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Mr. Joel H. Peck, Clerk
State Corporation Commission
P.O. Box 1197
Richmond, VA 23218

RE: Ex Parte: Electrification of Motor Vehicles

Case No. PUR-2020-00051

Dear Mr. Peck,

Enclosed for filing in the above-referenced docket are NRDC's comments filed on behalf of our over 9,500 members in Virginia.

Thank you,

W. C. SR

Walton C. Shepherd

Enc.

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

COMMONWEALTH OF VIRGINIA, *ex rel.*
STATE CORPORATION COMMISSION

Case No. PUR-2020-00051

***Ex Parte*: Electrification of Motor Vehicles**

NRDC COMMENTS

Demand growth from charging EVs in Virginia, while modest today, is nonetheless a permanent feature of our state's electric system. On behalf of NRDC's over 9,500 paying members in Virginia, we therefore applaud and thank the Commission and Staff for taking this proactive step, especially given that EV charging revenues are an unparalleled opportunity to lower the rates of all APCo and Dominion customers.

Of primary importance, therefore, is ensuring that all Virginia customers realize the benefits of transportation electrification in the Commonwealth, through rate design and other policies that ensure EV charging generates revenues *in excess of* any associated marginal costs. Indeed, given the rate-lowering potential of excess charging-related revenue, through optimized, off-peak use of an underutilized grid, the SCC should also equally explore the benefits of policies that in fact *accelerate* uptake of EVs.

That acceleration of **beneficial widespread electrification** includes growth in medium- and heavy-duty vehicle EVs and ensuring that all EV drivers have access to charging stations, including those that do not live in a single-family home with a garage in which to charge.

The well-documented experience of utility territories that already have some of the highest EV penetration in America[1] shows that not only are the upgrade costs incurred to manage EV load minimal, relative to total grid expenses.[2] More importantly, lived utility experience with EV load shows that smart

[1] *See*, "Joint IOU Electric Vehicle Load Research – 7th Report," April 2019, at 5, available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=228787-14&DocumentContentId=60075.
[2] *See id.* at 8.

EV charging *lowers* total electric rates,[3] especially when charging occurs in off-peak periods during which there is excess, underutilized grid capacity—through load management and intelligent rate design that sends clear price signals to EV drivers.

There is no reason optimally integrating EVs into Virginia's own system can't deliver similar net benefits to all Virginia utility customers. These beneficiaries of good rate design and smart charging include:

- non-EV owners, through rate reductions due to increased charging revenues;
- EV owners, through fuel cost savings when compared to internal combustion powered cars, and even greater savings through off- and super-off peak TOU rates, as well as more widespread charging availability;
- disadvantaged communities burdened by excessive transportation-related air pollution, through reduced tailpipe pollution; and
- low- and moderate-income households with higher energy cost burdens, through lowered household and transportation-related expenses.

EV growth also provides net environmental benefits, with localized pollution reduced through less tailpipe emissions, and total transportation greenhouse-gases reduced, due to the greater efficiency of electric motors when compared to internal combustion engines, regardless of EVs' upstream electrical supply.

Utilities too will benefit, and not only from increased revenues. They will earn greater customer satisfaction (from EV and non-EV owners alike) and opportunities to facilitate and augment the growth of the competitive charging market by enhancing access to charging infrastructure, especially in harder to reach segments like multi-family housing. Further, EVs—particularly medium- and heavy-duty vehicles—can serve as distributed energy storage resources and further integrate renewables onto the grid.[4]

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[3] *See* "Electric Vehicles Are Driving Electric Rates Down," Synapse Energy Economics, June 2019, at 3, available at www.synapse-energy.com/sites/default/files/EV-Impacts-June-2019-18-122.pdf.

[4] *See, generally,* "Steering EV Integration Forward," Pamela MacDougall, NRDC, June 2019, available at www.nrdc.org/experts/pamela-macdougall/steering-ev-integration-forward.

In sum, smartly electrifying and charging cars, trucks, and buses can benefit everyone, including those in disadvantaged communities. Thoughtful regulatory approaches and utility investments contemplated in this proceeding can ensure equitable access to both clean transportation and lower rates.

With these significant potential benefits in mind, and with an eye toward ensuring all Virginians can capture the full economic potential of EV charging already experienced elsewhere, we address several of the Commission's questions below, and we also respectfully propose additional questions the Commission might choose to address in the future.

