1. What role should the utility play in supporting Electric Vehicle Supply Equipment (EVSE) deployment? Please address this question from the perspective of utility ratepayers, Electric Vehicle (EV) suppliers, and providers of EVSE. How should utility investment costs, if any, be compensated or recovered? Should utilities have the opportunity for earnings adjustment mechanisms related to successful EVSE deployment?

We encourage the Commission to approach the consideration of the utility role in EV development by thinking about New York’s policy goals for transportation electrification, the barriers to achieving these goals, and the attributes and strengths of utilities that enable them to play a unique and constructive role in helping to overcome certain of these barriers.

As a Zero Emission Vehicle Memorandum of Understanding (“ZEV MOU”) state, New York is committed to deploy approximately 800,000 ZEVs by 2025.\(^1\) Separately but related, the State has a goal of reducing greenhouse gas (“GHG”) emissions 40 percent below 1990 levels by 2030,\(^2\) and 80 percent below 1990 levels by 2050.\(^3\) Based on analysis by M.J. Bradley, the State’s aggressive climate requirements will necessitate more rapid and deeper electrification of the transportation sector than will the ZEV MOU, with a projected 27 percent plug-in electric vehicle penetration in 2030 (as compared with 10.9 percent based on the ZEV MOU trajectory).\(^4\)

Presently, three primary barriers are limiting New York’s EV market development and interfering with the State’s ability to achieve its ZEV MOU and GHG goals. First, while the number of models and types of EVs is growing rapidly and a used EV market is beginning to develop, vehicle cost and performance considerations remain a barrier for some consumers. Second, there persists a significant education gap regarding EVs and the rapid positive changes that the EV market has experienced in recent years.\(^5\) Third, concerns about access to convenient

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\(^5\) See Lingzhi Jin & Peter Slowik, Literature review of electric vehicle consumer awareness and outreach activities, ICCT Working Paper 2017-03 (Mar. 21, 2017), available at
charging remain a major impediment to EV purchases, particularly for individuals who lack the capacity to install charging equipment where they live.

There is a growing consensus that utilities have an important role to play in helping to address the latter two barriers. Specifically, we urge the DPS to identify three discrete roles for utilities: (1) utilities should implement programs and improve rate structures to maximize customer savings and promote effective management of new EV load; (2) utilities should help to accelerate deployment of EV charging infrastructure, particularly through enabling third-party investment and expanding access to the benefits of electrified transportation for underserved market segments including low- and moderate-income customers; (3) utilities should engage in education and outreach regarding the benefits of vehicle electrification. These roles are essential to achieving New York’s ZEV and GHG goals and ensuring that all ratepayers benefit from New York’s EV market development.

The above recommendations are consistent with recommendations from the Multi-State ZEV Task Force (“ZEV Task Force”), Northeast Corridor Steering Committee (“Steering Committee”) and other entities, as well as actions taken by a number of other states around the country. For example, the 2018 ZEV Action Plan, developed by the ZEV Task Force which includes representatives from New York DEC, NYSERDA and NYPA, encourages ZEV states to consider a number of roles for utilities in each of the core areas identified above, including education and outreach, deployment of residential, workplace, and public charging.

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6 For example, in 2017 PSEG-LI passed through a $10,000 rebate from Nissan for the Nissan Leaf in addition to the federal tax credit and New York’s “Drive Clean” rebate.

7 2018 ZEV Action Plan at 15 (“Utilities should include funding for consumer education and outreach activities, such as ride and drive events, in transportation electrification program proposals submitted to public utility commissions.”).

8 Id. at 19 (“Utilities should play a key role in deploying EVSE at MUDs by helping to assess the need for electric service upgrades, and when authorized to rate-base infrastructure investment, by upgrading electrical service and offering a utility ownership option or incentives to defray the often higher costs of installing EVSE at these locations”); id. at 20 (“Utilities should consider offering options for deploying Level 2 EVSE at single family homes, including turnkey programs and rebates or other incentives as a way to reduce costs for homeowners and to collect data on EVSE deployment that supports planning for service upgrades.”).

9 Id. (“Utilities should make expanding workplace charging a key priority of EVSE investment and outreach programs, for example by deploying stations or providing make-ready infrastructure; by developing programs that catalyze/leverage private investment in charging infrastructure; by offering information and training about workplace charging to commercial and institutional customers to encourage investments; and by assisting customers to develop and optimize building load energy management plans”).

10 Id. at 21 (“Utilities and EVSE providers should strategically deploy charging hubs—with both DC fast charging (DCFC) and level 2, as appropriate—in communities without off-street parking and/or neighborhoods located near commuting travel corridors within metropolitan areas, to serve long distance and local PEV drivers, including PEVs in taxi and ride sharing/hailing fleets.”); id. at 22 (“Utilities should support expansion of DCFC along travel corridors, for example, by assisting with site selection, installing make-ready infrastructure, or deploying stations, particularly in areas where there are gaps in the charging network with low projected charging usage.”).
infrastructure, and load management.\textsuperscript{11} The Steering Committee, which is composed of representatives from twelve states (including New York) and the District of Columbia, and facilitated by Northeast States for Coordinated Air Use Management (“NESCAUM’’), has also recommended a robust role for utilities in accelerating deployment of EV charging stations including owning or defraying the cost of EV supply equipment at multi-unit dwellings, rebates and incentives for Level 2 home charging, make-ready infrastructure for DC fast chargers, and educating their customers about EV charging and incentives.\textsuperscript{12}

In addition, a growing number of states have approved utility programs that include support for charging infrastructure, education and outreach, and load management components:

- California: The California Public Utilities Commission has approved multiple rounds of charging infrastructure proposals by the state’s three investor owned utilities amounting to approximately $935 million of recoverable investment in EV charging infrastructure.\textsuperscript{13} The recently approved proposals are wide-ranging and build on smaller-scale utility-sponsored EV programs now underway,\textsuperscript{14} with the programs recently approved for Pacific Gas & Electric and Southern California Edison concentrating on charging infrastructure for electric trucks, buses and heavy-duty equipment.\textsuperscript{15} The approved filing also included new commercial rate structures for DC fast chargers in Southern California Edison territory and a requirement that Pacific Gas & Electric file their own commercial rate. Another notable program in the filing is a “make ready” program for DC fast charging in Pacific Gas & Electric territory, which includes a robust rebate for charging infrastructure in disadvantaged communities.

\textsuperscript{11} Id. at 20 (“Utilities should offer customer incentives to charge at home during off-peak times, such as financial incentives linked to demand response programs or technologies enabling PEV-only TOU rates that avoid the need for installation of additional utility meters.”).

\textsuperscript{12} Northeast Corridor Regional Strategy at 12, 18.


\textsuperscript{14} See generally Decision 18-05-040, supra note 9.

