COMMENTS OF ENVIRONMENTAL DEFENSE FUND
REGARDING THE
NEW YORK CLIMATE ACTION COUNCIL DRAFT SCOPING PLAN

July 1, 2022

I. Introduction

Environmental Defense Fund ("EDF") is a global membership organization, founded in New York in 1967, whose mission is to preserve the natural systems on which all life depends. EDF works to get the world on a rapid path to climate stability, with healthy, resilient communities. To accomplish this, EDF works with a wide range of partners to stabilize the climate and to join with communities to build resilience in the midst of a changing climate. EDF respectfully submits these comments to the Climate Action Council broadly in support of the Draft Scoping Plan and with recommendations to improve its effectiveness.

The Climate Action Council ("Council")'s Draft Scoping Plan represents a critical step in defining New York's path to achieve the objectives of the Climate Leadership and Community Protection Act ("CLCPA").[1] The Final Scoping Plan will be a foundational document defining how New York will equitably meet its greenhouse gas emission reduction goals under the law. This will ensure a coordinated statewide scheme consistent with the holistic, whole-of-government approach to decarbonization contemplated by the CLCPA. The CLCPA requires that the Final Plan "shall identify and make recommendations on regulatory measures and other state actions that will ensure the attainment of the statewide greenhouse gas emissions limits."[2] The Final Plan will provide necessary direction to state agencies, which are required in all "administrative approvals and decisions" to "consider whether such decisions are inconsistent with or will interfere with the attainment of the statewide greenhouse gas emissions limits," to "prioritize reductions of greenhouse gas emissions and co-pollutants in disadvantaged communities," and to "not disproportionately burden disadvantaged communities."[3] And the Final Plan will provide necessary direction to ensure that state agencies comply with the statutory directive that they "shall promulgate regulations to contribute to achieving the statewide greenhouse gas emissions limits."[4]

In these comments, EDF addresses four topics on which we are actively engaged. Section II of these comments discusses the electrification of trucks and buses, covered in Draft Scoping Plan Chapter 11 (Transportation) and Chapter 13 (Electricity); Section III discusses market-based solutions, covered in Chapter 17 (Economy-Wide Strategies); Section IV discusses the natural gas sector as covered in Chapter 18 (Gas System Transition); and Section V discusses adaptation and resilience, covered in Chapter 21 (Adaptation and Resilience) and Appendix H (Adaptation and Resilience Strategy Components). In each of these issue areas, New York has an opportunity to lead, but significant action is required of state and local governments as well as private actors to achieve the critical climate, environment, and equity goals established in the CLCPA.

[1] New York State Climate Leadership and Community Protection Act ("CLCPA"), 2019 N.Y. Laws 106.
[2] *Id.* §2.
[3] *Id.* §7(2)–(3).
[4] *Id.* §8.

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II. Electric Trucks and Buses

EDF has been focused on driving the adoption of clean trucks and buses for over 20 years, including advocacy before state and federal environmental regulators, as well as utility regulators in several states, where EDF has advocated for charging infrastructure programs and business models that are cost-effective, beneficial for the grid and the environment, and equitable. Before the New York Public Service Commission (the "PSC" or "Commission"), EDF has long advocated for efficient integration of distributed energy resources, price signals that incentivize customers of all types to manage their demand to improve electric system utilization and enable flexibility in support of grid decarbonization, and utility metering infrastructure and business practices needed to support this evolution of the electric system. EDF has also advocated for timely, tailored consideration of the needs and capabilities of electric medium- and heavy-duty vehicles ("MHDV") as a key component of New York's energy transition.

