STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

At a session of the Public Service Commission held in the City of Albany on August 15, 2024

COMMISSIONERS PRESENT:

Rory M. Christian, Chair
David J. Valesky
John B. Maggiore
Uchenna S. Bright
Denise M. Sheehan
Radina R. Valova

CASE 24-E-0364 - In the Matter of Proactive Planning for Upgraded Electric Grid Infrastructure.

ORDER ESTABLISHING PROACTIVE PLANNING PROCEEDING

(Issued and Effective August 15, 2024)

BY THE COMMISSION:

INTRODUCTION

Expanding its efforts related to the electrification of the transportation sector in New York State, in April 2023, the Public Service Commission (Commission) issued the Order Instituting Proceeding and Soliciting Comments, thereby commencing a proceeding to address barriers to Medium- and Heavy- Duty (MHD) Electric Vehicle (EV) charging infrastructure (the MHD Proceeding).[1] The MHD Initiating Order served as an opportunity to obtain stakeholder input and develop a focus for the MHD Proceeding. Additionally, the MHD Initiating Order solicited comments from stakeholders regarding challenges to

[1] Case 23-E-0070, Medium- and Heavy- Duty Electric Vehicle Charging Infrastructure, Order Instituting Proceeding and Soliciting Comments (issued April 20, 2023) (MHD Initiating Order).

developing infrastructure for MHD EVs, as well as considerations regarding proactively responding to electric grid needs, on both a per-site and statewide level. To provide further opportunities for input, Department of Public Service staff (Staff) held several technical conferences.

Based on the responses received to the questions in the MHD Initiating Order, the Commission finds that the planning needs of the State's electrical grid exceed the scope of the MHD Proceeding and therefore commences this proactive planning proceeding. This Order directs the State's major investor-owned electric utilities, collectively referred to as the Joint Utilities, to develop two filings.[2] The first filing shall propose a framework for a process to proactively plan for EV and building electrification, define methods for evaluation and cost allocation of infrastructure projects, and describe the process by which this new planning framework may be integrated within other planning processes. The second filing shall propose urgent projects that may require deployment before the completion of the overall planning process proposed in the first filing. These filings would be subject to notice and comment and further Commission review and consideration.

BACKGROUND

The MHD Initiating Order posed 16 questions regarding challenges related to the electrification of MHD EVs and proactive EV infrastructure planning. Stakeholders filed

[2] The Joint Utilities include Central Hudson Gas & Electric Corporation (Central Hudson), Consolidated Edison Company of New York, Inc. (Con Edison), Niagara Mohawk Power Corporation d/b/a National Grid (National Grid), New York State Electric & Gas Corporation (NYSEG), Rochester Gas and Electric Corporation (RG&E), and Orange and Rockland Utilities, Inc. (O&R).

responses to these questions in June of 2023. Additionally, Staff held three technical conferences between October and November of 2023. Relevant to this proceeding, the second and third technical conferences focused on proactive infrastructure planning and included presentations from the Joint Utilities, CALSTART, and the Environmental Defense Fund (EDF).

Comments received in response to the MHD Initiating Order and during the technical conferences held as a part of this proceeding, as well as State policy efforts regarding electrification across multiple segments (personal vehicles, fleets, buildings, etc.), suggest that New York needs a significant ramp-up in infrastructure upgrades to support increasing electrification of both the building and transportation sectors.

As detailed in the Transportation Electrification Distribution System Impact Study and the Carbon Neutral Buildings Roadmap, billions of dollars of distribution grid upgrades may be required by 2050 to enable EV deployment and building decarbonization in line with State policy.[3] While utility infrastructure upgrades can take over seven years to complete, construction timelines for charging stations and building electrification can take considerably less time. Given these different timelines, analysis is needed to determine more precisely what, where, and when upgrades are necessary

[3] See New York State Energy Research and Development Authority's "Transportation Electrification Distribution System Impact Study," issued May 2022, available at: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Research/Transportation/22-13-Transportation-Electricification-Distribution-System-Impact-Study.pdf and "Carbon Neutral Buildings Roadmap," issued December 2022, available at: https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Programs/Carbon-Neutral-Buildings/carbon-neutral-buildings-roadmap.pdf.

(including type, and megawatt (MW)) to avoid inefficient or redundant investments and significant delays to New York's effort to electrify the transportation and building sectors.

PUBLIC COMMENTS

In the MHD Initiating Order, comments on an enumerated list of questions were solicited regarding 1) MHD EVs and 2) proactive EV infrastructure planning and investment. A summary of the comments responding to the proactive planning-focused questions is included in the Appendix. Focused references to the comments are included throughout the discussion below.

DISCUSSION

The Commission is instituting this proceeding to establish a statewide, collaborative framework for proactive planning to support the needs of New Yorkers as we focus on electrification of the transportation and building sectors to further our climate change goals. To further the goals of this new proceeding, the Commission directs the Joint Utilities to design a framework for a comprehensive planning study and submit two filings, the first detailing the study framework and the second proposing urgent grid needs arising from electrification, to facilitate transportation and building electrification across New York State. This Order is designed to begin the planning process to identify potential electric grid upgrades to support electrification across a number of sectors.

In typical infrastructure planning studies, each utility identifies potential needs as they arise in their territory, either from new service requests or load letters – requests for new or increased electrical service - from new or existing customers and through their planning processes based on forecasted load. New York's utilities do not all conduct these

planning studies on the same timeline and may not use the same assumptions, input data, or methods, thereby making it difficult to compare and evaluate appropriate utility investments statewide. Furthermore, incremental upgrades from individual load letters may result in inefficient expansion within a given service territory, where recently upgraded areas may require new capacity in short order. Finally, travel patterns and fleet routes that cross utility service territories could result in duplicative or poorly aligned infrastructure upgrades if utilities use inconsistent input assumptions to develop their respective load forecasts.