\textsuperscript{15} Id. at 76-100.
• Florida: The Florida Public Service Commission has approved a $8 million program by Duke Energy to deploy 530 L2 EV charging stations at multi-unit dwellings (“MUDs”), workplaces, public long-dwell time locations, and highway and depot DC fast charging stations, and to fund customer education and outreach.16

• Massachusetts: The Department of Public Utilities (“DPU”) has approved utility proposals from the largest two distribution utilities in Massachusetts. In 2017, the DPU approved a $45 million proposal by Eversource to facilitate the installation of almost 4,000 public charging ports in multi-unit dwellings, in workplaces, and in other public long-dwell-time locations in Massachusetts by installing and owning the make-ready infrastructure, and in some cases rebating the cost of the chargers as well. 17 In 2018, the DPU approved a second similar $24 million proposal from National Grid that would support the deployment of approximately 1,200 public L2 charging ports and 80 DCFCs in its service territory.18

• Nevada: The Nevada Public Utilities Commission approved a $15 million program by NV Energy to offer incentives for the purchase and installation of DCFCs and L2 EV chargers, including engagement by NV Energy on customer education and awareness of vehicle electrification benefits.19

• Ohio: The Public Utilities Commission of Ohio recently approved a $10 million EV charging plan by American Electric Power that includes rebates for the hardware, network services, and installation of up to 300 L2 chargers and 75 DCFCs including target percentage L2 deployments at public, workplace and multi-unit dwelling locations, and with 10 percent of both L2 and DCFCs to be located in low-income areas.20

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• Oregon: the Oregon Public Utility Commission recently approved pilots by both Portland General Electric ("PGE") and PacifiCorp that include EV charging infrastructure components.\footnote{In the Matter of Portland General Electric Company, Application for Transportation Electrification Programs, Ore. Pub. Util. Comm’n UM 1811, Order 18-054 (Feb. 16, 2018); In the Matter of PacifiCorp, dba Pacific Power, Application for Transportation Electrification Programs, Ore. Pub. Util. Comm’n UM 1810, Order 18-075 (Feb. 27, 2018).} PGE’s pilot includes $2.6 million for the company to install and own up to 24 DC fast chargers.\footnote{Order 18-054, at 4-5.} PacifiCorp’s pilot includes up to $1.85 million for the company to construct and own up to seven charging sites, with each site featuring up to four dual-standard DCFCs and at least one Level 2 port.\footnote{Order 18-075, at 3.}


• Utah: The Utah Public Service Commission has authorized PacifiCorp to spend up to $2 million per year for five years and includes EV charging equipment incentives for non-residential and multi-family Level 2, DCFCs, and grant-based custom projects and partnerships.\footnote{I/M/O Application of Rocky Mountain Power to Implement Programs Authorized by the Sustainable Transportation and Energy Plan Act, Pub. Serv. Comm’n of Utah Dkt. No. 16-035-36, Phase Three Report and Order (June 28, 2017), at 3-4.}

• Washington: In 2016, the Washington Utilities and Transportation Commission approved a pilot by Avista Utilities to install 265 Level 2 chargers in residential single-family homes, at workplace, fleet, and multi-unit dwelling locations, and at public locations, as well as DCFCs at seven locations.\footnote{Wash. Utils. & Transp. Comm’n v. Avista Corp., Wash. Utils. & Transp. Comm’n Dkt. UE-160082, Order 01: Order Allowing Tariff Revisions to Become Effective Subject to Conditions (Apr. 28, 2016), at 1-2.}

Utility actions in the areas identified above should be consistent with the joint recommendations filed in this docket by a diverse coalition of 29 groups on August 6, 2018 ("Joint Recommendations").\footnote{Natural Resources Defense Council, Sierra Club et al., Joint Recommendations, Dkt. No. 18-E-0138 (Aug. 6, 2018).} With regard to infrastructure deployment, this includes incorporating program elements that enable low-income and/or disadvantaged communities to share the full range of benefits from transportation electrification, and giving these communities a voice in informing these programs,\footnote{Joint Recommendations Section 3.c.} collaborating with relevant stakeholders, including local public transit agencies, to help deploy charging stations to support electric transit buses,\footnote{Joint Recommendations Section 3.d.} leveraging third party investment to promote competitive markets and maximize the impact of
limited ratepayer funds, requiring open access and equipment interoperability for utility-facilitated non-fleet charging station deployments that leverage utility customer funds, requiring access to charging data as a precondition for participation in transportation electrification programs and regularly developing public reports that provide (properly anonymized) information to the Commission and other stakeholders on program implementation.

Finally, utilities should have an opportunity to recover prudently incurred costs of such programs and should have a financial incentive to develop effective and successful programs. Over time, the financial incentive should increasingly be in the form of earnings adjustment mechanisms based on metrics that are closely tethered to the goals of the programs rather than a more traditional rate of return on capital expenditures, as this creates better incentives for utilities to maximize the value of their transportation electrification spending.

2. What are the most significant changes the Commission can make in order enhance the utilities’ roles in supporting EVSE deployment? What are the benefits and problems with utility ownership of EVSE?

We encourage the Commission to clarify the conditions under which utilities can recover costs of investments in the types of programs described in Question 1 and to articulate clear expectations for utilities’ role and contribution in achieving the State’s climate and vehicle electrification goals. Consistent with the Joint Recommendations referenced above, we urge the Commission to use this docket to determine the appropriate scope and timing of utility transportation electrification proposals, appropriate criteria for Commission review of such proposals, as well as the appropriate venue for submission of proposals. We discuss procedural recommendations further in response to Question 14.

In thinking through the issue of utility ownership of EVSE, it is helpful to begin by establishing the goals of utility EVSE engagement. We submit that these goals should include accelerating deployment of EV charging infrastructure in a manner that: (a) is equitable—reaching presently underserved market segments; (b) is complementary to a competitive EV charging market; (c) ensures that new load is robustly managed; (d) leverages limited ratepayer dollars as far as possible; (e) properly incentivizes utilities to make effective investments; and (f) delivers a positive experience to site hosts and EV drivers. When viewed through the lens of

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30 Joint Recommendations Section 3.g.
31 Joint Recommendations Section 3.h. This means that publicly funded or utility owned non-fleet charging stations should be easily utilized by and accept forms of payment commonly used today by drivers of all vehicle types, regardless of membership to a particular charging network and that charging stations should be able to switch network providers, such that if a network provider ceases operations, the charging station is not rendered inoperative. Interoperability reduces the risk that utility customer-funded charging assets will be stranded, facilitates competition for charging services, and helps maximize site host choice.
32 Joint Recommendations Section 3.i.
33 Joint Recommendations Section 2.b.
these goals, utility ownership should be considered a means to an end rather than an end in and of itself. There are contexts in which having utilities own stations may be particularly valuable in helping to achieve identified goals, but more often other features of program design will take precedence over ownership model in dictating whether goals are met. Some of the relevant considerations are discussed below.

With regard to equity and ensuring benefits to underserved market segments, we believe there is a particularly compelling case to allow a utility ownership option for utility programs targeting MUDs. Based on initial data from utility EV program implementation in California using different ownership models, there is some evidence that a full utility ownership model may be valuable in helping to reach this presently underserved market. Specifically, as of March 5, 2018, San Diego Gas & Electric, which utilized a full utility ownership model, had 40% of its contracted charger installations (101 of 253) located at multi-unit dwellings and 38% of its contracted charger installations (96 of 253) located in disadvantaged communities.\(^\text{34}\) By contrast, as of the end of January 2018, Southern California Edison, which used a make-ready model, had deployed charging installations at 3 multi-unit dwellings, representing approximately 7 percent of completed installations.\(^\text{35}\) Another option for the MUD segment is to provide rebates for public fast charging located near high concentrations of apartment buildings to efficiently meet residents of MUDs with a single installation.

