May-26	22-May-26
Deming		55.00	09-Mar-26	22-May-26
ENG - 4 - 2200	BESS Structural / Foundation Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 2201	BESS Structural / Foundation Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 2204	BESS Structural / Foundation Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 2205	BESS Structural / Foundation Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 2206	BESS Structural / Foundation Engineering IFC Transmittal	10.00	11-May-26	22-May-26
Meadow Lake		55.00	09-Mar-26	22-May-26
ENG - 4 - 2300	BESS Structural / Foundation Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 2301	BESS Structural / Foundation Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 2304	BESS Structural / Foundation Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 2305	BESS Structural / Foundation Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 2306	BESS Structural / Foundation Engineering IFC Transmittal	10.00	11-May-26	22-May-26
Rio Communities		55.00	09-Mar-26	22-May-26
ENG - 4 - 2400	BESS Structural / Foundation Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 2401	BESS Structural / Foundation Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 2404	BESS Structural / Foundation Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 2405	BESS Structural / Foundation Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 2406	BESS Structural / Foundation Engineering IFC Transmittal	10.00	11-May-26	22-May-26
San Miguel		55.00	09-Mar-26	22-May-26
ENG - 4 - 2500	BESS Structural / Foundation Engineering 30% Submittal	15.00	09-Mar-26	27-Mar-26
ENG - 4 - 2501	BESS Structural / Foundation Engineering 30% Owner Comments	10.00	30-Mar-26	10-Apr-26
ENG - 4 - 2504	BESS Structural / Foundation Engineering 90% Submittal	10.00	13-Apr-26	24-Apr-26
ENG - 4 - 2505	BESS Structural / Foundation Engineering 90% Owner Comments	10.00	27-Apr-26	08-May-26
ENG - 4 - 2506	BESS Structural / Foundation Engineering IFC Transmittal	10.00	11-May-26	22-May-26
BESS Electrical Engineering		70.00	09-Mar-26	15-Jun-26
Otero		65.00	09-Mar-26	08-Jun-26
ENG - 4 - 3100	BESS Electrical Engineering 30% Submittal	20.00	09-Mar-26	03-Apr-26
ENG - 4 - 3101	BESS Electrical Engineering 30% Owner Comments	10.00	06-Apr-26	17-Apr-26
ENG - 4 - 3104	BESS Electrical Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3105	BESS Electrical Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3106	BESS Electrical Engineering IFC Transmittal	10.00	26-May-26	08-Jun-26
Deming		65.00	09-Mar-26	08-Jun-26
ENG - 4 - 3200	BESS Electrical Engineering 30% Submittal	20.00	09-Mar-26	03-Apr-26
ENG - 4 - 3201	BESS Electrical Engineering 30% Owner Comments	10.00	06-Apr-26	17-Apr-26
ENG - 4 - 3204	BESS Electrical Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3205	BESS Electrical Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3206	BESS Electrical Engineering IFC Transmittal	10.00	26-May-26	08-Jun-26
Meadow Lake		65.00	09-Mar-26	08-Jun-26
ENG - 4 - 3300	BESS Electrical Engineering 30% Submittal	20.00	09-Mar-26	03-Apr-26
ENG - 4 - 3301	BESS Electrical Engineering 30% Owner Comments	10.00	06-Apr-26	17-Apr-26
ENG - 4 - 3304	BESS Electrical Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3305	BESS Electrical Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3306	BESS Electrical Engineering IFC Transmittal	10.00	26-May-26	08-Jun-26



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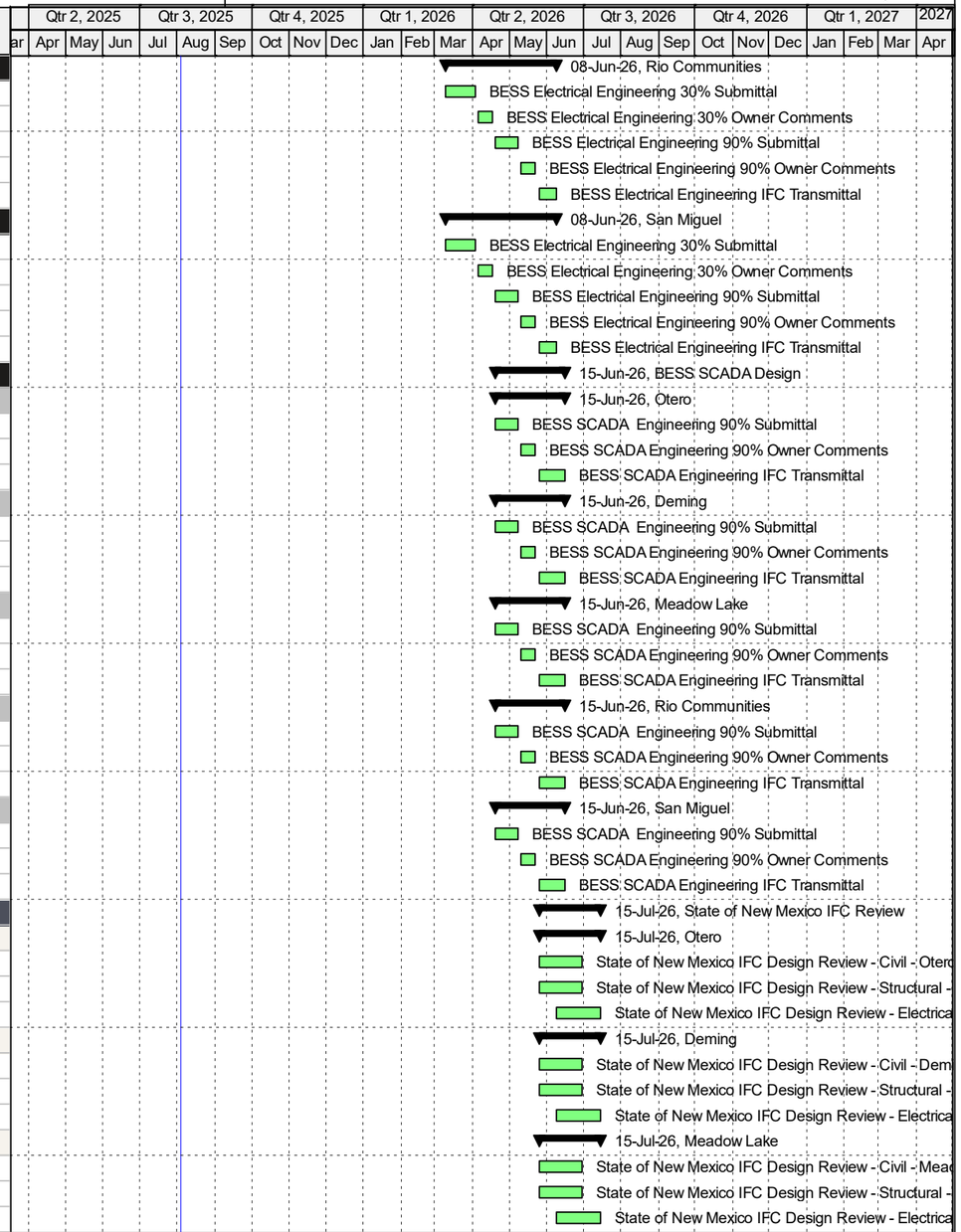
Activity ID	Activity Name	Remaining Duration	Start	Finish
Rio Communities		65.00	09-Mar-26	08-Jun-26
ENG - 4 - 3400	BESS Electrical Engineering 30% Submittal	20.00	09-Mar-26	03-Apr-26
ENG - 4 - 3401	BESS Electrical Engineering 30% Owner Comments	10.00	06-Apr-26	17-Apr-26
ENG - 4 - 3404	BESS Electrical Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3405	BESS Electrical Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3406	BESS Electrical Engineering IFC Transmittal	10.00	26-May-26	08-Jun-26
San Miguel		65.00	09-Mar-26	08-Jun-26
ENG - 4 - 3500	BESS Electrical Engineering 30% Submittal	20.00	09-Mar-26	03-Apr-26
ENG - 4 - 3501	BESS Electrical Engineering 30% Owner Comments	10.00	06-Apr-26	17-Apr-26
ENG - 4 - 3504	BESS Electrical Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3505	BESS Electrical Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3506	BESS Electrical Engineering IFC Transmittal	10.00	26-May-26	08-Jun-26
BESS SCADA Design		40.00	20-Apr-26	15-Jun-26
Otero		40.00	20-Apr-26	15-Jun-26
ENG - 4 - 3114	BESS SCADA Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3115	BESS SCADA Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3116	BESS SCADA Engineering IFC Transmittal	15.00	26-May-26	15-Jun-26
Deming		40.00	20-Apr-26	15-Jun-26
ENG - 4 - 3214	BESS SCADA Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3215	BESS SCADA Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3216	BESS SCADA Engineering IFC Transmittal	15.00	26-May-26	15-Jun-26
Meadow Lake		40.00	20-Apr-26	15-Jun-26
ENG - 4 - 3314	BESS SCADA Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3315	BESS SCADA Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3316	BESS SCADA Engineering IFC Transmittal	15.00	26-May-26	15-Jun-26
Rio Communities		40.00	20-Apr-26	15-Jun-26
ENG - 4 - 3414	BESS SCADA Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3415	BESS SCADA Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3416	BESS SCADA Engineering IFC Transmittal	15.00	26-May-26	15-Jun-26
San Miguel		40.00	20-Apr-26	15-Jun-26
ENG - 4 - 3514	BESS SCADA Engineering 90% Submittal	15.00	20-Apr-26	08-May-26
ENG - 4 - 3515	BESS SCADA Engineering 90% Owner Comments	10.00	11-May-26	22-May-26
ENG - 4 - 3516	BESS SCADA Engineering IFC Transmittal	15.00	26-May-26	15-Jun-26
State of New Mexico IFC Review		35.00	26-May-26	15-Jul-26
Otero		35.00	26-May-26	15-Jul-26
ENG - 6 - 1100	State of New Mexico IFC Design Review - Civil - Otero	25.00	26-May-26	30-Jun-26
ENG - 6 - 1101	State of New Mexico IFC Design Review - Structural - Otero	25.00	26-May-26	30-Jun-26
ENG - 6 - 1102	State of New Mexico IFC Design Review - Electrical - Otero	25.00	09-Jun-26	15-Jul-26
Deming		35.00	26-May-26	15-Jul-26
ENG - 6 - 1200	State of New Mexico IFC Design Review - Civil - Deming	25.00	26-May-26	30-Jun-26
ENG - 6 - 1201	State of New Mexico IFC Design Review - Structural - Deming	25.00	26-May-26	30-Jun-26
ENG - 6 - 1202	State of New Mexico IFC Design Review - Electrical - Deming	25.00	09-Jun-26	15-Jul-26
Meadow Lake		35.00	26-May-26	15-Jul-26
ENG - 6 - 1300	State of New Mexico IFC Design Review - Civil - Meadow Lake	25.00	26-May-26	30-Jun-26
ENG - 6 - 1301	State of New Mexico IFC Design Review - Structural - Meadow Lake	25.00	26-May-26	30-Jun-26
ENG - 6 - 1302	State of New Mexico IFC Design Review - Electrical - Meadow Lake	25.00	09-Jun-26	15-Jul-26



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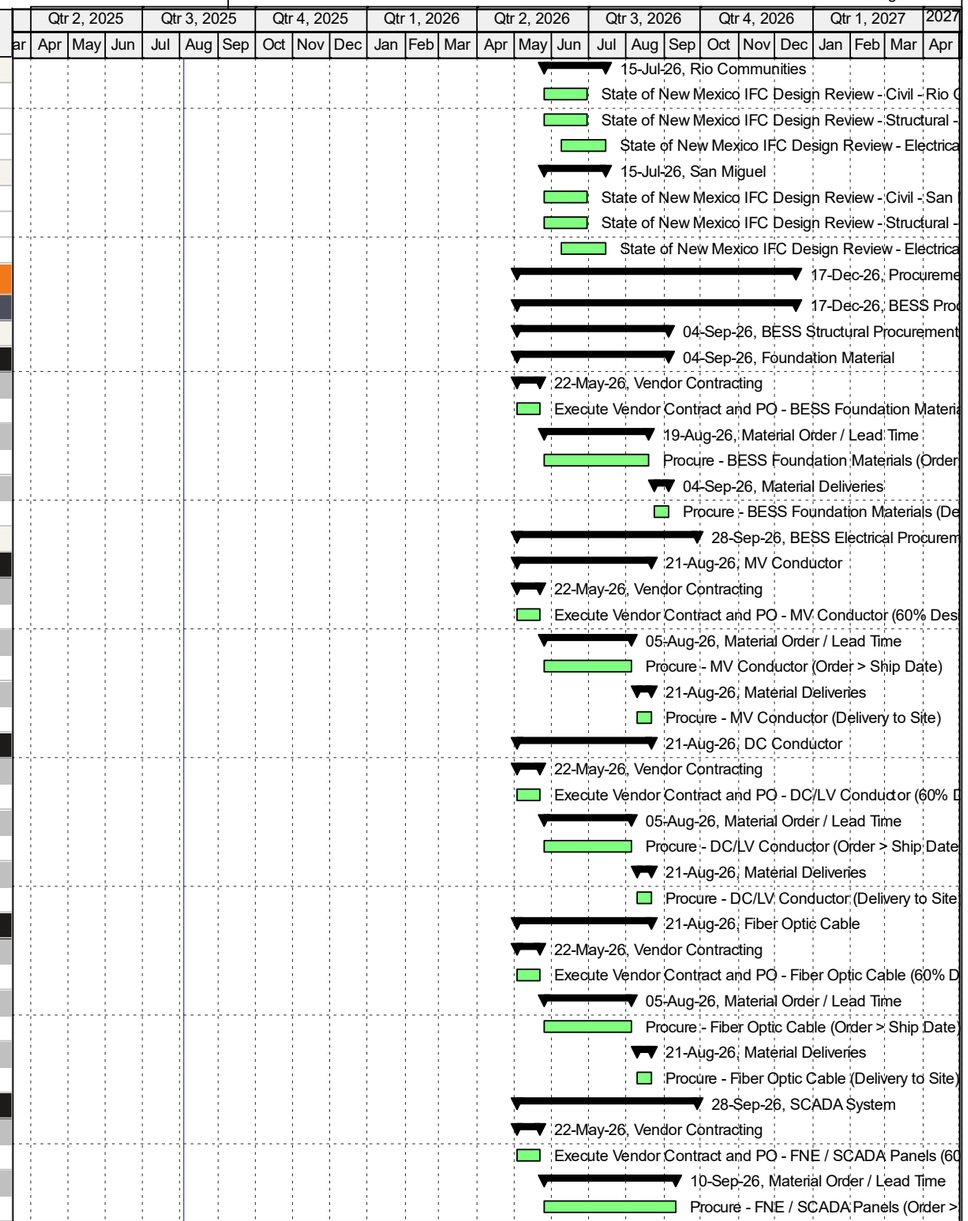
Activity ID	Activity Name	Remaining Duration	Start	Finish
Rio Communities		35.00	26-May-26	15-Jul-26
ENG - 6 - 1400	State of New Mexico IFC Design Review - Civil - Rio Communities	25.00	26-May-26	30-Jun-26
ENG - 6 - 1401	State of New Mexico IFC Design Review - Structural - Rio Communities	25.00	26-May-26	30-Jun-26
ENG - 6 - 1402	State of New Mexico IFC Design Review - Electrical - Rio Communities	25.00	09-Jun-26	15-Jul-26
San Miguel		35.00	26-May-26	15-Jul-26
ENG - 6 - 1500	State of New Mexico IFC Design Review - Civil - San Miguel	25.00	26-May-26	30-Jun-26
ENG - 6 - 1501	State of New Mexico IFC Design Review - Structural - San Miguel	25.00	26-May-26	30-Jun-26
ENG - 6 - 1502	State of New Mexico IFC Design Review - Electrical - San Miguel	25.00	09-Jun-26	15-Jul-26
Procurement		157.00	04-May-26	17-Dec-26
BESS Procurement		157.00	04-May-26	17-Dec-26
BESS Structural Procurement		87.00	04-May-26	04-Sep-26
Foundation Material		87.00	04-May-26	04-Sep-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 1100	Execute Vendor Contract and PO - BESS Foundation Materials (60% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		60.00	26-May-26	19-Aug-26
PRO - 2 - 1101	Procure - BESS Foundation Materials (Order > Ship Date)	60.00	26-May-26	19-Aug-26
Material Deliveries		10.00	24-Aug-26	04-Sep-26
PRO - 2 - 1102	Procure - BESS Foundation Materials (Delivery to Site)	10.00	24-Aug-26	04-Sep-26
BESS Electrical Procurement		102.00	04-May-26	28-Sep-26
MV Conductor		77.00	04-May-26	21-Aug-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 2100	Execute Vendor Contract and PO - MV Conductor (60% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		50.00	26-May-26	05-Aug-26
PRO - 2 - 2101	Procure - MV Conductor (Order > Ship Date)	50.00	26-May-26	05-Aug-26
Material Deliveries		10.00	10-Aug-26	21-Aug-26
PRO - 2 - 2102	Procure - MV Conductor (Delivery to Site)	10.00	10-Aug-26	21-Aug-26
DC Conductor		77.00	04-May-26	21-Aug-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 2200	Execute Vendor Contract and PO - DC/LV Conductor (60% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		50.00	26-May-26	05-Aug-26
PRO - 2 - 2201	Procure - DC/LV Conductor (Order > Ship Date)	50.00	26-May-26	05-Aug-26
Material Deliveries		10.00	10-Aug-26	21-Aug-26
PRO - 2 - 2202	Procure - DC/LV Conductor (Delivery to Site)	10.00	10-Aug-26	21-Aug-26
Fiber Optic Cable		77.00	04-May-26	21-Aug-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 2300	Execute Vendor Contract and PO - Fiber Optic Cable (60% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		50.00	26-May-26	05-Aug-26
PRO - 2 - 2301	Procure - Fiber Optic Cable (Order > Ship Date)	50.00	26-May-26	05-Aug-26
Material Deliveries		10.00	10-Aug-26	21-Aug-26
PRO - 2 - 2302	Procure - Fiber Optic Cable (Delivery to Site)	10.00	10-Aug-26	21-Aug-26
SCADA System		102.00	04-May-26	28-Sep-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 2400	Execute Vendor Contract and PO - FNE / SCADA Panels (60% Comments)	15.00	04-May-26	22-May-26
Material Order / Lead Time		75.00	26-May-26	10-Sep-26
PRO - 2 - 2401	Procure - FNE / SCADA Panels (Order > Ship Date)	75.00	26-May-26	10-Sep-26



Actual Work
Remaining Work
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Milestone
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Data Date: 04-Aug-25
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Distribution Phase II - PNM - 30MWac
Preliminary Detailed Schedule

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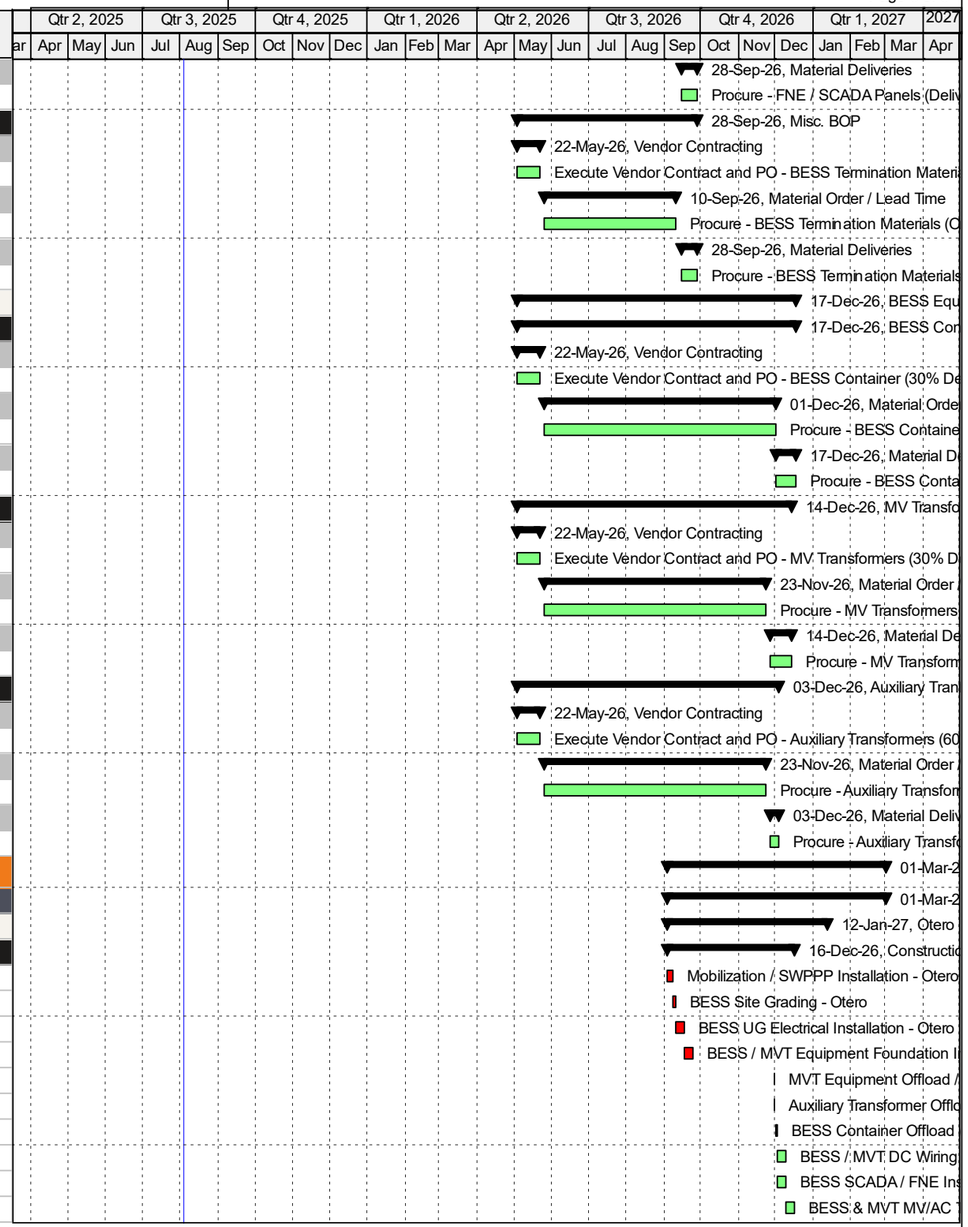
Activity ID	Activity Name	Remaining Duration	Start	Finish
Material Deliveries		10.00	15-Sep-26	28-Sep-26
PRO - 2 - 2402	Procure - FNE / SCADA Panels (Delivery to Site)	10.00	15-Sep-26	28-Sep-26
Misc. BOP		102.00	04-May-26	28-Sep-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 2500	Execute Vendor Contract and PO - BESS Termination Materials (60% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		75.00	26-May-26	10-Sep-26
PRO - 2 - 2501	Procure - BESS Termination Materials (Order > Ship Date)	75.00	26-May-26	10-Sep-26
Material Deliveries		10.00	15-Sep-26	28-Sep-26
PRO - 2 - 2502	Procure - BESS Termination Materials (Delivery to Site)	10.00	15-Sep-26	28-Sep-26
BESS Equipment Procurement		157.00	04-May-26	17-Dec-26
BESS Containers		157.00	04-May-26	17-Dec-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 3100	Execute Vendor Contract and PO - BESS Container (30% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		130.00	26-May-26	01-Dec-26
PRO - 2 - 3101	Procure - BESS Container (Order > Ship Date)	130.00	26-May-26	01-Dec-26
Material Deliveries		12.00	02-Dec-26	17-Dec-26
PRO - 2 - 3102	Procure - BESS Container (Delivery to Site)	12.00	02-Dec-26	17-Dec-26
MV Transformers		154.00	04-May-26	14-Dec-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 3200	Execute Vendor Contract and PO - MV Transformers (30% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		125.00	26-May-26	23-Nov-26
PRO - 2 - 3201	Procure - MV Transformers (Order > Ship Date)	125.00	26-May-26	23-Nov-26
Material Deliveries		12.00	27-Nov-26	14-Dec-26
PRO - 2 - 3202	Procure - MV Transformers (Delivery to Site)	12.00	27-Nov-26	14-Dec-26
Auxiliary Tranformers		147.00	04-May-26	03-Dec-26
Vendor Contracting		15.00	04-May-26	22-May-26
PRO - 2 - 3300	Execute Vendor Contract and PO - Auxiliary Transformers (60% Design)	15.00	04-May-26	22-May-26
Material Order / Lead Time		125.00	26-May-26	23-Nov-26
PRO - 2 - 3301	Procure - Auxiliary Transformers (Order > Ship Date)	125.00	26-May-26	23-Nov-26
Material Deliveries		5.00	27-Nov-26	03-Dec-26
PRO - 2 - 3302	Procure - Auxiliary Transformers (Delivery to Site)	5.00	27-Nov-26	03-Dec-26
Construction		122.00	03-Sep-26	01-Mar-27
BESS Construction		122.00	03-Sep-26	01-Mar-27
Otero		88.00	03-Sep-26	12-Jan-27
Construction		72.00	03-Sep-26	16-Dec-26
CON - 2 - 1101.1	Mobilization / SWPPP Installation - Otero	2.00	03-Sep-26	08-Sep-26
CON - 2 - 1102.1	BESS Site Grading - Otero	3.00	08-Sep-26	10-Sep-26
CON - 2 - 3100.1	BESS UG Electrical Installation - Otero	5.00	11-Sep-26	17-Sep-26
CON - 2 - 2100.1	BESS / MVT Equipment Foundation Installation - Otero	5.00	18-Sep-26	24-Sep-26
CON - 2 - 4101.1	MVT Equipment Offload / Setting - Otero	1.00	30-Nov-26	30-Nov-26
CON - 2 - 4102.1	Auxiliary Transformer Offload / Setting - Otero	1.00	30-Nov-26	30-Nov-26
CON - 2 - 4100.1	BESS Container Offload / Setting - Otero	1.00	02-Dec-26	02-Dec-26
CON - 2 - 3200.1	BESS / MVT DC Wiring - Otero	5.00	03-Dec-26	09-Dec-26
CON - 2 - 3201.1	BESS SCADA / FNE Installation - Otero	5.00	03-Dec-26	09-Dec-26
CON - 2 - 4201.1	BESS & MVT MV/AC Terminations - Otero	5.00	10-Dec-26	16-Dec-26



Actual Work
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Distribution Phase II - PNM - 30MWac
Preliminary Detailed Schedule

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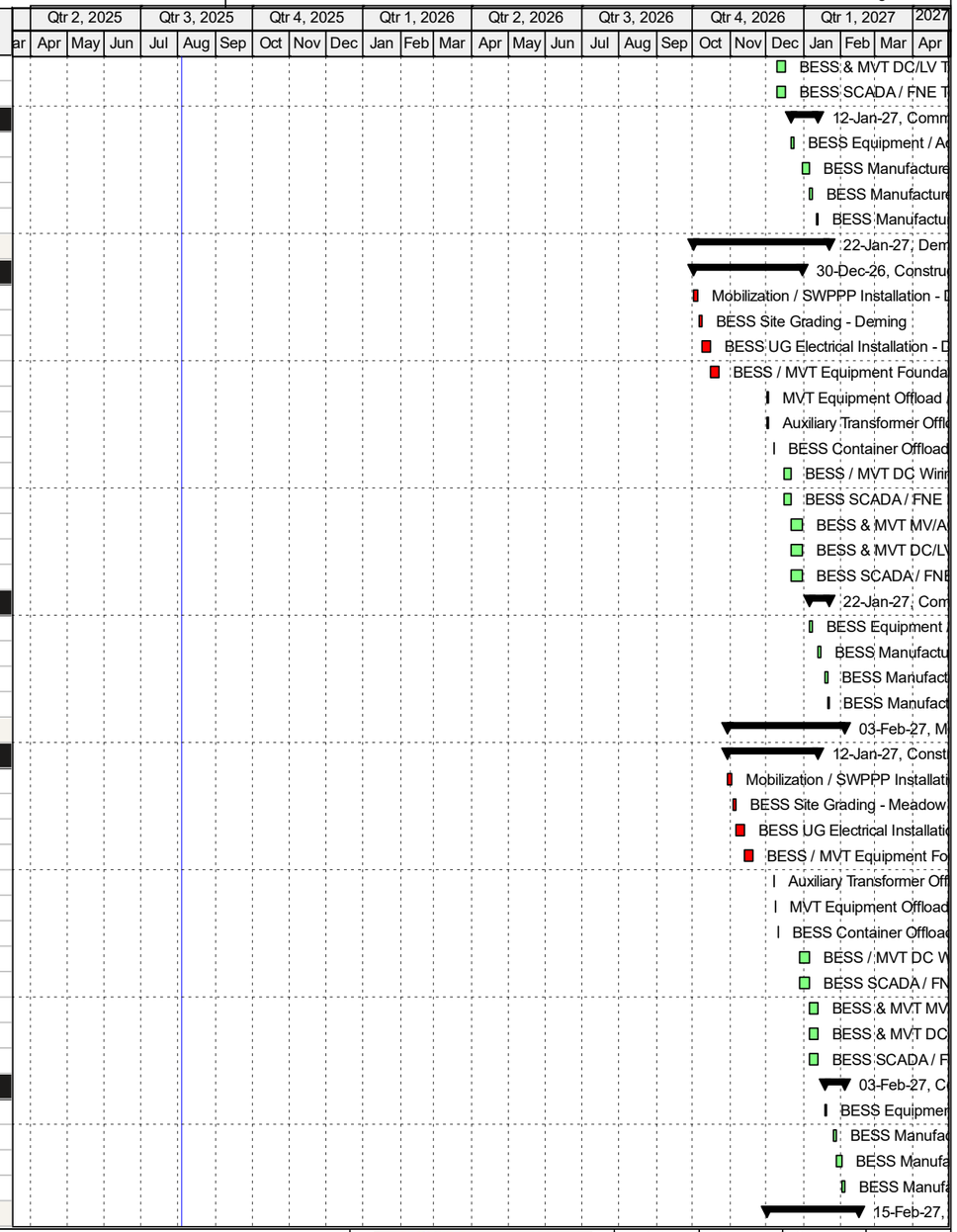
Activity ID	Activity Name	Remaining Duration	Start	Finish
CON - 2 - 4202.1	BESS & MVT DC/LV Terminations - Otero	5.00	10-Dec-26	16-Dec-26
CON - 2 - 4203.1	BESS SCADA / FNE Terminations - Otero	5.00	10-Dec-26	16-Dec-26
Commissioning		13.00	22-Dec-26	12-Jan-27
CON - 2 - 6100.1	BESS Equipment / Acceptance Testing - Otero	2.00	22-Dec-26	23-Dec-26
CON - 2 - 6101.1	BESS Manufacturer - Cold-Commissioning - Otero	3.00	31-Dec-26	05-Jan-27
CON - 2 - 6200.1	BESS Manufacturer - Hot-Commissioning - Otero	3.00	06-Jan-27	08-Jan-27
CON - 2 - 6201.1	BESS Manufacturer - Operational / Capacity Testing - Otero	2.00	11-Jan-27	12-Jan-27
Deming		76.00	02-Oct-26	22-Jan-27
Construction		60.00	02-Oct-26	30-Dec-26
CON - 2 - 1101.2	Mobilization / SWPPP Installation - Deming	2.00	02-Oct-26	05-Oct-26
CON - 2 - 1102.2	BESS Site Grading - Deming	3.00	06-Oct-26	08-Oct-26
CON - 2 - 3100.2	BESS UG Electrical Installation - Deming	5.00	09-Oct-26	15-Oct-26
CON - 2 - 2100.2	BESS / MVT Equipment Foundation Installation - Deming	5.00	16-Oct-26	22-Oct-26
CON - 2 - 4101.2	MVT Equipment Offload / Setting - Deming	1.00	02-Dec-26	02-Dec-26
CON - 2 - 4102.2	Auxiliary Transformer Offload / Setting - Deming	1.00	02-Dec-26	02-Dec-26
CON - 2 - 4100.2	BESS Container Offload / Setting - Deming	1.00	07-Dec-26	07-Dec-26
CON - 2 - 3200.2	BESS / MVT DC Wiring - Deming	5.00	15-Dec-26	21-Dec-26
CON - 2 - 3201.2	BESS SCADA / FNE Installation - Deming	5.00	15-Dec-26	21-Dec-26
CON - 2 - 4201.2	BESS & MVT MV/AC Terminations - Deming	5.00	22-Dec-26	30-Dec-26
CON - 2 - 4202.2	BESS & MVT DC/LV Terminations - Deming	5.00	22-Dec-26	30-Dec-26
CON - 2 - 4203.2	BESS SCADA / FNE Terminations - Deming	5.00	22-Dec-26	30-Dec-26
Commissioning		13.00	06-Jan-27	22-Jan-27
CON - 2 - 6100.2	BESS Equipment / Acceptance Testing - Deming	2.00	06-Jan-27	07-Jan-27
CON - 2 - 6101.2	BESS Manufacturer - Cold-Commissioning - Deming	3.00	13-Jan-27	15-Jan-27
CON - 2 - 6200.2	BESS Manufacturer - Hot-Commissioning - Deming	3.00	18-Jan-27	20-Jan-27
CON - 2 - 6201.2	BESS Manufacturer - Operational / Capacity Testing - Deming	2.00	21-Jan-27	22-Jan-27
Meadow Lake		64.00	30-Oct-26	03-Feb-27
Construction		48.00	30-Oct-26	12-Jan-27
CON - 2 - 1101.3	Mobilization / SWPPP Installation - Meadow Lake	2.00	30-Oct-26	02-Nov-26
CON - 2 - 1102.3	BESS Site Grading - Meadow Lake	3.00	03-Nov-26	05-Nov-26
CON - 2 - 3100.3	BESS UG Electrical Installation - Meadow Lake	5.00	06-Nov-26	12-Nov-26
CON - 2 - 2100.3	BESS / MVT Equipment Foundation Installation - Meadow Lake	5.00	13-Nov-26	19-Nov-26
CON - 2 - 4102.3	Auxiliary Transformer Offload / Setting - Meadow Lake	1.00	07-Dec-26	07-Dec-26
CON - 2 - 4101.3	MVT Equipment Offload / Setting - Meadow Lake	1.00	08-Dec-26	08-Dec-26
CON - 2 - 4100.3	BESS Container Offload / Setting - Meadow Lake	1.00	11-Dec-26	11-Dec-26
CON - 2 - 3200.3	BESS / MVT DC Wiring - Meadow Lake	5.00	29-Dec-26	05-Jan-27
CON - 2 - 3201.3	BESS SCADA / FNE Installation - Meadow Lake	5.00	29-Dec-26	05-Jan-27
CON - 2 - 4201.3	BESS & MVT MV/AC Terminations - Meadow Lake	5.00	06-Jan-27	12-Jan-27
CON - 2 - 4202.3	BESS & MVT DC/LV Terminations - Meadow Lake	5.00	06-Jan-27	12-Jan-27
CON - 2 - 4203.3	BESS SCADA / FNE Terminations - Meadow Lake	5.00	06-Jan-27	12-Jan-27
Commissioning		13.00	18-Jan-27	03-Feb-27
CON - 2 - 6100.3	BESS Equipment / Acceptance Testing - Meadow Lake	2.00	18-Jan-27	19-Jan-27
CON - 2 - 6101.3	BESS Manufacturer - Cold-Commissioning - Meadow Lake	3.00	25-Jan-27	27-Jan-27
CON - 2 - 6200.3	BESS Manufacturer - Hot-Commissioning - Meadow Lake	3.00	28-Jan-27	01-Feb-27
CON - 2 - 6201.3	BESS Manufacturer - Operational / Capacity Testing - Meadow Lake	2.00	02-Feb-27	03-Feb-27
Rio Communities		52.00	01-Dec-26	15-Feb-27



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Distribution Phase II - PNM - 30MWac
Preliminary Detailed Schedule

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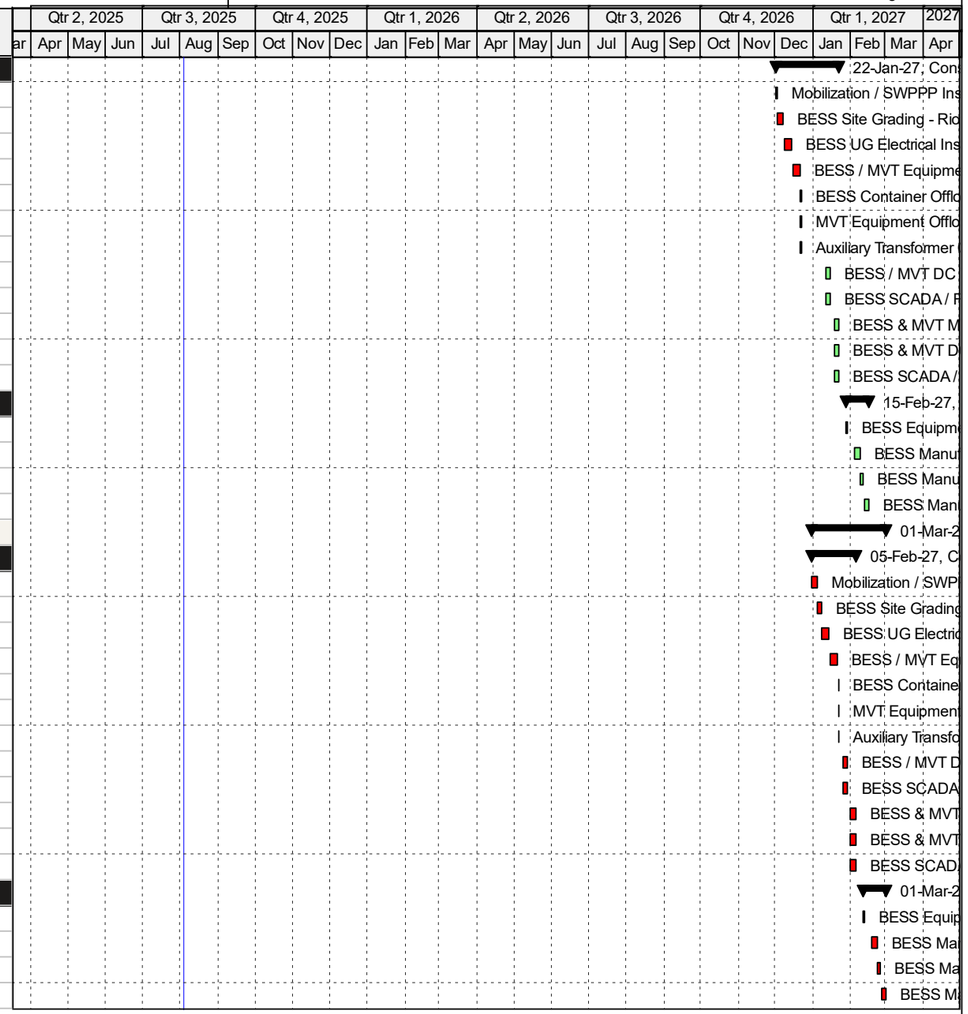
Activity ID	Activity Name	Remaining Duration	Start	Finish
Construction		36.00	01-Dec-26	22-Jan-27
CON - 2 - 1101.4	Mobilization / SWPPP Installation - Rio Communities	2.00	01-Dec-26	02-Dec-26
CON - 2 - 1102.4	BESS Site Grading - Rio Communities	3.00	03-Dec-26	07-Dec-26
CON - 2 - 3100.4	BESS UG Electrical Installation - Rio Communities	5.00	08-Dec-26	14-Dec-26
CON - 2 - 2100.4	BESS / MVT Equipment Foundation Installation - Rio Communities	5.00	15-Dec-26	21-Dec-26
CON - 2 - 4100.4	BESS Container Offload / Setting - Rio Communities	1.00	22-Dec-26	22-Dec-26
CON - 2 - 4101.4	MVT Equipment Offload / Setting - Rio Communities	1.00	22-Dec-26	22-Dec-26
CON - 2 - 4102.4	Auxiliary Transformer Offload / Setting - Rio Communities	1.00	22-Dec-26	22-Dec-26
CON - 2 - 3200.4	BESS / MVT DC Wiring - Rio Communities	5.00	11-Jan-27	15-Jan-27
CON - 2 - 3201.4	BESS SCADA / FNE Installation - Rio Communities	5.00	11-Jan-27	15-Jan-27
CON - 2 - 4201.4	BESS & MVT MV/AC Terminations - Rio Communities	5.00	18-Jan-27	22-Jan-27
CON - 2 - 4202.4	BESS & MVT DC/LV Terminations - Rio Communities	5.00	18-Jan-27	22-Jan-27
CON - 2 - 4203.4	BESS SCADA / FNE Terminations - Rio Communities	5.00	18-Jan-27	22-Jan-27
Commissioning		13.00	28-Jan-27	15-Feb-27
CON - 2 - 6100.4	BESS Equipment / Acceptance Testing - Rio Communities	2.00	28-Jan-27	29-Jan-27
CON - 2 - 6101.4	BESS Manufacturer - Cold-Commissioning - Rio Communities	3.00	04-Feb-27	08-Feb-27
CON - 2 - 6200.4	BESS Manufacturer - Hot-Commissioning - Rio Communities	3.00	09-Feb-27	11-Feb-27
CON - 2 - 6201.4	BESS Manufacturer - Operational / Capacity Testing - Rio Communities	2.00	12-Feb-27	15-Feb-27
San Miguel		42.00	31-Dec-26	01-Mar-27
Construction		26.00	31-Dec-26	05-Feb-27
CON - 2 - 1101.5	Mobilization / SWPPP Installation - San Miguel	2.00	31-Dec-26	04-Jan-27
CON - 2 - 1102.5	BESS Site Grading - San Miguel	3.00	05-Jan-27	07-Jan-27
CON - 2 - 3100.5	BESS UG Electrical Installation - San Miguel	5.00	08-Jan-27	14-Jan-27
CON - 2 - 2100.5	BESS / MVT Equipment Foundation Installation - San Miguel	5.00	15-Jan-27	21-Jan-27
CON - 2 - 4100.5	BESS Container Offload / Setting - San Miguel	1.00	22-Jan-27	22-Jan-27
CON - 2 - 4101.5	MVT Equipment Offload / Setting - San Miguel	1.00	22-Jan-27	22-Jan-27
CON - 2 - 4102.5	Auxiliary Transformer Offload / Setting - San Miguel	1.00	22-Jan-27	22-Jan-27
CON - 2 - 3200.5	BESS / MVT DC Wiring - San Miguel	5.00	25-Jan-27	29-Jan-27
CON - 2 - 3201.5	BESS SCADA / FNE Installation - San Miguel	5.00	25-Jan-27	29-Jan-27
CON - 2 - 4201.5	BESS & MVT MV/AC Terminations - San Miguel	5.00	01-Feb-27	05-Feb-27
CON - 2 - 4202.5	BESS & MVT DC/LV Terminations - San Miguel	5.00	01-Feb-27	05-Feb-27
CON - 2 - 4203.5	BESS SCADA / FNE Terminations - San Miguel	5.00	01-Feb-27	05-Feb-27
Commissioning		13.00	11-Feb-27	01-Mar-27
CON - 2 - 6100.5	BESS Equipment / Acceptance Testing - San Miguel	2.00	11-Feb-27	12-Feb-27
CON - 2 - 6101.5	BESS Manufacturer - Cold-Commissioning - San Miguel	3.00	18-Feb-27	22-Feb-27
CON - 2 - 6200.5	BESS Manufacturer - Hot-Commissioning - San Miguel	3.00	23-Feb-27	25-Feb-27
CON - 2 - 6201.5	BESS Manufacturer - Operational / Capacity Testing - San Miguel	2.00	26-Feb-27	01-Mar-27



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Distribution Phase II - PNM - 30MWac
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PAYMENT SCHEDULE

Month #:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Order	Tax	Client SOV	Description	Original Total	Backed Out GRT	Revised Total	LNTP 1		March-25	April-25	May-25	June-25	July-25	August-25	September-25	October-25	November-25	December-25	January-26	February-26	March-26	April-26	May-26	June-26	July-26
			OTERO	**$ 13,942,290.87**	**$ 1,141,525.06**	**$ 12,800,765.81**	**$ -**		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,189,496.76**	**$ 396,161.60**	**$ -**
	N		ENG - 60% Design	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 528,215.47	$ -	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 396,161.60	$ -
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 125,205.50	$ 1,404,021.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 562,219.34	$ 6,304,581.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 75,683.37	$ 848,693.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 86,495.28	$ 969,935.65	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			DEMING	**$ 13,942,290.87**	**$ 1,150,238.99**	**$ 12,792,051.88**	**$ -**		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,189,496.76**	**$ 396,161.60**	**$ -**
	N		ENG - 60% Design	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 528,215.47	$ -	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 396,161.60	$ -
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 126,161.26	$ 1,403,066.16	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 566,511.09	$ 6,300,289.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 76,261.11	$ 848,115.95	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 87,155.55	$ 969,275.38	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			MEADOW LAKE	**$ 14,032,248.46**	**$ 1,182,216.94**	**$ 12,850,031.52**	**$ -**		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,199,392.10**	**$ 398,860.33**	**$ -**
	N		ENG - 60% Design	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 531,813.77	$ -	$ -
	N		ENG - IFC Design	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 398,860.33	$ -
	N		PRO - BESS Containers Purchased	$ 1,534,624.89	$ 129,292.15	$ 1,405,332.74	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,534,624.89	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,913,578.99	$ 582,469.03	$ 6,331,109.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 930,674.10	$ 78,409.29	$ 852,264.81	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,063,627.54	$ 89,610.62	$ 974,016.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			RIO COMMUNITIES	**$ 15,059,506.86**	**$ 1,214,172.74**	**$ 13,845,334.12**	**$ -**		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,312,390.53**	**$ 429,678.08**	**$ -**
	N		ENG - 60% Design	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 572,904.10	$ -	$ -
	N		ENG - IFC Design	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 429,678.08	$ -
	N		PRO - BESS Containers Purchased	$ 1,596,260.40	$ 128,698.49	$ 1,467,561.91	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,596,260.40	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,447,753.36	$ 600,475.11	$ 6,847,278.25	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 1,002,582.18	$ 80,833.19	$ 921,748.99	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,145,808.21	$ 92,380.79	$ 1,053,427.42	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			SAN MIGUEL	**$ 14,523,662.94**	**$ 1,183,068.53**	**$ 13,340,594.41**	**$ -**		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,253,447.68**	**$ 413,602.76**	**$ -**
	N		ENG - 60% Design	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 551,470.35	$ -	$ -
	N		ENG - IFC Design	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 413,602.76	$ -
	N		PRO - BESS Containers Purchased	$ 1,564,109.74	$ 127,409.25	$ 1,436,700.49	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,564,109.74	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,169,114.52	$ 583,981.73	$ 6,585,132.79	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 965,073.11	$ 78,612.93	$ 886,460.18	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,102,940.70	$ 89,843.34	$ 1,013,097.36	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			Total	**$ 71,500,000.00**	**$ 5,871,222.26**	**$ 65,628,777.74**	**$ -**	**MONTHLY**	**Subtotal**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,144,223.83**	**$ 2,034,464.37**	**$ -**
									Invoice Total	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,144,223.83**	**$ 2,034,464.37**	**$ -**
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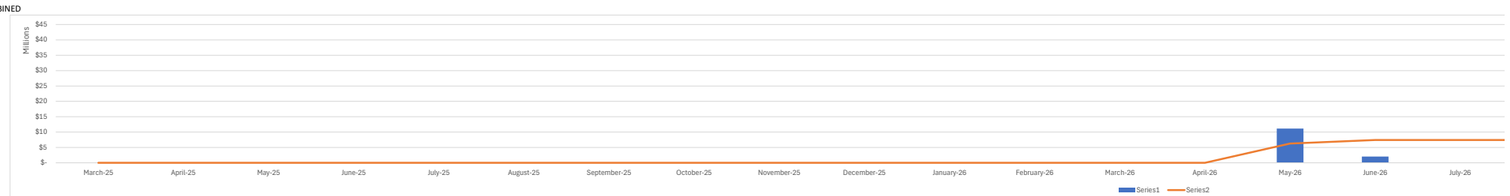
								CUMULATIVE	**Subtotal**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,144,223.83**	**$ 13,178,688.20**	**$ 13,178,688.20**
									Invoice Total	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,144,223.83**	**$ 13,178,688.20**	**$ 13,178,688.20**
									% Billed	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**15.6%**	**18.4%**	**18.4%**

MONTHLY CASH OUT	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,144,223.83**	**$ 2,034,464.37**	
CUMULATIVE CASH OUT	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 11,144,223.83**	**$ 13,178,688.20**	

Select Project/s:
ALL 5 COMBINED



17	18	19	20	21	22	23	24	25	
August-26	September-26	October-26	November-26	December-26	January-27	February-27	March-27	April-27	Total Check
$ -	$ 1,188,484.80	$ -	$ -	$ 8,847,609.04	$ 1,188,484.80	$ -	$ 132,053.87	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ -	$ 6,866,801.05	$ -	$ -	$ -	$ -	$ -
$ -	$ 528,215.47	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ 660,269.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 924,377.06	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 1,056,430.93	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 396,161.60	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
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$ -	$ -	$ 1,188,484.80	$ -	$ 8,847,609.04	$ 1,188,484.80	$ -	$ 132,053.87	$ -	$ -
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$ -	$ -	$ -	$ -	$ 6,866,801.05	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ 528,215.47	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 924,377.06	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 1,056,430.93	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ 1,196,580.98	$ 7,844,253.09	$ 1,063,627.54	$ 1,196,580.98	$ 132,953.44	$ -	$ -
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$ -	$ -	$ -	$ -	$ 7,447,753.36	$ -	$ -	$ -	$ -	$ -
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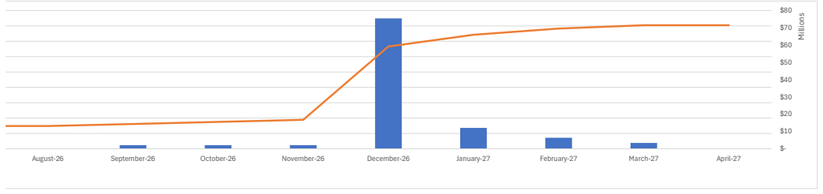
$ -	$ -	$ -	$ -	$ 716,130.13	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 1,002,582.18	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 1,145,808.21	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 716,130.13	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 429,678.08	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 7,169,114.52	$ 2,205,881.40	$ 1,102,940.70	$ 1,378,675.88	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 7,169,114.52	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 551,470.35	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 689,337.94	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 965,073.11	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 1,102,940.70	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 689,337.94	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 413,602.76	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ 1,188,484.80	$ 1,188,484.80	$ 1,196,580.98	$ 42,447,955.46	$ 6,792,286.75	$ 3,588,555.92	$ 1,918,963.09	$ -	
$ -	$ 1,188,484.80	$ 1,188,484.80	$ 1,196,580.98	$ 42,447,955.46	$ 6,792,286.75	$ 3,588,555.92	$ 1,918,963.09	$ -	
$ 13,178,688.20	$ 14,367,173.00	$ 15,555,657.80	$ 16,752,238.78	$ 59,200,194.24	$ 65,992,480.99	$ 69,581,036.91	$ 71,500,000.00	$ 71,500,000.00	
$ 13,178,688.20	$ 14,367,173.00	$ 15,555,657.80	$ 16,752,238.78	$ 59,200,194.24	$ 65,992,480.99	$ 69,581,036.91	$ 71,500,000.00	$ 71,500,000.00	
18.4%	20.1%	21.8%	23.4%	82.8%	92.3%	97.3%	100.0%	100.0%	

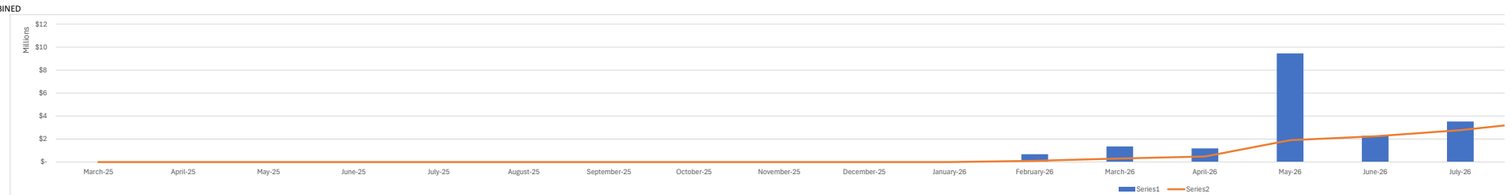
$ -	$ -	$ 1,188,484.80	$ 1,188,484.80	$ 1,196,580.98	$ 42,447,955.46	$ 6,792,286.75	$ 3,588,555.92	$ 1,918,963.09
$ 13,178,688.20	$ 13,178,688.20	$ 14,367,173.00	$ 15,555,657.80	$ 16,752,238.78	$ 59,200,194.24	$ 65,992,480.99	$ 69,581,036.91	$ 71,500,000.00



CANCELLATION SCHEDULE

Order	Tax	Client SOV	Description	Original Total	Backed Out GRT	Revised Total	LNTP 1		March-25	April-25	May-25	June-25	July-25	August-25	September-25	October-25	November-25	December-25	January-26	February-26	March-26	April-26	May-26	June-26	July-26
			Month #:	**0**					**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	
			OTERO	$ 13,942,290.87	$ 1,141,525.06	$ 12,800,765.81	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 231,094.26	$ 1,859,362.09	$ 442,380.45	$ 686,680.11
	N		ENG - 60% Design	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 132,053.86	$ -	$ -	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,040.40	$ 198,080.80	$ 99,040.40	$ -
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 125,205.50	$ 1,404,021.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 562,219.34	$ 6,304,581.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 343,340.05	$ 686,680.11
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 75,683.37	$ 848,693.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 86,495.28	$ 969,935.65	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			DEMING	$ 13,942,290.87	$ 1,150,238.99	$ 12,792,051.88	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 231,094.26	$ 1,859,362.09	$ 442,380.45	$ 686,680.11
	N		ENG - 60% Design	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 132,053.86	$ -	$ -	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,040.40	$ 198,080.80	$ 99,040.40	$ -
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 126,161.26	$ 1,403,066.16	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 566,511.09	$ 6,300,289.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 343,340.05	$ 686,680.11
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 76,261.11	$ 848,115.95	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 87,155.55	$ 969,275.38	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			MEADOW LAKE	$ 14,032,248.46	$ 1,182,216.94	$ 12,850,031.52	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ 265,906.89	$ 232,668.52	$ 1,867,008.50	$ 445,394.03	$ 691,357.90
	N		ENG - 60% Design	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ 265,906.89	$ 132,953.44	$ -	$ -	$ -
	N		ENG - IFC Design	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,715.08	$ 199,430.17	$ 99,715.08	$ -
	N		PRO - BESS Containers Purchased	$ 1,534,624.89	$ 129,292.15	$ 1,405,332.74	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,534,624.89	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,913,578.99	$ 582,469.03	$ 6,331,109.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 345,678.95	$ 691,357.90
	N		CON - Site Mobilization & Civil Complete	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 930,674.10	$ 78,409.29	$ 852,264.81	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,063,627.54	$ 89,610.62	$ 974,016.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			RIO COMMUNITIES	$ 15,059,506.86	$ 1,214,172.74	$ 13,845,334.12	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ 286,452.04	$ 250,645.55	$ 1,954,325.47	$ 479,807.19	$ 744,775.34
	N		ENG - 60% Design	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ 286,452.04	$ 143,226.03	$ -	$ -	$ -
	N		ENG - IFC Design	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 107,419.52	$ 214,839.04	$ 107,419.52	$ -
	N		PRO - BESS Containers Purchased	$ 1,596,260.40	$ 128,698.49	$ 1,467,561.91	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,596,260.40	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,447,753.36	$ 600,475.11	$ 6,847,278.25	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 372,387.67	$ 744,775.34
	N		CON - Site Mobilization & Civil Complete	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 1,002,582.18	$ 80,833.19	$ 921,748.99	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,145,808.21	$ 92,380.79	$ 1,053,427.42	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			SAN MIGUEL	$ 14,523,662.94	$ 1,183,068.53	$ 13,340,594.41	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ 275,735.17	$ 241,268.28	$ 1,908,778.71	$ 461,856.42	$ 716,911.45
	N		ENG - 60% Design	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ 275,735.17	$ 137,867.59	$ -	$ -	$ -
	N		ENG - IFC Design	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,400.69	$ 206,801.38	$ 103,400.69	$ -
	N		PRO - BESS Containers Purchased	$ 1,564,109.74	$ 127,409.25	$ 1,436,700.49	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,564,109.74	$ -	$ -
	N		PRO - PCS/MVT Purchased	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,169,114.52	$ 583,981.73	$ 6,585,132.79	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 358,455.73	$ 716,911.45
	N		CON - Site Mobilization & Civil Complete	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 965,073.11	$ 78,612.93	$ 886,460.18	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,102,940.70	$ 89,843.34	$ 1,013,097.36	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			Total	$ 71,500,000.00	$ 5,871,222.26	$ 65,628,777.74	$ -	**MONTHLY**	**Subtotal**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 678,154.80	$ 1,356,309.58	$ 1,186,770.87	$ 9,448,836.86	$ 2,271,818.54	$ 3,526,404.91
									Invoice Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 678,154.80	$ 1,356,309.58	$ 1,186,770.87	$ 9,448,836.86	$ 2,271,818.54	$ 3,526,404.91
									Invoice Paid Date																
								CUMULATIVE	**Subtotal**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 678,154.80	$ 2,034,464.38	$ 3,221,235.25	$ 12,670,072.11	$ 14,941,890.65	$ 18,468,295.56
									Invoice Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 678,154.80	$ 2,034,464.38	$ 3,221,235.25	$ 12,670,072.11	$ 14,941,890.65	$ 18,468,295.56
									% Billed																
								MONTHLY CASH OUT		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 678,154.80	$ 1,356,309.58	$ 1,186,770.87	$ 9,448,836.86	$ 2,271,818.54	$ 3,526,404.91
								CUMULATIVE CASH OUT		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 678,154.80	$ 2,034,464.38	$ 3,221,235.25	$ 12,670,072.11	$ 14,941,890.65	$ 18,468,295.56

Select Project/s:
ALL 5 COMBINED



17	18	19	20	21	22	23	24	25	
August-26	September-26	October-26	November-26	December-26	January-27	February-27	March-27	April-27	Total Check
$ 1,030,020.16	$ 2,561,845.01	$ 1,716,700.26	$ 1,716,700.26	$ 2,310,942.66	$ 858,350.13	$ -	$ 132,053.87	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,030,020.16	$ 1,373,360.21	$ 1,716,700.26	$ 1,716,700.26	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ 528,215.47	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ 660,269.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 924,377.06	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 1,056,430.93	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 330,134.67	$ 330,134.66	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 396,161.60	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,030,020.16	$ 1,373,360.21	$ 2,905,185.06	$ 1,716,700.26	$ 1,980,807.99	$ 1,188,484.80	$ -	$ 132,053.87	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,030,020.16	$ 1,373,360.21	$ 1,716,700.26	$ 1,716,700.26	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ 528,215.47	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 924,377.06	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 1,056,430.93	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 396,161.60	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,037,036.85	$ 1,382,715.80	$ 1,728,394.75	$ 2,924,975.72	$ 930,674.10	$ 1,628,679.67	$ 631,528.85	$ 132,953.44	$ -	$ -
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$ -	$ -	$ -	$ 531,813.77	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ 664,767.21	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 930,674.10	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 1,063,627.54	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 565,052.13	$ 99,715.08	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 398,860.33	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,117,163.00	$ 1,489,550.67	$ 1,861,938.34	$ 1,861,938.34	$ 2,291,616.41	$ 1,503,873.28	$ 930,969.17	$ 143,226.03	$ -	$ -
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$ -	$ -	$ -	$ -	$ 572,904.10	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 716,130.13	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 1,002,582.18	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 1,145,808.21	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 358,065.07	$ 358,065.06	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 429,678.08	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 1,075,367.18	$ 1,433,822.90	$ 1,792,278.63	$ 1,792,278.63	$ -	$ 3,143,381.00	$ 854,779.04	$ 689,337.94	$ -	$ -
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$ 1,075,367.18	$ 1,433,822.90	$ 1,792,278.63	$ 1,792,278.63	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 551,470.35	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 689,337.94	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 965,073.11	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 937,499.60	$ 165,441.10	$ -	$ -	$ -
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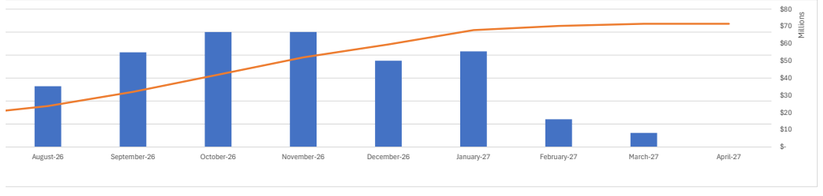
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 413,602.76	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 5,289,607.35	$ 8,241,294.59	$ 10,004,497.04	$ 10,012,593.21	$ 7,514,041.16	$ 8,322,768.88	$ 2,417,277.06	$ 1,229,625.15	$ -	
$ 5,289,607.35	$ 8,241,294.59	$ 10,004,497.04	$ 10,012,593.21	$ 7,514,041.16	$ 8,322,768.88	$ 2,417,277.06	$ 1,229,625.15	$ -	
$ 23,757,902.91	$ 31,999,197.50	$ 42,003,694.54	$ 52,016,287.75	$ 59,530,328.91	$ 67,853,097.79	$ 70,270,374.85	$ 71,500,000.00	$ 71,500,000.00	
$ 23,757,902.91	$ 31,999,197.50	$ 42,003,694.54	$ 52,016,287.75	$ 59,530,328.91	$ 67,853,097.79	$ 70,270,374.85	$ 71,500,000.00	$ 71,500,000.00	

$ 5,289,607.35	$ 8,241,294.59	$ 10,004,497.04	$ 10,012,593.21	$ 7,514,041.16	$ 8,322,768.88	$ 2,417,277.06	$ 1,229,625.15	$ -	
$ 23,757,902.91	$ 31,999,197.50	$ 42,003,694.54	$ 52,016,287.75	$ 59,530,328.91	$ 67,853,097.79	$ 70,270,374.85	$ 71,500,000.00	$ 71,500,000.00	



PAYMENT SCHEDULE

Order	Tax	Client SOV	Description	Original Total	Backed Out GRT	Revised Total	LNTP 1		March-25	April-25	May-25	June-25	July-25	August-25	September-25	October-25	November-25	December-25	January-26	February-26	March-26	April-26	May-26	June-26
			Month #:	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**					
			OTERO	$ 13,942,290.87	$ 1,141,525.06	$ 12,800,765.81	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,189,496.76	$ 396,161.60
	N		ENG - 60% Design	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 528,215.47	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 396,161.60
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 125,205.50	$ 1,404,021.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 562,219.34	$ 6,304,581.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 75,683.37	$ 848,693.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 86,495.28	$ 969,935.65	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			DEMING	$ 13,942,290.87	$ 1,150,238.99	$ 12,792,051.88	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,189,496.76	$ 396,161.60
	N		ENG - 60% Design	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 528,215.47	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 396,161.60
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 126,161.26	$ 1,403,066.16	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 566,511.09	$ 6,300,289.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 76,261.11	$ 848,115.95	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 87,155.55	$ 969,275.38	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			MEADOW LAKE	$ 14,032,248.46	$ 1,182,216.94	$ 12,850,031.52	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,199,392.10	$ 398,860.33
	N		ENG - 60% Design	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 531,813.77	$ -
	N		ENG - IFC Design	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 398,860.33
	N		PRO - BESS Containers Purchased	$ 1,534,624.89	$ 129,292.15	$ 1,405,332.74	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,534,624.89	$ -
	N		PRO - PCS/MVT Purchased	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,913,578.99	$ 582,469.03	$ 6,331,109.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 930,674.10	$ 78,409.29	$ 852,264.81	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,063,627.54	$ 89,610.62	$ 974,016.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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			RIO COMMUNITIES	$ 15,059,506.86	$ 1,214,172.74	$ 13,845,334.12	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,312,390.53	$ 429,678.08
	N		ENG - 60% Design	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 572,904.10	$ -
	N		ENG - IFC Design	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 429,678.08
	N		PRO - BESS Containers Purchased	$ 1,596,260.40	$ 128,698.49	$ 1,467,561.91	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,596,260.40	$ -
	N		PRO - PCS/MVT Purchased	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,447,753.36	$ 600,475.11	$ 6,847,278.25	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 1,002,582.18	$ 80,833.19	$ 921,748.99	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,145,808.21	$ 92,380.79	$ 1,053,427.42	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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	N		Final Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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			SAN MIGUEL	$ 14,523,662.94	$ 1,183,068.53	$ 13,340,594.41	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,253,447.68	$ 413,602.76
	N		ENG - 60% Design	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 551,470.35	$ -
	N		ENG - IFC Design	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 413,602.76
	N		PRO - BESS Containers Purchased	$ 1,564,109.74	$ 127,409.25	$ 1,436,700.49	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,564,109.74	$ -
	N		PRO - PCS/MVT Purchased	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,169,114.52	$ 583,981.73	$ 6,585,132.79	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Site Mobilization & Civil Complete	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 965,073.11	$ 78,612.93	$ 886,460.18	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,102,940.70	$ 89,843.34	$ 1,013,097.36	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			Total	$ 71,500,000.00	$ 5,871,222.26	$ 65,628,777.74	$ -	**MONTHLY**	**Subtotal**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,144,223.83	$ 2,034,464.37
									Invoice Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,144,223.83	$ 2,034,464.37
									Invoice Paid Date														
								CUMULATIVE	**Subtotal**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,144,223.83	$ 13,178,688.20
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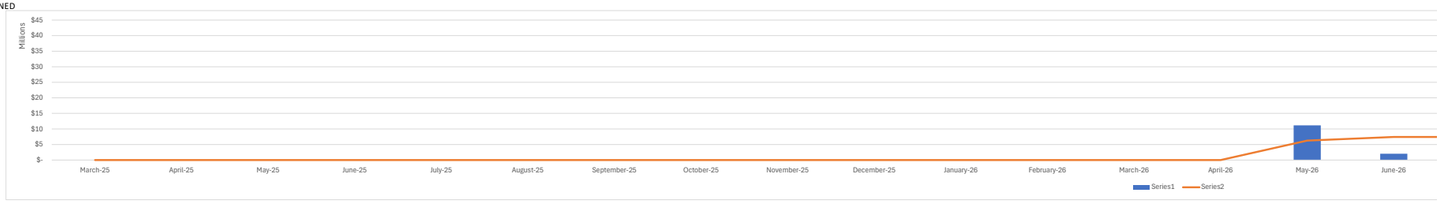
								MONTHLY CASH OUT	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,144,223.83
								CUMULATIVE CASH OUT	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,144,223.83