These existing challenges point to the need for a single, unified, and proactive planning process across the Joint Utilities. As the Alliance for Clean Energy New York and Advanced Energy United observe in their comments, "[f]or MHD fleet locations, long-term planning and future-proofing infrastructure for future power demand is critical to meeting public policy objectives, and to ensuring that utility grid investments align with plans."[4]

As EDF notes in its comments, given that EV deployment typically proceeds on faster timelines than utility infrastructure, "[u]tilities should also be proactively identifying areas where significant [MHD EV (MHDV)] electrification is expected (including through active outreach to fleets to understand their electrification plans) and completing system upgrades needed to serve those fleets in advance of their electrification to speed interconnection timelines."[5] This proactive planning will ensure the electric

[4] Case 23-E-0070, supra, Alliance for Clean Energy and Advanced Energy United Comments (filed June 6, 2023).

[5] Case 23-E-0070, supra, Environmental Defense Fund Comment (filed June 5, 2023).

grid can accommodate the decarbonization of MHD EV fleets at the speed and scale necessary to meet State policy targets. A robust proactive planning process will also provide certainty to MHD EV fleet operators as to the availability of sufficient grid infrastructure to support charging loads from electric vehicles as they transition their fleets.

The increased load related to the electrification of vehicles is expected to be significant and is a major driver of the load forecasts used to identify transmission and distribution upgrades in the newly established Coordinated Grid Planning Process (CGPP).[6] However, due to the scale and complexity of integrated resource planning models, the CGPP has focused on a top-down approach to the load forecasts to determine transmission and distribution buildouts to enable interconnection of clean generation to meet expected load generally. The current CGPP is best suited for the higher voltage infrastructure investments. Therefore, the bottom-up modeling that is necessary to forecast granular EV load-driven upgrades is expected to identify incremental infrastructure needs. Ultimately merging granular EV planning with the CGPP would enable the Commission to evaluate the totality of upgrades necessary to meet the renewable energy and greenhouse gas emission targets in the Climate Leadership and Community Protection Act (CLCPA).[7]

Commencement of Planning Processes

The Commission notes that the development of integrated planning processes, along with the studies and

[6] Case 20-E-0197, Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act, Order Approving a Coordinated Grid Planning Process (issued August 17, 2023).

[7] Chapter 106 of the Laws of 2019, codified in Environmental Conservation Law (ECL) §75-0107.

regulatory approvals, will take a significant amount of time. There may be upgrades required that, due to load growth expectations or construction time, need to be planned or fully constructed in advance of implementation of the integrated planning process. For example, as Con Edison presented in the November 2, 2023 Technical Conference and submitted in comments to this proceeding, the Zerega Avenue project demonstrates the possibility that EV charging load appears before grid capacity buildout.[8] Similarly, National Grid's presentation at the November 2, 2023 Technical Conference states that new EV loads may push many areas beyond the median feeder capacity by 2025, while the case study presented shows one load area exceeding its feeder limits by 2027.[9]

The Commission finds that there is a need to address urgent upgrade projects on an earlier timeframe, while a statewide proactive planning framework is developed. A process to consider rapidly evolving infrastructure needs may also be necessary through future planning cycles in situations where market demand outstrips the broader planning cycles. The Commission therefore directs the Joint Utilities to consider and submit two filings outlining the long-term and urgent processes, discussed in detail below.

Long-Term Upgrade Planning Process

As discussed above, the Commission recognizes the importance of a unified proactive approach to planning for new electrification load. Utilizing an approach used in the transmission planning proceeding, the Commission directs the Joint Utilities to file a proposal for a long-term coordinated

[8] Case 23-E-0070, supra, Consolidated Edison Company of New York Comments (filed June 5, 2023).

[9] Case 23-E-0070, supra, National Grid Technical Conference Presentation (filed November 6, 2023).

planning process to study and identify necessary upgrades to support electrification.[10] In this proposal, the Joint Utilities shall account for new electrification loads beyond the transportation sector, including, but not limited to, electrification of buildings, such as housing or industrial loads related to economic development, that can similarly drive system upgrade needs.[11] The proposal shall, at a minimum, include assumptions and methods that will underlie the process, as well as identify necessary data and timelines needed, to carry out the study. The Joint Utilities shall also consider publicly available data from studies issued by State agencies.

To fully capture system needs, very granular utility data will be required. Given the importance of the load forecast and demand expectations on model outputs, special attention shall be given to these assumptions in the filing, including how a less granular forecast may be scaled to a given utility's territory and load areas. The Joint Utilities' proposal shall include at least two options related to load forecast development, as follows. At a minimum, the Joint Utilities must consider the option of relying on load forecasts developed in other proceedings, including the work produced by the CGPP and Scoping Plan mentioned above, and the option of developing their own bottom-up forecast of granular electric demands. The Joint Utilities must discuss the benefits and drawbacks of either of these options, as well as alternate methods of developing near- and long-term load forecasts.

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[10] Case 20-E-0197, Transmission Planning Proceeding, Order Approving a Coordinated Grid Planning Process (issued August 17, 2023).

[11] The Joint Utilities are encouraged to include PSEG Long Island in the development of the proposed proactive planning framework.

Furthermore, the Joint Utilities' proposal shall include a procedural approach for the Commission's consideration of transmission and distribution upgrade investments, which shall evaluate options for requesting approval outside of rate case proceedings. If the proposal recommends funding for infrastructure projects outside of the rate case process, the Joint Utilities' proposal must also incorporate an analysis of the estimated revenue requirement and offsetting incremental revenues associated with the infrastructure development, as well as a proposal for how costs for such projects would be recovered, allocated, and how to mitigate ratepayer risk of stranded assets. The Joint Utilities must explain how the proactive planning for electrification process shall be incorporated in future rate filings so that the Commission has better insight into what is being authorized as revenue requirements change.