1. How many electric vehicles are currently deployed in Virginia and what is the expected growth over the next five, ten and twenty years?

The one certainty regarding EV sales in Virginia is that they will steadily increase. That trend will continue to accelerate due to factors as diverse as falling battery costs and the largest auto manufacturers' continually expanding investment in their increasing EV fleet share. Given that every one of the increasing number of EVs in Virginia will charge from our state's grid, a central regulatory goal of all stakeholders – including the Commission -- must be to ensure that each of them can easily utilize the grid in a way that provides rate-lowering benefits to all customers.

Currently, there are approximately 19,650 electric vehicles (EV) in Virginia.[5] Of this, approximately 11,200 are battery electric vehicles while 8,450 are plug-in hybrid vehicles. As more EV models become available—including electric SUVs and trucks—and the used EV market continues to grow, it is anticipated that the market will continue to grow exponentially, as it has trended for the past decade (see figure 1, below). In 2020, the Virginia legislature passed HB717, which requires the EV Rebate Program Working Group to develop a rebate program for new and used EVs in Virginia.[6] Research shows that rebate programs for electric vehicles can stimulate the market and increase vehicle

[5] Atlas Public Policy, *EV Hub*, last accessed May 20, 2020, available at www.atlasevhub.com/.
[6] *See*, "An Act to direct the Department of Mines, Minerals, and Energy to convene a working group to determine the feasibility of an electric vehicle rebate program," available at https://lis.virginia.gov/cgi-bin/legp604.exe?201+ful+CHAP0973+pdf.

sales of electric vehicles, therefore, Virginia should expect to see increased EV sales once the program is implemented.

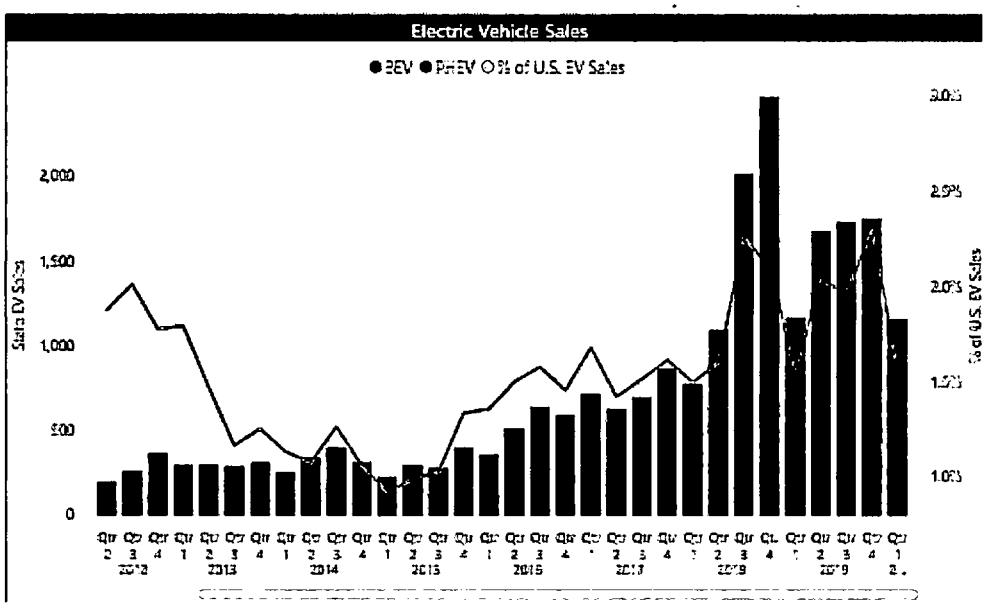

Figure 1: EV sales have grown exponentially over the past decade (Source: Atlas EV Hub, June 2020)

Just as importantly, transportation is now the largest source of carbon dioxide pollution in Virginia. To meaningfully reduce greenhouse gas emissions and co-pollutants in the Commonwealth, investments that support transportation electrification will improve Virginia's air quality. In Norfolk, for example, in Chesapeake, VA a single 2020 Chevrolet Bolt reduces emissions by almost 200 CO_2 grams/ mile (see figure 2, below).