Select Project/s:
ALL 5 COMBINED



16	17	18	19	20	21	22	23	24	25	
July-26	**August-26**	**September-26**	**October-26**	**November-26**	**December-26**	**January-27**	**February-27**	**March-27**	**April-27**	**Total Check**
$ -	**$ -**	**$ 1,188,484.80**	**$ -**	**$ -**	**$ 8,847,609.04**	**$ 1,188,484.80**	**$ -**	**$ 132,053.87**	**$ -**	$ -
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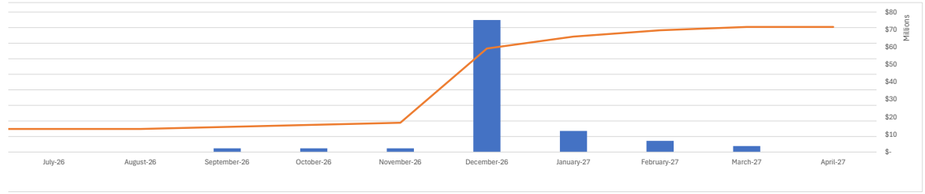
$ -	**$ -**	**$ 1,188,484.80**	**$ 1,188,484.80**	**$ 1,196,580.98**	**$ 42,447,955.46**	**$ 6,792,286.75**	**$ 3,588,555.92**	**$ 1,918,963.09**	**$ -**	
$ -	**$ -**	**$ 1,188,484.80**	**$ 1,188,484.80**	**$ 1,196,580.98**	**$ 42,447,955.46**	**$ 6,792,286.75**	**$ 3,588,555.92**	**$ 1,918,963.09**	**$ -**	
$ 13,178,688.20	**$ 13,178,688.20**	**$ 14,367,173.00**	**$ 15,555,657.80**	**$ 16,752,238.78**	**$ 59,200,194.24**	**$ 65,992,480.99**	**$ 69,581,036.91**	**$ 71,500,000.00**	**$ 71,500,000.00**	
$ 13,178,688.20	**$ 13,178,688.20**	**$ 14,367,173.00**	**$ 15,555,657.80**	**$ 16,752,238.78**	**$ 59,200,194.24**	**$ 65,992,480.99**	**$ 69,581,036.91**	**$ 71,500,000.00**	**$ 71,500,000.00**	
18.4%	**18.4%**	**20.1%**	**21.8%**	**23.4%**	**82.8%**	**92.3%**	**97.3%**	**100.0%**	**100.0%**	

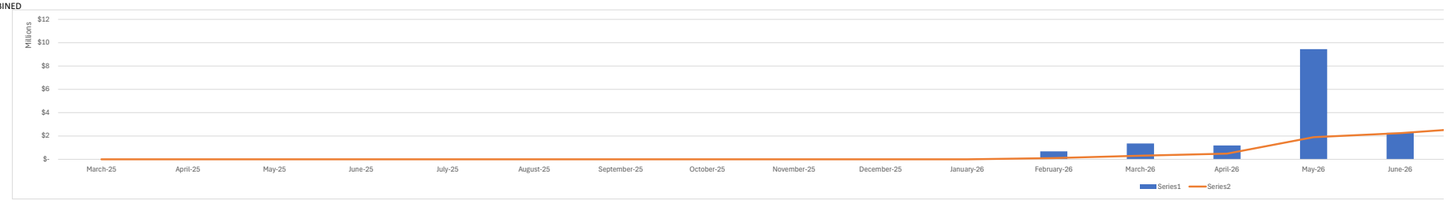
$ 2,034,464.37	**$ -**	**$ -**	**$ 1,188,484.80**	**$ 1,188,484.80**	**$ 1,196,580.98**	**$ 42,447,955.46**	**$ 6,792,286.75**	**$ 3,588,555.92**	**$ 1,918,963.09**
$ 13,178,688.20	**$ 13,178,688.20**	**$ 13,178,688.20**	**$ 14,367,173.00**	**$ 15,555,657.80**	**$ 16,752,238.78**	**$ 59,200,194.24**	**$ 65,992,480.99**	**$ 69,581,036.91**	**$ 71,500,000.00**



CANCELLATION SCHEDULE

Order	Tax	Client SOV	Description	Original Total	Backed Out GRT	Revised Total	LNTP 1		Month #: 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
									March-25	April-25	May-25	June-25	July-25	August-25	September-25	October-25	November-25	December-25	January-26	February-26	March-26	April-26	May-26	June-26
			OTERO	**$ 13,942,290.87**	**$ 1,141,525.06**	**$ 12,800,765.81**	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 231,094.26	$ 1,859,362.09	$ 442,380.45
	N		ENG - 60% Design	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 132,053.86	$ -	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,040.40	$ 198,080.80	$ 99,040.40
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 125,205.50	$ 1,404,021.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 562,219.34	$ 6,304,581.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 343,340.05
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,247.64	$ 484,967.83	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 75,683.37	$ 848,693.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 86,495.28	$ 969,935.65	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,059.55	$ 606,209.78	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,435.73	$ 363,725.87	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,811.91	$ 121,241.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			DEMING	**$ 13,942,290.87**	**$ 1,150,238.99**	**$ 12,792,051.88**	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 231,094.26	$ 1,859,362.09	$ 442,380.45
	N		ENG - 60% Design	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ 264,107.74	$ 132,053.86	$ -	$ -
	N		ENG - IFC Design	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,040.40	$ 198,080.80	$ 99,040.40
	N		PRO - BESS Containers Purchased	$ 1,529,227.42	$ 126,161.26	$ 1,403,066.16	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,529,227.42	$ -
	N		PRO - PCS/MVT Purchased	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,053.87	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,866,801.05	$ 566,511.09	$ 6,300,289.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 343,340.05
	N		CON - Site Mobilization & Civil Complete	$ 528,215.47	$ 43,577.78	$ 484,637.69	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 924,377.06	$ 76,261.11	$ 848,115.95	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,056,430.93	$ 87,155.55	$ 969,275.38	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 660,269.33	$ 54,472.22	$ 605,797.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 396,161.60	$ 32,683.33	$ 363,478.27	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,053.87	$ 10,894.44	$ 121,159.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			MEADOW LAKE	**$ 14,032,248.46**	**$ 1,182,216.94**	**$ 12,850,031.52**	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ 265,906.89	$ 232,668.52	$ 1,867,008.50	$ 445,394.03
	N		ENG - 60% Design	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ 265,906.89	$ 132,953.44	$ -	$ -
	N		ENG - IFC Design	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,715.08	$ 199,430.17	$ 99,715.08
	N		PRO - BESS Containers Purchased	$ 1,534,624.89	$ 129,292.15	$ 1,405,332.74	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,534,624.89	$ -
	N		PRO - PCS/MVT Purchased	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 6,913,578.99	$ 582,469.03	$ 6,331,109.96	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 345,678.95
	N		CON - Site Mobilization & Civil Complete	$ 531,813.77	$ 44,805.31	$ 487,008.46	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 930,674.10	$ 78,409.29	$ 852,264.81	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,063,627.54	$ 89,610.62	$ 974,016.92	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 664,767.21	$ 56,006.64	$ 608,760.57	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 398,860.33	$ 33,603.98	$ 365,256.35	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 132,953.44	$ 11,201.33	$ 121,752.11	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			RIO COMMUNITIES	**$ 15,059,506.86**	**$ 1,214,172.74**	**$ 13,845,334.12**	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ 286,452.04	$ 250,645.55	$ 1,954,325.47	$ 479,807.19
	N		ENG - 60% Design	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ 286,452.04	$ 143,226.03	$ -	$ -
	N		ENG - IFC Design	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 107,419.52	$ 214,839.04	$ 107,419.52
	N		PRO - BESS Containers Purchased	$ 1,596,260.40	$ 128,698.49	$ 1,467,561.91	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,596,260.40	$ -
	N		PRO - PCS/MVT Purchased	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,226.03	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,447,753.36	$ 600,475.11	$ 6,847,278.25	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 372,387.67
	N		CON - Site Mobilization & Civil Complete	$ 572,904.10	$ 46,190.39	$ 526,713.71	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 1,002,582.18	$ 80,833.19	$ 921,748.99	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,145,808.21	$ 92,380.79	$ 1,053,427.42	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 716,130.13	$ 57,737.99	$ 658,392.14	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 429,678.08	$ 34,642.80	$ 395,035.28	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 143,226.03	$ 11,547.60	$ 131,678.43	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			SAN MIGUEL	**$ 14,523,662.94**	**$ 1,183,068.53**	**$ 13,340,594.41**	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ 275,735.17	$ 241,268.28	$ 1,908,778.71	$ 461,856.42
	N		ENG - 60% Design	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ 275,735.17	$ 137,867.59	$ -	$ -
	N		ENG - IFC Design	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 103,400.69	$ 206,801.38	$ 103,400.69
	N		PRO - BESS Containers Purchased	$ 1,564,109.74	$ 127,409.25	$ 1,436,700.49	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,564,109.74	$ -
	N		PRO - PCS/MVT Purchased	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -
	N		PRO - Long Lead Equipment Delivery to Site	$ 7,169,114.52	$ 583,981.73	$ 6,585,132.79	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 358,455.73
	N		CON - Site Mobilization & Civil Complete	$ 551,470.35	$ 44,921.67	$ 506,548.68	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Foundations & UG Electrical Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Equipment Installation Complete	$ 965,073.11	$ 78,612.93	$ 886,460.18	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - AG Electrical Complete	$ 1,102,940.70	$ 89,843.34	$ 1,013,097.36	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		CON - Commissioning Complete	$ 689,337.94	$ 56,152.09	$ 633,185.85	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Mechanical Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Substantial Completion	$ 413,602.76	$ 33,691.25	$ 379,911.51	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N		Final Completion	$ 137,867.59	$ 11,230.42	$ 126,637.17	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	N			$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
			Total	**$ 71,500,000.00**	**$ 5,871,222.26**	**$ 65,628,777.74**	**$ -**	**MONTHLY**	**Subtotal**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 678,154.80**	**$ 1,356,309.58**	**$ 1,186,770.87**	**$ 9,448,836.86**	**$ 2,271,818.54**
									Invoice Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 678,154.80**	**$ 1,356,309.58**	**$ 1,186,770.87**	**$ 9,448,836.86**	**$ 2,271,818.54**
									Invoice Paid Date															
								CUMULATIVE	**Subtotal**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 678,154.80**	**$ 2,034,464.38**	**$ 3,221,235.25**	**$ 12,670,072.11**	**$ 14,941,890.65**
									Invoice Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 678,154.80**	**$ 2,034,464.38**	**$ 3,221,235.25**	**$ 12,670,072.11**	**$ 14,941,890.65**
									% Billed															
								MONTHLY CASH OUT	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 678,154.80**	**$ 1,356,309.58**	**$ 1,186,770.87**	**$ 9,448,836.86**	**$ 2,271,818.54**
								CUMULATIVE CASH OUT	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ 678,154.80**	**$ 2,034,464.38**	**$ 3,221,235.25**	**$ 12,670,072.11**	**$ 14,941,890.65**

Select Project/s:
ALL 5 COMBINED



16	17	18	19	20	21	22	23	24	25	
July-26	**August-26**	**September-26**	**October-26**	**November-26**	**December-26**	**January-27**	**February-27**	**March-27**	**April-27**	**Total Check**
$ 686,680.11	**$ 1,030,020.16**	**$ 2,561,845.01**	**$ 1,716,700.26**	**$ 1,716,700.26**	**$ 2,310,942.66**	**$ 858,350.13**	**$ -**	**$ 132,053.87**	**$ -**	**$ -**
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ 686,680.11	$ 1,030,020.16	$ 1,373,360.21	$ 1,716,700.26	$ 1,716,700.26	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ 528,215.47	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 924,377.06	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 1,056,430.93	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 330,134.67	$ 330,134.66	$ -	$ -	$ -	$ -
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$ 686,680.11	**$ 1,030,020.16**	**$ 1,373,360.21**	**$ 2,905,185.06**	**$ 1,716,700.26**	**$ 1,980,807.99**	**$ 1,188,484.80**	**$ -**	**$ 132,053.87**	**$ -**	**$ -**
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$ 686,680.11	$ 1,030,020.16	$ 1,373,360.21	$ 1,716,700.26	$ 1,716,700.26	$ -	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ -	$ -	$ -	$ 660,269.33	$ -	$ -	$ -	$ -
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$ 691,357.90	**$ 1,037,036.85**	**$ 1,382,715.80**	**$ 1,728,394.75**	**$ 2,924,975.72**	**$ 930,674.10**	**$ 1,628,679.67**	**$ 631,528.85**	**$ 132,953.44**	**$ -**	**$ -**
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$ 691,357.90	$ 1,037,036.85	$ 1,382,715.80	$ 1,728,394.75	$ 1,728,394.74	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 531,813.77	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ 664,767.21	$ -	$ -	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ -	$ -	$ -	$ 1,063,627.54	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 565,052.13	$ 99,715.08	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 132,953.44	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 398,860.33	$ -	$ -	$ -
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$ 744,775.34	**$ 1,117,163.00**	**$ 1,489,550.67**	**$ 1,861,938.34**	**$ 1,861,938.34**	**$ 2,291,616.41**	**$ 1,503,873.28**	**$ 930,969.17**	**$ 143,226.03**	**$ -**	**$ -**
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$ 744,775.34	$ 1,117,163.00	$ 1,489,550.67	$ 1,861,938.34	$ 1,861,938.34	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ 572,904.10	$ -	$ -	$ -	$ -	$ -
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$ 716,911.45	**$ 1,075,367.18**	**$ 1,433,822.90**	**$ 1,792,278.63**	**$ 1,792,278.63**	**$ -**	**$ 3,143,381.00**	**$ 854,779.04**	**$ 689,337.94**	**$ -**	**$ -**
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$ 716,911.45	$ 1,075,367.18	$ 1,433,822.90	$ 1,792,278.63	$ 1,792,278.63	$ -	$ -	$ -	$ -	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ 551,470.35	$ -	$ -	$ -	$ -
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$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 137,867.59	$ -	$ -
$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 413,602.76	$ -	$ -
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$ 3,526,404.91	**$ 5,289,607.35**	**$ 8,241,294.59**	**$ 10,004,497.04**	**$ 10,012,593.21**	**$ 7,514,041.16**	**$ 8,322,768.88**	**$ 2,417,277.06**	**$ 1,229,625.15**	**$ -**	
$ 3,526,404.91	**$ 5,289,607.35**	**$ 8,241,294.59**	**$ 10,004,497.04**	**$ 10,012,593.21**	**$ 7,514,041.16**	**$ 8,322,768.88**	**$ 2,417,277.06**	**$ 1,229,625.15**	**$ -**	
$ 18,468,295.56	**$ 23,757,902.91**	**$ 31,999,197.50**	**$ 42,003,694.54**	**$ 52,016,287.75**	**$ 59,530,328.91**	**$ 67,853,097.79**	**$ 70,270,374.85**	**$ 71,500,000.00**	**$ 71,500,000.00**	
$ 18,468,295.56	**$ 23,757,902.91**	**$ 31,999,197.50**	**$ 42,003,694.54**	**$ 52,016,287.75**	**$ 59,530,328.91**	**$ 67,853,097.79**	**$ 70,270,374.85**	**$ 71,500,000.00**	**$ 71,500,000.00**	

$ 3,526,404.91	**$ 5,289,607.35**	**$ 8,241,294.59**	**$ 10,004,497.04**	**$ 10,012,593.21**	**$ 7,514,041.16**	**$ 8,322,768.88**	**$ 2,417,277.06**	**$ 1,229,625.15**	**$ -**	
$ 18,468,295.56	**$ 23,757,902.91**	**$ 31,999,197.50**	**$ 42,003,694.54**	**$ 52,016,287.75**	**$ 59,530,328.91**	**$ 67,853,097.79**	**$ 70,270,374.85**	**$ 71,500,000.00**	**$ 71,500,000.00**	

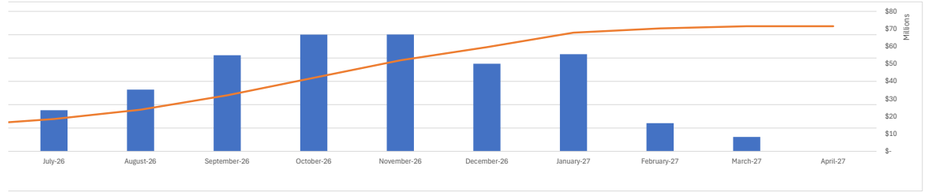

EXHIBIT J

SITE DESCRIPTION

Site 1: Otero| 155 Alamo St, Alamo NM 88301
In Alamogordo, New Mexico Alamogordo County

EXHIBIT J

SITE DESCRIPTION

Site 2: Demings | 65 Coyote Rd Deming, NM 88030
In Deming, New Mexico Luna County (80 acres)

MAP:

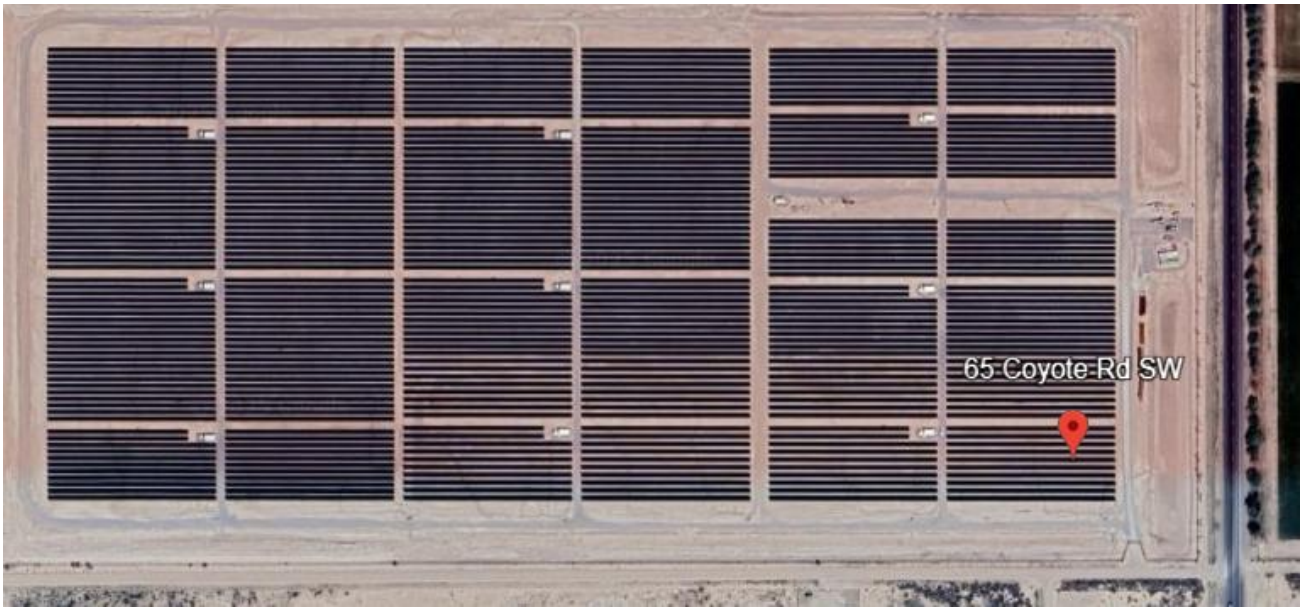

EXHIBIT J

SITE DESCRIPTION

Site 3: Meadow Lake| 100 Energy Dr. Los Lunas, NM 87031
In Los Lunas, New Mexico Otero County

EXHIBIT J

SITE DESCRIPTION

Site 4: San Miguel | 250 NM HWY 250 Las Vegas, NM 87701
In Las Vegas, New Mexico, San Miguel County (100 acres)

MAP:

EXHIBIT J

SITE DESCRIPTION

Site 5: Rio Communities | 55 North Navajo Loop Rio Communities, NM 87002
In Rio Communities, New Mexico (103 acres)

MAP:

Docusign Envelope ID: 4CEAED38-E2AA-4FC2-B57E-2E27EDFCB74F

EXHIBIT K

SPECIFIED SUPPLIERS AND SPECIFIED SUBCONTRACTORS

1. APPROVED SUPPLIERS

PV Modules	Jinko
	Boviet
	Trina
	Hanwha Q-Cells
	Canadian Solar
	Longi
	GCL
	JA Solar
	First Solar
	Hyundai
	NE Solar
	SEG Solar
	Adani Solar
Inverters	Sungrow
	TMEIC
	Power Electronics
	Siemens
	Gamesa
	Ingeteam
Battery Energy Storage Systems	Tesla
	LG Electronics
	Sungrow
	BYD
	Hithium
	Trina
Racking Structure (1-Axis Tracker)	Array Technologies, Nextracker, or PV Hardware
Transformers	JSHP
	Cooper
	ABB

Docusign Envelope ID: 4CEAED38-E2AA-4FC2-B57E-2E27EDFCB74F

	Eaglerise
	WEG
	TTE
Interconnection Substation	ECI / EPCS
	PACK POWER Dashiell
Cable (MV, LV, AUX)	KBI (MV, LV, AUX)
	WTEC (MV, LV, AUX)
	American Wire Group (AWG)
	Priority Wire & Cable (PWC) (LV, AUX)
	Apar (MV, LV, AUX)
	Service Wire (Ground, LV)
	TE (DC Collection) (LV)
	Encore Wire (LV, AUX)
	Prysmian Group (MV, LV, AUX)
	Huaxing Cable (MV, LV, AUX)
	Voltage (MV, LV, AUX)
Foundations	Unimacts
	Power House Partners (PHP)
	Karamtara
	WTEC
	Push Pak
	Valmont
	Nucor
MVT	JSHP
	Eagle Rise
	Maddox
	WEG
	TTE
Gear	MCXP Solutions
	Spike Electric
	Siemens
	Square D
	Federal Pacific

Docusign Envelope ID: 4CEAED38-E2AA-4FC2-B57E-2E27EDFCB74F

2. APPROVED SUBCONTRACTORS

To be confirmed	Civil Works
WTEC AUI ArrayCon RMCI	Foundation Execution
NEI Engineering Fractal PVH Indie Energy Trimark	SCADA Design & Engineering, Plant Commissioning
Electric Power Systems Electrical Reliability Services - Vertiv	NETA testing
RMCI Sacramento Drilling	Structural Contractor

EXHIBIT L

SITE ASSUMPTIONS

The following Site Assumptions shall apply to the Site:

1. No archeological, paleontological, historical, religious and/or cultural finds or artifacts.
2. No sensitive, protected, endangered or threatened species.
3. No pre-existing Hazardous Materials or other environmental contaminants requiring remediation by the Contractor
4. Site/grade is undeveloped, tolerance of finished grading as shown below:

- Design Criteria - For Uniform Grade:
  - Existing Grade – vegetation grubbed
  - Maximum slope shall be 8.5% or as specified in tracker documentation

5. Compaction of the soil needs to be 90% maximum dry density within a moisture content range of +/- 2% of optimum moisture as determined by ASTM D698 pending pile test.
6. Soil conditions that allow at least 80% of standard steel posts (“H piles”) to be driven directly into soil without imposing structural damage or deflection of pile placement and with the ability to withstand compressive and uplift forces of solar module systems. Required depth below grade to be determined by geotechnical study, but typically 5 feet but not greater than 7 feet.
7. Minimum bearing capacity 1000 pounds/sq. foot.
8. No water table within 10 feet of finished grade.
9. Soil up lift resistance (to pile) equal to or greater than 1000 pounds at a maximum pile depth of six feet.
10. Soil lateral resistance (to pile) equal to or greater than 4000 pounds imposed at a distance of 6 inches above grade with a maximum deflection of 0.5 inches at grade.
11. No unidentified existing utilities, easements, rights of way, improvements or existing structures which inhibit construction of the Project.
12. 90 mph wind speed as depicted in Fig 6-1 of the American Society of Civil Engineers (ASCE 7-16) code.
13. Unrestricted access to the Site 24 hours per day, seven days per week for the duration of construction and commissioning in two locations to allow for entering and exiting of

vehicles; provided that Contractor shall provide Owner with reasonable prior notice of the need for access to the Site during any hours other than normal working hours (as such normal working hours are set forth in the Work Schedule) and Owner shall make Commercially Reasonable Efforts to accommodate such requests for access to the Site. To the extent that Owner is unable to accommodate any such reasonable requests, the provisions of Article 16 of the Agreement shall apply.

14. Contractor shall provide access to the Site from public roadway to the gate, via a well-maintained, flat, level and compacted (90 - 95% density surface) and stabilized access road capable of withstanding commercial (e.g., semi-trailers) and construction grade vehicle traffic.

Commented [NN1]: Appears there is a current access road, and parties will need to address additional ROW needs.

15. Upon completion, interior roads at the Site shall stabilized with 4" of gravel, or some other Owner-approved medium, and compacted to 90 - 95% density.

EXHIBIT M

FORMS OF BONDS

Bond No.

Document A312™ – 2010

Conforms with The American Institute of Architects AIA Document 312

Performance Bond

CONTRACTOR:
(Name, legal status and address)

,

SURETY:
(Name, legal status and principal place of business)

,

Mailing Address for Notices

,

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)

, US|

CONSTRUCTION CONTRACT
Date:

Amount: $

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $

Modifications to this Bond: ☒ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	Attorney-in-Fact Surety Phone No.

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

,

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

,

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§6.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section *5;* and
.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or *5.4,* the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law-bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature: _____		Signature: _____	
Name and Title:		Name and Title	
Address		Address	

Bond No.

Document A312™ – 2010

Conforms with The American Institute of Architects AIA Document 312

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

Mailing Address for Notices

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:

Amount: $

Description:
(Name and location)

BOND
Date:

(Not earlier than Construction Contract Date)

Amount: $

Modifications to this Bond: ☒ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature: _____		Signature: _____	
Name and Title:		Name and Title:	Attorney-in-Fact Surety Phone No.

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

§ **1** The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ **2** If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ **3** If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§**4** When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ **5** The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ **5.1** Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ **5.2** Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ **6** If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ **7** When a Claimant has satisfied the conditions of Sections *5.1* or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ **7.1** Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§**7.2** Pay or arrange for payment of any undisputed amounts.

§ **7.3** The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ **8** The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ **9** Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work..

§**10** The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ **11** The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ **12** No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date **(1)** on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ **13** Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ **14** When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ **16** Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ **16 Definitions**

§ **16.1 Claim.** A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ **16.2 Claimant.** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§**16.3 Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ **16.4 Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ **16.5 Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ **17** If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ **18** Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature: _____		Signature: _____	
Name and Title:		Name and Title:	
Address		Address	

WARRANTY BOND

KNOWN ALL BY THESE PRESENTS: That we_____,
as Principal, and_____, a corporation organized and existing under the Laws of the State of_____, as Surety, are held and firmly bound unto_____, as Obligee, in the total sum of _____
U.S. Dollars (_____) for the payment whereof said Principal and Surety bind themselves, jointly and severally, as provided herein.

WHEREAS, the Principal entered into a contract with the Obligee dated_____for
_____
_____("Work").

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall maintain and remedy said Work free from defects in materials and workmanship for a period of _____year(s) commencing on (the "Warranty Period"), then this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED, HOWEVER, that any suit under this bond shall be commenced no later than one (1) year from the expiration date of the Warranty Period; provided, however, that if this limitation is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law, and said period of limitation shall be deemed to have accrued and shall commence to run on the expiration date of the Warranty Period.

SIGNED this_____day of_____,_____.

(Principal)

By: _____

By: _____
Attorney-in-Fact

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(to be finalized prior to execution of the EPC contract)

EXHIBIT N

SMALL BUSINESS SUBCONTRACTING PLAN

Note: To be prepared prior to execution Full Notice to Proceed

(All elements of the below plan are developed specifically for this contract and applicable for the full term of this contract, including any option periods.)

Name of Supplier:

Address:

Telephone:

Facsimile:

E-mail:

Contract Number/Purchase Order:_____

Contract Name: _____

Service/Material: _____

Total Amount or Contract/Purchase Order (Including options) $ _____

Period of Contract/Purchase Order Performance (DAY, MO. & YR.)_____

1. Goals

State separate dollar and percentage goals, expressed in terms of percentages of total subcontracting dollars, for the use of small business, veteran-owned small business, service-disabled veteran-owned small business, HUBZone small business, small disadvantaged business, and women-owned small business as subcontractors.

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Description	$ Dollar Value	%
Total estimated dollar value and percent of planned subcontracting with **small businesses** (include veteran-owned small, service-disabled veteran-owned small, HUB Zone small, small disadvantaged, and women-owned small businesses) *No double counting is permitted, the percentages of the mentioned categories are independent and calculated based on the total estimated dollar value and percent of all planned subcontracting with* ***large businesses and small businesses.***		
Total estimated dollar value and percent of planned subcontracting with **large businesses**		
Total estimated dollar value and percent of all planned subcontracting with **large businesses and small businesses**		***100%***
Total estimated dollar value and percent of planned subcontracting with **veteran-owned small businesses**		
Total estimated dollar value and percent of planned subcontracting with **service-disabled veteran-owned small businesses**		
Total estimated dollar value and percent of planned subcontracting with **HUB Zone small businesses**		
Total estimated dollar value and percent of planned subcontracting with **small disadvantaged businesses**		
Total estimated dollar value and percent of planned subcontracting with **women-owned small businesses.**		

DocuSign Envelope ID: 502E02F7-8D83-45DB-928C-E1CF5479EDB2

2. Description of materials or services to be subcontracted

Provide a description of all the materials and/or services to be subcontracted under this contract, and indicate the types of businesses supplying them:

Subcontracted Items	SB	VOSB	SDVOSB	HUB Zone	SDB	WOSB

(Check all that apply and attach additional sheets if necessary)

3. Description of the Method Used to Develop the Subcontracting Goals

4. **Description of the Method Used to Identify Potential Sources** (the Central Contractor Registration (CCR), veterans service organizations, New Mexico Small Business Development Centers, Women's Economic Self-Sufficiency Team, ACCION New Mexico, The Loan Fund, Office of Veterans Business Development, New Mexico Native American Business Enterprise Center, etc)

(Attach additional sheets if necessary.)

5. Indirect costs have not been included in the dollar and percentage subcontracting goals stated above.

6. Program Administrator

Name:

Title:

Address:

Telephone

Number:

Facsimile:

E-mail:

DocuSign Envelope ID: 502E02F7-8D83-45DB-928C-E1CF5479EDB2

7. Duties of the Program Administrator

8. Describe the efforts to ensure that small, veteran-owned small, service-disabled veteran-owned small, HUB Zone small, small disadvantaged and women-owned small businesses will have an equitable opportunity to compete for subcontracts. These-efforts include, but are not limited to, the following activities:

9. Reporting and Cooperation

The contractor gives assurance of: (1) cooperation in any studies or surveys that may be required; and (2) submission of the subcontracting plan.

10. Recordkeeping

Type of records the contractor will maintain to demonstrate the procedures adopted to comply with the requirements and goals in the subcontracting plan. These records will include, but not be limited to, the following:

a. Organizations contacted in an attempt to locate small, veteran-owned small, service-disabled veteran-owned small, HUB Zone small, small disadvantaged and women-owned small business sources.
b. On a contract-by-contract basis, records on each subcontract solicitation resulting in an award of more than $100,000 indicating: (1) whether small businesses were solicited, and if not, why not; and (2) if applicable, the reason why the award was not made to a small business.
c. Records to support other outreach efforts.

This subcontracting plan was submitted by:

Signature:

Typed Name:

Title:

Phone Number:

Facsimile Number:

Email:

EXHIBIT O

Spare Parts List

Exhibit O: Spare Parts List

General BESS BOP Spare Parts List

- **Medium Voltage Equipment**
  - MV fuses
  - Spare vacuum interrupters
  - Protection relays
  - Meters
  - Current transformers (CTs)
  - Voltage transformers (VTs)
- **Low Voltage AC/DC Panels**
  - Breakers
  - Terminal blocks and DIN rail accessories
  - Relays
  - Power supplies
  - Indicator lights
- **Communication & Monitoring Equipment**
  - Fiber optic patch cables
  - Ethernet/Fiber switches
  - RS485 / Modbus converters (if applicable)
  - Wireless radios / antennas (if used)
- **Fire Protection System**
  - Smoke/heat detectors
  - Actuation modules
  - Spare suppression agent canisters (if feasible/applicable)
  - Control panels / circuit boards
  - Cabling/connectors
- **Auxiliary and Safety Components**
  - Emergency stop buttons
  - Lighting components
  - Cable glands and strain reliefs
  - Conduit fittings and adapters

Tesla Spare Parts List

- **To be provided by Telsa as part of service agreement**

Exhibit O: Spare Parts List

Confidential

MEGAPACK 2 MANUFACTURER'S LIMITED WARRANTY CO12 (US)

Effective Date: March 14, 2025

1. What Is Covered?

1.1 This Limited Warranty applies to the "**System**" comprised of one or more Tesla Megapack 2 battery energy storage units (each, a "**Megapack**") and the Tesla System Controller that is supplied by Tesla, Inc. ("**Tesla**") and installed inside the United States of America. The agreement under which Tesla originally sold the System is the "**System Purchase Agreement**."

1.2 Tesla warrants that the System and its components will be free from defects in design, engineering, fabrication, manufacture or workmanship relative to the System Specification (as defined in the System Purchase Agreement and (each such defect, a "**Defect**", where "**Defective**" has a corollary meaning).

1.3 The batteries within the System, like all lithium-ion batteries, will experience gradual energy capacity loss with time and use. Tesla warrants that the System (but not any one or more Megapacks individually) will retain energy capacity in an amount equal to or greater than the "**Minimum Energy Retention Percentage**" as defined in Exhibit 1 (the "**Energy Retention Warranty**"). Subject to Section 2, the System's failure to meet the Energy Retention Warranty shall constitute a Defect for the purposes of the claims process in this Limited Warranty.

1.4 Goods installed by Tesla in the System pursuant to the Related Contracts shall be deemed part of the System for purposes of this Limited Warranty. The term "**Related Contracts**" means the System Purchase Agreement and the Long-term Services Agreement executed by Tesla (or its Affiliate) and the original buyer or current owner of the System.

1.5 As part of its remedy of a Defect covered by this Limited Warranty, Tesla shall remedy damage to the System directly caused by such Defect.

1.6 This Limited Warranty is subject to adjustment pursuant to the System Purchase Agreement.

1.7 Unless defined in this Limited Warranty, defined terms set out here have the same meaning given to it as in the System Purchase Agreement.

2. Items Not Covered

This Limited Warranty does not cover claims involving damage to or failures of the System not caused by a Defect (including damage or failure caused by failure to handle, install, maintain or operate the System in accordance with applicable Tesla's policies and guidelines, system manuals, technical documents, application notes and other Tesla materials applicable to the System (collectively, the "**Tesla Documents"**)). Additionally, you must arrange to have preventative maintenance performed by Tesla, a Tesla Affiliate or an authorized Tesla maintenance provider. If such maintenance is not performed for more than a year for reasons other than Tesla's (or its Affiliate's) breach of its obligations to perform preventative maintenance under a Related Contract, this Limited Warranty will be voided.

3. Who can make claims under this Limited Warranty?

The current System owner (itself or through its authorized agents acting on the System owner's behalf) (collectively, "**you**") can make claims under this Limited Warranty.

4. When does the Limited Warranty Period begin and end?

4.1 The "**Start Date**" for this Limited Warranty is the earlier of:

4.1.1 the Commissioning Completion Date or Substantial Completion Date, as applicable, in accordance with the System Purchase Agreement; and

4.1.2 the date falling 180 days after the date when title to the last Megapack comprising part of the System transfers to the original buyer as part of the initial delivery of Megapacks under the System Purchase Agreement.

4.2 This Limited Warranty expires on the earlier of

4.2.1 the 15th anniversary of the Start Date, and

4.2.2 the time when the Total Throughput (as defined in Exhibit 1) exceeds the Total Throughput Limitation indicated for Warranty Year 15.

4.3 The period between the Start Date and the expiration date set forth in Section 4.2 is the "**Limited Warranty Period**."

5. What warranty applies to parts repaired or replaced under this warranty?

Parts of the System repaired or replaced under this Limited Warranty are covered under this Limited Warranty until the Limited Warranty Period ends. For warranty claims specific to the Energy Retention Warranty, the replacement parts will be in a condition sufficient to achieve or exceed the minimum energy retention of the original Megapack parts, for the remainder of the Limited Warranty Period.

6. Obtaining warranty service

6.1 To obtain warranty service, you must notify Tesla of your warranty claim at the email address below within the Limited Warranty Period. When contacting Tesla, please provide proof of purchase, the Megapack serial number, original sale date and a description of the issue. For a warranty claim with respect to the Energy Retention Warranty, you must run a standard capacity test in accordance with Exhibit 1, and you must include the results of that test with your claim.

6.2 You must make the Megapack available to Tesla for inspection and service. If you make a claim under the Energy Retention Warranty, Tesla can perform one or more capacity tests in accordance with Tesla's standard practices upon 24 hours' prior notice. If we dispute or deny a warranty claim, we will provide our reasoning.

6.3 If you submit a valid claim under this Limited Warranty, Tesla will repair the Defective Megapack or component or replace it with an equivalent component within a reasonable time after Tesla's validation of the claim.

6.4 As part of its remedy, Tesla may elect to do any of the following in its sole discretion, among other activities: (i) repair parts (including removing such parts and reinstalling the same after repair); and/or (ii) use (A) remanufactured or refurbished parts to the extent such parts have remaining lives equivalent to the remaining life of the part replaced; or (B) equivalent or improved versions of Tesla products, features or options. Tesla will pay for disassembly of the Megapack, transportation, re-assembly and re-installation of the Megapack or components, as applicable to the warranty service.

7. Remote Monitoring

For Tesla to provide this Limited Warranty, Tesla requires the ability to remotely monitor the performance

of the System, remotely access and /or login to the System for diagnosing and resolving issues and provide remote firmware and software updates the System.

7.1 You hereby consent to Tesla:

7.1.1 performing remote monitoring of and accessing and logging into the System for diagnosing and resolving issues at any time without further notice or consent; and

7.1.2 providing such software updates as Tesla reasonably deems appropriate, in each case subject to your Approval (as defined in and subject to the applicable provisions of the Related Contracts, as applicable), provided that you may impose reasonable limitations and requirements as a condition to such approval (including, for example, receipt from Tesla of a reasonable description of the modifications made by such update, reasonable assurances regarding compatibility and Tesla's testing of such update, and your prior agreement to the scheduling of such update, among other reasonable requirements).

7.1.3 Tesla will perform any remote monitoring, implementation of updates and access and logging into the System in accordance with the Related Contracts, as applicable.

7.1.4 Subject to Section 7.1.5, below, if you withhold consent, impose additional limitations or requirements (including any of the same that prevent Tesla from detecting, preventing, limiting or mitigating damage or failures caused by Defects because Tesla couldn't remotely access or monitor the System or data generated by the System) or otherwise fail to provide timely access to the System, to monitoring data or for software updates or fail to install software updates within a reasonable time after notification by Tesla that there is an update available:

(a) Tesla shall be entitled to recover its reasonable, documented, out of pocket costs incurred arising from same, plus 20%, and

(b) if the System is damaged or degrades in performance as a result, you will be responsible for all such damage and degradation and Tesla will not have any liability for same under this Limited Warranty or any Related Contracts.

7.1.5 If requested by you where you have rejected an update in accordance with the Approval process specified in the System Purchase Agreement, Tesla shall revert the System to the software immediately preceding the affected update.

7.2 Any information obtained by Tesla through remote monitoring of the System that falls within the parameters stated to be made available to customers in System Specifications shall be owned by you. Any information obtained by Tesla through remote monitoring of the System that falls outside the parameters stated to be made available to customers in the Controls and

Communication Manual shall be owned by Tesla and shall be confidential information of Tesla. Tesla shall not be required to make such information available to you.

8. Exclusive Remedies

8.1 THIS LIMITED WARRANTY IS THE ONLY EXPRESS WARRANTY MADE IN CONNECTION WITH THE SYSTEM, OTHER THAN ANY EXPRESS WARRANTIES MADE TO YOU UNDER ANY RELATED CONTRACT DIRECTLY INVOLVING THE SYSTEM. ALL OTHER IMPLIED OR EXPRESS WARRANTIES, INCLUDING ANY STATUTORY WARRANTY RIGHTS ARISING FROM LOCAL LAWS, ARE DISCLAIMED TO THE FULLEST EXTENT ALLOWED BY THE LAW. THE WARRANTIES TESLA DISCLAIMS INCLUDE, BUT ARE NOT LIMITED TO, IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY, FITNESS FOR A

PARTICULAR PURPOSE, DURABILITY, OR THOSE ARISING OUT OF A COURSE OF DEALING OR USAGE OF TRADE.

8.2 The performance of repairs and replacement by Tesla as set forth in Section 6.3 is your exclusive remedy under this Limited Warranty provided that (1) to the extent that Tesla breaches its obligations under this Limited Warranty, the claimant shall have the right to pursue whatever remedies are available to it at law or in equity with respect to such breach, and (2) Tesla acknowledges that this Limited Warranty does not foreclose the pursuit of any rights and remedies available under the Related Contracts. Tesla does not authorize any person or entity to create for it any other obligations or liability in connection with this Limited Warranty.

9. Limitation of Liability

9.1 In no event shall Tesla be liable to you for any Consequential Loss (as defined herein), arising out of or relating to Defects in the System or any breach of this Limited Warranty, whether or not the possibility of such Consequential Loss has been disclosed in advance or could have been reasonably foreseen and regardless of the legal or equitable theory (contract, tort or otherwise) upon which the claim is based.

9.2 For purposes of this Section 9, "Consequential Loss" means any loss of revenue, loss of profit, loss of business opportunity, loss of contract, loss of opportunity to earn profit or revenue, loss arising from damage to goodwill or reputation, loss of anticipated savings, loss arising from business interruption or loss arising from damage to credit rating, loss or damages incurred by a financing party or any offtaker or other end customer of you, or exemplary or punitive damages. Penalties issued by a governmental authority and incurred by you at law as a result of Tesla's non-compliance with this Limited Warranty are not consequential loss.

9.3 Tesla shall not be liable for any direct damages in excess of the original purchase price for the System (comprising the lesser of the original System Price or Contract Price, as applicable and defined in the System Purchase Agreement). Any liability under this Limited Warranty shall not count towards Tesla's aggregate limit of liability under the System Purchase Agreement.

10. Limitation on Medical Use

THE SYSTEM IS NOT INTENDED FOR USE AS A PRIMARY OR BACK-UP POWER SOURCE FOR LIFE-SUPPORT OR OTHER MEDICAL EQUIPMENT. TESLA DISCLAIMS ANY LIABILITY ARISING OUT OF ANY SUCH USE OF THE SYSTEM.

11. Governing Law; Dispute Resolution; Venue

11.1 This Limited Warranty will be governed by and interpreted in accordance with the laws specified as the governing law in the System Purchase Agreement.

11.2 Any dispute arising from or relating to this Limited Warranty shall be governed by and managed in accordance with the dispute resolution provisions set forth in the System Purchase Agreement, which provisions are hereby incorporated by reference, mutatis mutandis.

11.3 The NDA (as defined in the System Purchase Agreement) sets out the Parties' confidentiality obligations under this Limited Warranty and is hereby incorporated by reference, mutatis mutandis. The terms and conditions of the NDA will continue in force throughout the Warranty Period and for 3 years following the expiration of the Warranty Period. The terms and conditions of this Limited Warranty and the "know how" involving Tesla's performance of warranty work pursuant to this Limited Warranty shall be Tesla's Confidential Information for purposes of the NDA.

Exhibit 1

Energy Retention Warranty

Years 1 through 15 following Start Date:

Per Section 1.2 above, Tesla warrants that during the Warranty Year specified below, as applicable, the Actual Energy Retention Percentage for the System for such Warranty Year shall be equal to or greater than the applicable Minimum Energy Retention Percentage (below) until the Warranty Year expires or (if earlier) the Total Throughput exceeds the below Total Throughput Limitation for that Warranty Year.

Actual Energy Retention Percentage means the energy discharged by the System as a whole, as measured at the Point of Measurement defined in the System Purchase Agreement ("**POM**") Documentation at Standard Test Conditions, expressed as a percentage of the Guaranteed Energy Capacity.

Guaranteed Energy Capacity for the benefit of this Energy Retention Warranty means the kWh energy capacity of the System at the Point of Measurement set out in the System Purchase Agreement.

Total Throughput means the total discharge throughput of the System (as measured at the POM in kWh per kWh of Guaranteed Energy Capacity).

Warranty Year means each consecutive 365-day period commencing on the Start Date and each anniversary of that date, as applicable.

Period (Warranty Years following Start Date)	Total Throughput Limitation (4 Hour Megapacks) CO12	Minimum Energy Retention Percentage (4 Hour Megapacks) CO12
1	339	93.0%
2	667	90.0%
3	988	88.0%
4	1,301	86.0%
5	1,607	84.0%
6	1,908	82.5%
7	2,240	81.0%
8	2,530	79.5%
9	2,814	78.0%
10	3,093	76.5%
11	3,364	74.5%
12	3,628	72.5%
13	3,885	70.5%
14	4,136	69.0%
15	4,380	67.0%

Standard Test Conditions

When measuring the Actual Energy Retention Percentage, (a) the System must be fully charged to 100% state of energy and then fully and continuously discharged at the Guaranteed Power Capacity (as defined in the System Purchase Agreement) to a 0% state of energy, (b) the ambient temperature at the System location and the initial hourly average ambient temperatures at the System location recorded during the charge and discharge cycle of the System of all battery modules must be 25°C ±5°C, and (c) the hourly average ambient temperatures at the System location recorded during the charge and discharge cycle of the System must be 25°C ±5°C.

EXHIBIT Q

FORM OF CHANGE IN WORK FORM

CHANGE IN WORK 01

Projects: Five (5) energy storage facilities, each with maximum discharge capability of 30MW (6MW/24MWh) located across existing Solar PV sites in , New Mexico

Contract: Engineering, Procurement and Construction Agreement by and between PUBLIC SERVICE COMPANY OF NEW MEXICO, a New Mexico corporation ("**Owner**") and GRIDWORKS INC. ("**Contractor**")

Change In Work #01:

Date of Change In Work: [●]

The undersigned agree to the following change to the Engineering, Procurement and Construction Agreement, dated as of September 1, 2024, (the "**Agreement**"), by and between Owner and Contractor. Initially capitalized terms used but not defined herein shall have the respective meanings given in the Agreement.

The changes to the Agreement that are described below (collectively the applicable Change In Work) are considered an amendment to the Agreement. With the exception of the Change In Work, this Change In Work Form does not relieve Owner or Contractor of their responsibilities and obligations described in the Agreement or otherwise modify the rights of Owner or Contractor under the Agreement. The below adjustments to the Agreement terms will constitute a full and complete settlement for the Change In Work which is the subject of this Change In Work Form, unless otherwise provided in the detailed description below.

Detailed description of the requested Change In Work and reason for request:

_____

_____

_____

_____

Detailed description of the effect of the Change In Work on the Agreement:

_____

_____

_____

_____

Description of attached documentation establishing the Change In Work cost of performing the work other than a change in the Contract Price. If there is no change in cost, state "none":

_____

_____

_____

_____

Description of the change in the Contract Price:

The original Contract Price is: $ [●]

The change in the Contract Price is: $ [●]

The revised Contact Price (including the Change In Work set forth herein) is: $ [●]

The method used in determining the change in Contract Price is indicated on the attached Schedule 1.

Changes to the Work Schedule, Milestone Items and Substantial Completion Guaranteed Date are set forth below. If there is no change in the Work Schedule, Milestone Items and Substantial Completion Guaranteed Date, state "none":

_____

_____

_____

_____

The revised Substantial Completion Guaranteed Date (taking into consideration the Change In Work set forth herein and all other prior Changes In Work) is: [●]

Requested By:	**Accepted and Agreed To:**
By:_____	By:_____
Name:_____	Name:_____
Title:_____	Title:_____

Schedule 1 to Change In Work Form

Method used in determining the change in Contract Price

[●

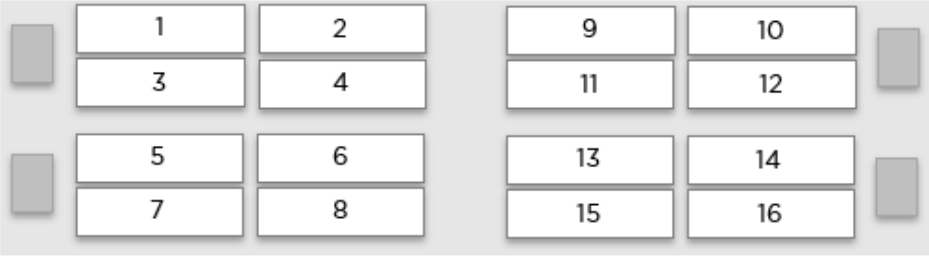
Appendix G: Megapack-Level DNP3 Points List

DNP3 Indexing of Megapack-Level Points

Tesla provides the points in *Megapack Status on page 85* and *Megapack Alerts on page 84* over DNP3. The signals and alerts are provided as additional analog inputs and binary inputs respectively. Individual Megapack monitoring begins at analog input and binary input *StartIndex* = 400, when using Modbus for site-level controls, or *StartIndex* = 2000, when using the DNP3 points for site-level controls described in *Appendix D: Site-Control DNP3 Points List - Utility Battery Only Archetype on page 142*, *Appendix E: Site-Control DNP3 Points List - Utility Co-Located Archetype on page 172*, or *Appendix F: Site-Control DNP3 Points List - Utility Hybrid Archetype on page 193*. The same schema applies for control with binary outputs. Tesla does not currently use analog outputs or counters for individual Megapack monitoring or control.

The order of Megapacks over the DNP3 interface is configured by Tesla at commissioning using a Megapack index and can follow an order corresponding to the site drawings as desired by the customer. A site-to-index map can be used to identify which Megapack corresponds to a given block of DNP3 indices.

Figure 54. DNP3 Megapack Index Example on a Megapack Site Layout



Every Megapack is allocated 30 binary input spaces, 30 analog input spaces, and 30 binary output spaces. Each analog input, binary input, and binary output block is repeated for each Megapack over the interface, starting at index *StartIndex* + 1 for the first Megapack. Binary output control is disabled by default and must be enabled by Tesla at commissioning.

This subsection provides details on the Megapack-level points.

Analog Inputs - Megapack-Level

The table below includes point labels, descriptions, and refresh rates for all available analog input signals. The refresh rate is provided for informational purposes and corresponds to the rate at which the individual Megapacks will update their respective signals to the Tesla System Controller. Customers are responsible for selecting an adequate refresh rate in their remote terminal unit implementation.

The Megapack index is referred to as "X." The list of analog inputs below starts at index 1 for the first Megapack of the list and is repeated every 30 points for each Megapack. For example, Megapack Real Power for the Megapack with index 2 will have the point index *StartIndex* + 32. Tesla reserves spare points in case analog input points are added in the future.

NOTE: Offset is zero for all analog inputs. Megapack-level analog input points are only available as integers.

Table 93. Megapack-Level Analog Inputs

DNP3 Index	Point Label	Description	Unit	Multiplier	Refresh Rate	Class	Object Group	Variation	Deadband
StartIndex + (X-1)*30 + 1	Megapack Real Power Target	Command the Tesla System Controller is sending to the Megapack.	W	1	10s	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 2	Megapack Real Power	Real power measured by the Megapack.	W	1	10s	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 3	Megapack Reactive Power Target	Command the Tesla System Controller is sending to the Megapack.	var	1	10s	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 4	Megapack Reactive Power	Reactive power measured by the Megapack.	var	1	10s	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 5	Megapack State of Energy	State of energy of the Megapack.	%	1	1min	3	30,32	1,3	1
StartIndex + (X-1)*30 + 6	Megapack Energy Remaining	Energy Remaining when the Megapack is at nominal temperature (25°C); subtracts energy of faulted battery components.	Wh	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 7	Megapack Charge Capacity Remaining	Estimated energy to charge the Megapack until full; subtracts energy to charge faulted components.	Wh	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 8	Megapack Full Pack Energy	Usable energy when the Megapack is fully charged and the Megapack is at nominal temperature (25°C); subtracts energy of faulted battery components.	Wh	1	1min	3	30,32	1,3	5000

DNP3 Index	Point Label	Description	Unit	Multiplier	Refresh Rate	Class	Object Group	Variation	Deadband
StartIndex + (X-1)*30 + 9	Megapack Nominal Full Pack Energy	Energy when the Megapack is fully charged and the Megapack is at nominal temperature (25°C); includes energy of faulted battery components.	Wh	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 10	Megapack Frequency		Hz	0.001	1min	3	30,32	1,3	50
StartIndex + (X-1)*30 + 11	Megapack AC Voltage	Phase-to-ground RMS Voltage - Average of all three phases.	V rms	0.1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 + 12	Megapack Phase A Voltage	Phase A to ground RMS Voltage, averaged across all inverters.	V rms	0.1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 + 13	Megapack Phase B Voltage	Phase B to ground RMS Voltage, averaged across all inverters.	V rms	0.1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 + 14	Megapack Phase C Voltage	Phase C to ground RMS Voltage, averaged across all inverters.	V rms	0.1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 + 15	Megapack Phase A Current	Phase A current, summed across all inverters.	A rms	1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 +16	Megapack Phase B Current	Phase B current, summed across all inverters.	A rms	1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 + 17	Megapack Phase C Current	Phase C current, summed across all inverters.	A rms	1	1min	3	30,32	1,3	10
StartIndex + (X-1)*30 + 18	*Reserved*								
StartIndex + (X-1)*30 + 19	Maximum Battery Temperature	The maximum cell temperature in the battery modules.	degC	0.1	10s	3	30,32	1,3	10
StartIndex + (X-1)*30 + 20	Ambient Temperature	Ambient temperature measured inside of the Megapack enclosure. Ambient Temperature reporting requires the Megapack to be in State Request On.	degC	0.1	10s	3	30,32	1,3	10

DNP3 Index	Point Label	Description	Unit	Multiplier	Refresh Rate	Class	Object Group	Variation	Deadband
StartIndex + (X-1)*30 + 21	Megapack Available Charge Power	Available Charge Power of the Megapack, aggregated from battery modules and inverters; updates based on grid voltage; subtracts faulted components.	W	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 22	Megapack Available Discharge Power	Available Discharge Power of the Megapack, aggregated from battery modules and inverters; updates based on grid voltage; subtracts faulted components.	W	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 23	Megapack Nominal Charge Power	Nominal charge power of the Megapack, aggregated from battery modules and inverters, assuming nominal voltage; includes faulted components. Does not include missing or disconnected components.	W	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 24	Megapack Nominal Discharge Power	Nominal discharge power of the Megapack, aggregated from battery modules and inverters, assuming nominal voltage; includes faulted components. Does not include missing or disconnected components.	W	1	1min	3	30,32	1,3	5000
StartIndex + (X-1)*30 + 25	`AI_spare_1`								
StartIndex + (X-1)*30 + 26	`AI_spare_2`								
StartIndex + (X-1)*30 + 27	`AI_spare_3`								
StartIndex + (X-1)*30 + 28	`AI_spare_4`								
StartIndex + (X-1)*30 + 29	`AI_spare_5`								

DNP3 Index	Point Label	Description	Unit	Multiplier	Refresh Rate	Class	Object Group	Variation	Deadband
StartIndex + (X-1)*30 + 30	AI_spare_6								

Binary Inputs - Megapack-Level

The digital point names and definitions are listed below. All alerts are reported on-change, so no *Refresh Rate* is provided. All alerts are normally false.

Table 94. Megapack-Level Binary Inputs

DNP3 Index	Point Label	Description	Class	Object Group	Variation
StartIndex + (X-1)*30 + 1	Loss of Megapack Communication	The Tesla System Controller has persistently lost communication with the Megapack, meaning the Tesla System Controller has not received Megapack communications for the timeout duration of 120 seconds, unless otherwise configured. Megapack power output will ramp down over the course of 60 seconds.	1	1,2	1,2
StartIndex + (X-1)*30 + 2	Megapack Isolation Failure	Megapack has reported an isolation measurement below its acceptable threshold.	1	1,2	1,2
StartIndex + (X-1)*30 + 3	Megapack Inverter Fault	All inverters in the Megapack are faulted.	1	1,2	1,2
StartIndex + (X-1)*30 + 4	Enable Circuit Open	The Megapack enable circuit is open. This can be caused by door switch, enable switch, or remote shutdown.	1	1,2	1,2
StartIndex + (X-1)*30 + 5	Enable Switch Off	Megapack enable switch is in the off position, preventing operation.	1	1,2	1,2
StartIndex + (X-1)*30 + 6	Door Switch Open	One or more of the Megapack doors is open. Does not apply to the Customer Interface Bay door (bay 4).	1	1,2	1,2
StartIndex + (X-1)*30 + 7	AC Breaker Status	A value of 1 indicates that the Megapack AC circuit breaker is closed. A value of 0 indicates that the Megapack AC circuit breaker is open.	1	1,2	1,2
StartIndex + (X-1)*30 + 8	Bus Controller Prolonged Fault	Megapack has experienced several consecutive faults and has entered a prolonged fault state, which will stop operation for one hour.	1	1,2	1,2
StartIndex + (X-1)*30 + 9	Remote Shutdown	Remote shutdown is being commanded via customer external I/O.	1	1,2	1,2
StartIndex + (X-1)*30 + 10	Coolant Low	Coolant level is low as reported by the coolant sensor.	1	1,2	1,2

DNP3 Index	Point Label	Description	Class	Object Group	Variation
StartIndex + (X-1)*30 + 11	Extreme Temperature Warning	The Megapack has detected a temperature increase above the temperature increase warning threshold. Clear the area and notify Tesla immediately.	1	1,2	1,2
StartIndex + (X-1)*30 + 12	Extreme Temperature Fault	The Megapack has detected a temperature increase above the temperature increase fault threshold. Clear the area and notify Tesla immediately.	1	1,2	1,2
StartIndex + (X-1)*30 + 13	Grid Uncompliant	The Megapack has measured an over/undervoltage, over/underfrequency or zero sequence overvoltage outside of its hardware protection trip thresholds.	1	1,2	1,2
StartIndex + (X-1)*30 + 14	Low State of Energy	Megapack is at a very low state of energy and at least one battery module has entered the battery off state as a protection. Remaining at low state of energy can lead to cell damage.	1	1,2	1,2
StartIndex + (X-1)*30 + 15	Breaker Irrational	The Megapack AC circuit breaker is reporting open and closed simultaneously.	1	1,2	1,2
StartIndex + (X-1)*30 +16	Breaker Ready to Close	The Megapack AC circuit breaker spring is charged, either manually or via motor reclose, and the breaker can close now.	1	1,2	1,2
StartIndex + (X-1)*30 + 17	Megapack Disabled	The Megapack is disabled, meaning its battery modules and thermal system are commanded to the Off state (see *State Request on page 27*). **Warning:** This does not replace the need for operators to follow proper de-energization procedures.	1	1,2	1,2
StartIndex + (X-1)*30 + 18	Power Electronics Over Temperature	Over 25% of the Megapack power electronics are experiencing an overtemperature.	1	1,2	1,2
StartIndex + (X-1)*30 + 19	Sparker Fault	One or more sparkers are behaving incorrectly. Sparkers are located inside the Megapack and control the levels of combustible gas by providing a spark to combust low levels of these gasses before they accumulate.	1	1,2	1,2
StartIndex + (X-1)*30 + 20	Cellular Modem Enabled	The Megapack's internal cellular modem is enabled.	1	1,2	1,2
StartIndex + (X-1)*30 + 21	Megapack Communications Warning	The Tesla System Controller has not received communications from the Megapack for at least 20 seconds. The communication interruption should be investigated.	1	1,2	1,2
StartIndex + (X-1)*30 + 22	OV Ride Through Active	The Megapack has detected an overvoltage based on its overvoltage ride-through trip settings and will trip if the overvoltage persists.	1	1,2	1,2

DNP3 Index	Point Label	Description	Class	Object Group	Variation
StartIndex + (X-1)*30 + 23	UV Ride Through Active	The Megapack has detected an undervoltage based on its undervoltage ride-through trip settings and will trip if the undervoltage persists.	1	1,2	1,2
StartIndex + (X-1)*30 + 24	OF Ride Through Active	The Megapack has detected an overfrequency based on its overfrequency ride-through trip settings and will trip if the overfrequency persists.	1	1,2	1,2
StartIndex + (X-1)*30 + 25	UF Ride Through Active	The Megapack has detected an underfrequency based on its underfrequency ride-through trip settings and will trip if the underfrequency persists.	1	1,2	1,2
StartIndex + (X-1)*30 + 26	`DI_spare_1`				
StartIndex + (X-1)*30 + 27	`DI_spare_2`				
StartIndex + (X-1)*30 + 28	`DI_spare_3`				
StartIndex + (X-1)*30 + 29	`DI_spare_4`				
StartIndex + (X-1)*30 + 30	`DI_spare_5`				

Binary Outputs - Megapack-Level

When enabled by Tesla at commissioning, customers can control individual Megapack AC circuit breakers. The Tesla System Controller uses the DNP3 Latch model.

Table 95. Megapack-Level Binary Outputs

DNP3 Index	Point Label	Description	Class	Object Group	Variation
StartIndex + (X-1)*30 + 1	Open Megapack Breaker	Write to 1: Opens the Megapack AC circuit breaker. Must be configured by Tesla at commissioning.	1	10,12	1,2
StartIndex + (X-1)*30 + 2	Close Megapack Breaker	Write to 1: Closes the Megapack AC circuit breaker.	1	10,12	1,2
StartIndex + (X-1)*30 + 3	Disable Megapack	Write to 1: Brings all battery modules into standby state and brings the thermal HVDC bus down **Warning:** This does not replace the need for operators to follow proper de-energization procedures.	1	10,12	1,2

EXHIBIT S

FORM OF CONTRACTOR'S INVOICE

APPLICATION AND CERTIFICATE FOR PAYMENT

TO OWNER:

PROJECT:

APPLICATION NO.:
PERIOD TO :
PROJECT NOS.:
INVOICE NO.:
CONTRACT DATE :
DUE DATE:

Distribution to:
☐ OWNER
☐ ARCHITECT
☐ CONTRACTOR
☐
☐

FROM CONTRACTOR: Gridworks, Inc.
3900 Singer Blvd. NE
Albuquerque, NM 87109

ARCHITECT:

CONTRACT FOR:

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation sheet is attached.

1. ORIGINAL CONTRACT SUM (Incl. Taxes) . . . . . $
2. Net change by change orders (Incl. Taxes). . . . . $
3. CONTRACT SUM TO DATE (Line1 +/- 2) . . . . . $
4. TOTAL COMPLETED & STORED TO DATE . . . . $
(Incl. Taxes)(Column G on G703)
5. RETAINAGE:
(Total retainage Column I of G703) . . . . . $
6. TOTAL EARNED LESS RETAINAGE . . . . . $
(Line 4 less Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT
(Line 6 from prior Certificate) . . . . . $
8. CURRENT PAYMENT DUE . . . . . $
9. BALANCE TO FINISH, INCLUDING RETAINAGE
(Line 3 less Line 6) $

CHANGE ORDER SUMMARY		ADDITIONS	DEDUCTIONS
Change Order approved in previous months by Owner			
APPROVED THIS MONTH			
Number	Date Approved		
Current Total:			**0.00**
Net Change by Change Orders			

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for payment were issued and payments received from the Owner, and that current payment shown herein is now due.

Contractor: Gridworks, Inc.

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before

me this _____ day of _____

Notary Public: _____

My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of Work is in accordance with the Contract Documents, and the Contractor is entitled to the payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED.....$ _____

(Attach explanation If amount certified differs from the amount applied for. Initial figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

Gridworks, Inc.

CONTINUATION

Page: 2

APPLICATION AND CERTIFICATE FOR PAYMENT, containing
Contractor's signed Certification is attached.
In tabulation below, amounts are stated to the nearest cent.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NUMBER:
APPLICATION DATE: INVOICE NO.:
PERIOD TO:
PROJECT NO:

A	B	C	D	E	F		G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED (D+E)		MATERIAL PRESENTLY STORED	TOTAL TAXES TO DATE	TOTAL COMPLETED AND STORED TO DATE	PER-%(G/C)	BALANCE TO FINISH	RETAINAGE
			FROM PREVIOUS APPLICATION	THIS PERIOD						
1012	NTP									
1014	Mobilization									
1016	Storage Canopy Construction									
1017	Module Delivery									
1020	Mechanical Completion									
1025	Substantial Completion									
1027	Final Completion									
1030	Change Orders									
1031	Change Orders - Non-Taxable									
	Project Total:									

Megapack 2 XL Design and Installation Manual

Revision 2.8

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IMPORTANT SAFETY INFORMATION

SAVE THESE INSTRUCTIONS

THIS MANUAL CONTAINS IMPORTANT INFORMATION THAT MUST BE READ, UNDERSTOOD, AND FOLLOWED DURING DESIGN AND INSTALLATION OF THE MEGAPACK SYSTEM.

SYMBOLS

This manual uses the following symbols to highlight important information:

DANGER: Indicates a hazardous situation which, if not avoided, could result in severe injury or death.

WARNING: Indicates a hazardous situation which, if not avoided, could result in injury.

CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor injury or damage to the equipment.

NOTE: Indicates an important step or tip that leads to best results but is not safety- or damage-related.

PRODUCT WARNINGS

DANGER: Risk of electrical shock. Multiple energy sources terminate inside this equipment. Always check with a properly rated voltmeter that there is no voltage on the bus before working.

DANGER: Control all forms of hazardous energy at the source before servicing Megapack or removing the Megapack AC circuit breaker or bus bar access panels in the Customer Interface Bay.

DANGER: Controlling hazardous energy by isolating Megapack from other sources does not de-energize the battery, and thus a shock hazard may still be present.

DANGER: During installation, all equipment must be de-energized.

DANGER: Hazardous voltage can cause severe injury or death.

DANGER: Electric shock could occur when touching live components.

DANGER: Megapack, even in a normally discharged condition, is likely to contain substantial electrical charge and can cause injury or death if mishandled.

DANGER: The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble, operate above 50°C (122°F), or incinerate.

WARNING: To reduce the risk of injury, read all instructions.

WARNING: In order to operate, Megapack requires a solidly grounded circuit such that the line-to-ground nominal voltage does not exceed 300 V.

WARNING: All installations must conform to the laws, regulations, codes, and standards applicable in the jurisdiction of installation, such as National Electric Code (NEC) ANSI/NFPA 70 or the Canadian Electrical Code CSA C22.1.