The Commission notes that numerous commenters, including EDF, ChargePoint, the Joint Utilities, and the World Resources Institute, suggest that the risk of stranded assets is low, since pre-installed infrastructure will be attractive to other fleets or loads, in the event the initial wave of electrification does not materialize. The Joint Utilities shall provide input on the magnitude of the risk of potentially stranded or underutilized assets, as well as approaches to manage this risk. The Commission directs that any proposal for cost recovery shall also note the recommended approach for funding the study process itself.

1. CGPP Integration

The Commission expects that key elements of the long-term planning process will serve as essential inputs to the broader CGPP process. Granular load projections, system information, and potential upgrades, including the timeline of

the upgrades, are components that the Joint Utilities shall include in such plan for integration, and are encouraged to identify other pieces of the planning work that shall be integrated with the CGPP. Given the noted synergies with the overall goals of the CGPP, the Joint Utilities' response to this Order must also include a recommendation for whether the process should be integrated with the CGPP. If yes, the proposal shall further explain how the proposed planning process would be integrated with the overall CGPP by the beginning of the second CGPP cycle.[12]

The Joint Utilities' proposal shall also consider completing the initial phase of the overall planning framework by the end of 2025 or early 2026, which would align with the completion of the initial CGPP cycle; this will enable the Commission to consider the first round of proactive planning upgrades in the broader context of the results and recommendations of CGPP upgrades.

2. Evaluation Criteria

Any potential upgrades resulting from the long-term proposed planning process would need to be evaluated by the Commission to determine the necessity and value of each project. This evaluation would require certain criteria by which to measure and compare projects to determine those that benefit ratepayers and deliver outcomes in line with the goals of the CLCPA. The Joint Utilities' long-term proposal shall,

[12] The second CGPP cycle is currently expected to commence in January 2027. See Energy Policy Planning Advisory Council Coordinated Grid (EPPAC) Planning Process supporting documents, Coordinated Grid Planning Process Calendar, available at: https://dps.ny.gov/system/files/documents/2024/06/cgpp-timeline-additional-detail.pdf.

therefore, also propose criteria by which projects shall be evaluated, and shall include details such as the cost, urgency, certainty, location, site type, alignment with CLCPA objectives, primary driver of upgrade, and expandability potential. The evaluation criteria shall also incorporate and prioritize impacts to disadvantaged communities and consistency with the State's greenhouse gas emissions reduction objectives.

The Commission notes that there may be more than one solution for each required grid upgrade, and the Joint Utilities are encouraged to discuss the value of expandability, alternate technologies, phasing approaches, and optionality in proposed projects, as well as how these values shall be incorporated into evaluation criteria. As Earthjustice and Sierra Club note in their comments, there may also be an opportunity to leverage peak mitigating or managed charging programs to minimize upgrade size or cost. They state, "this includes both technologies such as energy storage that can mitigate peak electric draw from MHDV charging facilities as well as managed charging strategies that can help avoid the need for distribution system upgrades."[13] The Joint Utilities shall consider these alternatives in the solutions development process to help ensure final plans are developed at least cost to ratepayers.

Finally, if the Joint Utilities believe it is likely that future upgrades may arise on timelines not supported by the planning process, the Joint Utilities shall note this possibility in their filing and propose a procedure for submitting and evaluating these projects. We note that these urgent projects may be currently unknown to the Joint Utilities and are therefore different than the projects discussed below, which should already be identified.

[13] Case 23-E-0070, supra, Earthjustice and Sierra Club Comments (filed June 5, 2023).

Urgent Upgrade Projects

The Commission recognizes that there may be already-identified projects that cannot wait for the implementation of the long-term planning process framework. If an upgrade is identified as urgent, meaning that it must begin construction before the completion of the proposed planning process developed in this proceeding, which is estimated to occur in the first half of 2026, each of the Joint Utilities shall have the opportunity to develop a proposal that identifies these needs and includes details sufficient to enable Commission consideration of these urgent upgrades. Each utility that identifies Urgent Upgrade Projects shall file a proposal that shall be of rate case quality with appropriately supported costs estimates. The Commission further directs the Joint Utilities to propose a common approach for evaluation criteria, cost allocation, and cost recovery for Urgent Upgrade Projects in a separate filing.

Given that the urgent projects would be proposed for funding outside the final proactive planning process and may require expedited review, the investments may require more strict evaluation criteria than those projects developed within the broader planning process. At a minimum, the projects proposed in this urgent process shall exhibit a higher degree of certainty in the need they propose to address and stronger ties to transportation and building electrification needs than a typical project in the successive process. This would ensure that only the truly urgent investments are made while other upgrades are funded when required in the future, minimizing total ratepayer impacts. The Joint Utilities shall propose enhanced evaluation criteria for urgent projects and include a description of how the underlying analysis has managed risks associated with load forecast uncertainty, including the timing,

location, and magnitude of future electrification loads, as well as how the risks related to stranded assets, overbuilding, and underbuilding have been managed.

Procedural Timeline

The first cycle of the CGPP is underway and, based on the findings of the November Technical Conferences in that proceeding, there may already exist urgent electrification needs that require early consideration. These facts point to the need for an expeditious timeline for this process to be initiated. The Commission therefore requires that each member of the Joint Utilities that identifies Urgent Upgrade Projects submit a filing with the proposed Urgent Upgrade Projects within 90 days of this Order. A companion Evaluation and Funding filing by the Joint Utilities that proposes a common approach for evaluation criteria, cost allocation, and cost recovery shall also be made within 90 days of this Order. The Joint Utilities shall submit a filing related to the long-term Proactive Planning Process Framework within 120 days of this Order, which shall include cost allocation and recovery proposals, integration with CGPP, and evaluation criteria. Both filings will be noticed for public comment and be subject to subsequent Commission action.

CONCLUSION

The Commission finds that a proceeding is needed to establish a proactive planning framework study. As part of this proceeding, the Joint Utilities will submit two filings, the first of which will address urgent planning needs and the second of which will address long-term planning needs. These proposals will serve as the first step towards implementing a proactive planning framework to support the electric grid as we advance New York's climate goals.