Eliminating tailpipe emissions from the MHDV sector is an essential component of New York's energy transition. On a per-vehicle basis, trucks and buses contribute disproportionately to the large greenhouse gas ("GHG") footprint of today's vehicle sector; moreover, they are one of the most significant drivers, and in some cases *the* most significant driver, of air pollution in disadvantaged communities, such that remediation is absolutely essential to achieving State commitments to environmental justice and equity. Fortunately, electric MHDVs are rapidly becoming more widely available and cost effective across a variety of vehicle classes. But, this transition will not happen at the scale or pace necessary unless the State, in robust coordination with federal and municipal entities with relevant goals and resources, takes additional actions to support the deployment of electric MHDVs, and ensures sufficient charging infrastructure is in place when and where it is needed. To maximize the benefits and minimize the costs of electrification for vehicle owners as well as the general public, the State, through the PSC and other agencies, must ensure that the value of electric MHDVs as a grid resource is unlocked through supportive programs as well as rate design and other price signals.

A. Action is urgently needed to accelerate the deployment of zero-emission MHDVs to meet New York State's climate, local air pollution, and disadvantaged community goals.

The Council rightly recognizes the fact that significant action is needed, both by the State and by private parties, to transition to zero-emission vehicles as soon as possible. As the Draft Scoping Plan states, "early action and investment will be needed in the early 2020s" to meet the plan's 2050 goals for the transportation sector.[5] Decarbonizing the transportation sector is critical for meeting the statewide GHG emissions goals established in the CLCPA, as that sector ranks second in sector GHG emissions based on the current DEC methodology.[6] Unfortunately, the

[5] New York State Climate Action Council, *Draft Scoping* Plan, at 97 (Dec. 30, 2021) [hereinafter "Draft Scoping Plan"].

[6] Based on the New York Department of Environmental Conservation's methodology, transportation is the second-largest source, responsible for 28% of emissions, while the United Nations Framework Convention on Climate

early 2020s are already close to winding down, and in the case of MHDVs, there is little sign that the requisite early action and investment to ready the grid for non-emitting vehicles is in fact happening.

Transitioning the MHDV sector to zero-emission vehicles must be a particular area of policy and regulatory focus, due to both the unique challenges of decarbonizing these vehicles, and their disproportionate contributions to GHG and local air pollution. Unlike light-duty vehicles, which can literally be plugged into a home wall outlet, MHDVs generally require at least Level 2 charging and in many cases fast charging for ordinary operations—making each a new MHDV a potentially significant new load source. Meanwhile, despite making up only around 6% of all on-road vehicles in New York State, MHDVs produce approximately 24% of all GHGs, 45% of particulate matter, and 52% of all nitrogen oxide from the transportation sector.[7] And, MHDVs represent an increasingly large share of the transportation sector's GHG emissions, with diesel emissions growing from approximately 14% of transportation GHG emissions in 1990 to 19% in 2019.[8]

The harm currently being caused by these vehicles is enormous, and the further harm that would result from allowing their pollution to continue unabated would be staggering. Based on the DEC's most recent data from 2019, and the interim social cost of carbon of $51 per metric ton, the GHG emissions from diesel emissions in New York cause approximately $750 million in social harm every year.[9] And that's the global impact of only GHG emissions; when other tailpipe emissions are considered, the harm—which is largely inflicted directly on New York residents—is even more severe. According to a recent report by the American Lung Association, transitioning all car sales in New York State to zero-emission by 2035, and all MHDV sales by 2040, would create $68.2 billion in cumulative health benefits through 2050.[10] This includes 6,200 avoided premature deaths, 159,000 avoided asthma attacks, and 825,000 work days of additional productivity[11] – all in addition to the climate benefits.

Transitioning to zero-emission MHDVs will provide outsized benefits to the disadvantaged communities, who today disproportionately suffer from local air pollution from today's trucks and buses. People living in New York's DACs are more likely than those in other communities

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Change methodology makes it the largest source, responsible for 27% of emissions. *See* NY Dep't of Envtl. Cons., *2021 Statewide GHG Emission Report: Summary Report*, at v (2021), *available at* https://www.dec.ny.gov/docs/administration_pdf/ghgsumrpt21.pdf [hereinafter "Statewide GHG Emissions Report"].

[7] M.J. Bradley and Associates, *New York Clean Trucks Program*, at 4 (September 2021), *available at* https://www.mjbradley.com/reports/new-york-clean-trucks-report.