With regard to impacts on competition and supporting the long-term development of a competitive EV market, the most salient issue around utility ownership is the pricing to drivers at DCFC stations. If the pricing is too low, private market entrants will not be able to compete on price; too high, and drivers will avoid the stations. We suggest that for public charging stations at which utilities determine pricing, attention should be given to impacts on private market operators, utility cost of service to provide EV charging, encouraging EV adoption (i.e., supporting fuel cost savings for drivers), increasing equitable access to charging stations, and maximizing grid benefits.

With regard to facilitating effective EV load management, a utility ownership model is not decisive but may affect how load management efforts are structured. Where utilities own and operate stations, they can develop managed charging programs or seek approval for rate designs that incentivize desired charging behavior at those stations. However, even where utilities do not own or operate stations, they can condition utility support for infrastructure on participation in managed charging programs or development of load management plans for the stations. Thus, utility ownership can facilitate effective load management, but load management goals can be achieved under other ownership models as well.


\(^{35}\) Southern California Edison, Charge Ready Advisory Board Meeting (Feb. 28, 2018), at Slide 45.
With regard to cost-efficacy and maximizing the impact of limited ratepayer dollars, program design considerations should be emphasized over ownership model type. Specifically, the use of site host contribution payments in a utility ownership model can offset a chosen portion of the cost of utility ownership, while ensuring that site hosts have a meaningful financial stake in (“skin in the game”) stations they are hosting. In theory, the site host contribution payment could be structured in a way to make the utility ownership model equal, more expensive, or less expensive on a per-station basis than a make-ready or rebate model. Focus should therefore be on costs relative to program goals rather than on ownership model per se.

With regard to utility incentives, allowing for utility ownership may be helpful but is not essential to incentivizing utilities to develop effective EV programs. As discussed in response to Question 1 above, focus should increasingly be placed on developing appropriate performance incentive metrics to connect utility financial incentives to tangible, desired outcomes rather than capital expenditures.

Finally, with regard to user experience, there are pros and cons to different ownership models. Considerations should include standardization of driver experience, accountability for station maintenance, and site host choice in hardware and network services. In addition, because non-utility site hosts are not directly subject to regulation by the PSC, the mechanism to establish minimum standards for non-utility site hosts is through contracts with the utilities supporting the stations.

Ultimately, we encourage the Commission not to predetermine the issue of ownership model in its forthcoming whitepaper but instead to encourage utilities to develop programs that best achieve the goals identified above and evaluate those programs based on their ability to meet the full suite of goals.

3. What role should the utility play in encouraging EV adoption? Should the role of the utility extend beyond customer education and awareness? Please address this question from the perspective of utility ratepayers, EV suppliers, and providers of EVSE. How should utility costs, if any, be compensated or recovered?

As discussed in response to Question 1 above, we support a proactive role for utilities in customer outreach and education. These education and outreach efforts should be coordinated

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36 By way of illustration, in Rhode Island National Grid proposed a site host cost share for utility owned stations that would equalize the cost proposition for site hosts between the utility’s make-ready offering and its full utility ownership offering. The Narragansett Electric Co. d/b/a National Grid, Testimony and Schedules of: Power Sector Transformation Panel, Book 1 of 3, Rhode Island Pub. Utils. Comm’n Dkts. 4770/4780 (Nov. 27, 2017), Chpt. 5 at 6.
with those undertaken by other relevant stakeholders, including state agencies. Utility education and outreach materials should compile and provide useful information regarding availability of federal, state, local, automaker, and utility incentives for EVs and EVSE. Materials should also include information regarding the benefits of electrified transportation, including the potential for fuel savings using relevant electric rates, information about lower maintenance and repair costs for EVs, and the public health and environmental benefits of switching to EVs. As discussed in Question 1 above, we believe utilities should be able to recover costs for education and outreach regarding these topics.

Utilities may also provide an important partner in siting. Not only must they provide the interconnection for chargers, but they should also participate in siting and design conversations as we move to higher and higher power levels, especially for DCFC, and can often partner as site hosts themselves.

4. What is the best way for utilities, charging station providers, and site hosts to work together to locate charging stations where they best meet electric system, customer, and community needs? What data are needed to further this collaboration?

There are several dimensions to the question of optimal charger siting and it is helpful to begin with first principles. First, in order to enable EV ownership for a driver, that driver will need to have convenient access to EV charging that enables the full range of trips he or she engages in. To satisfy the needs for long-distance road trips, it will be necessary to have at least a minimum network of DCFC stations reasonably spaced along major travel corridors. In the urban and suburban cores, DCFC also plays an important role for renters and apartment dwellers when sited close to MUDs, and in areas where rideshare is popular, especially as transportation networking companies (TNCs) move to electrify their fleets.

Second, given that most vehicles sit idle most of the time, opportunities to charge where vehicles routinely park should be maximized. We therefore support deployment of residential (including multi-unit dwelling) and workplace charging, while recognizing the value of public charging for drivers that lack access to convenient home or workplace charging options and for drivers engaging long-distance travel.

The coordination considerations are different for different types of charging stations, and for different stages of market development. For DCFCs, coordination is important for several reasons. First, given relatively low numbers of publicly-accessible DCFC charging stations deployed to date and the need for a minimum network of DCFCs to give drivers the range confidence to purchase an EV, there is value in coordinating station deployment to try to rapidly achieve widespread coverage. This requires communication between the different entities currently deploying public-facing DCFCs, including the New York Power Authority ("NYPA")
through EVolve NY, Electrify America, and the state agencies charged with spending VW settlement proceeds. Second, large DCFC installations, when not coupled with on-site storage, can have a significant instantaneous draw on the grid, potentially necessitating upgrades to the local distribution system. When making localized siting decisions for DCFCs, streamlining utility input to EV charging service providers on capacities of transformers and other information about required system upgrades is of utmost value in identifying the most suitable locations. Third, for neighborhood DCFC, information about heavily traveled routes can be helpful in siting at convenient locations.

For L2 stations, which are less costly and have a smaller impact on the local distribution system than DC fast charging installations, having accurate, up-to-date databases of public-facing L2 charging stations and coordinating with other entities that are deploying public-facing L2 stations such as Electrify America and New York state agencies managing the state’s VW settlement funds, is helpful to avoid duplicating locations.

While we encourage coordination and thoughtful analysis in siting public-facing charging stations, it is also important to bear in mind the early stage of the EV market and the magnitude of the State’s public charging needs if New York is going to meet its ZEV MOU and climate goals. The Department of Energy has made available on its Alternative Fuels Data Center website a tool called the Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite for estimating public charging needs to support a specified level of EV deployment. Based on preliminary, illustrative results utilizing this tool based on New York’s ZEV MOU goals, it is clear that New York is nowhere near the level of public charging infrastructure deployment that will be required to support this number of EVs. New York State Energy Research and Development Authority (NYSERDA) also identified a significant charging infrastructure gap at the technical conference in July.