The Commission orders:

1. A proceeding is instituted, and Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation d/b/a National Grid, New York State Electric & Gas Corporation, Rochester Gas and Electric Corporation, and Orange and Rockland Utilities, Inc. shall file proposals for Urgent Upgrade Projects, if necessary, as discussed in the body of this Order, within 90 days of the issuance of this Order.

2. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation d/b/a National Grid, New York State Electric & Gas Corporation, Rochester Gas and Electric Corporation, and Orange and Rockland Utilities, Inc. shall file an Urgent Upgrade Project Evaluation and Funding proposal, as discussed in the body of this Order, within 90 days of the issuance of this Order.

3. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Niagara Mohawk Power Corporation d/b/a National Grid, New York State Electric & Gas Corporation, Rochester Gas and Electric Corporation, and Orange and Rockland Utilities, Inc. shall file a long-term Proactive Planning Framework, as discussed in the body of this Order, within 120 days of the issuance of this Order.

4. In the Secretary's sole discretion, the deadlines set forth in this Order may be extended. Any request for an extension must be in writing, must include a justification for the extension, and must be filed at least three days prior to the affected deadline.

5. This proceeding is continued.

By the Commission,

(SIGNED) MICHELLE L. PHILLIPS
Secretary

The questions outlined below were originally asked in the MHD Initiating Order and relate to proactive planning.

9. Discuss how proactive EV infrastructure planning differs for light-duty and MHD vehicle market segments?

RMI, Walmart, Gage Zero, PACT, Powerflex, Heliox, and the JU note the greater load of MHDs versus light-duty vehicles. EDF notes that MHD adoption will happen in waves due to: ACT rules; MHD fleets planning on longer timelines than residential light-duty vehicles; and MHD fleets being more clustered than light-duty vehicles. Heliox also comments on the clustered nature of MHD fleets. The JU notes MHDs are located more peripherally to the grid. EDF states that some fleets are more likely to prioritize based on existing distribution capacity. Gage Zero and Tesla comment on the need for direct engagement of stakeholders, unlike for light-duty vehicles. Highland and NYPA note that MHDs are more predictable for planning purposes than light-duty vehicles, due to replacement rates and charging schedules. Livingston and PACT identify space and weight considerations as different from light-duty planning. Powerflex, PACT and TANY mention the length of time required to charge as a difference between vehicle classes. Tesla notes longer installation timelines for MHDs due to the requisite power level. CALSTART and signatories highlight the importance of speeding up interconnection timelines due to the misalignment of vehicle procurement and interconnection timelines. CALSTART and signatories further recommend that, due to the unique and irregular distribution of MHDVs, the Commission allow for utilities to utilize tools and data to forecast where MHDV load is likely to be needed and to proactively build for this anticipated need. TANY notes trucker rest period requirements as a consideration for MHD planning.

ATE asserts that planning for commercial use is straightforward because commercial vehicle operators are very aware of the cost per mile. ATE endorses planning for all vehicle load, including more granular load forecasting models with customer-specific locations, to the address level where possible.

Quanta comments that light-duty planning must consider fast replacement of assets, and that a longer-term issue may be the installation of higher power chargers due to lengthening ranges.

VGIC argues that MHD vehicles in particular can be considered grid resources should adequate vehicle-to-grid (V2G) infrastructure and equipment be installed to make use of this potential. VGIC cautions that, should programs and incentives fail to be established to encourage V2G equipment as a component of proactive planning, New York risks a substantial amount of grid capacity as a stranded asset in the form of MHD vehicles utilizing unidirectional charging equipment and infrastructure.

In reply comments, ChargePoint supports establishing a framework for proactive utility investment. ChargePoint recommends that the utilities report energization timelines and enact solutions to reduce bottlenecks, including reviewing MHD sites and pre-purchasing electrical distribution equipment. ChargePoint supports a full-scale MHD program that focuses on no-regrets sites in the short-term. ChargePoint recommends that the proceeding establish interconnection targets, reporting requirements, and preemptive solutions to issues contributing to delays.

10. How should proactive planning consider concurrent policy goals to reduce personal vehicle usage and increase the use of shared modes (including public transit)?

CALSTART recommends the development of multimodal mobility hubs offering a variety of transportation options to encourage a transition to shared and active mobility, located around larger scale existing transit nodes. EDF asserts planning would be best informed by communities with existing significant reliance on transit, and that policies should support electrification of transit in DACs. Heliox recommends optimizing infrastructure through competitive procurement, integrating transit and shared mobility into overall planning, including by involving such stakeholders. The JU argues that planning should include all electric transportation, including transit and micromobility. Livingston states that in areas where mass transit is feasible, reducing fares and offering the option of trips using electric mass transit may attract riders to EVs. MTA recommends increasing equitable and affordable access to public transit, citing the CAC Scoping Plan, which MTA contends can be furthered by an emphasis on fleet electrification and proactive planning, including transit-oriented smart growth. Powerflex suggests developing incentives for shared EV adoption and prioritizing public transit investments. WRI recommends a "no regrets" approach to proactive planning that emphasizes fleet electrification for school transportation and public transit. Quanta expresses general support for including shared modes in infrastructure planning. VGIC estimates that school buses alone can serve as a significant source of storage capacity without incurring additional real estate costs as required by most other energy resources. Combined with efforts to make export compensation

mechanisms more viable, VGIC argues that this could spur the increased deployment V2G capable vehicles such as school buses.

11. Discuss how battery energy storage systems and other distributed energy resources (DERs) can be implemented in both short-term and long-term planning for electric vehicle charging needs across vehicle classes.

