

PNM Transportation Electrification Program

Approved by the NMPRC

2022 - 2023

Public Service Company of New Mexico



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2. Purpose of this Document

This document shall serve as a reference for the approved PNM Transportation Electrification Program (TEP or Program). All components of the Program will be detailed in this document and will include assumptions, calculations, and descriptions of the final product.

This document describes the both the motivation and design of the TEP, as well as the components that received approval from the New Mexico Public Regulations Commission (NMPRC) in Case No. 20-00237-UT.

3. Executive Summary

House Bill 521 – PRC Application for Vehicle Electricity (HB 521) was enacted into law on June 14th, 2019 and requires investor-owned utilities (IOUs) to file an application to expand transportation electrification with the New Mexico Public Regulation Commission (NMPRC) by January 1, 2021.

Pursuant to HB 521, Public Service Company of New Mexico (PNM) proposed a Transportation Electrification Program (TEP or Program) that includes infrastructure incentives for residential and non-residential customers, pilot rates for residential and non-residential customers, funding for education and outreach, and administrative costs for program implementation.

Transportation electrification is in the public interest for many reasons. EVs have no tailpipe emissions and operate more efficiently than internal combustion engines, which results in a lower carbon footprint when using energy from the electrical grid. This is especially the case in a state like New Mexico, which has adopted an aggressive decarbonization strategy for the electricity sector. EVs also will put downward pressure on rates for all customers as existing grid infrastructure is utilized more efficiently.

PNM's Application for Approval of Electric Vehicle (EV) Infrastructure Investment, EV specific Rates, EV Customer Education and Outreach Program, and TEP administration was approved by the NMPRC for the following pursuant to the TE Statute:

- (a) \$1.95 Million for customer rebates for the purchase cost of 3900 Level 2 residential chargers,
- (b) \$300,000 for the installation of 150 Level 2 chargers for low- to moderate-income residences,
- (c) \$1.75 Million for customer rebates for the installation cost of electrical infrastructure behind the meter and up to the base of any public charging station ("make-ready infrastructure") for Direct Current Fast Charging (DCFC) for non-residential customers,
- (d) \$450,000 for the installation of make-ready infrastructure for public Level 2 charging stations,
- (e) \$450,000 for the installation cost of make-ready infrastructure for workplace Level 2 charging for non-residential customers,
- (f) \$300,000 for the installation cost of Level 2 make-ready infrastructure for multifamily housing,
- (g) \$1.5 Million for the installation of make-ready infrastructure for mass transit,
- (h) the implementation of pilot EV rates,
- (i) \$1.0 Million for funding customer education and outreach about the benefits of EVs and the aforementioned PNM EV programs, and
- (j) \$1.463 Million for administrative costs such as personnel, third party administrative support, filing expenses, and program management software costs.
- (k) \$2,290,750 in budget flexibility to account for uncertainty with actual program costs

The TE Statute also states, that "[a] public utility that undertakes measures to expand transportation electrification pursuant to this section shall have the option of recovering the public utility's reasonable costs for the expansion through a commission-approved tariff rider or base rate or both." The costs of the TEP will be the total cost of the program from date of implementation through 2023.

4. Background

4.1. Legislation

In 2010, the New Mexico Legislature passed House Bill 521 (HB 521 or TE Statute). The bill became law on June 14th, 2019 and is included in its entirety in Appendix A. The TE Statute accomplishes two major things: 1) it requires IOUs to file an application for approval at the NMPRC to expand transportation electrification, and 2) it clarifies that a person or business who sells electricity as fuel for transportation needs is not considered a utility pursuant to the Public Utility Act. This document addresses only the first section of the legislation.

When considering programs for approval, the TE Statute requires the Commission to consider whether the proposed investments, incentives, programs and expenditures are:

- 1) Expected to improve system efficiency and allow for the integration of variable resources,
- 2) Expected to increase access to the use of electricity as transportation fuel,
- 3) Designed to contribute to the reduction of air pollution and greenhouse gases (GHG),
- 4) Expected to support increased consumer choice and allow for private investments,
- 5) Reasonable and prudent, and
- 6) Transparent through the incorporation of public reporting requirements.

4.2. Additional PNM Transportation Electrification Efforts

PNM has been a leader in supporting transportation electrification to demonstrate the capabilities of the technology. In 2014, PNM Resources (PNMR) joined more than 70 other utilities through the Edison Electric Institute (EEI) in committing 5% of annual fleet acquisition budget to the purchase of EVs and has used this commitment to incorporate plug-in technology to both light duty sedans and pickups as well as medium duty bucket trucks. Today, approximately 7% of the PNM fleet is electrified. In September 2020, PNMR again partnered with EEI to announce new fleet electrification goals centered around vehicle adoption rates. PNMR announced that by 2025, 25% of its new light-duty vehicle procurements will be electric and by 2030, 50% of all new light-duty vehicle procurements will be electric.

PNM has also partnered with its customers and other agencies to support advancing transportation electrification across the state. PNM worked successfully with multiple customers during the application process for the Volkswagen Settlement funds with a focus on installing electric vehicle supply equipment (EVSE or Charging Stations) as well the purchase of electric vehicles. PNM customers were successfully awarded approximately \$2 million in funds to advance their transportation electrification goals.

PNM was also integral in partnering with the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD), the Land of Enchantment Clean Cities Coalition, and the New Mexico

Department of Transportation to get the first Alternative Fuel Corridors designated in New Mexico through the U.S. Department of Transportation Federal Highway Administration. The application process was successful in designating a Corridor-Ready section on I-25 from Albuquerque to Santa Fe, as well as Corridor-Pending sections along the remainder of I-25 from Texas to Colorado, all of I-40 from Texas to Arizona, all of I-10 from Texas to Arizona, as well as US-160 from Colorado to Arizona. The designation of these corridors serves to help inform all New Mexicans that transportation electrification is important to connect all regions of the state and to allow for interstate travel to neighboring states.

4.3. Stakeholder Engagement

During the development of this program proposal, PNM engaged with many stakeholders to solicit feedback and guidance to ensure that the program will serve customer needs. From October 2019 through November 2020, PNM hosted both in-person and virtual stakeholder meetings for groups and individuals to discuss the proposed TEP and make adjustments as necessary. Stakeholders included the following:

- Albuquerque Bernalillo County Water Utility Authority
- Charge Point
- City of Albuquerque
- City of Santa Fe
- Coalition of Sustainable Communities New Mexico
- Electrify America
- Environment New Mexico
- Go-Station
- Land of Enchantment Clean Cities Coalition
- Natural Resources Defense Council
- New Mexico Affordable Reliable Energy Alliance
- New Mexico Auto Dealers Association
- New Mexico Public Regulation Commission Staff
- Plug In America
- PPC Solar
- Prosperity Works
- Sandoval County
- Santa Fe County
- Santa Fe Green Chamber of Commerce
- Sierra Club
- Southwest Energy Efficiency Project
- State of New Mexico Energy, Minerals, and Natural Resources Department
- State of New Mexico Office of the Attorney General
- Tesla Owners' Club of New Mexico
- The Nature Conservancy

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- University of New Mexico
 - Western Resource Advocates

PNM has considered all feedback received and incorporated ideas and addressed concerns as necessary. This final Program is the product of collaboration between PNM and all stakeholders who participated in the advisory process.

4.4. Current Market

The market for EVs is quickly transforming and becoming mainstream. The advent of improved battery energy density combined with decreasing initial costs means the EVs that are currently on the market are approaching range parity and cost parity with traditional internal combustion engine vehicles (ICEVs). For the purposes of the TEP, an EV is defined as a Plug-In Hybrid Electric Vehicle or a Battery All-Electric Vehicle.

Nationally, EVs account for roughly 4% of all new vehicle sales. However, this market is strongly influenced by the states that have passed Zero Emission Vehicle (ZEV) or Low Emission Vehicle (LEV) legislation. There are currently 14 states that have enacted ZEV or LEV mandates.

In 2021, EVs accounted for approximately 2% of sales in New Mexico. The implementation of a strong utility program along with legislative support will help support market growth and allow New Mexico to become a leader in the transportation electrification sector.

Per data obtained through the PNM membership with Electric Power Research Institute (EPRI), at the time the TEP was filed with the NMPRC, there were an estimated 3,300 EVs in New Mexico, approximately 2,800 of which are located in the PNM service area. It is not unexpected that roughly 80% of all EVs are in PNM service area, as early adopters of new technology such as EVs typically reside in urban areas. PNM serves two of New Mexico's metropolitan areas, Albuquerque and Santa Fe. In order to increase the adoption of EVs throughout the state, it is important to invest in charging infrastructure in metropolitan areas as well as along travel corridors to facilitate travelers' needs beyond simply urban commuters. Success of the TE sector will depend on ensuring that charging infrastructure and technology is available and convenient for both urban and rural drivers.

4.5. New Mexico Climate Action

The State of New Mexico made headlines in 2019 through the passage of the Energy Transition Act (ETA). The ETA requires investor-owned utilities to produce 100% carbon-free electricity by 2045. PNM has stated that it expects to reach this milestone by 2040. The ETA is significant for the transportation sector because it means that, as the carbon footprint of the grid decreases, electric vehicles will produce fewer emissions over time.

In January 2019, New Mexico Governor Michelle Lujan Grisham also addressed climate change via Executive Order 2013-003. The Executive Order sets a GHG reduction goal of at least 45% by 2030 as compared to 2005 levels. Vehicle emissions are addressed in the order through implementing LEV or ZEV “clean car standards” that require a certain number of these vehicles be sold in state each year. This program is discussed in the 2020 New Mexico Climate Strategy report [10], which outlines plans to make clean car standards effective beginning in 2023.