WARNING: Do not install adjacent to or expose to any external heat source.

WARNING: Personal Protective Equipment (PPE) is required when working inside the Megapack enclosures. Service personnel must wear safety glasses and gloves with a minimum voltage rating of 1500 V DC, Class 0 per ASTM D120 and IEC EN60903 standards.

WARNING: Megapack has no user-serviceable parts. All service must be performed by Tesla-approved service personnel.

WARNING: The installation instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any servicing other than that specified in the operating instructions unless you are qualified to do so.

WARNING: Only use this equipment as specified by Tesla. If the equipment is used in a manner that is not specified by Tesla, the protection provided by the equipment might be impaired.

WARNING: For continued protection against risk of fire, use only replacement fuses of the same type and rating as the original fuse. Fuses must only be replaced by trained personnel.

CAUTION: Megapack input and output circuits are isolated from the enclosure. System grounding, when required by the National Electric Code, ANSI/NFPA 70, or other relevant standard, is the responsibility of the installer.

CAUTION: Do not paint any part of Megapack other than external white metal surfaces, using only Tesla-provided touch-up paint. Internal or external components such as exterior cabinets or grilles should not be painted.

CAUTION: Do not use cleaning solvents to clean Megapack or expose the system to flammable or harsh chemicals or vapors.

CAUTION: Do not use fluids, parts, or accessories other than those specified in Tesla manuals, including use of non-genuine Tesla parts or accessories, or parts or accessories not purchased directly from Tesla or a Tesla-approved party.

CAUTION: Hearing damage could occur if not wearing hearing protection while Megapack is in operation.

Refer to the *Industrial Lithium-Ion Battery Emergency Response Guide* for detailed hazard information specific to the lithium-ion battery. The guide also provides hazard information for a single Tesla Megapack unit.

Voltage Classification

This section defines voltage classification as used in this document.

The table below represents Tesla's standard voltage ranges. The defined ranges, comparable to global codes and standards, help categorize potential electrical hazards where applicable.

NOTE: Any voltage referred to in this document is low voltage unless otherwise specified.

CAUTION: In general, voltages above 49 V are potentially hazardous. What is considered hazardous depends on many factors including your local codes and regulations.

Table 1. Voltage Classifications

Classification	Short Form	Alternating Current (AC) Range	Direct Current (DC) Range
Ultra-low voltage	ULV	0–49 V	0–49 V
Low voltage	LV	50–1,000 V	50–2,000 V
Medium voltage	MV	1,001–35,000 V (1 kV–35 kV)	2,001–35,000 V (2 kV–35 kV)
Sub-transmission medium voltage	STMV	35,001–69,000 V (35 kV–69 kV)	35,001–69,000 V (35 kV–69 kV)
High voltage	HV	Above 69,000 V (>69 kV)	Above 69,000 V (>69 kV)

Shutting Down in an Emergency

DANGER: If smoke or fire is visible, do not approach the Megapack and do not open any of its doors.

DANGER: Refer to the *Industrial Lithium-Ion Battery Emergency Response Guide* for details on response to a hazardous event (*Emergency Response Guide on page 25*).

CAUTION: External safety features such as E-Stops and upstream breakers differ by region and design. Always be aware of your site's safety design and external safety features.

To shut down the system in an emergency or for unknown behavior:

1. If an external E-Stop button or remote shutdown contact to Megapack is present, engage it.
2. If Megapack is serviced upstream by an external AC circuit breaker or disconnect, open the breaker or disconnect.
3. Only if safe to do so and if needed, proceed with de-energizing the Megapack (*Performing Lockout/Tagout on page 118*).
4. Contact Tesla (*Contact Information on page 27*) to advise that the system has been shut down.

Reference Documents

Visit the Tesla Partner Portal at *https://partners.tesla.com/* to find reference material referred to within this guide:

- Megapack 2 XL System Specification – *https://partners.tesla.com/home/en-us/content/download/megapack_2_xl_system_specification.pdf*
- Megapack 2 XL Installation Guide (abridged, mobile-friendly installation instructions) – *https://partners.tesla.com/home/en-us/content/view/megapack-2-xl-installation/*
- Megapack 2 XL Drawings – *https://partners.tesla.com/home/en-us/content/download/megapack_2_xl_drawings.zip*
- Megapack 2 XL Transportation and Storage Guidelines – *https://partners.tesla.com/home/en-us/content/download/megapack_2_xl_transportation_and_storage_guidelines.pdf*
- Megapack 2 XL Operation and Maintenance Manual – *https://partners.tesla.com/home/en-us/content/download/megapack_2_xl_operation_and_maintenance_manual.pdf*
- Megapack 2 XL Compliance Packet – *https://partners.tesla.com/home/en-US/content/download/Megapack_2_XL_Compliance_Packet.zip*
- Megapack 2 XL Compliance Summary – *https://partners.tesla.com/home/en-US/content/download/Megapack_2_XL_Compliance_Summary.pdf*
- Megapack 2 XL Option Codes Quick Reference Guide – *https://partners.tesla.com/home/en-us/content/download/megapack_2_xl_option_codes_quick_reference_guide.pdf*
- Megapack 2 XL Interconnection Data – *https://partners.tesla.com/home/en-US/content/download/Megapack_2_XL_Interconnection_Data.pdf*
- Controls and Communications Manual – v2 Platform – Utility-Scale Projects – *https://partners.tesla.com/home/en-US/content/download/Controls_and_Communications_Manual.pdf*
- Controls and Communications Manual – v2 Platform – C&I Projects – *https://partners.tesla.com/home/en-US/content/download/Controls_and_Communications_Manual_CI.pdf*
- Emergency Response Site Information Form *https://partners.tesla.com/home/en-US/content/download/Emergency_Response_Site_Information_Form.docx*
- Application Note: Considerations for Hazardous Materials Business Plans (HMBP) – *https://partners.tesla.com/home/en-us/content/download/considerations_for_hazardous_materials_business_plans_appnote.pdf*
- Megapack Deployment Overview – *https://partners.tesla.com/home/en-us/content/download/megapack_deployment_overview.pdf*
- Megapack Deployment Checklists – *https://partners.tesla.com/home/en-us/content/download/megapack_deployment_checklists.zip*
- Megapack Design Review Checklist – *https://partners.tesla.com/home/en-US/content/download/Megapack_Design_Review_Checklist.pdf*
- Tesla Energy Operations Contact List and Response Times – *https://partners.tesla.com/home/en-US/content/download/Tesla_Energy_Operations_Contact_List_and_Response_Times.pdf*
- SCADA Design Manual – *https://partners.tesla.com/home/en-US/content/download/SCADA_Design_Manual.pdf*
- Microgrid Controller Owner's Manual – *https://partners.tesla.com/home/en-us/content/download/microgridcontroller_manual_owners.pdf*
- Standard Tesla System Controller Enclosure Installation Manual – *https://partners.tesla.com/home/en-us/content/download/standard_tesla_system_controller_enclosure_installation_manual.pdf*
- Industrial Lithium-Ion Battery Emergency Response Guide – *https://www.tesla.com/firstresponders*

- Tesla Industrial Energy Approved Vendor List – *https://partners.tesla.com/home/en-us/content/download/tesla_industrialenergy_approved_vendor_list.pdf*
- Application Note: Using SEL-735 Meters with Tesla Products – *https://partners.tesla.com/home/en-US/content/download/Using_SEL-735_Meters_With_Tesla_Products_Appnote.pdf*
- Application Note: Megapack Integrated Wireway – *https://partners.tesla.com/home/en-us/content/download/megapack_integrated_wireway_appnote.pdf*
- Application Note: Grounding Conductor Recommendations for Megapack Applications – *https://partners.tesla.com/home/en-us/content/download/megapack_grounding_conductor_recommendations_appnote.pdf*
- Application Note: Electrical Protection Architecture – *https://partners.tesla.com/home/en-us/content/download/electrical_protection_architecture_application_note.pdf*
- Application Note: On-Site Water Supply Sizing For Exposure Protection – *https://partners.tesla.com/home/en-US/content/download/Onsite_Water_Supply_Sizing_For_Exposure_Protection_Application_Note.pdf*
- Application Note: On-Site Maintenance Infrastructure Requirements – *https://partners.tesla.com/home/en-us/content/download/on-site_maintenance_infrastructure_requirements_appnote.pdf*
- Application Note: NERC CIP Low Impact Facility Cybersecurity Compliance – *https://partners.tesla.com/home/en-US/content/download/NERC_CIP_Low_Impact_Facility_Cybersecurity_Compliance_Appnote.pdf*
- Megapack 2 XL Sample Engineered Template – *https://partners.tesla.com/home/en-US/content/download/Megapack_2_XL_Sample_Engineered_Template.zip*
- VIDEO: Megapack 2 XL – Installing Customer Connections – *https://partners.tesla.com/home/content/video/4724*

1 Megapack System Overview

1.1 Introduction

Tesla Megapack 2 XL (Megapack) is a modular, fully integrated, AC-coupled industrial battery energy storage system (BESS). This document provides the site designer the relevant information during the pre-construction phase and also provides the installation contractor the necessary details to install Megapack.

CAUTION: Any deviation from what is specified in this manual must be submitted to Tesla in writing in advance for review.

1.2 Roles and Responsibilities

NOTE: Responsibilities listed are the minimum required by Tesla. Additional responsibilities may be required.

1.2.1 Site Designer

The site designer ("designer") is responsible for all technical decisions for the project. This includes performing tasks such as:

- Civil, mechanical, and electrical design, including:
  - Consulting site geotechnical report for the geotechnical design requirements
  - Engineering all site features according to requirements in *Routes and Zones on page 72*
  - Documenting the preliminary *Electrical Control Plan on page 103*
- Coordinating controls and operation modes as required, including:
  - Consulting with the SCADA engineer
  - Refer to the *SCADA Design Manual* for details
- Analyzing local grid code requirements to inform the development of site operational settings
- Creating project-specific documentation and drawings as required (such as site layout, single-line, and network architecture)
- Coordinating and obtaining permits as required
- Creating site movement and crane delivery plan

1.2.2 Installation Contractor

The installation contractor ("installer") is responsible for completing the mechanical and electrical installation of Megapack according to appropriate local fire, electrical, and building code requirements, in addition to meeting all criteria provided in the *Megapack Deployment Checklists*.

As part of mechanical completion, the installer is responsible for coordinating the logistics with Tesla from the factory to the site, and directly responsible for moving Megapack between the truck trailer and final foundation location. Logistics-specific items may include:

- Site-specific movement plan
- Arranging for craning, including providing a site-specific crane lifting plan
- Coordination with responsible third party transporters such as truck drivers

- Providing all required documentation to responsible parties
- Confirming the existing *Electrical Control Plan on page 103* and updating as needed according to actual site conditions

The installer must provide the following for Tesla review prior to completing the *Megapack Deployment Checklists*:

- Arc flash calculations showing the available energy at the Megapack AC bus
- Isolating methods plan or switching scheme identifying the order of opening and who is responsible for each step

The *Megapack Deployment Checklists* list the criteria that must be inspected and completed on-site for Tesla to consider the site completed and ready for commissioning. This includes items such as:

- Physical installation such as proper anchoring, door swing, access, etc. of all equipment
- Site and foundation grading, drainage, and access
- Electrical termination checks for polarity and torque for all equipment
- Harness termination checks
- Ethernet cable checks
- Insulation resistance testing for all wires
- Meter wiring and CT polarity check
- Recording site information (serial numbers, unit and meter locations, inspection date, etc.) and emailing a scanned copy to Tesla
- Megapack and Tesla System Controller start-up

DANGER: While performing Megapack installation, always follow all *IMPORTANT SAFETY INFORMATION on page 3* and ensure personal safety at all times per local and national regulations. The installer is responsible for providing required personal protective equipment (PPE), including such items as safety glasses, hard hats, appropriate boots, and appropriate gloves (cut and electrical).

1.2.3 Site Owner

The site owner or operator is the entity who will be maintaining the site for the life of the system. This includes such responsibilities as:

- Ensuring adequate outreach with local first responders, including:
  - Completing the *Emergency Response Site Information Form*
  - Hosting a site walk with the local fire department
- Where required by local jurisdictions, prepare a Hazardous Materials Business Plan (refer to the *Application Note: Considerations for Hazardous Materials Business Plans*)
- Consulting the latest revisions of relevant information on the Tesla Partner Portal
- Providing the completed *Electrical Control Plan on page 103* to Tesla
- Maintaining *Routes and Zones on page 72* as required
- Other duties as described in the *Megapack 2 XL Operation and Maintenance Manual*

1.3 Tesla System Components

A Tesla System consists of the following components:

- One or more Megapacks – part number 1848844-XX-Y[1] (*Megapack on page 10*)
- Tesla System Controller: Standard Tesla System Controller – part number 1471208-XX-Y[1], or Large Tesla System Controller – part number 1700130-XX-Y[1] or 1459155-XX-Y[1] (*Tesla System Controller on page 17*)

[1]*Where X is a number between 0 and 9, and Y is a letter.*

A Megapack site may additionally consist of other equipment including what is outlined in *Site Architecture on page 28*.

Figure 1. Example Megapack Site

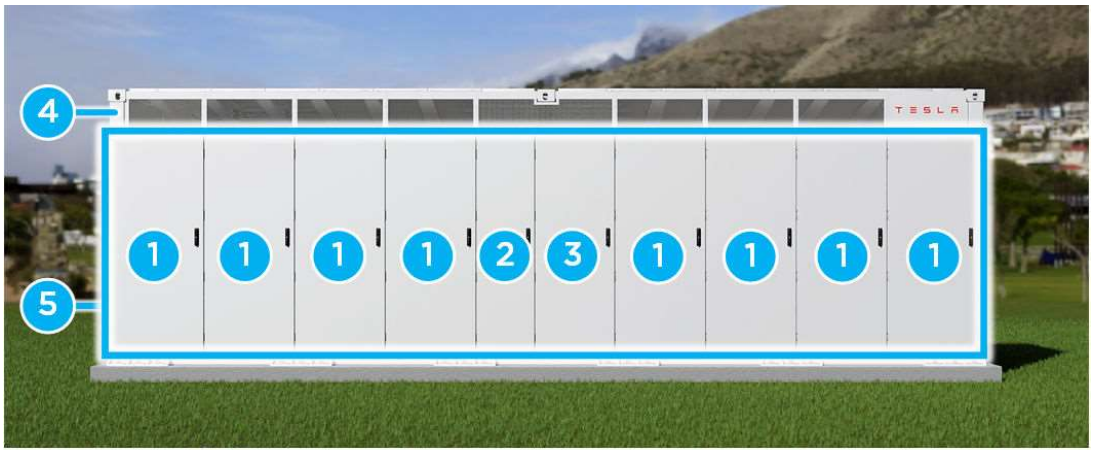
1.4 Megapack

Megapack is a fully integrated battery energy storage unit capable of charging and discharging real power and injecting and absorbing reactive power. Megapack converts power for storage in rechargeable lithium-ion battery modules and is designed to support a range of AC power and energy.

NOTE: Individual Megapack specifications are detailed on the product label (see *Megapack Labels on page 21*).

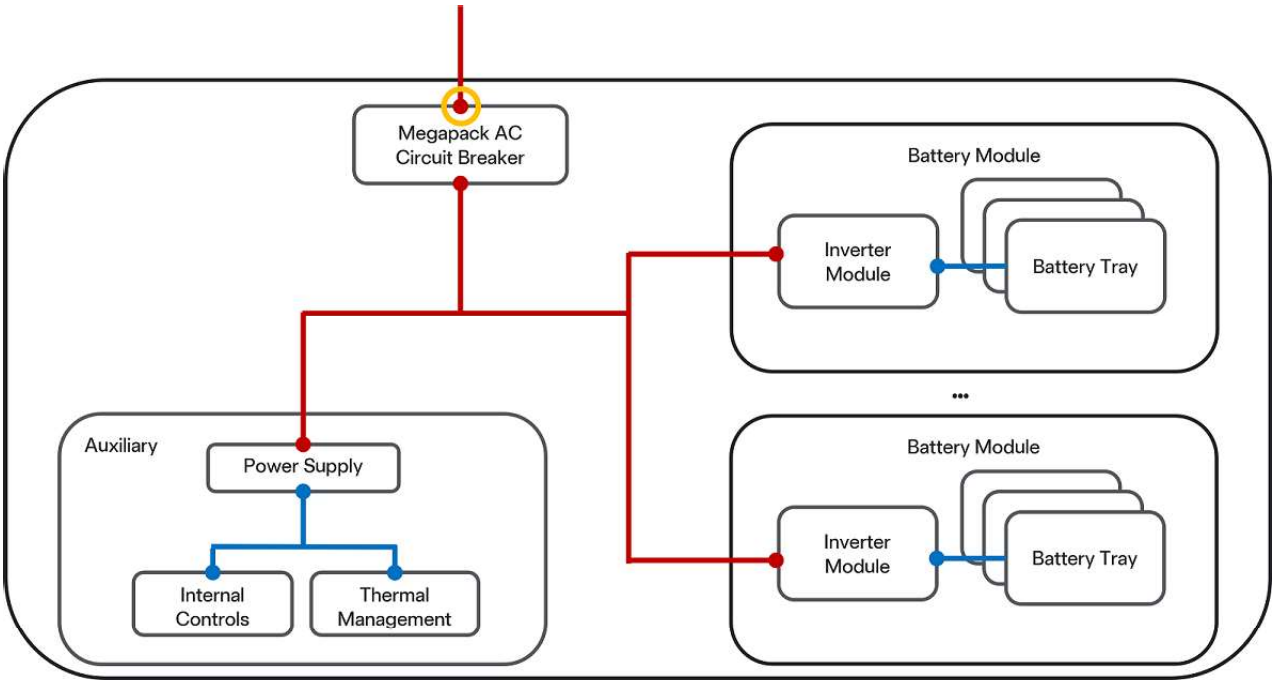
A Megapack unit consists of the following components:

Figure 2. Megapack Overview



1. Battery module bays (*Battery Modules on page 14*)
2. Thermal cabinet (*Thermal System on page 15*)
3. Customer Interface Bay (*Customer Interface Bay on page 16*)
4. Thermal roof (*Thermal System on page 15*)
5. IP66 enclosure (*Enclosure on page 16*)

Figure 3. Megapack Internal Architecture



AC
AC Output Terminals
Internal DC

The AC output terminals are the point on the AC bus bars (*AC Bus Bar Area on page 112*) at which the external AC connections to the Megapack are terminated.

1.4.1 Product Configurations

A Megapack unit is configurable and may vary based on **options** or **variants**. The product (Megapack unit) as built or later reconfigured, complete with its customizations including variants and options, is known as a **configuration**.

1.4.1.1 Megapack Options

An **option** is a product difference that the customer or sales team can select to configure the Megapack unit in a certain way to meet customer or project needs, such as number of battery modules or cell type (*Battery Modules on page 14*). Product options are defined using **option codes**. Not all combinations of option codes are possible, as some option codes are pre-defined by other option codes.

Option codes appear in a list of alphanumerical digits separate from the part number, determined at the time of product configuration during the sales process, and referenced throughout the order-to-delivery process. Finally, they are printed on the Megapack unit's labels (*Megapack Labels on page 21*) for reference throughout the Megapack's operational lifetime.

Although Megapack arrives at the site already configured, use its option codes to determine information required during design and installation.

Option codes are described at a high level below. Refer to the *Megapack 2 XL Option Codes Quick Reference Guide* for detailed calculation and ratings information.

Table 2. Product Options

Option	Option Code	Description
Cell	C###	Cell options can denote different cell characteristics such as specifications or manufacturing location. The following cell options are available: • C010 • C011 • C012
Fan Type	FN##	Fan type options affect the maximum audible noise specification (*Noise Specification and Guidance on page 67*). The following fan type options are available: • FN01 • FN02 • FN03
Number of Battery Modules	EC##	Where ## is a number between 08 and 24, which indicates the number of battery modules. Combine with GT## to derive the Megapack unit's energy capacity (kWh). Combine with GT## and P### to derive the Megapack unit's real power capability (kW).
Inverter Module Configuration	GT##	GT01: 4-Hour inverter module configuration GT02: 2-Hour inverter module configuration Combine with EC## to derive the Megapack unit's energy capacity (kWh).

Option	Option Code	Description
Apparent Power Configuration	P###	Where ### is a number between 040 - 240, which indicates the Megapack unit's apparent power capability. Additionally allows for calculation of maximum continuous charge/discharge current (A).
Low-Voltage Augmentation Configuration	CMA#	CMA0: The hardware configuration does not support future low-voltage battery augmentation CMA1: The hardware configuration supports future low-voltage battery augmentation
Grid-Forming Firmware Configuration	VF##	VF00: The configuration does not support grid-forming VF01: The configuration supports grid-forming

Tesla may also configure options (**manufacturing options**) that become part of the product's option codes, such as circuit breaker manufacturing options (*Megapack AC Circuit Breaker on page 106*). Manufacturing options are not customer-configurable.

Table 3. Manufacturing Options

Option	Option Code	Description
Thermal Configuration	TC#H	TC2H: 2-Hour thermal configuration TC4H: 4-Hour thermal configuration Preconfigured based on heat rejection requirements of the power electronics and battery module count.
Internal Bussing Configuration	QB##	QB01: 1600 A QB02: 3000 A Preconfigured based on the inverter module and apparent power configurations.
Megapack AC Circuit Breaker	BB##	BB01: 1600 A BB02: 3000 A Preconfigured based on the inverter module and apparent power configuration.
Shipping Firmware Configuration	SE##	SE00: Configuration supports transportation over water SE01: Configuration supports transportation over land only Preconfigured based on delivery location of the Megapack.
Cellular Configuration	CR##	CRNA: North America

Option	Option Code	Description
		CRCN: China CRRW: Rest of world Preconfigured based on delivery location of the Megapack.

1.4.1.2 Product Variants

A **variant** is a part or product difference that is not optionally configured but is, for example, an incremental product improvement, such as an enclosure variant (*Enclosure on page 16*).

1.4.1.3 Standard Configurations

Megapack's power and energy may be configured to meet specific site and project requirements. A fully populated Megapack has the following nominal ratings at 480 V AC:

Table 4. Megapack Standard Configuration Ratings

Configuration	Apparent Power Capability (kVA)	Real Power Capability (kW)	Energy Capacity (kWh)	Associated Option Codes
2-Hour C010 / C011	2400.0	1927.2	3854.4	C010 or C011, EC24, GT02, P240
4-Hour C010 / C011	1320.0	979.2	3916.8	C010 or C011, EC24, GT01, P132
4-Hour C012	1320.0	1042.5	4170.0	C012, EC24, GT01, P132

The apparent power capability (kVA) of a fully populated Megapack may be factory-configured to a lower value than the above.

1.4.2 Battery Modules

Battery modules are factory-installed into Megapack battery module bays and contain prismatic lithium-ion battery cells, the smallest non-divisible energy storage components of the Megapack. A battery module in turn is the smallest field-replaceable battery unit. Each Megapack contains up to 24 battery modules.

Battery modules may consist of C010, C011, or C012 cell options.

Battery modules may consist of C010 or C011 cell options.

Figure 4. Battery Module - C010 or C011 Cell Option

Figure 5. Battery Module - C012 Cell Option

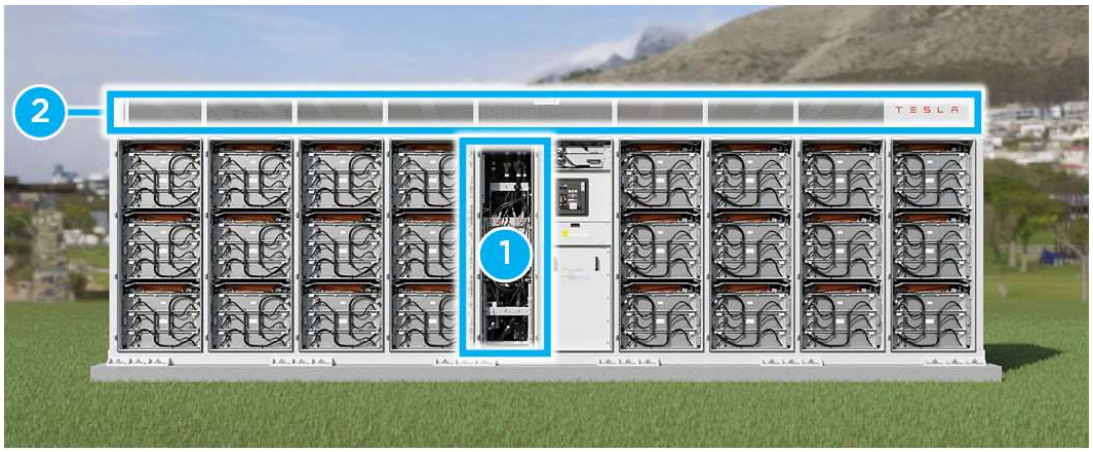
Each battery module includes an integrated inverter module for power conversion. Battery modules are connected in parallel to Megapack's internal AC bus, each with an AC power and communications output connection. The modules do not require any field assembly or adjustments and may only be replaced by Service Providers.

1.4.3 Thermal System

The thermal system provides active cooling and heating to the internal Megapack components. An external HVAC or thermal system is therefore not required for Megapack to operate.

The thermal system is comprised of the thermal cabinet and the thermal roof.

Figure 6. Thermal System



1. Thermal cabinet
2. Thermal roof

The thermal cabinet includes pumps that circulate coolant through the Megapack and a compressor that maintains thermal control, in addition to an in-line heater that can warm the coolant. The thermal cabinet also contains a power conversion system for drawing power from Megapack's internal AC bus. The thermal cabinet is accessible for servicing from ground level.

The thermal roof, or top cabinet of the enclosure, provides ventilation airspace and contains fans and radiators that cool the ethylene glycol-water coolant solution. The thermal roof is accessible for servicing with the help of a ladder or mechanical lift.

See *Thermal Specifications on page 69* for more information.

WARNING: See *Unloading on page 114* for important precautions about working on the roof.

WARNING: The thermal management section is locked during operation. Do not open this cabinet while fans are in use, to avoid hazard from moving parts.

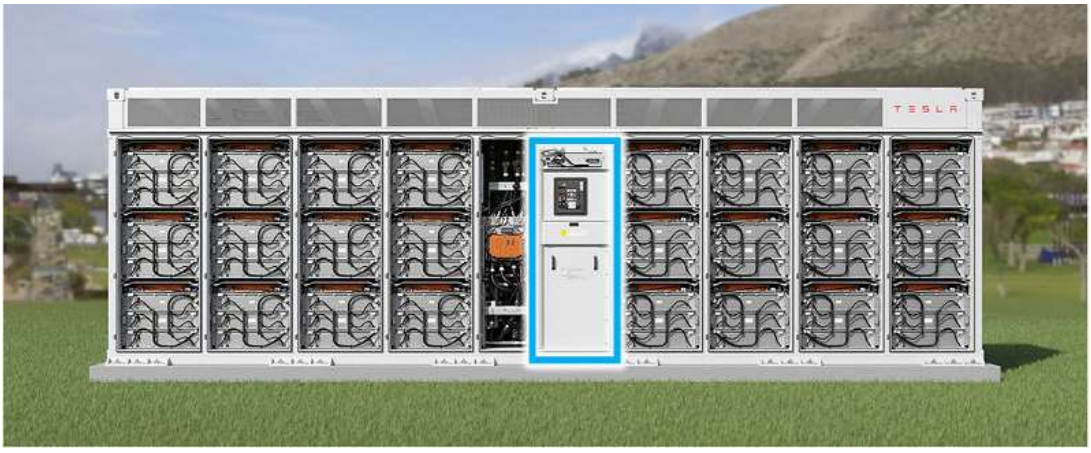
NOTE: Megapack includes an enable circuit as a safety feature. Opening the door to the thermal bay shuts down the Megapack. The thermal components located on the roof should not be serviced during operation.

WARNING: The thermal management sections are locked during operation. The thermal bay and thermal roof are only serviceable when the system is not operating. Do not open the thermal enclosures while the unit is operational to avoid hazard from moving parts.

1.4.4 Customer Interface Bay

The Customer Interface Bay is a single bay that includes all the external connections needed for initial installation (the customer I/O area and the AC bus bar area) and the Megapack AC circuit breaker.

Figure 7. Customer Interface Bay



For design information, see *Customer Interface on page 105*. For installation tasks, see *Installing Customer Connections on page 134*.

1.4.5 Enclosure

Megapack's enclosure is rated according to IP (ingress protection) code IP66. This means it provides a high level of protection against particle and water ingress for components internal to the enclosure.

This high protection rating must be maintained at all times. In particular, special precautions must be observed while installing or servicing Megapack to prevent particles, water, or debris from entering the enclosure. Refer to *Sealing the Wireway Openings on page 140* for more information.

There are two enclosure variants:

Table 5. Megapack Enclosure Variants

Variant	Number of Anchor Brackets	Wireway Configuration
-C enclosure	12	Two single-channel trays
-D enclosure	10	Two four-channel trays

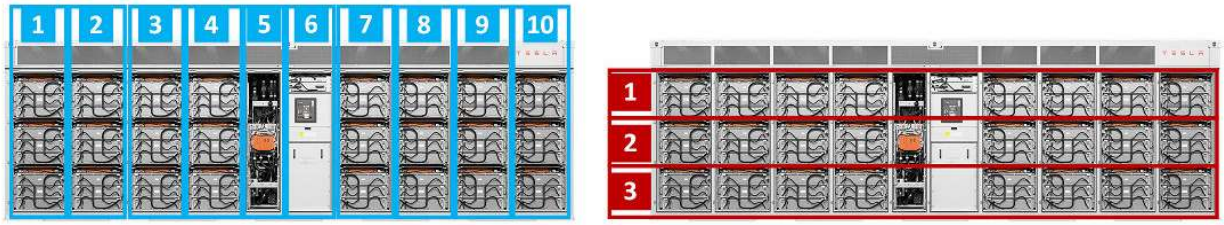
Graphics in this publication reflect the -C enclosure variant unless otherwise specified.

Refer to the *Megapack 2 XL Layout* drawings in the *Megapack 2 XL Drawings* package for detailed information.

1.4.6 Megapack Numbering Key

A numbering key can help identify locations of Megapack enclosure components to assist you when referring to them during installation or service. Below are the numbering keys for **bay** (vertical tower) and **shelf** (horizontal row) locations:

Figure 8. Megapack Bay Numbering (Left) and Shelf Numbering (Right)



For example, as depicted in *Megapack Overview on page 11*:

- The thermal bay is in bay 5
- The Customer Interface Bay is bay 6
- Battery modules are located on shelves 1–3 in bays 1–4 and 7–10.

1.5 Tesla System Controller

The Tesla System Controller is the single point of interface with which to monitor and control the entire Megapack System and approved third-party generation sources as specified in the *Tesla Industrial Energy Approved Vendor List*. It hosts the Tesla Controls Suite, which manages control functions of the Megapack System and approved third-party generation sources, aggregating real-time information and using it to optimize commands. The Tesla System Controller communicates over a private TCP network.

By default, Tesla provides two Tesla System Controllers (with the same part number). Refer to the *SCADA Design Manual* for additional details on alternative configurations. Tesla does not include additional networking equipment that may be required for the system to operate.

The Tesla System Controller has three network interfaces:

- LAN 1 RJ45/Ethernet port, which connects to the Customer Network and can be configured for WAN access
- LAN 2 RJ45/Ethernet port, which connects to the Tesla Network
- Integrated cellular modem, which by default provides cellular access for Tesla's remote connection (part numbers 1471208 and 1700130)

Refer to the relevant *Controls and Communications Manual* for complete instructions on how to interface with the Tesla System Controller.

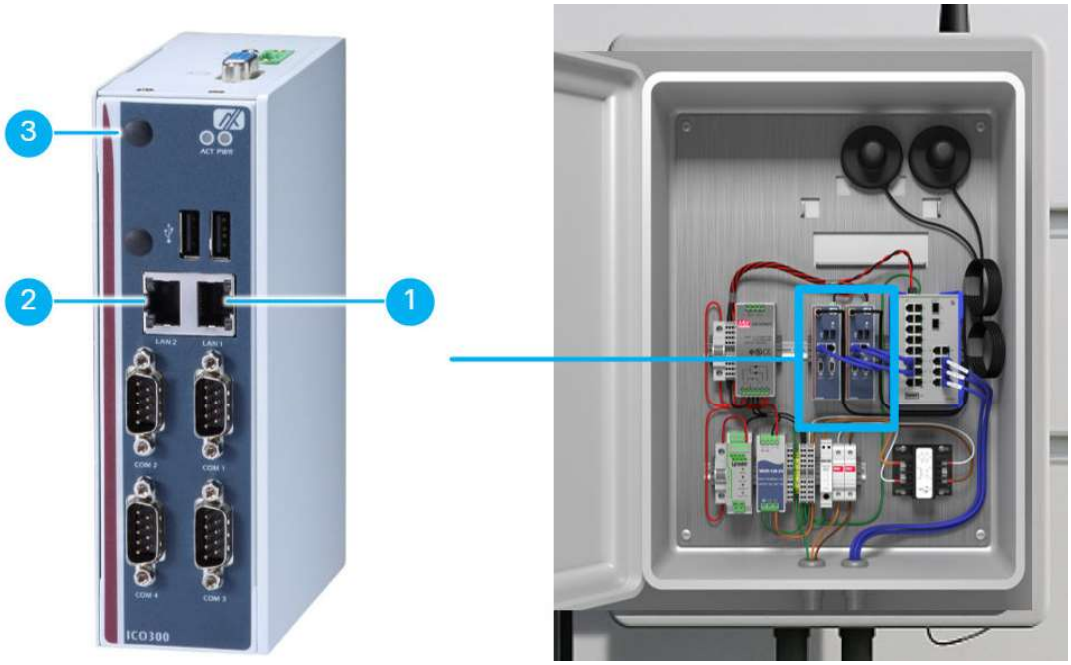
Tesla requires network separation between the Tesla Network and the Customer Network. The Tesla Network shall only contain devices that are critical for Megapack System operation. System operators can interface with the Tesla System Controller over the Customer Network.

There are two physical variations of the Tesla System Controller:

- **Standard Tesla System Controller**: Used in Megapack Systems with up to 16 battery units (not including augmentation units). Delivered in the Standard Tesla System Controller Enclosure, which includes two Standard Tesla System Controllers. Refer to the *Standard Tesla System Controller Enclosure Installation Manual* for installation details.
- **Large Tesla System Controller**: Used in Megapack Systems with greater than 16 and up to 1,000 battery units (not including augmentation units). A single Large Tesla System Controller (or pair of controllers acting in automatic failover) supports up to 1,000 Megapacks. For projects with more than 1,000 Megapacks, additional Large Tesla System Controller(s) may be required. Refer to the *SCADA Design Manual* for additional information about requirements for designing an energy storage site larger than 18 MW. Contact your Tesla representative for more information on controller architectures for larger system sizes.

NOTE: If you have contracted a Certified Service Provider to operate and maintain your Tesla System, contact your Tesla representative for requirements.

Figure 9. Two Standard Tesla System Controllers in the Standard Tesla System Controller Enclosure (Part Number 1471208)

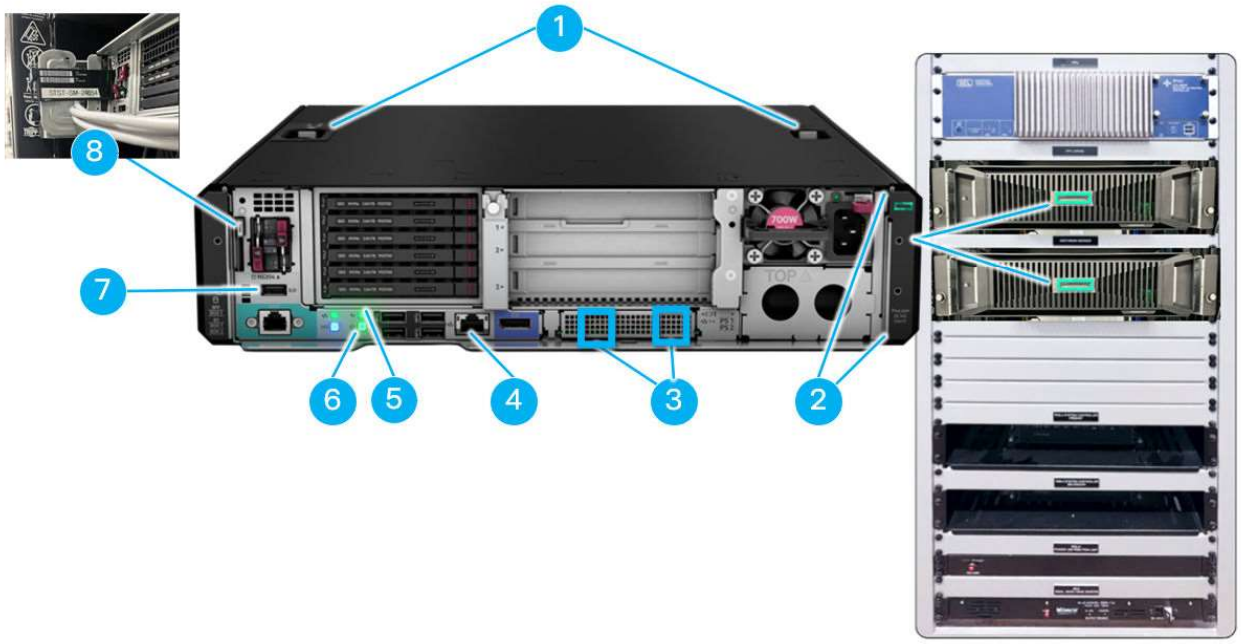


1. LAN 1 port – Customer Network
2. LAN 2 port – Tesla Network
3. Cellular WAN connection

Figure 10. Two Large Tesla System Controllers in a SCADA Network Enclosure (Part Number 1700130)

1. LAN 1 port – Customer Network
2. LAN 2 port – Tesla Network
3. Cellular WAN connection

Figure 11. Two Large Tesla System Controllers in a SCADA Network Enclosure (Part Number 1459155)



1. Quick Removal Access Panel
2. Two Power Supply Slots
3. LAN1 (left) and LAN2 (right) RJ45 ports
4. Remote Management Port
5. Health LED
6. Power On / Standby Button and System Power LED
7. Service Port
8. Information Pull Tab (Serial Number)

For more information:

- Refer to *Installing the Tesla System Controller on page 143* for installation information.
- Refer to *Standard Tesla System Controller Wiring on page 95* and *Network and Internet Considerations on page 60* for design considerations.

1.6 Hazard Mitigation Features

There are hazards inherent in any energy system. In battery energy storage systems, chemical energy in the battery cells can be transmitted as electricity or heat and gases which, when unmitigated, may result in fire.

Hazards are mitigated in multiple ways by the Tesla System, as described in this section.

1.6.1 Electrical Hazard Mitigation

Electrical hazards can include shock from unexpected voltage, heat from unanticipated escape of stored energy, and environmental hazards such as electrical storms. Megapack's electrical hazard mitigation includes:

- *System Protection Features on page 101*
- *Lightning Protection Design on page 103*

1.6.2 Explosion Hazard Mitigation

The Megapack battery enclosure has an explosion control system that mitigates the potential of the enclosure to fail in the event of a deflagration. This system includes:

- **Sparker System:** A protective feature that uses spark plugs ("Sparkers") to proactively ignite flammable discharge gases from compromised battery cells before the gases accumulate within the enclosure and could lead to an explosion hazard.
- **Overpressure vents:** Vents installed in the ceiling of the battery bay's IP66 enclosure that are designed to open during an overpressure event, such as the rapid ignition of flammable gases by a Sparker. Once opened, the overpressure vents permit gases, products of combustion, and flames to exhaust in a controlled path from the battery bay into the thermal roof. From the thermal roof, this exhaust releases out of the roof vents.

1.6.3 Fire Hazard Mitigation

If fire occurs as a result of these hazards, the battery enclosure is designed to prevent it from propagating to nearby enclosures or exposures.

1.6.4 Other Safety Features

In addition to features provided to mitigate hazards, the Tesla System provides additional features that you can use to enhance safety, including:

- *Safety Disconnect Features on page 103*
- **Battery management system:** Megapack provides firmware and software that can be used to monitor the system including battery cell temperature and fault tolerance.

1.7 Product Labels

1.7.1 Megapack Labels

Megapack labels provide the specifications and product reference for each individual Megapack unit.

NOTE: The labels pictured here are example labels. Refer to the labels on the Megapack units themselves for specific product configuration information.

The **Megapack external label** is a small metal label laser-etched onto the outside of the Customer Interface Bay door above the handle. It contains:

- Description of the product, with kWh, kW, and amp ratings
- Part number followed by option codes
- Serial number
- Date of manufacture

Figure 12. Megapack External Label - Example

1. Part number
2. Serial number
3. Option codes

The **Megapack nameplate label** is a large sticker affixed to the inside of the Customer Interface Bay door, and contains nameplate information such as:

- AC input/output specifications including relevant power and energy ratings, in kWh, kW, and amps
- Part number followed by complete list of option codes
- Serial number
- Date of manufacture
- Weight (mass)
- Other detailed product specifics and compliance marks

Figure 13. Megapack Nameplate Label - Example

1. Part number
2. Serial number
3. Option codes

1.7.2 Tesla System Controller Labels

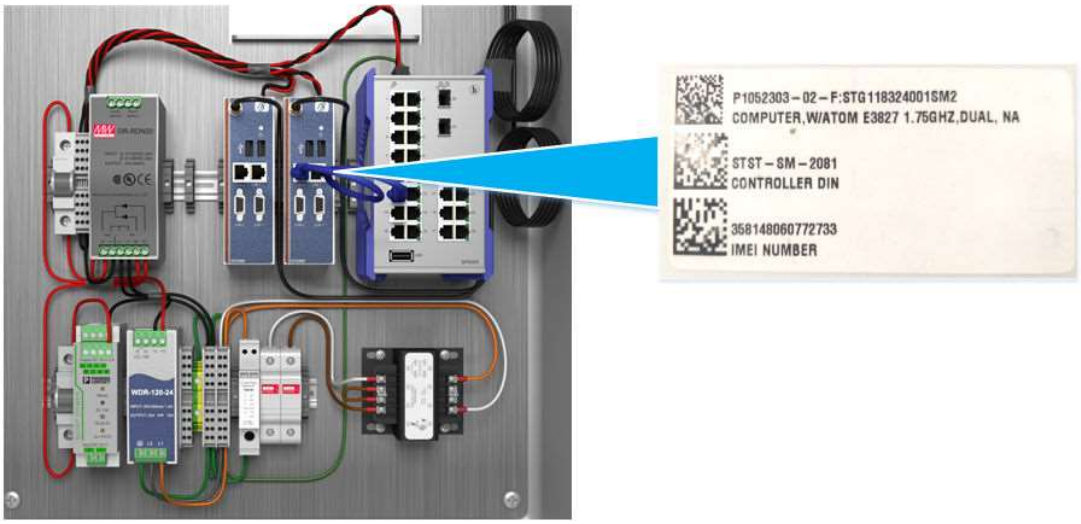
Look on the controller computer of any variant of the Tesla System Controller to locate its labels. The part number is typically identified with P or PN. The VIN is typically labeled *CONTROLLER DIN* and takes the format *STST-SM-####*.

For more information about the Tesla System Controller and its variants, refer to *Tesla System Controller on page 17*.

1.7.2.1 Standard Tesla System Controller

Standard Tesla System Controller labels are located on the side of the computers in the Standard Tesla System Controller Enclosure:

Figure 14. Standard Tesla System Controller Label (Example)



NOTE: There may be two Standard Tesla System Controllers in the Standard Tesla System Controller Enclosure. Each has its own identifiers.

1.7.2.2 Large Tesla System Controller

The labels for the Large Tesla System Controller (part number 1700130) are located on the top and side of the computer:

Figure 15. Large Tesla System Controller (1700130) Label on Top (Example)

Figure 16. Large Tesla System Controller (1700130) Label on Side (Example)

The labels for the Large Tesla System Controller (part number 1459157 or 1459158) are located on the top of the computer and on the information pull tab:

Figure 17. Large Tesla System Controller (1459155) Information Pull Tab Label (Example)

NOTE: Typically, two Large Tesla System Controllers are provided. Each has its own identifiers.

1.8 Emergency Response Guide

The *Industrial Lithium-Ion Battery Emergency Response Guide* (ERG) provides an overview of product materials, handling and use precautions, hazards, emergency response procedures, and storage and transportation instructions. Tesla recommends that a physical copy of the ERG is transported along with Megapack, and subsequently remains on site and accessible at all times for the life of the product. The ERG is periodically updated. Download the latest revision from *https://tesla.com/firstresponders*.

The ERG may be used in place of traditional Safety Data Sheets (SDS) commonly associated with the health and safety of a chemical product, however Safety Data Sheets are available for materials in Tesla Energy products. Refer to the Tesla Partner Portal or contact Tesla for more information.

NOTE: Tesla BESS coolant is not a regulated substance according to the United States Department of Transportation (USDOT). Tesla BESS refrigerant is a regulated substance according to the USDOT.

1.8.1 Available ERG Translations

The *Industrial Lithium-Ion Battery Emergency Response Guide* (ERG) is available in various languages as indicated below. As information in the ERG is periodically updated and translations are periodically added, always check the Tesla First Responders Information page at *https://www.tesla.com/firstresponders* for the latest revision of this guide, for ERGs for other Tesla products, and for the latest additional translated versions.

English	Deutsch	Español	Français
עברית	Italiano	日本語	한국어
Nederlands	简体中文	繁體中文	Português
Slovenščina			

1.9 Getting Support

This guide, in addition to other required and supportive documentation, is distributed via the Tesla Partner Portal at *https://partners.tesla.com/*.

NOTE: Ensure that the installation team has the most recent revisions of this document and the *Megapack Deployment Checklists* before beginning work. If you are an installation contractor and are not sure if you have the required documents, check with the site manager or Tesla support.

To get support or to provide product feedback, refer to *Contact Information on page 27*.

1.9.1 Contact Information

In case of critical performance issues (for example, if the Tesla site is 100% non-operational), call the appropriate Tesla telephone number listed below and select **Urgent** for 24/7 support.

For other inquiries, visit the **Online Support and Ticketing Portal** or telephone the support contacts provided below.

Online Support and Ticketing Portal
https://ion.tesla.com/ For information about using the Energy Service Portal, refer to the *Energy Service Portal User Guide*: *https://partners.tesla.com/home/en-us/content/download/tesla_ion_user_guide_en-na.pdf*

Urgent Support via Telephone (24x7)
Asia: +1 571 573 9163 Australia/New Zealand: +61 2 432 802 81 Europe/Middle East/Africa: +31 2 08 88 53 32 Japan: +1 571 573 9163 North America: +1 650-681-6060

Technical Support via Telephone		
North America: +1 650-681-6060	Asia/Pacific: +61 2 432 802 81	France: +33 173218702
Japan: +0120 312-441	The Netherlands: +31 208885332	Slovenia: +38 617778699
South Africa: +27 213004878	Switzerland: +41 445155607	United Kingdom: +44 1628450645

2 Site Architecture

In addition to *Tesla System Components on page 9*, a Megapack site may require other equipment and design considerations as noted in this section.

2.1 Archetypes

Standard control Archetypes represent a type of project built with a Tesla battery system and specify metering installation requirements, pre-defined control functions (site- and inverter-level), and system behavior under special conditions based on the project's electrical topology.

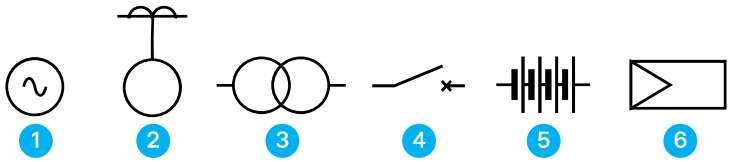
The following Archetypes are available for Tesla projects:

- Utility Battery Only – The Utility Battery Only Archetype is designed for front-of-the-meter, utility-scale storage projects.
- Utility Co-Located Plant (Battery Only) – The Utility Co-Located Plant (Battery Only) Archetype is designed for projects consisting of both batteries and solar generation assets in which only battery control is within Tesla's scope, or for projects with multiple battery meters instead of a single battery meter at the point of interconnection.
- Utility Hybrid – The Utility Hybrid Archetype is designed for projects consisting of both batteries and solar, where the system is being controlled as a single combined resource (referred to as a hybrid resource) and both solar and battery control is within Tesla's scope.
- Battery Dispatch Only – The Battery Dispatch Only Archetype is used in projects where Tesla provides control capabilities at the battery-level. Site-level control capabilities are outside of Tesla's scope and must be managed by a third-party controller.
- Grid-Connected Only – The Grid-Connected Only Archetype is used in projects where the system is grid-connected and Tesla provides both battery-level and site-level control capabilities. These projects consist of a net load meter, Tesla battery, and optional solar generation assets connected to the grid.
- Backup – The Backup Archetype is used in projects where the system is normally grid-connected and provides load backup in the event of abnormal grid conditions. Tesla provides battery-level, site-level, and islanding control capabilities. These projects consist of a Tesla battery and an Islanding Controller.
- Off-Grid Microgrid – The Off-Grid Microgrid Archetype is used in projects where the system is an isolated grid capable of supporting loads and managing battery operation in coordination with other generation assets. These projects consist of a Tesla battery and approved solar, generator, and/or wind assets while operating off-grid.
- Grid-Connected Microgrid – The Grid-Connected Microgrid Archetype is used in projects in which the system is connected to the grid and is also capable of islanding, and charging or discharging in coordination with generation assets in order to support loads. These projects consist of a Tesla battery and approved solar, generator, or wind assets while operating on-grid and off-grid.

Electrical topology and associated design guidance varies per Archetype. Guidance where unique for each Archetype is provided throughout this section.

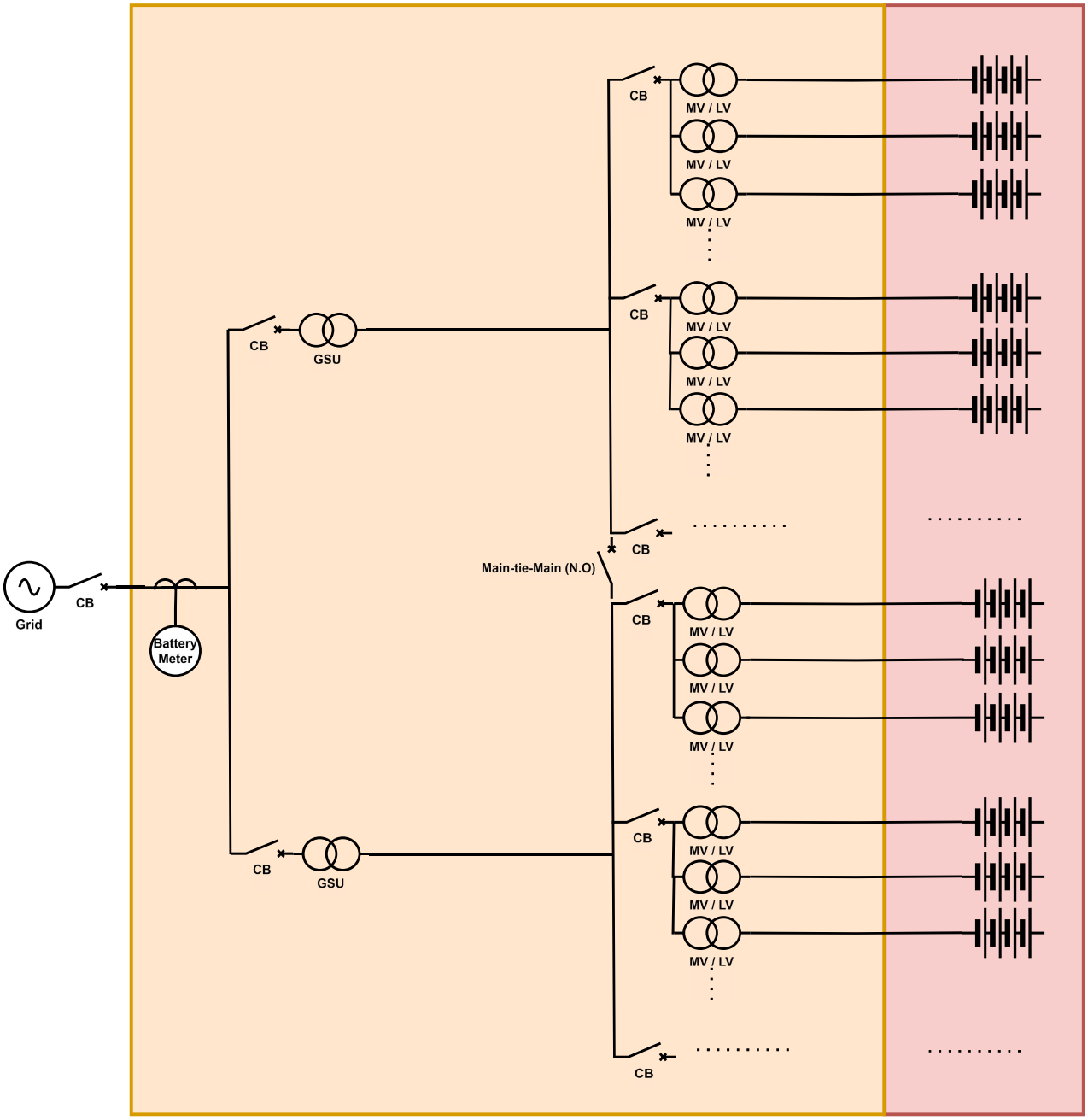
A diagram of the electrical topology for each Archetype is provided below. In the diagrams, shaded areas represent different control sections as indicated in each diagram's legend. Icons in the diagrams generally indicate the following components:

Figure 18. Icon Key



1. Grid
2. Meter: At various locations, as indicated in diagrams
3. Transformer: With types indicated, including generator step-up (GSU), medium voltage (MV), low-voltage (LV)
4. Circuit breaker: Also abbreviated CB
5. Battery assets: Megapack units
6. Solar assets: Also abbreviated PV for photovoltaics

Figure 19. Utility Battery Only Archetype – Electrical Topology & Control Sections



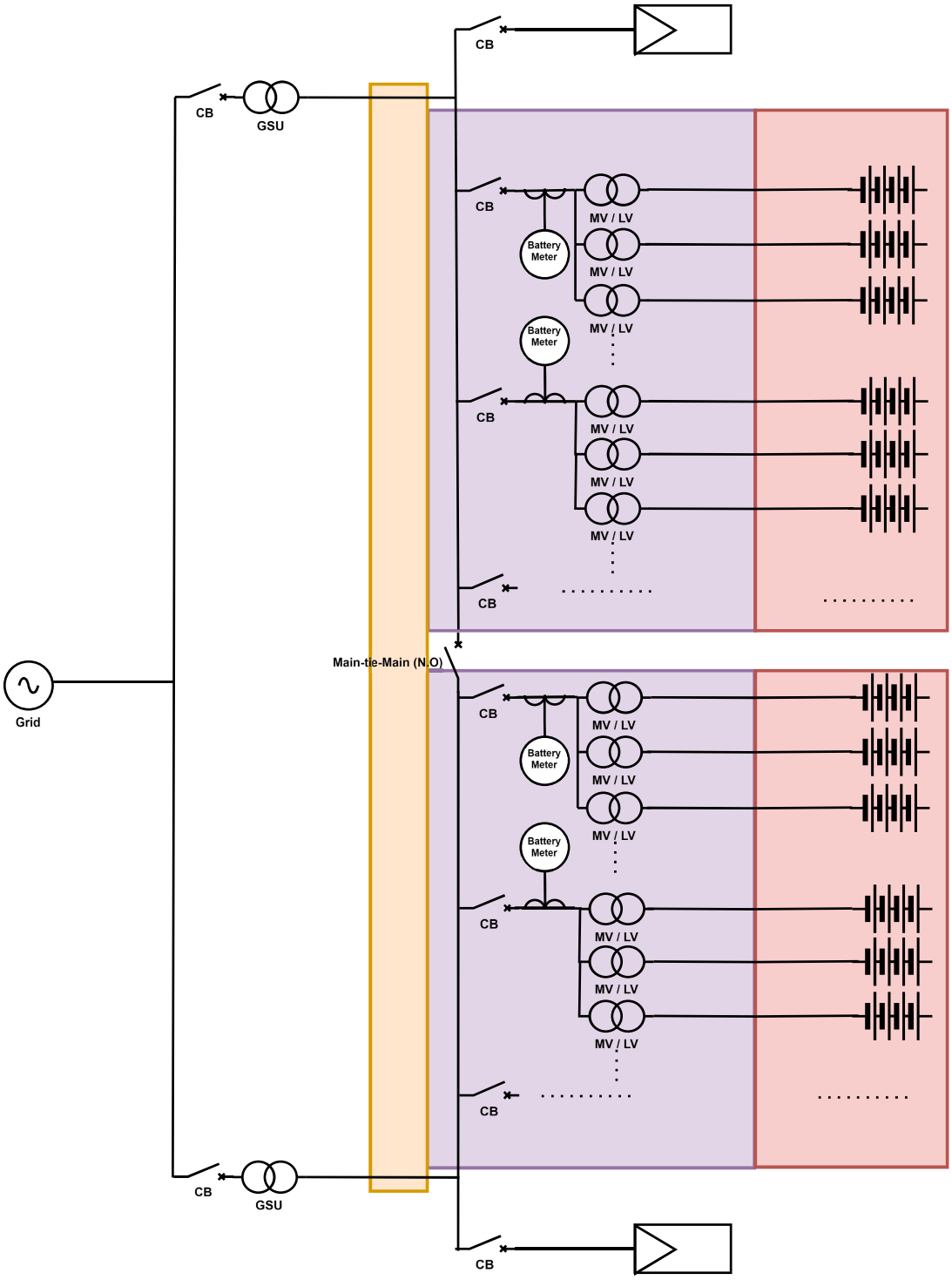
Control Sections

On-Grid

Battery Assets

NOTE: In projects using the Utility Battery Only or Utility Hybrid Archetypes, in order to black start a facility, the meter and main circuit breaker shall be arranged as shown in the diagram. The main circuit breaker must be on the utility- or line-side of the battery meter for black start to function.

Figure 20. Utility Co-Located Archetype – Electrical Topology & Control Sections



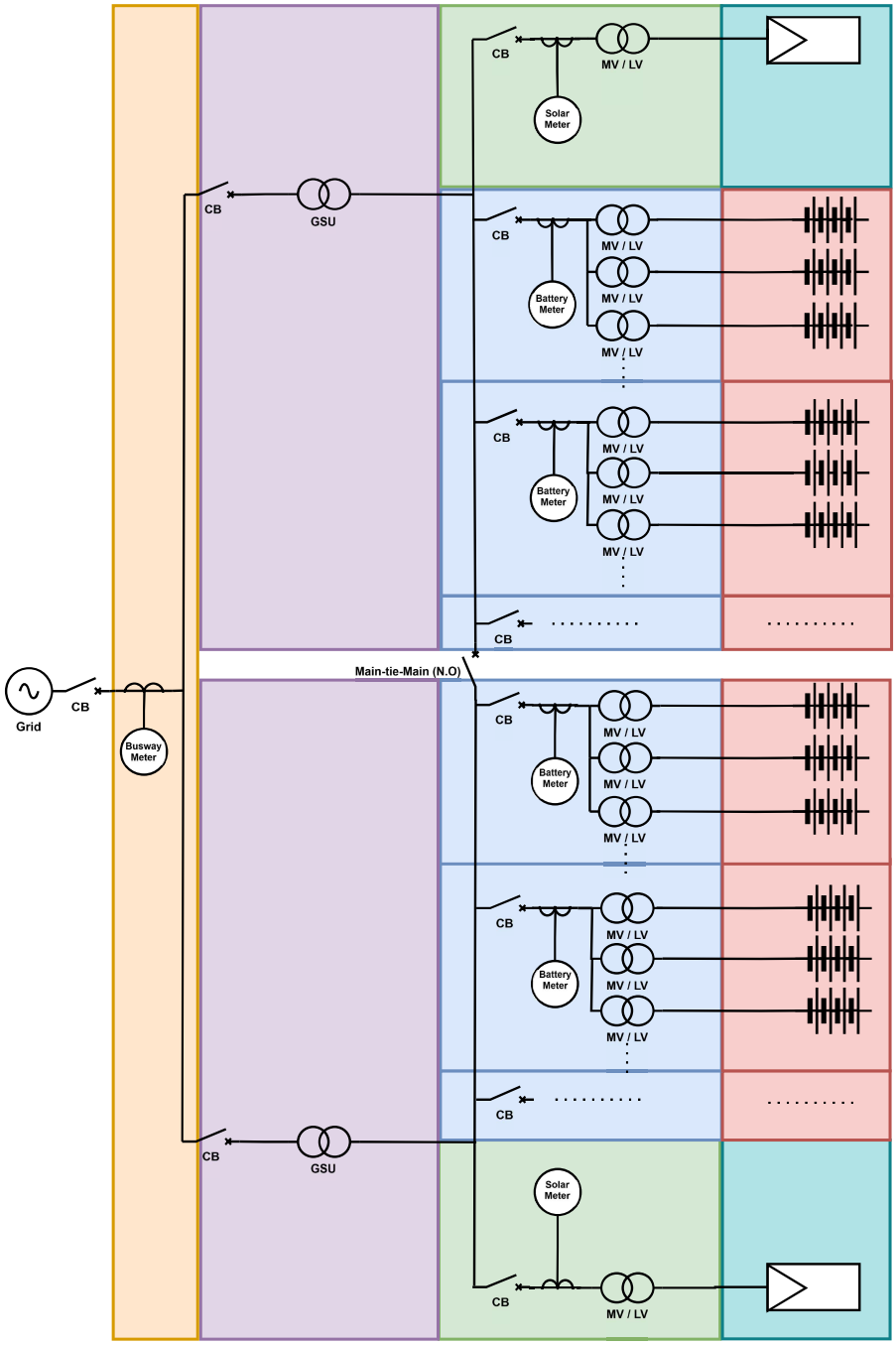
Control Sections

On-Grid

Metered Battery Sub-Site

Battery Assets

Figure 21. Utility Hybrid Archetype – Electrical Topology & Control Sections

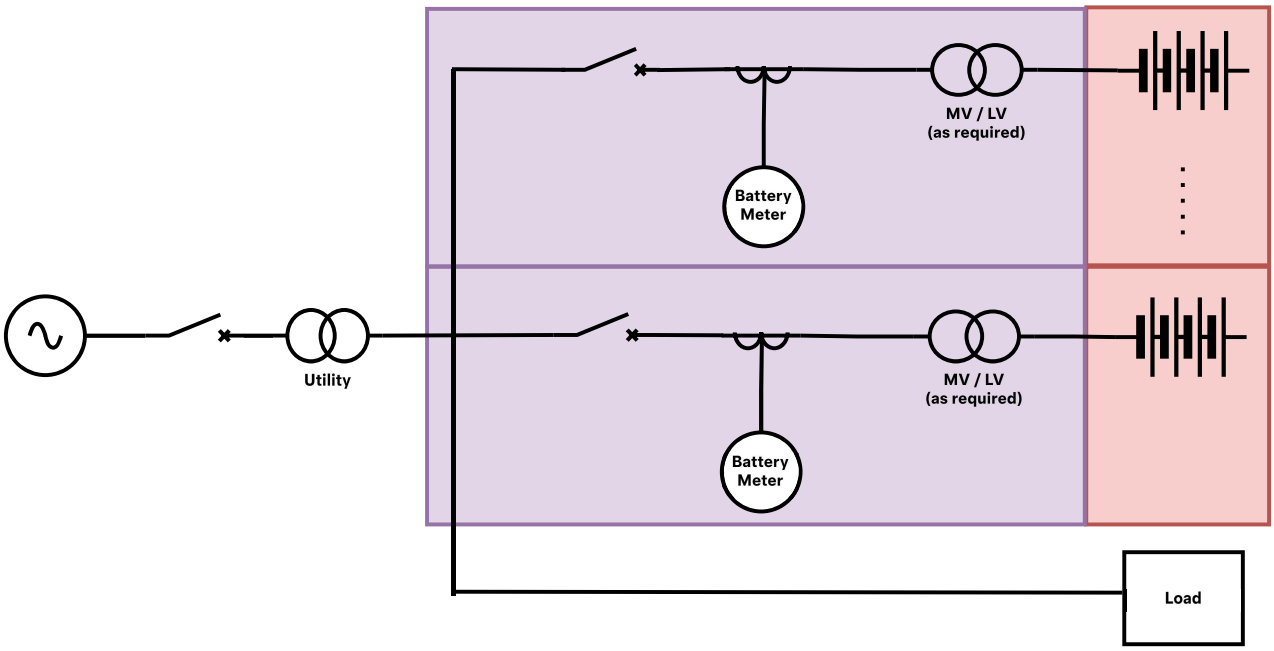


Control Sections

- On-Grid
- Hybrid Sub-Site
- Metered Solar Sub-Site
- Metered Battery Sub-Site
- Solar Assets
- Battery Assets

NOTE: In projects using the Utility Battery Only or Utility Hybrid Archetypes, in order to black start a facility, the meter and main circuit breaker shall be arranged as shown in the diagram. The main circuit breaker must be on the utility- or line-side of the battery meter for black start to function.

