pennsylvania
DEPARTMENT OF TRANSPORTATION

Department of Transportation's Comments on PUC's EV Charging Rate Design Policy

The PUC should strongly encourage electric distribution companies (EDCs) to consider the various impacts of electric vehicles (EV) on their present and future distribution system when establishing utility rates. EVs may become a substantial electricity load in the future, and most EV charging has at least some degree of flexibility as to when the charging can occur. By supporting the adoption of EVs and encouraging charging during times of low electricity demand, EDCs may be able to improve the efficiency of their systems and decrease per unit electricity prices for all customers.

The PUC should encourage EDCs to incorporate the following EV rate designs into their rates.

- Residential time-of-use rates for EV charging:
  - These rates should allow sub-metering options, so customers do not have to install a separate utility-grade meter to enroll in the program.
  - Residential EV time-of-use rates should maximize the price difference between the lowest and highest cost time of day, while ensuring that marginal costs are always recovered.
  - EDCs should include strategies for encouraging enrollment in residential EV charging rate programs, which may include:
    - Offering an incentive for customers to purchase equipment necessary to enroll in the program (such as a wi-fi enabled home charging unit)
    - Marketing the program to customers
    - Working with auto dealerships to educate customers at the time of their vehicle purchase.
    - Other strategies
- Alternative rate structures for public DC fast charging stations that decrease peak-demand electricity charges as a portion of the total electricity bill.
  - Proposed rates should incorporate the long-term outcome that enabling public DC fast charging increases local EV adoption, which subsequently increases electricity consumption
  - Alternative rate structures may be temporary while a DC fast charging station has a low load factor, or may propose a permanent alternative to traditional peak-demand charges
- Alternative rate designs for commercial customers, especially those with electric vehicle fleets
  - EDCs should consider changing non-coincident peak-demand charges to coincident peak-demand charges for commercial customers or splitting the peak-demand charge into non-coincident and coincident portions.
  - EDCs may consider additional strategies to incentivize electric fleet vehicle charging during times of available grid capacity and avoiding electric fleet vehicle charging during times of limited grid capacity.

Questions for EV Charging Rate Design Working Group

1. Should the Commission adopt minimum filing requirements for EV rate design proposals?

Adopting minimum filing requirements would serve to improve the quality and relevancy of information submitted by utilities in rate-design proposals and improve the efficiency of the review and decision-making processes.
Minimum filing requirements should establish standard questions that seek to understand how a utility's proposal will collect and use data, optimize grid capacity, manage impacts to peak periods, and communicate impacts with their customers.

2. What goals should the Commission focus on in reviewing utility proposals for EV rates?

- Mitigating increases to peak-demand on the grid
- Encouraging charging during times of low demand
- Facilitating the adoption of electric vehicles because increased adoption results in long-term benefits to all ratepayers
- Minimizing the cost of EV charging for low-income customers
- Improving access to EV charging for low-income customers

3. Should the EV charging rates be designed as part of the rate otherwise charged to the customer (e.g., a "whole home" rate), or designed as a standalone EV rate, which requires a separate meter and billing?

Both options may be considered. When a program uses a separate rate for EV charging the barrier to enrollment should be minimized as much as possible. For example, a residential time-of-use rate could use a sub-meter for an EV-only rate rather than requiring a second utility-grade meter.

4. Should the rates as designed be default or opt in? Should EV-specific rates be required for those customers participating in other approved utility EV programs?

EV rates should be optional unless the customer is also receiving a benefit through a utility EV program. For example, if a utility provides a financial incentive for a customer to purchase a wi-fi enabled home charger then they may require the customer to enroll the EV charger on an EV-only rate for a minimum period.

5. Should the EV-specific rates vary by season (summer, winter)?

Rates may vary by season when a year-round rate would result in significant negative impacts to the distribution system during a portion of the year, or when they are necessary for the EV-specific rate to produce a meaningful benefit as compared to not offering an EV-specific rate. EDCs should be especially careful and cognizant when setting seasonal rates on residential customers as this may require additional educational efforts and communications.

6. What opportunities are there for managed charging, and what role should EDC rates play in managed charging?

EDCs may propose the inclusion of managed charging within their rates and programs. EDCs should be required to offer a commensurate incentive in exchange for their ability to manage the charging of customer EV's. Customers must also be given sufficient notice regarding when and how the EDC may manage or alter their charging.

7. How should rate design for supply and distribution be aligned (if at all)?

Electricity customers, especially residential customers, should not have substantially different rate structures for their supply and distribution charges. When possible, supply and distribution should be billed similarly, or at least in coordination. (For example, a low day-time summer rate from a solar electricity supplier paired with a high day-time summer distribution rate would counteract each other and be confusing for the customer.)