Finally, many government entities in New Mexico have announced their own goals related to the impact of transportation on the climate. For example, the State of New Mexico has earmarked funds for the purchase of electric fleet vehicles and installation of charging infrastructure. The City of Santa Fe has identified increasing low- and zero-emissions vehicles in the City fleet and community as a priority through the Sustainable Santa Fe 25-Year Plan. Also, the City of Albuquerque has announced the purchase of electric fleet vehicles in both the light duty and mass transit sectors to reduce the City’s environmental impact. These are just a few examples of transportation electrification initiatives in the PNM service area.

4.6. Market Forecast

The market for EVs is poised for steady growth for the foreseeable future. As technology improvements increase range and decrease cost, and as more consumers become aware of the financial and environmental benefits of EVs, the market share will continue to increase.

As with other disruptive technologies, the growth of EVs is expected to follow the S-Curve for adoption. The S-Curve, illustrated in Figure 1 and originally developed by E.M. Rogers, is often used to model the acceptance of innovative technologies by different customer segments [6]. Figure 2 shows historical examples of the S-Curves of other disruptive technologies through the 20th century [8].



Figure 1: S-Curve and Bell Curve for Adoption Rate (source: The Australian Business Review)

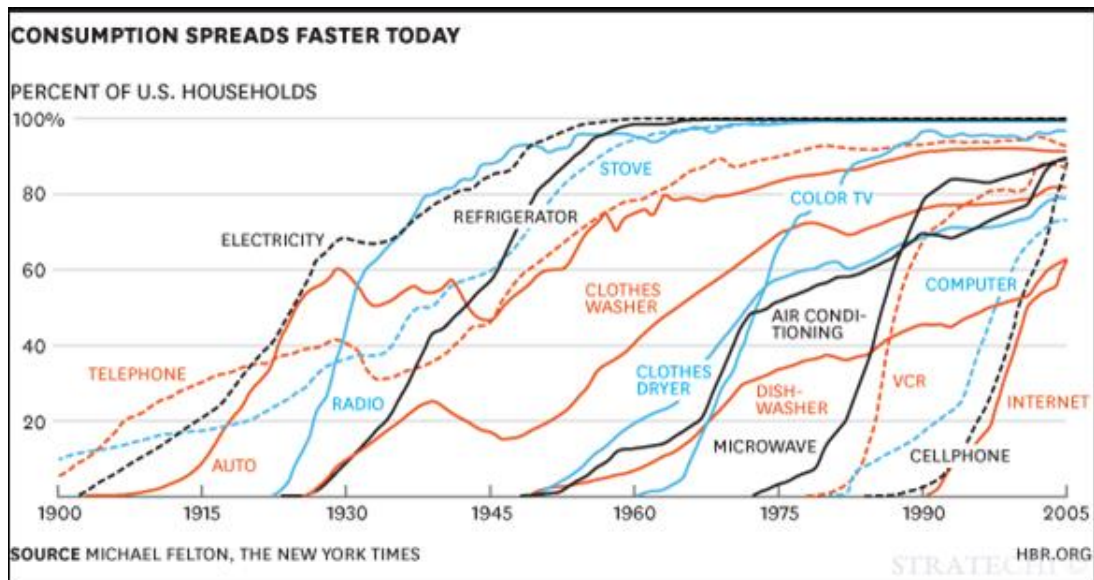


Figure 2: Historical S-Curves (source: Harvard Business Review)

Currently, electric vehicle adoption in New Mexico is approximately 2% of market share, placing it in the “Innovators” stage of adoption. Some other states, notably those with LEV/ZEV mandates in place, have moved into the “Early Adopters” phase. Figure 3 shows the national forecast for EV sales and the steady growth projected over the next decade up to the inflection (or take-off) point where exponential growth in the adoption rate begins [4].

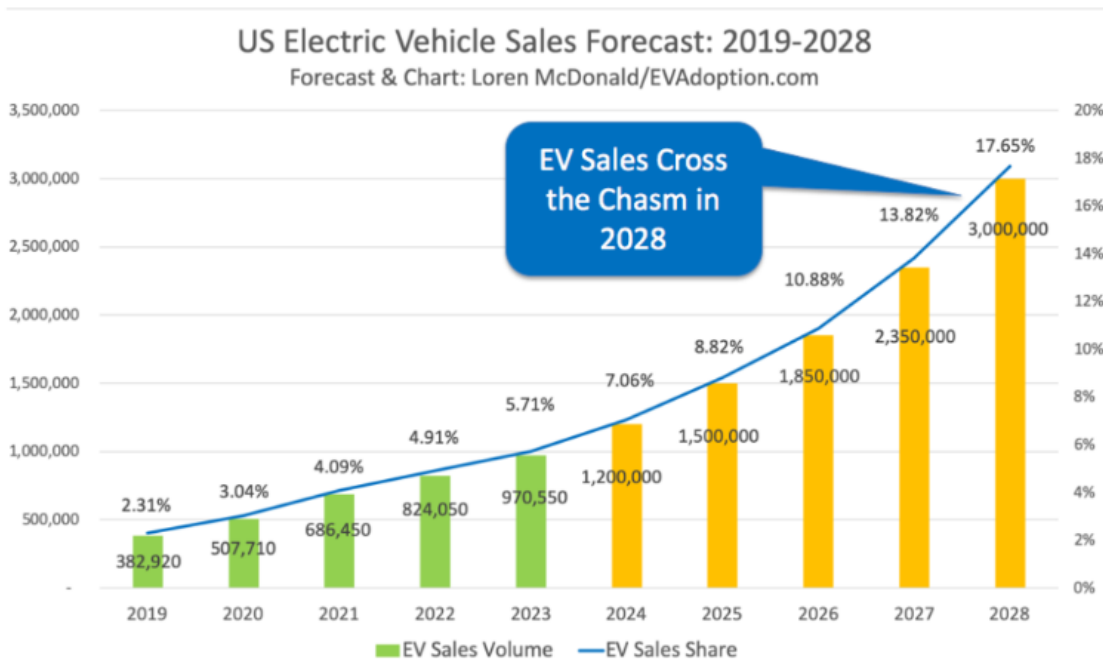


Figure 3: National EV Sales Forecast (source: www.evadoption.com)

A main goal of the TE Statute is to encourage strong utility programs to expand adoption of transportation electrification. The goal of the PNM TEP is to assist with the early stage of adoption based on S-Curve modelling needed to achieve long term climate goals such as an 80% reduction in greenhouse gas emissions as compared to 2005 levels, which could be achieved by having 2.0 million EVs in New Mexico by 2050 [7]. Therefore, the TEP estimates a cumulative total of approximately 7,800 EVs in PNM's service area by the end of 2023. The incentive programs within the TEP are designed to satisfy the needs of this projected market.

5. Benefits to Customers

All PNM customers will benefit from the increase in electrification of the transportation sector. In addition to benefits to EV owners such as the lower cost of ownership, there are also significant societal benefits of electrified transportation that extend beyond the customers who own or plan to purchase an EV. These include a lower impact on the environment compared to ICEVs, the utility's ability to balance load using variable resources, and the downward pressure on rates from increased energy sales.

5.1. Environmental Benefits

Transportation is the largest single sector of GHG emissions in the United States as per the EPA [16] and is the second largest emitter of GHG emissions in New Mexico [10] as shown in Figure 4.

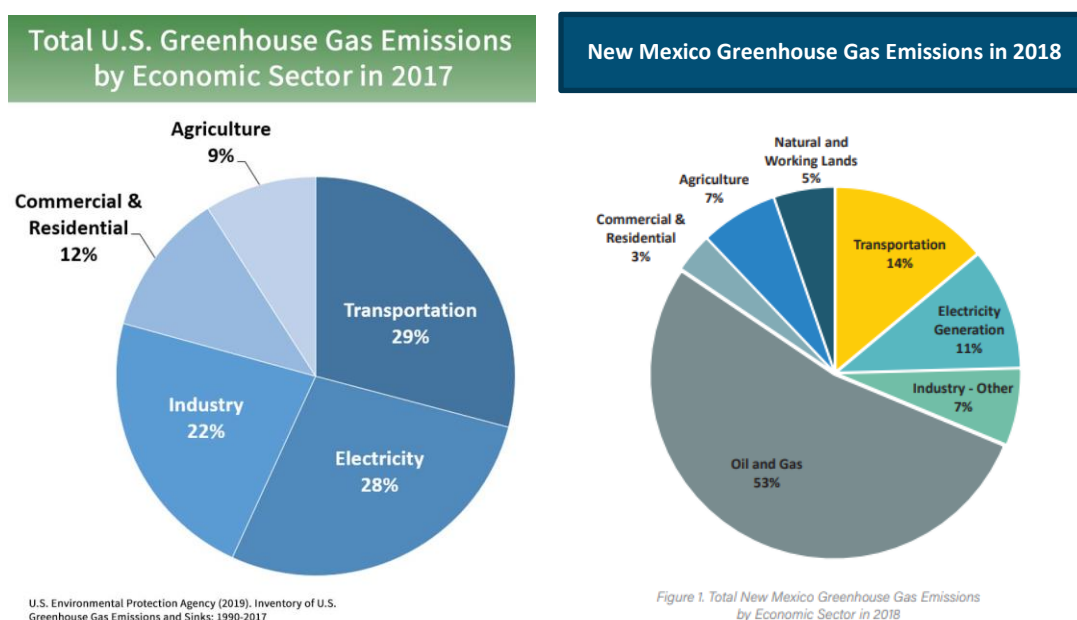


Figure 4: GHG Emission by Sector (sources: US EPA and NM Climate Report)

The electrification of transportation is key to reducing total GHG emissions and other detrimental emissions such as particulate matter as outlined by the third requirement of the TE Statute. While the generation of electricity currently contributes significantly to GHG emissions in the U.S., New Mexico is leading the nation through the passage of the ETA, which will also help EVs get cleaner over time. As the electric grid becomes cleaner, an electrified transportation sector will contribute significantly to a reduction in emissions.