ABBE, ACE NY & United, ATE, CEP, ChargePoint, EDF, Gage Zero, Heliox, Highland, the JU, Livingston Energy, NineDot, Powerflex, Prologis, RMI, Stem, Tesla, and Walmart all generally support the implementation of battery energy storage and other DERs at EV charging sites. Proponents of battery integration cite a variety of benefits such as overall cost reductions, deferral or avoidance of conventional infrastructure upgrades, system reliability, resilience, sustainability improvements, peak demand management, greater and more flexible capacity in grid-constrained areas, the ability to provide backup power during outages, and encouraging the adoption of time-of-use rates. ACE NY & United also cite the ability of collocated renewable generation assets to provide zero-emissions energy to EV charging sites. PACT argues that DERs and energy storage can accelerate MHD charging access, but that these are unlikely to help with the primary issue of providing adequate capacity for MHD fleets. PACT cautions to evaluate whether inclusion would delay the energization process.

ATE, CEP, and Tesla argue that such collocation of storage and DERs should be permitted and even encouraged, but that storage assets should not be a required feature of charging locations, nor – according to Tesla – relied upon to solve greater, long-term grid planning problems. The JU also cautions that storage should not be viewed as a complete replacement for conventional system upgrades in meeting EV charging

requirements. Conversely, EDF, Powerflex, and RMI argue that energy storage offers an important temporary solution to near-term grid problems and can circumvent costly upgrades, though RMI acknowledges that in most cases, managed charging can solve these issues more cost effectively without battery installation. However, Stem contends that such technology should be integrated into EV charging designs preemptively to effectuate coordinated storage and charging, operational flexibility, and suitable design scale for optimal outcomes with minimal redundancy. DTNA notes that many depot and public charging station operators would couple EV charging infrastructure with energy storage systems in the absence of sufficient grid capacity, though DTNA warns that current Make-Ready Program rules would prohibit such installations. NYPA cautions that collocating storage infrastructure at EV charging sites will be complicated by space constraints, and that the usual operation of storage assets with respect to charging and injection may be at odds with EV charging needs.

The City states that battery storage is likely to play an important role for concentrated fleet charging. The City states that fleet battery storage may be challenging in the City due to fleets being spread out over many sites. The City emphasizes the need to prioritize MHD charging hubs in IBZs, where fleet concentration may be high enough to warrant battery storage installations.

In addition to conventional energy storage assets, ACE NY & United and Powerflex advocate for the development of microgrids that can provide reliable emergency power to charging infrastructure and grid balancing during high demand periods, while Highland observes that electric school buses can be used as large, mobile batteries to similar effect in grid stabilization and DER integration efforts. Both ChargePoint and

Powerflex also recommend automated load management (ALM) as a means to overcome capacity constraints through peak load management and load balancing. CALSTART and signatories recommend the Commission require utilities to implement non-wires alternatives (NWAs) to help reduce interconnection delays including solar and storage, software and hardware solutions, and flexible interconnections. To encourage the use of NWAs, CALSTART and signatories argue that customers should be compensated for the benefits they bring, or grid upgrades they defer.

Several commenters recommend various approaches to mitigate the upfront costs of energy storage system deployment to charging infrastructure operators. ABBE, EDF, and the JU generally recommend incentives for energy storage and other DERs paired with EV charging sites, with ABBE proposing separate budgets for such equipment due to significant upfront and implementation costs. EDF contends that utilities should cover DER installation costs up to the cost of avoided system upgrades and cites a straw proposal from New Jersey Board of Public Utilities Staff that details such a program. EDF also emphasizes the importance of futureproofing and coordinated collocation to avoid inefficient and redundant efforts. VGIC states that MHD vehicles offer a substantial amount of storage capacity and that additional mechanisms should be considered to make V2G a more viable and affordable option. VGIC argues that VGI should be considered as a new DER asset class and incorporated into all EV charging load forecasts and considered alongside traditional infrastructure upgrades in any proactive investment proposals.

Regarding interconnection, ABBE advocates for a streamlined process for DERs collocated at EV charging sites, while the JU suggests that the Commission establish mechanisms

for siting storage systems for optimal augmentation of grid capacity to support transportation electrification. EDF recommends that the Commission establish interconnection objectives and performance standards and advocates for flexible interconnection agreements at sites with limited capacity.

11a. Is vehicle-grid integration (VGI) technology at a sufficient level of maturity to impact short-term planning considerations? If so, describe how; if not describe why not.

Commenters have mixed opinions on the current viability of VGI and its impact on planning. EDF cites successful VGI pilots, with Highland, Ninedot, and Quanta also characterizing VGI as commercially viable. Nuvve states VGI is mature enough to impact planning, but with an initial focus of school buses. ABBE states that only school bus applications are mature enough to impact short-term infrastructure planning. VGIC and NY-BEST state that VGI is mature enough to be used by school buses, but do not comment on whether that should impact planning. The City comments that once mature, VGI will likely make the most sense for school buses.

The City, ChargePoint, DTNA, Gage Zero, PACT, Powerflex, Tesla, and WRI do not consider VGI to be mature enough for short-term planning purposes. The JU states that some flexible load solutions such as software-as-a-service and energy storage technologies are sufficiently mature for inclusion in short-term planning, however bidirectional VGI technologies are nascent, and more experience is needed to confidently include them in utility planning. ABBE and ATE support VGI pilots in the short-term.

VGIC and NY-BEST state that a "flexible connection" framework needs to be established that will reduce the site connection requirement and incentivize the adoption of ALM

technologies up front. Ninedot comments on the need for clear payment structures for VGI. FreeWire and VGIC and NY-BEST are supportive of Earnings Adjustment Mechanisms (EAMs) to encourage load management technologies. VGIC encourages updating and improving funding mechanisms and incentives for V2G or else it argues that New York will risk being left out of the development of V2G projects and a large amount of energy storage located in vehicles without the appropriate infrastructure to utilize the storage capabilities.