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38 See https://www.nypa.gov/innovation/programs/evolveny.
40 https://www.afdc.energy.gov/evi-pro-lite.
41 Presuming that all ZEVs will be EVs.
42 This analysis comes from NRDC’s Blog: Amidst Northeast EV Gains, Charging Infrastructure Gap Looms (June 5, 2018), https://www.nrdc.org/experts/noah-garcia/amidst-northeast-ev-gains-charging-infrastructure-gap-looms. For that blog, NRDC assumed EVI-Pro Lite’s default shares of plug-in hybrid electric vehicles [PHEVs] and pure battery-electric vehicles [BEVs], 80 percent of EV drivers have access to charging at home, and “partial support” for PHEVs. Different inputs will yield different results.
Current L2 data from Alternative Fuels Data Center. L2 projections from National Renewable Energy Laboratory.

Current DCFC data from Alternative Fuels Data Center. DCFC projections from National Renewable Energy Laboratory (Tesla DCFC plugs are discounted from this analysis because they employ proprietary charging stations accessible only to Tesla vehicles).
While it is important not to become paralyzed in siting public charging stations by trying to divine “perfect” station locations based on the information that is currently available, it is also important that stations that do get deployed provide information to inform and refine future siting decisions. As noted in response to Question 1 above, and as flagged in the Joint Recommendations, we support requiring data collection and reporting as a precondition for participation in transportation electrification programs. Specifically, for utility programs to support EVSE, we encourage the collection of data regarding:

- EVSE installation costs by site type (broken out by distribution system costs, “behind-the-meter” make-ready costs up to the stub, and charging station costs);
- Where applicable, operations and maintenance costs incurred by the utility;
- For utility-owned/operated EVSEs:
  - The usage rate by site type and charger type;
  - The charging load profiles (both aggregate and by site type); and
  - The price per kWh and usage in kWh by price charged to EV drivers.
- For non-residential EVSEs operated by a non-utility site host:
  - The usage rate by site type and charger type;
  - The charging load profiles (both aggregate and by site type); and
  - The site host’s intended pricing plan applicable to EV drivers updated on a quarterly basis.

Finally, one immediate coordination opportunity involves NYPA’s EVolve NY program. Through EVolve NY, NYPA is proposing to support, among other things, 200 DCFC stations at 30-mile intervals along key interstate corridors and in select urban hubs by the end of 2019. Utilities have an immediate opportunity to support state ZEV and climate goals by making complementary make-ready investments to NYPA’s DCFC network.

5. Are there any communities or customer groups that require special consideration in the placement of EVSE facilities? What role should the utility play in encouraging or facilitating increased EV usage by low- to moderate-income households?

A primary goal of utility engagement should be to promote access to the benefits of electrified transportation in market segments that are currently underserved by the competitive market. This includes low- to moderate-income households and MUDs, and, DCFC stations in lower trafficked areas where the private market would otherwise not deploy charging until ZEV sales grow. Consistent with the comments of Pace Energy and Climate Center et al., we encourage the Commission to take an expansive view of how underserved populations can

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44 Joint Recommendations Section 3.1.
45 See https://www.nypa.gov/innovation/programs/evolveny
46 See Case No. 18-E-0138, Aligned Parties Comments (Sept. 21, 2018).
benefit from electrified transportation. As identified in the Pace et al. comments, communities can benefit not only from deployment of EV charging infrastructure, but also from electrified shared mobility programs. Indeed, communities can also benefit from electrified transit buses and other medium- and heavy-duty vehicles, which can improve local air quality.

Utilities can play an important role in supporting electrified transportation in underserved communities. As discussed in response to Question 2 above, the case for utility ownership of EV charging infrastructure is particularly strong in these communities, including MUDs and low- and moderate-income communities, especially where is there is evidence that the private market would not serve these segments. A number of utilities are already targeting these areas in their EV charging infrastructure proposals. Some utilities have also included innovation funds in their transportation electrification intended to “facilitate and encourage equitable access to benefits derived from vehicle fleet electrification, especially in underserved market segments.” And several utilities have incorporated charging infrastructure to support electric transit buses in their proposals.

6. What rules, requirements, and standards are needed to enable EVs and EVSE to operate as a source of grid services and system value, including possible data and instrumentation needs?

A range of rules and requirements and standards are required to fully leverage EVs and EVSEs as a source of grid services and system value. These are described below.

Communication Standards: Key barriers for EV adoption as well as vehicle grid integration (VGI) are interoperability of multiple smart charging solutions and open access to


48 Proposal to Implement a Statewide Electric Vehicle Portfolio, Maryland Pub. Serv. Comm’n Case No. 9478 (Jan. 19, 2018), at 47.

49 E.g., National Grid in Rhode Island targeted 2 of 12 sites for DC fast charging station deployment to support public transit buses, Amended Settlement Agreement, Rhode Island Pub. Utils. Comm’n Dkt. Nos. 4770 and 4780 (Aug. 10, 2018), at 59; Pepco in the District of Columbia has included a proposal to install and own five bus depot chargers and one on-route bus charger to support electric transit buses in the District, Application of Potomac Electric Power Company for Approval of Its Transportation Electrification Program, D.C. Pub. Serv. Comm’n Formal Case No. 1130 (Sept. 6, 2018), at 37-38.
these for EV drivers. Setting a communication standard between the EV and EVSE minimizes investment risk,\(^{50}\) allows interoperability among automakers, and enables smart charging technologies, open payment, and driver access to charging infrastructure. Communications standards for EVs and EVSEs are internationally recognized as key to enabling EV adoption and lowering long-term costs.

**Metering Capabilities:** A recently published Synapse report called *Driving Electrification Transportation Forward in New York*\(^{51}\) showed that the EV time of use (TOU) rates offered by Con Edison had a low subscription rate of just four EV owners. This was primarily due to the high cost of installing a second meter to participate in this EV-only rate. Accordingly, solutions to lower or eliminate the cost of a second meter need to be explored. This may be achievable through alternatives such as sub-metering, metering within the EVSE or EV battery management system, or cheaper cloud-based solutions such as Sense.\(^{52}\) The challenge with these alternatives largely relate to familiarity and their current lack of classification as “utility grade,” rather than technical capability. Utilities should propose pilot projects to address these barriers, after which the alternatives can be incorporated into regular utility metering and billing. Implementing a scalable low-cost EV metering solution is key to accessing the value of smart charging for both the utility as well as EV owners.

**EVSE Placement:** Enabling EV and EVSE as a source of grid services requires adequate and proper placement of EVSE equipment. For example, workplace charging programs in concert with proper placement of public charging stations can promote the integration of renewable resources, such as solar, and offer EV owners more access to charging and smart charging opportunities, which should help make a more compelling case for EV uptake.

**New Billing Solutions**\(^{53}\): At this time, new billing structures should be investigated to facilitate more performance-based components in the bill for new and existing VGI services (e.g., new rate structures or critical peak-related incentives based on meeting specified objectives). Furthermore, interoperability through "e-roaming", which allows for EV owners to charge across multiple EVSE provider networks but only using a single billing system, much like we do these with our cellphones, should be explored.