Furthermore, EVs are already much more efficient at converting energy than the ICEV counterparts in terms of GHG emissions. Figure 5 shows the equivalent GHG emission in terms of miles-per-gallon-equivalent (MPGe) for different electricity resource mixes around the country. EVs in New Mexico in 2018 had the environmental footprint of a car that averages 63 MPG [12].

EV Emissions as Gasoline MPG Equivalent

Average EV, 2018

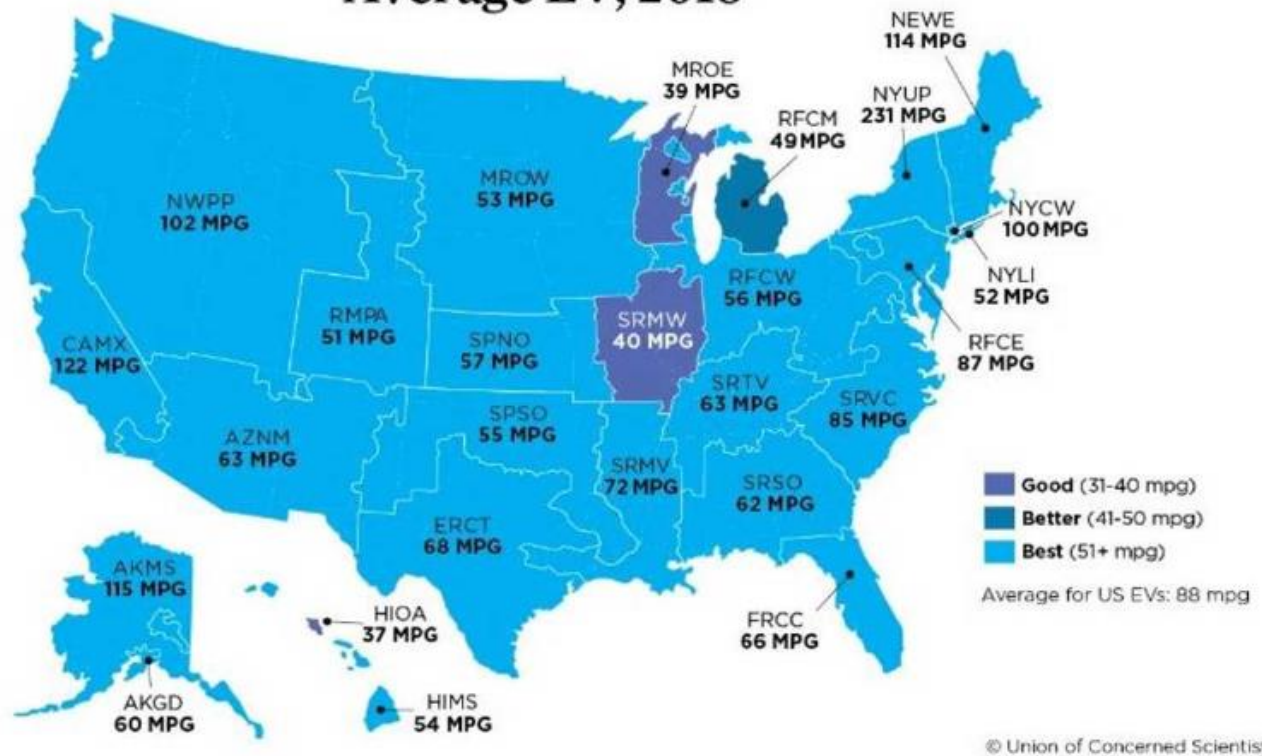


Figure 5: Average MPGe of EVs, 2018 (source: Union of Concerned Scientists)

It is also worth noting that due to changes in the grid mix, EVs can get cleaner over time. Figure 6 shows the improvements in EV emissions from 2009 through 2018. Over the past decade, there has been a 28% improvement in MPGe in New Mexico. This figure will continue to improve as the grid mix increases the amount of emissions-free electricity generation through the ETA.

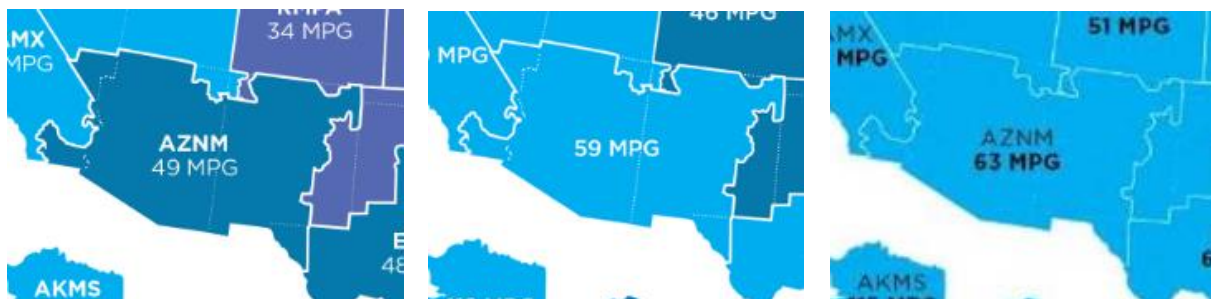


Figure 6: Average MPGe of EV Improvement: 2009, 2016, and 2018 (source: Union of Concerned Scientists)

5.2. Cost of Ownership

One of the most attractive benefits of EVs is the much lower cost of ownership as opposed to ICEVs. The US Department of Energy (USDOE) states that the average household spends nearly one-fifth of total family expenditures on transportation. The ability to lower that cost for customers means more money in their pockets. These savings can come from direct ownership of EVs, or through indirect means as business and municipal fleets require fewer operating costs and those savings are passed on to consumers.

While EVs today typically come with a higher up-front price tag than an ICEV, that initial investment is recovered through significant fuel and maintenance savings realized by EVs over time. Fuel has two components: total cost and volatility. In both cases, electricity is favorable over gasoline. The current (October 2020) U.S. average gallon of gasoline costs \$2.18, whereas the equivalent fuel for an EV is only \$1.21 per the USDOE [14]. Utility rate structures that shift charging loads to times when the system is underutilized through rate design can further reduce this cost for customers.

Oil prices are notoriously volatile because they are determined by the global market and can see large price shifts based on global events, seasons, and market conditions. Electricity pricing, on the other hand, is regulated at the state level and typically only has mild seasonal and annual variability. Figure 7 shows that in addition to electricity being lower than gasoline on a gasoline gallon equivalents basis (GGE), electricity prices have also been much more stable over time, which allows customers to better plan for these necessary expenses.

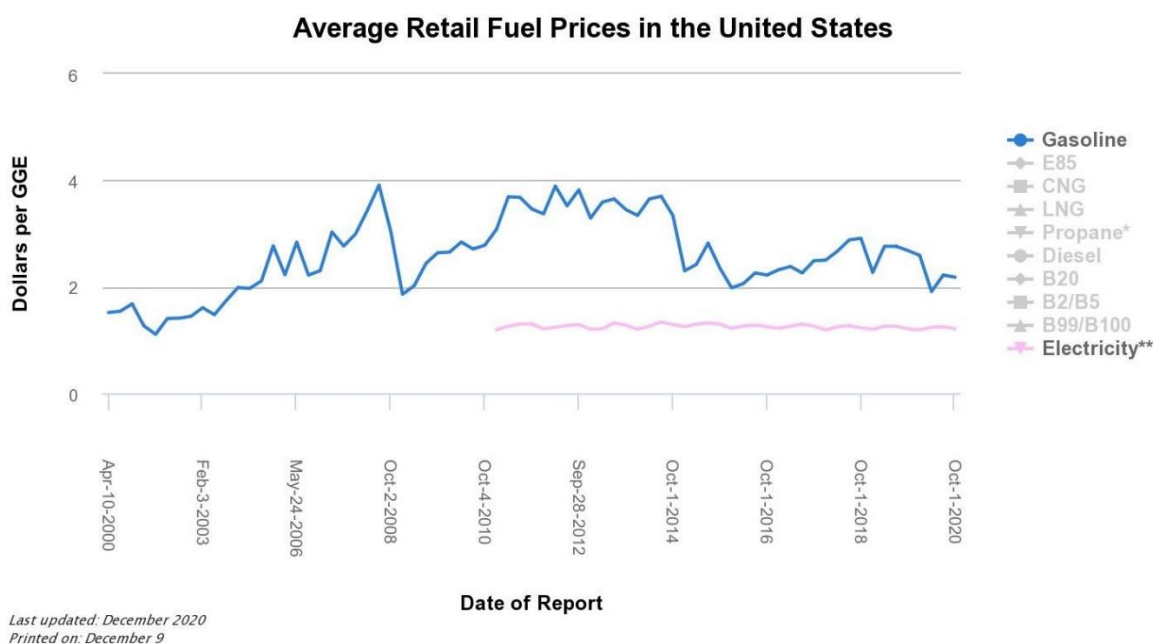


Figure 7: Price and Volatility Comparison for Gasoline and Electricity (source: US DOE)

The other main savings for EVs come from the reduced maintenance required. While ICEV drivetrains have thousands of moving parts, including pistons, valves, belts, etc., EVs typically only have dozens. The lower number of fail points in the drivetrain means that fewer things need repair or replacement over time. Furthermore, EVs require no oil changes or spark plug replacement, and the regenerative braking feature means less wear and tear on the brake pads.

The combination of lower fuel and maintenance costs means that EVs save their owners expenses year over year as compared to ICEVs and have a lower total cost of ownership that saves people money over the life of the vehicle.

5.3. Integration of Variable Resources

EVs offer the ability for utilities to utilize additional load that better balances the system as more variable resources such as solar and wind are included in the energy mix. EVs can accommodate these resources through the deployment of managed charging programs by the utility to send price signals to customers. The Santa Fe Institute [1] proposes another model whereby EV charging behavior is aligned with renewable generation that would otherwise be curtailed. However, both of these strategies require significant investment in back-end software.