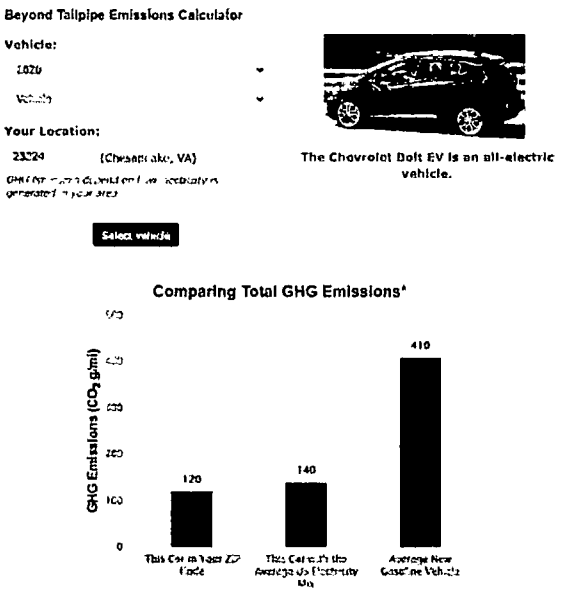

Figure 2: Greenhouse gas emissions from a Chevy Volt vs. the average new gasoline vehicle in Chesapeake, VA. (Source: U.S. DOE Alternative Fuels Data Center)

2. What is the current level of public charging infrastructure in Virginia and how is that expected to grow?

Wide availability of public charging infrastructure, especially direct-current fast chargers (DCFC), is an important factor for many drivers when deciding to purchase an EV. There are currently 1,762 electric vehicle charging stations at 631 locations in Virginia.[7] Of this, 398 stations are DCFC, and 1,359 are Level 2 stations. However, the Commonwealth will need more charging stations to support widespread vehicle electrification. Virginia's 2018 Energy plan—which contains a section with recommendations regarding EVs and Advanced Transportation—also discusses the current lack of DCFC stations in Virginia as a major barrier to EV growth in the Commonwealth.

[7] U.S. Department of Energy, "Alternative Fueling Station Locator," accessed June 2020, available at https://afdc.energy.gov/stations/#/analyze?region=US-VA&fuel=ELEC.

Specifically, according to EVI-Pro Lite, assuming five percent of vehicles in Virginia are electric—approximately 375,000 vehicles—the Commonwealth will need 2,076 DCFC stations and over 24,000 public and workplace Level 2.[8]

Additionally, M&HD vehicle electrification is an important strategy to improve air quality, reduce climate causing pollutants, and increase equitable access to clean transportation. Charging stations to support these vehicles often require more power, and, depending on the fleet, need to be installed both along major delivery and travel routes, as well as at the location to which fleets "return home."

Utilities are in a unique position to propose and undertake strategic programs and initiatives to ensure full development of the needed infrastructure to support the electrification of all classes of vehicles – light, medium ,and heavy duty. We further discuss the utilities' proper potential role in supporting public charging, and provide best practices and examples from other utilities below.

3. **Whether and how rate designs should be structured to incentivize the use of electric vehicles, and**
4. **Whether and how rate designs should be structured to incentivize charging of electric vehicles during off-peak times?**

We all pay for the legacy and new-build costs of Virginia's grid, and increasing EV charging revenues must be captured to lower those total costs for all. Given EVs' increasing electricity demand, the SCC's primary goal should be to ensure that grid optimization – especially deliberate rate design -- fosters greater EV adoption, through price signals that maximize fuel cost savings. That can best be accomplished by ensuring that least-cost charging occurs during off-peak and super-off-peak periods when the grid is underutilized. Successfully optimizing our grid through smart EV charging will in turn generate revenues in excess of the marginal costs of increased charging, and thereby reduce rates for all

[8] U.S. Department of Energy, "EV Infrastructure Projection Tool," accessed May 2020, available at https://afdc.energy.gov/evi-pro-lite. Assumptions: Vehicle Mix: 15% PHEV 20-miles, 35% PHEV 50-miles, 15 BEV 100 miles, 35% BEV 250 miles; partial support for PHEV; 80% of drivers with access to home charging.

customers. Indeed, that is the core purpose of rate design: ensuring the most efficient possible use of the grid for which we are all paying.