**Open Payments:** For payments at public charging stations, there should be a form of open payment available that is accessible to all EV owners, without a requirement for subscriptions or

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\(^{50}\) International Energy Agency – Vehicle to Grid Integration. 2017. Notes that establishing a communication standard will enable EV adoption and minimize stakeholder investment risk. ([https://www.iea.org/media/topics/transport/VehicleGridIntegration.pdf](https://www.iea.org/media/topics/transport/VehicleGridIntegration.pdf)).


\(^{52}\) [https://sense.com/](https://sense.com/).

\(^{53}\) Also see response to Question 7 for additional context on rate structures for VGI services.
specific mobile apps. This can be implemented by requiring multiple common forms of payment such as credit cards, Paypal, and/or Apple or Android Pay.

7. **What are the barriers to treating EVs and EVSE as Distributed Energy Resources (DERs)? How does rate design affect the ability of EVs and EVSE to provide this value? How does rate design affect the extent to which the value provided by EVs and EVSE (including environmental and economic benefits) is compensated?**

See response to question 6 for technical barriers with regards to metering, billing, and communication standards.

Proper rate design can enable powerful incentives that promote charging in ways that maximize grid stability, and boost EV adoption either via charging-cost reduction or additional revenues for grid services provided. A recent report by Synapse evaluated the best practices for rate design in New York to enable EV adoption to incentivize demand response through smart charging. At present, however, the adoption of rates that would benefit EVs such as whole-house and EV-only TOU rates are extremely low. In this regard, utilities may need urging, via an earnings adjustment mechanism perhaps, to establish TOU pilots toward full deployment and set targets for enrollment in those EV rate programs. Additionally, due to their close relationship with their ratepayers, utilities should be actively promoting these rate structures and educating their customers about the savings benefits of enrollment.

The report also made the following findings and recommendations related to other facets of rate design.

To encourage participation, utilities must design a rate that guarantees cost savings for managed EV charging. To this end, some utilities offer a one-year price guarantee for customers to switch to a TOU rate, ensuring their electricity costs will not exceed their bills on a flat rate. Furthermore, to maximize ratepayer savings, TOU rate structures should have a large enough ratio between on-peak and off-peak times. Data from a SDG&E trial found that adoption and response to a TOU rate with a peak to off-peak ratio of 6:1 was significantly larger than with just 2:1. As such, rates should be designed with a large enough on-peak to off-peak ratio to incentivize shifting charging behavior, while also engendering viable business opportunities for service providers such as EVSE owners, and lowering operational costs to utilities for grid management.

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Finally, New York utilities exhibit a wide range of increased monthly service charges when switching from a flat rate to a TOU rate. Transparency on what these increases in service costs are for and comparable, cost-based increases across utilities is recommended.

Overall, proper rate design can lower the cost of grid investment for utilities, improve the business case for EVSE providers, leverage grid services facilitated by charging (e.g., time shifting, ramping up and down) at times when needed by the grid such as accommodating renewable energy, and ultimately support EV adoption. Therefore, proper rate design can both reduce costs and emissions.

8. **Should EVs and EVSE be treated as DERs? If so, what factors need to be addressed to include EVs and EVSE within the DER market and compensation structure for DERs?**

EVs and EVSEs (particularly with smart charging and/or V2G enabled) are a distributed energy resource – this is internationally recognized. While EVs and EVSEs have not reached the numbers in New York necessary to have a meaningful impact on the DER market, there is strong future potential – particularly with the ambitious goals already in place for electrification of the transportation sector in New York.

9. **What considerations should be taken into account in designing rates for charging stations? For example, should a typical three-part tariff (customer, demand and energy charge) be applied? Should the rate design be different for residential versus commercial use? Should the rate design be expected to change over time as EV penetration increases? Should time-of-use rates be required for EV charging? Should utility residential EV charging tariffs (filed in Case 18-E-0206) be modified? Please address these questions from the perspective of utility ratepayers, EV owners, and EVSE suppliers.**

As recommended by nearly 30 entities in the New York Electric Vehicle Joint Recommendations, we respectfully urge the Commission to improve current TOU rate structures and create new TOU rates that encourage EV charging that benefits utility customers and the electricity system at large. EV charging, if managed to respond to grid conditions, can simultaneously 1) maximize fuel cost savings relative to gasoline powered vehicles; 2) lower the cost of electricity service for all utility customers through greater utilization of existing grid assets; 3) avoid or defer grid upgrades; and 4) further reduce emissions by aligning charging with renewable energy generation. Rate design is one important tool for encouraging the management of new load.

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58 By spreading fixed distribution system costs over a greater amount of energy (kWh) sales delivered at low to no marginal costs, utilities can effectively lower the cost of electricity service for all customers, regardless of whether they drive EVs. A recent report by M.J. Bradley & Associates finds that in a scenario where New York achieves
Residential Rates

Because most light-duty EV charging currently takes place at home, it is critical to ensure that residential rates are simple, cost-based, and effective at shifting flexible EV load to off-peak hours. All investor-owned utilities in New York have offered some form of existing time-varying rate on a whole home or EV-only basis. Though most tariff offerings have some laudable features (e.g. time-varying structures and one-year price guarantees that allow customers to try out the rates risk-free), they suffer from extremely low levels of adoption.\(^5^9\) Simply offering a time-varying EV rate is not sufficient for generating customer interest and enrollment. For that reason, NRDC, Sierra Club, and other stakeholders filed comments in Case 18-E-0206 recommending the following regarding residential rates:

- Utilities with low price differentials between on-peak and off-peak rates increase the on- versus off-peak price ratio to motivate off-peak charging and enable greater fuel savings;
- Ensure that a customer who charges mostly off-peak achieves fuel savings relative to a customer who remains on a standard rate and charges only on-peak;
- Reduce or eliminate the customer charge for second meters which can be obviated by existing charging station and vehicle technology;
- Explore submetering as a means to lower the cost of EV-only rates for EV drivers;
- Evaluate whether the proposed rate will provide sufficient fuel savings to encourage customers to adopt EVs over high-efficiency internal combustion engine vehicles; and
- Endeavor to maximize customer enrollment through education, outreach, and incentives.

Consider Baltimore Gas & Electric’s TOU rate pilot. Prior to applying the TOU rate, customers’ EV load peaked at 6pm.\(^6^0\) When the pilot rate was applied, customers’ peak EV load shifted to later hours in the evening, mitigating evening peak concerns. The Commission should encourage the development of TOU rates that incentivize charging to occur at times most beneficial to individual utility system conditions.


\(^{60}\) Id. at 13
Demand charges are not included in residential rates today, and they would frustrate efforts to encourage EV adoption in a manner consistent with state goals. We do not recommend their inclusion in residential rates. Instead, the Commission should seek to encourage the development of residential rates that simultaneously encourage off-peak charging that benefits the grid, provide opportunities for fuel cost savings that motivate EV purchases, leverage technologies that reduce metering costs, and as a result, drive customer interest in the rate.

