Please submit your responses to RA-PDEVCorridors@pa.gov by Friday, April 15, 2022.

These Comments are being provided to the Pennsylvania Department of Transportation ("PennDOT") as part of the National Electric Vehicle Infrastructure ("NEVI") Formula Program and the series of questions posed to stakeholders by PennDOT via electronic mail on March 29, 2022.

Overview of Comments of NRG Energy, Inc. ("NRG")

NRG is a leading integrated power company built on dynamic retail brands and diverse generation assets powered by its customer-focused strategy, strong balance sheet, and comprehensive sustainability framework. A Fortune 500 company, NRG brings the power of energy to millions of North American customers. NRG's family of brands helps people, organizations and businesses achieve their goals by leveraging decades of market expertise to deliver tailored solutions. Working in concert, its dynamic multi-brand retail strategy coupled with supply risk-management forms a uniquely positioned, integrated competitive energy provider.

Its retail brands serve more than six million customers across North America, including a significant share in Pennsylvania — so significant, in fact, that NRG's northeast retail business is headquartered in Philadelphia. NRG's subsidiaries include several competitive electric generation suppliers ("EGSs") that are licensed by the Pennsylvania Public Utility Commission ("PUC") to sell electricity to retail customers. As EGSs, these subsidiaries that are actively serving residential, commercial, industrial and institutional customers in the service areas of electric distribution companies ("EDCs") throughout Pennsylvania.

The overall theme of NRG's comments is to urge PennDOT to rely on the competitive market to promote and support the adoption of electric vehicles ("EVs"). Approaches that put utilities in the central role of implementing this program, to the exclusion of EGSs and other energy services providers, are not appropriate in light of the way the Commonwealth has chosen to structure its market for electricity.

NRG in our comments addresses two (2) major considerations:

1. The program should be designed to place the responsibility for providing energy services to EV charging equipment in the hands of one or more competitive supplier (an EGS) that can both guarantee a cost of energy and have responsibility for maximizing the value of energy and reliability services *from* the chargers, if they are co-located with storage or solar.
2. A commission on the EGS's contract for these services can be a valuable contribution toward the 20% matching funding, without having that funding come all or mostly from utility customers who may not benefit from the EV charger installations.

Regulated utilities are charged with the safe and reliable delivery of electricity. There will be a substantial role for that in relation to this program. However, because utilities have not been given responsibility for electricity generation and supply services, especially the kind of innovative business models that this program seems to necessitate, their role should not be ubiquitous—but instead limited to making the 'middle mile' grid investments necessary to accommodate new electric loads from EV

charging stations. To give one example of what can go wrong if their role is *not* limited, consider the fact that utilities are required by law to offer time-of-use ("TOU") rates to all customers with a smart meter.

PECO Energy Company estimated that to implement TOU rates it will incur costs totaling $3.8 million related to training and information technology changes to its billing and customer information systems, billing, meter data management, customer self-service, Care Center scripting, net metering excess generation tracking and compensation and customer communications.[1] Despite recovering costs of this magnitude from ratepayers, the level of participation in TOU rates across all of the utilities is abysmal, with only 420 accounts enrolled in the EDC provided TOU rates in 2020 throughout Pennsylvania, out of a total of nearly 6 million electric customers.[2]

It will be necessary, or at least economically efficient, in this program to ensure that whoever is providing energy supply services to the EV chargers have a clear financial incentive to get this right.

Again, utilities will have an important but focused role to play. In addition to capital investments in grid infrastructure to support additional electric loads, the utilities' internal processes and procedures should be updated and streamlined to facilitate new requests for charger installations and new requests for usage data. The utilities need to become data services providers to the myriad competitors striving to meet the demands of this emerging market in understanding customer charging behavior and the best locations to site charging stations.

By relying on the competitive market for the supply services to EV charging stations, PennDOT can be assured that companies with the experience and expertise in designing innovative products that harness advancements in technology will be responsive to the needs of consumers. It will also ensure that the risk of stranded assets is placed more squarely on the shoulders of shareholders instead of consumers.

Funding/incentives

1. Are the utilities willing/able to come up with any portion of the 20% local match for the utility upgrades needed?

NRG Comments:

PennDOT should develop a strategy for having the 20% contribution of the overall capital cost emerge from the competitive market. A three-pronged consortium, consisting of a charging company, site owner, and energy services provider – each with different competencies – is a model that appropriately places the risk on the market rather than on ratepayers.

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1 *Petition of PECO Energy Company for Approval of its Default Service Program for the Period from June 1, 2021 through May 31, 2025*, PUC Docket No. P-2020-3019290, PECO Energy Company Statement No. 2 (Direct Testimony of Joseph A. Bisti) at 23; PECO Exhibit JAB-6.