Virginia ratepayers benefit when our ratemaking policy ensures off-peak charging soaks up excess capacity and energy from our grid and, moreover, better integrates renewable energy resources. The resulting downward pressure on rates for all customers – as that additional revenue is spread out among the rate base -- has already occurred in utility territories with some of the highest EV penetration in the nation,[9] and delivering lower rates for all should be an explicit regulatory goal here in Virginia as well.

These potential benefits are neither insubstantial or abstract: a 2019 study showed that two utility territories with some of the highest EV penetration in the U.S. (Southern California Edison (SCE) and Pacific Gas & Electric (PG&E), collected nearly $600 million in net revenues from EV charging customers.[10] That analysis found that EV charging has succeeded in pushing those utilities' electric rates down, largely due to shifting charging to occur overnight, to soak up the excess capacity of the grid.

Specifically, EV customers on TOU rates in those territories only charged during "on-peak" hours 9-14% of the time.[11] By responding to intelligent rate design, these utilities' EV owners are not driving additional net marginal costs to accommodate their additional charging-related load. Instead, EVs provide significant new net revenues (of dollars that would otherwise be spent at the gas station and therefore sent out-of-system), dollars that are "returned" to all utility customers via lower rates and bills.[12]

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[9] *See, generally,* "Electric Vehicles Are Driving Electric Rates Down," Synapse Energy Economics, June 2019, available at www.synapse-energy.com/sites/default/files/EV-Impacts-June-2019-18-122.pdf. Synapse evaluated both EV revenues and costs, 2012-2018, in Pacific Gas & Electric and Southern California Edison territories, and found EV drivers contributed an estimated $584 million (in 2017 dollars) in cumulative revenue, net of utility expenditures to support EV charging and uptake.

[10] *Id.* at 3.

[11] *Id.* at 2.

[12] Other studies have shown similarly shown the potential of EV charging to lower utility rates in other states; *e.g.* MJB&A analysis showing significant EV adoption in Minnesota could reduce utility bills by over $10 billion by 2050, available at www.mjbradley.com/reports/electric-vehicle-cost-benefit-analysis-minnesota.

As EV numbers continue to grow, these rate-lowering benefits must be delivered to Virginia ratepayers as well, through deliberately crafted, intelligent rate design, specifically to ensure off-peak charging.

For Dominion customers, that will mean avoiding EV charging in late summer and winter afternoons and winter mornings. To ensure predominantly non-peak charging occurs, (and ideally "super off-peak" from 12 – 6 AM for Dominion customers), the following are the primary considerations for well-designed time-of-use rates:

- Clear TOU rates and related TOU information that is predictable, easy to find, and easily understood, and passed through directly to drivers at private and public chargers alike.

- TOU cost signals and cost differentials that are sufficient to shift EV charging behavior away from the "charge upon arrival" default.

- Default EV-only TOU rates for all EV owners and charging station hosts.

- Rate designs that account for different charging market segments, e.g. commercial, private homeowner, multifamily housing, private fleets, and municipal fleets.

- Targeted rate design and related incentives for harder to reach but important segments like multi-family housing.

- To complement TOU rates, EV load management tools like direct EV load control and EV demand response options, all with "set it and forget it" capability.

- Rate-design related education and outreach, to EV owners and non-owners alike, to ensure maximum awareness and adoption.

In addition to rates for residential customers, commercial and industrial charging rates must also be carefully crafted to support fleet, medium- and heavy-duty vehicle electrification, and public charging stations. Synapse Energy Economics notes in its recently released report, "Best Practices for Commercial

and Industrial EV Rates"[13] that "[t]raditional C&I rates were generally designed for large buildings, rather than for public fast charging of passenger vehicles or for depot charging of truck and bus fleets" and that those building-centric rates "do not reflect the unique costs or flexibility of EV charging and can charge commercial EV customers much more than their true cost of service."

In other words, commercial tariffs, like Dominion's GS-2 commercial tariff, are likely not appropriate for charging stations, as they may hinder their beneficial proliferation in Dominion's territory. Time-limited discounts have been used as a temporary solution elsewhere but are not sustainable, and utilities and regulators should develop new EV-charging specific C&I rates that are both cost-reflective and take advantage of the unique characteristics and flexibilities of EV load.