8. How can EV charging be aligned with renewable energy production?

EDCs should consider the increasing production of renewable energy, and their ability to incentivize renewable energy production, in their EV rates. For example, EDCs may wish to have an off-peak rate during mid-day hours over the summer when solar production is highest, in addition to an off-peak rate overnight.

9. Should eligibility to participate in utility-offered EV incentive programs be tied to utilization of EV-specific rates?

EDCs may pair EV incentive programs with enrollment in EV-specific rates when both programs have an apparent connection. For example, a utility incentive to purchase a wi-fi enabled home charger has a clear connection to a customer's ability to enroll in an EV-specific rate so the programs can be tied together. Alternatively, a nominal bill credit program for notifying the utility of an EV purchase would not have an obvious connection to an EV-specific rate program.

10. How should low-income and equity considerations be considered for EV-specific rate design?

EDCs may incorporate low-income and equity considerations into their programs in many ways. They could include:

- Offering higher incentives to projects located in disadvantaged/low-income areas
- Offering higher incentives to projects that include substantial equity provisions, such as charging low-income customers a lower rate for use of a public charging station
- Incentivizing charging at multi-unit dwellings, or other locations likely to serve lower-income customers
- Educating and engaging with disadvantaged customers

Residential Rate Questions

11. What types of rate design are optimal for residential EV charging?

A variety of rate designs can be appropriate for residential EV charging. Important components are a low cost to enroll (no need for second utility-grade meter), opportunity for meaningful savings, and incentive to charge during off-peak times.

12. What are the potential benefits of optimal rate designs?

Optimal rate design both mitigates potential increases in distribution system peak demand and provides benefits for all customers. Optimal rate design uses EV load to flatten the overall demand load curve, so the distribution system is utilized more efficiently.

13. What are the costs associated with various rate design options?

All rate designs have a cost associated with administration and marketing/education. More complicated rate designs will be harder to educate and incentivize enrollment, especially for residential customers, which could increase the program cost per customer.

14. What are best practices in designing an EV specific rate?

- Hours for peak, off-peak, and potentially super off-peak periods
- Maximize the cost difference between the lowest and highest hourly rate
- Customers should be able to achieve a substantial savings by enrolling in the program as compared to staying on the standard rate
- The time period for the lowest rate should be at least 4-6 hours per day.
- Lower cost time periods should coincide with times the distribution system and/or generation have excess capacity
- Sufficient communications to customers for education, enrollment, and changes
- Work with auto dealerships to educate customers as they are contemplating the vehicle purchase

15. How often should customers be permitted to switch rate plans once enrolled?

Customers should be permitted to change rate plans anytime unless they received an associated utility incentive. Utilities may require that rate plan changes take effect after a set reasonable amount of time to facilitate administrative processes.

16. What metering capability is needed for various rate design options, and should customers be required or have the option to separately meter EV consumption from the house load?

Customers should have the option to separately meter EV consumption using a sub-meter. Options for sub-metering include in-vehicle options, wi-fi enabled home chargers, and meters with higher average error rates than utility-grade meters. As a sub-meter, it is less important that the amount be highly accurate, as the customer will still be billed for all electricity consumption.

17. Should the Commission entertain rate design pilot proposals or just move directly into new EV rate designs?

EDCs may be permitted to propose EV rate designs as pilots if they choose, but there is no need to require such rate designs be proposed as pilots. The exception may be EV rate designs that are truly novel or have been implemented by very few utilities nationally.

Commercial, Industrial and Public Charging Rate Questions

18. What types of rate design are optimal for commercial and industrial EV charging?

A variety of rate designs may be optimal for commercial and industrial EV charging. Note that public DC fast charging stations should be treated as their own category, separate from other types of commercial EV charging. Optimal components of commercial EV charging rates include incentives for charging during times of low distribution system demand and incentives to avoid adding load to times distribution system demand is high. As with residential rates, customers should be able to achieve sufficient savings using EV-rates to successfully incentivize their enrollment. Utilities may also wish to provide supportive services for planning and supporting EV fleet deployment to ensure high levels of communication, planning, and cooperation with customers adopting EV fleets.

19. Should utilities require a specific separate rate for direct current fast charge ("DCFC") stations? If so, should the rate designs recognize issues related to demand charges and station economics in periods of low utilization?

Utilities should offer optional rate designs specifically for public DC fast charging stations. These rates should recognize issues related to low load factors at DC fast charging stations, especially while EV adoption remains relatively low for now. By making DC fast charging stations economically viable charging access will increase, which will subsequently increase EV adoption and improve the load factor of the station.

20. Should the Commission consider specific separate tariffs for workplace, fleet, or electrified public transit?

Utilities should be allowed to propose different EV rate designs for various types of commercial EV charging. The individual charging patterns and usage needs of commercial customers may vary dramatically, and utilities may identify a variety of strategies to appropriately address different situations.