A cost-effective approach to incentivize customers to charge during off-peak times or when there is additional renewable capacity on the system is by setting time periods that influence customer behavior. This document describes rate structures designed to promote charging during off-peak times and/or when penetration of variable resources on the system is at its highest in order to fulfill the first requirement of the TE statute.

5.4. Rate Reduction

In California, the region with the highest EV penetration in the country, the electrification of transportation has been shown to directly benefit all utility customers by putting downward pressure on electric rates through increased energy sales. As EVs are incentivized to charge during off-peak times through TOD rates, the system benefits from increased revenue from energy sales during those times when the system is underutilized. Figure 8 is taken from a report by Synapse Energy Economics, Inc. [5] which drew data from the two utilities with the highest EV penetration in California, Pacific Gas and Electric (PG&E) and Southern California Edison (SCE). This figure shows that during the period of 2012-2018, EVs have generated significantly more revenues than they have increased cost for the utility because the system is being utilized more efficiently. This phenomenon drives rates downward for both EV and non-EV owners alike.

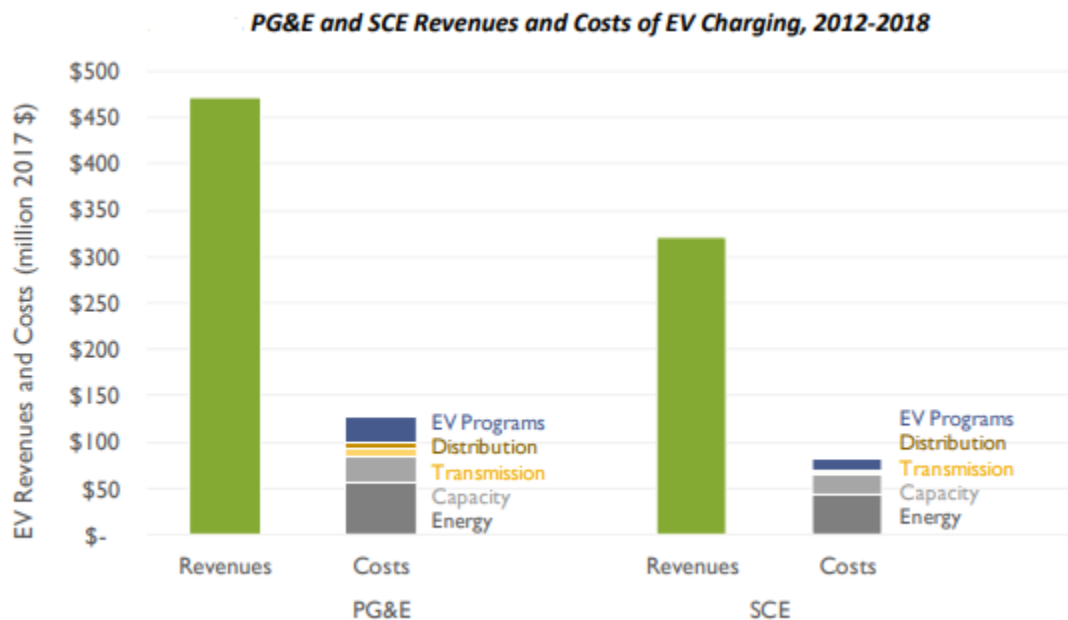


Figure 8: Revenues vs. Costs in High EV Penetration Utilities (source: Synapse Energy Economics, Inc.)

5.5. Equitable Access to Electrified Transportation

One of the biggest challenges of any transportation electrification program is to ensure that low- and moderate-income (LMI) customers are included to ensure all customers have the ability to enjoy the benefits of electric vehicles. PNM designed the TEP with the intent designating at least 25% of the total program budget to program components specifically for LMI participants. This budget will include targeted education, increased incentives for residential charging installations, multifamily housing charging stations, and mass transit charging infrastructure to serve LMI communities. LMI customers may be identified on the individual or community level, depending on the incentive type.

Customers seeking incentives for individuals, such as the increased incentives for residential charging installation, will qualify if they fall at or below 200% of the federal poverty level depending on household occupancy and income. Individuals will self-identify for the residential charger and installation funds.

For the purposes of this proposal, LMI communities will be determined using the EPA EJScreen mapping tool, available at ejscreen.epa.gov/mapper [15]. LMI communities will be defined as those communities within the Low Income Population of 80-90 Percentile or greater. The tool defines the percentile group as the percent of individuals whose ratio of household income to poverty level in the past 12 months was less than 2 (as a fraction of individuals for whom ratio was determine). See Figure 9 for an example of the tool with the Low-Income Population regions on the map. The LMI community rebates such as the multifamily housing and mass transit rebates will use this tool as guidance for eligibility of program funds.

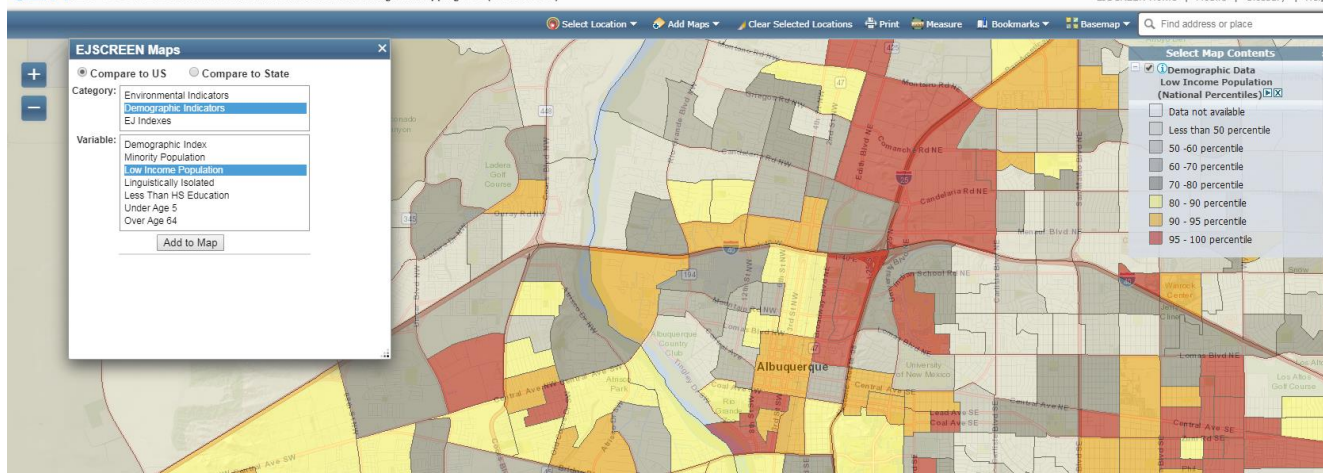


Figure 9: EPA EJScreen Low Income Population Map

6. Recovery of Program Costs

Section 1(c) of the TE Statute specifically allows for the recovery of costs associated with the implementation of the TEP. PNM will recover all associated program costs through a rider. Rider 53 will be applied to all non-lighting rate classes on a \$/kWh basis. Expenses will be recorded in a regulatory asset as they occur. Rider 53 will first be filed in March 2023 with rates to recover expenses incurred between the date of the Final Order in this case and December 31, 2022.

The costs of the programs will be included in the regulatory asset annually after the utilization of funds during the program year is known. Approved funds not used will not be included in the regulatory asset and are not eligible for recovery.

This approach is reasonable per the 5th requirement of the TE Statute because the benefits of transportation electrification can be realized by all customers. The environmental benefits as well as system efficiency affect all customers either directly or indirectly.

6.1. Flexibility of Program Category Funds

All categories of the TEP, along with their respective funding levels, are initial estimates designed to serve the needs of customers. In order to assure that funding for specific TEP categories does not run out prior to the implementation of a subsequent program, the NMPRC has approved a budget flexibility of 25%. This will allow for continued funding of certain categories should the proposed funding amount not be sufficient to support customers through the two-year term of the TEP.

All adjustments will be tracked and used to better allocate funds for the design of subsequent PNM TEP proposals.

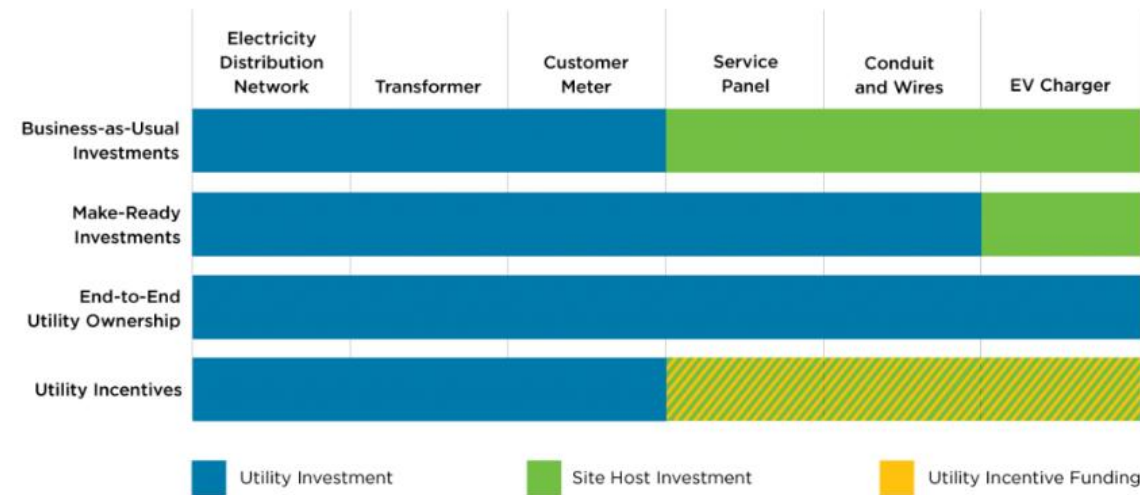
7. Description of Program Categories

Each program category is based on the TE Statute Section 1(A). The categories broadly fall into three groups: 1) incentives to facilitate the deployment of charging infrastructure and associated electrical equipment (including electrification of public transit and publicly owned vehicle fleets); 2) rate designs that encourage charging that supports the operation of the electric grid; and 3) customer education and outreach programs to increase awareness of such programs and the benefits of transportation electrification.