Synapse's C&I EV charging report offers the following principles for C&I rates, which we support:

- Time-varying volumetric rates are generally preferable to demand charges;
- Non-coincident peak demand charges should generally be avoided;
- Design rates to promote efficient use of fixed system resources, reducing cost for all utility customers;
- Rates must be easy to understand and predictable;
- Rates must be designed with end users in mind;
- It may be appropriate to set rates to recover marginal costs rather than embedded costs; and
- Programs that rely on price signals inherent in rate design to deliver grid and user benefits should ensure users actually see those price signals.

[13] "Best Practices for Commercial and Industrial EV Rates," Synapse Energy Economics, May 2020, at 1, available at www.synapse-energy.com/sites/default/files/Best-Practices-Commercial-Industrial-EV-Rates_18-122.pdf.

We recommend that SCC direct all utilities to consider these best practices and proactively develop both residential and C&I rates, to maximize the benefits of transportation electrification on the grid for EV-owners and non-owners alike.

5. Can and should rate regulation prevent cost shifting to consumers who do not own or operate electric vehicles?

Yes.

As has already been shown by the two utilities with among the highest EV penetration in America, rate regulation must not only prevent cost shifting, but should also deliver cost reductions to non-EV owners.

Indeed, EV demand will only increase, so a guiding principle for all stakeholders must be the delivery of system-wide cost savings through additional revenues generated during times of grid underutilization. EV charging demand that manages to instead increase total costs would represent a failure of policy design, so we again thank the Commission for taking this proactive step in advance of the EV demand increases on the horizon.

The potential benefits of this increased demand are not just hypothetical—real world data from California[14] (which has had a decade's worth of experience as well as the greatest penetration of EVs in the United States), shows that EVs can push downward pressure on rates, as discussed in more detail above in questions 3 & 4.

More specifically, to examine whether or not "cost shifting" occurred in two territories with significant EV penetration, Synapse evaluated the revenues and costs associated with EVs from 2012 through 2018 in PG&E and SCE service territories. They compared the new revenue the utilities collected from EV drivers to the cost of the energy required to charge those vehicles, plus the costs of any

[14] *See, generally,* "Joint IOU Electric Vehicle Load Research – 7th Report," April 2019, available at https://efiling.energy.ca.gov/GetDocument.aspx?tn=228787-14&DocumentContentId=60075.

associated upgrades to the distribution and transmission grid, and the costs of utility EV programs that are deploying charging stations for all types of EVs.

And in total, EV drivers contributed an estimated $584 million more than the associated costs (see figure 3, below).

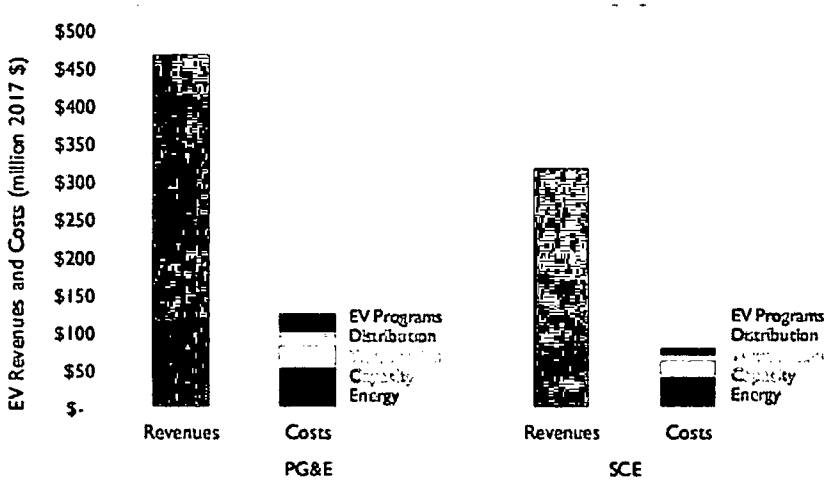

Figure 3: PG&E and SCE Revenues and Costs of EV Charging, 2012-2018 (Source: "Electric Vehicles Are Driving Electric Rates Down," Synapse Energy Economics, June 2019)

As for direct grid costs to accommodate EVs, other studies of higher EV penetration utilities show that EV grid integration costs are relatively modest. A 2017 analysis of EV grid integration costs in California found that utilities collectively spent less than $610,000 on upgrades out of a collective distribution capital budget of over $5 billion – one hundredth of one percent of total distribution capital expenditures from 2012 to 2017.[15] This is because – again -- EV charging largely uses excess grid capacity.[16]