[8] NY Dep't of Envtl. Cons., *2021 Statewide GHG Emission Report: Sectoral Report #1: Energy*, at 8 (2021), *available at* https://www.dec.ny.gov/docs/administration_pdf/ghgenergy21.pdf (finding that diesel emissions in New York State grew 60% between 1990 and 2019, while gasoline emissions grew 5% and jet fuel emissions grew 33%).

[9] *See id.* at 9; Interagency Working Group on Social Cost of Greenhouse Gases, Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990, at 5 (Feb. 2021), *available at* https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf.

[10] American Lung Association, *Zeroing in on Healthy Air*, at 9 (March 2022), *available at* *https://www.lung.org/clean-air/electric-vehicle-report*.

[11] *Id.*

to be located in or near commercial and industrial areas, and along highways and other routes with significant truck traffic, meaning they are exposed to higher levels of air pollution that causes increased rates of illness and premature death.[12] Prioritizing policy interventions to eliminate tailpipe emissions from MHDVs operating in DACs, and ensuring that ZEV requirements drive the transition of these fleets in the near term, are important strategies for achieving the State's equity and climate goals.

B. Electric MHDVs will be the best option for the vast majority of fleets and many are ready for deployment now, largely obviating the need for bridge fuels.

The Draft Scoping Plan suggests that in order to meet the emissions reduction targets applicable in 2030, when most MHDVs on the road are still expected to use internal combustion engines, one option is to rely on lower-carbon fuels such as renewable diesel, advanced biofuels, and green hydrogen temporarily while the transition to electric MHDVs continues.[13] This pathway, however, ignores the near-term realities and expectations of what it will take to electrify these vehicles and risks setting the MHDV sector up for failure in meeting the 2050 goals.

Electric trucks and buses are a viable option to replace many of today's fleets with no loss of operational capabilities. According to a new study from RMI, electric models exist today that could replace 65% of medium-duty vehicles and 49% of heavy-duty vehicles in New York State, together representing 30% of annual MHDV miles in the State.[14] And, the number of electric MHDV manufacturers and available models is growing. According to an M.J. Bradley & Associates study released last year, there were thirty vehicle manufacturers selling at least one electric MHDV model in 2021, with nine more expecting to begin sales by 2025.[15] By then, there will be multiple commercially available electric MHDVs in almost all market segments.[16]

Not only will these vehicles be available, they will also be cost-effective in many, if not all, market segments in a short timeframe. A recent study from the National Renewable Energy Laboratory estimates that all zero-emission MHDVs will be cost-competitive with fossil fuel MHDVs on a total cost of ownership ("TCO") basis in all vehicle classes by 2035, with some medium-duty vehicles reaching that point by 2026.[17] That same study found that some electric buses are cost-competitive today.[18] Another study by M.J. Bradley & Associates concluded that

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[12] *See* Union of Concerned Scientists, *Inequitable Exposure to Air Pollution from Vehicles in New York State* (June 2019), *available at* https://www.ucsusa.org/sites/default/files/attach/2019/06/Inequitable-Exposure-to-Vehicle-Pollution-NY.pdf.
[13] Draft Scoping Plan at 96
[14] RMI, *Charting the Course for Early Truck Electrification*, at 12 (May 2022), *available at* https://rmi.org/insight/electrify-trucking/.
[15] M.J Bradley and Associates, *Medium- & Heavy-Duty Vehicles: Market Structure, Environmental Impact, and EV Readiness*, at 21 (July 2021), *available at* https://www.mjbradley.com/reports/medium-heavy-duty-vehicles-market-structure-environmental-impact-and-evreadiness.
[16] *Id.*
[17] National Renewable Energy Laboratory, *Decarbonizing Medium- and & Heavy-Duty On-Road Vehicles: Zero-Emission Vehicles Cost Analysis* 19 (March 2022), *available at* https://www.nrel.gov/docs/fy22osti/82081.pdf.
[18] *Id.* at 27.

