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Received - 2022-06-15 06:23:18 AM
Control Number - 51603
ItemNumber - 18

PROJECT NO. 51603

REVIEW OF WHOLESALE	**§**	**BEFORE THE**
ELECTRIC MARKET	**§**	**PUBLIC UTILITY COMMISSION**
DESIGN	**§**	**OF TEXAS**

COMMENTS of

Texas Electric Transportation Resources Alliance (TxETRA)

TxETRA is pleased to submit answers to the questions in Project 51603, dated June 15, 2022.

It may seem surprising to some that the Texas Electric Transportation Resources Alliance (TxETRA) is appearing in Docket 51603 on Distributed Energy Resources (DER). Many would presume that Electric transportation will be a strain on the grid, not a generation asset that can help stabilize and provide significant resources to the grid. But properly integrated, EVs will soon move energy from demand starved nights when generation is plentiful to demand-challenged summer afternoons where generation resources are challenged.

Just 3 years ago, worldwide sales of EVs were approximately 100,000 vehicles a month. Today, sales are closer to a million vehicles a month. Global sales have grown from 4.2% in 2020 to 8.3% in 2021. Although the US lags behind China and Europe, sales in North America increased by 96% in the last year. Global manufacturing of electric vehicles is skyrocketing.

In Texas, we now have over 125,000 electric vehicles. At 75 kWhs of battery storage per vehicle, that represents almost 10,000 MWhs of storage. With the Federal goal of half of all vehicles sold to be electric propulsion by 2030, the electric vehicle population on Texas roads will grow to become a significant resource for the Texas grid.

Although EV-to-home (V to H) and vehicle-to-grid (V to G) are not currently common, manufacturers like Ford with the Lighting 150 are promoting that feature in their roll out of their world-famous truck line. Many others will follow.

And it is with lightning speed that electric transportation integration is coming to Texas.

As the voice of Electric Transportation in Texas, representing 1500 manufacturers, providers, and owners, TxETRA urges the Commission to consider the value of 100 GWhs of mobile storage within the decade and to consider what rules and protocols should be adopted to keep that resource from being stranded. For in the next decade, that number may grow to a Terawatt hour, enough energy to run the entire grid for half a summer day.

1. Distribution planning and control: What planning and control processes and practices should the Commission consider for greater DER participation and grid resilience? Which entities should be involved in planning and control processes and practices? These resources are far more likely to be plugged in and available as a demand response tool or for grid dispatch if there are clear protocols and regulations established by the Commission to give value to the consumer and aggregator.

Processes to increase transparency by the distribution utilities should be developed in order to allow for an understanding of where there are limitations and/or opportunities on the grid. This should include stakeholder input. In addition, the distribution utilities need to have clear information with regard to the location and capabilities of the DERs. Better communication from the distribution utilities to ERCOT will also be necessary to achieve DER support of the grid.

i. What are the different utilization and participation formats for existing DERs on distribution networks? No comment at this time.

ii. Should the current size limit on unregistered distributed resources be reconsidered? The current size limit for unregistered distributed generation is 1MW. Some vehicle-to-grid installations over 1MW might find it useful for the regulatory burden of ERCOT registration to be adjusted.

2. Transmission and distribution modification: What equipment, processes, and standards need to be implemented to allow for further DER participation? We need processes to enable the aggregation of EV interconnection devices and other DERs so that they can be aggregated to a level and presented to ERCOT at a capacity that is meaningful to ERCOT.

ERCOT can now provide nodal pricing to registered distribution resources. This benefits sophisticated customers who can respond accordingly. This should be available to EV owners as well because some EVs have the ability to delay charging or provide energy to the grid based on price. In general, EVs contain computers that can track those signals which could provide motivation for users to sell energy for a profit. Customers should have direct access to real time pricing for electricity consumption and discharge.

3. Cost quantification: How much transmission and distribution investment will be necessary and what methods would be available to recuperate costs? And should the Commission consider new methods of cost allocation and recovery for DER-related infrastructure enhancements? We should be looking at the distribution investment the same as any other growth in residential load. Residential EV owners with home chargers should not be disincentivized to invest in EVs by being required to purchase extra equipment to support their residences or offices. No new methods are needed.

i. What market signals, if any, should be considered related to DERs aimed at providing grid services? Managed charging can be incentivized with rebates and access to nodal pricing, but demand charges on residential customers should not be imposed. Information on times of high renewable penetration will motivate some customers.