Please note that the following budgets for each category are the initial suggested program budgets. Budgets may be adjusted as per Section 6.1.

7.1. Utility Investment Strategy

PNM investigated many models of utility investments from utilities nationwide to determine the appropriate strategy for this program. Many popular strategies include the utility investing in and owning the necessary infrastructure for electric charging. Figure 10 shows the different models for utility investment in charging stations [17], also known as Electric Vehicle Supply Equipment (EVSE).



Models of Utility Investment in Electric Vehicle Charging Infrastructure

Figure 10: Utility Investment Strategies (source: Union of Concerned Scientists)

PNM will focus all investments in charging infrastructure using the Utility Incentives model. This model means that all infrastructure behind the customer meter is installed, owned, and maintained privately by the customer and supported with the help of utility incentives to offset the initial deployment. This model ensures that the jurisdiction between utility-owned equipment and customer-owned equipment remains clear. This model satisfies the fourth requirement of the TE Statute by allowing for private investment in utility-supported EVSE deployment. At this time, PNM does not

propose owning and operating additional charging stations within the TEP. However, if the need arises for utility ownership in the future to ensure a robust charging network, PNM may consider this option in subsequent filings.

7.2. Incentives for Charging Infrastructure

Charging infrastructure incentives are divided between the residential and non-residential customer classes to best increase access to charging as per the second requirement of the TE Statute. The residential incentive is comprised of an incentive on the purchase price of charging station itself for all customers. LMI customers may also qualify for a supplemental incentive to cover the installation of the charging station. The non-residential incentives are focused solely on the infrastructure installation up to the base of the charging station and do not cover the cost of the charging station itself. This is generally known as “make-ready” infrastructure and consists of the installation costs incurred from the customer side of the meter to the base of the charging station. Using Figure 10 as a guide, we can think of the make-ready infrastructure as including the Service Panel and the Conduit and Wires; however, in practice make-ready infrastructure refers to all of the installation costs which includes trenching and setting a foundation.

For the purposes of this document, a charging station is defined as the single unit of the EVSE. This is analogous to a fuel dispenser that ICEVs use at filling stations. Depending on the technology, a charging station may have single port or multiple ports of either the same or different connectors (e.g. J1772, CCS, CHAdeMO).

It should be noted that the requirements for EVSE outlined in this document refer only to charging stations installed by customers that intend to use PNM incentive money for purchase and/or installation. They are not general guidelines for the installation of charging infrastructure in the PNM service area. Customers that prefer to install equipment that does not meet the specifications outlined here may do so at their discretion as long as they comply with all local and national codes and standards.

7.2.1. Charging Infrastructure Overview

Charging stations, also known as EVSE, come in three different levels that relate to the speed of charge of the EVSE. Figure 11 illustrates the levels of charging, the electrical infrastructure needed, and time required for refueling [2].

KNOW YOUR EV CHARGING STATIONS




<p>AC Level One</p>  <p>VOLTAGE 120v 1-Phase AC</p> <p>AMPS 12–16 Amps</p> <p>CHARGING LOADS 1.4 to 1.9 kW</p> <p>CHARGE TIME FOR VEHICLE 3–5 Miles of Range Per Hour</p>	<p>AC Level Two</p>  <p>VOLTAGE 208V or 240V 1-Phase AC</p> <p>AMPS 12–80 Amps (Typ. 32 Amps)</p> <p>CHARGING LOADS 2.5 to 19.2 kW (Typ. 7 kW)</p> <p>CHARGE TIME FOR VEHICLE 10–20 Miles of Range Per Hour</p>	<p>DC Fast Charge</p>  <p>VOLTAGE 208V or 480V 3-Phase AC</p> <p>AMPS <125 Amps (Typ. 60 Amps)</p> <p>CHARGING LOADS <90 kW (Typ. 50 kW)</p> <p>CHARGE TIME FOR VEHICLE 80% Charge in 20–30 Minutes</p>
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Figure 11: EV Charging Levels (source: Carolina Country)

Level 1 charging is the same as plugging into a standard wall outlet and takes the longest time to charge. This is typically only appropriate for residential or very long-term charging when the customer has many hours to fuel the EV (possibly up to 24 hours). Level 2 is applicable to both residential and non-residential applications where the vehicle will be parked either overnight or for an extended time during the day, such as at work or at a shopping center. Finally, Direct Current Fast Charging (DCFC) is for uses when the driver needs to refuel as quickly as possible. DCFC is best suited to transit corridors for en-route charging or when a quick top off is required.

Typically, the higher the level of charging, the higher the cost of the unit and installation costs. Table 2 shows a table from the US Department of Energy on the estimated costs of installation for different levels [13]. When PNM engaged external stakeholders regarding these costs, they were reported to be low estimates. These estimates were used for ballpark figures and PNM has included a larger budget to accommodate the actual estimated costs of installation.

Ballpark EVSE Installation Costs

EVSE Type	Average Installation Cost (per unit)	Installation Cost Range (per unit)
Level 1	not available	\$0-\$3,000* <i>Source: Industry Interviews</i>
Level 2	~\$3,000 <i>EV Project (INL 2015b)</i>	\$600-\$12,700 <i>EV Project (INL 2015b)</i>
DCFC	~\$21,000 <i>EV Project (INL 2015d)</i>	\$4,000-\$51,000 <i>EV Project (INL 2015d) and (OUC 2014)</i>

Table 2. Ballpark costs for installation of Level 1, Level 2, and DCFC EVSE (not including the EVSE unit.)

*The \$0 installation cost assumes the site host is offering an outlet for PEV users to plug in their Level 1 EVSE cordsets and that the outlet already has a dedicated circuit.

Table 2: EVSE Installation Cost (source: US DOE)

7.2.2. Residential

About 80% of charging for privately-owned EVs occurs at home. However, many residences do not have any special charging equipment installed, leading to extended charging periods, which is often a disincentive to purchase an EV. The residential incentive is based on the approximate cost to purchase a Level 2 residential charger. Level 2 chargers operate at 240 V, allowing for a much quicker recharge time than the Level 1 (120 V) that comes with most EVs as standard equipment. The installation of the Level 2 charger will complement the Whole-Home EV rate as it allows customers to fully charge their EV during the discount window overnight, which lets customers maximize their savings and shift all of their load to a period when PNM's system is underutilized.

PNM proposes a \$500 incentive per residential customer for the purchase of a qualified Level 2 charger. Incentives will be available for the first 3,900 customers, which is enough to offer this to approximately 50% of all expected residential EV owners. The \$500 will cover the majority of the cost to purchase of a qualifying unit, as most range between \$500-\$800. Furthermore, customers who receive a residential charger rebate will be required to join the Whole-Home EV (WHEV) rate described in Section 7.3.1.

No single service address shall qualify for more than one rebate. To qualify, the customer must provide purchase information showing that the charger meets the following criteria:

- Level 2 charger
- UL 2594 Listed
- ENERGY STAR ® certified
- Smart charging capabilities to program charging windows and respond to external signals through OpenADR or OCPP communications protocol
- WIFI or cellular connection
 - LMI customers who do not have WIFI already available at their home are not required to obtain WIFI to qualify for the incentive
- Charging data shall be shared with PNM
 - LMI customers who do not have WIFI already available at their home are not required to obtain WIFI to qualify for the incentive and will not be required to share data with the utility
- Charger was purchased after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required
- Customer will enroll in the WHEV rate

Qualification will be verified through an online application process. PNM will provide an up to date list of all qualified residential chargers. The customer will need to submit a current registration for an EV at their service address, the purchase receipt for the qualifying charger, and the data sheet of the charger to illustrate that it meets all requirements for the rebate. Incentive funds will then be sent to qualifying customers in the form of a check or instant rebate if applicable.

Additionally, LMI customers may qualify for supplemental assistance for the cost of installation of a qualified residential Level 2 charger by a qualified electrician. PNM expects approximately 5% of the total customers interested in the residential rebate to qualify as LMI customers. Therefore, supplemental rebates for up to \$2,000 will be offered to the first 150 LMI customers for installation of the approved Level 2 charger. Customers who apply for the supplemental LMI installation rebate must also participate in the residential Level 2 charger incentive. LMI customers are exempted from the requirement to connect the Level 2 charger to WIFI to share data with the utility.

No single service address can qualify for more than one (1) rebate. To qualify, the LMI customer must meet the following criteria:

- Also take advantage of the Level 2 residential charger rebate described above
- Self-identify as meeting the LMI qualifications as described in Section 5.5
- Installation was completed after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required

Qualification will be verified through an online application process. The customer will submit the receipt for the installation costs. Rebates will then be sent to qualifying customers in the form of a check.

7.2.3. Non-residential

The non-residential infrastructure rebate program is structured around the cost to install the infrastructure needed behind the customers meter and up to the base of the charger itself. Figure 12 shows the portion of the required infrastructure that is eligible for a rebate. This differs from the residential category because the non-residential charging stations may be manufactured by the owner/operator and the units can become profit centers for themselves. PNM does not believe it is appropriate for the utility to assist a company in purchasing the company's own equipment.

