

San Juan Replacement Plan Stakeholder Meeting

April 23rd, 2019

TOM FALLGREN



Talk to us.



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SAFETY AND LOGISTICS

MEETING PRELIMINARIES

- Fire escape routes via stairways at east and west ends of hallway; please let us know if you require special handicap egress or special assistance
- We must obey any fire or emergency alarm; even drills/test alarms
- Restrooms – Women's room at west end; Men's room at east end
- PNM's WiFi – username: guest,
password: **@angryAnt89**

SAFETY AND LOGISTICS CONTINUED

MEETING PRELIMINARIES

- Please be aware that there are outlets/network connections on the floor
- Must sign-in with security desk each time you enter the building
- Must be escorted in and out of the building by a PNM employee
- Recycling is easy and encouraged

AGENDA

- 2017 IRP - Tom F
- Changes since 2017 IRP – Tom F
- SJGS replacement RFP – Tom F
- SJGS replacement bid evaluation – Roger N (HDR)
- Initial Modeling – Nick W (Astrape)
- Initial Model Results – Nick W (Astrape)
- Ascend Modeling – Dave M
- Summary and Next Steps – Tom F

2017 IRP SUMMARY ACTION PLAN

- Continue to develop and implement energy efficiency and demand management programs
- Add renewable energy resources to maintain compliance with the Renewable Portfolio Standard (RPS)
- Explore options to maintain system supply and reliability
 - Assess the costs and benefits of joining the California Energy Imbalance Market
 - Participate in regional transmission planning groups
 - Complete an economic assessment of the Reeves Generating Station to develop a plan for Reeves
- File for SJGS abandonment with the NMPRC
 - Issue a RFP for energy storage, renewable energy and flexible natural gas resources to confirm the assumptions and refine the replacement resources
 - Make a filing with the NMPRC to determine the extent to which SJGS should continue to serve PNM retail customers no later than Dec 2018.
 - Define SJGS replacement resources
- Secure Palo Verde leased capacity to support carbon free portfolio
- Meet load growth with additional renewable energy, gas peaking, or energy storage
- Identify the best opportunities to increase transmission capacity to Eastern NM wind energy.
- Replace expiring Valencia PPA in 2028
- Exiting Four Corners at end of contract term in 2031 results in benefit to customers

UPDATES SINCE 2017 IRP – ENERGY EFFICIENCY

Energy Efficiency

- During 2019 legislative session HB 291 amended the EUEA
- Included decoupling mechanism for disincentives
- Increased cap on efficiency spending from 3% to be up to 5%
- Increased EE goals reduce planned renewable capacity
- PNM load forecast updating to reflect this change