12. How can managed charging programs reduce upfront infrastructure needs?

The JU predicts that responses to its managed charging programs will vary by vehicle class and use case but anticipates opportunities for engagement with station operators in planning infrastructure needs and operations based on managed charging. The JU cautions that more experience with managed charging programs is needed before results are incorporated into planning efforts to reduce infrastructure costs, particularly as utilities must plan for peak and contingency scenarios. TMH comments that a flexible connection contract between the utility and customer, rather than a "best effort" request, could allow utilities to raise the utilization rate of distribution feeders and transformers, potentially deferring upgrades. TMH states that ALM systems can help avoid site-level upgrades at sites where fleets have predictable routes and sufficient dwell times. TMH comments that flexible connection contracts and ALM are not mutually exclusive, and both should be incorporated as standard assumptions in forward-looking grid assessments. Powerflex states that technologies such as ALM can be used to manage charging at sites to reduce or avoid the need for infrastructure buildout and suggests they be used as a first measure. IPI-RFF

suggests that to reduce infrastructure needs, managed charging programs need to align price signals with overall system costs, noting a study prepared by Resource Innovations. MTA observes that load shapes for MHD fleet charging are likely to be stable and more predictable than light-duty EV charging when facilitated by flexible incentives for off-peak charging that do not penalize for peak period charging. MTA recommends that managed charging design be developed to encourage off-peak charging to reduce peak demand, while also accommodating the specific operational constraints of transit fleets. MTA notes that this would reduce utility transmission and distribution costs but require greater infrastructure investments to permit charging flexibility. Tesla states that high utilization of charging infrastructure and MHD vehicles will result in the best total cost of ownership for fleets, so it is important to right size the equipment. Tesla notes that as larger data sets become available, load diversity calculations may be an option to safely minimize unnecessary grid upgrades.

VGIC cites studies from New York State Energy Research and Development Authority and Synapse Energy Economics that show significant cost savings from the implementation of managed charging programs and argues that including more robust VGI can deliver even more benefits to ratepayers and cost-savings for fleet operators. Stem states that managed charging can minimize peak demand and associated buildout. WRI maintains that managed charging programs can reduce upfront infrastructure needs, particularly when coupled with education for fleet operators. WRI suggests that regulatory modifications, such as the contractual codification of performance parameters, are needed to generate confidence in grid planning and engineering for future EV loads, which may help avoid overbuild resulting from planning for potential peak impacts. Prologis states that

managed charging programs can reduce upfront charging needs. Prologis states fleet operations are duty-cycle dependent and predictable, so when changes do occur, it is likely a critical event that the system must meet. Prologis urges exploring the permitting and rating of EV charging projects based on percent of installed capacity, which could allow more charging infrastructure to share the same circuit. Quanta recommends always considering managed charging first when planning a new facility load. Quanta suggests creating charging zones, similar to industrial zones, around areas with high fleet facility concentrations. Quanta comments that zoning laws could help encourage companies to stay and allow for infrastructure upgrades to occur, or ensure the business operation could be replaced.

ACE NY & United, EDF, FreeWire, Gage Zero, Heliox, Highland, and Livingston note that managed charging is important for reducing costs for fleets. ABBE, DTNA, PACT and Quanta caution that managed charging will likely not be feasible for all fleets, with ABBE and PACT recommending managed charging not be required for incentive program participation for this reason. The City recommends that any managed charging program be discussed in the demand charge alternative proceeding, with an eye to fleets that cannot easily participate in managed charging. ATE comments that managed charging programs are not necessary beyond allowing participation in existing demand-response initiatives, stating that rate design is key to managing costs. CEP similarly notes demand-response as one possible type of managed charging, along with the possibility of combining EV charging with storage as an NWA. FreeWire recommends considering the inclusion of incentives and other approaches to encourage load management, noting potential design options including: EAMs; awarding avoided make-ready costs to

projects that reduce the need for upgrades; including load management technologies in distribution planning; and prominently featuring load management technologies in fleet assessment services. PACT encourages the Commission to direct the utilities to negotiate rates directly with fleet operators to determine which fleets managed charging is possible for.

ChargePoint comments that power sharing can help operators stay under site limits and respond to time varying rates. NineDot states that managed charging programs need both hardware and software solutions to minimize upfront costs and maximize potential revenue. RMI suggests that determining a fleet's power in advance and educating fleets about management strategies can reduce the net power required at a depot.

13. What strategies can reduce the risk of future-proofed sites from becoming stranded assets if a fleet or other baseload user changes their operations or moves to a different site?

ChargePoint, EDF, PACT, WRI, and the JU assert that stranded assets are unlikely, as pre-installed infrastructure will be attractive to other fleets, and fleets are already constrained by the challenges of acquiring new real estate as it is. ABBE notes that MHD fleets who lease sites face challenges, and states that ways to allow fleet tenants to recoup the investment depreciation upon relocation should be developed. RMI states that good grid planning and increased market demand for electric MHD vehicles will mitigate the risk of a site becoming a stranded electrical asset.

EDF, Livingston, and Powerflex support the use of the Open Charge Point Protocol (OCPP), with EDF recommending it be required. ChargePoint does not support a mandate requiring OCPP as it has not been fully evaluated and is intended to evolve over time. ATE is generally supportive of open standards and

interoperability. EDF notes the importance of two additional standards, ISO 15118, and Open Automated Demand Response (OpenADR). EDF recommends the development of submetering accuracy and reporting requirements from the EVSE as a streamlined process for fleets to access price signals rather than depending on separate metering equipment.

ChargePoint states that the risk of stranded utility-side assets may be reduced if customers have a financial stake in futureproofed sites and that a new full-scale program should provide meaningful incentives for customer-side infrastructure and include a cost-share component to ensure that fleet operators invest some of their own capital. Tesla notes that fleet operators are concerned about stranded assets and supports an equitable return on these long-term investments.