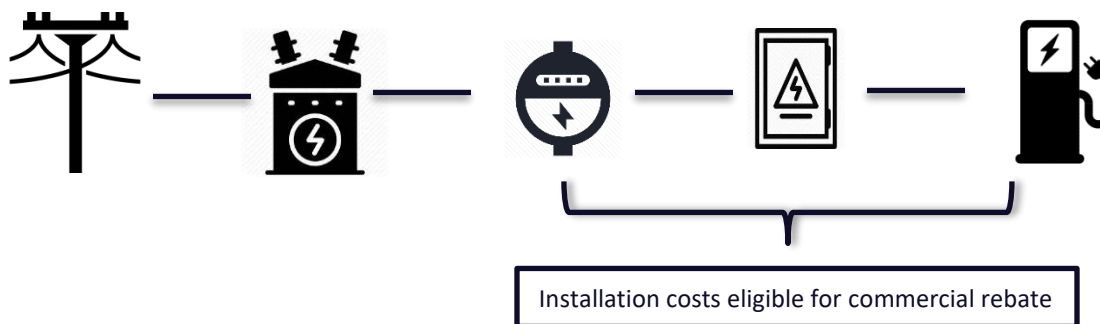


Figure 12: Definition of Infrastructure for Rebate

To ensure that the non-residential charging incentive is spread among different customer classes, the categories below describe different programs. The categories were chosen to allow for the installation of 70 DCFCs and 200 Level 2 chargers. This number of chargers was chosen to maintain an

approximate 10 EVs per charging port ratio which is the ratio currently recommended by the European Union [11]. Note that this ratio assumes an average of two charging ports per charging station and there are currently approximately 230 charging ports in PNM Service area.

7.2.3.1. *Public Direct Current Fast Charging*

One of the biggest barriers to EV adoption is “range anxiety” experienced by prospective customers. Range anxiety is described as the hesitation felt by many that the EV will not have the battery capacity or the charging stations available to complete the desired journey. There are two ways to combat range anxiety: 1) increase the size and range of the battery in the EV, and 2) increase the availability of publicly accessible charging stations, preferably those that allow for a full charge in under an hour.

The addition of DCFCs is key to overcoming range anxiety and supporting the electric transportation sector as a whole. DCFCs are best suited for installation along heavily traveled corridors where travelers need to fuel during a longer journey.

To support businesses that would like to install DCFCs, PNM proposes a total budget of \$1,750,000 and a cap of \$25,000 per DCFC. Furthermore, customers who receive a rebate for the installation of DCFC will be required to enroll in the non-residential charging rate as described in Section 7.3.2.1.

No single service address shall qualify for more than four (4) rebates. To qualify for the rebate, charging stations must meet the following criteria:

- DC Fast Charger with minimum 50 kW capacity
- Accessible to the public
- UL 2202, 2231-1, and 2231-2 listed
- Both types of non-proprietary charging plug available (SAE Combo, CHAdeMO)
- Networked to a public charging network
- Smart charging capabilities to program charging windows and respond to external signals through OpenADR or OCPP communications protocol
- If fee to be charged, EVSE shall have at a minimum the Europay, MasterCard, Visa (EMV) chip reader to allow for Point of Sale transaction. Other Point of Sale systems such as app-based payment, contactless credit card, and phone payment are permissible, but not required.
- Charging data shall be shared with PNM
- Installation was completed after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required
- Customers will enroll in the non-residential charging rate Rate 3F
 - As a default, customers are required to include a price differential to the end-user at the same ratio as Rate 3F (3:1 in the Summer and 2:1 all other months).

Qualification will be verified through an online application process. The customer will need to submit the receipt(s) for all installation costs and the data sheet of the charger, along with any supporting information to illustrate that it meets all requirements for the rebate. Rebates will then be sent to qualifying customers in the form of a check.

7.2.3.2. Level 2 Charging

An equally important charging model is the proper dispersal of Level 2 charging stations throughout towns and cities. The longer charging periods makes Level 2 charging ideal for any place that an EV will be parked for at least a couple hours at a time. The most popular use cases for Level 2 charging are public spaces such as shopping centers and movie theaters, workplace charging, and multifamily housing units. PNM proposes funding rebates for the installation of 440 Level 2 charging ports.

7.2.3.2.1. Public Charging

Level 2 public charging is sited at any publicly accessible parking space where electrical infrastructure can be installed. Public chargers can either be a dedicated service or behind an existing customer meter. Customers should be aware of any potential added demand charges if chargers are installed on an existing service.

A total budget of \$450,000 for the installation of approximately 180 Level 2 public charging ports, with a cap of \$2,500 per port was approved by the NMPRC. A budget of \$90,000 will be reserved for the installation of public Level 2 charging ports in LMI communities.

No single service address shall qualify for more than eight (8) rebates. To qualify for the rebate, charging stations must meet the following criteria:

- Level 2 charging station
- Accessible to the public
- UL 2594 listed
- Networked to a public charging network
- Smart charging capabilities to program charging windows and respond to external signals through OpenADR or OCPP communications protocol
- If fee to be charged, EVSE shall have at a minimum the Europay, MasterCard, Visa (EMV) chip reader to allow for Point of Sale transaction. Other Point of Sale systems such as app-based payment, contactless credit card, and phone payment are permissible, but not required.
- Charging data shall be shared with PNM
- Installation was completed after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required

Qualification will be verified through an online application process. The customer will need to submit the receipt(s) for all installation costs and the data sheet of the charger, along with any supporting information to illustrate that it meets all requirements for the rebate. Rebates will then be sent to qualifying customers in the form of a check.

7.2.3.2.2. Workplace and Fleet Charging

Workplaces are the second most frequent place that customers park for long periods of time. To support workplaces that want to encourage their employees to drive EVs by offering workplace charging as well as offer incentives for fleets that want to begin electrifying the fleet, a \$450,000 budget for the installation of 180 workplace chargers with a cap of \$2,500 per port was approved by the NMPRC. A budget of \$90,000 will be reserved for the installation of workplace/fleet Level 2 charging ports in LMI communities.

No single service address shall qualify for more than eight (8) rebates. To qualify for the rebate, charging stations must meet the following criteria:

- Level 2 charging station
- Accessible to employees and/or fleet vehicles of the workplace. They should not be available to the public.
- UL 2594 listed
- Networked to a public charging network
- Smart charging capabilities to program charging windows and respond to external signals through OpenADR or OCPP communications protocol
- If no fee to be charged, signage shall indicate a maximum parking time of 4 hours during business hours to increase the number of vehicles able to access the station during business hours.
- Charging data shall be shared with PNM
- Installation was completed after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required

7.2.3.2.3. Multifamily Charging

Addressing multifamily charging is key to ensuring that customers who live in multifamily housing units can charge at home. Multifamily charging presents unique challenges because it can be very difficult to install typical residential chargers behind a specific unit's service panel.

To encourage the installation of Level 2 charging stations at multifamily housing units, a \$300,000 budget was approved for the installation of 80 multifamily Level 2 ports. Of that budget, \$200,000 will be reserved for the installation of 40 charging ports in LMI communities, with a cap of \$5,000 per

port. The remaining \$100,000 will be used for 40 charging ports in other communities with a cap of \$2,500 per port.

No single service address shall qualify for more than four rebates. To qualify for the rebate, charging stations must meet the following criteria:

- Level 2 charging station
- Accessible to residents of multifamily housing unit. They should not be available to the public.
- UL 2594 listed
- Networked to a public charging network
- Smart charging capabilities to program charging windows and respond to external signals through OpenADR or OCPP communications protocol
- Charging data shall be shared with PNM
- Installation was completed after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required

Qualification will be verified through an online application process. The customer will need to submit the receipt(s) for all installation costs and the data sheet of the charger, along with any supporting information to illustrate that it meets all requirements for the rebate. Rebates will then be sent to qualifying customers in the form of a check.

7.2.3.3. *Mass Transit Infrastructure*

Mass transit, either in the form of municipal mass transit or institutional mass transit (e.g. school buses) is a great candidate for electrification. Mass transit has planned routes with known charging intervals as well as the ability to affect a large portion of the population. The emissions reductions from mass transit can make a major impact in the air quality along affected routes.

PNM will support the deployment of mass transit infrastructure to serve LMI communities as defined in Section 5.5. The proposed budget for the mass transit infrastructure deployment was determined using estimates from CALSTART [3] as shown in Table 3.

E-Truck & Bus charging infrastructure cost estimates

Fleet cost estimates per one charger installation	EVSE	EVSE Installation	
		Low	High
16.5kW (220V / 75A)	\$1,000 - \$3,000	\$17,000	\$32,000
70kW (208VAC 3Ø / 200A)	\$5,000 - \$10,000	\$20,000	\$75,000
450kW (480VAC 3Ø / 640A)	\$350,000	\$150,000	\$200,000

Source: [22], [23], [24] and confidential communications with truck and bus fleet managers and E-Truck & Bus manufacturers, May and June 2015.

Table 3: Mass Transit Installation Estimates (source: CALSTART)

A total budget of \$1,500,000 for mass transit infrastructure installation was approved by the NMPRC. This should be approximately enough to install four (4) 450 kW en-route charging stations and fifteen (15) depot charging stations with a capacity < 100 kW.

There is no limit on the number of installations that a single service address may apply for. To qualify for the rebate, charging stations must meet the following criteria:

- Be used to charge mass transit EVs that have at least 2 stops within LMI communities
- UL 2594 / UL 2202 listed
- Smart charging capabilities to program charging windows and respond to external signals through OpenADR or OCPP communications protocol
- Charging data shall be shared with PNM
- Installation must be completed after the implementation date of the PNM TE Program
- Proof of completed installation (such as signed statement) may be required

Qualification will be verified through an online application process. The customer will need to submit the receipt(s) for all installation costs and the data sheet of the charger, along with any supporting information to illustrate that it meets all requirements for the rebate. Rebates will then be sent to qualifying customers in the form of a check.