Another study from New York anticipates similar net benefits as have already been experienced in the EV hotbed of California. Specifically, EV adoption levels needed to meet New York's GHG

[15] "Electric Vehicles are Not Crashing the Grid: Lessons from California," Synapse Energy Economics, November 2017, at 2, available at www.synapse-energy.com/sites/default/files/EVs-Not-Crashing-Grid-17-025_0.pdf.
[16] *See id.* at 2-3.

reductions goals ae anticipated to provide more than $75 billion in net benefits, including $24 billion in reduced utility bills for all utility customers stemming from the same effect already experienced by SCE and PG&E as discussed above.[17] That analysis also estimates that EV drivers could realize $34 billion in reduced fuel and maintenance costs.[18] Virginia policy design can ensure utility customers in Virginia realize similarly beneficial cost savings.

Further, utility programs can increase transportation electrification for all citizens. Reflecting these opportunities, the Edison Electric Institute (EEI), the Illinois Citizens Utility Board, the National Consumer Law Center, NRDC, and Sierra Club issued a joint statement earlier this year highlighting the benefits of electrifying cars, trucks, and buses to everyone—especially those in disadvantaged communities.[19] This joint statement underscores the importance of thoughtful utility investments and programs to ensure equitable access to clean transportation.

Importantly, in terms of environmental impacts, including in environmental justice communities, medium- and heavy-duty vehicles often account for a significant share of on-road emissions in low- and moderate income and environmental justice communities. Therefore, so that all utility customers benefit from clean transportation efforts, the Commission should ensure utility EV programs increase charging availability in multi-family housing, in environmental justice and low-and moderate-income communities, and generally support the electrification of medium- and heavy-duty vehicles.

14. Is the market for providing public charging stations competitive or should it be considered a natural monopoly with service provided exclusively by regulated utilities? If the market is competitive, to what extent is utility ownership of charging stations appropriate and are there specific geographic areas where utility ownership of charging stations may be appropriate?

[17] "Electric Vehicle Cost-Benefit Analysis," MJ Bradley & Associates, December 2016, at 4, available at www.mjbradley.com/sites/default/files/NY_PEV_CB_Analysis_FINAL.pdf.
[18] *Id.* at 6.
[19] "Joint Statement Supporting Electric Transportation," February 2020, available at www.nrdc.org/sites/default/files/media-uploads/joint_statement_supporting_electric_transportation_0.pdf.

Public charging stations must be a part of the competitive charging market, and utility support or ownership of charging stations in some instances can help spur this market. Therefore, the Commission should not prejudge utility ownership of charging stations. Utility ownership of charging stations may be particularly valuable in certain segments, such as multi-family housing and other segments where the competitive market has not yet entered.

We must ensure that all utility customers who drive or could drive EVs have access to reliable charging, including low- and middle income and multi-family housing residents. Disadvantaged communities often bear the brunt of transportation emissions, and therefore it is crucial that these communities realize the benefits of transportation electrification. Therefore, as discussed further in these comments, we recommend that utilities be permitted to provide targeted turn-key solutions for charging infrastructure located at multi-family housing locations, particularly in low- and moderate-income communities and in environmental justice communities.

Best practices from other utilities show that these turn-key solutions may be needed to increase multi-family housing charging. For example, SCE found that providing make-ready infrastructure was not sufficient in all segments and even a 100% make-ready incentive for multi-family housing charging stations only solicited three applications. To remedy this, SCE now instead offers a full "turn-key" utility-ownership option for electric vehicle charging stations, providing both the make-ready infrastructure and the charging station.[20]

Further, PG&E developed a program designed specifically to address the barriers of transportation electrification in disadvantaged communities. Their Empower Electric Vehicle Charger Incentive and Education Program provides incentives for up to 2,000 low-and moderate- income communities to cover the cost of EV charging at residential properties.[21]

[20] *See* "Charge Ready Program," SoCal Edison, available at www.on.sce.com/chargeready.
[21] *See* "CA Approves Novel Low-income EV Charger Program," Miles Muller, NRDC, September 2019, available at www.nrdc.org/experts/miles-muller/california-approves-novel-low-income-ev-charger-program.

While EV penetration in Virginia may be comparatively modest today, models already exist to ensure total cost savings are available to all charging market segments.