Walmart states that strategies to reduce the risk of stranded assets depend on the location and highlights the need to analyze the risk on a granular basis. Walmart notes the Contribution in Aid of Construction (CIAC) approach, when applied on a case-by-case basis, as a way for utilities to recover an appropriate amount from individual customers while protecting other customers from being responsible for unused abandoned infrastructure assets. CALSTART and signatories call for clear targets, metrics, and reporting requirements to be implemented such as number of electric MHDVs deployed, interconnection timelines, and costs of different program elements to establish clear targets for utilities. If utilities fail to meet their timelines and the metrics established, CALSTART and signatories call for the utilities to be required to provide justification to the Commission and a plan for improvement.

BETA recommends a comprehensive planning study be conducted to define scenarios where utility distribution

infrastructure needs to be upgraded and argues that this will help proactively identify and upgrade aging or insufficient grid infrastructure where most needed. Heliox recommends flexible infrastructure design, scalable power capacity, and flexible service agreements and contracts. CEP suggests that future-proofing should also apply to storage and other supportive equipment. Stem stresses the importance of integrating energy storage and distributed energy at the early design stages, even if initial EV charging loads are relatively low. Powerflex notes modular EV charging hardware, flexibility in leased or ownership agreements, and planning for EV sharing groups as strategies to reduce stranded assets. Livingston states that providing amenities near charging infrastructure can make sites less likely to become obsolete.

In reply comments, PACT notes that it agrees with other commenters that fleet operators are equally as concerned about stranded assets as utilities but notes that fleets operate on different timelines than utilities and may be unable to provide guaranteed usage for up to ten years. PACT calls for the regulatory environment to act as insurance for utilities that infrastructure build-out will not result in stranded infrastructure.

13a. In the Northeast, climate change is expected to increase the frequency and intensity of storms, especially extreme precipitation and extreme heat, and lead to more frequent high tide flooding. Should the impact of current and future climate vulnerabilities be addressed in the infrastructure planning process (e.g., sites that are in or are projected to be in the floodplain)? If so, how?

ABBE, Chargepoint, and the City support mitigation techniques against frequent flooding. The City recommends

developing climate risk assessments and adapting infrastructure to climate risks to withstand flooding from coastal storms, tides, and stormwater. The City mentions that some areas around the City are particularly vulnerable to flooding. The City suggests that developers use tools like the NYC Flood Hazard Mapper and recommends that sites in tidal floodplains not be considered for EV charging. The City suggests that incentive programs should encourage developers to analyze whether their site is in the FEMA flood insurance map's future 1% floodplain and recommends that EV chargers and related infrastructure be designed to resiliency guidelines used by the local municipality or utility, deferring to whichever is more stringent. The City states that EV chargers and make-ready infrastructure should be designed to withstand increased annual temperature and increasing frequency of heat waves. The City advocates for a tiered incentive structure that offers higher incentives to chargers that are in areas with identified high heat vulnerability and flood risk to help pay for the incremental cost of implementing the necessary climate resilient designs. The City also recommends establishing utility-specific EV climate resiliency design guidelines based on the unique needs of each service territory.

EDF states that charging stations should be constructed to meet minimum flood resilience standards and align with New York City's Climate and the Waterfront Edge Design Guidelines. EDF notes that infrastructure should be avoided in locations with impending sea level rise where feasible and distributed equitably and minimally when not feasible. EDF emphasizes the importance of redundancy and durability in alignment with climate expectations and encourages working with municipalities to develop guidance. EDF also notes how electric MHD vehicles with V2G capabilities can provide resiliency during

extreme weather events, such as providing backup power to critical facilities.

Heliox and Powerflex advocate for the evaluation of the climate vulnerabilities, such as flooding and extreme heat, to be incorporated in the infrastructure planning process. Powerflex proposes that infrastructure planning design should account for longer-term regional weather changes and that plans should aligned with emergency action plans. The JU recommends that EV infrastructure planning processes and incentive programs consider climate change risks and resilience solutions, noting that utilities are already engaged in such planning. The JU recommends that charging station developers follow guidance from local permitting agencies, adding that vehicles with critical emergency functions may require additional planning for backup charging during disasters. DTNA and EDF state that following power outages, utilities should prioritize restoring power to fleets so they can transport necessary items.

Livingston states that creating a barrier between EV infrastructure and the elements, such as using EVSE skids to elevate equipment in flooding prone areas, and installing equipment that can withstand extreme temperatures, can make a site more resilient. NYPA comments that they are currently installing charging infrastructure in a depot located near water and are locating the power cabinets on the second floor, at an additional cost, to minimize flood risk. Prologis recommends that developers in coastal and wildfire-prone areas include large generators in the planning process to improve resiliency, stating that BEVs are at a higher risk of flooding and extreme weather than internal combustion engine vehicles, and recommends including behind the meter solutions such as generators in the planning process, as well as relocating EVSE that retain sufficient useful life.

ATE states that climate events such as flooding are addressed through the building permit process and therefore need not be addressed by the Commission. Tesla states that fleets are not necessarily considering climate changes in their planning processes, and adding this as a requirement will complicate the transition to electrification that already has several barriers.

PACT notes that MHD charging infrastructure has the same risks as other existing or future physical infrastructure but argues that MHD charging sites must be given a high priority for restoration during power outages due to critical services performed by MHD vehicles such as grocery delivery, snowplowing, and disaster cleanup.

14. What types of site locations and use cases should be prioritized for proactive future-proofing, and why?

Livingston Energy, Heliox, Powerflex, and Walmart recommend that site location priority should be determined by traffic volume, electric grid capacity in each area, areas of concentrated fleet vehicles, high-traffic corridors, transportation hubs, depots, distribution centers, and in urban areas where charging infrastructure can support last-mile delivery vehicles and reduce local emissions. Powerflex recommends conducting a needs assessment to identify potential demand for EV charging.

ACE NY & United and EDF state that priority should be given to DACs, with the goal of improving air quality in areas hosting MHD fleets and in areas highly trafficked by MHD vehicles, however attention should be made to the long-term implications of locking in MHD traffic by building out charging infrastructure to serve these vehicles.