UPDATES SINCE 2017 IRP - RPS

SB489 Energy Transition Act passed during 2019 legislative session

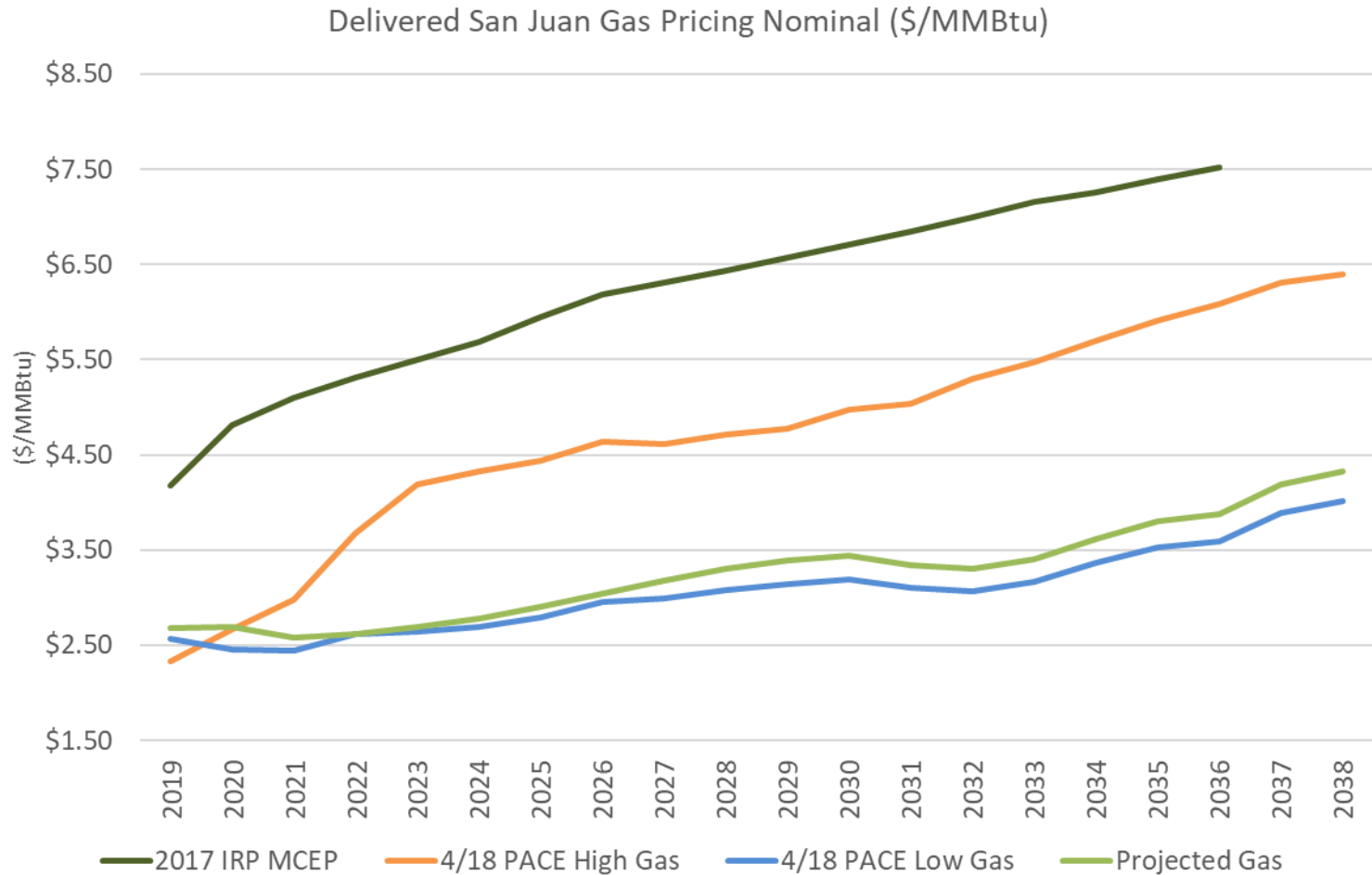
Renewable Portfolio Standard:

- Removal of exemptions and large customer caps
- 20% by 2020
- 40% by 2025
- 50% by 2030
- 80% by 2040
- 100% carbon free by 2045

PNM's June 1st, 2019 RPS submittal for 2020 compliance year

- Additional resource required because of removal of exemptions and caps
- This additional resource included in SJGS replacement modeling

UPDATES SINCE 2017 IRP – NATURAL GAS PRICING



UPDATES SINCE 2017 IRP – VOLUNTARY PROGRAM

PNM Solar Direct Voluntary Program

- 50 MWs Solar
- Participants include City of ABQ, other gov't entities, large customers
- Commercial Operation Date – Spring of 2021
- Per Energy Transition Act voluntary program RECs not counted toward new RPS requirements
- Anticipate filing with NMPRC by May 31st, 2019
- Approval of this program assumed in SJGS replacement modeling

www.pnm.com/solardirect

UPDATES SINCE 2017 IRP – REGIONAL MARKETS - EIM

- August 22, 2018 PNM filed application for regulatory asset with NMPRC
- Anticipated joining Western EIM in April 2021
- Estimated \$20.9M initial capital & \$7.4M other expenses to join
- Estimated benefits from \$10.6M - \$19.4M annually
- December 12th, 2018 NMPRC approved order
- February 6, 2019 NMPRC issued order vacating Dec 2018 order and granting rehearing.
- March 27th, 2019 NMPRC issued final order adopting Hearing Examiner's recommended decision from rehearing
- April 12th, 2019 Joint motion filed for Clarification of March 27th final order regarding benefits calculations for a future rate case
- Uncertainty on PNM participation at this time
- EIM participation can impact market interaction assumptions in modeling