2 https://www.puc.pa.gov/media/1787/retail_elec_choice_report2020v2.pdf (Table 8 on page 14); https://www.papowerswitch.com/media/aheoyala/paps_numbers033122.pdf

Revenues collected by utilities from customers through their distribution rates should not be used to fund a local match to federal funding programs. A contribution by the utilities for anything other than the "poles and wires" necessary to accommodate chargers would be an inappropriate use of dollars received from captive ratepayers, most of whom do not use an EV and who have no option in the utility that delivers their electricity – that being the local monopoly EDC, such as PPL Electric Utilities. Ratepayers should not be expected to carry the risk that investments under this program will be underutilized.

This is especially true when entities in the competitive market and investors are already investing their own capital in the electric vehicle ("EV") market, taking the risks that are appropriately borne by the market. Rather than placing captive ratepayer dollars at risk and putting utilities in the position of owning it all, reliance on the competitive market is the most cost-effective and efficient solution.

2. Are you considering load balances (variable pricing scheme) encouraging charging during off-peak times?

NRG Comments:

An NRG subsidiary is already offering time-varying price offers in Pennsylvania that encourage charging during off-peak times. See www.picknrg.com and enter zip code 19104 to see NRG Home's current 12-month fixed time-of-use ("TOU") rate plan for EV owners. Due to the archaic rules in Pennsylvania that prevent EGSs from issuing consolidated bills to consumers containing both the distribution and supply charges, EGSs are currently somewhat limited on what they can offer due to the inability to effectively show consumers on bills the effects of shifting consumption to off-peak times.

However, in the context of this program, EGSs could enter into a long-term contract either with a charging company or with PennDOT through the RFP structure it establishes for this program. Such a contract could provide energy services at a known price or cost for five (5) years, and be shaped over times of the day that encourage the economically efficient charging of vehicles (i.e., when wholesale prices are likely to be low). If the charging infrastructure has bidirectional capabilities to the grid, then the EGS also would be responsible for maximizing the value of the EV charging infrastructure for grid reliability, including by sales of capacity, ancillary services, and energy (if storage and/or solar was co-located). A contract for energy services through an EGS also could be a commissionable funding source for part of the 20% match, with a surcharge built into the contract that effectively uses future charging or other market revenues as a facility to repay another party, such as a charging company or site owner, that put up capital in the first place to facilitate the match required by the plan.

Finally, NRG notes that the PUC currently has a petition pending before it to initiate a proceeding that would solicit comments on pricing structures that would facilitate EV charging. ChargEVC-PA filed the petition on February 4, 2022 at Docket No. P-2022-3030743. Interested parties filed comments on April 11, 2022 and reply comments are due on May 11, 2022. NRG joined with two other EGSs in submitting comments, which urge the PUC to rely on the competitive market to develop a wide array of TOU pricing structures, along with necessary consumer education, to promote EV adoption in Pennsylvania.

3. Are you aware of any pilot programs or plans to reduce demand charges for EVSE DC Fast chargers? If programs have been implemented, how have they been faring?

NRG Comments:

Rather than considering any existing pilot programs or plans to reduce demand charges, or their results, PennDOT should let the market develop innovative solutions to address concerns about demand charges for DC Fast Chargers ("DCFCs"). NRG recognizes that DCFCs produce high peaks, which generate high demand charges. NRG believes that demand charges should correspond to actual costs to serve those high demand peaks. If the charges do not recover those costs, those costs inevitably shift to other customers. That would be unfair. Users of DCFCs are paying for energy and the speed and it isn't unreasonable that they should pay more than people who are charging at home over a longer timeframe.

Again, NRG suggests a structure where this program co-locates storage, solar, or another distributed energy resource in certain charging locations to help avoid demand charges, and then puts the whole of energy supply responsibility in the hands of an EGS to actively manage. It would be the EGS that is responsible for managing the financial risk of energy supply. Reliance on the competitive market would result in solutions such as energy management services helping the customer shape the peak in a way that minimizes the demand charges without shifting costs to other customers.

Site installation/connection

4. What part of the grid upgrades needed are tied to the EV infrastructure?
    a. Needs to be closely tied to the EV infrastructure.
5. How much work and investment are needed to upgrade the wattage?
    a. Going from 200 kw to 600 kw – is that difficult?
6. If additional expansion to the electric grid required, would you ever deny access to a EV charging location? Or would the EVSE need to pay for the upgrades needed?
    a. Would additional lines be added on utility poles to support EV efforts?
7. When a new DC Fast station is being planned, at what stage does the utility company typically get involved? Is the coordination with the property owner (i.e. business establishment) or the third-party EVSE company that typically installs and operates the station?