7.3. Rate Design

Rate design is the most direct way to communicate price signals to the customer to influence charging behavior. Proper rate design will incentivize customers to charge during off-peak times, thereby increasing the efficiency of the grid and allowing for greater penetration for EVs and other variable resources without the need for costly system upgrades.

Both residential and non-residential rates are included as an integral part of the TEP. Both rates are designed to address possible barriers of EV adoption and benefit the system by shifting demand off peak.

7.3.1. Residential

The pilot residential rate is a Whole-Home EV (WHEV) pilot rate. This means that a separate sub-meter or separate service is not required to implement the rate to benefit from charging the EV overnight. The decision to stay with a single meter was based on keeping costs low for the customer because a separate sub-meter will add cost to the installation. The WHEV rate will require the installation of an advanced meter to record both time period and interval data. While it would be possible for a customer to shift all their load to discounted period, this would still benefit the system by reducing demand on the system during peak periods and would therefore benefit the system and all customers.

The WHEV rate is offered to 4,900 EV owners for an additional incentive to charge the EV and any other loads from 10:00 PM to 5:00 AM year-round. Of to 4,900 customers that may enroll in the new rate, 3,900 must also take the residential charger incentive and 1,000 may be customers who do not wish to take the residential charger incentive, but otherwise qualify for the rate. The number of participants was capped to limit the expense of the new meters; the budget for the smart meters and integration is \$1.8 million. These costs are not included in the budget for the TEP, rather PNM proposes to recover the cost of these meters in the next general rate case. See Table 4 for a description of the WHEV rate as it would apply to customers.

Time period		Proposed WHEV \$/kWh Rate
5:00am-10:00pm electricity usage	Block 1	\$0.0779432/kWh
	Block 2	\$0.1240339/kWh
	Block 3	\$0.1495326/kWh
WHEV electricity usage (10pm-5am)		\$0.0304438/kWh

Table 4: WHEV Rate Description

Qualification will be verified through an online application process. The customer will need to submit a current registration for an EV at their PNM service address; to remain enrolled in the rate, PNM will annually verify that the customer still qualifies.

7.3.2. Non-residential

The biggest hurdle to non-residential charging today are demand charges that many non-residential customers incur when charging stations are installed on their existing service. While Level 2 charging typically will only increase demand by up to 10 kW, DCFC can increase demand well over 100 kW. For example, a customer on rate 3B with a PNM-owned transformer pays a demand charge of \$19.02/kW for the non-summer months. This means that the highest demand for the billing period is charged this amount. If a customer installs a DCFC with 100 kW capacity that is charging an EV at the same time they hit the highest demand for the month, the bill could increase by \$1902.00. Understandably, this is a reason many customers avoid large charging loads.

While the current utilization rates for public chargers are low, a single charge using a DCFC could be thousands of dollars in demand, even though less than 100 kWh were fueled into the vehicle. To address this concern, PNM is offering a new pilot non-residential volumetric EV charging rate. The new rate will have no demand charges, regardless of the connected charger capacity. PNM believes that this is the best way to support the deployment of non-residential charging infrastructure to make charging stations readily available throughout the PNM service area. As EV adoption increases, demand charges may no longer be burdensome to the business model for EV charging. PNM will continue to monitor charging data from stations that used rebate money to understand how this trend is progressing.

7.3.2.1. *Non-Residential Charging Rate Design*

The non-residential EV charging rate is also designed to avoid charging during the peak, but in this case, it will require a dedicated service in order to remove demand charges. The non-residential rate varies between summer and non-summer months and is based on the cost of energy. Table 5 shows the proposed time windows and the associated energy costs for the non-residential EV charging rate. The pricing ratios of on-peak to off-peak of approximately 2:1 in the non-summer months and approximately 3:1 in the summer months should be sufficient to incentivize customers to avoid charging during the peak periods [9].

Table 5 shows the time windows and associated energy charges for the non-residential EV charging rate.

	Proposed TOU hours for Rate 3F	Proposed Energy Rate
On-peak		
Summer	5:00-10:00pm, Monday-Sunday (35 hours/ week)	\$0.1855246/kWh
Non-summer	5:00-8:00am and 5:00-8:00pm, Monday-Sunday (42 hours/ week)	\$0.1373415/kWh
Off-peak		
Summer	All other hours (133 hours/ week)	\$0.0638779/kWh
Non-summer	All other hours (126 hours/ week)	\$0.0638779/kWh

Table 5: Non-residential EV Rate Proposal

7.4. Market Transformation

The overall goal of the PNM TEP is to support and encourage transformation to an electrified transportation sector. This transformation will not occur only through the financial support through incentives and rates for those customers with EVs, but will require significant engagement with customers who are still learning about the benefits of electrification.

As the market continually transforms, the PNM TEP must also evolve by using the most up-to-date metrics and engagement techniques.

7.4.1. Customer Education and Outreach

Creating awareness among PNM customers of the benefits of electric transportation is key to spurring the wider adoption of EVs in New Mexico. By engaging customers and educating them about both the environmental and economic benefits of EVs, PNM customers can help not only achieve state environmental goals, but their own pocketbooks as well.

The TEP requires a strategic customer-centric marketing plan focused on the education, experience, and benefits of driving an electric vehicle. This customer education and outreach plan aims to give the consumer what they need in the ways they need to receive the information. This information will include not only generic benefits about EVs, but also specific incentives, such as the applicable utility incentives available through the TEP.

Using a multi-media communication approach ensures that PNM is reaching a target market of consumers who can engage with the information to research and make informed decisions. PNM proposed a budget of \$1.0 million to implement the customer education and outreach plan; 25% of this total budget will be set aside for marketing and outreach specifically for LMI customers.

7.4.1.1. *Marketing Channels*

Using the right multi-media tactics will provide consumers with relevant, informative and useful information that will guide them through the product research to purchase experience. Media tactics may include tactics such as digital search marketing used across mobile and desktop and traditional media efforts. Other marketing efforts such as search engine optimization (SEO) and marketing (SEM) across major search engines and social media platforms will reach customers to engage in digital display advertising and re-targeting tactics.

To further engage customers, PNM may use engaging video and commercial content, as well as create a mobile responsive website to include a car-focused marketplace that offers resources and emphasizes the value and benefits of driving an electric vehicle which are tactics required to meet consumer expectations. PNM may use direct mail, outdoor board, and also leverage community relationship sponsorships to help promote EVs as important branding methods to develop consumer trust.

PNM has committed to using a portion of the marketing budget dedicated to reaching LMI customers to contract with at least one community-based organization to assist with the education, marketing, and outreach components of the TEP for LMI customers. Additionally, PNM will look for opportunities for cross-promotion and collaboration in marketing efforts with other stakeholders such as community groups, municipalities, governmental organization, utilities, and auto manufacturers and dealers to promote the use of electric vehicles throughout the state.

7.4.1.2. *Website Customer Engagement*

PNM proposes a new approach to engage customers as the trusted advisor for customers as they begin to embrace transportation electrification. An updated website engagement tool will not only provide information about the utility, but ideally will assist customers with making choices about vehicles and connecting them with dealerships in the area.

The website engagement tool could also function as a marketplace for enrolling in utility incentive programs as well as possibly providing a gateway for purchasing other equipment that meets incentive program criteria.

7.4.1.3. *Customer Communication*

Messaging is focused on informing and educating consumers about the convenience, practicality, and safety benefits and technology of EVs. This includes topics on EV-specific rates, energy efficiency practices and programs, environmental stewardship, and economic savings of ownership. Communicating the tools and resources available ensures that PNM will provides value that consumers need during the research and decision-making process.

7.4.1.4. *Customer Experience*

Participating in environmentally aware community events and partnering with national electric vehicle Ride-and-Drive events can provide consumers with an offline practical experience needed to make an informed buying decision.

8. Program Administration

8.1. Personnel

Administration of this and any future electric transportation program will require additional employees in the Customer Marketing department. Table 6 shows the description of each position required for program administration. The positions outlined below show the needs for the first two years of program administration.

Position	Headcount	Description
Department Manager	½	Manages the EV team as well as other programs within Product Development. Oversees all personnel and program issues, including ongoing development of the program and subsequent filings.
Program Manager	1	Main point of contact for program categories and management of all fund disbursement. Manages annual required reporting and program metrics.
Program Specialist	1	Processes applications to ensure that applicants meet all program criteria.

Table 6: Staffing Requirements for Administration of EV Program

8.2. Third Party Administration Support

Where appropriate, PNM proposes to enlist support from third-party experts for program administration. Third parties would assist in payment disbursement, saturation and potential studies, and measurement and evaluation of all program categories. Third parties will take advantage of both outside expertise and independent verification of all defined metrics.

8.3. Software Tools

In order to process applications for all programs (rebates and rates), an online application tool will be required.

In the event that contracts between PNM and the customer are required, the program will use DocuSign e-signatures to allow for ease of signatures and tracking between PNM and the customer.

9. Measurement and Evaluation

To determine the impact of the program, it is important to determine the key performance indicators (KPIs) to be reported. While the TE Statute outlines general guidelines for desired results of the program, the measurable impacts will be the overall adoption of EVs, the ability to shift load to the off-peak periods to improve system efficiency, and the total GHG reductions through transportation electrification.

To ensure transparency as per Requirement 6, PNM will publicly report these metrics annually, beginning the year after implementation of the Program.

9.1. EV Adoption Rate

One of the most telling KPIs is the overall adoption of EVs in the PNM service area. This will measure whether the program successfully addressed concerns regarding the wide availability of charging stations and other barriers. This is a proxy measurement to determine the increase of using electricity as a fuel.

Each year, PNM will compare the estimated adoption of EVs in PNM's service area with the past three years to see if there is an increase in growth attributable to the PNM programs. Data shall be acquired through trade associations, such as the data currently procured through EPRI, and validated through the number of customers participating in PNM EV programs.