Time of use rates to charge at least-cost opportunities will be helpful. Innovative rate design options are needed. The Alliance for Transportation Electrification has developed rate design principles that will be applicable.[1]

The Commission should approve funding for broadcast distribution of ERCOT market prices.

4. Data accessibility: What data would improve supply side dynamics and encourage targeted development? What information would be useful to establish a current

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[1] Alliance for Transportation Electrification, Electric Transportation Rate Design Principles for Regulated Utilities, https://evtransportationalliance.org/wp-content/uploads/2022/02/ATE-Rate-Design-Principles-Final-July-202194.pd, and Alliance for Transportation Electrification, Rate Design for EV Fast Charging: Demand Charges, https://evtransportationalliance.org/wp-content/uploads/2022/06/Rate.Design.TF_.Demand-Charge-Paper-Final-5.25.22.pdf.

baseline and assess future market potential? What accessibility and information security concerns should be considered? Development of EV charging can be supported by information on where there are areas of vulnerability and opportunity on the distribution grid. See comments under #1 above.

i. What level of information should entities responsible for planning and control of DERs have access to for long-term planning purposes? Levels of expected EV penetration can and should be used in distribution utility planning in two ways.

EV growth patterns can be obtained and projected from registration data, medium and heavy- duty truck and school location data. The Commission should allow projected demand growth estimates to be considered as a factor in rate cases. However, since plugged in and dispatched EVs can lower demand for additional distribution capacity, the value of this managed load should also be considered.

5. Other related questions

i. Should the Commission consider classifying various DER types? If so, on what basis should DERs be classified? For example, size, performance, characteristics, or some other attribute? (E.g., rooftop solar PV, distribution connected energy storage, microgrids) Customers should be able to register the type and capability of DER, eliminating the need for classification while providing a comprehensive account of the portfolio, independent of customer interest in discharging into the grid. Registration of DER needs to be easy in order to capture an accurate account of what resources are out there in order to help ERCOT and the distribution grid. If EV owners want to provide services to the grid, they will need to register.

EVs can reduce the energy demand of a residential home but will not likely run the meter backward until certain protocols are well established. As EV batteries are removed and repurposed as storage units, the energy they store from rooftop solar may be of value to the grid and could be dispatched. Larger EVs with larger batteries in the future are likely to run the meter backward. Users could aggregate several EVs for demand and response, without injecting power into the grid, thereby providing demand reduction. In order to participate in the aggregate for compensation, owners would need to register with the size and type of resource: different standards should be considered for a vehicle or a reused EV battery.

ii. What issues should be considered for segmentation and islanding? Should there be consideration related to DERs associated with critical facilities and entities? Users should have the ability to island in a way that is safe for linemen. Individuals invest in order to establish reliability and should therefore be allowed to invest in inverters that will enable them to island, similar to what is in place for solar consumers.

iii. What should be done to encourage consistency in interconnection agreements between the various interconnecting entities? The EV market is emerging rapidly. EVs offer a significant tool for grid resilience, but rules and protocols need to be modified and refined to allow EVs and associated stored energy to be deployed. A common approach among utilities to interconnecting DERs would be helpful and could be achieved with a PUC or ERCOT template.

iv. What can the Commission do to promote consistency in its DER policy between the ERCOT and non-ERCOT markets? Statewide energy efficiency goals that cross from ERCOT utilities to non ERCOT utilities would be beneficial. Consistency in the registry such as Smart Meter TX should be available across the board.

v. What successes have been seen in other states that could be implemented in Texas? Several approaches have been successfully executed elsewhere that may suggest opportunities in Texas.

- Vehicle-grid integration pilot programs developed by PG&E[2]

[2] Pacific Gas and Electric Company, Request for Approval, https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_6259-E.pdf, Pacific Gas and Electric Company, Electric Vehicle Infrastructure OIR Rulemaking 18-12-006 Data Response, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/transportation-electrification/data-response-electricvehicleinfrastructure_dr_ed_031-q01-05.pdf, and Public Utilities Commission of the State of California, https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/transportation-electrification/e5192-draft-comment-resolution-pge-6259e.pdf.

- Vehicle-grid integration pilot programs developed by SCE[3]
- Vehicle-to-grid Demonstration Project at a USAF Base[4]
- Various Vehicle-to-grid Demonstration Projects[5]

vi. What can reasonably and economically be done within a 5-year timeframe? Within a five-year timeframe the DER registry could be set up alongside a model interconnection agreement and process.