15. What is the proper role, if any, of utility investment in the deployment of public charging stations?

Given both the ability of transportation electrification revenue to lower rates and the inherent "chicken vs. egg" obstacle of limited charging infrastructure forestalling greater EV uptake, targeted utility investment in public charging infrastructure, particularly in underserved market segments, is appropriate, subject to the following considerations.

Utility investment – including potential ownership -- must be informed by the goal of accelerating charging deployment in a manner that:

- is equitable – reaching presently underserved market segments, like multi-family housing, where landlords have little incentive to install charging infrastructure;
- is complementary of a competitive charging market;
- ensures new EV load is effectively managed; and
- leverages ratepayer dollars as far as possible.

Future approval of any utility charging infrastructure program must be contingent upon meeting several crucial metrics. Specifically, utility investment must be directly aimed at improving the utilization of the electric grid by relying on TOU rates, direct load control, and demand response. Full cost recovery must be contingent upon delivering lower total household energy costs, both transportation and household electric, particularly for LMI and EJ communities. Improved air quality in communities historically-burdened by transportation-related emissions must be an explicit goal and identifiable outcome. Lastly, utility sponsored programs should ultimately take advantage of the inherent flexibility and storage

potential of EVs to better facilitate the integration of variable renewable energy resources in the Commonwealth.

Importantly, there are contexts in which utility ownership of stations may be particularly valuable, such as in in low- and moderate-income and environmental justice communities and in multi-family housing. There are a variety of possible models (see figure 4, below). Many utilities throughout the country, as one example, have invested in make-ready infrastructure programs, which provide incentives for EV infrastructure, up to the physical charging station (similar to Dominion's own recently approved EV pilot program). In New York, the Department of Public Service Staff proposed a $582 million "make-ready" infrastructure program that would help the state achieve its 2025 zero-emission vehicle goals by installing over 100,000 electric vehicle charging stations. In addition to make-ready programs for light-duty vehicles, medium- and heavy-duty electrification is an equally, if not more important, opportunity to maximize EV charging benefits to Virginia's electric system and ratepayers.

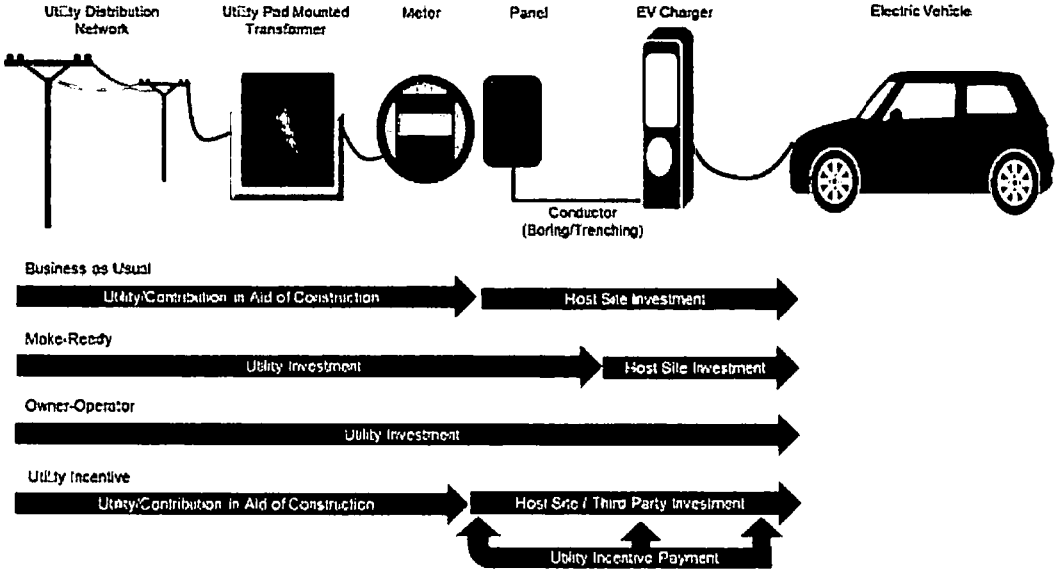

Figure 4: Utility Ownership Models for Electric Vehicle Investments. (Source: MJB&A and Georgetown Climate Center)