NineDot states that constrained areas of the grid where MHD fleet operators exist should be prioritized. NYPA recommends the Commission prioritize futureproofing for public transit agencies, noting that many have mandates to fully electrify their fleets by 2035 or 2040. Highland, WRI, Quanta, and NineDot state that given the state's electric school bus mandate, school districts should begin planning their fleets' transitions to electrification now. Quanta states that seaports and airport cargo handling should be an additional priority due to their heavy bearing on disadvantaged communities and need for high reliability.

Tesla, DTNA, PACT and the JU suggest that all sites should be considered for futureproofing. Tesla recommends considering both near-term capacity needs and those on a five-year horizon. DTNA suggests that future-proofing should consider current and future vehicle regulations. ATE and Chargepoint recommend including future-proofing because it can save substantial costs and does not result in extensive stranded assets. ATE identifies best practices including oversizing conduit, sizing conductor so that additional conductor can be pulled through the same conduit in the future, and installing pull boxes at strategic locations. PACT argues that the act of considering future-proofing for all sites will allow utilities to meet increases in energy demand from all sources, not just MHD vehicles.

VGIC calls for VGI to be included into EV charging load forecasts and states that VGI solutions should be considered alongside traditional infrastructure upgrades in any proactive infrastructure investment proposal.

In reply comments, PACT notes it is supportive of JU recommendations to consider both existing grid capacity and identify areas of need for proactive planning. PACT further

notes it supports the JU's suggestion for utilities to directly engage with customers and provide capacity mapping and encourages the Commission to work with utilities to understand the issues that hinder the fulfillment of energization requests and ensure that the utilities general rate cases account for MHD load growth.

15. What considerations should be taken into account when addressing future-proofing sites in disadvantaged communities?

ATE recommends that DACs be subject to the same future-proofing policies as locations outside of DACs. The JU advocates for a broad approach to futureproofing, and cautions that, if funding for such purposes is limited, futureproofing to benefit disadvantaged communities should be prioritized over other areas.

Livingston, Tesla, and Prologis recommend examining emissions from vehicles when determining how to future-proof sites located in DACs and suggest prioritizing communities near truck depots, construction sites, airports, distribution facilities, and factories. Tesla states that if there are specific environmental goals and fleet electrification projects in the same locations, overlaying the correlated objectives may help right-size future project needs.

EDF, Heliox, and Powerflex suggest considering community engagement with residents in DACs, choosing accessible site locations, and providing additional funding. EDF also recommends considering future-proofing needs for smaller fleets with fewer resources. Heliox recommends providing co-benefits for communities. Walmart states that it is necessary to ensure site locations do not overly burden DAC residents with noise pollution and other negative impacts.

PACT argues that future-proofing inherently benefits DACs because of an existing overlap of DACs and locations where MHD electrification and operation will take place.

Quanta recommends modeling impacts when addressing futureproofing in DACs, particularly the proximity of sites to the communities and routes through the communities. In addition to existing health impact analysis of nonattainment areas, Quanta recommends further studies on these impacts including monetization of the health impacts of diesel emissions.

WRI cautions against the implementation of statewide future-proofing policies and instead recommends a more flexible and localized approach based on community needs. WRI expresses concern about replicating the historically disproportionate concentration of infrastructure in disadvantaged communities with EV charging infrastructure.

16. Are there alternative financing models for bringing new electric service to sites with additional capacity for future-proofing? Please describe.

ABBE, ACE NY & United, DTNA, PACT, Prologis, the City, Tesla, and Zeem state that there are alternative financing and operational models, including "Charging as-a-Service" (CaaS) and "Fleet as-a-Service," in which third parties maintain the costs of owning and operating ZEVs and infrastructure. DTNA also mentions other innovative business models emerging such as "trucking-as-a-Service" (TaaS) and "Mobility-as-a-Service" (MaaS).

CALSTART suggests that innovative line extension rebates provided by utilities like PG&E, Con Ed, and Xcel Energy in other jurisdictions could be employed to reduce consumer costs and increase EV adoption. EDF suggests that the IRA and the Infrastructure Investment and Jobs Act should be explored as

alternative financing models, citing the IRA's $3 billion in support of ZEV charging port equipment in U.S. ports. EDF also mentions that on-bill financing could help lower upfront cost barriers. Gage Zero recommends that utility incentive programs be available to service providers offering charging services to fleet owners and operators. Heliox and Powerflex state that alternative financing models include public-private partnerships, grant programs and incentives, energy service contracts, third party ownership, and utility programs and tariffs.

ABBE notes that alternative financing options can provide fleet owners and truck operators with more flexibility and can shift the capital expenses of vehicles and infrastructure to an operating expense, which can often be paid by vehicles miles traveled or per kWh with a guaranteed floor and can also include wear and tear premiums. Tesla states that some companies are leasing truck and charging infrastructure as a package as an alternative way of financing the charging infrastructure and delaying upfront costs.

PACT argues that allowing the customer and utility to negotiate energization agreements can support near term charging needs by providing partial capacity to larger sites with the ability to phase in remaining power requirements over time.

In reply comments the City recommends developing alternative financing models to address the high upfront costs of installing chargers and of purchasing MHD vehicles and suggests several models, such as: the State owns and operates the charging stations; a public-private partnership where the State maintains control over the principles of deployment and not the commercial risks; or the charging infrastructure is owned, implemented, and operated by private entities with no State interference. The City points to additional models to be

considered, including Electric Truck-as-a-Service, Energy-as-a-Service, Transportation-as-a-Service, and buying real estate in strategic locations for EV charging deployment.

In reply comments, the JU disagrees with ChargePoint and Gage Zero, stating that individual rate cases for funding EV investments may not the most effective way to meet expected demand, and instead recommends establishing a separate proactive planning process for a more holistic approach to addressing the scope of concentrated EV charging load growth.