NRG Comments:

Please see our comments in response to Questions #1-3 above. Again, the program should be designed with the appropriateness of the utility's role closely in mind, ensuring the capital investments the utility makes are closely targeted toward the actual grid upgrades needed to accommodate additional electrical loads from EV charging infrastructure. These needs can potentially be offset by other co-located services that manage grid-supplied demand.

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Communication/coordination

8. What communication from EVSE owners would you like to see?
    a. What else do you want from the EVSE companies?
9. What information do you want from PennDOT?
10. What are other ways to further improve collaboration between DOTs, network companies, businesses and the utility companies?
11. What ways can future initiatives and priorities be coordinated between the DOT and utility companies? For example, SB 435 includes requirements for utility companies to submit a transportation electrification development plan. These planning efforts should be coordinated with DOT efforts (and vice versa).

NRG Comments:

The most useful role of PennDOT in the EV arena is to forecast charging needs and provide transparency regarding traffic flows to the market, so that private entities can decide where to site charging stations and help with operations. Real-time data access to traffic flows by EGSs serving EVSE and to EVSE developers to better forecast the best location for charging stations. By providing data to the market, PennDOT would efficiently facilitate EV build-out.

New legislation implications

12. What are your thoughts on SB 435? And how would this impact your planning for upgrades?
    a. Utility-owned EV charging stations. Are the utilities interested in entering this space and would that require PUC action?
13. Have utility companies begun efforts to plan for the BIL programs related to Rural Energy Infrastructure and ways to establish more affordable rates for EV charging? Have specific plans been outlined for target areas of infrastructure expansion?
14. Per the guidance for administering NEVI formula funding, (from the IIJA), the State Plan "should include the best available information regarding the State's [among other items]… grid capacity necessary to support additional EV infrastructure." What information could utilities provide that PennDOT can include in its Plan, to evaluate grid capacity in different areas of the state?

NRG Comments:

Utilities should remain focused on the necessary "poles and wires" upgrades needed to meet additional electric demand from EV chargers. EV chargers are already being widely deployed in the market without any governmental subsidy. Now with this program, only 20% of the capital is required to come from the market in general—that is a challenge the market can readily meet, without the involvement on a utility monopoly that has recourse to a captive base of customers, most of whom do not use EVs, to support it.

In the second quarter of 2020, the National Renewable Energy Laboratory ("NREL") estimated a need for 27,500 DC EV ports and 601,00 level 2 ports, based on a scenario where there are 15 million light duty

plug-in vehicles on the road.[3] According to the refreshed Pennsylvania Road Map for Electric Charging, there are 415 DC Fast Chargers, enough to support 230,555 vehicles, and 1,869 Level 2 chargers, enough to support 46,608 vehicles.[4] Yet, of the 12 million registered vehicles in Pennsylvania, a mere 29,000 are electric.[5] The current EV charging infrastructure is overbuilt by orders of magnitude, and NRG anticipates this over build to persist as private investors rush into this space.

The reason for this overbuild of EV charging infrastructure is that many well-established, well-capitalized competitive businesses are in this space, including Blink,[6] Volta,[7] EVgo,[8] and Electrify America.[9] Competing against each other for market share in the EV charging network space, these companies are deploying their own capital to build and often own EV charging infrastructure in the United States. Electrify America, alone, has made a commitment to spend $1.2 billion in states other than California to build charging infrastructure, as part of the Volkswagen diesel emissions settlement.

In addition, automakers are directly supporting the build out of EV charging infrastructure by building their own private networks and supporting the build out of existing public networks. Just a few examples or a subset of automakers and their current and announced networks of EV charging infrastructure include:

- General Motors has announced an investment of $750 Million (~$0.8 B) in all aspects of charging at home, at work, and on-the-go in the US and Canada.[10]
- Ford announced a network of 13,500 charging stations to support their growing electric vehicle line up.[11]

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3 *Electric Vehicle Ownership Costs: Today's Electric Vehicles Offer Big Savings for Consumers*, Harto, Chris, October 2020, httpnt/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf

4 *Pennsylvania Electric Vehicle Roadmap: 2021 Update*, Pennsylvania Department of Environmental Protection, see https://files.dep.state.pa.us/Energy/OfficeofPollutionPrevention/StateEnergyProgram/PAElectricVehRoadmapBookletDEP5334.pdf