EVs may be cost-competitive with equivalent internal combustion vehicles on a TCO basis for more than two-thirds of MHDVs by 2025.[19] And a study conducted this year by Roush Industries for EDF concluded that by 2027, seven of the eight types of electric MHDVs analyzed will have a lower TCO than their fossil fuel equivalent.[20] This means that for many fleet operators, an electric truck or bus may be the most cost-effective option when they next replace their current vehicles. And, a prolonged period of the high fuel prices we are seeing today, should they persist, will only make a shift away from diesel and towards electricity as a fuel more attractive to operators.

Encouraging the widespread use of alternative fuels as a bridge to electrification is not only unnecessary but risks interfering with achievement of the emissions and environmental justice goals of the CLCPA. Biodiesel, for example, does have lower life cycle emissions of GHGs and some local air pollutants such as particulate matter, but can produce higher levels of other pollutants including nitrogen oxides.[21] Green hydrogen, although not a source of pollution when used in a fuel cell, is an indirect GHG that is prone to leakage in the production and transmission process.[22] Moreover, the use of any of the alternative fuels mentioned in the draft scoping plan, at sufficient scale to have a meaningful impact on GHG emissions, could require the development of new infrastructure and/or supply chains that may only be needed for a few years if electrification remains the end-goal—creating new, incremental stranded cost risk, over and above the already potentially stranded investments that already complicate efforts to eliminate air emissions. See *infra*, Part IV.C for further discussion low-carbon fuels beyond the MHDV context.

C. Charging infrastructure remains a significant hurdle, and coordinated action by State agencies and utilities is needed to install this infrastructure

The Department of Environmental Conservation as well as the Legislature and the Governor have begun to commit the State to zero-emission MHDVs, but the transition to zero-emission MHDVs will not be successful unless the necessary charging and/or fueling infrastructure is in place to enable the vehicles to operate. For electric MHDVs in particular, the PSC and electric utilities must work to ensure that every level of the grid, from bulk transmission to distribution, is prepared for these vehicles, and that vehicle owners and operators have access to tools that ensure they will charge the vehicles in such a way that they are a benefit to the grid. To spur action on this topic, EDF, together with five other organizations, submitted a petition to the PSC

[19] EV Market Report, *supra* note 15, at 23 (projecting that electric MHDVs in vehicle classes representing 72% of the current fleet could achieve cost parity with equivalent fossil fuel vehicles by 2025).
[20] Roush Industries, Medium and Heavy-Duty Electrification Costs for MY 2027-2030, at 18 (February 2022), *available at* http://blogs.edf.org/climate411/files/2022/02/EDF-MDHD-Electrification-v1.6_20220209.pdf.
[21] *See* U.S. Department of Energy, *Biodiesel Vehicle Emissions*, *available at* https://afdc.energy.gov/vehicles/diesels_emissions.html.
[22] *See* Ocko, Ilissa and Hamburg, Steve (2022). "Climate consequences of hydrogen leakage." Preprint under review for the journal Atmospheric Chemistry and Physics. 2/18/22. *Available at* https://acp.copernicus.org/preprints/acp-2022-91/; Steven Hamburg and Ilissa Ocko, *For hydrogen to be a climate solution, leaks must be tackled* (Mar. 7, 2022), *available at* https://www.edf.org/blog/2022/03/07/hydrogen-climate-solution-leaks-must-be-tackled.

to address MHDV charging needs.[23] That petition, which is attached hereto as Appendix A, makes the following three core requests of the Commission.

First, the Commission must work with its sister agencies and New York's electric utilities to understand how many chargers are currently serving MHDVs in the State, how many will be needed in future years, when and where those chargers will be needed, and the expected cost of those chargers and the associated infrastructure. Research by Atlas Public Policy estimates that New York State will need 2,500 to 2,800 public and private chargers dedicated to MHDVs by 2024, with that number rising to more than 31,000 by 2030.[24] But to EDF's knowledge, there are no publicly available data or projections on this topic developed or accepted by the Commission, NYSERDA, DEC, NYSDOT, or any other State agency. This information will be important to appropriately scaling future programs, incentives, and regulations for the deployment of these vehicles, ensuring complementarity across agencies' programs, and ensuring alignment with State and local electrification targets.