Figure 22. Battery Dispatch Only Archetype – Electrical Topology & Control Sections

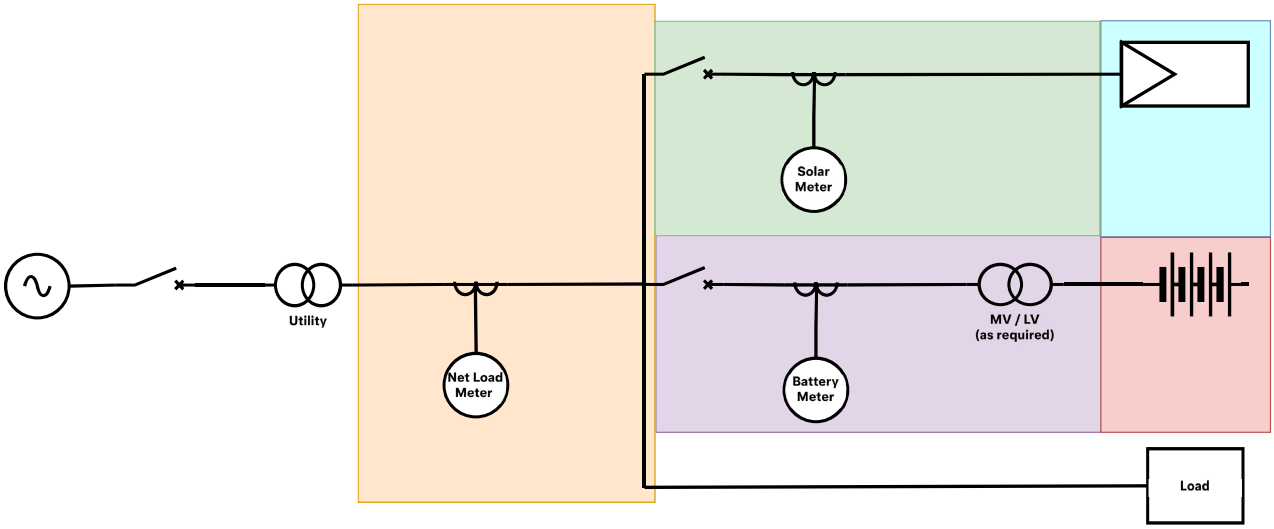


Control Sections

Metered Battery Sub-Site

Battery Assets

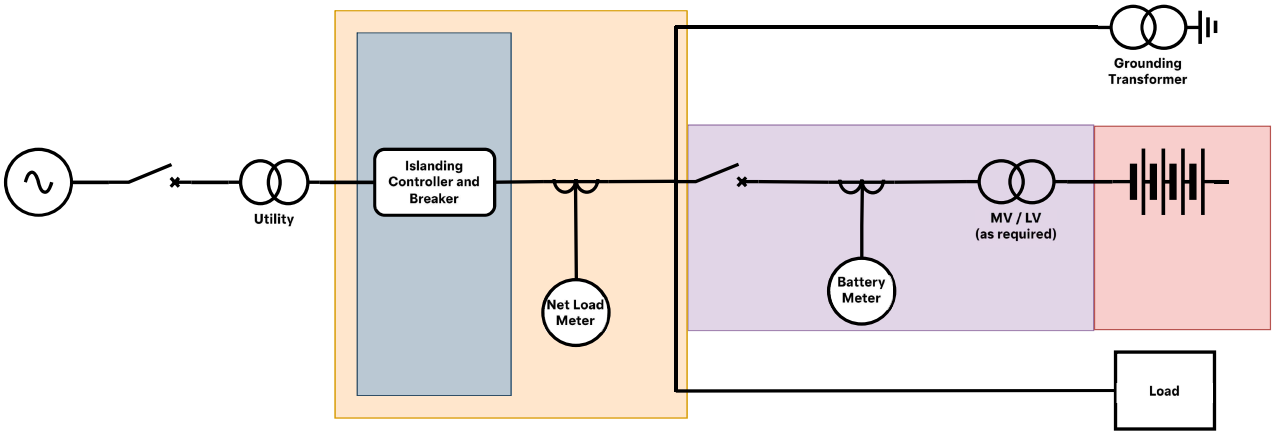
Figure 23. Grid-Connected Only Archetype – Electrical Topology & Control Sections



Control Sections

- On-Grid
- Metered Solar Sub-Site
- Metered Battery Sub-Site
- Solar Assets
- Battery Assets

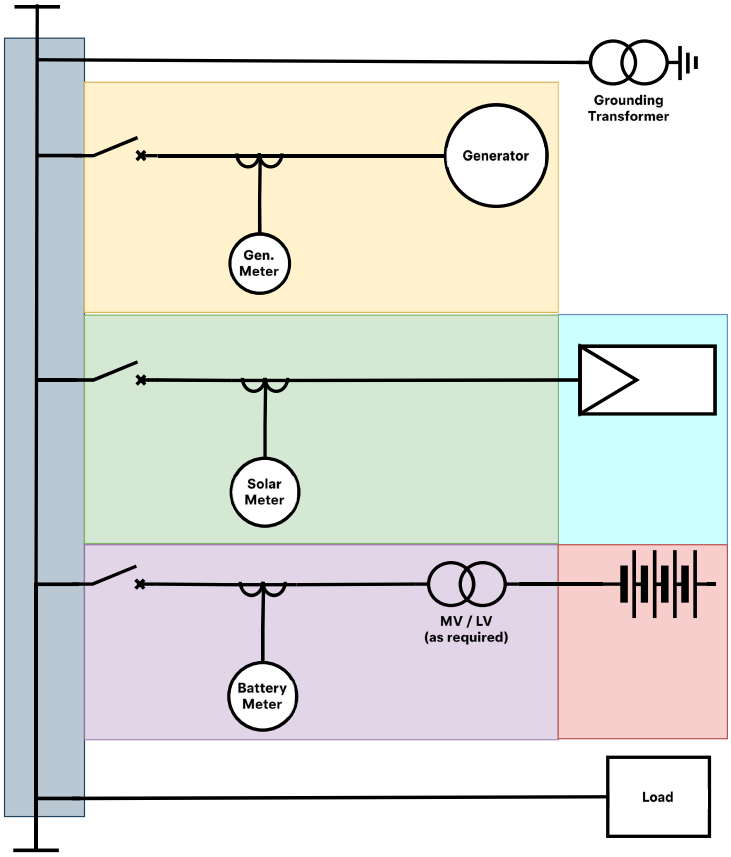
Figure 24. Backup Archetype – Electrical Topology & Control Sections



Control Sections

- On-Grid
- Islanding Control
- Metered Battery Sub-Site
- Battery Assets

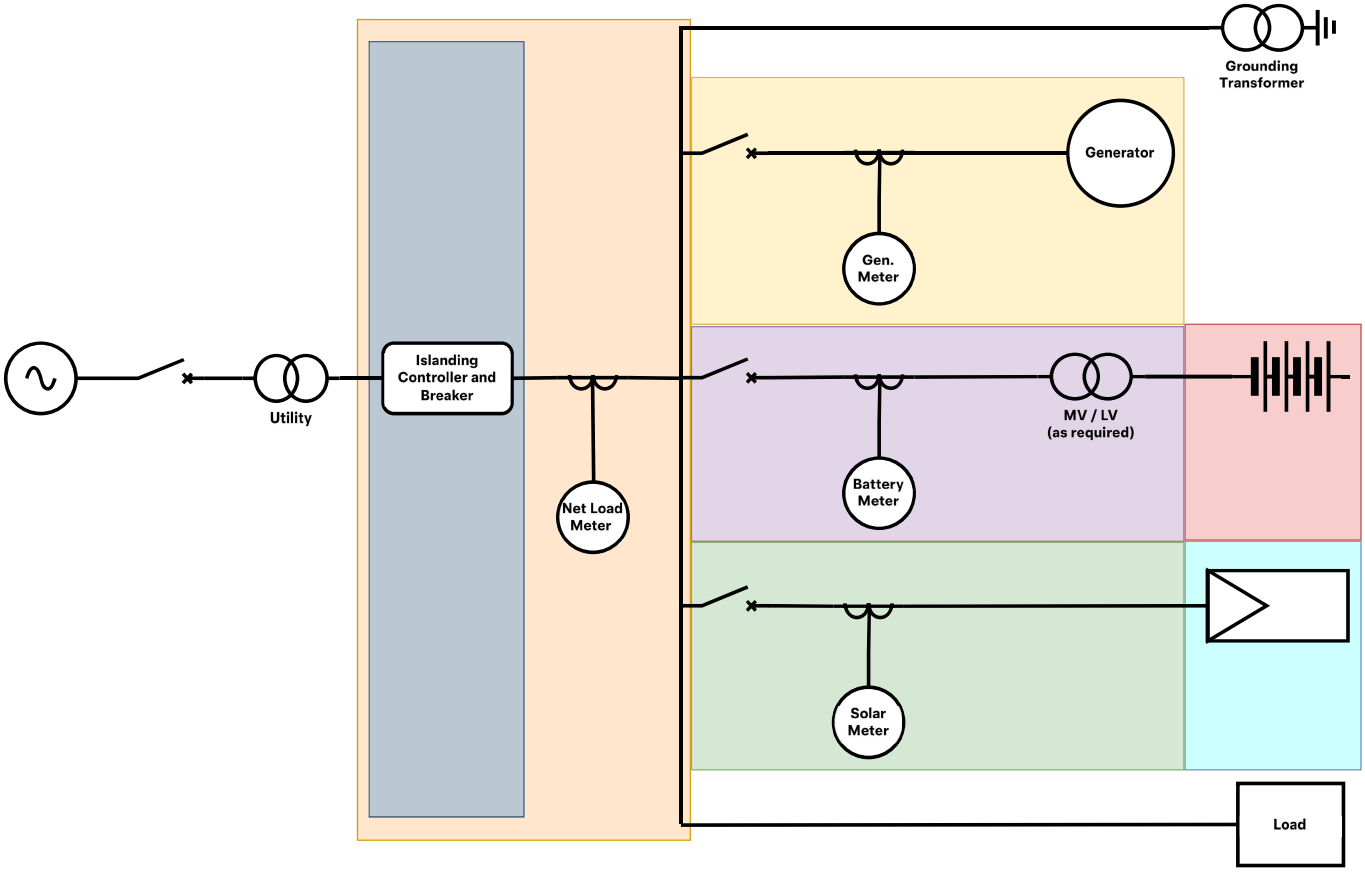
Figure 25. Off-Grid Microgrid Archetype – Electrical Topology & Control Sections



Control Sections

- Microgrid Control
- Metered Generator Sub-Site
- Metered Solar Sub-Site
- Metered Battery Sub-Site
- Solar Assets
- Battery Assets

Figure 26. Grid-Connected Microgrid Archetype – Electrical Topology & Control Sections



Control Sections

- On-Grid
- Islanding and Microgrid Control
- Metered Generator Sub-Site
- Metered Battery Sub-Site
- Metered Solar Sub-Site
- Battery Assets
- Solar Assets

2.2 Equipment per Archetype

Supported or required equipment varies per Archetype, generally according to the guidelines in this section.

Table 6. Equipment for Utility Archetypes

Equipment	Utility Battery Only	Utility Co-Located Plant (Battery Only)	Utility Hybrid
Meters			
Battery (*Battery Meter on page 42*)	Required Exactly 1	Required (1 per battery sub-site) Minimum 2, up to 10 supported	Required (1 per battery sub-site) Minimum 1, up to 10 supported
Solar (*Solar Meter on page 43*)	N/A	N/A	Required (1 per solar sub-site) Minimum 1, up to 10 supported
Busway (*Busway Meter on page 44*)	N/A	N/A	Required Exactly 1 at the point of interconnection for the hybrid plant
Other Equipment			
Ground reference (*Ground Reference Design on page 52*)	Required	Required	Required

Table 7. Equipment for C&I Archetypes

Equipment	Battery Dispatch Only	Grid-Connected Only	Backup	Off-Grid Microgrid	Grid-Connected Microgrid
Meters					
Battery (*Battery Meter on page 42*)	Required Minimum 1, up to 10 supported	Required Minimum 1, up to 10 supported	Required Minimum 1, up to 10 supported	Required Minimum 1, up to 10 supported	Required Minimum 1, up to 10 supported
Solar (*Solar Meter on page 43*) Refer to *On-Grid Solar Controls* or *Opticaster* in the *Controls and Communications Manual – v2 Platform – C&I Projects* for more information.	N/A	Required for on-grid solar controls or Opticaster, otherwise optional Up to 10 supported	Required for Opticaster, otherwise optional Up to 10 supported	Optional Up to 10 supported	Required for on-grid solar controls or Opticaster, otherwise optional Up to 10 supported

Equipment	Battery Dispatch Only	Grid-Connected Only	Backup	Off-Grid Microgrid	Grid-Connected Microgrid
Busway (*Busway Meter on page 44*) Refer to *Busway Hard Limits* in the *Controls and Communications Manual – v2 Platform – C&I Projects* for more information.	N/A	Required for busway limits, otherwise optional Up to 10 supported	Required for busway limits, otherwise optional Up to 10 supported	Required for busway limits, otherwise optional Up to 10 supported	Required for busway limits, otherwise optional Up to 10 supported
Generator (*Generator Meter on page 46*)	N/A	N/A	N/A	Optional Up to 10 supported	Optional Up to 10 supported
Wind (*Wind Meter on page 47*)	N/A	N/A	N/A	Optional Up to 10 supported	Optional Up to 10 supported
Net Load (*Net Load Meter on page 45*)	N/A	Required Exactly 1	Required Exactly 1	N/A	Required Exactly 1
Other Equipment					
Islanding controller and breaker (*Islanding Controller Design on page 55*)	N/A	N/A	Required	N/A	Required
Ground reference (*Ground Reference Design on page 52*)	Required	Required	Required	Required	Required

2.3 Energy Meter Design

The Tesla System Controller uses various energy meter inputs for different control functions. Every system requires, at a minimum, a battery meter. Additional energy metering in various capacities is supported or required as described per each Archetype (*Equipment per Archetype on page 37*).

This section describes requirements for procuring meter hardware. Refer to the *Tesla Industrial Energy Approved Vendor List* for supported meter hardware in addition to the requirements below.

NOTE: Energy meters must be provided, installed, and configured by the contractor. Tesla will confirm communication with these energy meters but is not responsible for their accuracy.

NOTE: See *Connecting Energy Meters on page 144* for instructions on connecting meters.

NOTE: The system requires Ethernet to connect meters to the Tesla System Controller. RS-485 is not supported.

NOTE: Tesla is not responsible for the accuracy of the energy meters provided, installed and configured by the customer. Consult with the energy meter manufacturer in the event of faulty communications from energy meters.

NOTE: See the *Application Note: Using SEL-735 Meters with Tesla Products* for details about configuring SEL-735 meters.

2.3.1 Meter Form

The Tesla System Controller only supports Form 9 (Wye) and Form 5 (Delta) meter forms. Other configurations are not supported. The table below shows guidance on the meter form for medium voltage (MV) and low voltage (LV) applications, as well as for the required current transformer (CT) and potential transformer (PT) values. Applications for UL 1741 power control systems (PCS) require Form 9.

Refer to *Meter Locations on page 41* for the importance of installing the correct meter polarity.

Table 8. Meter Wiring Configurations

Wiring Configuration	Required Meter Form	PTs Required	CTs Required	Applicable for UL 1741 PCS?	Notes
Three-Phase, Four-Wire	Form 9* (Four-Wire Wye)	3	3	Yes	--
Three-Phase, Three-Wire, Neutral Grounded at transformer	Form 9* (Four-Wire Wye)	3	3	Yes	Wire SEL 735 PT neutral to site ground
Three-Phase, Three-Wire, Ungrounded	Form 5 (Three-Wire Delta)	2	2	No	--

* Required for compliance with UL 1741 PCS. This certification is a requirement in many interconnection tariffs including California Rule 21 for non-export and inadvertent export applications, as well as NEM paired solar.

2.3.2 Meter Part Numbers

NOTE: Example part numbers provided in this section are for vertically mounted meter bodies, but horizontally mounted meter bodies may also be specified.

The SEL-735 is available in **Advanced, Intermediate, and Basic options.**

The Advanced meter is required:

1. When there is a project specific requirement for wider range of harmonic measurements, or
2. When there is a contractual/project requirement for response time test in performance testing.
    - **Note:** The response time test is not part of standard Tesla Performance tests and is included based on customer/contractual requirements.

For all other applications, the Basic or Intermediate SEL-735 meter can be used for metering.

NOTE: Part numbers in this section only include the features required for the SEL-735 meter to interface with the Tesla System Controller. The customer is responsible for ensuring the meter configuration fulfills all project requirements.

Table 9. Advanced Option Part Numbers

Frequency	Power Supply	Advanced Form 5 (Three-Wire Delta)	Advanced Form 9 (Four-Wire Wye)
60Hz	110-240 V AC and 110-250 V DC	Popular model code: 735#0301	Popular model code: 735#0302
60Hz	24-48 V DC	0735BX20524EXXXXXX16101XX	0735BX20924EXXXXXX16101XX
60Hz	12-24 V DC	0735BX20514EXXXXXX16101XX	0735BX20914EXXXXXX16101XX
50Hz	110-240 V AC and 110-250 V DC	0735BX20544EXXXXXX15101XX	0735BX20944EXXXXXX15101XX
50Hz	24-48 V DC	0735BX20524EXXXXXX15101XX	0735BX20924EXXXXXX15101XX
50Hz	12-24 V DC	0735BX20514EXXXXXX15101XX	0735BX20914EXXXXXX15101XX

Table 10. Intermediate Option Part Numbers

Frequency	Power Supply	Intermediate Form 5 (Three-Wire Delta)	Intermediate Form 9 (Four-Wire Wye)
60Hz	110-240 V AC and 110-250 V DC	Popular model code: 735#03VX	Popular model code: 735#H99M
60Hz	24-48 V DC	0735BX10524EXXXXXX16101XX	0735BX10924EXXXXXX16101XX
60Hz	12-24 V DC	0735BX10514EXXXXXX16101XX	0735BX10914EXXXXXX16101XX
50Hz	110-240 V AC and 110-250 V DC	0735BX10544EXXXXXX15101XX	0735BX10944EXXXXXX15101XX
50Hz	24-48 V DC	0735BX10524EXXXXXX15101XX	0735BX10924EXXXXXX15101XX
50Hz	12-24 V DC	0735BX10514EXXXXXX15101XX	0735BX10914EXXXXXX15101XX

Table 11. Basic Option Part Numbers

Frequency	Power Supply	Basic Form 5 (Three-Wire Delta)	Basic Form 9 (Four-Wire Wye)
60Hz	110-240 V AC and 110-250 V DC	Popular model code: 735#0101	Popular model code: 735#0102
60Hz	24-48 V DC	0735BX00524EXXXXXX16101XX	0735BX00924EXXXXXX16101XX
60Hz	12-24 V DC	0735BX00514EXXXXXX16101XX	0735BX00914EXXXXXX16101XX
50Hz	110-240 V AC and 110-250 V DC	0735BX00544EXXXXXX15101XX	0735BX00944EXXXXXX15101XX
50Hz	24-48 V DC	0735BX00524EXXXXXX15101XX	0735BX00924EXXXXXX15101XX
50Hz	12-24 V DC	0735BX00514EXXXXXX15101XX	0735BX00914EXXXXXX15101XX

2.3.3 Current and Potential Transformer Requirements

Energy meters must abide by the minimum accuracy requirements for current transformers (CTs) and potential transformers (PTs) as listed in the table below per region as appropriate. Equipment with greater accuracy may be installed if needed.

Table 12. Minimum Accuracy Requirements

Equipment	United States	Non-United States
Current Transformer (CT)	Class 1.2% Per ANSI/IEEE C57.13	Class 0.5S Per IEC 61869-2
Potential Transformer (PT) also known as Voltage Transformer (VT)	Class 1.0% Per ANSI/IEEE C57.13	Class 1.0 Per IEC 61869-3

2.3.4 Meter Locations

The Tesla System Controller supports a set of meter locations, corresponding to different monitored energy sources. This section details the different meter locations, their use cases, and sign conventions to guide wiring. Refer to *Equipment per Archetype on page 37* to determine meter requirements per Archetype, and *Wiring Current Transformer Inputs on page 145* for wiring installation steps.

2.3.4.1 Battery Meter

A battery meter monitors the output of the battery system only, which consists of Tesla battery units and transformers/conductors up to the point of metering. No additional load or generation is included through a battery meter. A battery meter is required on every Tesla battery system and is used to monitor the system's energy throughput and power output.

The meter sign convention is as follows:

- Real power discharged from the batteries is positive
- Reactive power injected by the batteries (overexcited) is positive
- Energy Exported increases with positive/discharge power

Figure 27. Battery Meter Wiring Convention

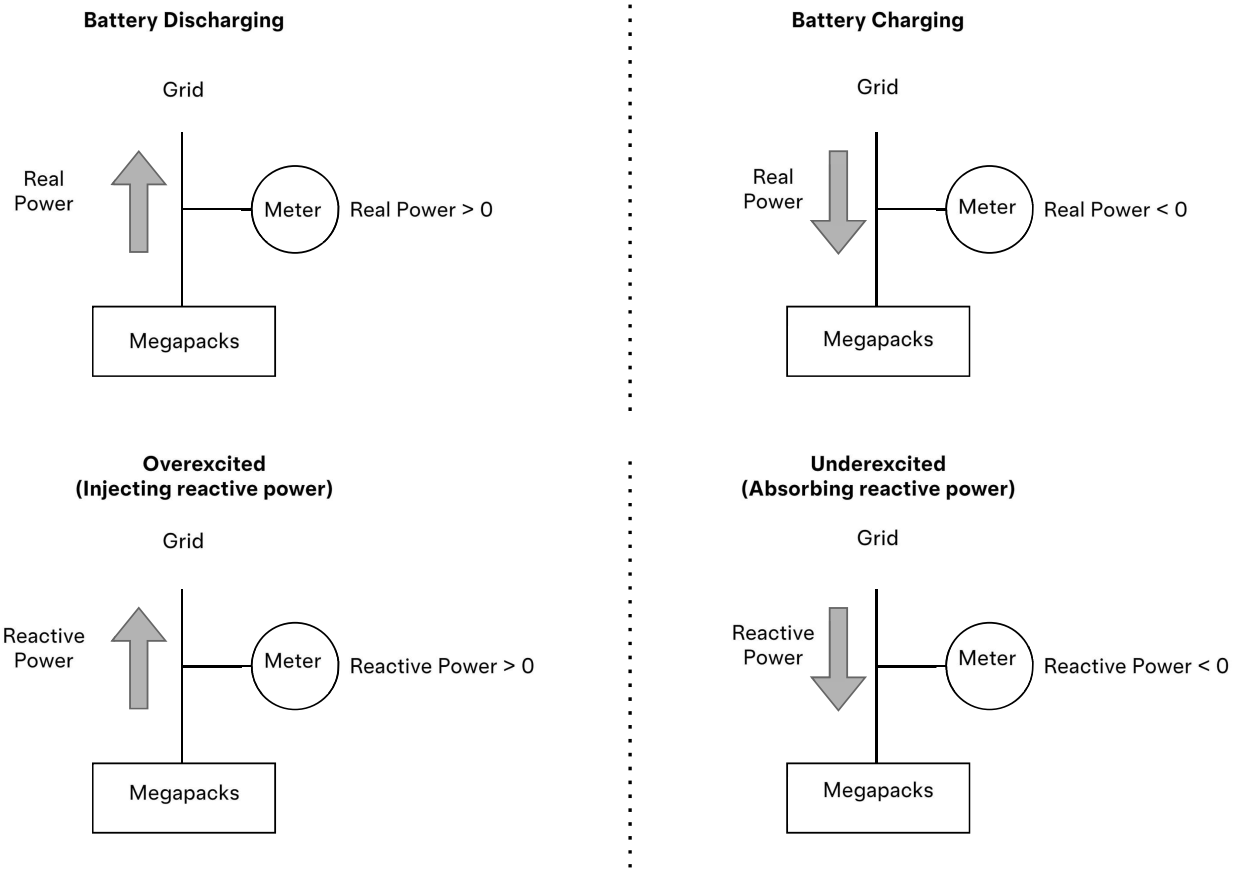


Table 13. Battery Meter Information

Metered Energy Source	Tesla batteries only.
Metering Convention	A discharge from the batteries leads to positive power at the meter.
Number of Meters Supported	Archetype-dependent, up to 10 maximum.

2.3.4.2 Solar Meter

A solar meter monitors solar assets and is used on systems in which the Tesla System Controller monitors and leverages solar data. Generation from solar assets leads to positive power at the meter.

Figure 28. Solar Meter Wiring Convention

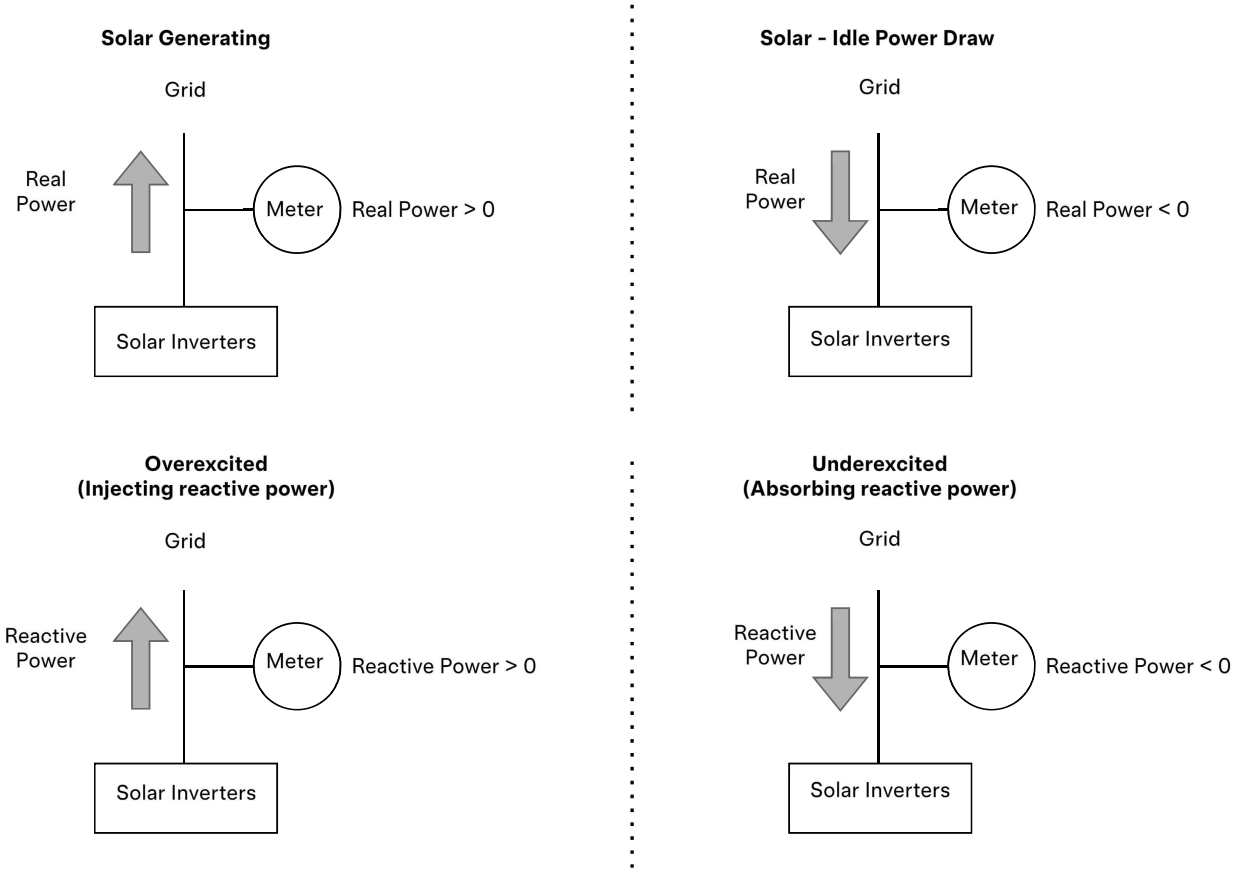


Table 14. Solar Meter Information

Metered Energy Source	Solar assets only.
Metering Convention	Solar generation leads to positive power at the meter.
Number of Meters Supported	Archetype-dependent, up to 10 maximum.

2.3.4.3 Busway Meter

A busway meter monitors more than one generation asset or load and can be installed at any location consisting of more than one generation or load type.

Figure 29. Busway Meter Wiring Convention

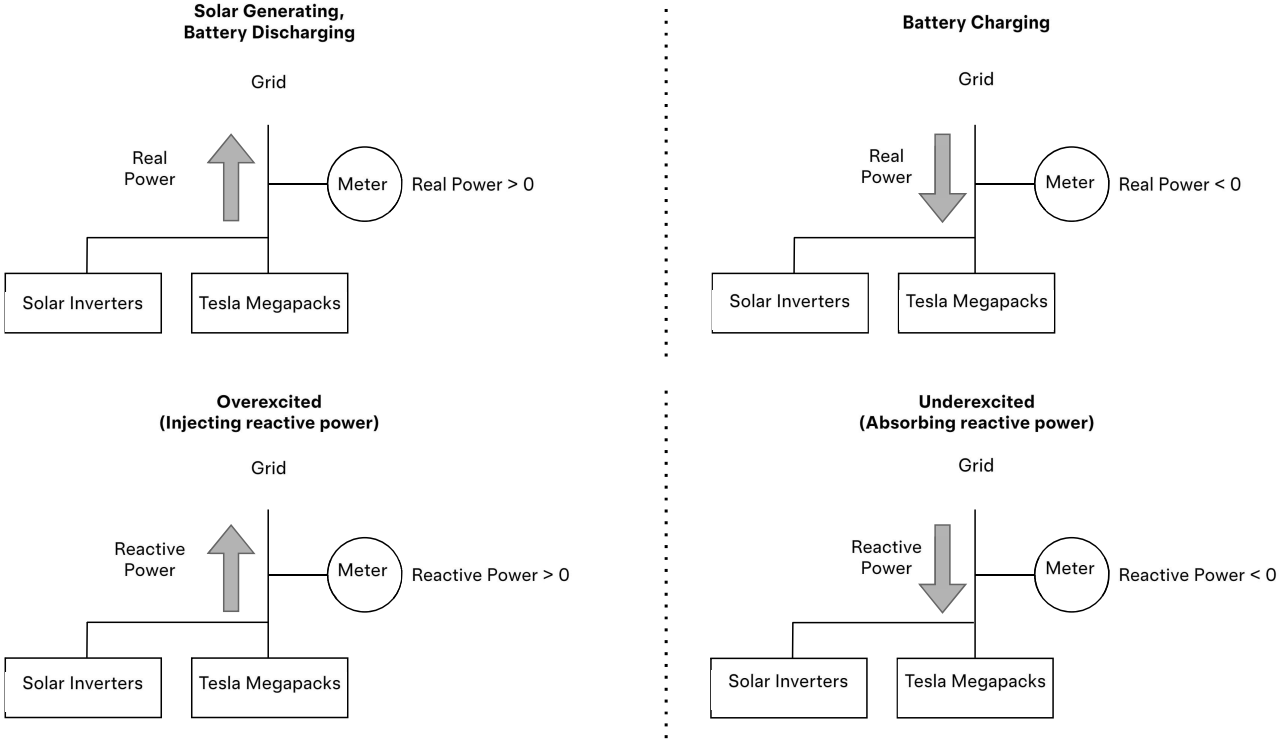


Table 15. Busway Meter Information

Metered Energy Source	Multiple generation assets, typically solar and battery.
Metering Convention	Solar generation and battery discharging lead to positive power at the meter.
Number of Meters Supported	Archetype-dependent, up to 10 maximum.

2.3.4.4 Net Load Meter

A net load meter monitors a facility's net load and is typically installed at the same location as the facility's utility meter used for billing.

Figure 30. Net Load Meter Wiring Convention

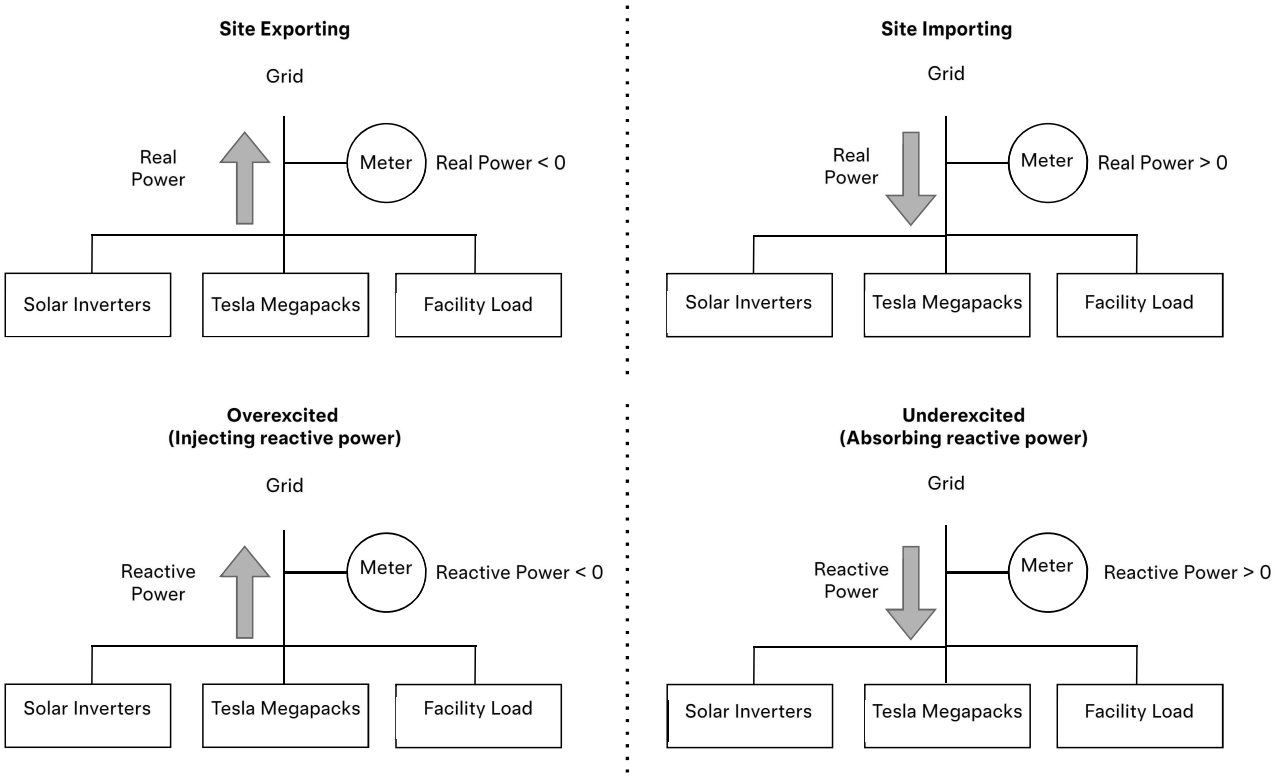


Table 16. Net Load Meter Information

Metered Energy Source	Grid (to facility load).
Metering Convention	Load (consumption) at the facility leads to positive power. Export from the facility due to on-site generation leads to negative power.
Number of Meters Supported	Archetype-dependent, up to 5 maximum.

2.3.4.5 Generator Meter

A generator meter monitors generator assets and can be installed when a conventional generator is used, typically as part of a microgrid.

Figure 31. Generator Meter Wiring Convention

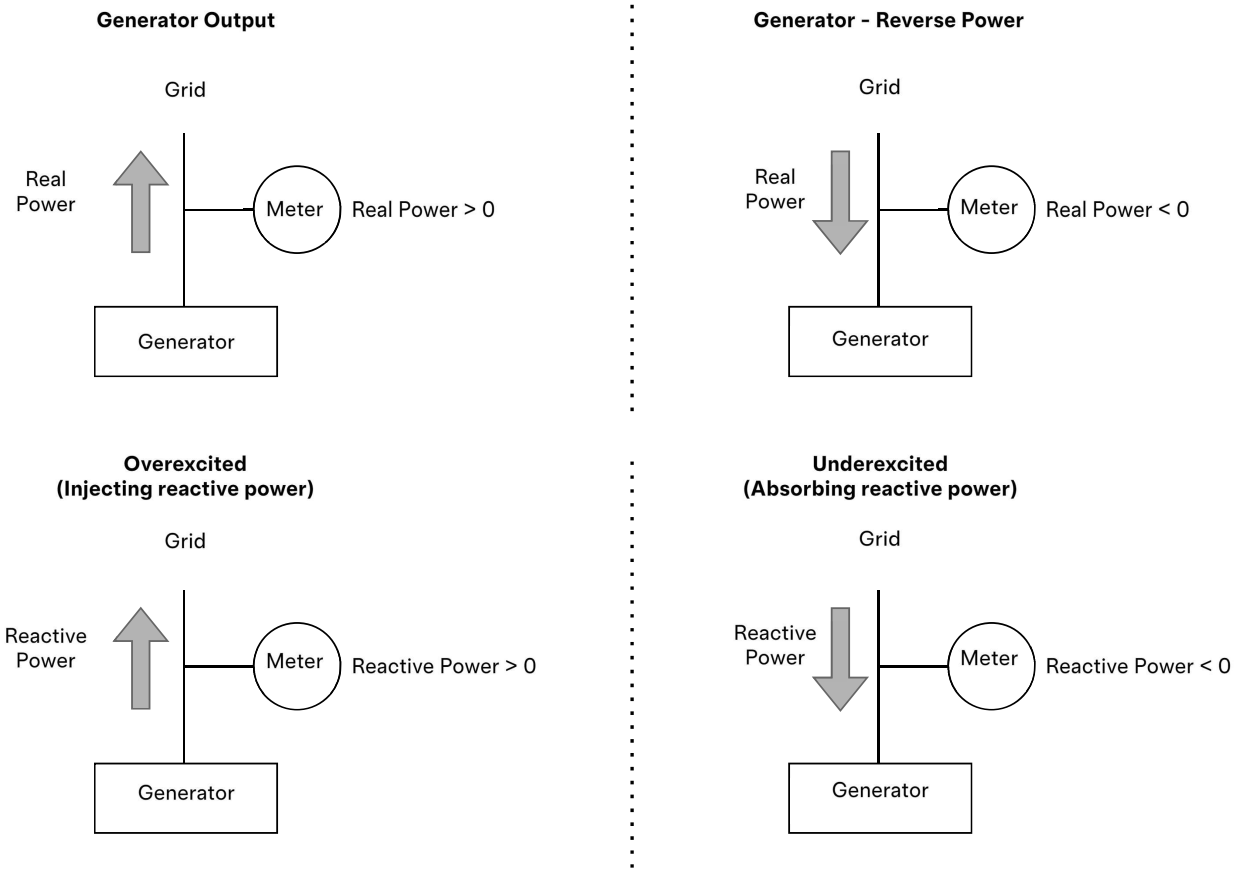


Table 17. Generator Meter Information

Metered Energy Source	Generator assets.
Metering Convention	Generation leads to positive power at the meter.
Number of Meters Supported	Archetype-dependent, up to 10 maximum.

2.3.4.6 Wind Meter

A wind meter monitors production from wind turbines on projects in which the Tesla System Controller interacts with wind generation.

Figure 32. Wind Meter Wiring Convention

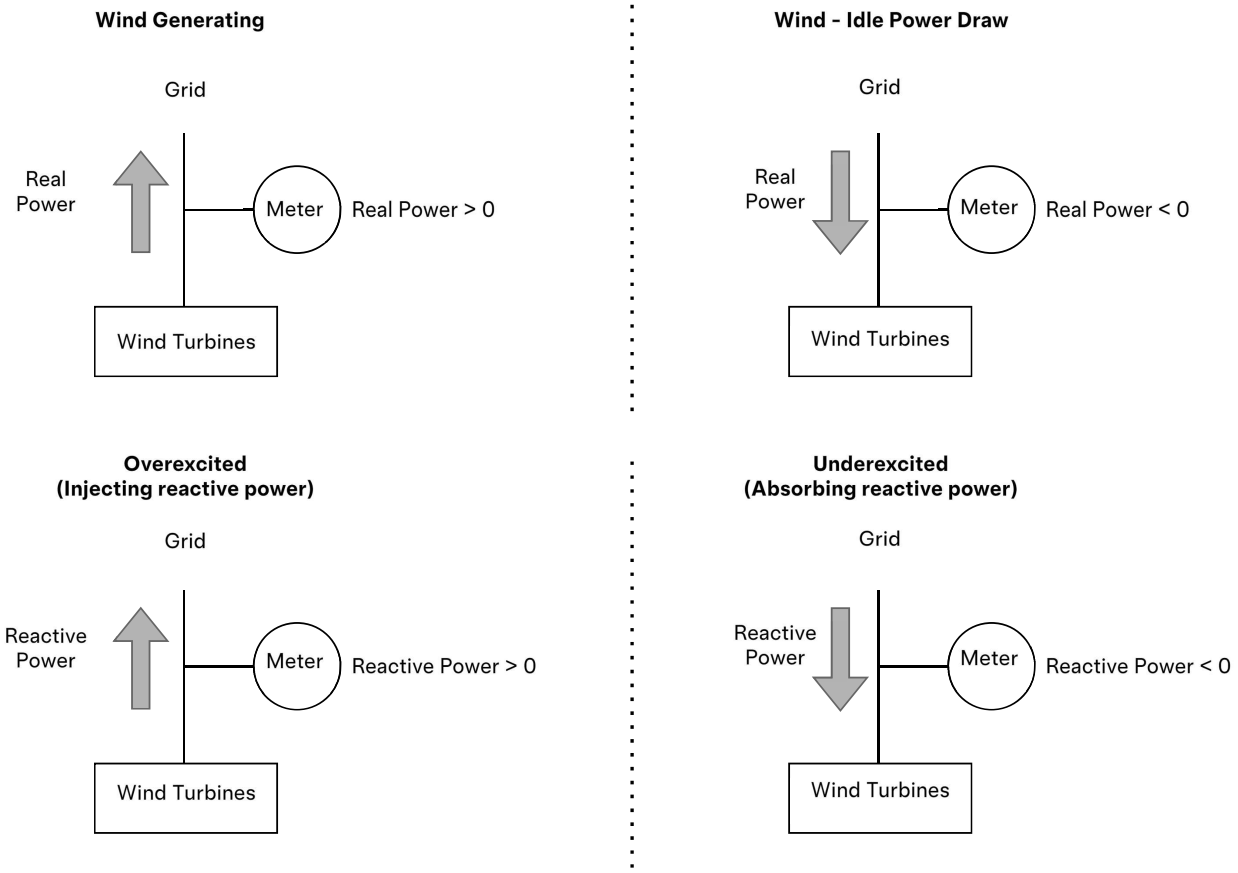


Table 18. Wind Meter Information

Metered Energy Source	Wind turbines.
Metering Convention	Generation leads to positive power at the meter.
Number of Meters Supported	Archetype-dependent, up to 10 maximum.

2.3.5 UL 1741 PCS Requirements

UL 1741 PCS compliance may be required by the interconnecting utility or site host. If UL 1741 PCS compliance is required according to applicable site design, follow the guidance in this section.

The Tesla battery system is certified to UL 1741 PCS for the energy storage system (ESS) operating mode of **import only**. Using this mode, the Tesla battery system will not export active power from the battery to the grid (Area EPS). Compliance with UL 1741 PCS can be achieved for system sizes under 20 MW with compatible meters according to the requirements below.

2.3.5.1 Meters

The Tesla battery system's UL 1741 PCS compliance is only compatible with the following meter:

- SEL-735 Power Quality and Revenue Meter (see *Energy Meter Design on page 38* for details)

2.3.5.2 Minimum Accuracy Requirements

Table 19. Minimum UL 1741 PCS Accuracy Requirements

Equipment	United States	Non-United States
Current Transformer (CT)	Class 0.6% Per ANSI/IEEE C57.13	Class 0.5S Per IEC 61869-2
Potential Transformer (PT) also known as Voltage Transformer (VT)	Class 1.0% Per ANSI/IEEE C57.13	Class 1.0 Per IEC 61869-3

2.3.5.3 Current Transformers

The Tesla battery system is UL 1741 PCS-compliant when a compatible meter operating as a site meter is installed in Form 9 configuration and has current transformers with a 5A secondary and between 86A and 24,000 A on the primary. To comply with the abnormal condition section of the PCS standard, installers shall ensure there is sufficient burden resistance on the current transformer circuit such there is no open circuit shock hazard. Furthermore, UL 2808, UL 61010, or IEEE 57.13 current transformer compliance is required based on the following table:

Table 20. Required Current Transformer Compliance Standards

Conductor Nominal Line-to-Line Voltage	Required CT Standard
≤600 V	CTs must be UL 2808 or UL 61010 compliant
601-1000 V	CTs must be UL 2808 or IEEE 57.13 compliant
>1000 V	CTs must be IEEE 57.13 compliant

Tesla suggests using the following Accuenergy AcuCT series models where possible. They are UL 2808 & UL 61010 compliance and have a built-in burden resistance.

- AcuCT-3135R
- AcuCT-4161R
- AcuCT-5170R

CT Labeling Requirements

You must post the following label near the installation of the CTs:

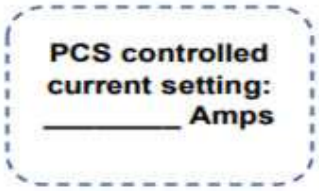
2.3.5.4 Voltage Sensing Configurations

The Tesla battery system's UL 1741 PCS compliance requires that the voltage sensing configuration be Form 9.

2.3.5.5 Bus Bar Labeling Requirements

The PCS-controlled current setting for each bus bar shall be indicated with a field-applied marking label on the conductor or in close proximity to the bus bars. Refer to the label below, filling the blank with the following value: (Maximum Nameplate Current)x(Number of installed Tesla units per site):

Figure 33. PCS Field Marking Label



2.3.5.6 Required UL 1741 PCS Compliance Information

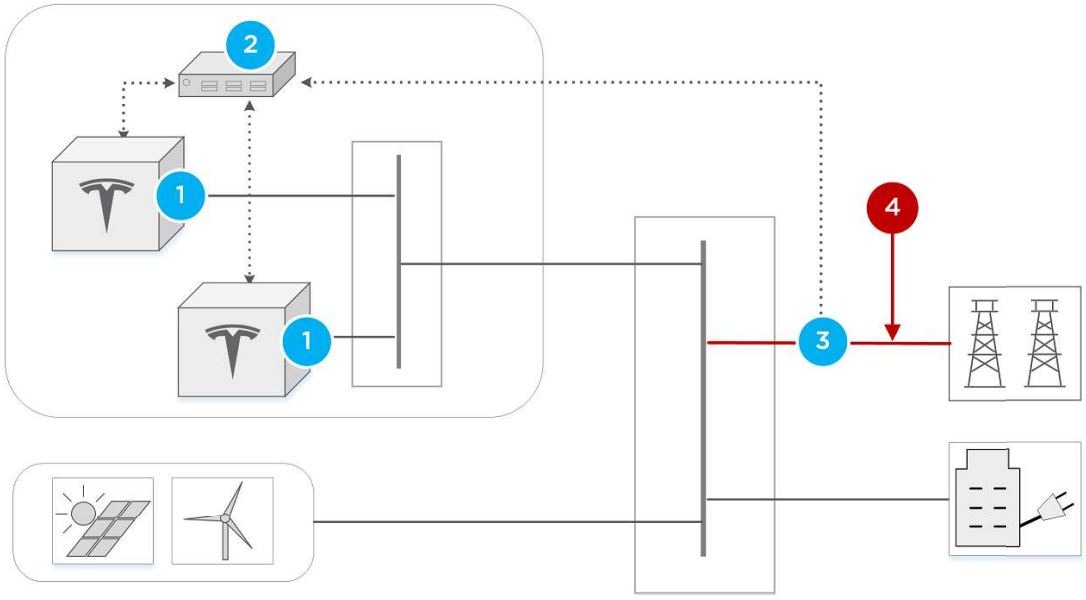
This system is equipped with a power control system (PCS). All PCS controlled busbars or conductors shall be protected with suitably rated overcurrent devices appropriately sized for the busbar rating or conductor ampacity.

Notice: The maximum operating currents in controlled busbars or conductors are limited by the settings of the power control system (PCS) and may be lower than the sum of the currents of the connected controlled power sources. The settings of the PCS controlled currents may be used for calculation of the design currents used in the relevant sections of NEC Article 690 and 705.

Warning: Only qualified personnel shall be permitted to set or change the setting of the maximum operating current of the PCS. The maximum PCS operating current setting shall not exceed the busbar rating or conductor ampacity of any PCS controlled busbar or conductor.

Maximum overcurrent protection rating per each PCS controlled conductor's location: 41,600 A.

Figure 34. Single Line Diagram for UL 1741 PCS-Compliant System



(Dashed lines indicate communication with Tesla System Controller)

1. Tesla battery system
2. Tesla System Controller
3. Site meter
4. PCS controlled conductors

The Tesla battery system must be configured before UL 1741 PCS controls are active. To configure the system for UL 1741 PCS, contact your Tesla representative.

2.4 Transformer Design

In order to operate, Megapack requires a solidly grounded circuit to ensure that the line-to-ground nominal voltage does not exceed 300 V AC during steady-state conditions.

Customers can parallel multiple Megapack units on a single secondary (low-voltage side) winding. Megapack does not require any additional transformer features such as K-factor or shielding requirements. Megapacks also do not require galvanic isolation from each other; therefore, a single-winding primary-to-single-winding secondary transformer is sufficient for connecting multiple Megapacks. One transformer grouped with several Megapacks is called a *transformer block*.

For operation and maintenance needs, the line-side bus bars and cables within the Megapack must be able to be isolated and locked out and should use a visually verifiable means. This can be generally performed with a no-load disconnecting means at the secondary of the transformer (due to the circuit breaker in the Megapack performing the load break functionality), or via a load break disconnect at the primary winding of the transformer. Arc flash, personal safety and operational procedures should be considered when selecting the means of disconnection.

The customer's engineer should ensure that the requirements listed in this section are met alongside other technical considerations such as utility compliance, protection, maintenance, certification and load requirements. For transformer configurations not discussed here, contact Tesla for review.

For more information about transformer design considerations, refer to the *Application Note: Grounding Conductor Recommendations for Megapack Applications* or reach out to your Tesla representative.

2.4.1 Site-Level High-Voltage Ride-Through Considerations

Megapack cannot be exposed to grid voltage greater than 1.3 per-unit for any period of time. This should be a consideration when designing transformers for use at the site.

2.4.2 Secondary-Side Fault Current Considerations

The maximum supply fault current rating of the Megapack is 85 kA_{rms}. Ensure that your transformer is designed to provide less than this fault current at the Megapack AC bus by following the guidance in this section.

To ensure that the maximum current flowing through Megapack does not exceed this value, maintain a minimum impedance value on the secondary side of the transformer such that in the event of a fault, the current does not exceed this value.

Even if there are multiple connected Megapacks, assume a single Megapack is subject to full fault current. In some circumstances, this increases the minimum allowable impedance of the transformer.

NOTE: Transformers manufactured to ANSI standards will always have +7.5% to -7.5% of impedance tolerance which must be taken into consideration.

Example

- Two 2,200 kVA Megapack connected to a transformer at 480 V
- Transformer has a rating of 4,400 kVA, or 5,292 amps at 480 V [`I=VA/(√3*V)`]
- Then, the max allowable short circuit current is given by:

$$I_{short\ circuit} = I_{rated} * \frac{100}{Z\%}$$

- From the above expression, base impedance is calculated as

$$Z\% = I_{rated} * \frac{100}{I_{short\ circuit}}$$

$$= 5292 * \frac{100}{85 * 10^3}$$

- The base impedance must be selected such that the available short-circuit current is less than 85 kA.

Result

The percentage transformer impedance value is calculated to be 6.2%. However, considering impedance tolerances, the base impedance of the transformer procured must be **at least 6.7% in accordance with ANSI standards.**

Per the example in *Site-Level High-Voltage Ride-Through Considerations on page 51*, the transformer impedance should be > 5.75%, and, per this example, for short-circuit current withstand, the transformer impedance should be > 6.7%.

Therefore, the final impedance of transformer should be at least 6.7%.

2.4.3 Using On-Load Tap Changers

If a Grid-Forming project includes an on-load tap changer (OLTC) between the meter used for control and the battery units, contact your Tesla representative about the available features.

2.5 Ground Reference Design

A ground reference is required for operation. Specific additional design considerations apply for certain Archetypes (*Equipment per Archetype on page 37*) according to the guidance below.

2.5.1 Battery Dispatch Only and Grid-Connected Only Archetype Considerations

The side of the transformer connected to Megapack must be a wye-grounded connection. The other side of the transformer may be a delta or wye connection for on-grid (grid-following) applications.

Provision the transformers accordingly for grid-following (mode 1) or grid-forming (mode 2) (refer to *Battery Switches* in the *Controls and Communications Manual – C&I Projects*) according to the guidance below:

Figure 35. Transformer Configuration for Grid-Following or Grid-Forming Operation

NOTE: The solidly grounded circuit may be provided by the utility transformer.

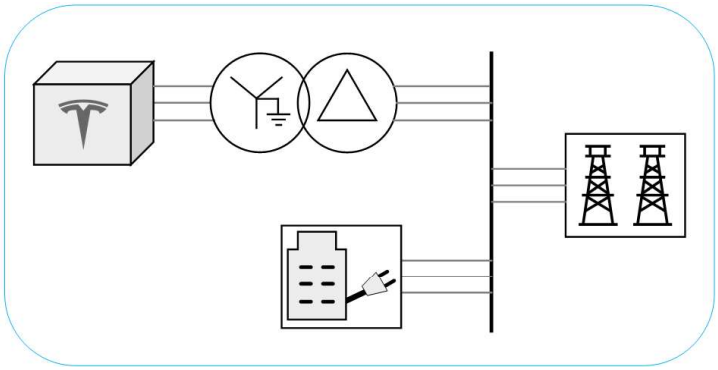
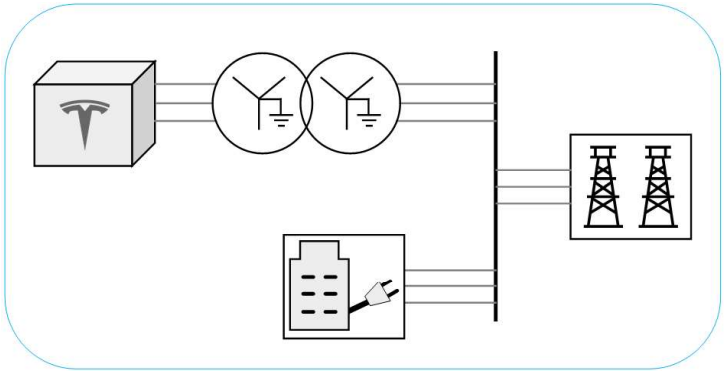


Figure 36. Transformer Configuration for Grid-Following Only Operation

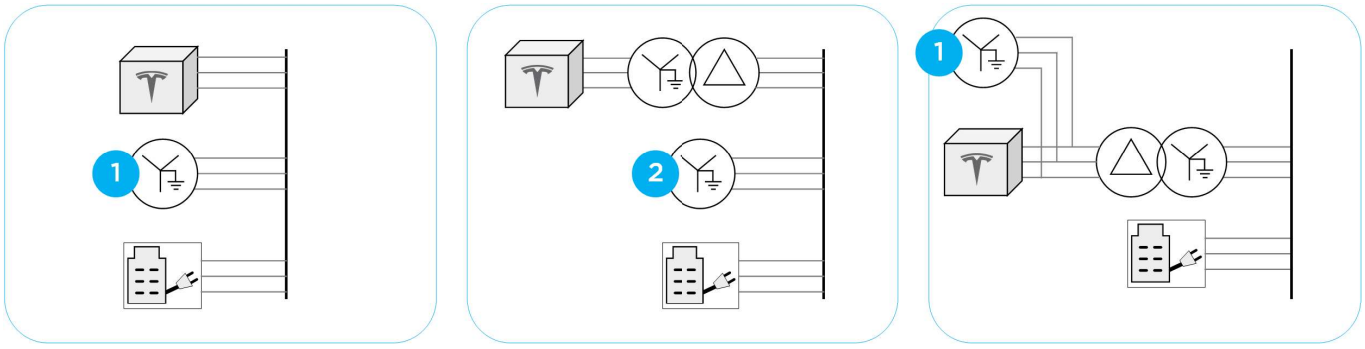
NOTE: The wye-wye transformer configuration is acceptable only for grid-following operation, and not acceptable for grid-forming operation.



2.5.2 Off-Grid Microgrid Archetype Considerations

The side of the transformer connected to Megapack must be a wye-grounded connection. The other side of the transformer must be a delta connection for off-grid (grid-forming) applications.

Figure 37. Off-Grid (Grid-Forming) Transformer Configurations

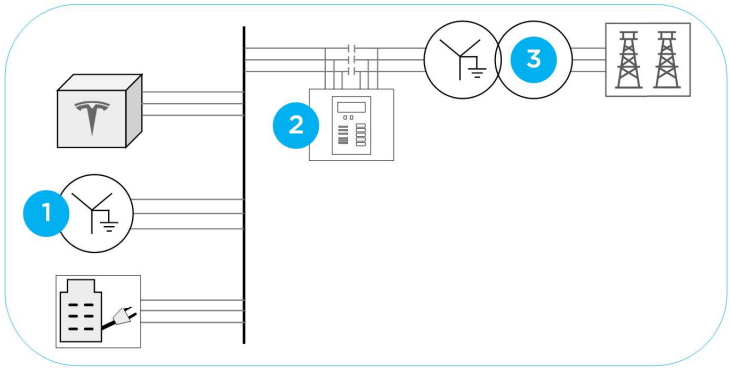


1. Grounding transformer
2. Optional grounding transformer (refer to *Ungrounded Bus Considerations on page 54*)

2.5.3 Backup and Grid-Connected Microgrid Archetype Considerations

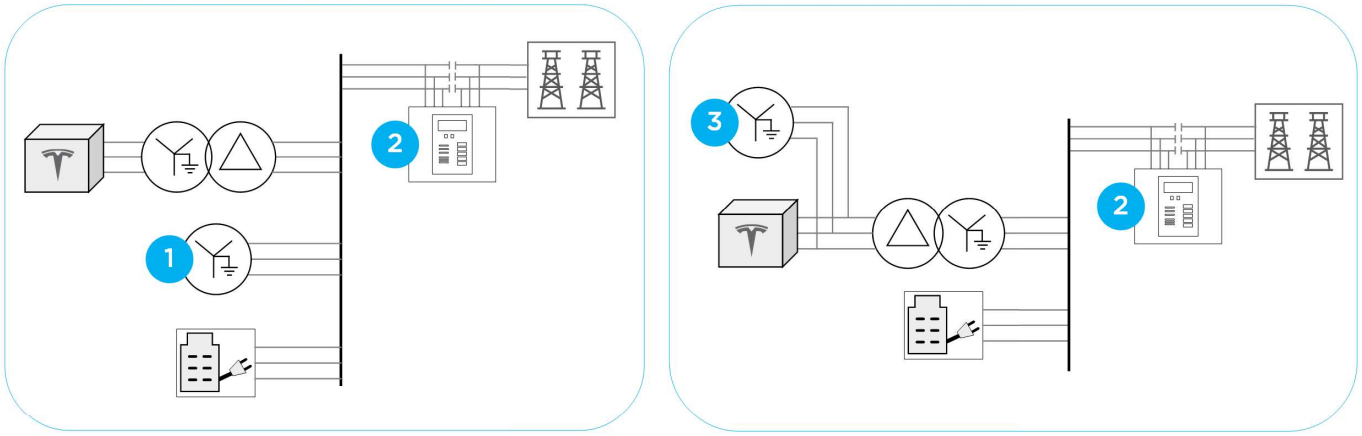
For islanding applications, ensure that a solidly grounded circuit exists during both on-grid and off-grid operation, as shown in the figures below. Depending on the project requirements, the grounding transformer may require disconnection when on-grid.

Figure 38. Islanding with a Utility Transformer and a Grounding Transformer



1. Grounding transformer
2. Islanding controller
3. Delta or wye

Figure 39. Islanding with a Step-up/Step-down Transformer



1. Optional grounding transformer (refer to *Ungrounded Bus Considerations on page 54*)
2. Islanding controller
3. Grounding transformer

2.5.4 Ungrounded Bus Considerations

An ungrounded bus does not require a grounding transformer, however, consider the following:

- Electrical protection requirements beyond the Tesla system
- There must be no line-to-neutral loads on ungrounded bus
- For all connected transformers, the delta winding configuration is connected to the ungrounded bus side
- All connected equipment is rated for the ungrounded configuration

NOTE: For more information, refer to the *Application Note: Grounding Conductor Recommendations for Megapack Applications*.

2.6 Solar Asset Design

A solar asset is a source that produces intermittent, renewable power from solar photovoltaic (PV) panels connected to an inverter. If your site is using an Archetype with solar assets, an approved solar inverter listed in the *Tesla Industrial Energy Approved Vendor List (AVL)* should be installed as indicated in the site's electrical topology.

2.6.1 Solar Asset Size Considerations

In systems coupled with solar assets, temporary overvoltage must not exceed the capability of Megapack as specified in *Maximum Overvoltage Withstand on page 97*.

1. Determine the solar inverter's AC overvoltage trip time. **If it does not exceed 150 ms,** proceed to step 2. If it is greater than 150 ms, reach out to your Tesla representative.
2. Determine the Megapack's EC and GT option codes by looking at the product label (*Megapack Labels on page 21*) or referring to your site contract.
3. Determine the *multiplier* for the formula using the table below together with the nominal DC voltage and AC voltage of the solar assets:

Table 21. Formula Multiplier

Nominal AC Voltage (V)	Multiplier		
	600 V DC	1000 V DC	1500 V DC
208	1.3	N/A	N/A
480	N/A	3.5	1
578	N/A	N/A	1.5
600	N/A	N/A	1.8
630	N/A	N/A	2
660	N/A	N/A	2.3

4. Apply these values to the following formula:

$$Maximum\ Recommended\ PV\ System\ Size = Multipler * \text{EC Variant} * \text{GT Variant} * 63\ \text{kVA} * \text{Number of Megapacks}$$

Contact your Tesla representative if the size of your solar assets exceeds Tesla's recommendation.

Example

Assume the following for this example:

- 600 V AC / 1500 V DC solar assets
- Megapack System with 10 Megapacks

1. Using the example in the *Megapack 2 XL Option Codes Quick Reference Guide*, the relevant option codes for this Megapack are: EC**24**, GT**01**
2. Use the *Formula Multiplier on page 55* table above together with the solar nominal voltage 600 V AC / 1500 V DC to determine the multiplier: **1.8**
3. Apply these values to the formula, including 10 for the number of Megapacks:

$$Maximum\ Recommended\ PV\ System\ Size = 1.8 * 24 * 1 * 63\ \text{kVA} * 10$$

Result

The maximum recommended size of the solar assets is **27,216 kVA**

2.7 Islanding Controller Design

An islanding controller is required for customers at sites that intend to switch between grid-connected and islanded configurations. Refer to (*Equipment per Archetype on page 37*) to determine if this equipment is required for the site's Archetype.

Supported islanding controllers are listed in the *Tesla Industrial Energy Approved Vendor List (AVL)*. SEL protection relays not listed in the AVL are incompatible due to divergences with the Modbus and C37 interface used to communicate with the islanding controller.

Customers may also choose to directly dictate the transitional behavior of the battery system. In this option, Tesla does not require an islanding controller to be integrated with the Tesla system. The customer is responsible for maintaining the system in the appropriate state relative to the status of the grid connection and handling conditions such as loss of communications. Contact your Tesla representative for additional details on this option.

For systems integrating with an approved islanding controller, Tesla requires that this controller have direct control over the system islanding contactor or circuit breaker (called *grid disconnect*). The islanding controller will manage the state and transitions of the islanded system, automatically isolating the battery system and loads from the grid during grid outages and providing reclose operations when the grid returns.

NOTE: For islanding controllers located on an ungrounded bus, delta-configured potential transformers (PTs) are required.

2.7.1 Provisioning the Islanding Controller

While the islanding controllers specified in the *Tesla Industrial Energy Approved Vendor List* (SEL-700G+ and SEL-751) are industry-standard power system protection relays, they have been adapted to function as an islanding controller for Tesla applications. Tesla's configuration is not intended to provide protection functionality, but customers are permitted to utilize the relay's existing protection functions as long as it does not interfere with Tesla's mandatory settings and required configurations.

The configuration of the islanding controller is site-specific. This section details its configuration, including those specifications that can be configured per customer site requirements. Specifications that are not customer-configurable are required by Tesla for the operation of the system and cannot be changed.

2.7.1.1 SEL-700G+ Model Options

Standard part number: 0700G02DCB0X74850301.

The model options used to integrate with the Tesla System Controller require the use of the "GEN 25" or 25 Synchronism Check element, which is available only on the (+) models.

- Default approved: 700G+
- Other approved models: 700G1+, 700GT+

Contact your Tesla representative if you plan to deviate from the standard part number.

Table 22. SEL-700G Model Options

Selected Options	Description
Model Options	700G+, Basic Generator Protection plus Gen 25, 64G, 21, 78, 78VS, Auto Synchronizer
User Interface	English
Front Panel	2x16 LCD With 8 Pushbuttons
Slot A Power Supply Voltage	24-48 Vdc
Slot A Digital Input Voltage	110 Vdc/Vac
Slot B Ethernet (Port 1)	Single 10/100BASE-T Ethernet
Slot B Rear Serial Port (Port 3)	EIA-485
IEC 61850 Protocol	No
DNP3 Protocol	No

Selected Options	Description
IEC 60870-5-103 Protocol	No
Ethernet/IP Protocol	No
Slot C	4 DI / 4 DO Fast High Current Hybrid (Form A)
Slot C Digital Input Voltage	24 Vdc/Vac
Slot D	Empty
Slot D Digital Input Voltage	N/A
Slot E	Vsync Input and Vn Input (300 Vac) (SELECT 2 AVI)
Slot E Digital Input Voltage	N/A
Slot Z Current and/or Voltage Inputs	3-Phase 5 Amp AC Current Input / 5 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) (SELECT 4 ACI / 3 AVI)
Conformal Coat	No preference from Tesla

NOTE: The SEL-700G+ relay can be specified to accept different voltage inputs for the digital signals, but this option requires a change to the SEL-700G relay part number. This is a client design choice to ensure correct interface and operation of all islanding system components.

NOTE: Ensure Jumper B on Slot B card is installed to enable remote breaker control from manufacturer.

2.7.1.2 SEL-751 Model Options

Standard part number: 751002ACB0X70851D00

The model options used to integrate with the Tesla System Controller require the use of C37 communication over Ethernet, which is available only on the SEL-751 model.

- Default approved: SEL-751
- Not approved: SEL-751A (C37 communication only available over serial)

Contact your Tesla representative if you plan to deviate from the standard part number.

Table 23. SEL-751 Model Options

Selected Options	Description
Advanced Features	None
User Interface	English
Front Panel	2x16 LCD With 4 Pushbuttons
Slot A Power Supply Voltage	24-48 Vdc
Slot A Digital Input Voltage	125 Vdc/Vac
Slot B Ethernet (Port 1)	Single 10/100BASE-T Ethernet
Slot B Multimode Fiber ST (Port 2)	No
Slot B Rear Serial Port (Port 3)	EIA-485
IEC 61850 Protocol	No
DNP3 Protocol	No

Selected Options	Description
IEC 60870-5-103 Protocol	No
EtherNet/IP Protocol	No
Slot C	4 DI / 4 DO Fast High Current Hybrid (Form A)
Slot C Digital Input Voltage	24 Vdc/Vac
Slot D	Empty
Slot D Digital Input Voltage	N/A
Slot E	Vsync (300 Vac) / Vbat (300 Vdc) / 4 Arc-Flash Detection Inputs
Slot E Digital Input Voltage	N/A
Slot Z Voltage Inputs	3-Phase AC Voltage (300 Vac)
Slot Z Current and/or Voltage Inputs	5 Amp Phase, 5 Amp Neutral
Conformal Coat	No preference from Tesla

2.7.1.3 Islanding Controller Considerations

The following table outlines specific aspects of the SEL relays and their incorporation into performing the islanding controller functions.