**Commercial Rates – Energy Charges**

With regard to commercial rates, it is important to recognize that a growing private market for EV charging services exists, and the Public Service Commission has clarified that it cannot regulate charging stations or the owners of such charging stations if that owner is not an electric corporation. The Public Service Commission also cannot assert jurisdiction over charging stations that charge drivers on a per kilowatt-hour (kWh) basis. As a result, the prices that EV drivers face for charging services may be disconnected from the electricity costs that are passed through to the charging station site host or owner-operator in commercial rates. For example, some site hosts may offer charging for free and some may charge by energy use, time, or other variables.

Site hosts that independently pay for and install charging stations of their own accord should be free to design their own pricing structures for charging service. However, in the context of a utility-customer-funded program, it is important to ensure that EV drivers have TOU pricing options that both maximize fuel cost savings and minimize strain on the grid. This is particularly important for those market segments where drivers are likely to charge for an extended period, such as workplaces and MUDs that take service on commercial rates.

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Real world data from Southern California Edison’s Charge Ready pilot program demonstrate that requiring site-hosts to take service on time-of-use rates while letting them have complete discretion over pricing to electric vehicle drivers leads to charging load profiles that have no correlation to time-of-use rates periods or grid conditions. Consider the load profiles below from SCE’s pilot program:

*Figure 2 SCE Charge Ready Load Profiles*

It is evident that drivers are simply charging when they arrive at work or home, and this home charging coincides with evening peaks. Drivers have no incentive to shift their charging if there is no clear price signal to do so – despite the ability to easily defer charging with timers embedded in smart charging stations today.

Fortunately, empirical evidence from BG&E’s TOU rate and other utility rates demonstrate that when drivers are subject to time-varying rates, they do in fact change their behavior in a predictable manner that benefits the grid and all utility customers with incremental off-peak load. In the case where utilities are deploying charging stations as part of a transportation electrification filing, the Commission should require those stations to take service on time-varying rates that align with grid conditions and ensure that those price signals are passed on to drivers. In San Diego Gas & Electric’s “Power Your Drive” workplace and MUD charging station deployment program, site-hosts are given the choice to have the utility’s dynamic time-variant rate passed through directly to electric vehicle drivers or to take service on that dynamic rate but implement alternative end-use pricing to drivers. The vast majority have chosen to pass through the dynamic price signals to electric vehicle drivers, and, as result, 90

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62 Southern California Edison, “Charge Ready and Market Education Programs; Pilot Report,” April 2, 2018 (link)
63 Joint IOU Electric Vehicle Load Research Report: December 2017 at 57-61. SCE EV customers that are not on a residential TOU rate exhibit demonstrably higher – approximately 60 percent higher – average demand at peak evening periods (8pm) relative to EV customers on a whole home TOU rate. (link)
64 This scenario can effectively be achieved by conditioning the deployment of charging infrastructure with the requirement that site hosts agree to take on time-varying rates and reasonably pass them on to drivers while maintain opportunities for fuel cost savings relative to gasoline vehicles.
percent of kWh delivered in the program are delivered during off-peak and super-off-peak hours.\textsuperscript{65}

**Commercial Rates – Demand Charges**

As explained in the New York Power Authority (NYP\texttimes) et al. petition on commercial rate design (Petition), existing demand charges can present a major barrier to the competitive deployment of Direct Current Fast Charging (DCFC) stations needed to support both light duty and medium- and heavy-duty electrification.\textsuperscript{66} Indeed, as Rocky Mountain Institute’s EVgo Fleet and Tariff Analysis for California amply illustrates, at low levels of EV penetration, demand charges swamp volumetric charges,\textsuperscript{67} precluding a viable business case for DCFC investments. Moreover, to the extent concerns about modifying or waiving demand charges are based on concerns about when drivers are choosing to utilize DCFC, existing demand charges fail to send a relevant price signal to encourage charging during off-peak periods. As set forth in the DCFC Petition, “[g]iven current low DCFC load factors, and that the overall DCFC load profile is comparatively intermittent and random compared to the usual drivers of customer demand, DCFC have coincident utilization rates lower than most other customers.”\textsuperscript{68} Demand charges in their current form as applied to DCFC do little to mitigate impacts to peak load.

Regrettably, current DCFC deployment is extremely limited in New York. The DOE’s Alternative Fuels Data Center reveals there are only 47 non-Tesla DCFC locations with 81 plugs in New York with very low coverage in upstate areas.\textsuperscript{69} NYP\texttimes finds that an additional 1,500 DCFC will be needed by 2025 to support New York’s Zero Emission Vehicle (ZEV) goals, though even this figure may be conservative.\textsuperscript{70} In short, without swift action to address barriers to DCFC deployment, New York will continue to face significant challenges in meeting its ZEV and climate goals.

We support the establishment of a near-term strategy to improve the economics of operating DCFC stations so as to encourage private investment in infrastructure needed to support widespread EV adoption, while recognizing that there are a number of meritorious ways to do so. To encourage DCFC investment, rates or incentives could significantly scale back the effect demand charges have on charging station economics at the outset, and could gradually phase them in as utilization improves, driving incremental


\textsuperscript{66} NYP\texttimes et al., “Joint Petition of New York Power Authority, New York State Department of Environmental Conservation, New York State Department of Transportation and New York State Thruway Authority for Immediate and Long-Term Relief to Encourage Statewide Deployment of Direct Current Fast Charging Facilities for Electric Vehicles,” April 13, 2018. (link)

\textsuperscript{67} Rocky Mountain Institute, EVgo Fleet and Tariff Analysis: Phase 1: California (2017).

\textsuperscript{68} Petition at 12

\textsuperscript{69} Alternative Fuels Data Center, Department of Energy (link)

\textsuperscript{70} The National Renewable Energy Laboratory’s EVI-Pro Lite tool is a model that estimates the number of public and workplace charging stations needed to support a given number of light-duty EVs at the state and city level. Plugging in New York’s estimated 800,000 vehicle ZEV goal yields 4,087 DCFCs needed across the state. For the purposes of these comments, we assumed EVI-Pro Lite’s default shares of plug-in hybrid electric vehicles [PHEVs] and pure battery-electric vehicles [BEVs], 80 percent of EV drivers have access to charging at home, and “partial support” for PHEVs. Different inputs will yield different results.
and beneficial load that otherwise would not have occurred, and avoiding cross-subsidy issues.\textsuperscript{71} Below are some examples of utility tariff and incentive modifications designed to lower the burden of demand charges on commercial customers supporting DCFC stations:

- In New York, Con Edison’s Business Incentive Rate is available to DCFC customers for seven years, until April 30, 2025. This incentive reduces customer demand charges by between 34 percent and 39 percent\textsuperscript{72};

- On Long Island, New York, the Public Service Enterprise Group proposes to refund operators of public EV charging facilities for per-unit energy expenditures that exceed a predetermined “set point,” to be determined by the regulatory body. Since enrolled facility owners will be commercial rate customers, this refund will be to the effect of reducing the overall demand charge burden\textsuperscript{73};

- In Oregon, Pacific Power implemented a tariff that would shift a portion of demand charges to on-peak energy rates for customers with DCFC, initially reducing DCFC bills by up to 59 percent. The demand charge would gradually be phased back in, so that by Year 9 all customers are transitioned back onto standard rates\textsuperscript{74};

- In California, Southern California Edison will offer a rate to general service customers serving EV loads that does not include a demand charge for five years. During Years 6 through 11, the demand charge will be gradually phased back in,\textsuperscript{75}

- In Rhode Island, National Grid will pilot a 100 percent distribution demand charge discount for dedicated DCFC station accounts.\textsuperscript{76} The discount would be in effect for three years with the level of demand charge discount to be reevaluated in National Grid’s next multi-year rate plan\textsuperscript{77}

- In Maryland, Baltimore Gas and Electric has proposed to provide a fixed demand charge credit to non-residential customers with EV chargers based upon the nameplate capacity of the installed charging infrastructure\textsuperscript{78};

\textsuperscript{71} Energy charges may be increased to compensate for the reduction in demand charges and then gradually be phased out as demand charges increase.