Other options are turnkey utility-ownership options for multi-family housing and government sites. San Diego Gas & Electric's "Power Your Drive Program," for example, which includes utility

ownership of charging stations, saw a significant percentage of multi-family deployment, suggesting landlords are motivated when the utility procures, operates, and maintains charging stations.[22]

These turnkey utility-ownership options in harder to reach market segments like multi-family housing is supportive of competition and a "level playing field" in the marketplace for EV charging products and services, which in turn could drive even greater EV adoption in those segments. Targeted utility ownership and direct procurement supports competition and a level playing field by acting as a market catalyst, rather than a market constraint. Utility procurement is itself true competition, with procurement decisions based on features, functions, track record, and price, rather than market share or corporate resources. Indeed, as motivated buyers, Virginia utilities would provide for market competition and opportunities for market participants that would otherwise not exist.

Given the wide variety of options and the future need for wider charging availability, the Commission should therefore carefully consider simply adopting new rules or tariffs that make the provision of such necessary infrastructure part of the normal course of utility business.

16. Under what utility tariffs do public charging stations take service from the electric utility and what adjustments to rate design or additional tariffs might be needed to support additional deployment of public charging stations?

In Dominion territory, public charging stations would most likely take default service under the heavily demand-based GS-2 tariffs. This is an unsustainable mismatch, and EV-tailored commercial rates are needed.

We previously discussed the importance of rate-design to shift charging to off-peak hours, particularly at residential properties and at fleets. However, public charging also provides challenges, especially considering these charging stations often fall on more expensive, demand-charge based commercial and industrial rates.

[22] *See* "Power Your Drive," SDG&E, available at www.sdge.com/residential/electric-vehicles/power-your-drive.

Synapse Energy Economics' report, "Best Practices for Commercial and Industrial EV Rates," correctly notes that "[t]raditional C&I rates were generally designed for large buildings, rather than for public fast charging of passenger vehicles or for depot charging of truck and bus fleets" and those rates "do not reflect the unique costs or flexibility of EV charging and can charge commercial EV customers much more than their true cost of service."[23] Time-limited discounts (such as demand charge credits) are not a sustainable solution to this ratemaking mismatch. Therefore, utilities and regulators should develop new C&I rates designed specifically with EV use cases in mind. These rates should be both cost-reflective and take advantage of the unique characteristics and flexibilities of EV load

We urge the Commission to consider Synapse's recommendations in moving forward with new C&I rate design for EV charging stations, including the prioritization of time-varying volumetric rates over demand charges and to avoid non-coincident peak demand charges altogether.

CONCLUSION AND ADDITIONAL QUESTIONS FOR FURTHER CONSIDERATION

In addition to the questions posed in this docket, we encourage the Commission to further solicit comment on any of the following related but additional questions:

- What different EV charging market segments exist, and how can each be adequately served by cost-effective charging infrastructure and related rates?
- What should be the charging station siting criteria for utility investment, rebates, or ownership?
- What, if any, physical infrastructure (e.g. AMI, sub-meters) is needed to implement TOU EV charging rates?
- What is the best way to assess and quantify additional charging revenues' system-wide value to all customers, including non-EV owners?
- How can any additional costs to the grid to accommodate EV charging be best captured and appropriately passed on to cost causers?

[23] "Best Practices for Commercial and Industrial EV Rates," Synapse Energy Economics, May 2020, at 1, available at www.synapse-energy.com/sites/default/files/Best-Practices-Commercial-Industrial-EV-Rates_18-122.pdf.

- What is the most efficient process for allocating EV charging revenue to all ratepayers (e.g. triennial rate reviews, RAC proceedings)?
- What data should be collected from Dominion and APO's current EV related programs and rates?
- How can utilities best support medium- and heavy-duty vehicle electrification?

To conclude, we thank the Commission for the opportunity to respond to the above posed questions. Electric vehicles will provide significant opportunities and benefits to utilities as the market expands, and it is important that these conversations happen in the near term. The Commission should ensure utilities 1) develop rates that optimize EV charging on the grid, both in the residential and C&I sectors; 2) enable equitable transportation electrification in LMI and EJ communities, including at multi-family housing; 3) support beneficial public charging infrastructure through make-ready programs and other utility incentives; and 4) support medium- and heavy-duty vehicle electrification in Virginia.

We look forward to continuing this important conversation in Virginia.