Second, the Commission needs to review and modify the currently authorized utility pilot programs for MHDV electrification, which to date have gone largely unused by fleets. In its light-duty vehicle make-ready order, issued in July 2020, the Commission ordered the creation of three programs relevant to MHDVs: the MHDV make-ready pilot, the fleet advisory services, and the Clean Medium-Duty and Heavy-Duty Innovation prize.[25] In the nearly two years that have elapsed since the Commission ordered the creation of those programs, however, multiple events have occurred impacting the State's MHDV electrification pathway. Governor Hochul signed legislation that sets a goal of one hundred percent of MHDVs operating in the State being zero-emissions by 2045 "everywhere feasible."[26] The DEC adopted the Advanced Clean Truck Rule ("ACT Rule"). And a recent budget agreement by Governor Hochul and State legislators committed the State to fully electrifying the State's 50,000 school buses by 2035.[27] PSC action is needed now to ensure that sufficient charging infrastructure will be available on a timeline that meets these goals. Immediate action is particularly important for supporting the goals of the ACT Rule, which will start driving the deployment of electric MHDVs in New York in 2024. This will require *promptly* modifying and improving upon the currently authorized MHDV programs, as

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[23] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Petition of CALSTART, Environmental Defense Fund, Natural Resources Defense Council, Sierra Club, South Bronx Unite, and WE ACT for Environmental Justice for the Initiation of a Proceeding and Interim Measures Addressing Electric Vehicle Supply Equipment and Infrastructure for Medium- and Heavy-Duty Electric Vehicles (May 11, 2022) [hereinafter "MHDV Petition"].

[24] Atlas Public Policy, *U.S. Medium- and Heavy-Duty Truck Electrification Infrastructure Assessment* (*see* Appendix A).

[25] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs, at 5–6 (July 16, 2020).

[26] A4302, 2021-2022 Leg., Reg. Sess. (N.Y. 2021); *see also* Press Release, In Advance of Climate Week 2021, Governor Hochul Announces New Actions to Make New York's Transportation Sector Greener, Reduce Climate-Altering Emissions (Sep. 8, 2021), *available at* https://www.governor.ny.gov/news/advance-climate-week-2021-governor-hochul-announces-new-actions-make-new-yorks-transportation.

[27] *See* Rachel Silberstein, *New York Schools Have Five Years to Begin Electric Bus Conversion*, Albany Times Union (Apr. 13, 2022), *available at* https://www.timesunion.com/news/article/New-York-schools-have-five-years-to-begin-17072485.php.

the immediacy of the need makes it unlikely a new, comprehensive program can be developed, receive stakeholder input, approved, and implemented in time to satisfy the near-term charging need.

Third, a comprehensive stakeholder process is needed to address the full suite of issues relevant to electric MHDVs in order to create a framework for this transition that is aligned with the State's long-term goals. This would include consideration of the infrastructure need, managed charging and other appropriate price signals, equity in access, ownership, and geographic distribution of chargers, and uniform standards for hardware and software, among others. Such a proceeding would also allow the Commission to hear from the full range of parties who will be impacted by and have specialized knowledge relevant to this transition and infrastructure buildout, including the fleets, vehicle manufacturers, charging providers, the leasing companies providing facilities to fleets, and the community members and environmental justice groups representing those harmed by today's truck and bus pollution.

Finally, building out the charging infrastructure to serve MHDVs will require forecasting when and where electrification will happen and planning necessary grid upgrades around those forecasts. The Draft Scoping Plan recognizes this, stating that "DPS should continue to work with the utilities to plan for expected service levels needed to support the electrification of MHD fleets, especially in Disadvantaged Communities where such depots tend to cluster."[28] As the plan recognizes, fleet vehicles typically have an uneven distribution across utility service territories, with high concentrations in commercial and industrial areas, and in or near disadvantaged communities. Maximizing near-term MHDV electrification in these communities as a tool for reducing local air pollution will require forecasts and planning that consider this clustering.