\textsuperscript{72} Consolidated Edison Company of New York, Inc., Tariff Book, Revision 5, Leaf 201, Rider J, issued February 1, 2017.


\textsuperscript{77} Id.

\textsuperscript{78} Baltimore Gas and Electric, et al., “Proposal to Implement Statewide Electric Vehicle Portfolio,” Docket
• In Connecticut, demand charge discounts offered by Connecticut Light and Power at two pilot public charging stations have reduced monthly bills by between 65 percent and 88 percent;

• In Hawaii, the Hawaiian Electric Companies’ EV-F rate spares qualifying commercial charging facilities – with peak demand under 100 KW – any demand charge, applying only a time-of-use rate. The utilities’ EV-U rate applies to a select group of DCFC charging stations, again imposing only a (higher) time-of-use rate; and

• In Washington D.C., the Potomac Electric Power Company has proposed to provide a fixed demand charge credit to non-residential customers with EV chargers based upon the nameplate capacity of the installed charging infrastructure. This proposal parallels that of BG&E.

In order to achieve these objectives, we encourage the Commission to act expeditiously to reduce barriers to DCFC deployment in the near-term, but to also explore smart charging and other technological opportunities to reduce DCFC operating costs under various demand-based tariff schedules.

10. How should the cost of recovering distribution network upgrades for EVSE be recovered if not through the demand charges?

See response to Question 9. If costs need to be recovered after reducing demand charges, temporarily increasing energy charges may increase utility revenues in a manner that is reflective of costs imposed on the electricity system. These energy charges may be reduced over time as demand charges gradually increase with customer utilization. Utilities may also have additional options with business incentive rates that can be used to develop time-limited demand charge reduction efforts that allow for DCFC market development. Smart charging can also limit the need for upgrades to the distribution and transmission system.

11. In designing EV and EVSE programs, how can the Commission ensure compatibility with ongoing regional initiatives, programs offered in other states, and potential private investment?

We applaud the Commission for seeking to streamline transportation electrification efforts with other state and regional efforts. First, the Commission should coordinate with the New York State Energy Research and Development Authority (NYSERDA), the Department of Environmental Conservation (DEC), the New York Power Authority (NYPA), and other agencies that are supporting existing EV and EV charging station programs such as the Drive

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Clean Rebate Program and EVolve NY. Utilities are uniquely positioned to widely disseminate information across all customer classes. To the extent utilities implement Commission-approved transportation electrification programs, the Commission can require utilities to compile and share all available incentives to encourage site hosts and utility customers to switch to electric transportation. NYSERDA can also brief the Commission on relevant learnings from various grant-based research proposals, such as Program Opportunity Notice (PON) 3578 that can inform future utility program development.82

The Volkswagen (VW) Settlement and DEC Beneficiary Mitigation Plan represent a critical opportunity to reduce harmful mobile-source nitrogen oxide (NOx) pollution – particularly in New York’s most vulnerable communities – while simultaneously advancing state greenhouse gas reduction and ZEV goals.83 First, the Beneficiary Mitigation Plan takes advantage of the maximum eligible allocation for light-duty EV charging station deployment and will help deploy nearly $20 million in workplace Level 2, MUD Level 2, and public DCFC stations. We strongly encourage utilities to complement the deployment of charging infrastructure in these market segments, and see an opportunity to maximize the impact of both VW Settlement and potential utility customer-funded programs. Consistent with the goals of Reforming the Energy Vision, we recommend that the Commission consider match funding, including VW VW Settlement funding where feasible, to stretch limited utility customer dollars further. This will increase the number of charging stations that would have been deployed in the absence of VW funding and avoids potentially duplicative, uncoordinated investments. The Beneficiary Mitigation Plan identifies eight additional eligible mitigation actions where all-electric vehicle technologies are qualified for funding, including transit buses. Utilities can maximize the value of the VW settlement funding by deploying light duty make ready infrastructure and infrastructure needed to support these medium- and heavy-duty vehicles, which are essential for reducing the local air pollution that adversely affects all New Yorkers, particularly those in disadvantaged or overburdened communities.

To ensure compatibility with regional initiatives and private investment, there are steps the Commission can take to ensure that utility customer funded charging infrastructure investments are used, useful, and support regional goals:

- Consistent with the recommendations of nearly 30 entities in the Joint Recommendations84, the Northeast States for Coordinated Air Use Management’s (NESCAUM) Northeast Corridor Regional Strategy for Electric Vehicle Charging Infrastructure 2018-202185, charging stations deployed via utility transportation electrification programs should provide for open access and interoperability. This means that stations should accept forms of payment commonly used by drivers of all vehicle types, regardless of membership to a particular charging service network. Though Level 2 charging infrastructure has coalesced around the J1772 standard, DCFC stations should be capable of providing a charge using both the CHAdeMO and SAE CCS standards.

82 The sharing of these learnings should not unduly delay or hamper the Commission’s ability to approve utility transportation electrification proposals that are readily able to scale.
83 An overview of the Beneficiary Mitigation Plan can be found at https://www.dec.ny.gov/chemical/109784.html
84 See footnote XX
85 NYSERDA and NYPA both participated in the development of this report.
Stations deployed for public use should also use open communication standards that provide a consistent charging experience and enable charging stations to switch network providers, such that if a network provider ceases operations, the charging station is not rendered inoperative. Interoperability reduces the risk that utility customer-funded charging assets will be stranded, facilitates competition for charging services, and helps maximize site host choice.

- Most DCFC stations operate at approximately 50 kilowatts (kW) today. As DCFC technology improves and allows for higher throughput stations (150+ kW), utilities should proactively prepare to integrate these charging stations onto the grid. To the extent that utilities facilitate the deployment of 50 kW stations today, they should “futureproof” DCFC sites to accommodate higher capacity charging stations to minimize long-term deployment costs and avoid stranded assets.

- Charging stations, particularly those serving corridor charging needs, need to be reliable to effectively complement regional initiatives. Site hosts and/or utilities should be required to identify an entity responsible for maintenance and upkeep of charging stations to minimize downtime. Utilities should also seek direction and best practices from EV charging service providers, including owners/operators of charging equipment. Multiple charging stations should be installed per site to increase redundancy and reduce the risk of a negative fueling experience.

- Charging stations are not useful if drivers do not know they exist. Though software has enabled drivers to identify charging locations from afar, physical signage is needed not only to help EV drivers locate charging stations but also create awareness that charging infrastructure exists to encourage adoption of EVs. In the case of corridor charging, the Commission can coordinate with the New York Department of Transportation and other state agencies around appropriate standardized signage. Pricing for charging service should also be easily understandable and clearly displayed at charging locations.