9.2. Load Shifting

Load shifting for residential and non-residential customers will determine if the programs successfully improve system efficiency and the ability to integrate more variable resources by determining what amount of load was shifted to off peak periods.

For residential customers, the use of a single meter for the whole-home EV rate means that data must be gathered from the charging station itself. For this reason, customers that use the rebate agree to share charging data with PNM. This will allow the data to be parsed to see how much of the total consumption is represented by the EV and how much is shifted to the overnight window as incentivized through the WHEV rate.

The non-residential rate is much simpler as it is a dedicated service. The customer will also agree to share the charging data from the station with PNM to validate that the service is dedicated for charging (with the understanding that some of the energy use will be used to run the charging station itself and will not solely be transferred to the vehicle). For non-residential customers, the energy sales during on- and off-peak periods will be compared.

9.3. Program Participation

PNM will report annually the number of participants in all program categories, including the number of LMI customer participation. This will provide transparency into the utilization of each program category to help direct the design of future program needs.

9.4. Program Spending and Capacity

PNM will also report on the total amount spent on each program category and its relation to the proposed budget estimates on an annual basis. Where applicable, the total capacity of all installed charging stations will also be reported to provide approximate cost data for multiple categories of charging within the PNM service area.

10. References

- [1] Blumsack, S., Hines, P., Moore, C., Trancik, J. E., Azevedo, I., Araújo, K., Bent, R., Brown, P., Cather, M., Edwards, M. R., Kavlak, G., Klein, D., Passell, H., Patino-Echeverri, D., Stokes, L. C., Ziegler, M. S. "The Energy Transition in New Mexico: Insights from a Santa Fe Institute Workshop", Santa Fe, NM: Santa Fe Institute, 2020. http://sfi-edu.s3.amazonaws.com/sfi-edu/production/uploads/resource_link_files/The_Energy_Transition_in_New_Mexico_Whitepaper_SFI_51fa01.pdf
- [2] Brodd, K., (July 2017). *Find Charging Options for Your Electric Vehicle*. Carolina Country. <https://www.carolinacountry.com/your-energy/energytech/know-charging-options-to-keep-your-ev-rolling>
- [3] CALSTART. (September 2015). *Electric Truck and Bus Grid Integration: Opportunities, Challenges & Recommendations*. https://calstart.org/wp-content/uploads/2018/10/Electric-Truck-and-Bus-Grid-Integration_-_Opportunities-Challenges-and-Recommendations.pdf
- [4] EVAdoption. (n.d.) *EV Sales Forecasts*. <https://evadoption.com/ev-sales/ev-sales-forecasts/>
- [5] Frost, J., Whited, M., Allison, A. (June 2019). *Electric Vehicles are Driving Rates Down*. Synapse Energy Economics. <https://www.synapse-energy.com/sites/default/files/EV-Impacts-June-2019-18-122.pdf>
- [6] Handberg, K. (2013, June 25) *The long road for EVs*. The Australian Business Review. <https://www.theaustralian.com.au/business/business-spectator/news-story/the-long-road-for-evs/786db3c68ad12fcb3050e63641ad71b4>
- [7] Lowell, D., Jones, B., Seamonds, D. (2020, January 28). *Electric Vehicle Cost-Benefit Analysis: Plug-In Electric Vehicle Cost-Benefit Analysis: New Mexico*. M.J. Bradley and Associates. <https://mjbradley.com/sites/default/files/NM-PEV-CB-Analysis-FINAL.pdf>
- [8] McGrath, R. (2013, November 25). *The Pace of Technology is Speeding Up*. Harvard Business Review. <https://hbr.org/2013/11/the-pace-of-technology-adoption-is-speeding-up>
- [9] Myers, E., Hargrave, J., Farinas, R., Hledik, R., Burke, L. (2019). *Residential Electric Vehicle Rates That Work*. Smart Electric Power Alliance.
- [10] New Mexico Interagency Climate Change Task Force. (2020). *2020 New Mexico Climate Strategy: 2020 Progress and Recommendations*. https://www.climateaction.state.nm.us/documents/reports/NMClimateChangeReport_2020.pdf
- [11] Policy Department for Structural and Cohesion Policies. (June 2018). *Research for TRAN Committee – Charging infrastructure for electric road vehicles*. European Parliament TRAN Committee. [https://www.europarl.europa.eu/RegData/etudes/STUD/2018/617470/IPOL_STU\(2018\)617470_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2018/617470/IPOL_STU(2018)617470_EN.pdf)
- [12] Reichmuth, D., (2020, February 11). *Are Electric Vehicles Really Better for the Climate? Yes. Here's Why*. Union of Concerned Scientists. <https://blog.ucsusa.org/dave-reichmuth/are-electric-vehicles-really-better-for-the-climate-yes-heres-why>
- [13] Smith, M., Castellano, J. (November 2015). *Costs Associated With Non-Residential Electric Vehicle Supply Equipment: Factors to consider in the implementation of electric vehicle charging stations*. United State Department of Energy. https://afdc.energy.gov/files/u/publication/evse_cost_report_2015.pdf#:~:text=The%20cost%20of%20a%20single,51%2C000%20for%20DC%20fast%20charging.
- [14] United States Department of Energy. (n.d) *Alternative Fuels Data Center: Fuel Price Report*. Retrieved December 9, 2020. <https://afdc.energy.gov/fuels/prices.html>
- [15] United States Environmental Protection Agency. (n.d). *EPA EJSCREEN: EPA's Environmental Justice Screening and Mapping Tool (Version 2019)*. <https://ejscreen.epa.gov/mapper/>
- [16] United States Environmental Protection Agency. (n.d.) *Inventory of U.S. Greenhouse Gas Emissions and Sinks*. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>
- [17] Union of Concerned Scientists. (April 2019). *Electric Utility Investment in Truck and Bus Charging: A Guide for Programs to Accelerate Electrification*. <https://www.ucsusa.org/sites/default/files/attach/2019/04/Electric-Utility-Investment-Truck-Bus-Charging.pdf>

11. Appendix A – TE Statute

AN ACT

RELATING TO PUBLIC UTILITIES; REQUIRING A PUBLIC UTILITY TO SUBMIT AN APPLICATION TO THE PUBLIC REGULATION COMMISSION TO EXPAND THE USE OF ELECTRICITY TO POWER VEHICLES AND OTHER EQUIPMENT THAT TRANSPORT GOODS OR PEOPLE; PROVIDING THAT A PERSON WHO ENGAGES IN THE RETAIL DISTRIBUTION OF ELECTRICITY FOR VEHICULAR FUEL IS NOT A PUBLIC UTILITY. BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

SECTION 1. A new section of the Public Utility Act is enacted to read: "APPLICATIONS TO EXPAND TRANSPORTATION ELECTRIFICATION. —

A. No later than January 1, 2021, and thereafter upon request by the commission, but no more frequently than every two years, a public utility shall file with the commission an application to expand transportation electrification. Applications may include investments or incentives to facilitate the deployment of charging infrastructure and associated electrical equipment that support transportation electrification, including electrification of public transit and publicly owned vehicle fleets, rate designs or programs that encourage charging that supports the operation of the electric grid and customer education and outreach programs that increase awareness of such programs and of the benefits of transportation electrification.

B. When considering applications for approval, the commission shall consider whether the investments, incentives, programs and expenditures are: (1) reasonably expected to improve the public utility's electrical system efficiency, the integration of variable resources, operational flexibility and system utilization during off-peak hours; (2) reasonably expected to increase access to the use of electricity as a transportation fuel, with consideration given for increasing such access to low-income users and users in underserved communities; (3) designed to contribute to the reduction of air pollution and greenhouse gases; (4) reasonably expected to support increased consumer choices in electric vehicle charging and related infrastructure and services; allow for private capital investments and skilled jobs in related services; and provide customer information and education; (5) reasonable and prudent, as determined by the commission; and (6) transparent, incorporating public reporting requirements to inform program design and commission policy.

C. A public utility that undertakes measures to expand transportation electrification pursuant to this section shall have the option of recovering the public utility's reasonable costs for the expansion through a commission-approved tariff rider or base rate or both.

D. The provisions of this section do not apply to a distribution cooperative organized pursuant to the Rural Electric Cooperative Act.

E. As used in this section: (1) "low-income" means annual household adjusted gross income, as defined in the Income Tax Act, of equal to or less than two hundred percent of the federal poverty level; (2) "transportation electrification" means the use of electricity from external sources to power all or part of passenger vehicles, trucks, buses, trains, boats or other equipment that transport goods or people; and (3) "underserved community" means an area in this state, including a county, municipality or neighborhood, or subset of such area, where the median income of the area is low-income."

SECTION 2. Section 62-3-4 NMSA 1978 (being Laws 1967, Chapter 96, Section 4, as amended) is amended to read: "62-3-4. LIMITATIONS AND EXCEPTIONS.—

A. The term "public utility" or "utility", when used in the Public Utility Act, shall not include: (1) any person not otherwise a public utility who furnishes the service or commodity only to that person or that person's employees or tenants, when such service or commodity is not resold to or used by others, or who engages in the retail distribution of natural gas or electricity for vehicular fuel; or (2) a corporation engaged in the business of operating a railroad and that does not primarily engage in the business of selling the service or commodity but that only incidentally to its railroad business or occasionally furnishes the service or commodity to another under a separate limited or revocable agreement or sells to a utility or municipality for resale, or that sells the service or commodity to another railroad, the state or federal government or a governmental agency, or that sells or gives for a consideration under revocable agreements or permits quantities of water out of any surplus of water supply acquired and held by it primarily for railroad purposes; and such railroad corporation shall not be subject to any of the provisions of the Public Utility Act.

B. The business of any public utility other than of the character defined in Subsection G of Section 62-3-3 NMSA 1978 is not subject to provisions of the Public Utility