5 Ibid.

6 *Charging Solutions*, see https://blinkcharging-dev.azurewebsites.net/wp-content/uploads/2020/04/1.3_BlinkOverview.pdf

7 *Vola Investor Relations*, see https://voltacharging.com/investor-relations/

8 *EVgo Fast Charging, EVgo Investor Relations*, see https://www.evgo.com/investors/

9 *Electrify America, Our Investment Plan*, see https://www.electrifyamerica.com/our-plan/

10 *GM will invest $750 Million in charging infrastructure by 2025*- InsideEVs, dated October 7, 2021, see https://insideevs.com/news/539127/gm-750million-investment-ev-charging

11 *Ford – Public and Destination Charging*, see https:// https://www.ford.com/buy-site-wide-content/overlays/mach-e-overlays/public-charging

- Shell announced the launch of RechargePlus - a new EV smart charging service that allows the charging of vehicles to be shifted to times when it would be most beneficial for the power grid and that will provide cost advantages for customers.[12]
- BP bought U.S. electric vehicle charging provider AMPLY Power – which serves fleets that operate trucks, transit and school buses, vans and light-duty vehicles – in an effort to speed up electrification in the fast-growing fleet segment, which is key to lowering emissions from the transport sector.[13]
- Tesla, with 79% market share of the EV market has built an extensive private network to support their consumers and currently provides nearly 60% of all DC fast charging points in the country.[14]
- Rivian is a new auto maker producing the R1T, R1S and supplying Amazon with 100,000 commercial fans. They have announced plans to build a network of 3,500 DC fast chargers at over 600 sites by 2023 including many sites in Pennsylvania.[15]
- Jeep is partnering with Electrify America to put chargers at trail heads.[16]

Typical suppliers of gasoline and diesel are also adapting to the anticipated EV charging demand by deploying EV charging infrastructure. Recent examples include: Wawa, which hosts 35 Electric Charging stations and opened its first EV-only charging stations in Virginia; Royal Dutch Shell, which has announced plans to deploy 500,000 charging points globally by 2025; Chevron, which announced investment in a handful of retail charging sites and also holds investments in electric charging such as

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12 *Shell RechargePlus: Managed Smart Charging for Electric Vehicles*, see https://www.shell.us/business-customers/shellrechargeplus.html#

13 *BP Buys EV Charging Provider Amply In Green Energy Push*, see https://www.reuters.com/markets/deals/bp-buys-ev-charging-provider-amply-green-energy-push-2021-12-07/

14 Electrek, *Tesla owns 79% of the electric car market in the US, and that needs to change,* dated February 16, 2021 see https://electrek.co/2021/02/16/tesla-owns-electric-car-market-us/#:~:text=Tesla%20owns%20almost%2079%25%20of,the%20US'%20electric%20car%20market, and*NREL, Electric Vehicle Charging Infrastructure trends from the Alternative Fueling Station Locator:Second Quarter 2020,* dated January 2021, see https://www.nrel.gov/docs/fy21osti/78486.pdf

15 Rivian – *Charging Your Rivian*, see https://stories.rivian.com/charging-your-rivian

16 *Jeep and Electrify America to put EV chargers at 4WD trailheads,* Joe Lorio, dated March 26, 2021, see https://autos.yahoo.com/jeep-electrify-america-put-ev-185800511.html?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvbS8&guce_referrer_sig=AQAAAGb7j12f6sKS_Z9KoBt5ARInrLkT6PpmKLCIGaeNMjt46BV8kc7PE5LVsUMeHtgLkP5PitwRvWTSudRJCoIDsCPJLn1IerRzQP61GE73qki02owcMkMOigWUaTZdEEDtagjyZtWukLEz_DUF2uZpEDbkVRfVT2A7zP67FkEYfQNG

the one in ChargePoint through its new venture technology fund; and BP, which purchased an EV charging station in the UK and in the US has backed start-up FreeWire.

In view of a market that is clearly competitive and benefiting from investment by numerous competitive companies, EDCs' captive ratepayers should not bear the risk of utility investment. The competitive market is not only meeting customer demand but has in fact built more than what is required based on current EV ownership. The competitive market, and most importantly private shareholders, should take on the burden and risk of funding research and development of innovative products and services in this burgeoning market.

Data/maps

15. Are there maps that identify three-phase power in your areas?
16. Are there areas/pockets of the state where three-phase power is not cost effective (feasible vs reasonable)?
    a. We may need to submit exceptions

NRG Comments:

NRG has no comments.

Equity and environmental justice

17. How do you consider equity in your planning work?
    a. Do you plan to have a Justice40 campaign (from the IIJA) or program to serve EJ communities in your region?