Making pricing signals available to customers can also be achieved in the initial time frame and will instruct users on optimal charging times.

vii. What other issues, if any, should the Commission consider and address while developing rules related to DERs? Modeling and studies are needed to identify optimal approaches to integrating EVs as DERs into the grid, such as those recommended in Electroempo's submission to this Commission Project 51603.

A Synapse Energy Economics cost/benefit analysis[6] of EVs' impact on two different utilities, from 2012 to 2019, demonstrated that EV drivers contributed ~$800M more in revenue than associated costs, driving down rates for all their customers. A similar cost/benefit analysis for utilities in Texas would provide meaningful information as Texas heads into the electric transportation future.

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[3] Electric Power Research Institute, SCE - Open Vehicle Grid Integration Platform (OVGIP) Residential Demand Response (DR) Project Summary Report, https://www.dret-ca.com/wp-content/uploads/2020/05/SCE_OVGIP_PIlot_Summary_Report-final_4.pdf.

[4] California Energy Commission, Alternative and Renewable Fuel and Vehicle Technology Program, https://edisonintl.sharepoint.com/teams/Public/TM2/Shared%20Documents/Forms/AllItems.aspx?ga=1&id=%2Fteams%2FPublic%2FTM2%2FShared%20Documents%2FPublic%2FRegulatory%2FFilings%2DAdvice%20Letters%2FPending%2FElectric%2FELECTRIC%5F4542%2DE%2DA%2Epdf&parent=%2Fteams%2FPublic%2FTM2%2FShared%20Documents%2FPublic%2FRegulatory%2FFilings%2DAdvice%20Letters%2FPending%2FElectric.

[5] Microgrid Knowledge, Vehicle-to-Grid Programs Give Rise to Mobile Microgrids, https://microgridknowledge.com/mobile-microgrids-vehicle-to-grid/#:~:text=In%20recent%20years%2C%20a%20few,the%20vehicles%20into%20mobile%20microgrids.

[6] Synapse Energy, Electric Vehicles Are Driving Electric Rates Down, https://www.synapse-energy.com/sites/default/files/EV_Impacts_June_2020_18-122.pdf.

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EVs are batteries on wheels. With appropriate direction from this Commission, these reserves can be dispatched to provide responsive reserves to help meet peak demand instantaneously.

New technologies and plummeting costs will make EVs and stationary storage batteries affordable and widespread over the next decade. And 80% of the EV batteries that are removed from use in EVs can be repackaged and reused as stationary battery storage where those batteries are projected to last an additional 10 years.

These new battery resources are extremely responsive, and the energy can be deployed instantaneously. These resources are inverter-based so they respond far faster than starting a power plant and they can be aggregated into a virtual power plant that can be used to meet spinning reserve requirements.

These resources are far more likely to be available as a demand response tool or for grid dispatch if there is value to the consumer and aggregator. While the cost of EV battery capacity is borne by their owners, the added cost will need to be justified by a market price high enough to reward consumers for the added costs of interconnection.

We need processes to enable the aggregation of EV interconnection devices and other DERs so that they can be aggregated to a level and presented to ERCOT at a capacity that is meaningful to ERCOT.

There are some reasonable and economically viable steps that can be taken by the Commission within a 5-year time frame. Modeling and studies are needed to identify additional, optimal approaches to integrating EVs as DERs into the grid.

In Texas, we now have over 125,000 electric vehicles. At 75 kWhs of battery storage per vehicle, that represents almost 10,000 MWhs of storage. With the Federal goal of half of all vehicles sold to be electric propulsion by 2030, the electric vehicle population on Texas roads will grow to become a significant resource for the Texas grid.

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[4] California Energy Commission, Alternative and Renewable Fuel and Vehicle Technology Program, https://edisonintl.sharepoint.com/teams/Public/TM2/Shared%20Documents/Forms/AllItems.aspx?ga=1&id=%2Fteams%2FPublic%2FTM2%2FShared%20Documents%2FPublic%2FRegulatory%2FFilings%2DAdvice%20Letters%2FPending%2FElectric%2FELECTRIC%5F4542%2DE%2DA%2Epdf&parent=%2Fteams%2FPublic%2FTM2%2FShared%20Documents%2FPublic%2FRegulatory%2FFilings%2DAdvice%20Letters%2FPending%2FElectric.

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