Table 24. Considerations for Key Relay Behaviors

Feature	Consideration
Remote Grid Disconnect Control	The Tesla System Controller requires control of the grid disconnect using the OPEN or CLOSE commands and output contact control. This allows the battery system to disconnect from the grid when a grid outage occurs, and reconnect upon grid return.
Digital I/O	The islanding controller reads a pair of auxiliary status contacts from the grid disconnect, so at least two (2) digital inputs are required for grid disconnect status. The islanding controller must also provide dry contact output(s) (one for contactor or two for breaker).
Passive Anti-Islanding Trips	In order to comply with local Authority Having Jurisdiction (AHJ) utility interconnect requirements, the islanding controller must have basic protection elements and basic functions that include: • Over- and undervoltage elements • Over- and underfrequency protection • Power elements (not applicable for some AHJ's) • Rate-of-change-of-frequency (ROCOF) protection (not applicable for some AHJs)
Synchronism Check	The islanding controller requires a synchronism-check element in order to verify that the microgrid frequency, voltage magnitude, and phase angle match the grid frequency, voltage magnitude, and phase angle before permitting the grid disconnect to be closed.
Control Logic	The islanding controller requires the ability to set latches, timers, counters, and math variables, and to report important statuses to the Tesla System Controller.
Communication Capability	The Tesla System Controller uses Modbus TCP/IP as the communication protocol when sending controls commands to the SEL-700 and SEL-751 relays. Monitoring data published by the relays is received by the Tesla System Controller using the C37 synchrophasor communication protocol.

2.7.1.4 Additional Recommendations

The power supply for the islanding controller, grid disconnect control power, and auxiliary status sense lines should be backed up using a UPS to protect against power interruptions in order to ensure the islanding controller is accurately reporting the status of the grid disconnect. Power supply during transition and failure modes of each source of power should be considered during the site design to ensure correct operation. If the Tesla System Controller loses communications with the islanding controller, the system reverts to grid-following operation as a failsafe.

CAUTION: Exceeding the current rating of the islanding controller digital outputs could result in welding the contact in the closed position. The customer is responsible for verifying that voltage and current are maintained within islanding controller limits and introducing interposing relays if required.

Given the high inrush associated with solenoid coils, the 24 V DC supply from the battery system is not suitable for grid disconnect control. Breaker coils are normally indicated as a 120 V AC source; however, this is dependent on the specific grid disconnect being used.

Consider the availability of the power supply source used to power trip and close coils, to ensure that power is available when needed:

- Generally, the close coil power can be provided from the grid side of the grid disconnect, given that the disconnect will not be closed onto a dead grid under any circumstances.
- During a low impedance grid fault scenario (in other words, a hard short circuit just upstream of the customer's facility), the line voltage may sag too low to energize shunt trip solenoid and island the system. To ensure that the grid disconnect can be opened during a low impedance grid fault, the trip coil should be supplied by a UPS or the breaker should be outfitted with an under-voltage relay.

2.8 Generator Asset Design

A generator asset is a grid-forming source that produces power by rotating and is powered by burning fuel. Generators are integrated assemblies that include a fuel reservoir or tank, engine, alternator, and generator controller. Generator controllers control the generator asset and synchronizing breaker, and disconnect the generator from the bus during a fault.

If your site is using an Archetype with generator assets, an approved generator controller listed in the *Tesla Industrial Energy Approved Vendor List (AVL)* should be installed as indicated in the site's electrical topology.

Droop is Tesla's required operational mode for generators for optimal operation and enhanced reliability.

2.9 Common Site Considerations

Common design considerations regardless of site Archetype are detailed below.

2.9.1 Resonance of Devices Connected to Common 480 V AC Bus

Excessive resonance is expected when Megapack is connected to a common 480 V AC bus with power electronics inverters (such as solar inverters) or loads (such as variable frequency drives (VFDs) or data center power supplies) that fulfill both conditions:

1. The total apparent power rating of the power electronics exceeds 20% of the apparent power rating of the Megapack.
2. The equivalent switching frequency at the AC bus of the power electronics is less than 35 kHz.

In order to mitigate the risk of resonance, you must design for one of the following:

- Relocate the equipment
- Provide a line reactor
- Provide an isolation transformer

2.9.1.1 Line Reactor

If using a line reactor, it must meet the minimum specifications below:

Table 25. Minimum Reactor Specifications

Specifications	Minimum Requirement
Inductance	0.022 mH per phase
Current Capacity	Exceeds continuous current rating of the Megapack(s) connected to this reactor
Location	In series between Megapack(s) and common AC bus

2.9.1.2 Isolation Transformer

If using an isolation transformer, it must meet the minimum specifications below. Refer to *Transformer Design on page 50* for additional details.

Table 26. Minimum Transformer Specifications

Specifications	Minimum Requirement
Impedance	Between 3% and 7%
Current Capacity	Exceeds continuous current rating of the Megapack(s) connected to this transformer
Location	In series between Megapack(s) and common AC bus

2.9.2 Network and Internet Considerations

The Tesla System Controller and meters communicate using TCP/IP with Modbus and C37.118 protocols, therefore connectivity requirements must be part of the design.

Tesla requires communication between the Tesla System Controller and all meters and Megapacks onsite. Every Megapack requires a wired Ethernet connection to the Tesla System Controller. In multi-Megapack sites, this often requires the use of customer-supplied Ethernet switches and may require the use of fiber.

The Tesla System Controller requires an internet connection. It has a built-in cellular connection that can provide a communication link between the Tesla System Controller and Tesla via the internet. If the cellular network is not sufficient, a hardwired internet connection is mandatory. Additionally, if the customer wants a network connection for a control interface, the Tesla System Controller is also the customer point of connection to the Megapack.

The Tesla System Controller requires network connectivity to control the Megapack. Ensure adequate connectivity by installing a permanent external antenna at sites where the Tesla System Controller is installed inside metal enclosures such as switchgear cabinets, in concrete buildings such as parking structures, or in areas with poor coverage.

See *Relocating the Antenna* in the *Standard Tesla System Controller Enclosure Installation Manual* for instructions on external antenna installation, and see *Terminating Auxiliary DC Power Conductors and Communications Cables on page 138* for required installation procedures.

NOTE: Refer to the *Controls and Communications Manual* for complete control details.

NOTE: Some projects may use external cell antennas different from the included external antenna. The Standard Tesla System Controller computer has an RP-SMA female connector (outer threading and pin) and requires an antenna with an RP-SMA male connector (inner threading and hole).

NOTE: Removing any component from the Standard Tesla System Controller Enclosure other than the antenna (for example, to mount the backplane in a different enclosure or control room) must meet the environmental requirements on the Tesla datasheet and is not covered in the certified installation configuration. Discuss any modifications with Tesla prior to installation.

NOTE: For more information or with specific questions, contact your Tesla representative.

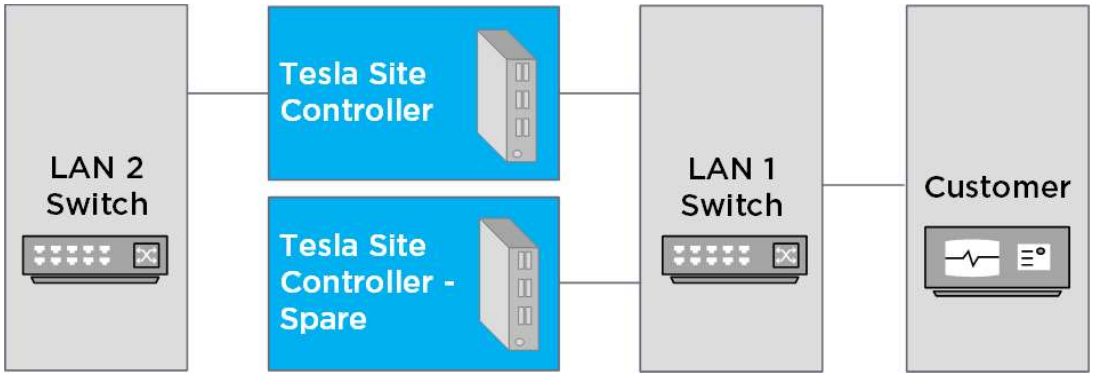
2.9.2.1 Computer Networking

The Standard Tesla System Controller Enclosure may have one or two controllers (Standard Tesla System Controllers). Large-scale sites typically ship with two controllers (Large Tesla System Controllers).

The Tesla System Controller has two (2) RJ45 LAN ports: LAN 1 and LAN 2, and an integrated cellular modem (where equipped) (*Tesla System Controller on page 17*).

For Standard Tesla System Controller Enclosures including two Standard Tesla System Controllers or for sites including dual Large Tesla System Controllers, LAN 1 of each computer may be connected in parallel, as indicated in the diagram below:

Figure 40. Dual Computer Networking



CAUTION: Contact Tesla before attempting to connect LAN 2 of both controllers in parallel.

NOTE: If you are connecting through a firewall, see the *Firewall Rules* table in the *SCADA Design Manual* for important connection information.

2.9.3 Maximum Arc Flash Incident Energy

The Megapack arc flash incident energy is largely determined by the available short circuit current and the protective clearing device that isolates the Megapack. The table below lists the maximum allowable arc flash incident energy at the Megapack AC bus bars.

Table 27. Maximum Allowable Arc Flash Incident Energy

All Regions
14 cal/cm^2

Customers must employ a protection scheme that does not exceed the maximum allowable energy. Tesla recommends designing the protection such that arc flash incident energy is minimized to the greatest extent that is practical. The engineer of record must provide an arc flash label including this information to installation contractors (*Providing the Arc Flash Label on page 141*). For more information, see *Required Protective Studies on page 102* and the *Application Note: Electrical Protection Architecture*.

2.9.4 SCADA

For many applications, Megapack can be operated as a stand-alone system as detailed in the *Controls and Communications Manual*. However, for custom solutions, Megapack can be integrated with a supervisory control and data acquisition (SCADA) system to expand its functionality.

The *SCADA Design Manual* further outlines what items to consider when designing a SCADA system, what additional features may be supported by Tesla, and how to integrate them with the Tesla System Controller.

2.9.5 Water Supply

If required by the AHJ, the site may need a water supply per NFPA 855 Section 4.13 or applicable local codes and regulations. For more information, refer to *Application Note: Onsite Water Supply Sizing For Exposure Protection*.

If required by on-site maintenance infrastructure, your site may need a potable water source. Refer to the *Application Note: On-Site Maintenance Infrastructure*.

2.9.6 On-Site Maintenance Infrastructure

Maintenance infrastructure is essential to the rapid and effective maintenance of Megapack sites. The required infrastructure should be incorporated into site design, made available to Tesla during construction and for the life of the project, and should be completed no later than 2 weeks prior to the commissioning start date.

For details, refer to the *Application Note: On-Site Maintenance Infrastructure Requirements*.

2.9.7 Augmentation Design

The Megapack System can be configured to be augmented to maintain power and energy capacity over the life of the project, if arranged for at the time of contracting. To support augmentation, the original site must be designed in accordance with the language in this section.

Augmentation units may be connected into:

- The low-voltage (LV) side of each Megapack, behind each Megapack AC circuit breaker
- The medium-voltage (MV) system, at the MV level of a Megapack site

NOTE: Refer to voltage classifications at *Voltage Classification on page 4*.

As illustrated below, sites may provide for LV augmentation, MV augmentation, or both. The site should provide adequate space to allow for the additional augmentation units and additional balance of plant equipment as required. It is up to the customer to consider all relevant design and construction details (such as additional lighting, foundations, roadways, and security).

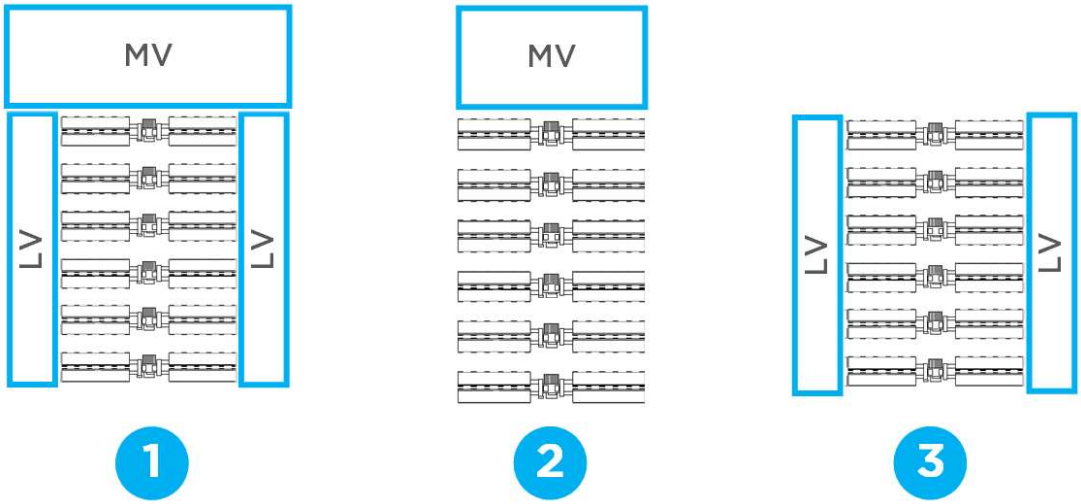
Clearance requirements include:

- Augmentation unit side-to-side and back-to-back clearance
- Clearance for an overhead lift to access the site at a later date
- Clearance for service

- Other clearances as required (such as exposure and fire clearances)

Contact your Tesla representative for more information relevant to your site.

Figure 41. Augmentation Layout Examples



1. LV and MV augmentation
2. MV augmentation only
3. LV augmentation only

The customer is responsible for overall integration of the system with third-party products and for ensuring that the site meets the requirements of the local jurisdictions. For more information the available options, refer to the sections below:

- *Low Voltage Augmentation on page 63*
- *Medium Voltage Augmentation on page 64*
- *Capacity Maintenance Agreement Augmentation on page 64*

2.9.7.1 Low Voltage Augmentation

For any site planning to provision for LV augmentation, Tesla recommends that the site layout provide adequate space to allow for the addition of LV augmentation units and foundations constructed at the same time as the original Megapack foundations. Up to three units can be connected to augment each Megapack, following the requirements below:

- Space must be reserved upon the foundation to place 1-3 augmentation units on either side of the Megapack (see concept below)
  - The foundation from the Megapack enclosure to the augmentation units should be continuous
  - This portion of the foundation must be capable of supporting the same magnitude of force as the rest of the Megapack foundation
  - Nothing can be on the foundation pad other than the Megapack enclosures or augmentation units
- 250 mm (10 in) side clearance is recommended to be reserved between Megapack enclosures and augmentation units. This clearance minimizes installation time and optimizes project cost.

- At a minimum, 150 mm (6 in) clearance must be observed to all objects (including Megapack, other augmentation units, or other exposures)

Figure 42. LV Augmentation Area Example

Approximate kWh	Additional Length Required (Minimum)	Additional Depth Required
500	1700 mm (5 ft 6 in)	N/A
1,000	3050 mm (10 ft)	N/A
1,500	4400 mm (14 ft 5 in)	N/A

2.9.7.2 Medium Voltage Augmentation

For any site planning to provision for MV augmentation, the site designer must determine the approximate number of augmentation units required. Tesla strongly recommends, for each planned augmentation unit, that the site provide the following at time of original site construction:

- Reserved foundation area with adequate space to allow for the addition of augmentation equipment roughly the size of a Megapack enclosure and its associated clearances (*Megapack Clearance on page 84*)
- Reserved foundation area with adequate space for required medium voltage equipment such as transformers and switchgear
- Reserved electrical capacity. Either:
  - Additional empty feeder capacity reserved for MV augmentation units
  - Additional empty transformer capacity reserved for MV augmentation units

NOTE: Foundations for MV augmentation do not need to be constructed at time of original site construction because the foundations will be separate from the original Megapack enclosure foundations.

2.9.7.3 Capacity Maintenance Agreement Augmentation

NOTE: A Capacity Maintenance Agreement is a legacy offering available only if already contracted.

A Capacity Maintenance Agreement (CMA) guarantees power and energy capacity over the life of the product. A capacity-maintained system adds CMA units (battery enclosures) over time to maintain power and energy. To support this, the site and foundation designs and the electrical infrastructure must pre-allocate space for the additional units during initial construction. This prevents the need to re-permit the entire site later in its lifecycle. A CMA must be contracted at the beginning of the project.

Guidance must be given to installation partners to ensure they understand the purpose of the space left for future CMA units, and they do not attempt to optimize layout during initial construction. Access must also be provided for a crane so that the supplementary CMA units can be added or removed as needed.

Upon request, Tesla can provide specifications for CMA lengths of 10, 15, or 20 years. If a site intends to use a CMA, contact Tesla for additional site design assistance.

For any site that has signed a Capacity Maintenance Agreement (CMA), the site layout must provide adequate space to allow for the addition of CMA units for the duration of the contract. Up to three CMA units may be required per Megapack as determined by Tesla. Tesla will, at a later date, install the units upon the space provided.

NOTE: Contact your Tesla Project Engineer to see if your site has a CMA requirement and for more information about the design requirements below.

Foundation design requirements include:

- Space must be reserved upon the foundation to place 1–3 augmentation units on either side of each Megapack (refer to dimensions below)
  - The foundation from the Megapack enclosure to the augmentation units should be continuous
  - Nothing can be on the foundation pad other than the Megapack enclosures or augmentation units
- Allowance for construction requirements
  - CMA unit anchoring plan
  - Clearance for an overhead lift to access the site

Figure 43. CMA Augmentation Dimensions

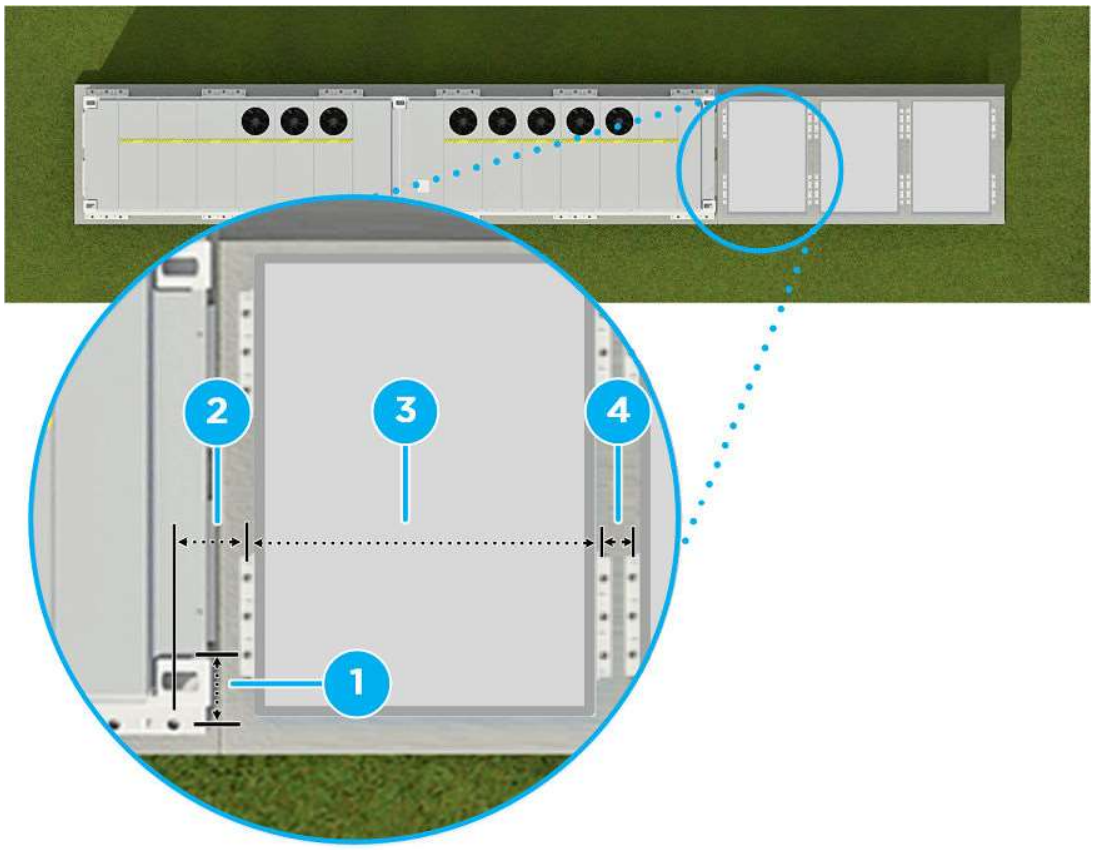


Figure Reference	Description	Dimension	Details
1	Depth to first anchor hole	225 mm (8 ¾ in)	Hole center to hole center
2	Width to first unit	300 mm (11 ¾ in)	Hole center to hole center
3	Unit width	1160 mm (45 ⅝ in)	Hole center to hole center
4	Spacing between units	140 mm (5 ½ in)	Hole center to hole center

3 Mechanical Design

3.1 Mechanical Specifications

While Megapack's dimensions remain fixed, its mass and center of gravity vary depending on its energy rating, corresponding to the number of battery modules installed. The maximum mass is displayed below. For precise values per configuration, refer to *Megapack Center of Gravity on page 68* and *Megapack Mass on page 67*.

Table 28. Megapack Dimensions and Mass (Weight)

Width	Depth	Height	Max. Shipping Mass
8800 mm (346 ½ in)	1650 mm (65 in)	2785 mm (110 in)	38,100 kg (84,000 lb)

CAUTION:

- Enclosure dimensions are provided for nominal design guidance. Do not use the dimensions above as anchoring specifications. For precise dimensions and structural and anchoring details, see the *Megapack 2 XL Drawings* on the Partner Portal.
- Dimensions as listed are as measured for the enclosure envelope exclusive of anchor brackets.
- Mass (weight) as listed is maximum shipping mass. Mass changes depending on product configuration and can be configured lighter based on project-specific requirements.

Table 29. Standard Tesla System Controller Enclosure Dimensions and Mass

Width	Depth	Height	Max. Mass (Weight)
560 mm (22 in)	255 mm (10 in)	724 mm (29.2 in)	22.4 kg (49.4 lb)

Table 30. Enclosure Specifications or Capabilities

Corrosion Resistance	Compliant with ISO 12944: C5I (industrial) and C5M (coastal) standards
Impact Rating	IK09
Ingress Rating	IP66/NEMA 3R (Megapack enclosure - including rain and sprinkler test immunity) IP20 (Thermal system)
AC Bus Bar Area Floor Live Load	Can support a person of up to 300 lb (136 kg) gross weight
Roof Live Load	Can support a person of up to 300 lb (136 kg) gross weight in clearly designated areas (Megapack enclosure)
Roof Snow Load	732.3 kg/m^2 (150 psf, or 7.18 kN$_{Earth}$/m^2) If the site may experience greater snow loading, contact Tesla to discuss.
Salt Fog Rating	Able to withstand over 1,000 hours of salt fog application per a C5M system

Seismic, Shock, and Vibration Rating	Qualification Level - IEEE 693-2018 High PL: *ZPA*=1.0 g 5% damping Certification Level - ICC-ES AC 156-2018 S_{DS}=2.50 g *z/h*=0 I_p=1.5
Thermal System	Coolant and refrigerant in capacities as specified in *Thermal Specifications on page 69* (each Megapack unit)
Wind Rating	Able to withstand Category 5 hurricane sustained wind speeds of up to 157 mph (252 km/h)
Operating Temperature	-30°C to 50°C (-22°F to 122°F) Megapack provides full rated power in all ambient temperature conditions and at maximum elevation under up to 1200 W/m2 solar loading, in any direction. See the *Megapack 2 XL System Specification* for more information.
Humidity	Up to 100% condensing
Storage	-30°C to 50°C (-22°F to 122°F) See *Megapack 2 XL Transportation and Storage Guidelines* for more information.
Maximum Elevation	3000 m (9840 ft) above sea level

3.1.1 Noise Specification and Guidance

Each Megapack unit has rooftop fans as part of its thermal system. Megapack's main source of noise comes from these fans, for which there are two related option codes:

- FN## (fan type)
- TC#H (thermal configuration manufacturing option code that represents number of fans)

The maximum audible noise specification is expressed as the sound pressure level (SPL) in decibels, and measured at a 10-meter (33-foot) distance from the enclosure at maximum thermal system operation.

Refer to the relevant combination of option codes for the Megapack unit's specification:

Table 31. Maximum Audible Noise Specification

FN##	TC2H	TC4H
FN01 / FN02	71.2 dB(A)	68.9 dB(A)
FN03	66.3 dB(A)	63.8 dB(A)

NOTE: In addition to Megapack unit differences, noise emission is affected by site-specific conditions such as ambient temperature and system dispatch profile. Maximum audible noise may generally only be reached under specific operating conditions. For the majority of the time, noise emitted by Megapack will be much lower. Tesla can provide more details around sound power and sound pressure if required for the project site.

3.2 Megapack Mass

To calculate Megapack's precise mass, use its energy rating (number of battery modules) together with a formula as described below.

1. Determine Megapack's number of battery modules using the two numbers in the EC option code (see *Megapack Labels on page 21*). For example, the option code **EC14** indicates a Megapack with 14 battery modules.
2. Apply that number in place of *nn* in the formula as indicated:

   38,100 – 1,270*(24–*nn*)

   The solution indicates Megapack mass in kg.

   For example, a Megapack with option code **EC14** has **14 battery modules**, and its mass is calculated as follows:

   38,100 – 1,270*(24–14) = 38,100 – 1,270*(10) = 38,100 – 12,700 = **25,400 kg**

3.3 Megapack Center of Gravity

Megapack's center of gravity is located close to the geometric center of the enclosure on the X and Y axis for all product configurations. For the precise location for a fully populated Megapack, see below.

Figure 44. Center of Gravity Dimensions

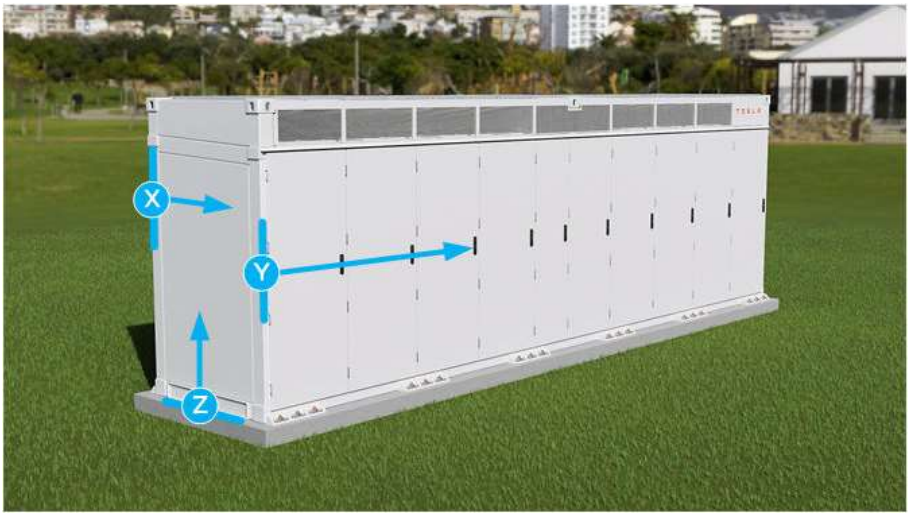


Table 32. Center of Gravity Location

System Duration	X (Distance from Rear Panel)	Y (Distance from Left Panel)	Z (Distance from Base)
2–Hour	791 mm (31 in)	4395 mm (173 in)	1202 mm (47 ¼ in)
4–Hour	791 mm (31 in)	4395 mm (173 in)	1199 mm (47 ¼ in)

3.4 Enclosure Colors

Megapack's exterior paint color code is *RAL 9016 Traffic White*. Touch–up paint ships as a Megapack accessory (see *Touch–Up Paint on page 129*).

Figure 45. Megapack Enclosure Color

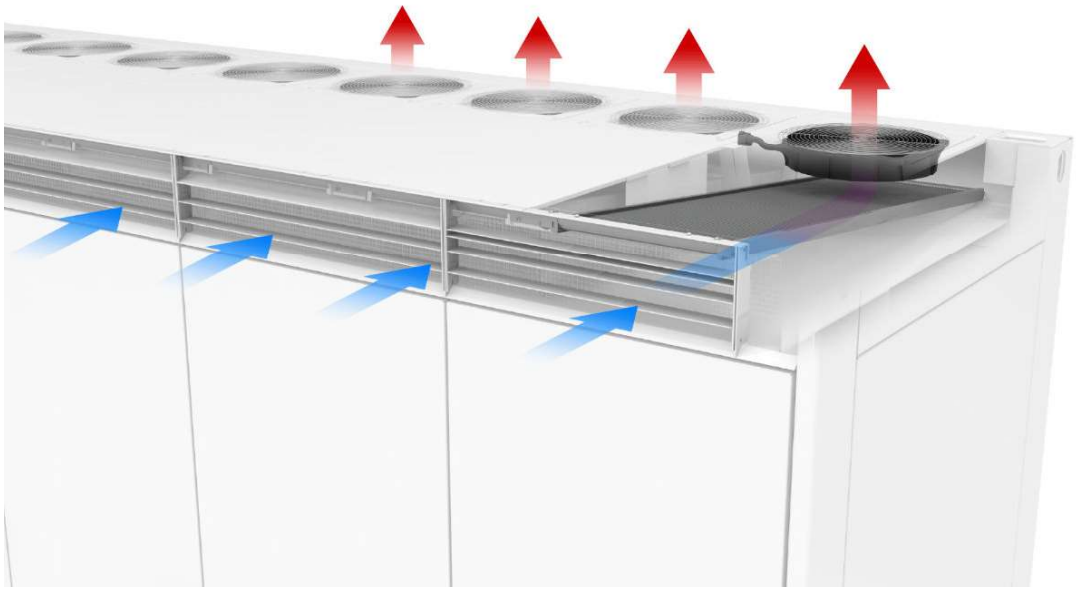
The Standard Tesla System Controller Enclosure is unpainted and is a flat grey color.

Figure 46. Standard Tesla System Controller Enclosure Color

3.5 Thermal Specifications

Air flows through the enclosure as shown below:

Figure 47. Megapack Airflow



The thermal system includes coolant and refrigerant in a sealed system. Megapack ships with the necessary coolant and refrigerant included as specified below.

Table 33. Thermal Capacities

	Composition	Max Quantity (Approx)	
Coolant	50–50 ethylene glycol–water	380 L / 100 gal	
Refrigerant	R-134a (1,1,1,2-Tetrafluoroethane)	4-Hour thermal configuration (TC4H option code)	Up to 1.5 kg / 3.3 lb
		2-Hour thermal configuration (TC2H option code)	Up to 3 kg / 6.6 lb

NOTE: Depending on the number of Megapacks installed on a site, storage, use and handling of these substances may require reporting, hazard management plans, or containment procedures as required by local codes and regulations.

Since the thermal subsystem is a fully closed-loop system with a compressor, the refrigerant line includes a pressure relief valve that can activate if incorrect maintenance or operation creates excessive pressure. The system operates autonomously and does not require user feedback.

Megapack is designed to be installed outdoors within the rated operating temperature specifications. Indoor installations are not allowed without consulting Tesla.

CAUTION: Do not install batteries in areas where temperatures routinely approach or exceed 50°C (122°F).

NOTE: The physical characteristics of the project site may cause localized heating effects (rise above ambient) adjacent to Megapack – for example, an installation in a location with a strong heat island effect, black pavement (parking lots), or in full direct sunlight. Although not required by Tesla, shade structures or canopies may help mitigate local environmental heating effects. Ultimately, the customer must understand the risk to performance of localized heating effects and take responsibility for any mitigation. Any shade structures must conform to the distances detailed in *Megapack Clearance on page 84*.

3.6 Safety Certification and Hazard Mitigation

In addition to providing product safety features (*Hazard Mitigation Features on page 20*), Tesla conducts extensive analysis and testing to assess hazardous conditions related to Tesla products. Megapack includes multiple layers of protection to mitigate hazardous electrical and fire conditions. Megapack has been reviewed and validated by an Independent Engineer, both at the product level and for the results of large-scale fire testing.

Megapack neither contains nor needs built-in smoke, gas, or fire detection or suppression devices. When required by the AHJ, third-party multi-spectrum IR heat or flame detectors can be installed externally at the site-level.

Refer to *Environmental Compliance on page 151* for environmental containment features.

Refer to the *Industrial Lithium-Ion Battery Emergency Response Guide* on the Tesla First Responders Information page at *https://www.tesla.com/firstresponders* for detailed hazard and response information.

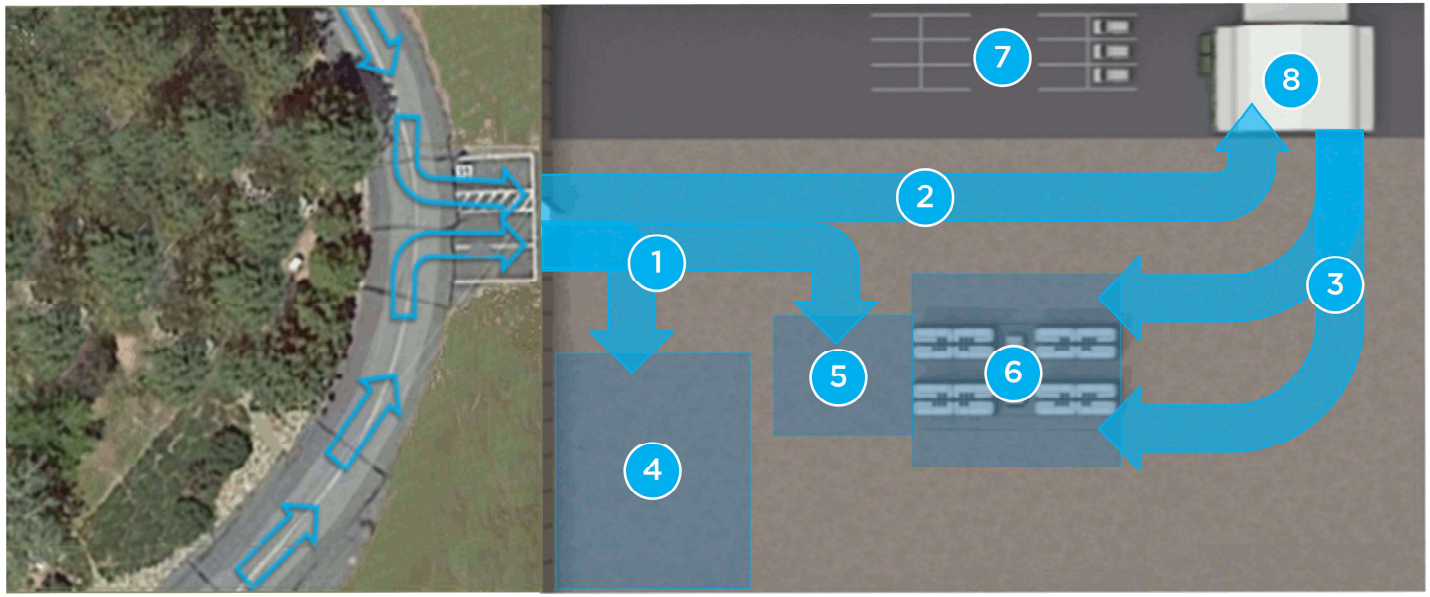
4 Civil Design

Planning for optimal foundation and clearance design, delivery, serviceability, and other site functionality requires attention to civil design including consideration of various routes and zones at the site. Geotechnical, civil, structural, and transportation engineering specialties should be consulted about route and zone civil design early in the site design process.

4.1 Routes and Zones

A site generally consists of routes and zones as indicated below. A **route** is defined as the full path between two or more locations and includes the surface being traveled upon. A **zone** is a defined area of the site that is typically distinguished by function. A zone can be in multiple locations on a site and is dependent on the site layout. Routes and zones are generally allowed to overlap as needed.

Figure 48. Routes and Zones -- Example



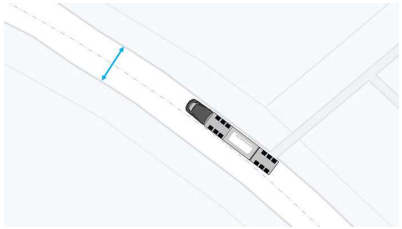
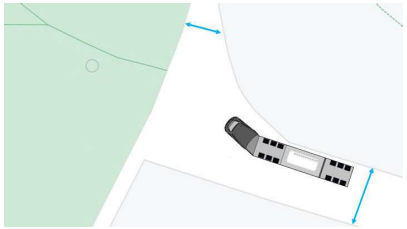
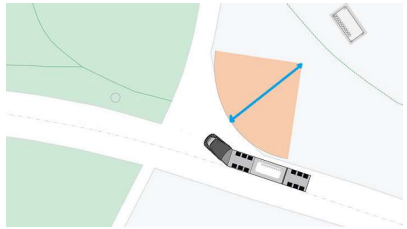
1. Delivery Route
2. Service Access Route
3. Battery Service Route
4. Construction Staging Zone
5. Crane Zone
6. Battery Zone:
    - Foundation Zone
    - Battery Service Zone
7. Parking Zone
8. Service Staging Zone

4.1.1 General Requirements

The design of routes and zones must abide by the requirements described in this section. Due care must be taken to engineer and install appropriate surfaces in all routes and zones for the full duration of the project's life. For vehicle descriptions and specifications, refer to *Typical Vehicles on page 79*.

All routes must be wide enough to support the wheel swept-path of designated vehicle types and strong enough to support the designated vehicle axle loads. Other infrastructure crossing routes at or below grade (water, electrical, or drainage) should be reviewed in detail to make sure there are no conflicts. It is recommended to include geotechnical engineering stakeholders and craning and logistics providers early in the site design process to ensure all other considerations (such as crane type or delivery vehicle needs) are incorporated. Refer to the *Megapack 2 XL Sample Engineered Template* for assistance with calculations and vehicle blocks to support swept-path analysis. Contact your Tesla representative with any deviations.

Table 34. Example Route Design Considerations

		
Minimum Route Width: Linear Driving	Minimum Route Width: Around Turns	Minimum Intersection Turn Radius

CAUTION: Standing water in any routes or zones may impact serviceability or structural integrity and should be mitigated as much as possible.

NOTE: The requirements for routes and zones generally apply at any site regardless of whether it is a single- or multiple-battery site. Contact your Tesla representative for more information.

Table 35. General Requirements for All Routes and Zones

Slope	Vehicle Requirements	Surface Conditions
Battery Service Zone: • Maximum 5% in any direction Foundation Zone: • Refer to *Foundation Design on page 81* All other routes and zones: • Maximum 5% cross slope	• Support for axle loads for designated vehicle types. • Support for adequate width for designated vehicle travel. • Support for minimum turning radii of designated vehicle types.	Required: • No potholes, ruts, or standing water. • Adequately compacted and safe for people to work on and for designated vehicle types to operate on (*Ground Surface Conditions on page 75*). • Engineered with sufficient grip to provide tire traction.

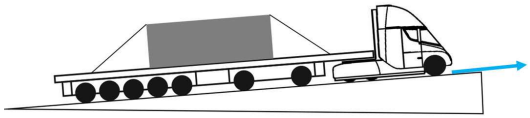
Slope	Vehicle Requirements	Surface Conditions
• Maximum 10% slope (grade) 		Recommended: • All-weather surfaces that will not require major upkeep and resurfacing after significant weather events. • A material that has been specified by the local or regional Department of Transportation. • Graded or crowned surface to shed water and prevent ponding.

Figure 49. Ground Surface Conditions

For additional information, refer to *Ground Surface Design Considerations on page 80*.

4.1.2 Route Requirements

Uses and additional requirements and recommendations specific to each route are described below.

Table 36. Route Uses and Requirements

Route or Zone	Use	Designated Vehicle Types	Requirements and Recommendations
Delivery Route	Transport between the public right-of-way, the designated project entrance, and the vehicle unloading point (Crane Zone or Construction Staging Zone).	• Megapack delivery vehicle • Crane • Utility vehicle • Telescopic forklift • Fixed-mast forklift • Service delivery vehicle	Required: • Delivery vehicles and cranes must have a valid route to all designated Crane Zones and/or Construction Staging Zones for installation.
			Recommended: • Looped route or cul-de-sac to avoid needing to reverse the delivery vehicle for long distances. • Ability for delivery vehicle to back into or pull alongside the Crane Zone for greatest efficiency.
Service Access Route	Transport between the public right-of-way and the Service Staging Zone.	• Megapack delivery vehicle • Crane • Utility vehicle • Telescopic forklift • Fixed-mast forklift • Service delivery vehicle	No additional requirements.
Battery Service Route	Transport between the Service Staging Zone and each Battery Service Zone.	• Fixed-mast forklift • Utility vehicle	Required: • Designated vehicle types must have a valid route from the public right of way to the Service Staging Zone to **every** Battery Service Zone.

4.1.3 Zone Requirements

Descriptions and additional requirements and recommendations specific to each zone are described below.

Table 37. Zone Descriptions and Requirements

Route or Zone	Description	Designated Vehicle Types	Requirements and Recommendations
Construction Staging Zone	Portions of the site set aside for construction activities. Typical uses include material handling and temporary stockpiling, equipment and contractor parking, and occasionally the storage of battery units.	• Megapack delivery vehicle • Crane • Utility vehicle • Telescopic forklift • Fixed-mast forklift	Recommended: • Consider that it is common for the construction staging zone to overlap with the service staging zone.
Crane Zone	Portions of the site that have been allocated for the set up or operation of a crane.	• Crane	Required: • Depending on the delivery logistics plan, additional clearances or surface load considerations may be required if delivery vehicles need to be within close proximity of the crane.
Battery Zone – Foundation Zone	The area upon which the battery unit is installed.	• None	Refer to *Foundation Design on page 81*.
Battery Zone – Battery Service Zone	The area in which service actions take place, as defined in *Clearance - Battery Service Zone on page 86*.	• Utility vehicle • Fixed-mast forklift	Required: • Supporting at least two egress routes, one in each direction, for people to vacate the zone on foot in the event of an emergency.
Parking Zone	Vehicle parking, required at all stages of the project life, but the quantity and usage of the parking will vary.	• Utility vehicle	Required: • Cannot overlap with listed equipment clearances on site. • Does not obstruct any of the delivery or service routes. • Parking stalls no smaller than 5.5 m x 2.75 m (18 ft x 9 ft).

Route or Zone	Description	Designated Vehicle Types	Requirements and Recommendations
			Recommended: • Temporary parking may be a good option for the surge in parking need during the construction of the project.
Service Staging Zone	Portions of the site set aside for service preparation activities. Typical uses include material handling and temporary stockpiling, and occasionally the storage of supplies. **NOTE:** Details of this zone are provided in the *Application Note: On-Site Maintenance Infrastructure Requirements*.	• Utility vehicle • Telescopic forklift • Fixed-mast forklift • Service delivery vehicle	Required: • Must be able to support a service delivery vehicle being unloaded by a forklift with sufficient room for the forklift and load to maneuver around the delivery vehicle.

4.1.4 Typical Vehicles

Various vehicles are required to access routes and zones at the site as designed by the engineer of record.

The figure below shows the relative scale of typical vehicles compared to the Megapack:

Figure 50. Typical Vehicle Scale Compared to Megapack (Examples)

Examples of vehicles that may require access during construction, delivery, and for serviceability are listed below.

Table 38. Typical Vehicle Examples and Requirements

Type and Usage	Design Gross Vehicle Weight	Design Axle Weight	Approx. Dimensions	Vehicle (Example) - Not to Scale
Utility vehicle Van or truck. Transports personnel and supplies.	4,545 kg (10,000 lb)	2,723 kg (6,000 lb)	Length: 6.7 m (22 ft) Height: 2.7 m (9 ft) Width: 2.4 m (8 ft)	
Service delivery vehicle Transports personnel and supplies for service and maintenance activities.	15,000 kg (33,000 lb)	8,165 kg (18,000 lb)	Length: 8 m (26 ft) Height: 4.2 m (13.6 ft) Width: 2.6 m (8.5 ft)	
Fixed-mast forklift Used during certain service activities to move components, most notably the battery module, as well as to unload service delivery vehicles.	6,350 kg (14,000 lb)	3,629 kg (8,000 lb)	Length: 3.8 m (12.4 ft) Height: 2 m (6.8 ft) Width: 1.6 m (5.4 ft)	

Type and Usage	Design Gross Vehicle Weight	Design Axle Weight	Approx. Dimensions	Vehicle (Example) - Not to Scale
				Shown with battery module removal tool for context.
Telescopic forklift Typically used during construction to move various materials or components. Not typically used by Tesla during service.	5,910 kg (13,000 lb)	3,175 kg (7,000 lb)	Length: 5.8 m (19 ft) Height: 6 m (20 ft) Width: 3 m (8 ft)	
Crane Lifts heavy equipment such as Megapack units and other units for system augmentation or other construction activities.	112,000 kg (246,918 lb)	9,072 kg (20,000 lb)	Length: 15.7 m Height: 4 m (13.1 ft) Width: 3 m (9.3 ft)	
Megapack delivery vehicle Brings Megapack units to a Construction Staging Zone or a Crane Zone.	63,200 kg (139,000 lb)	9,072 kg (20,000 lb)	Length: 24.1 m (79 ft) Height: 4.2 m (13.5 ft) Width: 2.6 m (8.5 ft)	

4.1.5 Ground Surface Design Considerations

When designing or maintaining ground cover and ground improvements within the site's routes and zones, consider the *Typical Vehicles on page 79* that will be traveling the site in addition to the following recommendations:

- Structural fill to be compacted to minimum 95% of maximum dry density as determined by a Standard Proctor (ASTM D698) and placed in loose lifts not exceeding 200 mm (8 in) to within 4 % of the optimal moisture content or as specified in the geotechnical report.
- Moisture content and compaction to be within the value determined by in the geotechnical report.
- Recommended compaction testing shall be performed on each lift of the compacted material at a rate of one test for every 460 m^2 (5000 ft^2) within the Foundation Zone and 920 m^2 (10,000 ft^2) elsewhere.
- Test recommendations: ASTM D698, ASTM D1557, California Bearing Ratio (CBR).

NOTE:

- Always consult a geotechnical engineer and have a site-specific geotechnical investigation performed prior to design and construction.
- All recommended guidance does not constitute approval of site-specific geotechnical conditions.

4.2 Foundation and Clearance Design

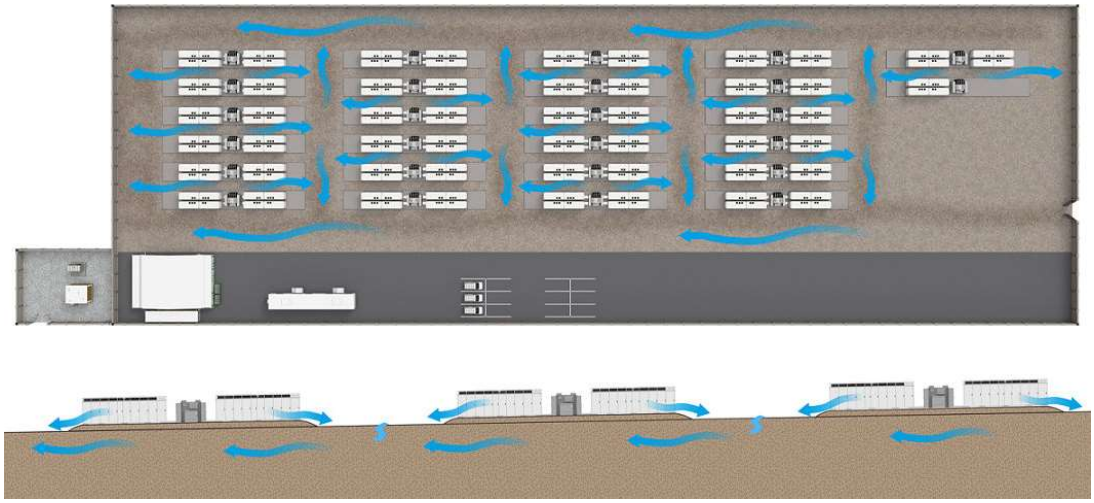
4.2.1 Foundation Design

Megapacks must be installed on a foundation or base strong enough to support the weight of the equipment listed in *Mechanical Specifications on page 66* and to resist all anchor loads. Observe equipment clearances per *Megapack Clearance on page 84*.

Figure 51. Megapack Foundation Zone - Side View

Foundation or base examples include, but are not limited to, concrete pad, grade beams, structural steel deck or skid. The following considerations must be respected:

- The Megapack unit must be installed on a single planar surface.
- If using non-concrete pad designs, review first with Tesla before work begins.
- Consider how water flow affects the Megapack enclosures and foundations. When using monolithic foundations, where possible, design your site so that water flows around Megapack foundations along their length, rather than perpendicular to them:



4.2.1.1 Foundation Installation Requirements

NOTE: Foundation requirements apply to Megapack units as well as any augmentation units (*Augmentation Design on page 62*). Foundations for augmentation must be installed at the same time as Megapack foundations.

- Foundation finish must have a smooth, even surface of uniform texture and appearance, free from bulges, depressions, and other imperfections that would impact equipment anchorage or foundation/base drainage.
  - If the foundation top surface is concrete, it must have a Class B finish.

- The top of the foundation must be above adjacent grade, 305 mm (12 in) maximum, with the edge of the foundation a maximum of 305 mm (12 in) from the front of Megapack. If the site does not allow this foundation height, contact Tesla. The foundation may not be below grade and must conform to local construction standards and regulations.
- A maximum of 13 mm (0.5 in) differential settlement is permitted.
- Ensure that the foundation is designed to prevent animals and insects from accessing Megapack's underside or debris from accumulating under Megapack.
- The area around the Foundation Zone must be designed to prevent standing water.
    - Any walls must be designed with sufficient clearance and be provisioned with features such as drains or weep holes to allow for proper drainage.
    - Megapack can withstand no more than 13 cm (5 in) of standing water for up to 30 minutes.
- Ensure that the foundation observes all clearance requirements as listed in *Megapack Clearance on page 84*.
- For anchoring requirements, see *Anchor Requirements on page 83*.
    - Concrete pad and equipment anchorage design shall meet ACI 318 and ASCE 7 requirements or the local building code requirements as required by the Authority Having Jurisdiction (AHJ).
    - Post-installed anchors (anchors installed into existing hardened concrete) must be approved to resist seismic loads in the installation jurisdiction and have a current ICC-ES or IAPMO report. Where anchoring conditions require an engineered design, it must be performed in accordance with the ICC-ES or IAPMO report and the cracked concrete provisions of ACI 318-11, Appendix D.

> **CAUTION:** Modification of anchor brackets is not permitted in any way.

If the foundation has areas of unevenness that violate any conditions above:

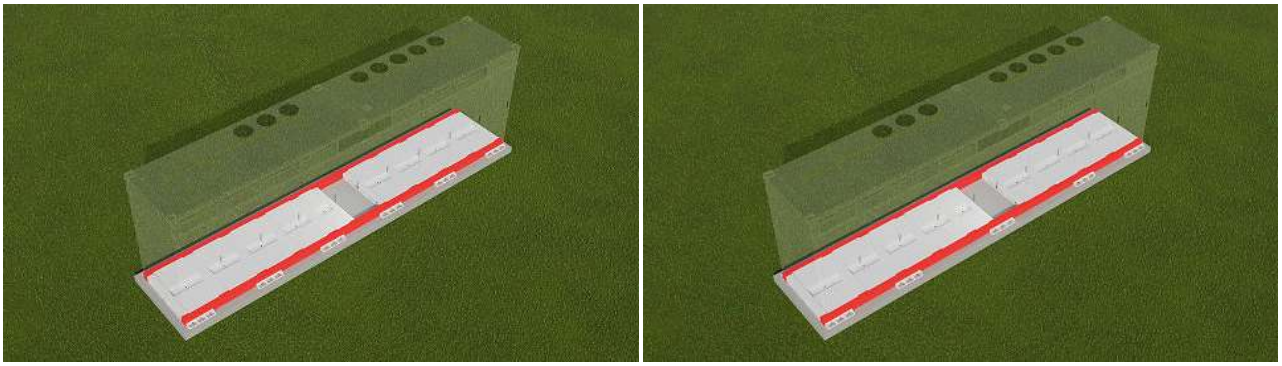
- For concrete foundations, use grout to even the surface
- For other foundation materials, use shims to even the surface
- In all cases, have a structural engineer approve the modification before implementing

If any aspect of the foundation inspection does not pass after remediation, contact Tesla before proceeding.

4.2.1.2 Equipment Bearing Areas and Anchoring

Megapack requires support along the length of the long sides to a width of 200 mm (8 in). Note that this support does not need to be continuous. Refer to the *Megapack 2XL Sample Engineered Template* for acceptable support locations. The foundational sections that must be supported are shown below:

Figure 52. Ground Support (-C Enclosure, -D Enclosure)



Megapacks may be anchored to their foundations using their anchor brackets, which are steel flanges welded to the base of Megapack. The use, quantity, and location of anchors (*Anchor Requirements on page 83*) is determined by the engineer of record and must conform to the laws, regulations, codes, and standards applicable in the jurisdiction of installation. Refer to clearance requirements in *Megapack Clearance on page 84*.

Anchors are needed if either of the following conditions are true:

- Uplift due to lateral forces such as wind or seismic cannot be effectively resisted by the Megapack's weight
- Sliding due to lateral forces such as wind or seismic cannot be effectively resisted by friction

NOTE: For anchor locations per Megapack installation type and complete anchor installation instructions, refer to *Anchoring Megapack on page 130*.

Figure 53. Anchor Brackets (-C Enclosure, -D Enclosure)

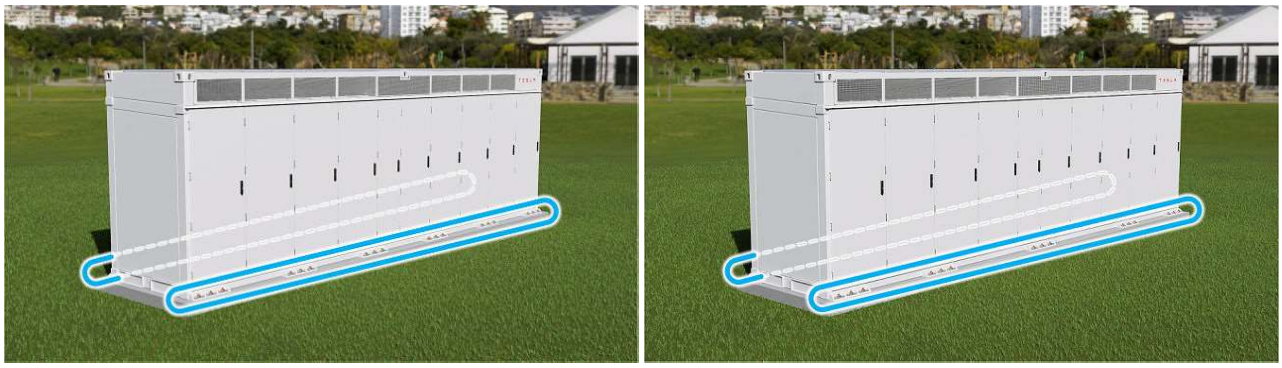


Table 39. Anchor Bracket Specifications

Description	Length	Depth	Thickness
Steel flanges welded to base of Megapack	610 mm (24 in)	102 mm (4 in)	16 mm (⅝ in)

4.2.1.2.1 Anchor Requirements

Anchors must be provisioned by the customer as selected by the structural engineer of record per site- and foundation-specific requirements according to the guidelines in this section.

NOTE: Refer to *Anchoring Megapack on page 130* for additional information.

When provisioning anchor hardware for Megapack, consider the following:

Table 40. Enclosure Anchoring Specifications

Anchor brackets (-C enclosure)	12 (6 in front; 6 in rear)
Anchor brackets (-D enclosure)	10 (5 in front; 5 in rear)
Anchor provisions	3 per bracket
Anchor hardware material	Stainless steel
Max. allowable anchor diameter	27 mm (1 in)
Anchor hole diameter	40 mm (1 1/2 in)
Anchor position tolerance	± 11 mm (7/16 in)

CAUTION: If using a concrete foundation, the structural engineer must provide the minimum allowable distance from the installed anchor to the edge of the foundation.

NOTE: Anchor hardware must not protrude above foundation surface greater than specified in *Anchor Protrusion on page 133*.

CAUTION: Modification of anchor brackets is not permitted in any way.

4.2.1.2.1.1 Additional Anchoring Considerations

- If installing back-to-back Megapacks and rear anchors are required, Tesla recommends that Megapacks are spaced with enough distance between them in order to install and access each Megapack's rear anchors. Refer to *Equipment Clearance Requirements - Side View on page 84* for back-to-back spacing requirements. Contact Tesla for more information if these requirements cannot be met.
- Hilti KB-TZ SS wedge anchors or HAS-R 304/316 SS and Hilti HIT-HY 200 epoxy anchor system are recommended.
- The final anchor selection must be made by the structural engineer of record.
- Refer to the seismic and wind specification values in *Enclosure Specifications or Capabilities on page 66*.

4.2.1.2.1.2 Additional Considerations for Concrete

If using concrete foundations, follow these guidelines in addition to the above:

- Concrete rebar reinforcement location must be coordinated with equipment anchor locations to avoid overlap.
- The pad thickness and size shall be sufficient to accommodate Megapack anchoring as required per ACI 318 or equivalent local standards.
- Specify rebar with a minimum and maximum allowed spacing, to allow the contractor to adjust rebar spacing to avoid conflicts with equipment anchoring.
- Alternately, the minimum concrete cover over the rebar can be increased to exceed anchor embedment depth, to avoid rebar conflicts with equipment anchoring.

4.2.2 Megapack Clearance

The clearances listed in this section are as required by the product. Additional clearances to non-Megapack equipment may be required per local codes and regulations.

Equipment clearances must be maintained throughout the operating life of the system. See the *Equipment Clearance Requirements on page 85* table below for dimensions. Shaded areas indicate the Battery Service Zone.

Figure 54. Equipment Clearance Requirements - Side View

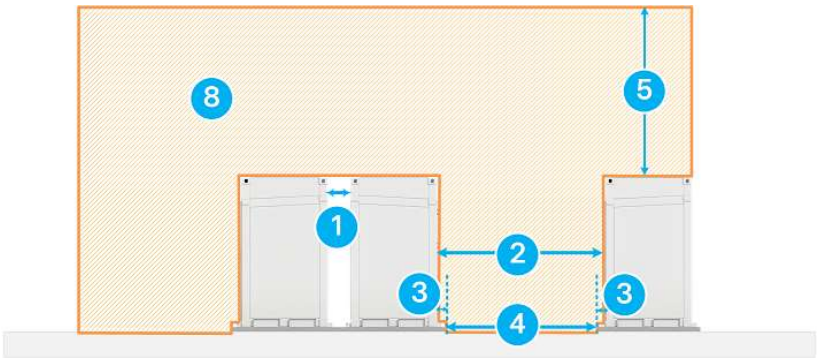


Figure 55. Equipment Clearance Requirements – Front View

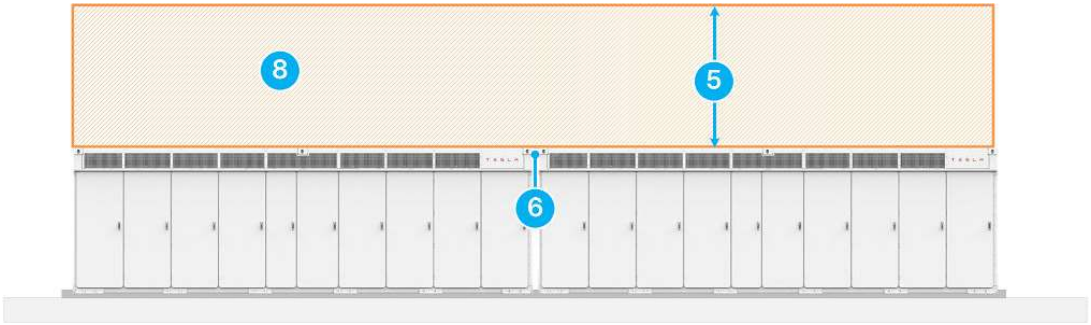
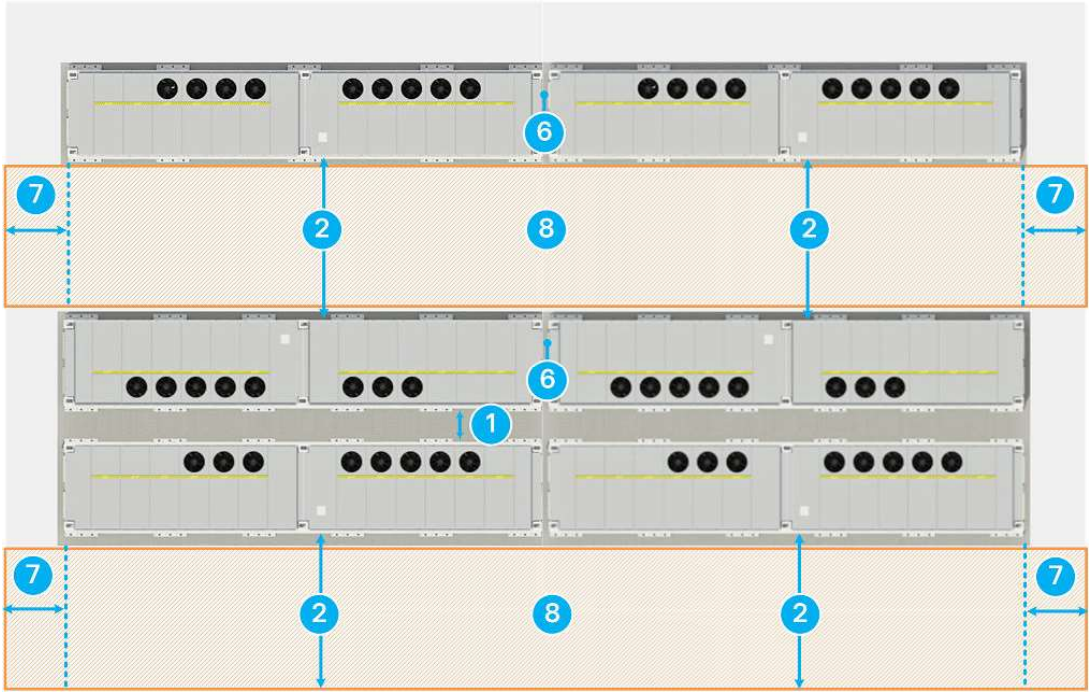


Figure 56. Equipment Clearance Requirements – Plan View



NOTE: All clearances listed must be observed from Megapack to any obstruction, including customer equipment or structures as well as other Tesla-provided components such as the Standard Tesla System Controller Enclosure.

Table 41. Equipment Clearance Requirements

Callout	Type	Minimum	Maximum	Notes
1	Back-to-back clearance	460 mm (18 in) *recommended* for access purposes. 230 mm (9 in) with prior Tesla review.	None	Measured from the back faces of the Megapacks. See also *Additional Anchoring Considerations on page 84*.
2	Front clearance	2440 mm (96 in)	None	Measured from the face of the door(s). Tesla-required clearance for maintenance access.

Callout	Type	Minimum	Maximum	Notes
				NOTE: Removable bollards may be installed within this area with prior Tesla approval. No permanent obstructions are allowed.
3	Foundation overhang	100 mm (4 in)	305 mm (12 in)	Varies depending on anchor and site design but must fall within this range. See *Equipment Bearing Areas and Anchoring on page 82* for more information.
4	Drive aisle clearance	1960 mm (77 in)	None	Measured from foundation. Tesla-required clearance for maintenance access.
5	Vertical clearance	2440 mm (96 in)	None	Must extend across the Battery Service Zone, as some service equipment extends beyond the roof of the enclosure. Megapack may only be installed by a crane, thus actual clearance during installation will be greater.
6	Side-to-side clearance	150 mm (6 in)	None	Measured from the side faces of each Megapack.
7	Service side clearance	915 mm (36 in)	None	Measured from the face of each side of the Megapack, except where side-by-side with another Megapack.
8	Battery Service Zone	--	--	The Battery Service Zone, shown shaded above, consists of the *Front* **(2)**, *Vertical* **(5)**, and *Service side* **(7)** clearances. **NOTE:** Small inclusions for foundations are allowed as long as the foundation does not infringe on the *Foundation overhang* **(3)** and *Drive aisle* **(4)** clearances.

4.2.2.1 Augmentation Clearance

For any site that requires augmentation, refer to *Augmentation Design on page 62* for clearance requirements.

4.2.3 Exposures and Fire Clearances

The dimensions and requirements as specified below are the product minimums and persist throughout the design, installation, and operating life of the system. Many jurisdictions have guidelines or restrictions about how close potentially combustible objects can be located to battery systems. Designers, owners, and operators are responsible for ensuring that the site meets the requirements of the local jurisdictions.

Figure 57. Exposure Clearances - Isometric View / Side View

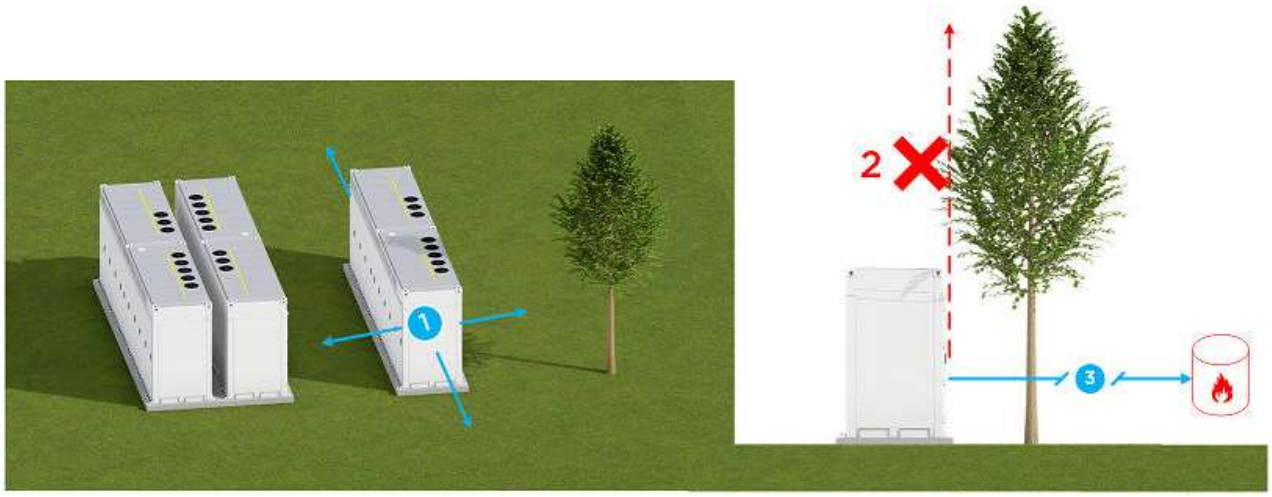


Table 42. Exposure Clearance Requirements

Callout	Type	Minimum	Maximum	Notes
1	Ordinary combustibles	1530 mm (60 in)	None	Minimum clearance as noted is required on all sides to ordinary combustible objects including trees, wooden fences, and other combustible structures.
2	Vertical combustible or ignitable	NA	NA	**Do not install Megapack under combustible or ignitable objects, at any distance.**
3	Ignitable liquids	6096 mm (240 in)	None	Minimum clearance as noted is required on all sides to ignitable liquids sources.