NRG Comments:

It would be unjust for investments in this program to be paid for by low- or moderate-income consumers who do not own an EV. Unfortunately, the risk that this occurs always is present when a utility monopoly is the one making the investment, because unless utilities are willing to bear the risk of loss (which as a rule they are not) then their investment must be recovered from all its ratepayers. That is why NRG advocates a focused role for utility investments, if any, and recovery of those investments through ratemaking that appropriately allocates costs to EV applications.

Efforts to address the needs of social justice communities should emphasize the conversion of bus and truck fleets with high emissions to EV. This focus would result in an improvement in air quality for the residents of these communities. Guidelines from the Federal Highway Administration ("FHWA") indicate that state plans should be future-proofed by considering expansibility of charging stations for medium- and heavy-duty vehicles. PennDOT should consider particularly how planned EV charging stations in these social justice communities might also accommodate bus and truck traffic to support any such fleet conversions.

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Energy generation

18. Do you see a linkage between EV infrastructure programs and innovative /renewable energy resources?
    a. Generation of the electricity
    b. Microgrids
    c. Storage Solutions

NRG Comments:

EV charging stations should not be viewed as standalone solutions. Rather, it is important to consider how those charging stations can be coupled with storage solutions, how to attach distributed solar to it, and how to participate in demand response. PennDOT should structure the program to encourage responses to its RFP, or like solicitations, that incorporate co-located additional resources with EV chargers. That would result in additional costs, although they would count toward the overall cost that is subject to being up to 80% funded through PennDOT revenues from the federal government, but it would also both potentially offset other costs (such as demand charges and grid upgrades) and add value and revenues (through the sale of capacity, ancillary services, and energy into the PJM market) that could be advantageous. PennDOT should encourage bidding into the program it establishes from companies that are willing to make contractual guarantees around the cost of energy supplied to EV charging infrastructure, which creates strong incentives to maximize the value of these chargers by the variety of firms that will be responsible for owning them, operating them, supplying them with energy services, and having them located on their premises.

Strategic or long-term planning

19. How are we allowing for expansion for demand and higher power levels (future-proofing)?
    a. Are you considering the development of energy/battery storage devices?
    b. Are you considering the possibility of Vehicle-To-Grid (V2G) capabilities for EVs?
20. How does resiliency play into your planning (weather related)?
21. Are you planning to improve any processes to accommodate this new need?
    a. Anything we/Commonwealth can do to help?

NRG Comments:

As discussed above, PennDOT must rely on the competitive market so as not to stifle innovation or place risk on ratepayers. This is a market that is changing quickly and PennDOT should rely on the market to ensure the best solutions are deployed for the least cost.

With respect to planning for resiliency, having on-site batteries and other distributed energy resources at charging stations can ensure that they continue to operate even during short-term grid blackouts. The competitive market should be given flexibility to make asset decisions on how to achieve resiliency. For instance, by relying on back-up generation or distributed energy resources like batteries, which NRG can sell, the grid would be more resilient.

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Other

22. How do you envision your role in order to fulfill the plan's vision and goals (convenient, affordable, reliable, equitable and safety)?
23. Is your workforce prepared for the upgrades needed?
    a. Do you anticipate any supply chain issues?
24. It appears that the utility company's contribution to date related to EV charging is primarily focused on the power distribution network, transformers, and metering. Is there interest in utility companies becoming more active in the EV charging infrastructure market including maintaining charging equipment (this appears to be the case in other states like Massachusetts, Oregon, and California)?

NRG Comments:

We view our role as an EGS and a provider of energy services as a firm that can either respond directly to a PennDOT RFP, if it were structured to solicit one or more dedicated energy services providers to the EV charging infrastructure deployed under this program or be part of a consortium that includes charging companies and site owners. NRG's business is to manage the risk of volatile energy markets on behalf of our customers, and to offer innovative solutions that reduce costs and maximize value to applications like EV charging infrastructure.

Meanwhile, as described extensively in response to Questions #12-14, the competitive market is doing an extremely robust job to drive demand for EVs and to accommodate charging needs that emerge. Question #24 asks if utilities would be "interested" in occupying a larger role in this space, and of course the answer is yes—but whether they are interested is not the relevant consideration here. Utilities axiomatically earn a government-authorized return on all capital investments they make, but at the same time they have little to no economic incentive under the ratemaking that applies to them to operationalize those capital investments to their maximum efficiency. Lots of capital spending with little operational efficiency: That is the exact opposite of what this program needs for success, and why we have advocated a limited role for utilities targeted toward "poles and wires" investments that may be needed.