In short, if utilities are going to facilitate the deployment of charging infrastructure, the Commission should encourage deployment in a manner that reduces risk, increases accessibility, and optimizes the use and usefulness of the assets.

12. Should the Commission address electrifying light-duty passenger vehicles, and medium and heavy-duty vehicles within this Case?

Yes. Electrification of medium and heavy-duty vehicles should be a priority for the Commission in this proceeding and it was also a core recommendation in the Joint Recommendations. As the DEC notes in its Beneficiary Mitigation Plan, two-thirds of state NOx pollution comes from mobile sources, and approximately two-thirds of those emissions come from on-road and off-road heavy-duty vehicles and equipment. Electrifying these vehicles produce zero tailpipe emissions and can significantly reduce air pollution, which is particularly critical in the greater New York City metro area and Long Island where ozone nonattainment.

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issues persist.\textsuperscript{87} As New York continues to transition to cleaner, renewable generation sources, the “well-to-wheels” NOx emission reduction benefits from electric transportation will only increase.

Aside from reducing air pollution and reducing greenhouse gas emissions, electrification of medium- and heavy-duty vehicles can also provide important mobility opportunities for New Yorkers that do not drive or have access to personal vehicles. Public transit and school buses are ripe opportunities for electrification, and the Commission can support the goals and commitments outlined in the Beneficiary Mitigation Plan by facilitating the adoption of additional electric heavy-duty transit vehicles. In short, all New Yorkers should have the opportunity to benefit from electric mobility, and heavy-duty electrification provides an avenue to realize that objective.

However, barriers to electrification exist. DEC identifies four key challenges to the scaling of medium and heavy-duty EVs\textsuperscript{88}:

1. Upfront cost relative to traditional technologies;
2. Lack of experience with electric technologies;
3. Currently expensive and occasionally non-standardized charging infrastructure; and
4. High cost of electricity service attributed to demand charges.

Advancements in battery technology are continuing to drive price declines that are narrowing the upfront cost of medium and heavy-duty EVs. Lack of experience is eroding from increased clean vehicle exposure and larger commitments to EV purchases.\textsuperscript{89} Similar to the light-duty market, the Commission can play a role in overcoming the remaining barriers through strategic deployment of charging infrastructure and rate design.

The Commission can look to the broad array of medium and heavy-duty utility programs approved by the California Public Utilities Commission as a starting point. At a high level, the utilities will\textsuperscript{90}:

\textit{Pacific Gas & Electric}

- Provide charging infrastructure to support customers investing in medium and heavy-duty electric vehicles of all types (trucks, buses, cranes, forklifts, etc.), with a budget cap of $236 million;
- Deploy electrical infrastructure to support up to five electric school buses and will help the participating school district manage charging to integrate solar and wind generation;

\textsuperscript{87} \textit{Id.} NOx pollution contributes to the forming of ozone pollution.
\textsuperscript{88} \textit{Id.} at 14
\textsuperscript{89} MTA recently announced a commitment to electrify its entire bus fleet by 2040. (\textit{link})
• Partner with a transit agency to electrify buses by installing charging stations, providing technical assistance (and potentially energy storage) to manage charging, and producing a “how to” handbook for other transit agencies; and
• Electrify refrigeration units and other auxiliary power units of agricultural and long-haul trucks in the San Joaquin Valley.

**Southern California Edison**

• Provide charging infrastructure to support customers investing in medium- and heavy-duty electric vehicles of all types (trucks, buses, cranes, forklifts, etc.), with a budget cap of $356 million (a significantly bigger budget than PG&E’s comparable program);
• Implement new time-of-use electric rates designed for high-power charging of light, medium, and heavy-duty vehicles, which encourage charging when the grid is underutilized and which phase in demand charges over time, improving the economics of high-power charging;
• Electrify nine rubber-tire gantry cranes and install electrical infrastructure to support 24 charging ports for yard tractors at the Port of Long Beach; and
• Provide “make-ready” electrical infrastructure and rebates for the purchase and installation of approximately 20 charging ports for electric transit buses.

**San Diego Gas & Electric**

• Install charging stations to support approximately 90 electric parcel delivery trucks, starting with a UPS facility, that will be served on a dynamic rate that will encourage the fleet to manage its charging in a way that facilitates the integration of wind and solar resources;
• Electrify baggage tractors and other types of ground support vehicles and equipment at the San Diego International Airport; and
• Provide 30-40 charging stations for forklifts and other vehicles at the Port of San Diego and conduct research to inform future, scaled up programs that could help integrate solar and wind generation.

Utility programs can complement existing state and local funding activities. ConEd recently received Commission approval to extend its SmartCharge NY program to medium and heavy-duty vehicles with agency, advocate, and industry support. The program will encourage operators of these vehicles to charge at times that will simultaneously benefit the grid and reduce vehicle fueling costs. The Commission should encourage other utilities to adopt similar TOU rates and incentives for medium and heavy-duty vehicles and support the deployment of infrastructure needed to fuel these vehicles while addressing rate design topics covered in question 9.

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91 Con Edison SmartCharge Program Expanded to Encourage Use of Electric Cars, New York Department of Public Service, September 12, 2018. ([link](#))
13. How should Staff structure future stakeholder engagement in this proceeding? Should additional issue-specific working groups be held prior to Staff issuing recommendations?

Staff has conveyed that it plans to issue a whitepaper in the Fall summarizing stakeholder input and developing recommendations for Commission action. **Given the accelerated timetable needed to reach state climate and ZEV goals and the need to expeditiously overcome barriers to transportation electrification, we support Staff’s stated time frame and do not recommend working groups be held prior to Staff issuing recommendations.** To that end, we hope that the July technical conference and current comment opportunity provides Staff with the information needed to complete the whitepaper this fall and for the Commission to issue an order in early 2019. If, however, there are one or more specific topics about which the Commission and Staff believes additional information is needed, we do not oppose a one-day workshop or brief technical conference to address those topics so long as they do not delay issuance of the Staff whitepaper and final Commission order.

14. Any other issues that stakeholders wish to raise.

We sincerely appreciate the Commission’s consideration of the utility and the Commission role in transportation electrification. New York state agencies have made notable progress in accelerating transportation electrification while balancing utility, consumer, industry, and environmental interests. As described in the Joint Recommendations, the Commission now has a significant opportunity advance electrification to the benefit of the grid, utility customers, and the environment. Without decisive, strategic, near-term action, New York risks falling behind on its commitments to power sector transformation and the environment while ceding ground to other leadership states that are scaling solutions to meet customer and electricity system needs. Fortunately, New York is well-positioned meet these commitments and can learn from other states in determining its path forward. **We recommend that the Commission authorize the development of full-scale utility transportation electrification programs that reduce barriers to the adoption of all classes of EVs, complement existing state programs to accelerate EV adoption, provide benefits to all New Yorkers, and put New York in a position to meet its climate and ZEV goals.**

We thank the Commission for the opportunity to provide comments and look forward to working with the Commission and other stakeholders to secure a clean transportation future for all New Yorkers.

Respectfully submitted,

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