NOTE:

- Megapack is not intended to be installed within 3050 mm (120 in) from accessible means of egress and exposures (such as buildings, public ways, and hazards not associated with electrical grid infrastructure as defined by the clearance requirements in the International Fire Code and NFPA 855).
- Any installation that requires clearances of less than 3050 mm (120 in) to accessible means of egress or exposures may require a freestanding fire barrier per requirements in the International Fire Code and NFPA 855.

4.2.4 Fencing and Barriers

Megapack shall be installed in a manner that deters access by persons who are not qualified. When deterring access, fences, screens, walls, or other barriers no shorter than 2.1 m (7 ft) in height are suggested. The distance from any barrier to the equipment shall match the clearance requirements listed in *Megapack Clearance on page 84*, or as noted per the exceptions below. Associated access points shall be locked and posted with a placard stating "Authorized Users Only," or similar. If applicable, see 2021 IFC 1207.4.9.

Exception: If the installation is located within a property that already contains perimeter barriers to prevent unauthorized public access, additional barriers might not be required.

4.3 Delivery Considerations

A Megapack unit is a large, overweight load. In order to prepare for successful delivery, all relevant routes and zones must be capable of supporting the loaded Megapack delivery vehicle. Refer to *Mechanical Design on page 66* for details on the estimated equipment gross weight of the Megapack unit.

Tesla recommends that a ***site movement and crane unloading plan*** be created as part of the design process prior to construction. Reach out to Tesla for more information about creating this plan.

For delivery checklist and process flow across responsible parties, refer to the *Megapack 2 XL Transportation and Storage Guidelines*.

Ensure that the installation contractor prepares for day-of-delivery access as specified in *Preparing for Installation on page 127*.

CAUTION: Failure to follow the recommended guidelines may result in damage to delivery vehicle or Megapack.

NOTE: Tesla is not responsible for unloading Megapack. The installation contractor together in consultation with the site designer shall provide a site movement and crane unloading plan.

NOTE: Failure to meet these requirements can lead to project delays.

4.4 Service and Maintenance Considerations

To service Megapack, Service Providers will require frequent access to the site and to the Megapacks themselves, over the full duration of the project's life. Routes and zones at the site must allow for year-round access, including for support of all vehicles as designated by the site's engineer of record. Refer to *Routes and Zones on page 72* for more information.

NOTE: For installations not at grade, owners must provide the ability for Service Providers to safely service Megapack and the Tesla System Controller. A written agreement must be approved by Tesla before commissioning for installations not at grade.

4.4.1 Megapack Access

- The Service Provider must be allowed to have the ability to remove any locks preventing access. Refer to *Megapack Door Security on page 126* for information on securing and locking doors while retaining Service Provider access.
- You must keep the doors of all enclosures free of all obstructions such as snow, sand, and blown debris during system operation. With any concerns, contact Tesla during the site design phase.
- You must ensure the area in front of each Megapack can support any of the vehicles described in *Typical Vehicles on page 79*.

5 Electrical Design

5.1 Interconnection Data

The inverter modules in Megapack are current-limited sources. Refer to the *Megapack 2 XL Interconnection Data* publication for additional information

Table 43. Interconnection Data

Specification	Value
Max Continuous Output Current	Factory-configurable
Overload Capability	120% of rated current (10 s max)
Nominal Voltage	480 V AC (configurable)
Output Voltage Range	422-552 V AC
Nominal Frequency	50 or 60 Hz (configurable)
Frequency Range	45-66 Hz
Phases	3
Configuration	3-wire, Wye **Note:** Grounded Wye required at transformer secondary
Full Load Efficiency	98.3%
California Energy Commission Weighted Efficiency	98.5%
Power Factor at Full Load	> 99%
Power Factor Range	-1 to +1
Total Current Harmonic Distortion (THD)	< 5% (at real power capability)
Power Regulation Accuracy	< 2%
Overvoltage Category	Category III up to 3000 m
Maximum Supply Fault Current	85 kA_{rms}

WARNING: In order to operate, Megapack requires a solidly grounded circuit such that the line-to-ground nominal voltage does not exceed 300 V AC.

NOTE: The per-unit short circuit current in the case of a three-phase-to-ground bolted fault is 1.2 per unit.

Table 44. Grid-Forming Additional Electrical Specifications

Specification	Value
Total Voltage Harmonic Distortion (THD)	< 8% (Individual Harmonic: Max 6%)

5.1.1 Peak Power

The 2-Hour Megapack can be requested to be configured by Tesla to discharge for up to one hour at higher power than its real power capability (kW) and apparent power capability (kVA) by enabling Peak Power Mode. Megapack must be configured by Tesla for Peak Power Mode to be available.

To understand the peak apparent power capability and peak real power capability when Peak Power Mode is enabled, refer to the *Megapack 2 XL System Specification*.

5.2 Megapack Wiring

5.2.1 Wiring Interface Summary

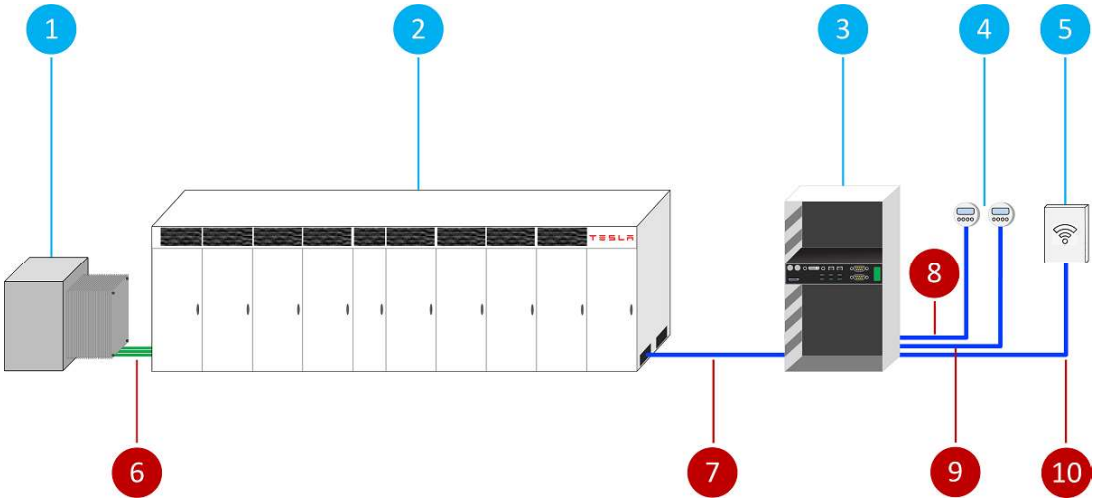
Megapack requires power and communications wiring between system components and to the site's main AC panel. The table below summarizes the wiring interfaces needed. All materials are supplied by the contractor.

Table 45. System Wiring Interface Summary

From Equipment	To Equipment	Wiring Interface	Minimum Conduit Size
Megapack	Controller or field network enclosure	Communications cable (see *Communications Cable Requirements on page 92*)	N/A
		DC power conductors (for communication control power or microgrid applications)	N/A
	Grid interconnection	AC power conductors (3-phase and ground)	N/A
Controller	AC power supply	AC power conductors (2-phase and ground)	25 mm (1 in)
	Meters	Communications cable (see *Communications Cable Requirements on page 92*)	25 mm (1 in)

An example interface plan is shown below:

Figure 58. Example Wiring Interface Plan



1. Transformer
2. Megapack
3. Tesla System Controller
4. Meters
5. Customer communications
6. AC power conductors between Megapack and transformer
7. Communications cable between Megapack and Tesla System Controller
8. Communications cable from Tesla System Controller to site meter as applicable
9. Communications cable from Tesla System Controller to battery meter
10. Communications cable from Tesla System Controller to customer communication interface

Each Megapack requires a 3-wire circuit (3 phases, ground) connection, terminated according to the instructions in *Wiring the AC Conductors on page 135*. If equipped, you may use the external ground interface, available on some Megapack units as indicated below:

Figure 59. External Ground Interface (If Equipped)

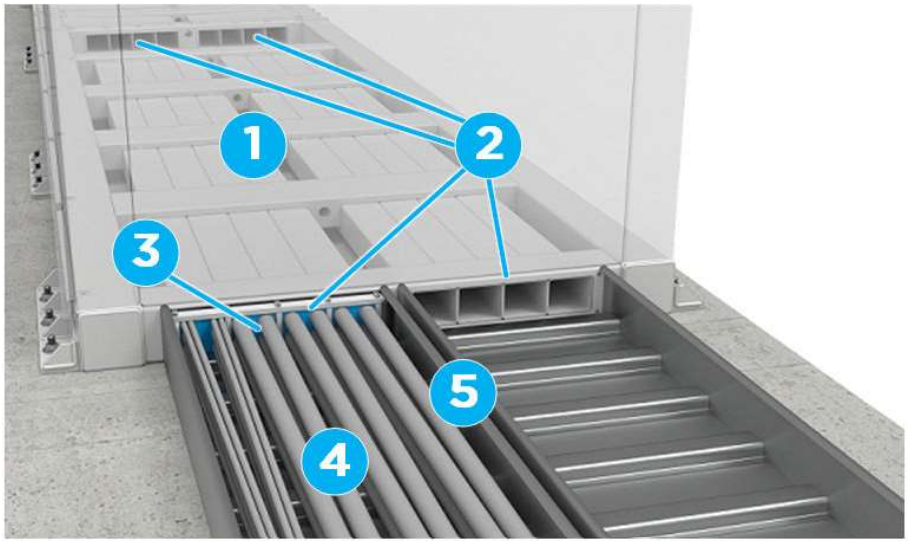
Conductors enter Megapack via the above-ground wireway, and terminate on the AC bus bars (*AC Bus Bar Area on page 112*) in the Customer Interface Bay.

Megapack is designed with two above-ground wireways through which to route AC cabling to LV transformer termination and communications cabling. The wireways do not require any site trenching construction. Each wireway runs from each side of the Megapack into the AC bus bar area in the Customer Interface Bay. Circuits using wireways must be designed and installed in accordance with local code. For more information on wireway design, refer to the *Application Note: Megapack Integrated Wireway*. For more details on wireway dimensions, refer to the *Megapack 2 XL Layout* drawings in the *Megapack 2 XL Drawings* package.

Table 46. Wireway Opening Dimensions

Enclosure Variant	Width	Height	Channel Width
-C variant	410 mm (16 ¼ in)	96 mm (3 ¾ in)	NA
-D variant	502 mm (19 ¾ in)	96 mm (3 ¾ in)	4 channels, 121 mm (4 ¾ in)

Figure 60. Megapack Integrated Wireway (-D Enclosure)



1. Two four-channel (single-channel in the -C enclosure) wireways, integrated into the Megapack base
2. Wireway openings
3. Roxtec seal in the wireway opening
4. AC power conductors or other cables such as communications cables
5. Two cable trays

5.2.2 Communications Cable Requirements

Communications wiring for the battery system requires special attention to network cabling. Follow the requirements in this section when wiring communications between any components of the system.

5.2.2.1 Cable Specification

Observe the following minimum required or recommended cable specifications:

Table 47. Communications Cable Specifications

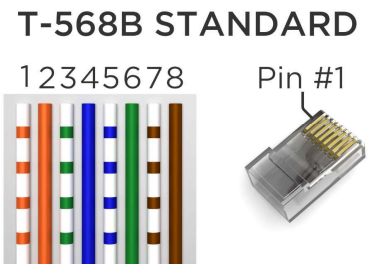
Specification	Required	Recommended
Ethernet Standard	Cat 5e	Cat 6a
Outer Jacket	Outdoor-rated (UV stable)	Direct burial
Shielding	Yes	Yes: F/UTP

Specification	Required	Recommended
Voltage Rating	600 V	600 V
Maximum Circuit Distance (If exceeded, consult the *SCADA Design Manual* or project designer.)	100 m (330 ft)	75 m (250 ft)

5.2.2.2 Connection Specification

Communications cables must be terminated according to the T568B wiring standard.

Figure 61. T568B Wiring Standard



In addition, ensure the following for proper cable termination:

- Crimp with the tool and forming die that match the connector used
  - Tesla recommends pass-through style RJ45 connectors (such as EZ-38 or VDV826)
- Use **metal** connectors into the network switch
- Use **plastic** connectors into the battery system
- Use strain relief on both ends
- Test all cables with a LAN tester prior to connecting

Figure 62. Metal (1) and Plastic (2) Ethernet Connectors

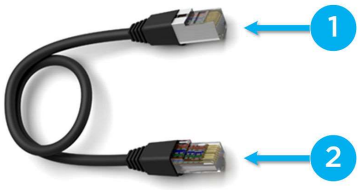


Figure 63. Ethernet Cables with Metal Connectors into the Tesla System Controller Network Switch

5.2.3 AC Power Requirements

Dedicate a separate 3-phase circuit for each Megapack. Tesla requires copper or aluminum conductors with a minimum insulation temperature rating of 90°C. For details on the bus bars provided to connect the circuit to the Megapack, see *AC Bus Bar Area on page 112*.

NOTE: Each Megapack's power rating is displayed on its label (see *Megapack Labels on page 21*). The contractor and engineer of record are responsible for sizing conductors accordingly.

Provide an equipment grounding connection for each power circuit. The grounding conductor size depends on local requirements and the Megapack AC circuit breaker rating.

CAUTION: All conductors, including the grounding conductor, must consider Megapack's IP66 enclosure rating (*Enclosure on page 16*) and obey this level of protection against water ingress. Consider jacketed conductors, as bare metal conductors may not be able to maintain this rating.

CAUTION: If an equipment grounding connection is not provided as part of the power circuit, an appropriate low-resistance ground fault path must be supplied. This solution must be compliant with local requirements and reviewed by Tesla.

Megapack does not require a separate auxiliary power circuit. Megapack auxiliary load – power drawn from the grid and/or battery modules to support the Megapack internal controls and thermal management loads – is supplied through the Megapack AC bus bars.

5.2.4 Uninterruptible Power Supply

Below are the options when designing backup power, such as an uninterruptible power supply (UPS), for a microgrid or for the Standard Tesla System Controller Enclosure (see *Standard Tesla System Controller Wiring on page 95*). Contact your Tesla project engineer for more information about backup power design.

1. **Customer-provided DC power –** Customers can provide a 24 V DC UPS that terminates into the 24 V DC redundancy module in the Standard Tesla System Controller Enclosure.
2. **Customer-provided AC power –** Customers can supply power from a UPS or other backed-up power supply (strongly recommended for microgrids and high-reliability sites). This supply must terminate upstream of the AC transformer in the Standard Tesla System Controller Enclosure. Do not add components to or modify the Standard Tesla System Controller Enclosure.

5.2.4.1 DC Power Requirements

For microgrids and high-reliability sites, a UPS or other backed-up power supply is strongly recommended. If DC power is used, it must be provided at 24 V DC with the wiring circuit designed as specified below.

Wiring Specification:

- Wire length of 45 m or less
- 2 mm^2 [14 AWG]
- Maximum power consumption: 100 W

5.3 Tesla System Controller Wiring

5.3.1 Standard Tesla System Controller Wiring

The Standard Tesla System Controller Enclosure must be powered from a dedicated 120-480 V circuit. Its internal transformer adjusts voltage as required. The engineer of record must design the means and methods of installing this circuit.

Table 48. Standard Tesla System Controller Wiring

Specification	Value
Input Voltage Range	120 V AC +/- 12 V AC 240 V AC +/- 24 V AC 480 V AC +/- 48 V AC
Operating Power Consumption	100 W maximum

To provide an uninterruptible power supply (UPS) to the Standard Tesla System Controller Enclosure, types of power supply are available as described in *Uninterruptible Power Supply on page 94*.

5.3.2 Large Tesla System Controller Wiring

Table 49. Large Tesla System Controller Wiring

Specification	Value	
Large Tesla System Controller (part number 1700130)		
Input Voltage Range	9-48 V DC	
Operating Power Consumption	100 W maximum	
Large Tesla System Controller (part number 1459155-02-A)		
Input Voltage Range	180-310 V DC	100-240 V AC (50-60 Hz)
Operating Power Consumption	450 W maximum	
Large Tesla System Controller (part number 1459155-03-A)		
Input Voltage Range	36-72 V DC	
Operating Power Consumption	450 W maximum	

5.4 Megapack Unit Capabilities

5.4.1 Overload

Megapack is capable of providing an additional 20% current overload for up to 10 seconds when followed by and preceded by a minimum of 10 minutes of operation at rated power or lower. In other words, Megapack can handle one equivalent full overload every 10 minutes if running at 100% current. This is purely a feature of the Megapack hardware.

Overload capability can be configured by Tesla at the customer's request, with an allowed percentage of overload from 0–20%.

5.4.2 Voltage Ride-Through

Megapack voltage ride-through (VRT) settings – high-voltage ride-through (HVRT) and low-voltage ride-through (LVRT) – are adjustable and programmed during the commissioning process to meet IEEE 1547-2018 or IEEE 2800-2022 requirements, and/or to comply with applicable grid code. The curve in *Megapack Non-Cumulative and RMS-Based HVRT and LVRT Capabilities on page 96* specifies the per-unit HVRT and LVRT non-cumulative capability of Megapack. All per-unit (pu) voltages are defined with respect to 480 V AC L-L.*

Figure 64. Megapack Non-Cumulative and RMS-Based HVRT and LVRT Capabilities

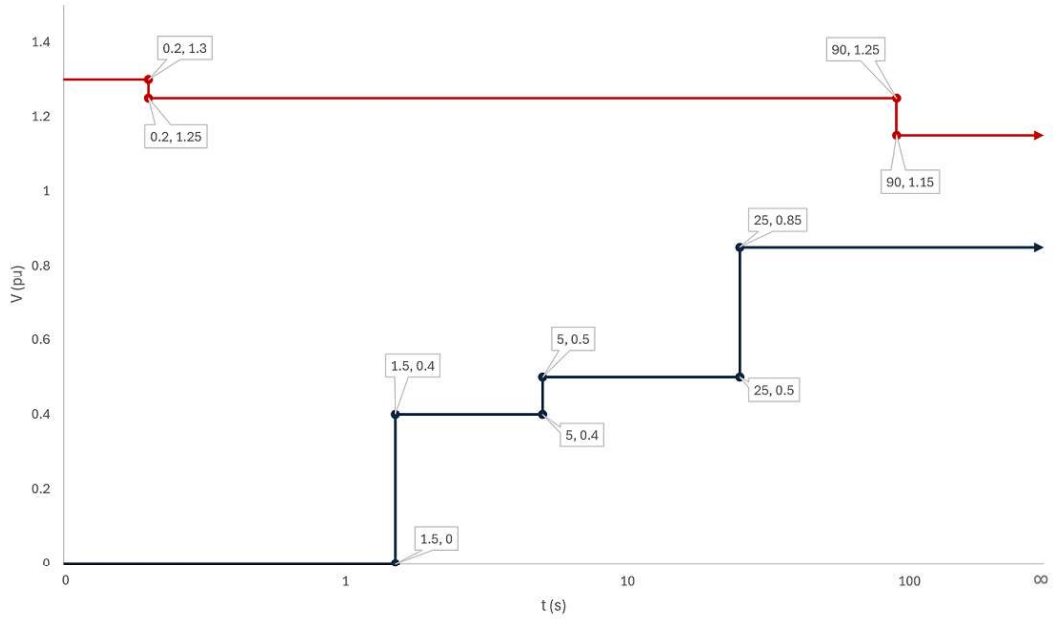


Table 50. Ride-Through Setting Ranges

Parameter	Setting Range	Resolution
Voltage	0.00 – maximum HVRT capability	0.01 pu
Time	0.001 – 60000 s*	0.001 s

** Time allowed at a specific per-unit voltage depends on the nominal voltage rating. Typically, default settings and acceptable ranges are tested as part of a specific certification. For deviations from certified settings in a region, contact your Tesla representative for more information.*

The table below specifies the maximum per-unit overvoltage (OV) withstand non-cumulative capability of Megapack:

Table 51. Maximum Overvoltage Withstand

Parameter	Per-Unit Maximum Value, Nominal Voltage of 480 V AC, Non-Cumulative and RMS-Based
Maximum OV withstand	130% @ 0.2 s

Megapack has adjustable abnormal voltage settings parameters. For details on configuring Megapack to comply with IEEE 1547, refer to *IEEE 1547 on page 99*.

In addition to ride-through capability, Megapack is capable of adding or removing VARs during VRT events to help support voltage regulation during a fault event. K-factor (reactive current support coefficient) adjusts the amount of reactive current supplied to support grid voltage during a fault. This coefficient is multiplied by the per-unit voltage sag/swell to determine the amount of reactive current (up to rated current) supplied to support the voltage. There are separate coefficients for sag and swell. Setting a K-factor to 0 disables reactive current support.

As part of the commissioning process, Megapack can be configured to prioritize real or reactive current during VRT (grid fault) events. Megapack can supply negative sequence reactive current (up to rated current per phase) to support voltage imbalance due to grid faults.

5.4.3 Frequency Ride-Through

Megapack frequency ride-through (FRT) settings are adjustable and programmed during the commissioning process to comply with IEEE 1547-2018 or IEEE 2800-2022 Table 15 requirements, and/or to comply with applicable grid code. High-frequency ride-through (HFRT) and low-frequency ride-through (LFRT) parameters are configurable to the limits of the capability curves shown in *Megapack HFRT and LFRT Capabilities (50 Hz) on page 97* and *Megapack HFRT and LFRT Capabilities (60 Hz) on page 98* below.

Figure 65. Megapack HFRT and LFRT Capabilities (50 Hz)

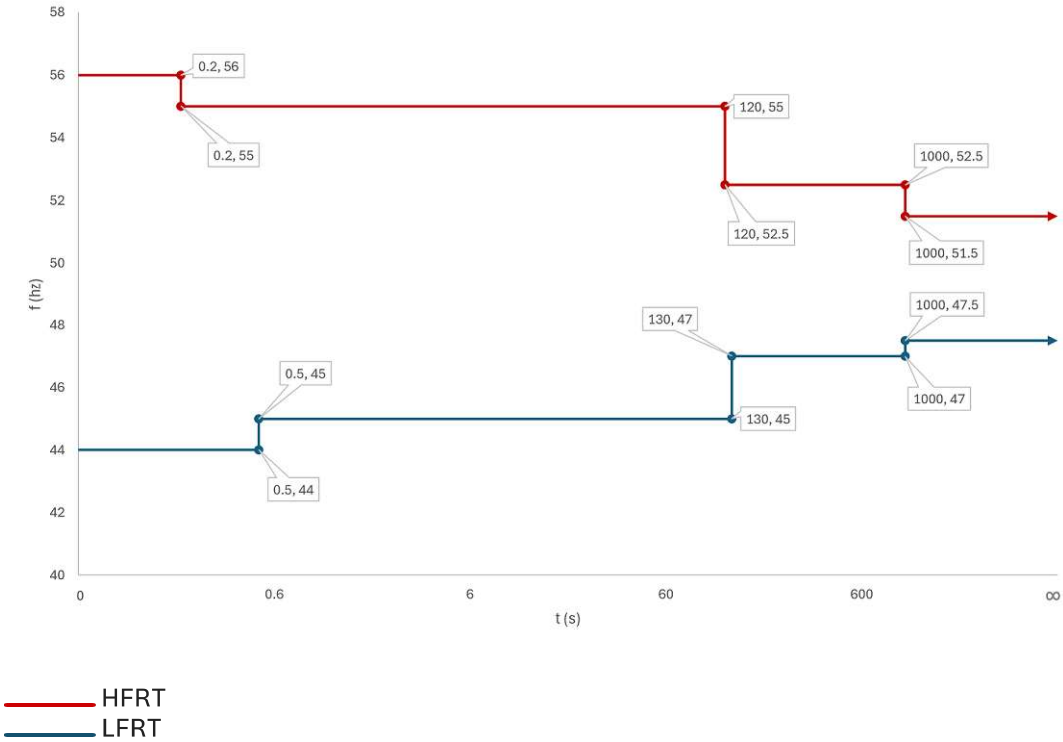
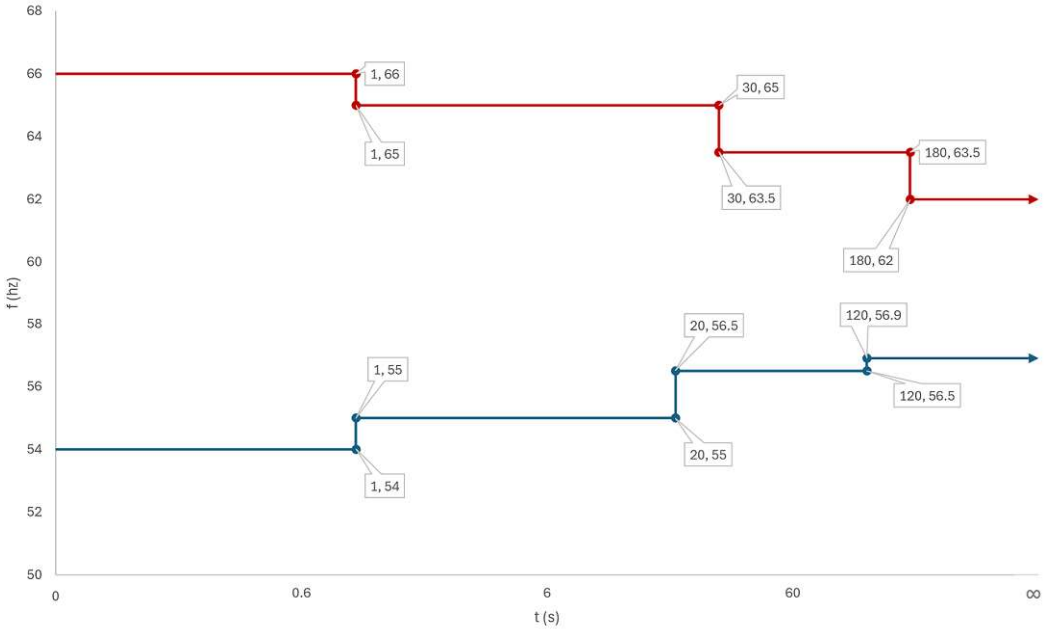


Figure 66. Megapack HFRT and LFRT Capabilities (60 Hz)



HFRT
LFRT

Megapack has three underfrequency (UF) and three overfrequency (OF) trip points and times. These are configured during commissioning to comply with the relevant grid code. The limits and resolution of frequency setpoints are enumerated in *Frequency Trip Point Settings on page 98* below.

Table 52. Frequency Trip Point Settings

Trip Point	Frequency Range	Time (s)	Resolution
UF Trip Time 1 - 3	44 – 66 Hz	0.001-60000	0.01 Hz/0.001 s
OF Trip Time 1 - 3			

5.4.4 Ride-Through Operation Alerts

Megapack exposes four ride-through alerts to the customer interface. A Megapack unit will assert an alert that it has entered VRT or FRT mode when any threshold has been crossed that would, if sustained, result in a Megapack trip. For example, if the HVRT settings were set according to the capability curve in *Megapack Non-Cumulative and RMS-Based HVRT and LVRT Capabilities on page 96*, a HVRT alert would be asserted without delay when voltage exceeds 1.15 per-unit. Underfrequency, overfrequency, and undervoltage alerts will be issued when their respective most-stringent thresholds are exceeded.

To reduce the risk of nuisance alerting, the Megapack unit ride-through alert is asserted when at least 50% of its inverters report that they have entered ride-through. The alert will remain asserted until less than 50% of the inverters are in ride-through.

The *Controls and Communications Manual* contains a list of ride-through points and other DNP3 points provided by Tesla.

5.4.5 IEEE 1547

Megapack meets the requirements of normal performance category B and abnormal performance category II & III of IEEE 1547-2018 IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces. The settings in the tables in this section will enable Megapack to meet the voltage and frequency ride-through requirements of IEEE 1547-2018.

CAUTION: Programming to values outside of the ranges in this section falls outside the scope of IEEE 1547-2018.

NOTE: When in grid-connected mode, Megapack complies with the IEEE 1547 harmonic current distortion requirements.

Table 53. Compliant HVRT Settings

Voltage Range (% of Base Value)	Response Time
Category II	
117.5<V<=120	0.2 s
115<V<=117.5	0.5 s
110<V<=115	1 s
Category III	
110<V<=120	0.083 s - 12 s

Table 54. Compliant LVRT Settings

Voltage Range (% of Base Value)	Response Time
Category II	
65<=V<88	Linear slope of 8.7 s / 1 per-unit voltage starting at 3 s @ 0.65 per-unit
45<=V<65	0.32 s
30<=V<45	0.16 s
Category III	
70<=V<88	20 s
50<=V<70	10 s
V<50	0.083 s - 1 s

Table 55. Compliant FRT Settings

Default Frequency (Hz)	Default Clearing Time (s)	Adjustable Frequency (Hz)	Adjustable Clearing Time Range (s)
>62	0.16	61.8-66	.16-1000
>61.2	300	61-66	180-1000
<58.5	300	50-59	180-1000
<56.6	0.16	50-57	.16-1000

Table 56. Interconnection System Response to Abnormal Voltages

Default Voltage Range (% of Base Value)	Default Clearing Time (s)	Adjustable Voltage Range (% of Base Value)	Adjustable Clearing Time Range (s)
V<45	0.16	0-50	0.16-2

Default Voltage Range (% of Base Value)	Default Clearing Time (s)	Adjustable Voltage Range (% of Base Value)	Adjustable Clearing Time Range (s)
			Response faster than 1 s
45<V<50	2	0–50	2–21 Response faster than 1 s
50<V<70	10	0–88	2–21
70<V<88	21	0–88	21–50
110<V<120	2	110–120	1–13
V>120	0.16	Fixed at 120	Fixed at 0.16

5.4.6 Trip Accuracy

Table 57. Trip Accuracy

Trip Setting	Accuracy
Voltage	+/– 1% of nominal voltage
Frequency	+/– 0.01 Hz
Reconnection time	1% of setpoint
Trip time	.16 s for < 5 s 1% of setpoint for > 5 s
Active power	+/– 5% of apparent power capability
Reactive power	+/– 5% of apparent power capability

5.4.7 Grid-Connected Features

5.4.7.1 Active Anti-Islanding

All systems are equipped with active anti-islanding using the Sandia Frequency Shift methodology. Megapack can autonomously and automatically detect an island condition, in which case it isolates from the grid and reports a trip to the user. Megapack can detect the island condition and trip within 2 seconds of island creation. An island condition is detected even if multiple Megapacks are connected on the same island area.

5.4.7.2 Passive Anti-Islanding

Megapack also optionally includes a rate of change of frequency (ROCOF) trip, which is configurable to site and user requirements. ROCOF is disabled by default, but Megapack detects an island condition and trips regardless of whether or not this feature is enabled. The ROCOF parameters available include:

Table 58. ROCOF Settings

Feature Name	Effect	Setting Range	Default
ROCOF Enable	Turns ROCOF on or off.	n/a	Off
ROCOF Fault Limit	Sets the rate of change required for a trip.	0.1–100.0 Hz/s	1 Hz/s
ROCOF Time Delay	Sets how long the rate of change has to be present for the inverter to trip.	0–1 s	1 s

NOTE: Anti-islanding can be disabled by a qualified Tesla technician or personnel only.

5.4.7.3 Automatic Grid Reconnection

Megapack automatically reconnects to the grid after a serious grid fault event which causes inverter trip. Megapack's configurable settings determine when and under what conditions it automatically reconnects to the grid.

Table 59. Reconnection Delay Timer Default Settings

Feature Name	Effect	Setting Range	Default
Reconnect Time Delay	The amount of time Megapack waits before reconnection, after the grid returns within the frequency and voltage ride-through windows defined above.	0–600 s	300 s
Reconnect Min. Voltage	The minimum voltage at which Megapack interprets the grid is within tolerable conditions.	0–150%	88.33%
Reconnect Max. Voltage	The maximum voltage at which Megapack interprets the grid is within tolerable conditions.	0–150%	105.83%
Reconnect Min. Frequency	The minimum frequency at which Megapack interprets the grid is within tolerable conditions.	44 – 66 Hz	59.3 Hz
Reconnect Max. Frequency	The maximum frequency at which Megapack interprets the grid is within tolerable conditions.	44 – 66 Hz	60.5 Hz

The reconnect voltage and frequency parameters are also used to determine whether it is safe for Megapack to synchronize to the grid upon initial start-up. Megapack has no time delay to connect to the grid after initial start-up.

5.4.8 Island Grid Controls

Megapack is capable of generating an island grid voltage. Its algorithm has been designed to be compatible with generators, renewable energy sources, and other microgrid assets. There are practical and sizing restrictions with microgrids that must be considered during site design.

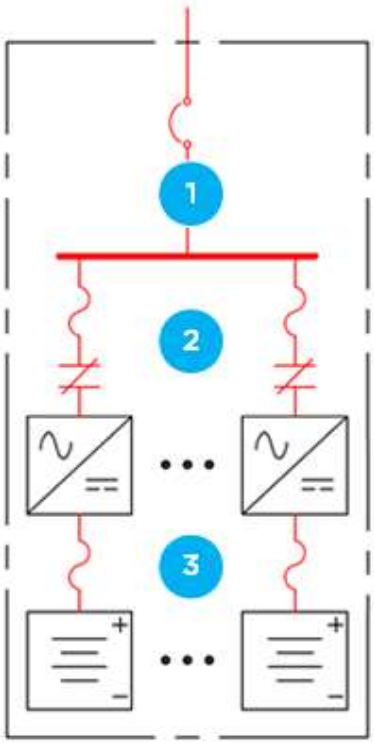
Islanding may require additional hardware. For further design questions on this feature, talk to your Tesla representative.

5.5 System Protection Features

Megapack has both hardware and software system protection features as described in this section.

At a high level, the system is protected as illustrated below:

Figure 67. System Protection Features



1. Megapack AC circuit breaker
2. AC fuse and contactor
3. Battery module fuse

Protection features include:

- **Battery module overcurrent protection:** The battery modules contain DC single-use fusible links.
- **Inverter DC protection:** Each inverter module is equipped with its own high-speed DC disconnect.
- **Inverter AC protection:** Each inverter module is equipped with its own AC contactor and AC fuses.
- **Ground fault protection:** Megapack is provided with a DC ground fault detection system. Megapack measures insulation resistance prior to operation and looks for excessive leakage current during operation. Megapack also contains an AC circuit breaker with ground-fault trip settings. See *Megapack AC Circuit Breaker on page 106* for more information.

5.5.1 Required Protective Studies

While Megapack provides system protection features as outlined above, the system design engineer is responsible for providing Tesla the following information based on site conditions and protection studies for Tesla's review:

- Arc flash calculations showing the available energy at the Megapack AC bus
- Isolating methods plan or switching scheme identifying the order of opening and who is responsible for each step
- See the *Megapack Deployment Checklists* for more information on submitting switching scheme information

5.5.2 Lightning Protection Design

Protection from direct lightning strike: Megapack enclosures have internal frames that act like a Faraday cage, diverting currents to flow around the internal components but not through them to ground. There is no expected significant impact to Megapack functionality due to a direct lightning strike. Hence, air terminations or lightning masts are not required to protect Megapack enclosures.

Protection from indirect lightning strike: Megapacks are designed with adequate power electronic component sizing and creepage clearance in addition to monitored surge protection on the load side of the Megapack breaker. Tests in accordance with IEEE C62.41.2 and IEEE C62.45 demonstrate that internal circuits and components of Megapack are protected from induced overvoltage from indirect lightning strikes. There is no expected impact on Megapack functionality due to an indirect lightning strike.

5.5.3 Electrical Control Plan

An Electrical Control Plan is a document that outlines the design, implementation, and operation of an energy site's electrical system, its hazards, and how any parties on site are expected to control the electrical hazards. For Tesla sites, such plans are required to include control of the battery system's electrical hazards (for example, those detailed in *Electrical Hazard Mitigation on page 20*).

Generally, an Electrical Control Plan may include details on how the site's electrical components, such as inverters, transformers, batteries, and protection relays, are properly integrated and function according to requirements. Such details may be communicated in the plan using wiring diagrams and schematics, operational and safety sequences, fault response, and documentation of compliance with regulatory standards. The Electrical Control Plan is typically provided by the customer's electrical engineer of record, implemented by the installation contractor, and approved by the site owner or operator. It then serves as an electrical safety plan for the site in order to ensure the safety of any parties on site including customer and Tesla parties.

For Tesla systems, the Electrical Control Plan should be created by the site designer or electrical engineer of record, and must include the following key elements:

- **Levels of isolation:** The approved levels (for example, block, feeder, site) at which isolation can be established, and the identified lockout device for each level
- **Control procedures:** Detailed procedures for isolating power supplies, including automatic switching devices and circuit reclosers, particularly at the medium-voltage transformer (MVT) and any interconnect power supplies
- **Responsible parties:** The name of the party responsible for executing each step in each of the procedures
- **Verification of isolation:** Detailed procedures for confirming isolation, such as using open viewing windows or designated testing points
- **Lockout participation:** Description of how Tesla will engage in the owner / operator lockout process, specifically using a group lock box to ensure multiple personnel can secure the system

5.6 Safety Disconnect Features

5.6.1 Megapack AC Circuit Breaker

The Customer Interface Bay contains an AC circuit breaker that can be locked in the open position.

WARNING: Operating the Megapack AC circuit breaker does not completely remove potential electrical hazards from the Megapack unit. See *Performing Lockout/Tagout on page 118* for more information.

5.6.2 Enable Circuit

Megapack includes an internal safety circuit called an *enable circuit* (also known as *HVIL – high-voltage interlock loop*) that isolates all major power components whenever the circuit is opened. Certain factors trigger opening this circuit, including opening bay doors or turning the enable switch (*Enable Switch on page 104*) off. The Customer Interface Bay door is not part of the enable circuit, as it does not provide direct access to high-voltage equipment. The enable circuit does not trip the Megapack AC circuit breaker.

The Megapack internal monitoring system uses the enable circuit to monitor for critical system faults and prevent operation of the Megapack unit if needed. It is not recommended to open a Megapack door during operation.

WARNING: Opening the enable circuit does not completely remove potential electrical hazards from the Megapack unit. See *Performing Lockout/Tagout on page 118* for more information.

Figure 68. Enable Circuit Examples

1. The enable circuit is closed. Megapack is able to operate.
2. The enable circuit is open due to an open bay door that is not the Customer Interface Bay door. Megapack is unable to operate.
3. The enable circuit is open because the enable switch in the off position. Megapack is unable to operate.

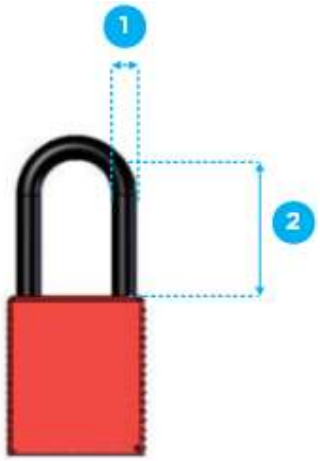
5.6.3 Enable Switch

The customer I/O area in the Customer Interface Bay includes an enable switch that can interrupt the enable circuit and prevent the system from energizing. This switch is part of the enable circuit, and provides a lockable isolation point for procedures that involve actively working inside Megapack. It is the recommended customer interface to the enable circuit. When the switch is turned off, the enable circuit is open and the product will not actively operate.

WARNING: The enable switch must be turned off at any time when working inside Megapack. See *Performing Lockout/Tagout on page 118* for more information.

If applying a lock to the enable switch, the lock must observe the specifications indicated below:

Figure 69. Lock Specifications



1. Nominal shackle diameter: 6.4 mm (¼ in)
2. Minimum shackle clearance: 38.1 mm (1 ½ in)

5.6.4 Remote Shutdown Terminals

The customer I/O area in the Customer Interface Bay contains a pair of terminals used to perform a remote shutdown, which commands the inverter to cease operation (isolating the Megapack AC bus from the battery DC source) and opens the Megapack AC circuit breaker. These terminals may be used by the customer to provision an E-Stop button, for example, which can be activated to place the system in a standby state. Refer to *Controlling the Circuit Breaker on page 110* for more information.

NOTE: Remote shutdown is software-driven functionality that may not comply with emergency stop regulations in all locales. Check with the local codes and AHJ before using this functionality to provision an E-Stop button.

5.6.5 Remote Shutdown in Islanding Applications

Systems used in islanding applications may be configured to provide an additional source of power in the absence of utility power. Therefore, an additional means may be required to prevent the Megapack System from creating a hazardous situation by introducing unexpected power to interconnected equipment during emergency response.

Using the remote shutdown terminals or a locally accessible human machine interface (HMI), an E-Stop button shall prevent the connected Megapack unit from providing an additional source of power to interconnected equipment. Tesla strongly recommends the E-Stop be readily accessible to emergency responders.

NOTE: As a best practice, add any E-Stop information to the *Emergency Response Site Information Form* and use that to inform local fire authorities about this functionality at your site.

5.7 Customer Interface

All of the interface customers require for installation, operation, and maintenance is located in the Customer Interface Bay, which contains:

Figure 70. Customer Interface Bay

1. *Megapack AC Circuit Breaker on page 106*
2. *Customer I/O Area on page 111* – where all terminations aside from AC bus bars are made
3. *AC Bus Bar Area on page 112* – where terminations to the site distribution transformer or AC distribution panel are made
4. Wireway openings

Installation procedures within the Customer Interface Bay are described in *Installing Customer Connections on page 134*. Safety disconnect features are described in *Safety Disconnect Features on page 103*.

5.7.1 Megapack AC Circuit Breaker

The Customer Interface Bay contains the Megapack AC circuit breaker, a pre-installed circuit breaker that provides distribution system protection.

NOTE: Additional protection or switching means at the output of the Megapack may be required depending on the jurisdiction. Protection and switching philosophy must be verified by the customer's engineer of record and should comply with regional and local codes.

Figure 71. Megapack AC Circuit Breaker – UL 489

Table 60. Megapack AC Circuit Breaker Specifications – UL 489

Model	UL 489 Siemens WL model with an ETU745 programmable protection unit
Manufacturer Documentation	Siemens Low Voltage WL Circuit Breakers: *https://new.siemens.com/us/en/products/energy/low-voltage/low-voltage-circuit-breakers/wl-power-circuit-breakers.html*→ *UL 489* content
Control Power	A separate power source is not required. While operating normally (above 0% state of energy and not faulted), power is provided by the battery modules. If a separate power source is desired, jumpstart power can also be used.
Button Location	1818 mm (71.6 in) from the base of the Megapack. If the chosen foundation will place these buttons outside of local regulatory height requirements, ensure that another method of compliance is provided (such as raised workstation or remote open/close terminals).
Spring Charge	Megapack comes standard with motor to allow automatic charging of the spring-loaded breaker. The circuit breaker spring may also be manually charged for actuation.
Part Number	• Option code BB02: L2F330WGJAXEACN • Option code BB01: L2F316TGJAXEACN Refer to the unit's label (*Megapack Labels on page 21*) for the option code and the *Megapack 2 XL Option Codes Quick Reference Guide* for more information.

Figure 72. Megapack 2 XL Circuit Breaker – UL 1066

Table 61. Megapack AC Circuit Breaker Specifications – UL 1066

Model	UL 1066 Siemens WA model with an ETU600 programmable protection unit
Manufacturer Documentation	Siemens Low Voltage WA Circuit Breakers: *https://www.siemens.com/us/en/products/energy/low-voltage/low-voltage-circuit-breakers/3wa-power-circuit-breakers.html*→ *UL 1066* content
Control Power	A separate power source is not required. While operating normally (above 0% state of energy and not faulted), power is provided by the battery modules. To view the ETU600 screen, power must be supplied from laptop and/or portable power supply via USB-C port.
Button Location	1818 mm (71.6 in) from the base of the Megapack. If the chosen foundation will place these buttons outside of local regulatory height requirements, ensure that another method of compliance is provided (such as raised workstation or remote open/close terminals).
Spring Charge	Megapack comes standard with motor to allow automatic charging of the spring-loaded breaker. The circuit breaker spring may also be manually charged for actuation.
Part Number	• Option code BB02: 3WA3232-5AF02-2KA5-Z B30+D80+F40+P61+S40 • Option code BB01: 3WA3216-5AF02-2KA5-Z B30+D80+F40+P61+S40 Refer to the unit's label (*Megapack Labels on page 21*) for the option code and the *Megapack 2 XL Option Codes Quick Reference Guide* for more information.

5.7.1.1 Programming the Circuit Breaker

The circuit breaker is pre-configured with default trip settings. **At no point should settings greater than the defaults indicated in the table below be programmed without Tesla's permission.** If settings less than the table below are to be used for additional system protection, these settings may be programmed on-site according to site-specific plans or engineering guidance from the engineer of record. The electronic trip unit (ETU) has configurable settings for LSIG trip functionality – long-time overcurrent protection (L), short-time delayed overcurrent protection (S), instantaneous overcurrent protection (I), and ground-fault protection (G) – and other features as noted below.

Table 62. Default Circuit Breaker Trip Settings – UL 489

Trip Setting	Option Code BB02	Option Code BB01
Frame size	II - (3000 A)	II - (1600 A)
I_n (plug rating) (Uses the same delay as t_r, long-time delay)	3000 A	1600 A
I_r (long-time current)	1 (3000 A)	1 (1600 A)
t_r (long-time delay)	2 sec (18000 A)	2 sec (9600 A)
I_{sd} (short-time current)	1.25 (3750 A)	1.25 (2000 A)
t_{sd} (short-time delay)	0.1 sec (I^2t=On)	0.1 sec (I^2t=On)
I_i (instantaneous current)	1.5 (4500 A)	1.5 (2400 A)
I_g (ground-fault current)	A (100 A)	A (100 A)
t_g (ground-fault delay)	0.1 sec (I^2t=Off)	0.1 sec (I^2t=Off)
Ground-fault toggle switch	ΣI	ΣI

Table 63. Default Circuit Breaker Trip Settings – UL 1066

Trip Setting	Option Code BB02	Option Code BB01
Frame size	II - (3000 A)	II - (1600 A)
I_n (plug rating) (Uses the same delay as t_r, long-time delay)	3000 A	1600 A
I_r (long-time current)	1 (3000 A)	1 (1600 A)
t_r (long-time delay)	2 sec (18000 A)	2 sec (9600 A)
I_{sd} (short-time current)	2.5 (7500 A)	2.5 (4000 A)
t_{sd} (short-time delay)	0.1 sec (I^2t=On)	0.1 sec (I^2t=On)
I_i (instantaneous current)	1.5 (4500 A)	1.5 (2400 A)
I_g (ground-fault current)	A (100 A)	A (100 A)
t_g (ground-fault delay)	0.1 sec (I^2t=Off)	0.1 sec (I^2t=Off)
GF residual (ground-fault detection method)	On	On

5.7.1.2 Controlling the Circuit Breaker

A circuit breaker is either closed, allowing electricity to flow, or it is open, preventing the flow of electricity. Upon fault detection, the circuit breaker will trip to open state to isolate the Megapack. Megapack will only close the circuit breaker if the system has been deemed safe by Megapack firmware, based on the information provided by its status circuits:

- Enable circuit (*Enable Circuit on page 104*)
- Remote shutdown circuit
- Breaker close circuit

Generally, if all three of these status circuits are closed, the Megapack AC circuit breaker will close. Conversely, if any one of these status circuits are open, the breaker will not close.

A Megapack's circuit breaker can be controlled in three ways:

Table 64. Control Method Summary

Control Method	Open Circuit Breaker	Close Circuit Breaker
Manual (*Opening and Locking the Megapack AC Circuit Breaker on page 120*)	Open button	Close button
DNP3 (*Controlling the Circuit Breaker using DNP3 on page 110*)	Point = Open Megapack Breaker	Point = Close Megapack Breaker
Remote (*Customer Interface Board on page 111*)	Remote shutdown terminals	Breaker close terminals

5.7.1.3 Controlling the Circuit Breaker using DNP3

When enabled by Tesla at commissioning, customers can control the Megapack AC circuit breaker on each unit. This feature is only available on the DNP3 interface, not on REST API and Modbus. The Tesla System Controller uses the DNP3 Latch model.

Work with your project engineer while designing the site to understand the ramifications for your project. You can also view the status of the Megapack AC circuit breaker over DNP3. For more information, see the *Controls and Communications Manual*.

Table 66. Breaker Control Points

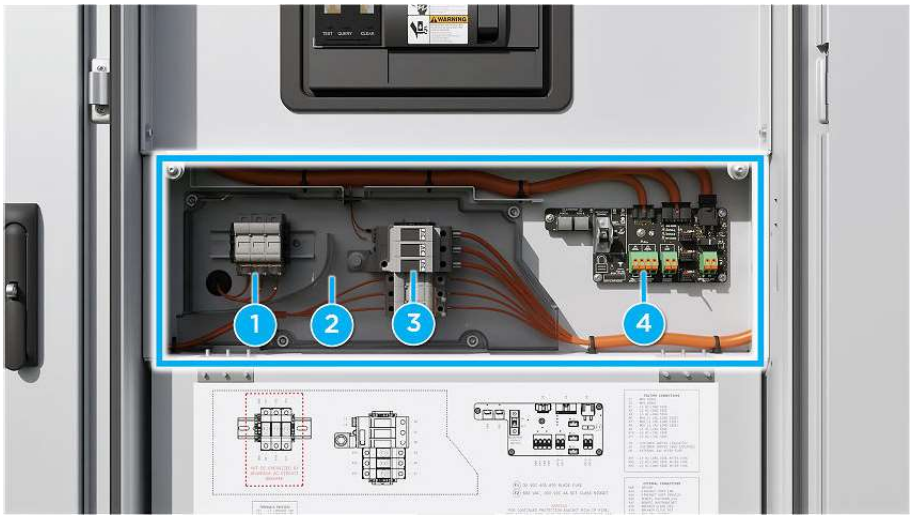
Point Label	Usage
Open Megapack Breaker	Write to 1: Opens the Megapack AC circuit breaker. Must be configured by Tesla at commissioning.
Close Megapack Breaker	Write to 1: Closes the Megapack AC circuit breaker.
Disable Megapack	Write to 1: Brings all battery modules into standby state and brings the thermal HVDC bus down **Warning:** This does not replace the need for operators to follow proper de-energization procedures. Refer to *Performing Lockout/Tagout on page 118* for more information

5.7.2 Customer I/O Area

Each Megapack includes a single customer interface (I/O) area consisting of a wiring compartment inside the Customer Interface Bay. This compartment contains all the necessary non-power connections to be made to the Megapack. The compartment is behind a tool-accessible door and shall only be accessed during operation while following site safety procedures. See *Terminating Auxiliary DC Power Conductors and Communications Cables on page 138* to terminate wiring in this area.

The customer I/O area is partially pre-wired. Only some on-site wiring is needed depending on the project needs as referenced below.

Figure 73. Customer I/O Area Components



1. Line-side (grid-side) tap (see *Performing Lockout/Tagout on page 118*)
2. Touch-safe cover
3. Load-side (inverter-side) tap (see *Performing Lockout/Tagout on page 118*)
4. Customer interface board (see *Customer Interface Board on page 111*)

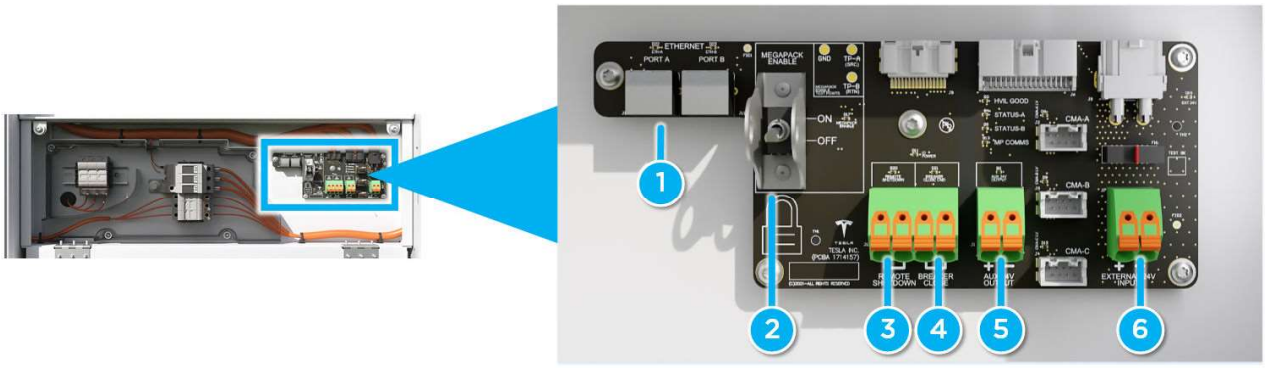
5.7.2.1 Customer Interface Board

The customer interface board contains terminals for Tesla use, terminals for external connections, and the Megapack enable switch.

CAUTION: All terminals in this area should be limited to 24 V. **Do not wire higher voltage in this area.** Wiring higher voltage into this area risks damage to terminals and internal components.

CAUTION: Certain terminals have polarity as indicated on the board. Failure to observe polarity when wiring risks damage to terminals and internal components.

Figure 74. Customer Interface Board Detail



1. **Ethernet ports A (communications) and B (service):** See *Network and Internet Considerations on page 60* and *Terminating Auxiliary DC Power Conductors and Communications Cables on page 138*.
2. **Enable switch:** See *Enable Switch on page 104* and *Performing Lockout/Tagout on page 118*.
3. **Remote shutdown:** A pair of terminals that create an integrated 20 mA DC signal circuit used to enable remote shutdown capability. See *Safety Disconnect Features on page 103* and *Controlling the Circuit Breaker on page 110*.

   These terminals ship with a jumper installed, meaning the circuit is closed by default. Removing the jumper commands a remote shutdown by opening the circuit. Closing the circuit must be done in a manner that mimics a jumper.

   NOTE: Do not apply a wetting voltage, as the remote shutdown circuit cannot share a common/return with other circuits.

4. **Breaker close:** A pair of terminals that create an integrated 20 mA DC signal circuit used to close the Megapack AC circuit breaker. See *Controlling the Circuit Breaker on page 110*.

   These terminals ship without a jumper installed. Installing a jumper will close the circuit and allow the Megapack AC circuit breaker to close, if the Megapack deems it safe to do so. Opening the circuit will NOT trip the breaker. Closing the circuit must be done in a manner that mimics a jumper.

   NOTE: Do not apply a wetting voltage, as the breaker close circuit cannot share a common/return with other circuits.

5. **Auxiliary 24 V DC output:** A pair of terminals used to supply 24 V DC power to external devices. See *DC Power Requirements on page 95* for wiring design.
6. **External 24 V DC input:** A pair of terminals that accept input of 24 V DC. Fused at 40 A. Wiring specification: Maximum 10 AWG (6 mm^2); minimum 100 W power supply.

5.7.3 AC Bus Bar Area

Megapack is provided with three tin-plated aluminum AC bus bars to connect three phases with conductors with a maximum of 1000 MCM (500 mm^2) per connection using NEMA 1.75-in, 2-hole studs, with a maximum pad thickness of 16 mm (⅝ in). Quantities of connections differ per configuration:

- 2-Hour Megapack: Up to 9 connections per phase
- 4-Hour Megapack: Up to 6 connections per phase

NOTE: Per ANSI/NEMA CC 1, the distance between studs is 45 mm (1 ¾ in). For detailed drawings, refer to the *Megapack 2 XL Drawings* on the Partner Portal.

The procedure to connect conductors is described in *Wiring the AC Conductors on page 135*.

6 Transporting Megapack

These sections provide high-level information and warnings about transportation. Refer and adhere to instructions in *Megapack 2 XL Transportation and Storage Guidelines* to ensure safety of personnel and equipment during transit, staging and storage.

6.1 Logistics and Shipping Guidance

The Megapack enclosure is similar to an ISO standard shipping container despite its custom dimensions. Megapack has six compliant ISO 1161-type lifting points called *ISO fittings* for effective rigging and to aid transportation and logistics (see *Megapack 2 XL Drawings* for reference). Megapack arrives on-site on a trailer pulled by a truck, and can be offloaded by lifting from these six ISO fittings. Depending on site constraints and lifting equipment, additional rigging (such as spreader bars and shackles) may be required.

Refer to the *Megapack 2 XL Transportation and Storage Guidelines* for additional details, including guidance on shipping and transportation, packaged dimensions and weights, allowed storage conditions, and shipping guidance for land and sea. Air transportation is not currently possible with Megapack.

Refer to *Emergency Response Guide on page 25* for additional critical shipping information.

CAUTION: Tesla battery systems are subject to specific transportation and storage conditions. Failure to adhere to the conditions listed in the system-specific transportation and storage guidelines may void the warranty.

6.2 Unloading

The installation contractor is responsible for arranging for unloading Megapack at the site (*Roles and Responsibilities on page 8*). Refer to *Megapack 2 XL Transportation and Storage Guidelines* for additional details about the requirements in this section.

DANGER: Do not attempt to load or unload Megapack without reading, understanding, and following all instructions. Failure to use proper equipment and procedures may result in improper loading, severe damage to equipment, and injury or death to personnel.

WARNING: Ensure proper working at heights procedures are followed if personnel need to work on the Megapack roof.

WARNING: When loading and unloading equipment, use suitable lifting equipment and lifting techniques for the weights as specified.

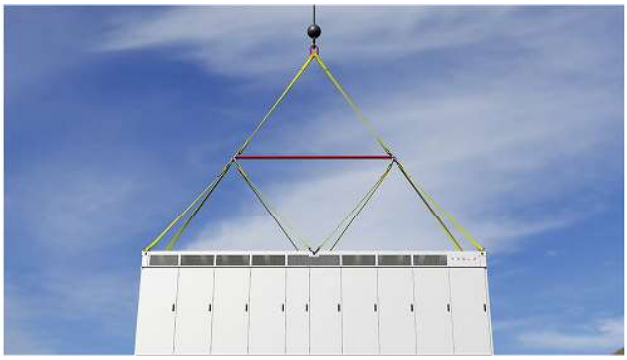
WARNING: Prior to installation, inspect the unit to ensure the absence of transport or handling damage which could affect the integrity of the product. Failure to do so could result in safety hazards. Unauthorized removal of necessary protection features, improper use, or incorrect installation or operation may lead to serious safety and shock hazards and/or equipment damage.

CAUTION: Megapack must be kept upright at all times. Equipment cabinets contain coolant that could leak and sensitive equipment that could become damaged if not positioned upright.

6.2.1 Craning

When lifting by a crane, Megapack must be lifted using all top six (6) ISO fittings ONLY. Straps, shackles, and a spreader bar should be used as deemed necessary by the crane operator.

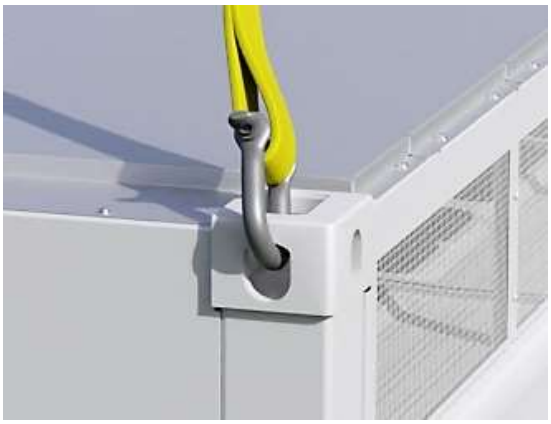
Figure 75. Lifting Using Straps and a Spreader Bar



Some appropriately rated shackles may not fit within the ISO fittings. In this case, crane operators may use straight rather than curved shackles, drop-in ISO fitting lifting adapters such as the Tandemloc 20901AA series, or other appropriately rated devices.

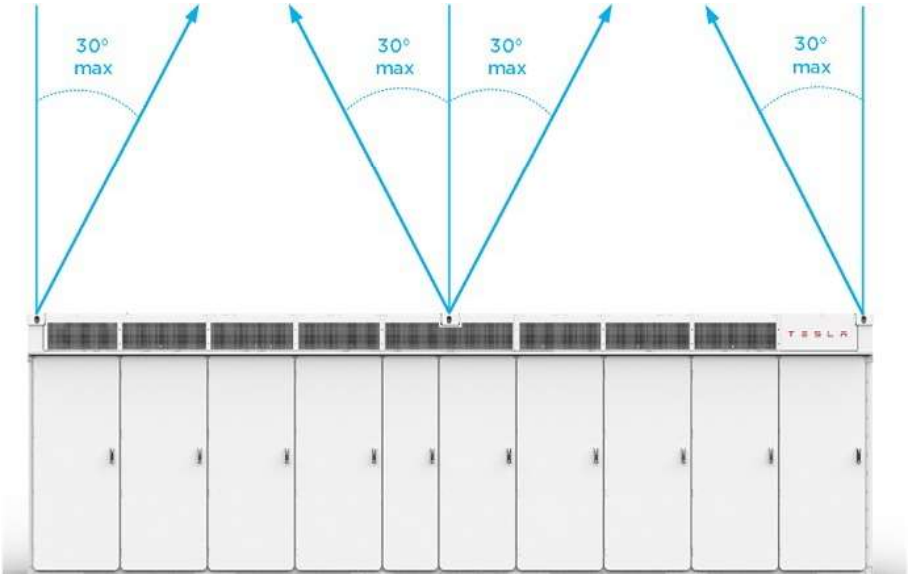
As a best practice, the shackle should be pointed in the upwards direction, as illustrated below.

Figure 76. Shackles Installed in the ISO Fittings in the Upward Direction



Rigging angles from the Megapack connections should not exceed 30 degrees from vertical, as shown in the figure below. Megapack should not be tilted more than five (5) degrees from horizontal at any point during the lifting process.

Figure 77. Rigging Angles



WARNING: Ensure lifting equipment is rated appropriately for lifting and moving Megapack. Use of insufficiently rated/designed equipment will result in failure to move the Megapack properly, and may cause damage to equipment or injury/death to personnel.

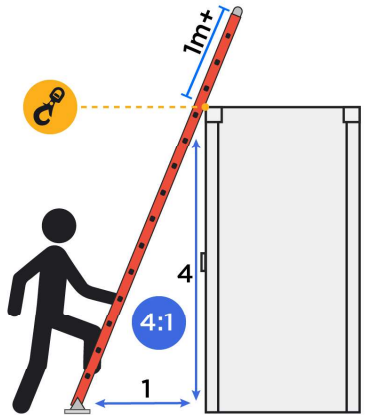
6.2.2 Accessing the Lifting Points

Megapack's ISO fittings are located on the roof of the Megapack unit. Reaching these lifting points requires ladders or other equipment. Lifting points are typically accessed when using a crane to lift the unit directly from the trailer.

When using an extension ladder in order to access Megapack's roof, observe the following guidance:

- The top of the ladder must extend at least 1000 mm (40 in) beyond the top of Megapack, as illustrated below
- The base of the ladder must be secure, with its feet on a firm, level surface
- The ladder must be positioned with a 4:1 ratio in accordance with the 4-to-1 rule
- The ladder should be secured to the Megapack or held in place by a second person

Figure 78. Proper Extension Ladder Placement



6.3 Staging

Schedule Megapack delivery to minimize long-term storage on-site. Refer to the requirements in the *Megapack 2 XL Transportation and Storage Guidelines*.

If short-term storage is required before the Megapack can be installed, refer to the procedure in *Configuring for Short-Term Storage on page 149*.

WARNING: Do not store or operate Megapack in temperatures over 50C (122F).

7 Accessing the Megapack Enclosure

Megapack is an IP66-rated enclosure (*Enclosure on page 16*) and affords high protection against particle and water ingress. This section contains critical information about when and how to properly access Megapack in order to both maintain its high protection rating and to provide a safe work environment.

After preparing site infrastructure and before beginning work on installing Megapack that involves accessing its enclosure, or any time you need to access the enclosure, ensure that all information in this section is taken into account.

7.1 Critical Door-Opening Considerations

Do NOT open a Megapack's doors in any of the conditions below.

CAUTION: Megapack doors should never be opened when it is actively raining or snowing, with no exceptions, to prevent damage to Megapack.

Do NOT Open Megapack Doors When:		
Actively raining or snowing.	Wind speeds 25 MPH or higher. Wind speed must be monitored.	Airborne dust and debris present on site.

CAUTION: When opening a Megapack door, do not force its door handle. Excessive torque could damage the handle. If the handle does not readily rotate, contact Tesla for assistance.

7.2 Performing Lockout/Tagout

If you need to work inside a Megapack, you must first de-energize the unit by performing the lockout/tagout procedure (LOTO). The LOTO procedure for Megapack consists of the tasks below, which must be performed in order:

1. *Isolating Megapack from Upstream AC Sources on page 119*
2. *Opening and Locking the Megapack AC Circuit Breaker on page 120*
3. *Turning the Enable Switch Off on page 122*
4. *Verifying Load-Side De-Energization on page 123*
5. *Verifying Line-Side De-Energization on page 124*

DANGER: Refer to *IMPORTANT SAFETY INFORMATION on page 3* for information on safety warnings and PPE recommendations before beginning any work on Megapack.

NOTE: Only Service Providers shall perform any corrective maintenance within the Megapack.

NOTE: Some equipment isolation can be performed by sending commands using the Tesla System Controller or other SCADA devices. For more information, see the *SCADA Design Manual* or the *Controls and Communications Manual – Tesla System Controller*, or reach out to your Tesla project engineer.

NOTE: When active work is **not** being performed, and AC grid power can be restored to the AC output terminals, Tesla recommends that the enable switch remains **on**.

7.2.1 Isolating Megapack from Upstream AC Sources

Megapack may need to be isolated from upstream AC sources, including other Megapacks, before performing work. Isolating Megapack is required if work is being performed in the AC bus bar area or if the arc flash incident energy values exceed the maximum allowed.