UPDATES SINCE 2017 IRP – PARTICIPATION REGIONAL TRANSMISSION PLANNING

- PNM participates in WestConnect regional transmission planning with other regional utilities
 - WestConnect has multiple stakeholder classes including transmission owners, transmission customers, independent transmission developers, state regulatory commissions, key interest groups.
- Biennial planning cycle is used to develop a regional plan
- Process includes monthly meetings with stakeholders.
 - PNM participates in Planning Subcommittee, Planning Management Committee and is vice-chair of Cost Allocation Subcommittee.

UPDATES SINCE 2017 IRP – REEVES LIFE CYCLE STUDY

- Life Assessment Study completed by Black & Veatch on May 17th, 2017
- Current plan results in Reeves depreciated by 2030
- Study identified capital and on-going O&M necessary to safely and reliability maintain Reeves through this duration
- Ongoing costs to retain Reeves currently lower than new capacity additions
- Reeves location is very strategic for transmission system reliability
- Reeves is a critical load-side generating resource for load to relieve transmission system constraints and to provide voltage support in the ABQ metro area.

UPDATES SINCE 2017 IRP – LOAD GROWTH

- PNM has seen indication that the New Mexico economy has started to recover (reference PNM April 2019 investor presentation).
- PNM currently in the process of updating its latest load forecast
- This updated load forecast will be used for finalizing SJGS replacement resource modeling

SJGS REPLACEMENT RFP

- Completed initial Astrape modeling to inform RFP instructions to bidders (see Astrape presentation for more details).
- PNM meet with BART Signatories in October 2017 to inform RFP
- Additional instructions on early introduction of renewable to utilize tax credits
- Utilized PowerAdvocate sourcing tool to capture all documents and provide for questions/answers in central transparent location
- Transmission interconnection/service costs included in evaluations to fully capture cost to deliver energy to load with WECC Path 48
- 345 bids from 37 bidders
- See HDR presentation on best in class determinations
- See Astrape presentation on initial modeling conclusions

SJGS REPLACEMENT RFP – PNM

- To assist consultants in their evaluation of RFP bids
- Determine a 20-year “least cost” portfolio based on the bids received using expansion planning software (Strategist®) with a focus on 2022 replacement resources
- Perform several portfolio sensitivity simulations to test various input assumptions
- Compare best performing portfolio against 2017 IRP MCEP

SJGS REPLACEMENT RFP – CONSULTING SUPPORT

HDR Engineering

- Hired as the third-party Independent Engineering firm
- Provided Industry Energy Storage assessment
 - <https://www.pnm.com/energy-sources>
- Facilitated development of the RFP instructions and supporting technical documents
- Bid evaluations to develop “best in class” for each technology
- Participation in contract negotiations with bidders
- Providing testimony in SJGS replacement filings

SJGS REPLACEMENT RFP – CONSULTING SUPPORT

Reference HDR Presentation

SJGS REPLACEMENT RFP – CONSULTING SUPPORT

Sandia National Laboratory

- Provided information on battery energy storage technology
- Assessment of the maturity of various technologies
- Input on Battery Life Cycle Analysis
- Value streams for batteries and options for capturing
- Commercial consideration for developing contract language

SJGS REPLACEMENT RFP – CONSULTING SUPPORT

Astrape Consulting

- Utilizes SERVUM software
- Multi area reliability and intra-hour production cost modeling and determination of system adequacy
- Allows the evaluation of capacity value, energy value, and flexibility value of different technologies
- Initial pre-RFP modeling to inform the RFP instructions
- Identify potential optimal resource portfolios and breakpoints on resource costs
- Performing determination on portfolios to convert “best in class” by technology to least cost portfolios that meet system reliability requirements
- Portfolio sensitivities on varying amounts of gas, solar, wind and storage