It is essential that the Council comprehend that thus far, the utility forecasting and planning process is largely not happening at the level of detail necessary to adequately support MHDV electrification. Several of the utilities are still only doing top-down forecasting that assumes even distribution of electric MHDVs across the service territory, with some utilities not including electric MHDVs in their current load forecasts in any form.[29] To accurately forecast the electricity demand from MHDV charging, and any distribution grid upgrades or non-wires alternatives needed in response to that demand, the utilities will need to do three things: First, all of the State's electric utilities need to include electric MHDVs in their load forecasts. Second, the utilities must align their forecasts with the State's targets and mandates for MHDV electrification. And third, the utilities must complete forecasts with sufficient levels of granularity to identify the heterogeneous distribution of MHDVs across service territories. Failure to do so will lead to significant delays as fleets are forced to wait to electrify while the utility completes infrastructure upgrades that should have been completed earlier had adequate forecasting and planning processes been in place, as well as increasing ultimate costs through unnecessary duplication when utilities do piecemeal plant additions that are inadequate to serve

[28] Draft Scoping Plan at 106–07

[29] *See* Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Presentation by the Joint utilities of New York with PSEG-LI/LIPA and in coordination with DPS Staff on EV Charging Load and Infrastructure Forecasting (Dec. 10, 2021), *available at* https://jointutilitiesofny.org/sites/default/files/JU%20EV%20Forecast%20Presentation_12.10.21.pdf.

load growth that is easily foreseeable. The PSC must ensure the utilities are implementing these processes.

D. When considering utilities' electricity rates and programs for electric vehicles, the PSC must recognize the unique characteristics, and potential value, of electric MHDVs

The Draft Scoping Plan recognizes the importance of designing electricity rates and other price signals to encourage managing EV charging and leveraging EVs as a grid asset in order to decrease costs for EV owners and for all ratepayers. The plan states that the PSC should direct the utilities to "implement programs that offer lower rates for or otherwise encourage off-peak charging and/or controlled, managed charging," and that the PSC and NYSERDA should study "how to maximize the value of ZEVs as grid-interactive assets and storage devices."[30] Further consideration of these issues by the PSC is a critical part of the transition to EVs, and a focus on the impact of these programs on MHDVs will be particularly important.

To date, the PSC has not completed a review of the electric rates available to electric MHDV charging customers to consider whether those rates are well-suited to encouraging managed charging where possible. In its July 2020 order creating the EV infrastructure make-ready program, the Commission declined to make changes to existing rates, stating that the topic would be reconsidered at the program's midpoint review, scheduled to begin no later than October 1, 2022.[31] In April 2022, in response to a statute passed in March 2022, the Commission initiated a proceeding to consider utility proposals for "alternatives to traditional demand-based rate structures to facilitate faster charging for eligible light duty, heavy duty, and fleet electric vehicles.[32] Due to that statute's focus on "faster" charging, however, this directive is not focused on use cases that can be well served by off-peak, managed charging, which will be a vital component of MHDV electrification if this transition is to happen without requiring significant overbuilding of the distribution grid to serve a large amount of unmanaged MHDV charging load. A more holistic examination of electric pricing for MHDV charging is urgently needed to ensure that the coming wave of MHDV electrification is affordable for all New Yorkers, and that its full benefits are harnessed.