To determine arc flash incident energy, check the arc flash label on the outside of the Customer Interface Bay door (*Providing the Arc Flash Label on page 141*). The arc flash label contains information about expected arc flash incident energy and recommended PPE.

Figure 79. Arc Flash Label -- Danger and Warning Examples

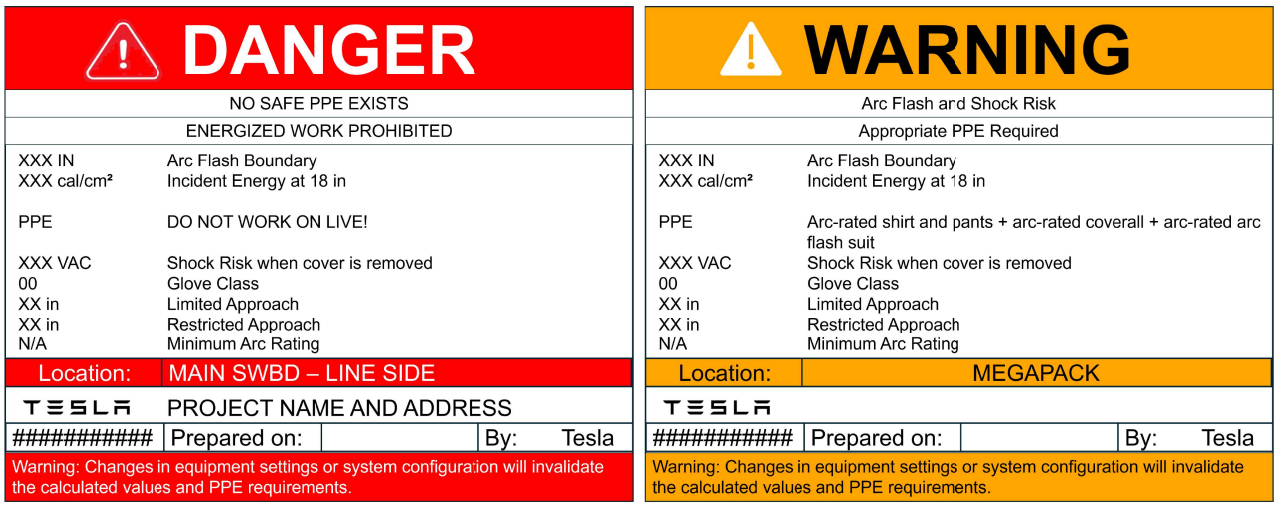


Table 67. Maximum Allowable Arc Flash Incident Energy

All Regions
14 cal/cm^2

If the label specifies either that no safe PPE exists or the arc flash incident energy exceeds the maximum allowed per the table above, you must first ensure that external AC power is removed from the Megapack by opening the upstream AC disconnect before continuing the LOTO procedure.

Customers must employ a protection scheme that does not exceed maximum allowable energy. For recommended protection schemes, refer to the *Application Note: Electrical Protection Architecture*. Customers must adhere to Telsa-required administrative controls when using relays as the protection scheme. For more information, refer to the *Application Note: Medium-Voltage Transformer Relay Program*.

If the label specifies that the arc flash incident energy falls below the maximum allowed, opening an upstream AC disconnect is not required unless work is being performed in the AC bus bar area or if it is required by a Service Provider. Follow the recommended PPE and other details on the label and then continue the LOTO procedure.

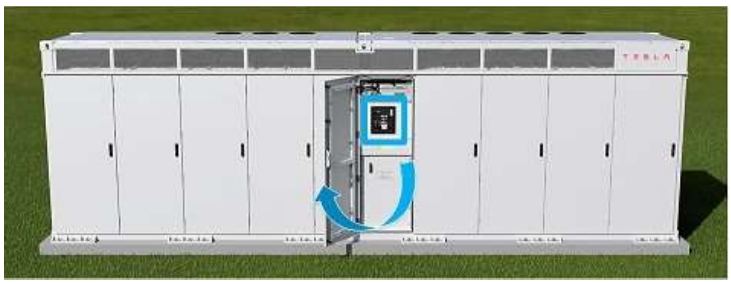
NOTE: Arc flash labels are applied after installation and wiring have taken place. If the AC conductors have not yet been terminated per *Wiring the AC Conductors on page 135*, Megapack does not need to be isolated before proceeding with LOTO.

DANGER: If no arc flash label exists and Megapack has already been commissioned and is operating, all upstream devices must be completely de-energized before work can take place. Contact your site owner or Tesla about the arc flash label requirement.

7.2.2 Opening and Locking the Megapack AC Circuit Breaker

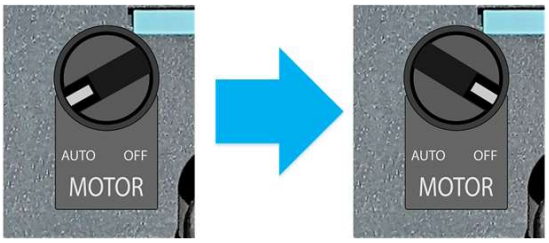
Perform this procedure only after *Isolating Megapack from Upstream AC Sources on page 119*.

1. Assess the steps in *Critical Door-Opening Considerations on page 118* and proceed if conditions allow.
2. Open the Customer Interface Bay door to access the Megapack AC circuit breaker:

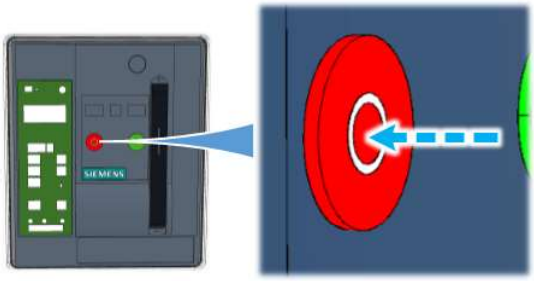


1 – Lock ring. 2 – Motor switch (some models). 3 – Contacts window. 4 – Open button. 5 – Spring-loaded lever.

3. If present, turn the motor switch from **auto** to **off**:

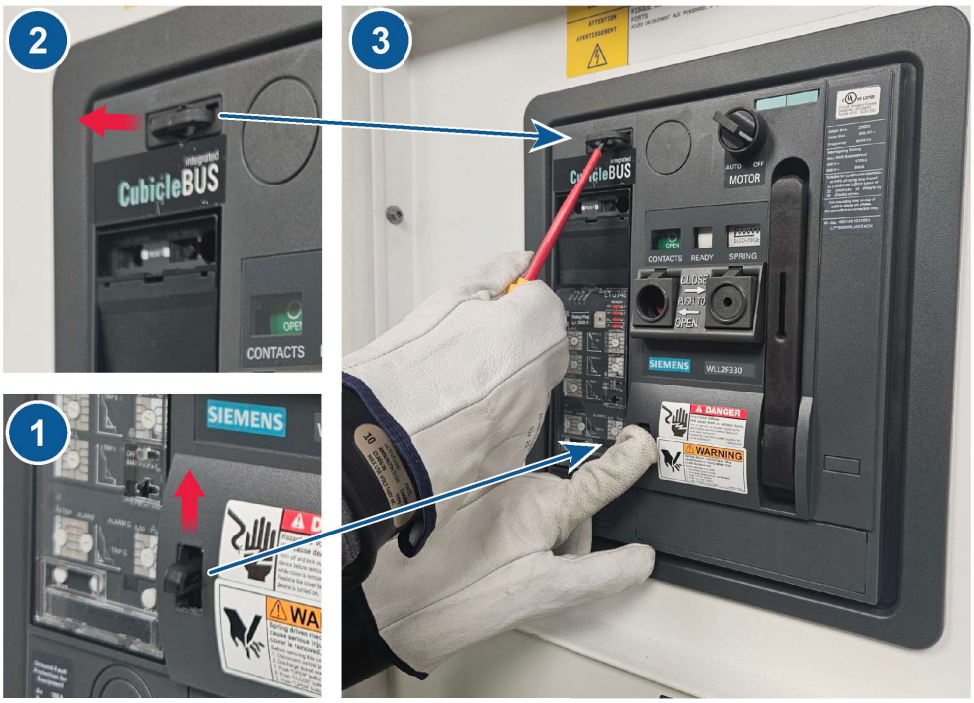


4. Open the breaker by pressing the red open button firmly until it clicks. When the breaker is open, the contacts window displays green and **OPEN**:

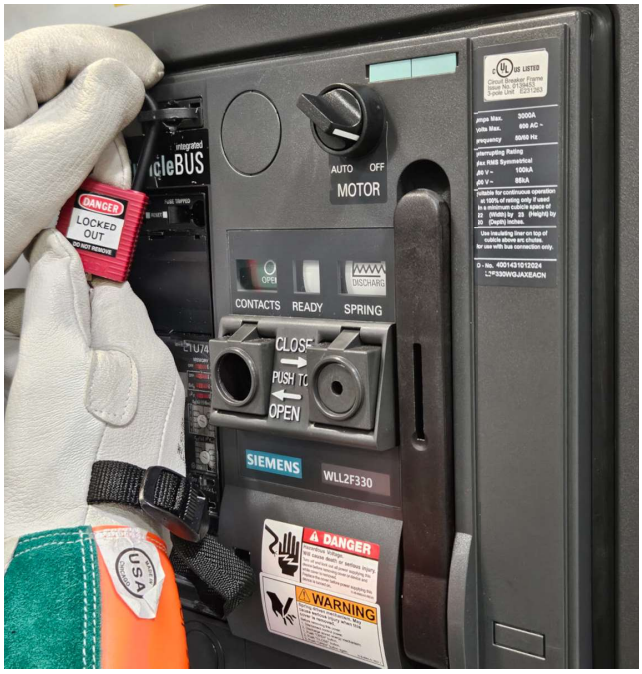


NOTE: Pressing the button manually opens the breaker. You may use other methods to open the Megapack AC circuit breaker (*Controlling the Circuit Breaker on page 110*).

5. Push up on the spring-loaded lever (1) to unlock the lock ring (2), and use a flat-head screwdriver to pull out the lock ring: (3):



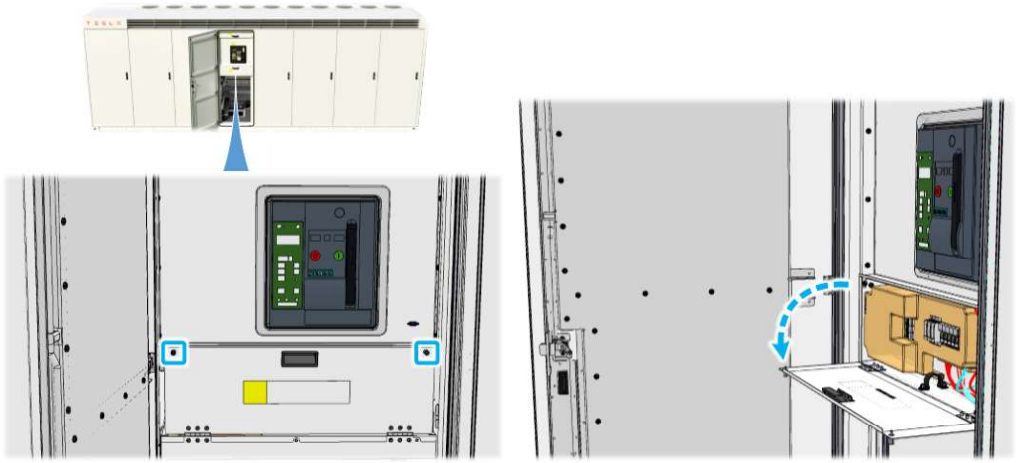
6. Insert the lock and lock it to secure the Megapack AC circuit breaker:



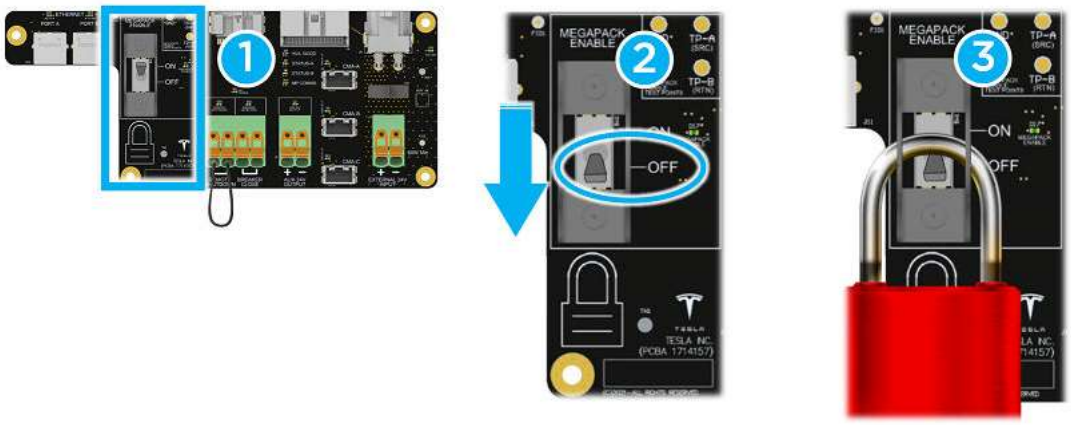
7. If isolation is required per *Isolating Megapack from Upstream AC Sources on page 119* and more than one Megapack is connected to the same circuit or transformer, repeat this procedure for each Megapack.

7.2.3 Turning the Enable Switch Off

1. Use a T30 Torx bit to remove the 2 screws securing the customer I/O area cover to the enclosure. Grab the handle and pull outward, then downward to expose the customer I/O area:



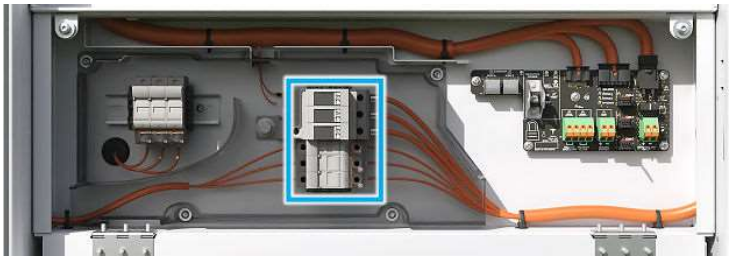
2. The Megapack enable switch is located on the customer interface board (1). Press **down** to turn the enable switch to the **off** position (2), and apply a lock (3):



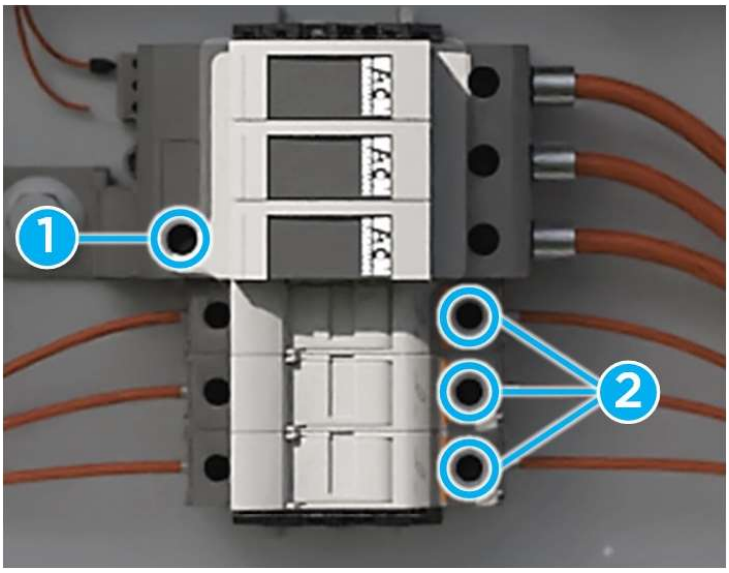
7.2.4 Verifying Load-Side De-Energization

NOTE: This check for dead should only take place after all previous steps were successfully completed.

Check the load-side (inverter-side) voltage in the customer I/O area at the terminals indicated below:



1. Using a CAT IV voltmeter rated for 1000 V AC, first verify the voltmeter on a known live source.
2. Measure AC phase-to-phase and phase-to-ground voltage at the load-side test points as shown below:



1 – Ground. 2 – Phase test points.

3. Confirm that the voltage is 0 V AC.

> **WARNING:** You may initially measure greater than 0 V AC due to residual capacitive energy. Stop and wait five minutes before testing again. **Do not proceed unless you have measured 0 V AC.**

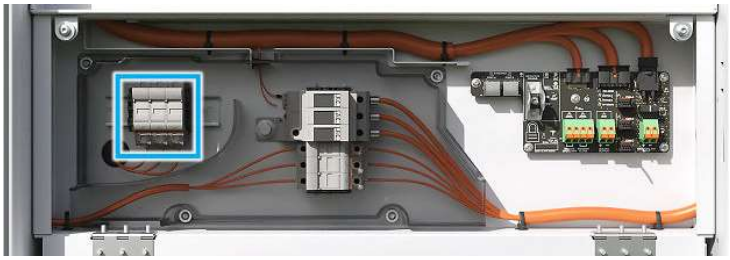
4. Re-verify the voltmeter on known live source.
5. Repeat the above, now measuring DC voltage.

> **NOTE:** You will measure a voltage of up to 50 V DC. This is normal and expected. If voltage above 50 V DC is detected, stop and contact Tesla.

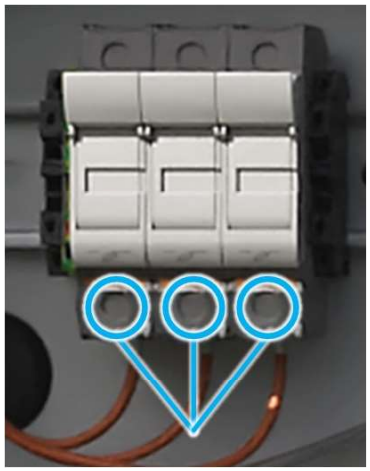
7.2.5 Verifying Line-Side De-Energization

> **NOTE:** This check for dead should only take place after all previous steps were successfully completed.

If isolation is required per *Isolating Megapack from Upstream AC Sources on page 119*, check the line-side (grid-side) voltage at the line-side tap in the customer I/O area:



1. Open the fuse holder for the line-side tap.
2. Using CAT IV voltmeter rated for 1000 V AC, first verify the voltmeter on a known live source.
3. Measure AC phase-to-phase and phase-to-ground voltage at the line-side test points as shown below:



4. Confirm that the voltage is 0 V AC.

   WARNING: You may initially measure greater than 0 V AC due to residual capacitive energy. Stop and wait five minutes before testing again. **Do not proceed unless you have measured 0 V AC.**

   NOTE: If upstream isolation was **not** required per *Isolating Megapack from Upstream AC Sources on page 119*, you may measure a nominal voltage.

5. Re-verify the voltmeter on known live source.

7.3 Accessing the AC Bus Bar Area

The AC bus bar area is located behind the bus bar access panel, which must be removed with a tool using the procedure below.

1. Assess the steps in *Critical Door-Opening Considerations on page 118* and proceed if conditions allow.
2. Lockout/tagout (*Performing Lockout/Tagout on page 118*).

   DANGER: BATTERIES ARE ALWAYS LIVE. Even before installation, any time you are actively working on Megapack, you must take the proper precautions to ensure that you have controlled electrical hazards using the Megapack lockout/tagout procedure.

3. Use a 13 mm socket ratchet to remove the 10 screws securing the bus bar access panel to the enclosure.
4. Remove the bus bar access panel.

5. Wait at least five minutes before entering the AC bus bar area.

CAUTION: At all times when performing work inside the AC bus bar area, leave the access panel off and bay door open.

7.4 Handling Desiccant

The AC bus bar area ships with several large bags of desiccant. Remove the bags while working in the area. After work is complete, return as many bags to the area as possible, and dispose of excess bags normally.

CAUTION: Do not place desiccant bags in direct contact with or secured to the AC bus bars.

7.5 Megapack Door Security

All Megapack doors have the provisions for the use of a padlock. The Customer Interface Bay (*Customer Interface Bay on page 16*), as the primary customer interface for Megapack, is recommended to be locked. The other doors do not need regular access and should remain closed and locked.

NOTE: Access to the Customer Interface Bay may be subject to local codes and regulations.

Installing Locks

Combination locks are shipped with Megapack, either pre-installed on Megapack doors or delivered in the accessory kit (see *Accessory Kit on page 128*). Install these locks to ensure doors are not left open unnecessarily:

- **Set combination to 4585** for coordinated access with Service Providers. Tesla must have ability to unlock doors. If you choose a different combination, advise your Tesla contact in writing.
- For keyed locks, a double hasp is required to allow Tesla access by unlocking Tesla's lock.

8 Installing Megapack

CAUTION: Do not modify the outer enclosures of any Megapack component. Modification of any sort voids the warranty, as well as the certification and UL/NRTL listing provided with the product.

NOTE: For an abridged, mobile-friendly version of the installation instructions, refer to the *Megapack 2 XL Installation Guide*.

8.1 Preparing for Installation

Before beginning installation procedures, the installation crew must validate aspects of site design and ensure that the site is prepared, minimally as described in this section. Always refer to your engineer of record and plans for each specific site.

Table 68. Site Validation

Site Consideration	Task
IP66 Enclosure Integrity	Ensure that installation crew is advised of critical enclosure access considerations (*Accessing the Megapack Enclosure on page 118*) and of enclosure sealing requirements during work (*Sealing the Wireway Openings on page 140*) **CAUTION:** If any evidence of moisture is present inside the enclosure, reach out to your Tesla representative.
Tools and Accessories	Ensure that required tools and accessories are available including *Installation Accessories on page 128*
Foundation	Validate foundation per *Foundation Design on page 81*
Clearance	Validate clearance requirements per *Megapack Clearance on page 84*
Wiring Infrastructure	Inspect the wiring infrastructure as per *Wiring Interface Summary on page 90*. If connections cannot be provided as planned, contact Tesla to discuss alternatives. Tesla must review the non-standard installation before work begins.
Electrical Control Plan	Review the *Electrical Control Plan on page 103*.
Service Accessibility	Validate service accessibility per *Service and Maintenance Considerations on page 88*
Road Condition Requirements	Verify that site roads along the delivery route are in good working order and free of potholes, rutting, washouts, vehicle traffic, and any other surface hazards of concern (*Delivery Considerations on page 87*)
Fencing and Barriers	Inspect fencing and barriers per *Fencing and Barriers on page 87*
Emergency Response Guide	Ensure that the latest revision of the Emergency Response Guide (ERG) is available at the site (*Emergency Response Guide on page 25*)
Compliance	**CAUTION:** Ensure that all installations comply with the appropriate local fire, electrical, and building code requirements.

8.2 Inspecting Delivered Units

Transportation, installation, and operation of the Megapack unit can result in minor or cosmetic imperfections on the unit. Such imperfections are not damaging to the unit and do not usually require remediation. The following table provides guidance to help determine what conditions may be considered minor, what should be considered for remediation, and how to respond.

Table 69. Megapack Imperfection or Damage Classifications

Condition	Classification	Possible Remediation
Imperfections in color or finish, or dirt on the Megapack unit.	Minor imperfection	None required. Customer may wash unit with automotive grade soap or automotive buffing compound for persistent discolorations.
Areas of bare metal less than 25 mm (1 in) diameter in size.	Medium damage	Customer should report to Tesla or remediate using touch up paint (*Touch-Up Paint on page 129*).
Leaking coolant, apparent water ingress, structural damage, mechanical failures.	Major damage	Contact Tesla if not already advised (*Contact Information on page 27*). Tesla to investigate on site or return unit.

DANGER: Refer to the *Industrial Lithium-Ion Battery Emergency Response Guide* for details on response to a hazardous event (*Emergency Response Guide on page 25*).

8.3 Installation Accessories

These accessories are shipped with Megapack and used in the installation process.

8.3.1 Installation Template

This template indicates the anchoring points of a single Megapack for easier anchor hole drilling for either stand-alone or back-to-back configurations. Refer to *Anchoring Megapack on page 130* for further instructions.

Table 70. Installation Template Part Numbers

Enclosure Variant	Part Number
-C enclosure	1807226-00-A
-D enclosure	1807226-00-B

8.3.2 Accessory Kit

Each Megapack ships with an accessory kit in a box inside the Customer Interface Bay (see *Preparing the Enclosure on page 129*). The items inside the kit and what they are used for are detailed below:

Table 71. Accessory Kit Contents

Part Number	Description	Use Case	2-Hour Quantity	4-Hour Quantity
1507926	M12 Bolt	Bolts for attaching lugs to external ground interface	8	8
1531223	M12 Nut	Nuts for attaching lugs to AC bus bars	70	52
1008644	M6 Bolt	Extra bolts for Customer Interface Bay door	2	2
1023878	Padlock	Padlocks for all doors	10	10

Part Number	Description	Use Case	2-Hour Quantity	4-Hour Quantity
1075744	40 A Blade Fuse	Spare fuses for customer interface board	2	2
1493272	Push Mount Cable Tie	Cable ties for harness routing in Customer Interface Bay	10	10
1553361	M8 Bolt	Extra bolts for bus bar access panel	2	2

8.3.3 Anchoring Hardware

Anchor washers ship in an additional box inside the Customer Interface Bay (see *Anchoring Megapack on page 130*).

Table 72. Anchoring Hardware Part Numbers

Part Number	Description	QTY
1531294-00-B	Anchor washers	24

8.3.4 Touch-Up Paint

Each site will be provided with touch-up paint in case of cosmetic damage during the installation process. The paint should only be used on external metal surfaces – do not apply paint to internal components or non-metal components. If damage is observed beyond what the touch-up paint can fix, please contact Tesla.

Table 73. Paint Part Numbers

Part Number	Description
1509391-00-A	Primer
1117378-00-A	Paint

See color information in *Enclosure Colors on page 68*.

8.4 Preparing the Foundation

After preparing the site infrastructure including inspecting the foundation, prepare the foundation for installation, using the Megapack installation template as a guide (see *Installation Template on page 128*).

Many common foundation anchors require a hole to be drilled in the foundation. Depending on the tool used, this may need to be done prior to lifting and placing Megapack (see *Anchoring Megapack on page 130*).

8.5 Preparing the Enclosure

Prepare the enclosure before lifting, positioning, and anchoring Megapack.

NOTE: Refer to *Megapack 2 XL Drawings* on the Partner Portal for exact dimensions.

CAUTION: Megapacks are available in many configurations and can differ based on characteristics such as power or energy rating and weight.

To prepare the enclosure, first locate and validate the enclosure configuration to be installed at the given site location.
The Megapack enclosure is now ready to be lifted and set onto the foundation.

8.6 Lifting and Positioning the Enclosure

Use these instructions to lift and position the enclosure. Follow the procedures in *Megapack 2 XL Transportation and Storage Guidelines* for additional details on lifting and positioning.

CAUTION: Modification of ISO fittings in any way is not permitted.

To lift and position the enclosure:

1. Using a lifting rig and crane, lift Megapack using the top six ISO fittings and locate it over the intended foundation in its designated area.

   CAUTION: Ensure that the lifting hardware has enough clearance to be removed once Megapack is properly positioned. Shackle pins may bind on neighboring Megapack if installed pin-side down.

2. Position the enclosure, taking any required anchor locations into account (see *Anchoring Megapack on page 130*).

8.7 Anchoring Megapack

Megapack may require anchoring to its foundation. If required by site design or the engineer of record, follow these instructions to anchor Megapack.

NOTE:

- Anchors can differ by site and are therefore not provided by Tesla. Stainless steel is required. Hilti KB-TZ SS wedge anchors or HAS-R 304/316 SS and Hilti HIT-HY 200 epoxy anchor system are recommended.
- Anchor washers are Tesla-provided, and are shipped in a box inside the Customer Interface Bay.
- Many common anchors can require holes to be pre-drilled into the foundation before anchoring. Ensure that the foundation has been properly prepared, if so (see *Preparing the Foundation on page 129*).
- Use the *Installation Template* to assist in this process (see *Installation Template on page 128*).
- Refer to the *Megapack 2 XL Drawings* on the Partner Portal for exact anchor and bracket specifications and dimensions.

8.7.1 Anchoring to Foundation

Anchor brackets are flanges welded on to the base of Megapack that can be used to hold it to its foundation. To anchor Megapack to its foundation:

1. Identify the required anchors and anchor brackets per site design, using the Installation Template and images below as a guide.

   CAUTION: Ensure that the Installation Template is thoroughly extended, with its ends pulled tight and the surface smoothed and wrinkle-free.

Figure 80. Available Anchor Brackets (-C Enclosure, -D Enclosure)

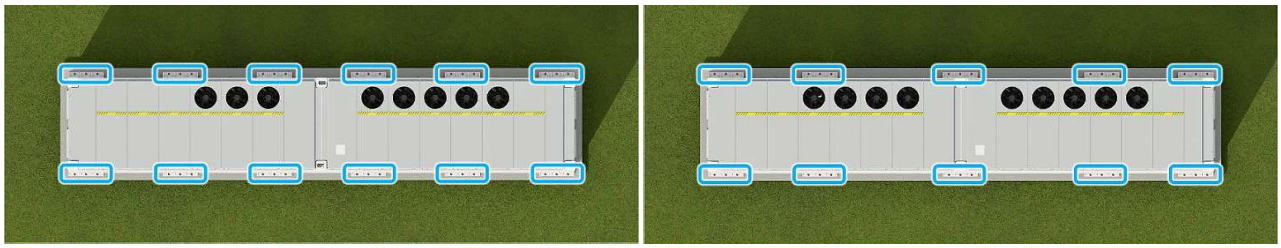
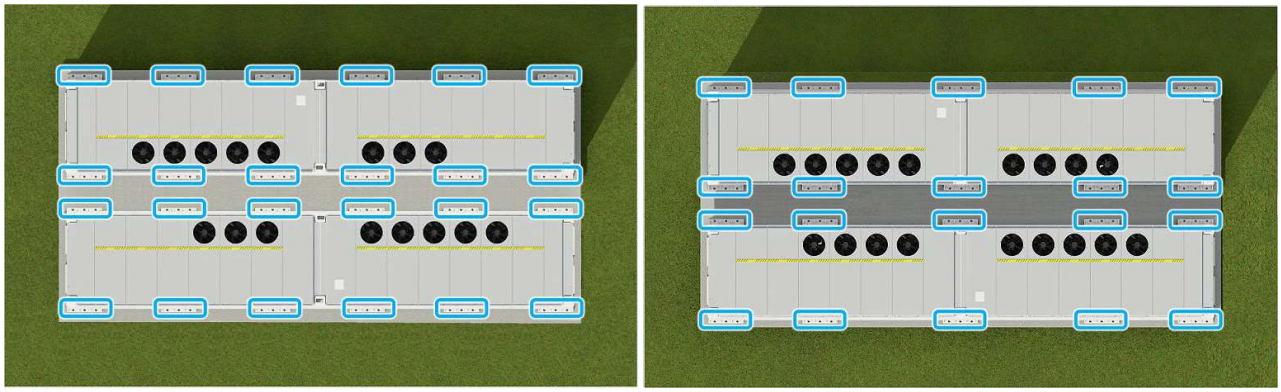
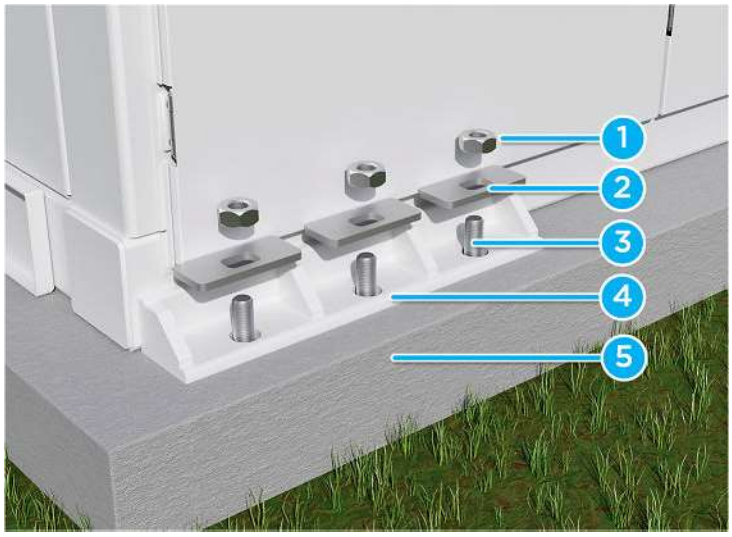


Figure 81. Available Anchor Brackets: Back-to-Back Installation (-C Enclosure, -D Enclosure)



2. Secure the required anchors through the washer, the bracket, and into the foundation:

Figure 82. Megapack Anchoring Detail



1 - Anchor nut (customer-provided); 2 - Anchor washer (Tesla-provided); 3 - Anchor (customer-provided); 4 - Anchor bracket (steel, welded to Megapack); 5 - Megapack foundation. For anchor specifications, refer to *Anchor Requirements on page 83*.

NOTE: Megapack can support up to three anchors per anchor bracket depending on site design.

- For each anchor bracket, ensure that the anchor and anchor washer are secure such that the bracket touches the foundation with no gaps. If a gap is present, the bracket MUST be shimmed to ensure there is no gap.
- Epoxy overflow or other debris can prevent the anchor washer from sitting flush on the anchor bracket. Ensure any debris is chipped away so that the washer sits flush to the bracket:

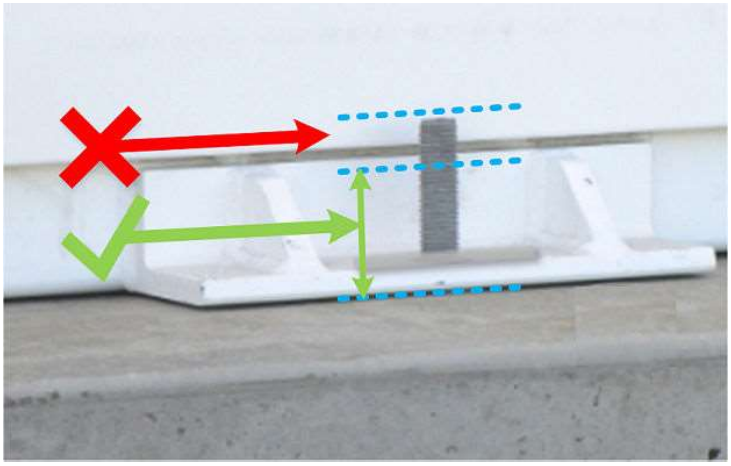
Figure 83. Epoxy Overflow

3. Using the anchor washer (note this washer is eccentric to provide as much mounting tolerance as possible), install and torque the anchor, then leave a paint mark:

   Figure 84. Torque and Leave Paint Mark

   - Ensure that anchor hardware does not protrude greater than 76 mm (3 in) above the foundation surface:

Figure 85. Anchor Protrusion



4. Repeat this process for all required anchors.

9 Installing Customer Connections

All of the wiring and customer connection tasks after installing Megapack take place in the Customer Interface Bay and wireways.

Watch the *Megapack 2 XL - Installing Customer Connections* video (*https://partners.tesla.com/home/content/video/4724*) for more information.

9.1 Preparing the Area

1. Perform lockout/tagout (*Performing Lockout/Tagout on page 118*).
2. Identify the wireway(s) that will be used to route cabling according to the plan of record.
3. Remove the covers for the required wireway(s):
    a. Use a T30 Torx bit to remove the 4 fasteners per wireway cover.
    b. Using a knife, carefully cut the sealant around the edges of the wireway cover.
    c. Using a pry bar, gently pry and remove the wireway cover.
    d. Using a plastic scraper, remove any remaining sealant.
4. Access the AC bus bar area (*Accessing the AC Bus Bar Area on page 125*).
5. Verify that the conduit or conductor wireway is prepared for the circuit conductors, including ensuring that nothing can damage the conductors during work.
    - If applicable, check for sharp edges around the wireway openings in the AC bus bar area by both visual inspection and touch test. **Install protection if sharp edges exist that could damage the conductors:**

9.2 Wiring the AC Conductors

AC conductors route from the medium-voltage (MV) transformer through the Megapack enclosure's wireway openings and into the AC bus bar area. The enclosure and AC bus bar area have wireway openings on either side, with the conductors using the side closest to the transformer.

DANGER: Each Megapack requires a 3-wire circuit (3 phases, ground) connection, and the transformer secondary is required to be a grounded wye.

9.2.1 Terminating the Conductors

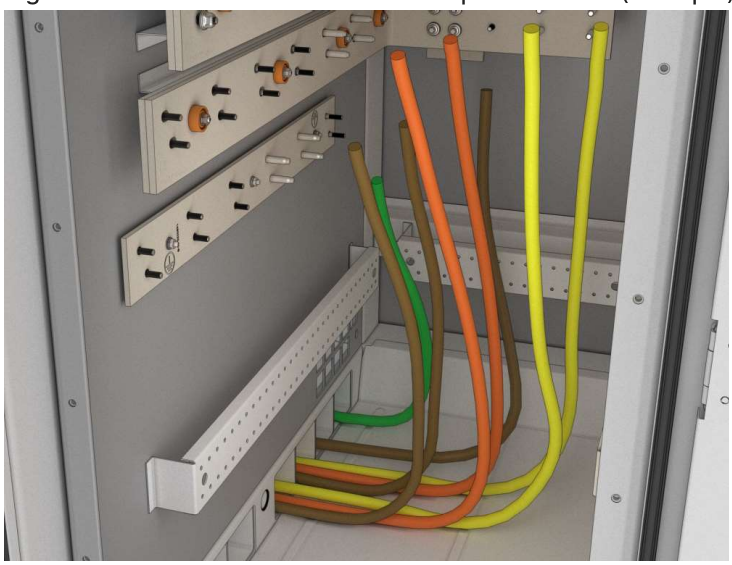
NOTE: Each Megapack accessory kit includes the M12 hardware for attaching the AC lugs to the AC bus (see *Installation Accessories on page 128*).

1. Ensure that the area is prepared (*Preparing the Area on page 134*).
2. Pull conductors through the wireway and into the AC bus bar area.

   NOTE: The example renders in this section depict cables entering the AC bus bar area from the left side, but all procedures and cautions must be observed regardless of entry side.

3. Train the conductors by bending them into a shepherd's hook or gentle bend, where the bend radius is large enough such that the cables will be able to sit flush to the bus bars without using excessive force.

   Figure 86. Conductors Trained into Shepherd's Hook (Example)

   NOTE: Where possible, to prevent strain and reduce installation effort, arrange the conductors to ensure that the bend radii are larger than the minimum specified by the conductor manufacturer.

   CAUTION: Before proceeding, you must ensure that the conductors are trained so that each conductor's lug will land properly on the bus bar studs. Failure to do so may result in damage to the enclosure or bus bar.

4. Trim, strip, and dress the conductors to prepare them for termination. Apply anti-oxide coating to each lug in the Megapack and switchgear if required by the AHJ. Attach the lug to the conductor using an approved connection method (compression lugs are recommended).
5. Precisely align both holes in each lug with both studs on the bus bar. If properly aligned and with as large a bend radius as possible, no more than gentle pressure is required to seat lugs on to bus bars.

Figure 87. Lug Holes Aligned with Studs (Example)

CAUTION: Do not force or use prying tools when seating lugs onto bus bars.

6. Use an 18 mm socket to connect all conductors to the bus bars with the M12 hardware provided in the accessory kit.

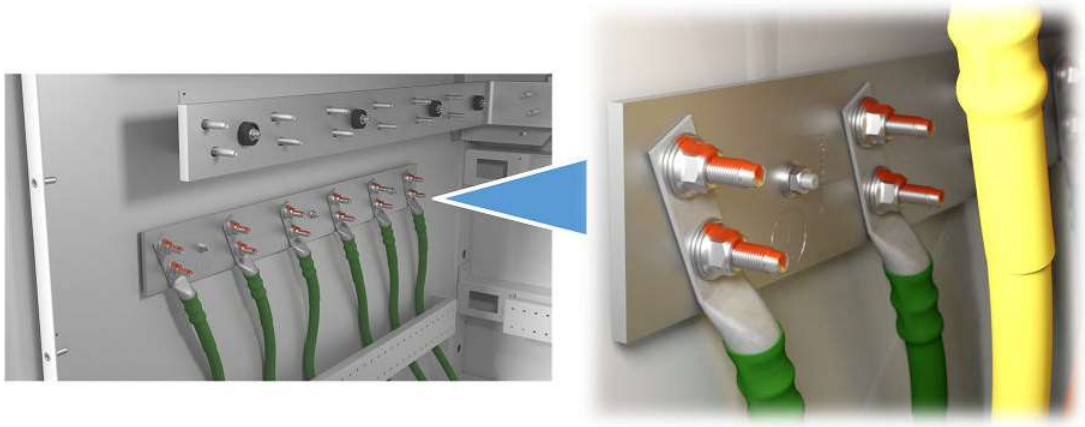
CAUTION: The lugs must be parallel to the bus bars.

NOTE: As a best practice, to prevent galling the bus studs and potentially damaging the Megapack, use of impact drivers or impact wrenches is not recommended.

NOTE: Ground terminations may use the external ground interface, if equipped (*External Ground Interface (If Equipped) on page 91*).

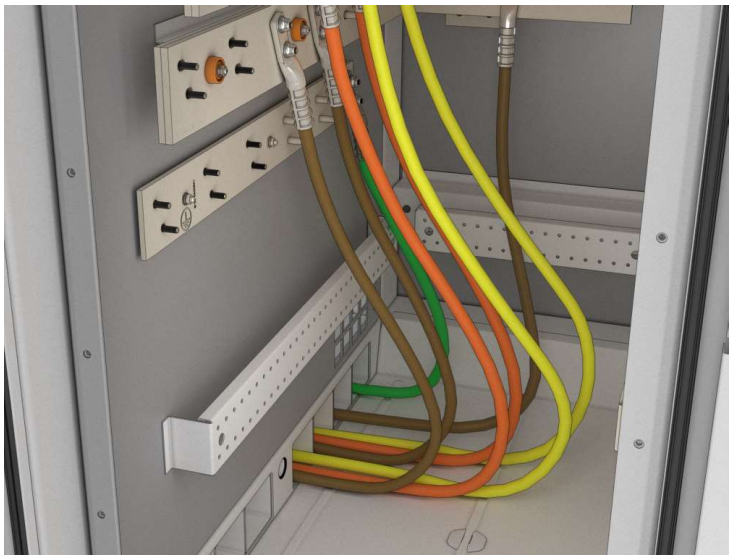
7. Torque all termination hardware to 55 Nm (40 ft lb) and mark each thread and nut with paint pen.

Figure 88. Ground Lugs with Paint Pen Mark (Example)



8. Gently pull on the conductors to verify that there is no bus bar movement and that the conductors are not being strained.
9. Check for a consistent gap between the bus bars and ensure that the minimum electrical clearance between one bus bar and the next bus bar, including fasteners, is at least 13 mm (½ in).

Figure 89. Terminated Conductors (Example)



CAUTION: Megapack output AC voltage is phase-rotation sensitive. All Megapacks at a given site must have the same phase rotation, either clockwise or counter-clockwise.

9.2.2 Checking and Testing

1. Prepare for testing:
   a. Ensure that there is no debris in the Customer Interface Bay.
   b. Verify that the Megapack AC circuit breaker is still locked in the open position.
   c. Secure (close and reattach) the bus bar access panel.
   d. Secure the customer I/O area cover.
   e. Close the Customer Interface Bay door.
2. Proceed to the location where the conductors terminate outside of Megapack, and test:
   a. Verify that the conductors have not been terminated.
   b. Test conductors' insulation resistance at 1000 V with every conductor separated.

      NOTE: Testing one conductor per phase is enough to confirm bus passes insulation resistance.

   c. Perform continuity tests.
3. Terminate the conductors.
4. Check that each conductor is correctly connected to the corresponding utility phase.
5. Perform a grounding resistance test. The system should show:
   - < 1 Ohm between each earth bar and the main system earth bar.
   - < 1 Ohm between the system's exposed metal and the local earth bar.
   - Only one neutral earth bond per system, at the transformer secondary.
6. Open the Customer Interface Bay door if conditions allow (*Critical Door-Opening Considerations on page 118*).
7. Open the customer I/O area cover and turn the enable switch ON on the customer interface board (removing the lock if necessary).

NOTE: If conditions or site-specific requirements do not allow these steps, refer to *Configuring for Short-Term Storage on page 149*.

8. Unless more work is required, close and secure the customer I/O area cover, and close the Customer Interface Bay door.

The AC conductors are now wired and tested. Do not modify the AC conductors without repeating this testing procedure.

9.3 Terminating Auxiliary DC Power Conductors and Communications Cables

Terminate auxiliary DC power conductors and communications cables by following a routing path into the customer I/O area as described below.

Figure 90. Customer I/O Routing

1. Customer I/O area panel
2. Screws securing the panel
3. Customer I/O area
4. Routing path
5. AC bus bar area
6. Wireway openings

To begin these procedures, access the AC bus bar area and customer I/O area:

1. If needed, prepare the area (*Preparing the Area on page 134*).
2. Using a T30 Torx bit, remove the two screws (callout #2) that secure the panel covering the customer I/O area, and open the panel.

To terminate auxiliary DC power conductors:

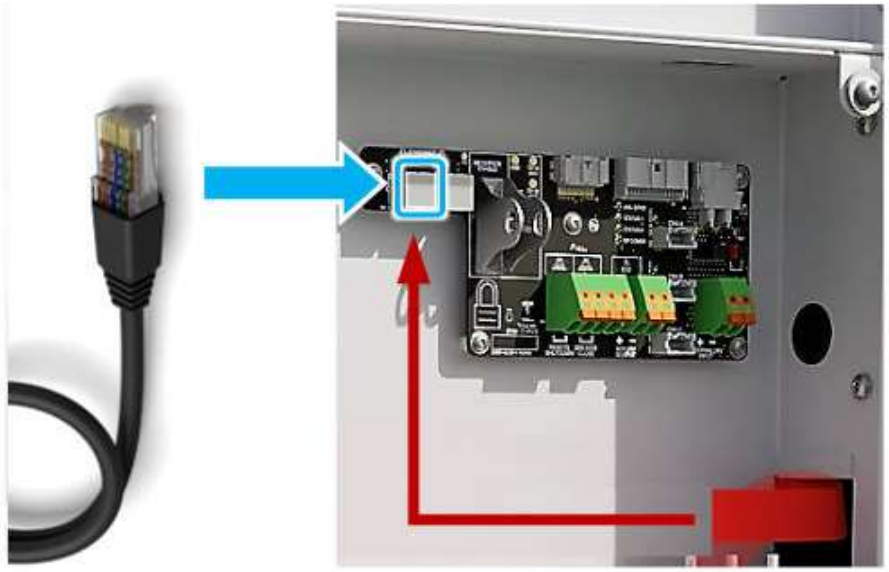
1. Route the cable from the AC bus bar area along the wall as indicated (callout #4).

2. Pull the cable into the customer I/O area (callout #3).
3. Connect it to the desired terminal.

To terminate communications cables:

Tesla requires Megapack to be connected to the Tesla Network along with the LAN 2 port of the Tesla System Controller.

1. Route the Tesla Network Ethernet cable into the AC bus bar area and along the wall as indicated (callout #4).
2. Pull the cable into the customer I/O area.
3. Terminate the cable with a plastic RJ45 connector using an EZ-RJ45 crimp tool or equivalent (see *Communications Cable Requirements on page 92* for more information).
4. Test the connection using a Fluke CIQ-100 tool or equivalent. Leave a paint pen mark on the cable once it passes.
5. Install the cable into the communications port (*Port A*, or the **left** Ethernet port) on the customer interface board (*Customer Interface Board Detail on page 112*).



6. Unless more work is required, secure (close and reattach) the bus bar access panel, secure the customer I/O area panel, and close the Customer Interface Bay door.

9.4 Securing Conductors External to Megapack

Conductors installed in wireway cable trays from the Megapack to the transformer or similar equipment shall be securely bound to prevent excessive movement due to fault-current magnetic forces. The cables must be secured using cable cleats. The engineer of record is responsible for ensuring that the cable restraints are capable of withstanding the fault current magnetic forces during a worst-case short circuit scenario. For more information, refer to the *Megapack Integrated Wireway Application Note*.

9.5 Sealing the Wireway Openings

As an IP66 enclosure (*Enclosure on page 16*), care must be taken to prevent particle and water ingress. At a minimum, this means the following conditions must be observed during the installation process and after installation is complete:

- **Megapack must remain sealed:** While actively working on Megapack, ensure that all Megapack doors are closed and conduit or wireway openings are sealed **before you leave the site each day** to keep the Megapack interior dry and clean.
- **Megapack's interior must remain dry:** Do not perform any work on Megapack that requires opening its doors when there is a possibility of moisture (from precipitation or excess humidity) entering the enclosure.
- **Megapack must remain protected from dust and debris:** At all times when doors are open, ensure that dust or debris of any kind does not enter the enclosure. For example, do not operate a leaf blower near an open door and ensure that doors are closed when wind may blow debris.

WARNING: Failure to properly seal the Megapack openings and enclosure may violate the integrity of the IP66 enclosure and allow moisture, particles, rodents or other objects to enter the enclosure and cause significant damage to equipment.

CAUTION: Some foaming agents such as plumbing foam can degrade conductor insulation and PVC conduit pipes. Ensure all sealants are compatible with site materials.

Depending on the site condition, one or more of the options below may be appropriate to properly seal Megapack wireway openings. Always defer to project-specific sealing details or the engineer of record.

NOTE: Megapack enclosures, including their wireway covers, are made of ferrous materials.

- Reinstall the wireway covers, if they were previously removed.
- If the wireway covers have been modified, ensure that the IP66 rating is maintained using appropriate products before reinstalling.

  NOTE: If necessary, the wireway covers can be replaced using non-ferrous materials.

- If reinstalling the wireway covers is not possible due to construction conditions, temporarily seal the openings using an impermeable membrane and tape until a permanent seal is installed.
- If wireway cover cannot be permanently reinstalled after Megapack construction is completed, install an alternate permanent seal:
  - Seal the wireway openings using a material identified by the sealant manufacturer as compatible with conductors.
  - Ensure that the wireway openings are completely sealed from moisture, dirt, and pest ingress.
- After commissioning, maintain this seal for the life of system.
- **If any of the above is not possible or you have any questions about maintaining Megapack's required IP66 rating, contact your Tesla project engineer.**

WARNING: It is common for there to be a lag in the time between when Megapack is placed on the foundation and when conductors are pulled and terminated. It is critical for the installer to ensure that wireway openings are sealed whenever work is not actively being performed per requirements above.

NOTE: Use a T30 Torx bit for the M6 screws that secure the wireway covers.

NOTE: Photos will be required to be sent to Tesla when completing the *Megapack Deployment Checklists* to verify all Megapack openings are sealed correctly.

9.6 Providing the Arc Flash Label

An arc flash label must be affixed on the outside of each Megapack. The label must be applied to the outside of the Customer Interface Bay door (on the exterior of the enclosure), where it must be clearly visible to personnel prior to opening Megapack doors. The label and the information it records are to be provided by the engineer of record and must reflect the conditions of the AC bus bar area. The label must conform to local requirements and at a minimum must designate:

- Working distance
- Expected incident energy
- Recommended PPE
- Nominal voltage

Figure 91. Example Location of Arc Flash Label

NOTE: Arc flash labels are required for Service Providers to perform any work on Megapack. If the label is not present, Tesla will require Megapack and upstream devices to be completely de-energized before any work on Megapack can take place.

NOTE: Labels must be provided in accordance with local codes and standards, examples of which include:

- NFPA70E & IEEE 1584
- CSA Z462-12
- AS -1319

9.7 Removing the Circuit Breaker Panel

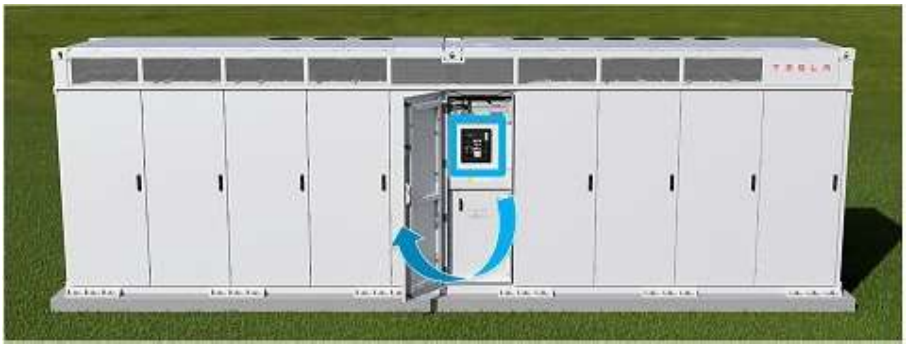
Follow this procedure to remove the panel surrounding the Megapack AC circuit breaker in order to perform field retrofits of breaker components.

WARNING: This procedure requires opening the Megapack enclosure. Only perform this procedure if conditions allow and per guidance in *Accessing the Megapack Enclosure on page 118*.

1. Lockout/tagout, ensuring that all incoming energy sources have been removed (*Performing Lockout/Tagout on page 118*).

2. Open the Customer Interface Bay door to access the Megapack AC circuit breaker area.

   Figure 92. Megapack AC Circuit Breaker in Customer Interface Bay



3. Use a T30 Torx bit to remove the 8 screws securing the circuit breaker panel to the enclosure:

   Figure 93. Removing Circuit Breaker Panel

4. Remove the circuit breaker panel.

10 Installing the Tesla System Controller

To install the Tesla System Controller (*Tesla System Controller on page 17*):

- For systems with the Standard Tesla System Controller, install the Standard Tesla System Controller Enclosure per the instructions in the *Standard Tesla System Controller Enclosure Installation Manual*, then terminate communication wiring per the guidance below.
- For systems with the Large Tesla System Controller, the customer can choose to follow the guidelines of the *SCADA Design Manual* to design and install their enclosure, then also observe the communication wiring guidance below.

10.1 Communication Wiring

For cable requirements, see *Communications Cable Requirements on page 92*.

10.1.1 Terminating Ethernet Cables

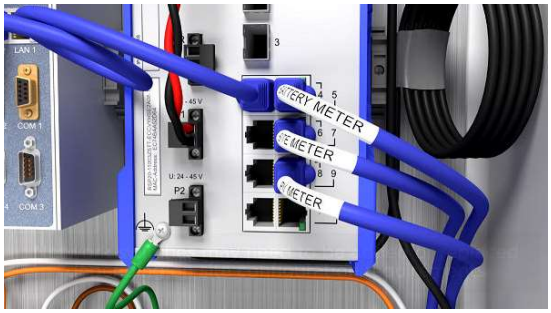
Review the following and set up Ethernet connections and terminations as needed per site requirements.

Both the Standard Tesla System Controller and Large Tesla System Controller provide two Ethernet ports for communication: LAN 1 and LAN 2.

Figure 94. LAN 2 and LAN 1 Ports on the Standard Tesla System Controller

- LAN 1 is typically reserved for connection and communication over the Customer Network.
- LAN 2 is typically pre-wired to a network switch for communication on the Tesla Network.

  Figure 95. Ethernet Connections to the Network Switch



For networking considerations in dual-controller configurations, see *Computer Networking on page 61*.

11 Connecting Energy Meters

These sections provide instructions on connecting energy meters. Energy meters must be provided by the contractor.

Every site requires, at a minimum, a battery meter, but the types and number of meters used vary based on Megapack's intended use. Always verify that the meters being installed match the plan of record for the site. See *Energy Meter Design on page 38* for details on meter hardware.

Failure to install all meters included in the approved plan of record may result in incorrect system performance or inability to meet reporting requirements.

NOTE: Tesla is not responsible for the correct installation of energy meters. The battery system will not operate correctly with incorrect CT installation or wiring to the meters. This is a common point of installation failure and requires careful installer attention.

NOTE: When communication to any of the meters is lost during on-grid normal operation, the system may cease to operate, depending on the control mode, until communication is resumed. If communication is lost, the values reported are the last values read from the meter until communication is resumed.

11.1 Connecting Meters to the Tesla System Controller

Connect a direct line between the meter(s) and the Tesla System Controller per the instructions in *Terminating Ethernet Cables on page 143*.

NOTE: All meters must be connected to the Tesla System Controller using Ethernet cable terminated according to the T568B Wiring Standard (see *Communications Cable Requirements on page 92*.

NOTE: If the site is using multiple external communication devices that use LAN 1 (such as a customer interface, utility monitoring device, or external-network meter), a second Ethernet switch is required. Contact Tesla for details.

11.2 Wiring Voltage Sense Inputs

For each energy meter, tap **all available bus bars**, including neutral if it exists, into the voltage inputs on the meter. Designs vary based on site-specific transformers and meters, so ensure that you follow the guidelines relevant for your site plan:

- **If using potential transformers (PTs):** You should be using a type that has the same number of outputs on its secondary side as the inputs on the primary side. If a neutral bus exists, it should connect to the PT, and a neutral line should flow through to the meter.
- **If the neutral exists (three-phase Wye):** Set the meter's voltage mode to a line-to-neutral type (*Form 9*).
- **If there is no neutral - only three active phases and ground (three-phase Delta):** Set the meter's voltage mode to a line-to-line type (*Form 5*).

Refer to the *Application Note: Using SEL-735 Meters With Tesla Products* for more information.

CAUTION: Failure to follow these guidelines will void any guarantee of accurate readings and accurate power control.

11.3 Wiring Current Transformer Inputs

To wire current transformer (CT) inputs:

1. Use core CTs only.
   Figure 96. Core CT (Example)

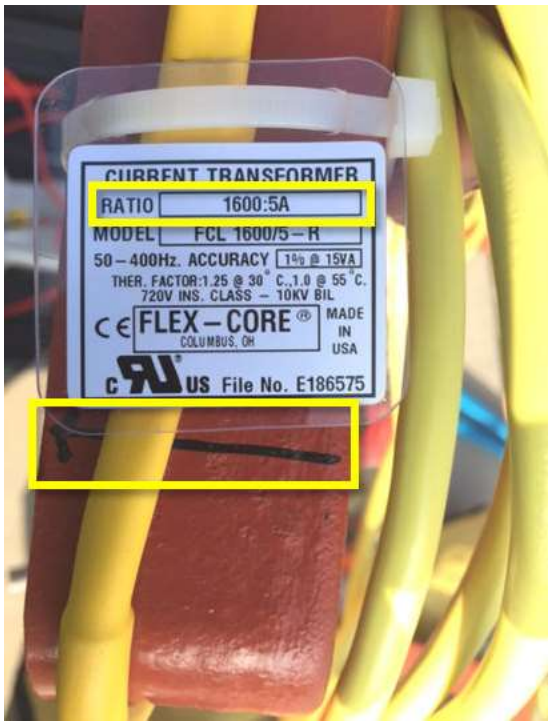
2. Verify that the CTs used match the chosen meter's specifications and the plan of record.

   NOTE: Tesla is not responsible for the correct installation of meters. The system will not operate correctly with incorrect CT installation or wiring to the meters. This is a common point of installation failure and requires careful installer attention.

   NOTE: Tesla is not responsible for the accuracy of the energy meters. Please consult with the energy meter manufacturer in the event of faulty communications from the energy meters.

3. Read the label on each CT to verify the CT ratio and the arrow that indicates the direction of flow. Record each meter's make, model, serial number, and CT ratio on the *Megapack Deployment Checklists*.

Figure 97. CT Ratio and Arrow



4. Ensure each phase's voltage wiring corresponds to the same phase of current wiring, and the positive and negative polarity of each phase are installed correctly to match the design information in *Meter Locations on page 41*.

   NOTE: All meters are phase-sensitive. The battery meter & battery system phase rotations must match.

5. For each meter, perform a resistance check between the positive and negative terminals from each CT:
   - Ensure resistance between each CT pair is ~0 Ohms.

6. On the meter UI, set the CT ratio per the installed CTs and document in the *Megapack Deployment Checklists*.

11.4 Configuring Meters

Once meter installation is complete, refer to the *Application Note: Using SEL-735 Meters with Tesla Products* for details on configuring the SEL-735 meter.

NOTE: Tesla is not responsible for the correct configuration of energy meters. The battery system will not operate correctly with incorrect input parameters.

12 Test Energization

Once the Megapack System has been installed, the site is mechanically complete, and the installation contractor believes the site is ready for first energization, Tesla recommends checking and testing the distribution interface by performing the black start procedure, which energizes the distribution system from the Megapack unit rather than from the grid.

Using this test energization procedure rather than energizing for the first time from the grid mitigates electrical hazards and potential for equipment damage. While grid energization exposes the distribution system to full available fault current, test energization limits fault current to 120% of the Megapack product nameplate current, which allows for electrical equipment to be verified under a lower fault current. At a minimum, equipment tested during this procedure includes:

- Megapack internal 480 V AC connections
- 480 V AC terminations
- Phasing in the AC bus bar area

CAUTION: Energization of the Megapack is not allowed prior to contacting your Tesla representative to discuss this procedure.

CAUTION: Large amounts of available fault current during initial grid energization could lead to equipment damage if there are issues with the components being energized.

13 Energizing, Site Isolation, and Storage

For all procedures, follow the guidelines in the site's *Electrical Control Plan on page 103*. Work with the site owner or operator with any questions related to the Electrical Control Plan.

13.1 Energizing the Megapack

After Tesla has completed the commissioning and initial start-up of Megapack, the system is ready for operation. You should not need to perform extra steps to start the system.

If a Service Provider gives the direction to re-energize a Megapack during installation or after upstream maintenance or short-term storage, the steps below must generally be performed to energize the Megapack.

WARNING: Notify operations and on-site personnel and clear working areas as necessary before re-energizing.

NOTE: These are general steps. The procedure may vary during specific installation or operational phases or at specific sites.

1. Verify that the equipment and area, including the inside of the Customer Interface Bay and AC bus bar area, is clear of tools, materials, workers, equipment, and debris.
2. Secure the bus bar access panel to the AC bus bar area, if it has been removed.
3. Reinstate the remote shutdown contact on the customer interface board, if it had been removed.
4. Turn the enable switch ON on the customer interface board (removing the lock if necessary) and close and secure the customer I/O area cover.
5. Remove the lock on the Megapack AC circuit breaker, if needed.
6. If present, turn the Megapack AC circuit breaker motor switch from OFF to AUTO.
7. Close the Megapack AC circuit breaker (*Controlling the Circuit Breaker on page 110*).
8. Close the Customer Interface Bay door.
9. Close any upstream external circuit breakers that had been opened.

13.2 Isolating the Site from Megapack

Follow the isolation procedures below to prevent Megapack(s) from providing energy to other components at the site.

13.2.1 Isolating a Single-Megapack System

Perform this procedure at sites with a single Megapack:

1. Command an off state using the Tesla System Controller or other SCADA equipment. If the site operator or system owner does not have the means to send commands, contact Tesla (*Contact Information on page 27*).
2. Isolate the Megapack from upstream AC if required (*Isolating Megapack from Upstream AC Sources on page 119*).
3. Open and lock the Megapack AC circuit breaker (*Opening and Locking the Megapack AC Circuit Breaker on page 120*).

13.2.2 Isolating a Multiple-Megapack System

Perform this procedure at sites with multiple Megapacks:

1. Determine whether all Megapacks should be isolated or only one Megapack:
   - If isolating all Megapacks, send the appropriate command using the Tesla System Controller or other SCADA equipment. The appropriate command varies depending on whether this is an on-grid or a microgrid site. If the site operator or system owner does not have the means to send commands, contact Tesla (*Contact Information on page 27*).
   - If isolating only one Megapack, the power commands do not require a change (but a change is permitted if desired).
2. Isolate AC power at the appropriate circuit breaker:
   - If isolating all Megapacks, open the site-wide external circuit breaker or disconnect to remove grid power.
   - If isolating only one Megapack, open the upstream AC disconnect.

13.3 Configuring for Short-Term Storage

This procedure is only to be performed when a Megapack needs to be shut down and removed from grid power **for more than 24 hours and up to 14 days**.

NOTE: Contact Tesla for assistance with configuring Megapack for storage periods of longer than 14 days.

WARNING: Active work cannot be performed inside Megapack while it is in storage. If active work is required, ensure the Megapack is de-energized per *Performing Lockout/Tagout on page 118*.

1. Ensure that conditions, including duration and temperature range, will abide by the requirements in the *Megapack 2 XL Transportation and Storage Guidelines* for the duration of storage.
2. Charge Megapack to at least 50% state of energy.
3. Open a ticket using Tesla's online support portal (*Contact Information on page 27*) and note the following in the ticket:
   a. Inform that the system will be shut down soon.
   b. State the amount of the time the system is expected to be idle.
4. Command to off state using the Tesla System Controller or other SCADA equipment. If the site operator or system owner does not have the means to send commands, contact Tesla (*Contact Information on page 27*).
5. Open the site or external circuit breaker or disconnect (if one is present).
6. Assess the steps in *Critical Door-Opening Considerations on page 118* and open the Customer Interface Bay door if conditions allow.
7. Turn the enable switch off (*Turning the Enable Switch Off on page 122*).
8. Wait five minutes.
9. Open and lock the Megapack AC circuit breaker (*Opening and Locking the Megapack AC Circuit Breaker on page 120*).
10. **Turn the enable switch back on.**
11. Close and secure the customer I/O area cover, and close the Customer Interface Bay Door.
12. Up to 14 days later, proceed with re-energization (*Energizing the Megapack on page 148*).

CAUTION: The enable switch must remain on during storage.

14 Regulatory Compliance

14.1 Signage Requirements

Signage must be posted in approved locations in accordance with local codes and standards.

14.2 General Compliance Information

Megapack is designed to be compliant with the industry's most stringent global safety standards for energy storage systems as well as with major market grid codes. *Megapack 2 XL Compliance Packet*, a full compliance packet of completed certifications in all regions, is available on the Tesla Partner Portal.

14.3 Environmental Compliance

Each Megapack contains coolant and refrigerant in its thermal system (*Thermal Specifications on page 69*). These substances are built into the Megapack and do not need to be added at the time of installation at site. Depending on the number of Megapacks installed on a site, storage, use and handling of these substances during maintenance events may require reporting, hazard management plans, or containment procedures as required by local codes.

Megapack's enclosure is designed with an integrated 900 L gravity-fed secondary coolant containment basin in its enclosure base in accordance with Title 40 CFR 264.175.

Should an internal coolant leak occur, a gutter system directs coolant away from the batteries to the base of the enclosure to a central location in the AC bus bar area of the Customer Interface Bay. In addition, Megapack has a coolant reservoir level indicator that will alert Service Providers to be dispatched for investigation.

14.3.1 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

The Regulation (EC) No 1907/2006 of the European Parliament and of the Council of December 18, 2006 concerning the Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) entered into force on June 1, 2007. Tesla agrees with the purpose of REACH, which is to ensure a high level of protection of human health and the environment. Tesla is compliant with all applicable requirements of REACH.