SJGS REPLACEMENT RFP – CONSULTING SUPPORT

Reference Astrape Presentation

SJGS REPLACEMENT RFP – INITIAL RESULTS

Initial results - Astrape

- Renewable only portfolios do not meet reliability requirements
 - Need additional capacity from gas or battery resources
- Most economic portfolio results in >450 MWs total
 - Capacity resources plus low cost renewable energy resources
- Large combined cycle provided reliability risk and did not provide the same flexibility as fast start gas or batteries
- More flexible gas chosen over frame units
- Battery behind solar limits ability to use full value stream of storage
- PPA providers limiting usage pattern of batteries

SJGS REPLACEMENT RFP – CONSULTING SUPPORT

Ascend Analytics

- Utilize PowerSimm Analysis tool
- Quantifies value of flexible capacity and ancillary services
- Quantifies resource value in regional markets (EIM)
- Analyzes role of energy storage in reliability support and market interaction
- Ascend role in SJGS abandon is to independently analyze top portfolios focusing on:
 - Capturing weather, load, renewable supply and price volatility through Monte Carlo simulations
 - Resource sufficiency for peak and flexible capacity for renewable integration
 - Market value of resources
 - Sub-hourly value in the Energy Imbalance Market (EIM)
 - Role and ownership model for batteries

SJGS REPLACEMENT RFP – MODELING REQUIREMENTS

Reference Ascend presentation

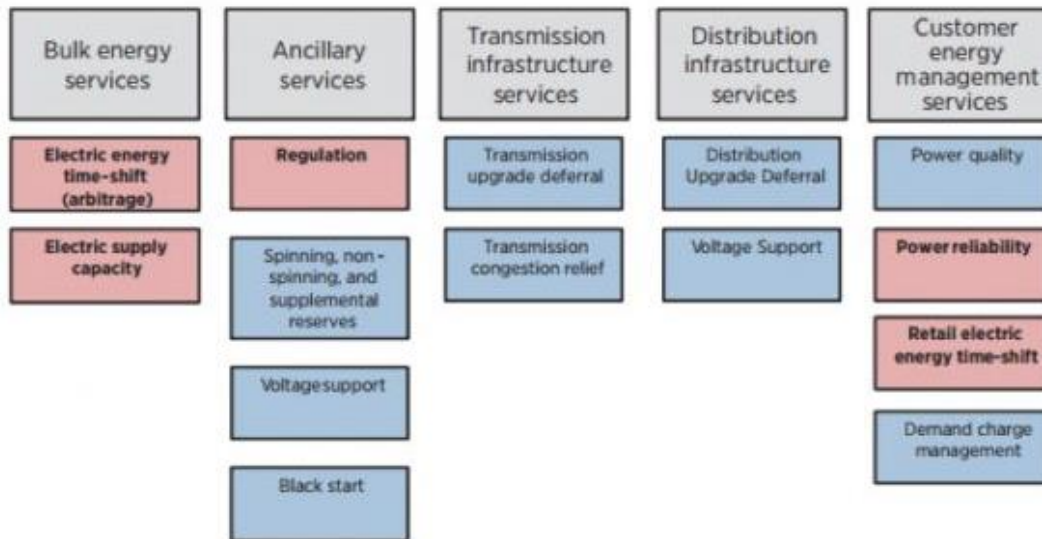
SJGS REPLACEMENT RFP – BATTERY VALUES

Justification for near term Battery installation dependent on collecting all the potential value streams including:

- Energy arbitrage – transfer of energy from one time to another time
- Energy Supply Capacity
- Energy regulation – ramp capability
- Spinning reserve
- Voltage support
- Black Start capability
- Transmission upgrade deferral and transmission congestion relief
- Distribution upgrade deferral
- Power quality and reliability

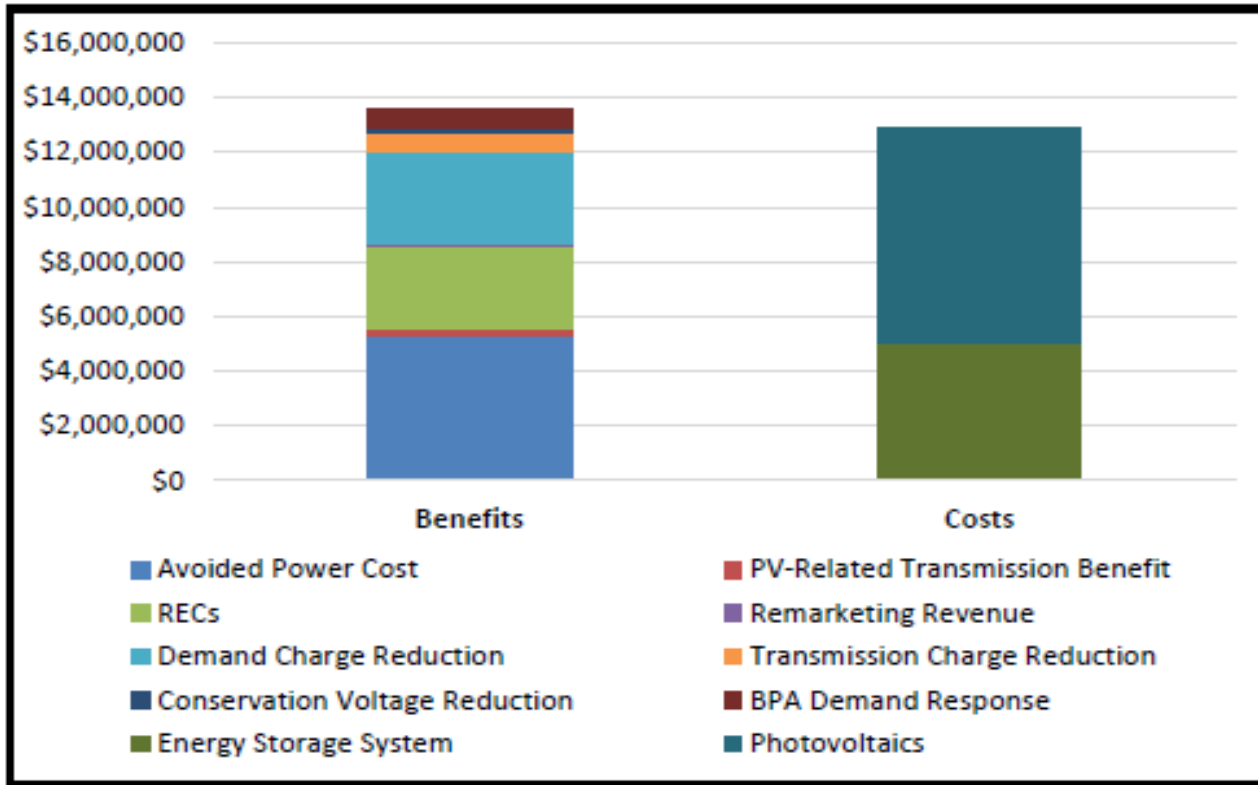
SJGS REPLACEMENT RFP – BATTERY VALUES

FIGURE 1: Services Provided by Battery Storage



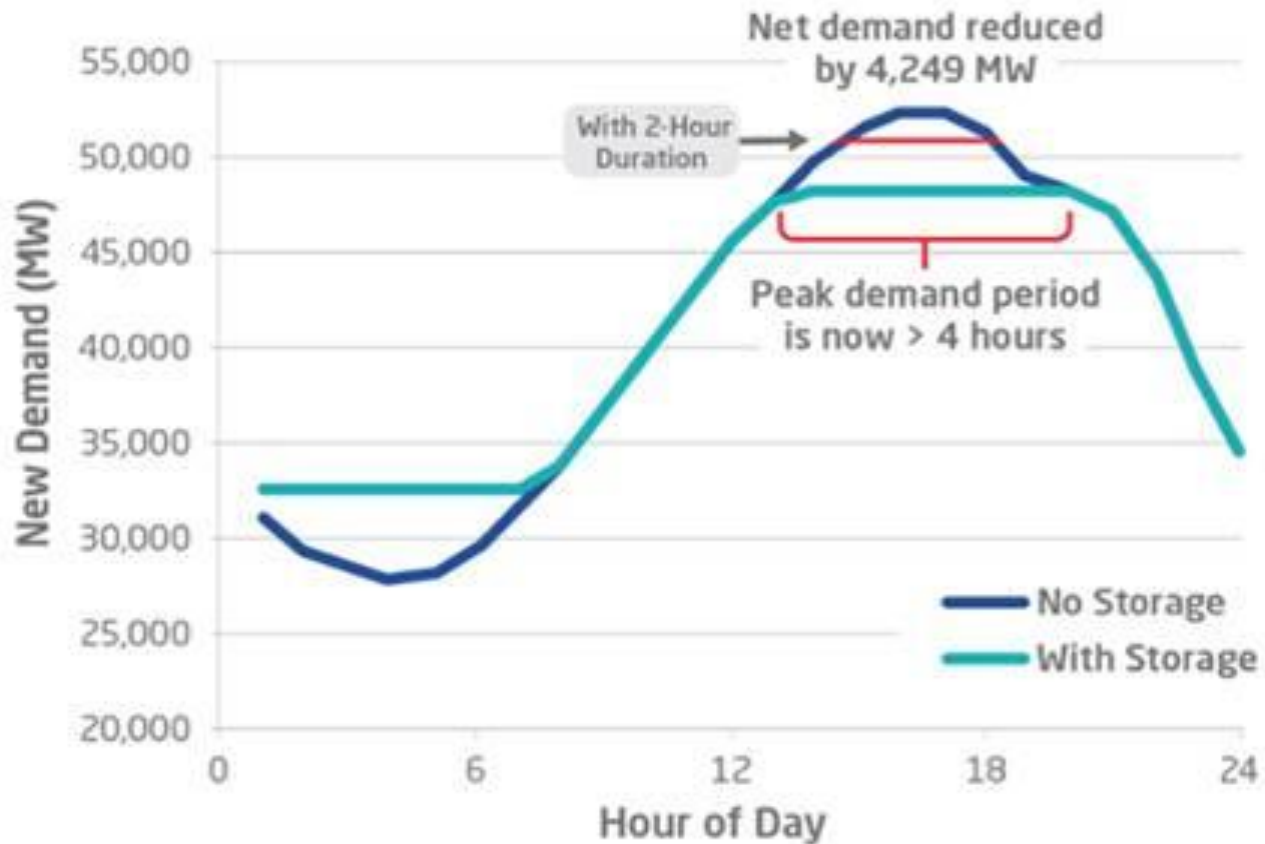
SJGS REPLACEMENT RFP – BATTERY VALUES

Illustrative benefits/costs



Above is an example of the battery installation justification used for the City of Richland Washington in coordination with Sandia National Labs.

SJGS REPLACEMENT RFP – BATTERIES



<https://www.utilitydive.com/news/unlayering-peak-demand-could-accelerate-energy-storage-adoption/546098/>