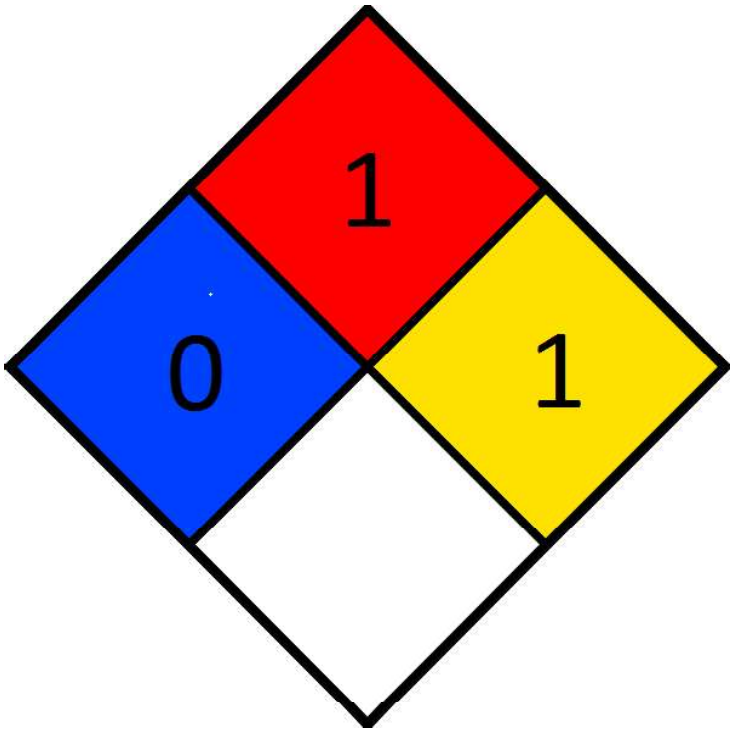
The registration requirements do not apply to Tesla, since it is neither a manufacturer nor an importer of preparations into Europe.

However, product (article) manufacturers or importers into Europe are obligated under Article 33 of REACH to inform recipients of any articles that contain chemicals on the Substances of Very High Concern (SVHC) candidate list above a 0.1% concentration (by weight per article). As of July 2021, Megapacks manufactured and marketed by Tesla do not contain substances on the REACH SVHC candidate list in concentrations greater than 0.1% by weight per article. Tesla continues to monitor the developments of the REACH legislation and will communicate with our customers according to the requirement above.

14.4 NFPA Compliance

For installations that require an NFPA placard, please refer to the figure below:

Figure 98. NFPA Placard



CAUTION: Water is the recommended suppressant in case of a fire involving a lithium-ion battery. Lithium-ion batteries **do not contain any solid metallic lithium** (a water reactive material); thus, the use of water is appropriate, and will not exacerbate a fire involving lithium-ion cells. For comprehensive fire response information, refer to the *Industrial Lithium-Ion Battery Emergency Response Guide*.

14.5 Electromagnetic Compatibility (EMC)

The Standard Tesla System Controller has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

14.6 Cybersecurity

Tesla is continually assessing Megapack System security and its compliance with various cybersecurity standards applicable to battery energy storage systems. Tesla has programs, policies, and processes that cover critical cybersecurity items, including the following:

- Personnel risk assessment, training, background checks, awareness
- Access management and control
- Electronic security perimeters and electronic access methods
- Incident response
- Continuity of operations (recovery and business continuity)
- Configuration change management
- Vulnerability assessments and patching process

- Transient cyber assets and removable media

In addition, Tesla provides a list of cybersecurity mandates and recommendations to ensure vulnerabilities within the overall SCADA network are mitigated. Mandatory items include changing default passwords, disabling unused wireless interfaces, access control and review, and system change management.

Recommended items include network scanning, password strengthening, disabling unused ports and services, timely patch implementation, and multifactor authentication.

For more information, see the *Application Note: NERC CIP Low Impact Facility Cybersecurity Compliance* and the *SCADA Design Manual*.

Revision History

Revision	Date	Details
2.8	May 29, 2025	• Updated the maximum allowable arc flash incident energy from 8 to 14 cal/cm^2 for all regions. Updated the protection scheme requirements to ensure admin controls related to relays are clearly defined (*Performing Lockout/Tagout on page 118*) • Clarified ride-through behavior (*Site-Level High-Voltage Ride-Through Considerations on page 51*) and included applicability for IEEE 2800-2022 (*Megapack Unit Capabilities on page 96*) • Updated reconnection delay timer setting ranges (*Grid-Connected Features on page 100*) • Updated *Tesla System Controller on page 17*, *Tesla System Components on page 9*, *Product Labels on page 21*, and *Large Tesla System Controller Wiring on page 95* to include additional Large Tesla System Controller • Provided details about the Electrical Control Plan (*Electrical Control Plan on page 103*) • Changed external 24 V DC input power supply minimum rating (*Customer Interface Board on page 111*) • Updated list of accessories with external ground interface bolts (*Accessory Kit on page 128*) • Clarified conductor routing procedures and proper termination in the AC bus bar area (*Terminating the Conductors on page 135*) • Clarified black start equipment arrangement in *Utility Battery Only on page 30* and *Utility Hybrid on page 33* projects • Provided guidance for systems using on-load tap changers (*Using On-Load Tap Changers on page 52*) • Provided GF residual (ground-fault detection method) settings for the UL 1066 breaker (*Default Circuit Breaker Trip Settings – UL 1066 on page 109*)
2.7	February 12, 2025	• Provided additional considerations for ground surface design (*Ground Surface Design Considerations on page 80*) • Provided guidelines about inspecting delivered units (*Inspecting Delivered Units on page 128*) • Provided recommendations regarding checking and testing the distribution interface (*Test Energization on page 147*) • Provided external ground interface details (*Wiring Interface Summary on page 90*) • Introduced the C011 cell option (*Battery Modules on page 14*, *Standard Configurations on page 14*, *Product Configurations on page 12*) • Introduced fan type options (*Megapack Options on page 12*) • Modified the maximum audible noise specification (*Noise Specification and Guidance on page 67*)
2.6	December 2, 2024	• Provided product configuration, option, and variant descriptions (*Product Configurations on page 12*)

Revision	Date	Details
		• Introduced the C012 cell option (*Battery Modules on page 14*, *Standard Configurations on page 14*) • Clarified accessing the lifting points (*Accessing the Lifting Points on page 116*) • Clarified thermal capacity configuration descriptions (*Thermal Specifications on page 69*)

2.5	October 23, 2024	• Introduced Archetypes and updated design information throughout Site Architecture accordingly (*Site Architecture on page 28*):
		  ◦ Provided *Archetypes on page 28* and *Equipment per Archetype on page 37*
		  ◦ Provided *Generator Asset Design on page 59*, *Islanding Controller Design on page 55*, and *Ground Reference Design on page 52*
		  ◦ Updated *Energy Meter Design on page 38*, *Transformer Design on page 50*, and *Solar Asset Design on page 54*
		• Provided service side clearance (superseding door swing clearance) and updated diagrams with Battery Service Zone highlight (*Megapack Clearance on page 84*)
		• Updated safety features to provide improved context (*Hazard Mitigation Features on page 20*)
		• Clarified that foundation support does not need to be continuous (*Equipment Bearing Areas and Anchoring on page 82*)
		• Removed guidance about turning enable switch back on when active work pauses for 1 hour or longer (*Turning the Enable Switch Off on page 122*)
		• Provided considerations for turning the enable switch back on under conditions described in this *Note on page 119*
		• Simplified conductor testing instructions (*Checking and Testing on page 137*)
		• Provided site water flow guidance (*Foundation Design on page 81*)
		• Updated I_{sd} (short-time current) defaults for UL 1066 (*Default Circuit Breaker Trip Settings – UL 1066 on page 109*)

2.4	May 31, 2024	• Included additional details about wireway covers when preparing to install customer connections (*Preparing the Area on page 134*) • Reorganized Civil Design section to better address civil design specialties (*Civil Design on page 72*) • Added a topic describing routes and zones to aggregate and better clarify site civil design requirements and considerations (*Routes and Zones on page 72*) • Provided examples of typical vehicles requiring access to the site (*Typical Vehicles on page 79*) • Corrected anchor bracket length (*Equipment Bearing Areas and Anchoring on page 82*) • Updated mechanical specifications (*Enclosure Specifications or Capabilities on page 66*) • Updated circuit breaker part numbers (*Megapack AC Circuit Breaker on page 106*) • Added -D enclosure installation template part number (*Installation Accessories on page 128*) • Clarified that THD is at real power capability (*Interconnection Data on page 89*)

Revision	Date	Details
		• Clarified that each Megapack unit must be installed on a single planar surface (original language: "Equipment must all be installed on a single level surface.") (*Foundation Design on page 81*)
2.3	March 6, 2024	• Clarified requirement for cable cleat usage in wireways (*Securing Conductors External to Megapack on page 139*) • Clarified that conductors must obey Megapack's IP66 rating (*AC Power Requirements on page 94*) • Updated (decreased) coolant volume (*Thermal Specifications on page 69*) • Clarified applicability of the procedure in *Solar Asset Size Considerations on page 54* • Updated owner responsibilities (*Site Owner on page 9*)
2.2	January 30, 2024	• Provided UL 1066 circuit breaker information (*Megapack AC Circuit Breaker on page 106*) • Clarified supply fault current rating (*Interconnection Data on page 89*) • Corrected clearance legends (*Megapack Clearance on page 84*)
2.1	November 8, 2023	• Clarified testing details in *Wiring the AC Conductors on page 135* • Emphasized preparing wireway openings in the AC bus bar area during installation (*Preparing the Area on page 134*) • Modified door-opening guidance and removed the requirement to contact Tesla before opening doors (*Critical Door-Opening Considerations on page 118*) • Provided PV system size considerations (*Solar Asset Size Considerations on page 54*) • Improved de-energization terminology and procedures, including isolation and performing lockout/tagout (*Performing Lockout/Tagout on page 118*, *Energizing, Site Isolation, and Storage on page 148*) • Improved clarity of Megapack AC circuit breaker content (*Megapack AC Circuit Breaker on page 106*) • Updated guidance for maximum number of Megapacks for a single Large Tesla System Controller (*Tesla System Controller on page 17*) • Clarified auxiliary load power supply (*AC Power Requirements on page 94*) • Changed "backup power" term to "uninterruptible power supply" (*Uninterruptible Power Supply on page 94*) • Updated *Fencing and Barriers on page 87* with 2021 IFC code • Clarified low-voltage augmentation foundation requirements (*Low Voltage Augmentation on page 63*) • Added islanding information to remote shutdown design (*Remote Shutdown in Islanding Applications on page 105*) • Updated Asia hotline information (*Contact Information on page 27*)
2.0	July 21, 2023	• Introduced the -D enclosure variant (*Enclosure on page 16*) • Added -D enclosure variant anchor bracket specification (*Anchor Requirements on page 83*)

Revision	Date	Details
		• Added -D enclosure variant wireway opening dimensions (*Wiring Interface Summary on page 90*) • Modified backup power guidance (*Uninterruptible Power Supply on page 94*, *DC Power Requirements on page 95*) • Provided minimum clearance guidance to ignitable liquids sources (*Megapack Clearance on page 84*) • Changed default ground fault circuit breaker values (*Programming the Circuit Breaker on page 109*) • Added cybersecurity overview (*Cybersecurity on page 152*) • Improved and simplified language in topic previously called *Electrical Specifications* (*Interconnection Data on page 89*) • Underscored the need to properly secure conductors external to Megapack (*Securing Conductors External to Megapack on page 139*) • Clarified ratings terminology (*Standard Configurations on page 14*) • Simplified auxiliary section of schematic (*Megapack on page 10*) • Added craning guidance (*Craning on page 115*) • Corrected label names (*Megapack Labels on page 21*) • Corrected augmentation dimensions (*Capacity Maintenance Agreement Augmentation on page 64*)
1.9	April 7, 2023	• Revised maximum allowable arc flash incident energy requirement (*Maximum Arc Flash Incident Energy on page 61*) • Provided additional details about augmentation design (*Augmentation Design on page 62*) • Added 4-Hour system refrigerant capacity (*Thermal Specifications on page 69*) • Added Megapack AC circuit breaker part number (*Megapack AC Circuit Breaker on page 106*) • Updated compliance information with Megapack containment details (*Environmental Compliance on page 151*). • Added criteria for dust, debris, and wind to *Critical Door-Opening Considerations on page 118* • Added instructions on *Removing the Circuit Breaker Panel on page 141* • Added Site Owner to *Roles and Responsibilities on page 8* • Updated Tesla Site Controller name to Tesla System Controller
1.8	December 20, 2022	• Added *Peak Power on page 90*
1.7	December 19, 2022	• Updated contact information (*Contact Information on page 27*) • Clarified role of spare Tesla Site Controller (*Computer Networking on page 61*) • Updated procedure to shut down for storage (*Configuring for Short-Term Storage on page 149*) • Added UL 1741 compliance CT information (*UL 1741 PCS Requirements on page 47*)

Revision	Date	Details
1.6	November 15, 2022	• Updated kVA ratings (*Standard Configurations on page 14*) • Added UL 1741 compliance information (*UL 1741 PCS Requirements on page 47*) • Added *Maximum Arc Flash Incident Energy on page 61* • Clarified clearance table applicability (*Megapack Clearance on page 84*) • Clarified back-to-back clearance requirements (*Megapack Clearance on page 84*) • Added extension ladder guidance (*Accessing the Lifting Points on page 116*) • Provided enable switch lock specifications (*Enable Switch on page 104*) • Provided material details in *Sealing the Wireway Openings on page 140* • Provided CMA support guidelines (*Augmentation Clearance on page 86*) • Modified SDS language to reflect latest guidance (*Emergency Response Guide on page 25*)
1.5	October 6, 2022	• Provided fastener pitch specification (*AC Bus Bar Area on page 112*) • Expanded information about noise emission factors (*Noise Specification and Guidance on page 67*) • Removed flatbed nomenclature to clarify that Megapack is typically shipped on a lower trailer (*Logistics and Shipping Guidance on page 114*) • Updated Voltage Ride Through specifications (*Voltage Ride-Through on page 96*) • Removed preliminary ratings caveats
1.4	September 16, 2022	• Added note about removable bollards (*Megapack Clearance on page 84*) • Clarified minimum allowable temperature rating of AC conductors (*AC Power Requirements on page 94*) • Provided maximum allowable pad thickness. Increased maximum number of connections for 2-Hour system. (*AC Bus Bar Area on page 112*) • Clarified when on-site maintenance infrastructure needs to be completed (*On-Site Maintenance Infrastructure on page 62*) • Fixed (swapped) width x height dimensions labels for the Standard Tesla Site Controller Enclosure (*Mechanical Specifications on page 66*) • Removed pre-production watermark
1.3	August 23, 2022	• Added isolation transformer guidance for resonance mitigation (*Resonance of Devices Connected to Common 480 V AC Bus on page 59*) • Modified on-site maintenance infrastructure topic to point to new app note (*On-Site Maintenance Infrastructure on page 62*)
1.2	August 8, 2022	• Added guidance on using line reactors (*Resonance of Devices Connected to Common 480 V AC Bus on page 59*) • Added water supply design reference (*Water Supply on page 62*) • Decreased wireway height (*Wiring Interface Summary on page 90*) • Provided circuit breaker option codes for default settings (*Megapack AC Circuit Breaker on page 106*) • Modified voltage ride through settings (*Voltage Ride-Through on page 96*)

Revision	Date	Details
		• Updated label renders (*Megapack Labels on page 21*) • *This revision was not published to Partner Portal.*
1.1	June 20, 2022	• Clarified support for multiple meters of the same function (*Energy Meter Design on page 38*) • Clarified *Advanced SEL-735* meter requirement for projects with specific response time requirements (*Energy Meter Design on page 38*) • Added reference to Megapack AC circuit breaker control over DNP3 (*Controlling the Circuit Breaker using DNP3 on page 110*) • Modified specifications and language in *On-Site Maintenance Infrastructure on page 62* • Provided center of gravity location (*Megapack Center of Gravity on page 68*) • Provided mass calculation (*Megapack Mass on page 67*) • Reduced total mass of refrigerant (*Thermal Specifications on page 69*) • Updated installation template part number (*Installation Accessories on page 128*) • Updated enable circuit example graphics (*Safety Disconnect Features on page 103*) • Updated example wiring interface graphic and key (*Wiring Interface Summary on page 90*) • Clarified that the arc flash label must be affixed to the outside of the Customer Interface Bay Door (*Providing the Arc Flash Label on page 141*)
1.0	April 22, 2022	Initial revision. PRE-PRODUCTION INFORMATION - SUBJECT TO CHANGE.

CONFIDENTIAL INFORMATION – SHARED UNDER NDA ONLY

Megapack 2 XL Design and Installation Manual – Revision 2.8

Last Updated May 29, 2025

EXHIBIT V

ESS COMMISSIONING TESTS

Commissioning Tests

A. Automatic Generation Control (AGC) Functionality Test (or equivalent)
B. SCADA Functionality Test (or equivalent)
C. Owner Control and Data Link Functionality Tests (See Exhibit A-1, Section 2.16)
D. ESS Solar Capacity Firming Test
E. ESS Unit Capabilities Tests
F. Tesla's Performance Testing

The following tests shall be conducted and satisfied as a requirement to achieve Substantial Completion

A. Automatic Generation Control (AGC) Functionality Test

Purpose:
This test will demonstrate the ability of the ESS to synch to AGC.

System starting state:
The ESS will be in the on-line state at between 15% and 85% SOC and at an initial active power level of 0 MW and reactive power level of 0 MVAR. The Energy Management System ("**EMS**") shall be configured to follow a predefined, agreed-upon active power profile.

Procedure:

1. Record the ESS active power level at the ESS "**Electric Metering Device**" (defined for purposes of this Agreement as an ION meter that meets the current PNM Interconnection Metering Standard along with a GPS clock with IRIG output, and this meter shall be used for closed loop control of the System to fulfill IEEE 1547:2018 compliance as well as to measure the performance metrics. The meter refresh time shall be the fastest allowable polling rate. ESS supplier to provide design recommendations on meter part number and CT/PT accuracy class requirements).
2. Command the ESS to follow a simulated AGC discharging signal every four (4) seconds for ten (10) minutes.
3. Command the ESS to follow a simulated AGC charging signal every four (4) seconds for ten (10) minutes.
4. Record and store the ESS active power response (in seconds).

System end state:
The ESS will be in the on-line state and at a commanded active power level of 0 MW.

B. SCADA Functionality Test

Contractor shall prepare and submit to Owner a SCADA Functionality Test procedure no later than 60 Days prior to the expected Substantial Completion Date. Contractor shall perform and successfully demonstrate the SCADA functionality in accordance with such test procedure as a requirement to achieve Substantial Completion.

C. Owner Control and Data Link Functionality Test

Contractor shall prepare and submit to Owner an Owner Control and Data Link Functionality Test procedure no later than 60 Days prior to the expected Substantial Completion Date. Contractor shall perform and successfully demonstrate the Owner Control and Data Link functionality in accordance with such test procedure as a requirement to achieve Substantial Completion.

D. Commissioning Tests

The following tests shall be conducted as a requirement to achieve the Substantial Completion Date.

E. ESS Unit Capabilities Testing

E.1 ESS Capacity Test

E.1.1 General

The ESS Capacity Test ("**ESS Capacity Test**" or "**ECT**") is a test performed to determine the ESS Capacity and Roundtrip Efficiency (RTE). The ESS Capacity Test performed prior to Substantial Completion shall be conducted in accordance with Industry Standards and the provisions of this

Exhibit V. Owner or its representative may be present for ECT and may, for informational purposes only, use its own metering equipment (at Owner's sole cost).

E.1.2 Requirements Applicable to all ESS Capacity Tests

A. Purpose of Test. ECT shall:

(1) verify compliance with the Guaranteed ESS Capacity or otherwise determine any lower ESS Capacity for the purposes of this A; and

(2) determine the Roundtrip Efficiency (RTE) of the ESS;

B. Parameters. During each ECT, the following parameters shall be measured and recorded simultaneously for the ESS:

(1) discharge time (minutes);

(2) ESS Charging Energy measured at the ESS Electric Metering Device prior to any compensation, in MWh ("**ESS Meter Energy In**");

(3) ESS Discharge Energy measured at the ESS Electric Metering Device prior to any compensation, in MWh ("**ESS Meter Energy Out**");

(4) ESS Discharge Energy measured at the ESS Electric Metering Device including the accounting of losses from the ESS Electric Metering Device to the Point of Delivery, in MWh ("**Point of Delivery Energy Out**"); and

(5) ESS Charging Energy measured at the ESS Electric Metering Device accounting for losses from the Point of Delivery to the ESS Electric Metering Device, in MWh ("**Point of Delivery Energy In**");

C. Site Conditions. During each ECT, the ambient air temperature (°C) at the Site shall be measured and recorded at thirty (30)-minute intervals.

D. Test Elements and Sequence. Each ECT shall include the following test elements:

(1) the discharging of the ESS from a 100% State of Charge at a power discharge setpoint rate equal to the Guaranteed ESS Capacity (MW);

(2) the determination of Point of Delivery Energy Out, as measured by the ESS Electric Metering Device, that is discharged from the ESS to the Point of Delivery until either a 0% State of Charge is achieved or Four (4) hours have elapsed from commencement of the ECT. The Point of Delivery Energy Out divided by the actual discharge time or Four (4) shall determine the ESS Capacity. The ESS Electric Metering Device shall be programmed to correct for losses between the ESS Electric Metering Device and the Point of Delivery, not including any losses from other facilities that share the common Point of Delivery with this ESS;

(3) the discharging of the ESS to a 0% State of Charge or such State of Charge achieved after Four (4) hours of discharging the Guaranteed ESS Capacity;

(4) starting at a 0% State of Charge, the charging of the ESS at a constant power charge rate equal to the Guaranteed ESS Capacity; and

(5) the determination of Point of Delivery Energy In, as measured by the ESS Electric Metering Device, that is required to charge the ESS until a 100% State of Charge is achieved as of the commencement of the ESS Capacity Test.

E. Test Conditions.

(1) General. At all times during an ECT, the ESS shall be operated in compliance with Industry Standards, the ESS Operating Restrictions and all operating protocols required by the manufacturer for operation. The ESS shall have charged and discharged at least 80% of one (1) Equivalent Full Cycle in the twenty-four (24)-hour period prior to the ECT, charged to a 100% State of Charge using Charging Energy on the day of the ECT and maintained at a 100% State of Charge for at least two (2) hours prior to commencement of the ECT. The ECT shall commence within one (1) hour after sunset or other such time as mutually agreed by the Parties, and the PV Power Plant shall be disconnected prior to commencement of such ECT. Owner, in coordination with customer and the transmission provider, may regulate the ESS power factor between 0.95 leading or lagging during the ECT as needed for the sole purpose of grid reliability and the ESS shall otherwise be at unity (1.00) power factor.

(2) Abnormal Conditions. If abnormal operating conditions that prevent the recording of any required parameter occur during an ECT, Owner may postpone or reschedule all or part of such ECT in accordance with Section E.1.2.F of these ESS Capacity Test Procedures.

(3) Weather Conditions. Ambient outside dry bulb air temperature of 25°C. Seasonal weather patterns may prevent the occurrence of an ECT. In such circumstances, Contractor shall supply adjusted performance metrics for the ESS at a range of ambient conditions for Owner's review and approval (such approval not to be unreasonably conditioned, delayed or withheld) ninety (90) Business Days prior to the scheduled ECT to determine whether the scheduled ECT is feasible.

(4) Instrumentation and Metering. Contractor shall provide all instrumentation, metering and data collection equipment required to perform the ECT. The instrumentation, metering and data collection equipment, and electrical meters shall be calibrated in accordance with prudent operating practice and Section 5 of the ESA.

F. Incomplete Test. If any ECT is not completed in accordance herewith (including as a result of any conditions specified in Section E.1.2.E(2) of this ESS Capacity Test Procedure), Contractor may, in its sole discretion: (i) accept the results up to the time the ECT was suspended; provided, however, that to the extent Owner reasonably objects to such results, Owner may

require that the ECT be repeated or that the portion thereof that was not completed, be completed within a reasonable specified time period; (ii) require that the portion of the ECT that was not completed to be completed within a reasonable specified time period; or (iii) require that the ECT be entirely repeated. Notwithstanding the foregoing, if Contractor is unable to complete an ECT due to a Force Majeure event or the actions or inactions of Owner or the Transmission Provider, Contractor shall be permitted to reconduct such ECT on dates and at times reasonably acceptable to the Parties.

G. Final Report. Within ten (10) Business Days after the completion of any ECT, Contractor shall prepare and submit to Owner a written report of the results of the ECT, which report shall include:

(1) A record of the personnel present during the ECT that served in an operating, testing, monitoring or other such participatory role;

(2) the measured data for the ESS Electric Metering Device readings as well as each parameter set forth in this ESS Capacity Test Procedure, as applicable, including copies of the raw data taken during the ECT and plant log sheets verifying the operating conditions and output of the ESS;

(3) The ESS Capacity as determined by the ECT, including supporting calculations; and

(4) Contractor's statement of either Contractor's acceptance of the ECT or Contractor's rejection of the ECT results and reason(s) therefor.

Within ten (10) Business Days after receipt of such report, Owner shall notify Contractor in writing of either Owner's acceptance of the ECT results or Owner's rejection of the ECT and reason(s) therefor.

If either Party reasonably rejects the results of any ECT, such ECT shall be repeated in accordance with Section E.1.2.F of this ESS Capacity Test Procedure.

H. Supplementary ESS Capacity Test Protocol. No later than one hundred twenty (120) days prior to the Substantial Completion Date, Contractor shall deliver to Owner for its review and approval (such approval not to be unreasonably conditioned, delayed or withheld) a supplement to this Exhibit F with additional and supplementary details, procedures and requirements applicable to ESS Capacity Tests based on the then-current design of the ESS Facility (collectively, the "**Supplementary ESS Capacity Test Protocol**"). Thereafter, from time to time, Contractor may deliver to Owner for its review and approval (such approval not to be unreasonably conditioned, delayed or withheld) any Contractor-recommended updates to the then-current Supplementary ESS Capacity Test Protocol. The initial Supplementary ESS Capacity Test Protocol (and each update thereto), once approved by Owner, shall be deemed an amendment to this Exhibit F.

I. Adjustment to ESS Capacity. The total amount of the Point of Delivery Energy Out (expressed in MWh-AC) during the first Four (4) hours of discharge of any ECT (up to, but not in excess of, the product of (i) the Guaranteed ESS Capacity, as such Guaranteed ESS Capacity may have been adjusted (if at all) under this ESA, multiplied by (ii) Four (4) hours) shall be divided by Four (4) hours to determine the new ESS Capacity to the extent

such new ESS Capacity is less than the Guaranteed ESS Capacity. The actual capacity determined pursuant to an ESS Capacity Test, not to exceed the Guaranteed ESS Capacity, shall become the new ESS Capacity at the beginning of the day following the completion of the ESS Capacity Test for all purposes under this ESA.

J. ESS Roundtrip Efficiency Test Calculations. The ESS Roundtrip Efficiency shall be calculated as a result of the ECT measurements. The ESS Roundtrip Efficiency shall be calculated as the ratio of ESS Meter Energy Out (MWh-AC) and the ESS Meter Energy In (MWh-AC) as below:

$$Roundtrip\ Efficiency\ (\%) = \frac{ESS\ Meter\ Energy{-}Out\ (MWh{-}AC)}{ESS\ Meter\ Energy{-}In\ (MWh{-}AC)} \times 100\%$$

E.2 ESS Response Delay Test

Purpose of Test:

1. Determine the Charge Ramp Rate of the ESS
2. Determine the Discharge Ramp Rate of the ESS

Test Conditions:

The ESS Facility will be in the on-line state at between 15% and 85% SOC and at an initial active power level of 0 MW and reactive power level of 0 MVAR. This test shall not cause the ESS to charge from the grid.

Test procedure:

Measured Charge Ramp Rate:

1. Send an active power charge command of PMAX to charge the batteries
2. The time measured from when the ESS receives the PMAX charge command until the power measured at the ESS Electric Metering Device changes from 0MW to at least 1% of charge PMAX shall be the Charge Ramp Latency
3. The time measured to ramp from 1% to charge PMAX with a plus-or-minus two and one-half percent (2.5%) tolerance on the commanded power shall be the Actual Charge Ramp Rate

Measured Discharge Ramp Rate:

1. Send an active power discharge command of PMAX to discharge the batteries
2. The time measured from when the ESS receives the PMAX discharge command until the power measured at the ESS Electric Metering Device changes from 0MW to at least 1% of discharge PMAX shall be the Discharge Ramp Latency
3. The time measured to ramp from 1% to discharge PMAX with a plus-or-minus two and one-half percent (2.5%) tolerance on the commanded power shall be the Actual Discharge Ramp Rate

Determination of ESS Response Delay:

The calculation below will demonstrate the determination of the ESS Response Delay used to determine ESS Response Delay Damages according to Section 15.4.1.

a) An "Actual System Latency" shall be calculated, which shall be equal to:

$$Actual\ System\ Latency = Max(Charge\ Ramp\ Latency, Discharge\ Ramp\ Latency)$$

b) An "Actual System Latency Delay" shall be calculated, which shall be equal to:

$$\begin{aligned}&Actual\ System\ Latency\ Delay\\&= Max(Guaranteed\ System\ Latency, Actual\ System\ Latency)\\&- Guaranteed\ System\ Latency\end{aligned}$$

c) An "Actual Discharge Ramp Rate Delay" shall be calculated, which shall be equal to:

$$\begin{aligned}&Actual\ Discharge\ Ramp\ Rate\ Delay\\&= Max(Guaranteed\ Discharge\ Ramp\ Rate, Actual\ Discharge\ Ramp\ Rate)\\&- Guaranteed\ Discharge\ Ramp\ Rate\end{aligned}$$

d) An "Actual Charge Ramp Rate Delay" shall be calculated, which shall be equal to:

$$\begin{aligned}&Actual\ Charge\ Ramp\ Rate\ Delay\\&= Max(Guaranteed\ Charge\ Ramp\ Rate, Actual\ Charge\ Ramp\ Rate)\\&- Guaranteed\ Charge\ Ramp\ Rate\end{aligned}$$

e) The "Charging ESS Response Delay" shall be calculated, which shall be equal to:

$$\begin{aligned}&Charging\ ESS\ Response\ Delay\\&= Actual\ Charge\ Ramp\ Rate\ Delay\\&+ Actual\ System\ Latency\ Delay\end{aligned}$$

f) The "Discharging ESS Response Delay" shall be calculated, which shall be equal to:

$$\begin{aligned}&Discharging\ ESS\ Response\ Delay\\&= Actual\ Discharge\ Ramp\ Rate\ Delay\\&+ Actual\ System\ Latency\ Delay\end{aligned}$$

g) The "ESS Response Delay" shall be calculated, which shall be equal to:

$$\begin{aligned}&ESS\ Response\ Delay\\&= Max(Charging\ ESS\ Response\ Delay, Discharging\ ESS\ Response\ Delay)\end{aligned}$$

For any instance in which the ESS Response Delay, as measured by the ESS Electric Metering Device is a positive value during an ESS Unit Capabilities Test, Contractor shall pay to Owner the ESS Response Delay Damages identified in Section 15.4.1.

Performance Testing

1. Overview.

(a) *Overview*. This outlines the standard performance testing protocol ("Test") used to evaluate the System.

(b) *Key Terms*. The following Key Terms will apply to this:

Performance Guarantees per site:	
Guaranteed Power Capacity:	6,000 kW at the Point of Measurement.
Guaranteed Energy Capacity:	24,000 kWh at the Point of Measurement.
Guaranteed Roundtrip Efficiency:	87.1% at the Point of Measurement.

Roundtrip Efficiency Floor:	78% at the Point of Measurement.	
Energy Cost:	$50/MWh	
Roundtrip Efficiency Buydown:	Has the meaning given in Section 2(f), below.	
Roundtrip Efficiency Buydown: Cap:	$460,000	
Additional Key Terms:		
Apparent Power Capacity:	6,300 kVA at the Point of Measurement	
Line and Transformation Losses:	No more than: 1.25% real power and 7.00% reactive power losses. Note: % real power and % reactive power loss is function of the Apparent Power Capacity specified above. For example, 1.5% real power loss is equivalent to 1.5 kW for 100 kVA System. Similarly, 6.5% reactive power loss is equivalent to 6.5 kVAR for 100 kVA System.	
Point of Measurement (POM):	Contractor furnished and installed ION Meter battery meter located at 12.47 kV (the "System Meter")	
Grid Voltage:	Nominal Grid Voltage (at Megapack's inverter terminals)	480 V_{AC}
	Voltage Requirement for full power operation (at Megapack's inverter terminals)	1.0 p.u. minimum 1.0 p.u. maximum
Maximum Design Temperature:	40.0°C as determined from ASHRAE Climatic Design Conditions 2017.	
Weather Station	ALBUQUERQUE INTL, NM, USA (WMO: 723650) . Used to monitor Relative Humidity, Pre-Test Hourly Average Ambient Temperature and Maximum Hourly Average Ambient Temperature. The weather station can be any station in the vicinity of the site and should be agreed upon between the Parties prior to the test.	

(c) Additional Definitions.

The terms in this Section 1(c) have the following meanings, when used in connection with the Test.

Available Charge Power	The estimated power that can be charged into the batteries, as reported by the Tesla System Controller.
Available Discharge Power	The estimated power that can be discharged from the batteries, as reported by the Tesla System Controller.
Battery Energy Exported	The System's export energy as measured at the Point of Measurement by the System Meter and reported by the Tesla System Controller.
Battery Energy Imported	The System's import energy as measured at the Point of Measurement by the System Meter and reported by the Tesla System Controller.

Battery Real Power	The System's instantaneous total 3 phase real power as measured by the System Meter at the Point of Measurement and reported by the Tesla System Controller.
CT Error	The error of the current transformer during the Test according to its accuracy class.
Maximum Hourly Average Ambient Temperature	The maximum of hourly average ambient temperature recorded during the Test.
Actual Charge Power Capacity	The average of the Battery Real Power values measured during the charge portion of the Test excluding ramping period.
Actual Energy Capacity	The total energy (in MWh) discharged by the System when it is charged and discharged in accordance with the below procedure.
Actual Discharge Power Capacity	The average of the Battery Real Power values measured during the discharge portion of the Test excluding ramping period.
Actual Roundtrip Efficiency	The ratio of the energy discharged by the System to the energy used to charge the System when the System is charged and discharged in accordance with the below procedure.
Meter Error	The error of the System Meter during the Test according to its accuracy class.
Metering System Error	The error of all meters used during the Test according to its accuracy class and is calculated as follows $\text{Metering System Error} = \sqrt{(Meter\ Error^2 + CT\ Error^2 + PT\ Error^2)}$
Pre-Test Hourly Average Ambient Temperature	The hourly average ambient temperature recorded prior to the commencement of the Test as measured by Weather Station.
PT Error	The error of the potential transformer during the Test according to its accuracy class.
Real Power Ramp Rates	The maximum rate of change of the Battery Real Power (kW) set for the System.
Relative Humidity	The ratio, expressed in percent, of the amount of atmospheric moisture present relative to the amount that would be present if the air were saturated as measured by Weather Station.
State of Energy (SOE)	The state of energy as calculated by dividing the "Energy Remaining" by the "Full Pack Energy" signals as reported by the Tesla System Controller.

2. General Requirements.

(a) *Meters*.

Contractor shall procure and install ION meter along with a GPS clock with IRIG output, and this meter shall be used for closed loop control of the System to fulfill IEEE 1547:2018 compliance as well as to measure the performance metrics. The meter refresh time shall be the fastest allowable polling rate. Tesla to provide design recommendations on meter part number and CT/PT accuracy class requirements.

To the extent possible, Tesla reasonably requests that the Contractor validates the individual accuracy of the System Meter and its CTs and PTs. Contractor shall promptly recertify the individual accuracy of the System Meter and its CTs and PTs and provide evidence of same to Tesla.

Contractor shall provide all instrumentation, metering, and external data collection equipment required for the Test. Instrumentation shall include all instruments permanently installed at the Project and the temporary instruments suggested by Tesla or deemed necessary by Contractor in its sole judgement.

(b) Line and Transformation Losses.

Contractor shall ensure that the Line and Transformational Losses between the AC terminals of the System and the POM shall not exceed the real power and reactive power losses set forth in Section 1(b), taking into account all electrical losses, including cabling, switchgear, impacts of specified Voltage Requirement and transformer losses (load and no load).
If the actual Line and Transformational losses exceed either or both of real power and reactive power losses defined above, Tesla shall be entitled to reductions in the Performance Guarantees to the extent the combination of real and reactive components of actual Line and Transformational Losses compromises the System's ability to meet respective Performance Guarantees.

(c) Voltage Requirement.

Test should be conducted in accordance with the Voltage Requirements specified in the Key Terms. If the Nominal Grid Voltage is lower or higher than specified, Contractor shall try to adjust the voltage at the POM and System AC terminals to be equivalent to the specified values in the Key Terms. Tesla shall be entitled to reductions in the Performance Guarantees to the extent the change in Voltage Requirement compromises the System's ability to meet the respective Performance Guarantees. The methodology for determining such reductions shall be agreed upon between both parties ahead of the Test following detailed design of the System.

(d) Data Collection and Recording.

The values indicated in the Test shall be collected and recorded by the Tesla System Controller with timestamps at a frequency of at least once per second. The data collected and recorded by the Tesla System Controller are used to calculate whether the Performance Guarantees are met.

(e) *Test Procedures*.

All Tests shall be performed by a Tesla employee or a third party approved by Tesla. If any Performance Guarantee is not met the first time a Test is performed, the Test may be repeated until such Performance Guarantee is achieved. Once a Performance Guarantee is met, it shall be deemed met regardless of achievement of other Performance Guarantees. Contractor shall bear the cost of energy to charge the System in connection with a Test, and shall be entitled to any revenue resulting from the Test.

(f) *Test Report*.

Tesla shall provide a Performance Test Report documenting the results of each Test within five (5) Business Days of Test completion.

3. Performance Test Protocol.

(a) *Purpose*.

Demonstrate that the Actual Charge Power Capacity, Actual Discharge Power Capacity, Actual Energy Capacity, and Actual Roundtrip Efficiency of the System equals or exceeds the Guaranteed Power Capacity, Guaranteed Energy Capacity, and Guaranteed Roundtrip Efficiency, respectively.

(b) *Pre-Test Conditions*.

Prior to the commencement of the Test:

1. The Pre-Test Hourly Average Ambient Temperature shall be between 20°C (68°F) and 30°C (86°F) and hourly average Relative Humidity shall be less than 70% for at least 12 hours. This condition can be waived at Tesla's sole discretion.

2. If the forecasted or actual Pre-Test Hourly Average Ambient Temperature is below 20°C (68°F) during the 12 hours prior to the Test, the System shall be pre-heated for 8 hours prior to the test (Heat Mode is activated).

3. If the Pre-Test Hourly Average Ambient Temperature is above 30°C (86°F) and the hourly average Relative Humidity is greater than 70% during the 12 hours prior to the Test, then the Test shall be postponed until a time when such conditions have subsided for at least 12 hours.

4. The System shall be kept idle for 2 hours between 10% - 25% SOE to allow SOE calibration.

5. If during the Test, the Maximum Hourly Average Ambient Temperature is higher than Maximum Design Temperature, then following temperature adjustments shall be applied to Guaranteed Energy Capacity.

(a) Maximum Design Temperature < Maximum Hourly Average Ambient Temperature <= 50°C (122°F): 99.0% of Guaranteed Energy Capacity

6. If during the Test, the Maximum Hourly Average Ambient Temperature is higher than 25°C (77°F), then the following temperature adjustments shall be applied to the Guaranteed Roundtrip Efficiency of the System:

(a) 25°C (77°F) < Maximum Hourly Average Ambient Temperature <= 30°C (86°F): 99.7% of Guaranteed Roundtrip Efficiency

(b) 30°C (86°F) < Maximum Hourly Average Ambient Temperature <= 35°C (95°F): 99.0% of Guaranteed Roundtrip Efficiency

(c) 35°C (95°F) < Maximum Hourly Average Ambient Temperature <= 40°C (104°F): 98.0% of Guaranteed Roundtrip Efficiency

(d) 40°C (104°F) < Maximum Hourly Average Ambient Temperature <= 50°C (122°F): 97.0% of Guaranteed Roundtrip Efficiency

7. If the Maximum Hourly Average Ambient Temperature > 50°C (122 °F), then the Test will be postponed until a time when the temperature is expected to remain below 50°C (122°F) for a minimum of 24 hours.

8. If the Contractor, utility, or independent system operator requires a specified ramp rate, the ramp rate shall be so configured, and the energy charged and discharged during the ramp shall be accounted for in the calculation of the Actual Roundtrip Efficiency and Actual Energy Capacity.

9. Reactive Power control mode is set to OFF. If not possible, Tesla shall be entitled to reductions in the Guaranteed Values to the extent keeping reactive power control turned ON compromises the System's ability to meet the applicable Performance Guarantee. The methodology for determining such reductions shall be agreed upon between both parties ahead of the Test following detailed design of the System.

10. Frequency Support shall be disabled. If not possible, Tesla shall be entitled to reductions in the Guaranteed Values to the extent the change in grid frequency compromises the System's ability to meet the applicable Performance Guarantee. The methodology for determining such reductions shall be agreed upon between both parties ahead of the Test following detailed design of the System.

11. The System reports Available Discharge Power that is equal to or greater than the Guaranteed Power Capacity, adjusted to account for Line and Transformational Losses.

12. The System reports Available Charge Power that is equal to or greater than the Guaranteed Power Capacity, adjusted to account for Line and Transformational Losses.

(c) *Test Procedure*.

1. Discharge until the System's SOE reaches 0% or the Available Discharge Power is zero.

2. Allow the System to idle fully discharged for 5 minutes. The System shall remain grid-connected during the rest period.

3. Send a charge command equal to the Guaranteed Power Capacity. As the Tesla System Controller receives the charge command, record time T1: start of charge.

4. Hold the charge command. Once the System's Battery Real Power first reaches the Guaranteed Power Capacity, record time T2: end of the ramp (charge).

5. Hold the charge command. As the System gets close to end of charge, the absolute value of the System's Battery Real Power will drop and remain below 98% of the Guaranteed Power Capacity (for example, if command is -100 MW, the Battery Real Power should be between 0 MW and -98 MW continuously). Once the System's Battery Real Power is 98% or less of the Guaranteed Power Capacity continuously, record time T3: end of steady state charge.

6. Hold the charge command. Once the System's Available Charge Power is equal to zero, record time T4: end of charge.

7. Allow the System to idle fully charged for up to 5 minutes. The System shall remain grid-connected during the rest period.

8. Send a discharge command equal to the Guaranteed Power Capacity. As the Tesla System Controller receives the discharge command, record time T5: start of discharge.

9. Hold the discharge command. Once the System's Battery Real Power first reaches the Guaranteed Power Capacity, record time T6: end of ramp (discharge).

10. Hold the discharge command. As the System gets close to end of discharge, the System's Battery Real Power will drop and remain below 98% of the Guaranteed Power (for example, if command is 100 MW, the Battery Real Power should be below 98 MW continuously). Once the System's Battery Real Power is 98% or less of the Guaranteed Power Capacity continuously, record time T7: end of steady state discharge

11. Hold the discharge command. Once the System's Available Discharge Power is zero, record time T8: end of discharge.

(d) *Recorded Values*.

1. Average of Battery Real Power (kW), as measured at the System Meter from T2 to T3

2. Average of Battery Real Power (kW), as measured at the System Meter from T6 to T7

3. Battery Energy Imported (kWh), as measured at the System Meter at T1

4. Battery Energy Imported (kWh), as measured at the System Meter at T4

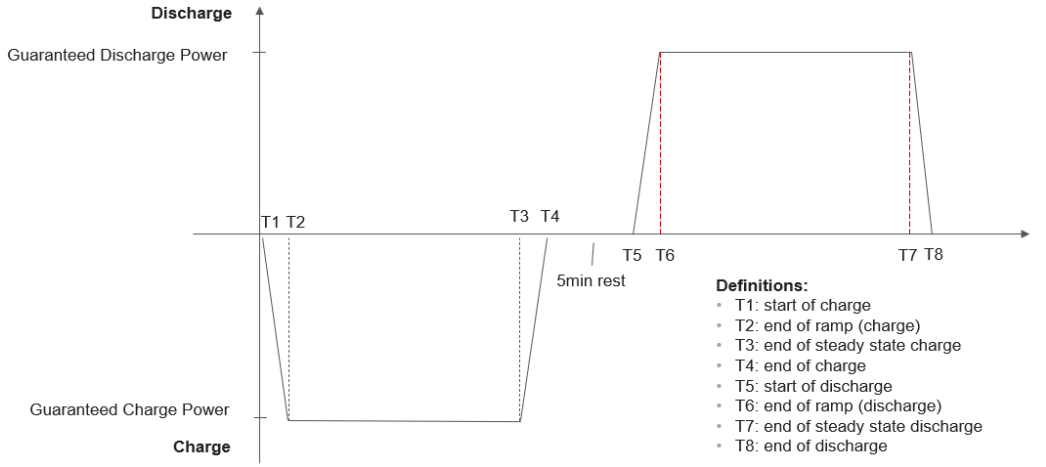
5. Battery Energy Exported (kWh), as measured at the System Meter at T5

6. Battery Energy Exported (kWh), as measured at the System Meter at T6

7. Battery Energy Exported (kWh), as measured at the System Meter at T7

8. Battery Energy Exported (kWh), as measured at the System Meter at T8

Timestamps T1 to T8 as represented below:



(e) *Acceptance Criteria*.

1. Guaranteed Power Capacity

$$|Actual\ Charge\ Power\ Capacity| \geq Guaranteed\ Power\ Capacity * (1 - Metering\ System\ Error)$$

$$Actual\ Discharge\ Power\ Capacity \geq Guaranteed\ Power\ Capacity * (1 - Metering\ System\ Error)$$

Where:

Actual Charge Power Capacity is the average of the Battery Real Power between times T2 and T3
Actual Discharge Power Capacity is the average of the Battery Real Power between times T6 and T7

2. Guaranteed Energy Capacity

$$Actual\ Energy\ Capacity \geq Guaranteed\ Energy\ Capacity * (1 - Metering\ System\ Error)$$

Where, if no Real Power Ramp Rates are configured:

$$Actual\ Energy\ Capacity = Battery\ Energy\ Exported\ (T7) - Battery\ Energy\ Exported\ (T6)$$

Where, if Real Power Ramp Rates are configured:

$$Actual\ Energy\ Capacity = Battery\ Energy\ Exported\ (T8) - Battery\ Energy\ Exported\ (T5)$$

If the Contractor, utility, or independent system operator require that Real Power Ramp Rates are applied during the Test, the energy discharged during the ramp up and ramp down times shall be included in the Actual Energy Capacity.

3. Guaranteed Roundtrip Efficiency

$$Actual\ Roundtrip\ Efficiency \geq Guaranteed\ Roundtrip\ Efficiency$$

Where:

$$Actual\ Roundtrip\ Efficiency = 100\% * \frac{Battery\ Energy\ Exported\ (T8) - Battery\ Energy\ Exported\ (T5)}{Battery\ Energy\ Imported\ (T4) - Battery\ Energy\ Imported\ (T1)}$$

(f) *Acceptance Criteria*.

If the Acceptance Criteria for Guaranteed Roundtrip Efficiency are not met, then Tesla shall have the option to buy down the Guaranteed Roundtrip Efficiency. The "Roundtrip Efficiency Buydown" shall be calculated as follows

$$Roundtrip\ Efficiency\ Buydown\ [USD] = \sum_{t=1}^{Warranty\ Years} \frac{\left(\frac{1}{Actual\ RTE} - \frac{1}{Guaranteed\ RTE}\right) \times (Total\ Throughput\ Limitation_t - Total\ Throughput\ Limitation_{t-1}) \times Guaranteed\ Energy\ Capacity \times Energy\ Cost}{(1+i)^t}$$

Where,

t = Operating Year of the Megapack Limited Warranty
Energy Cost has the meaning given in the Key Terms
i = discount rate of 10%

Tesla's liability for the Roundtrip Efficiency Buydown will be limited to the Roundtrip Efficiency Buydown Cap

EXHIBIT W

GUARANTY OF PAYMENT AND PERFORMANCE

This Guaranty of Payment and Performance (this "Guaranty") dated as of **[*]** (the "Effective Date"), is entered into by Public Service Company of New Mexico ("Guarantor"), in favor of Gridworks Inc., a corporation organized under the laws of the State of New Mexico ("Beneficiary") (Beneficiary and Guarantor, individually a "Party" and collectively, the "Parties").

RECITALS

A. Guarantor's affiliate, Public Service Company of New Mexico (the "Owner"), and Beneficiary have entered into that Engineering, Procurement and Construction Agreement dated **[*]** (as it may be amended, restated or otherwise modified pursuant to its terms from time to time, the "Agreement"), pursuant to which the Owner has agreed, among other things, to (i) purchase a battery energy storage system to be built by Beneficiary (as defined in the Agreement) and (ii) perform certain related obligations in connection therewith.

B. Guarantor acknowledges that it will indirectly benefit from the terms and conditions of, and the performance by Owner and Beneficiary of their respective obligations under, the Agreement.

NOW, THEREFORE, in consideration of Beneficiary's agreement to enter into the Agreement with Owner, the premises, covenants and agreements contained in this Guaranty and other good and valuable consideration (the receipt and sufficiency of which the Parties acknowledge), Guarantor agrees with Beneficiary as follows:

AGREEMENT

1. Defined Terms. Except as otherwise provided herein, all capitalized terms used herein but not defined herein shall have the respective meaning assigned to such term in the Agreement.

2. Guaranty.

(a) In consideration of, and as an inducement for, Beneficiary's entering into the Agreement as of the date hereof, and in respect of the other consideration described herein, Guarantor, as of the Effective Date, irrevocably and unconditionally guarantees to Beneficiary the full and timely payment when due of all sums due and payable by Owner to Beneficiary in accordance with the terms and conditions of the Agreement, up to the amount of $_____, plus applicable taxes, and the full and faithful performance of all non-monetary obligations and responsibilities of Owner under the Agreement (collectively, the "Guaranteed Obligations").

(b) The Guaranteed Obligations shall include, without limitation, all reasonable costs and expenses (including reasonable attorneys' fees), if any, incurred in enforcing Beneficiary's rights under this Guaranty.

(c) To the extent that Owner shall fail to pay or fulfill any Guaranteed Obligation, as applicable, when due under the Agreement, Guarantor shall promptly pay or fulfill such Guaranteed Obligation, as applicable, for the benefit of Beneficiary, and in any event no later than on or before 5:00 p.m. prevailing Mountain Time on the fifth (5th) business day following a written justified demand therefor (a "Demand") furnished by Beneficiary to Guarantor.

(d) Notwithstanding anything contained herein to the contrary, in the event of any claim under this Guaranty, Guarantor shall be entitled to assert any defense, set-off or counterclaim Owner could assert had such claim been made directly against Owner, except for defenses arising out of bankruptcy, insolvency, receivership, reorganization, dissolution or liquidation of Owner, the power or authority of Owner to enter into the Agreement and the lack of validity or enforceability of the Agreement.

3. Nature of Guaranty. This Guaranty constitutes a guarantee of payment and performance and not of collection. This Guaranty is a continuing guarantee of payment and performance, is binding as a continuing obligation of Guarantor and shall be absolute and unconditional as if Guarantor were the principal obligor in respect of the Guaranteed Obligations.

4. Guaranty Absolute. To the fullest extent permitted by applicable law, the obligations of Guarantor are absolute and unconditional (except in the event of Owner's satisfaction of all its obligations under the terms of the Agreement) and Guarantor shall have no right to be released, relieved or discharged, in whole or in part, from its obligations referred to in this Guaranty for any reason whatsoever, including:

(a) any change in the time, manner or place of the payment or performance of the Guaranteed Obligations or in any other term of the Agreement or Owner's failure to carry out any of its obligations under the Agreement;

(b) any change in the financial condition of Guarantor or Owner;

(c) any change in the corporate existence, structure or ownership of, or cessation of existence of, Guarantor or Owner (whether by way of merger, amalgamation, transfer, sale, lease or otherwise);

(d) the bankruptcy, winding-up, liquidation, dissolution, insolvency, reorganization or other similar proceeding affecting Owner or its assets or any resulting rejection, release, stay or discharge of any Guaranteed Obligations;

(e) any lack or limitation of power, incapacity or disability on the part of Owner or of its directors, officers or agents;

(f) any amendment, supplement or modification to, waiver of, consent to or departure from, or failure to exercise any right, remedy, power or privilege under or in respect of, the Agreement, the Guaranteed Obligations or any other agreement or instrument relating thereto;

(g) the existence of any claim, set-off, or other rights which Guarantor may have at any time against Beneficiary in connection with any matter unrelated to the Agreement; or

(h) any defense arising by reason of any failure of Beneficiary to make any presentment, demand for performance, notice of non-performance, protest, or any other notice, except as expressly set forth herein.

5. Demands. Each Demand shall be in writing and shall (i) specify the nature of Owner's default in payment or performance of the Guaranteed Obligation that Owner has failed to pay or perform and (ii) demand that Guarantor pay or perform, as applicable, such Guaranteed Obligation in accordance with this Guaranty. A Demand satisfying the foregoing requirements shall be required with respect to Guaranteed Obligations before Guarantor is required to pay or perform such Guaranteed Obligation and shall be deemed sufficient notice to Guarantor that it must pay or perform the Guaranteed Obligation to the extent required hereunder.

6. No Exhaustion of Remedies. Subject to the requirement that Beneficiary provide a Demand in accordance with Section 2(c), Beneficiary is not obligated to exhaust its remedies against Owner or any other persons or take any other action before being entitled to make a demand for payment or performance from Guarantor.

7. Representations and Warranties. Guarantor represents and warrants to Beneficiary that, as of the Effective Date:

(a) Guarantor has full power and authority to execute, deliver and perform its obligations under this Guaranty;

(b) The execution, delivery and performance of this Guaranty have been duly authorized by all necessary action on behalf of Guarantor and do not contravene any provision of applicable law or of Guarantor's organizational documents or any contractual restriction binding on Guarantor or its assets;

(c) This Guaranty constitutes the legal, valid and binding obligation of Guarantor enforceable against Guarantor in accordance with its terms, subject to bankruptcy, insolvency, reorganization, moratorium and other laws of general application relating to or affecting creditors' rights and to general equitable principles (whether considered in a proceeding at law or in equity);

(d) No consent, approval, authorization or permit of, or filing with or notification to, any person or entity is required for or in connection with the execution and delivery of this Guaranty by Guarantor or for or in connection with the consummation of the transactions and performance of the terms and conditions contemplated hereby by Guarantor; and

(e) Guarantor has full knowledge of the financial condition of Owner.

8. Financial Condition of Owner. Guarantor shall be responsible for maintaining its knowledge of Owner's financial condition during the term of this Guaranty. Beneficiary shall have no duty to advise Guarantor of information known to Beneficiary regarding such financial condition or any circumstances bearing upon the risk of nonpayment or nonperformance of the Guaranteed Obligations by Owner.

9. Termination. This Guaranty shall automatically terminate upon the expiration of all surviving obligations of Owner under the Agreement (the "Guaranty Termination Date"). Any Demand submitted by Beneficiary after the Guaranty Termination Date shall not be effective or create any liability of Guarantor and is not guaranteed under this Guaranty. No such termination or release shall affect, release or discharge Guarantor's liability with respect to any Demand claimed by Beneficiary submitted by Beneficiary prior to the Guaranty Termination Date, and this Guaranty shall remain in full force and effect until such Demand submitted prior to the Guaranty Termination Date is paid in full, fulfilled or Guarantor is otherwise discharged from liability.

10. Subrogation. Guarantor will not exercise any rights that it may acquire by way of subrogation under this Guaranty by any payment made hereunder or otherwise, until all the Guaranteed Obligations have been paid in full, performed or otherwise satisfied. If any amount shall be paid to Guarantor on account of such subrogation rights at any time when all the Guaranteed Obligations shall not have been paid in full, performed or otherwise satisfied, such amount shall be held in trust by Guarantor for the benefit of Beneficiary and shall forthwith be paid to Beneficiary, to be credited and applied to the Guaranteed Obligations.

11. Waivers. Guarantor hereby waives (a) notice of acceptance of this Guaranty; (b) presentment, demand, notice of non-performance, protest, notice of protest and notice of dishonor concerning the liabilities of Guarantor, except for a Demand as expressly set forth in Section 2(c) above; and (c) any right to require that any action or proceeding be brought against Owner or any other person to require that Beneficiary seek enforcement of any performance against Owner or any other person. Guarantor consents to the renewal, compromise, extension, changes in the time of payment of or other changes in the terms of the Guaranteed Obligations, or any part thereof or any changes or modifications to the terms of the Agreement.

12. Benefit of the Guaranty. This Guaranty shall be binding on the executors, administrators and successors of Guarantor and shall inure to the benefit of Beneficiary and its executors, administrators, successors and permitted assigns.

13. Entire Agreement. Notwithstanding anything else stated in this Guaranty, this Guaranty constitutes the entire agreement between Beneficiary and Guarantor with respect to the Guaranty's subject matter and supersedes all other agreements and understandings between the Parties, whether written or oral, with respect to the subject matter hereof. There are no representations, warranties, terms, conditions, undertakings or collateral agreements, expressed, implied or statutory, between the Parties, with respect to the subject matter of this Guaranty, other than as expressly stated in this Guaranty.

14. Remedies. No delay of Beneficiary in the exercise of, or failure to exercise, any rights or remedies hereunder shall operate as a waiver of such rights or remedies, a waiver of any other rights or remedies or a release of Guarantor from any obligations hereunder, and no single or partial exercise by Beneficiary of any right or remedy shall preclude any further exercise thereof or the exercise of any other right or remedy. The remedies in this Guaranty are cumulative and not exclusive of any remedies provided by law or equity.

15. Severability. If any provision of this Guaranty is determined to be invalid or unenforceable in whole or in part, such invalidity or unenforceability shall apply only to such provision and all other provisions of this Guaranty shall continue in full force and effect.

16. Amendment. This Guaranty shall not be amended, changed or modified except by a subsequent agreement in writing which indicates that such writing is intended to amend the terms of this Guaranty and is signed by duly authorized officers of both Parties. The Parties agree that this Guaranty shall not be amended in any manner by any course of dealing between the Parties.

17. Notices. Any notice, demand, request or other communication to be given in connection with this Guaranty must be addressed to the receiving Party at:

To Beneficiary:

Gridworks Inc.
3900 Singer Blvd. NE
Albuquerque, NM 87109
Attention: Legal
Telephone: +1 505.944.4220
Email: legal@gridworks.com

And to Guarantor at:

Public Service Company of New Mexico
414 Silver Avenue SW
Albuquerque, NM 87102
Attention: General Counsel

Any notice, Demand, request or other communication may be delivered, and shall be effective upon delivery by certified mail. Each Party may notify the other of any change of address in the manner provided therein.

18. Assignment. Guarantor may not assign its rights under this Guaranty without the prior written consent of Beneficiary. For avoidance of doubt, Beneficiary shall be permitted to freely assign its rights and obligations under this Agreement in connection with a valid assignment by Beneficiary of the Agreement. Any purported assignment which fails to comply with the requirements of this Section 18 shall be null and void and shall have no force or effect.

19. Governing Law. This Guaranty and the rights and obligations of the Parties hereunder and the transactions contemplated hereby shall be governed by, enforced and interpreted in accordance with the laws of the State of New Mexico, without regard to conflicts of laws rules that require or permit the application of the laws of another jurisdiction.

IN WITNESS WHEREOF, the Parties have caused this Guaranty to be executed by their authorized representatives as of the Effective Date.

GUARANTOR:
Public Service Company of New Mexico

By:_____
Name:_____
Title: _____

BENEFICIARY:
Gridworks Inc.

By:_____
Name:_____
Title: _____

EXHIBIT X

EXPEDITED PAYMENT

Contractor shall specify and arrange for the purchase of:

1. ESS Units sufficient to meet the requirements in Exhibit A-1, Contractor's Statement of Work from approved suppliers described in Exhibit K, Specified Suppliers and Specified Subcontractors.

Contractor shall provide to Owner copies of supply agreements with such supplier (currently anticipated to be Tesla for the ESS Units) and will provide a schedule of payment to such supplier as design is finalized. Owner agrees that within 10 days of Contractor's submission of invoices for ESS Units to Owner and consistent with the above, Owner shall pay such invoices (without duplication in the Contract Price).

Appendix X-1 BESS Sale & Purchase Agreement by and between Tesla, Inc. and Gridworks, Inc.

EXHIBIT Y

LIMITED NOTICE TO PROCEED AGREEMENT

LIMITED NOTICE TO PROCEED AGREEMENT

This LIMITED NOTICE TO PROCEED for the **PNM Distribution Battery Phase II** Project ("LNTP") is issued as of **XXXX XX, 202X** (the "Effective Date"), by PUBLIC SERVICE COMPANY OF NEW MEXICO ("Owner"), to GRIDWORKS INC. ("Contractor") pursuant to the EPC of the same date.

This LNTP authorizes Contractor to:

Execute the Tesla Megapack Sale and Purchase Agreement. (See Exhibit X in EPC Agreement)

Procure and initiate purchases of other long lead items:

- BESS medium-voltage transformers

Prepare and submit up to 90% project engineering packages for Owner reviews

LNTP Amount. The amount authorized by this LNTP shall not exceed $_____M. The payment schedule will follow the payments in Exhibit I of the EPC Agreement (the "Payment Schedule"). Supply agreements obtained under this LNTP will be shared with Owner as soon as executed and will be assignable to Owner or its designee. No additional expenditures are authorized until Owner issues full Notice to Proceed.

Payment. Contractor shall invoice Owner the portions of the LNTP Amount specified in the payment schedule set forth in Exhibit I upon providing Owner evidence of satisfactory progress of the preliminary work. Payment terms will follow Section 6 of the EPC.

EPC Contract Wrap. This LNTP – including any payments made – shall be incorporated into the EPC Contract and the rights and obligations of the Parties under this LNTP (including the Parties' rights upon Termination of obligations hereunder) shall be governed by the terms of the EPC Contract. In the event of a conflict between this LNTP and the EPC Agreement, all of both Parties' rights, obligations and remedies under this LNTP will be superseded by the rights, obligations and remedies of the EPC Contract.

[SIGNATURES ON THE FOLLOWING PAGE]

IN WITNESS WHEREOF, the Parties have caused this LNTP to be duly executed as of the Effective Date.

OWNER:

Public Service Company of New Mexico

By: _____

Name: _____

Title: _____

CONTRACTOR:

Gridworks Inc.

By: _____

Name: _____

Title: _____

EXHIBIT Z - Tesla Lithium Indexation Formula, Assumptions and Illustrations (Price Adjustment)

The Contract Price shall be adjusted to the extent the Final Price for the Tesla ESS (Megapack) units changes pursuant to the following:

Final Price = Megapack System Price + Price Adjustment

Price adjustment is based on $/kWh of installed energy capacity

Price Adjustment = (LCEm - LCEb) * MPx * (1/Fx) / 1000

- Fx - RMB/USD rate at the time of Final Price Calculation
- MPx - Megapack cost factor
- LCEb - baseline lithium carbonate price
- LCEm - market lithium carbonate price = the average lithium carbonate price of the LCE Observation Period in accordance with the table below.

Defined by SMM Shanghai Metals Market (99.5% Battery Grade)

- Minimum value of 67,500 RMB

Delivery Period Midpoint*	LCE Observation Period**
Dec — Feb	Mar — May
Mar — May	Jun — Aug
Jun — Aug	Sep — Nov
Sep — Nov	Dec — Feb

Details on Delivery and associated LCE Observation Quarter subject to final confirmation
*Median date between Earliest Permitted Delivery Date and Guaranteed Delivery Date
**Year prior to median delivery date
Example: For median delivery date in November 2024, the LCE Observation Period for Continental North America would be Dec 2023 - Feb 2024

Tesla's LCE Indexation Illustration

Project/Configuration	MP2XL 4hr C012
Installed Capacity (kWh)	25,020
Exchange (RMB/USD)***	7.244
LCEb (RMB/mt)	100,000
MPx	1.180

% Change in LCE	LCEm (RMB/t)	($/kWh)
-32%	67,500	-5.29
50%	150,000	8.14
150%	250,000	24.43
250%	350,000	40.71
350%	450,000	56.99

EXHIBIT AA

Prevailing Wage Certificate

This Prevailing Wage Certificate is being given pursuant to that certain engineering, procurement and construction agreement (the "EPC Contract"), dated as of *[*date*]*, between ("Owner") and *[ ]* ("Contractor") for the construction of the facility (the "Project"). Capitalized terms not defined in this certificate have the same meaning as in the EPC Contract.

The undersigned, in his or her capacity as an officer of Contractor, hereby certifies as follows:

1. Contractor's Prevailing Wage Requirements and Apprentice Requirements for the Project have been fulfilled as of Final Completion.

2. All PWA Records required to be retained by Contractor and its Subcontractors, whose workers performed Work subject to the Prevailing Wage and Apprenticeship requirements at the Site or any secondary construction site or support site, have been retained by Contractor and, to the best of Contractor's knowledge as of the date of this certificate, its Subcontractors.

The undersigned declares that I have examined the information contained in this Prevailing Wage Certificate, am aware that the Owner plans to use the information as a basis for certifying compliance with the Prevailing Wage Requirements and Apprentice Requirements to the Internal Revenue Service, and, to the best of my knowledge and belief and based on appropriate internal diligence, the information is true, correct and complete.

*[*Contractor*]*

By: _____

Name: _____

Title _____

BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

IN THE MATTER OF PUBLIC SERVICE COMPANY OF NEW MEXICO'S APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT, OWN, AND OPERATE 30 MEGA WATTS OF BATTERY ENERGY STORAGE FACILITES	)	**Case No. 25-000__-UT**
PUBLIC SERVICE COMPANY OF NEW MEXICO	)	

AFFIDAVIT

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

GARY B. BARNARD, Executive Director, Renewable Generation and Contracts for PNMR Services Company, upon being duly sworn according to law, under oath, deposes and states: I have read the foregoing **Direct Testimony of Gary B. Barnard,** and it is true and accurate based on my own personal knowledge and belief.

DATED this 6th day of August, 2025.

/s/ *Gary B. Barnard*
GARY B. BARNARD

GCG #533975