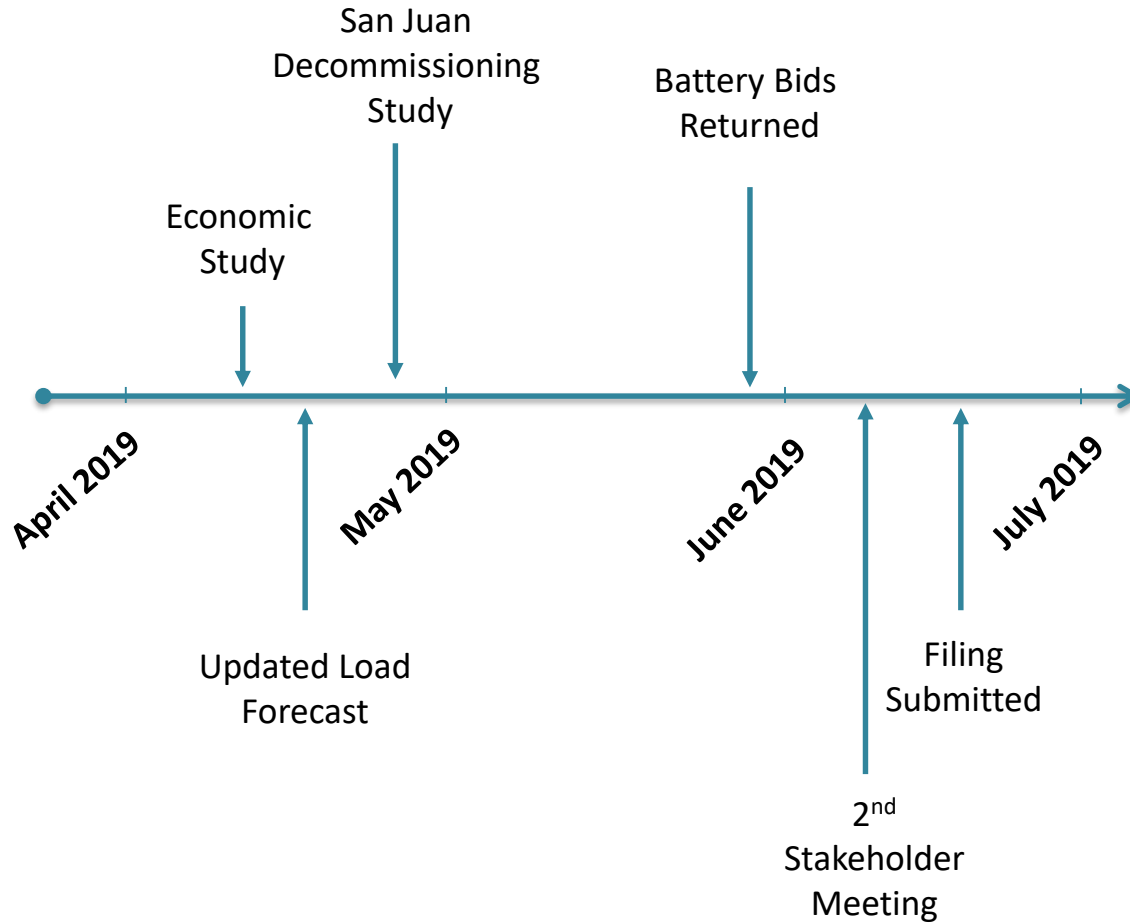
SJGS ABANDONMENT – ADDITIONAL INPUTS

- City of Farmington ownership of SJGS
 - Potential impacts to Reclamation, decommissioning, taxes, economic development fund, etc
- Water intake and storage facilities utilized for other beneficial uses
 - Current negotiations underway
 - Potential impacts to decommissioning, taxes, economic development
- Decommissioning study completion
 - Study agreed to by 9 owners in March 2019
 - Anticipate completion early May 2019
- Reclamation options by third party review

SJGS REPLACEMENT RFP – ALTERNATIVES CONSIDERED

- Least cost scenario
- Comparison of 450 MWs in affected school district
- Comparison of 450 MWs of renewables in affected school district
- No new gas additions

SJGS REPLACEMENT RFP – TIMELINE





Talk to us.



UPDATES SINCE 2017 IRP – RPS

PRE-ETA

POST-ETA



RPS = 20% RPS by 2020 w/diversity
RCT = 3% of annual revenues

RPS = 20% by 2020, 40% by 2025, 50% by 2030,
no diversity reqt. RCT = \$60/MWh levelized



Removes Exempt Customers & includes Large
Customer Adj

No Large Customer Adjustment. UNM & ABCWUA
Exempt only for equivalent energy produced



Includes avoided costs (per Aurora modeling)

No avoided cost calculation



Calculate on-year costs for owned and purchased
resources/RECs

Calculate costs on levelized basis for resource/REC life



June 1 filing date

July 1 filing date (beginning 2020)



Exclude Data Center and Community Solar loads &
resources

No change