Many electric MHDVs' operating cycles, with a relatively consistent number of miles driven per day and returning to a centralized depot when not operating, make them well-suited to employ managed charging. Time spent overnight at a depot can be used to charge during the off-peak period using lower power levels than would be needed if the vehicles relied on public fast chargers. This controlled charging can decrease charging infrastructure and electricity costs for

[30] Draft Scoping Plan at 104.
[31] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs, at 142–43 (July 16, 2020).
[32] Case 22-E-0236, *Proceeding to Establish Alternatives to Traditional Demand-Based Rate Structures for Commercial Electric Vehicle Charging*, Notice Soliciting Comments (Apr. 21, 2022); S7836, 2021-2022 Leg., Reg. Sess. (NY. 2021).

the vehicle operator and mitigate the need for distribution grid upgrades that increase rates for all customers. The upside potential, both for vehicle owners and other customers, can be even greater when charging is controlled not just through manually plugging and unplugging a vehicle, but through technology that automates vehicle-grid-integration ("VGI"). VGI encompasses both V1G (also known as managed charging), where technology and/or granular price signals enable vehicles to function as a grid asset by controlling when and how quickly they charge, and V2G, where vehicles shift from being a source solely of load to being a source of electric power. Both V1G and V2G allow vehicle owners and operators to provide a wide variety of services to the grid—ranging from peak reduction to energy storage to highly time-sensitive needs such as voltage support and frequency regulation.[33] The widespread deployment of intentional VGI will be essential as EV deployment grows significantly over the coming years, helping New York to achieve its climate and energy goals at lower cost than would otherwise be likely. The PSC should direct the utilities to ensure they make rates available to charging customers that incentivize EV owners to charge their vehicles in ways that benefit the grid and ratepayers.

It is also true that for some use cases, electric MHDVs will have limited capacity to serve as a grid asset, although eliminating tailpipe emissions from vehicles of these types is nonetheless crucial for meeting the State's climate and equity goals. These include long-haul trucks and vehicles that are used for multiple shifts per day. Together, these high-mileage vehicles produce a disproportionate share of the transportation sector's GHG emissions and local air pollution, and replacing them with electric and other zero-emission vehicles will produce outsized environmental and public health benefits for the State's residents. When electrified, these vehicles have significant electricity needs, require fast charging, and may regularly charge at multiple locations, characteristics that leave these vehicles with limited capacity to engage in managed charging, or to provide power and other services back to the grid. Proactive planning and action is needed to ensure the charging costs for these electrified vehicles is low enough to allow for their cost-effective operation even when they cannot provide substantial grid services, while ensuring that such charging does not result in unreasonable grid upgrade needs or excessive costs to ratepayers.

Finally, wholesale market rules and utilities' policies for allocating wholesale-level costs to individual customers may be unfairly burdening EV charging customers, and both the PSC and the New York Independent System Operator ("NYISO") should study whether current policies create an unreasonable barrier to charger deployment. As detailed in a recent letter from four

[33] *See* N. Deforest *et al.*, "Day ahead optimization of an electric vehicle fleet providing ancillary services in the Los Angeles Air Force Base vehicle-to-grid demonstration," *Applied energy*, 210, 987-1001 (Jan. 15, 2018), *available at* https://reader.elsevier.com/reader/sd/pii/S0306261917309418?token=E8D0250737AB10AAC9EEA328FB9BA69E84A169C21F6526EE5DAAC144A2C46CAB85BA8CF91F6B29DC4E33D2DFD65CF399. Other capabilities including demand charge management, integration of intermittent renewables, and peak load reduction, are being explored by Nuvve Corporation and American Honda Motor Co., Inc. *See* Nuvve Press Release, "Nuvve Corporation and Honda are Collaborating to Demonstrate the Benefits of Vehicle Grid Integration (VGI)," (April 25, 2019), *available at* https://www.prnewswire.com/news-releases/nuvve-corporation-and-honda-are-collaborating-to-demonstrate-the-benefits-of-vehicle-grid-integration-vgi-300837982.html.

members of Congress to the Federal Energy Regulatory Commission, experience in other RTOs suggests that charging station operators can face barriers to entry and economic operation as a result of at least two aspects of RTO-level capacity charges: capacity tags being established prospectively for initial the initial year of operation based on assumptions that are inappropriate for vehicle charging, and capacity obligations for subsequent years being set based on the coincidence (or lack thereof) between a specific customer's load and a small number of peak hours known only in retrospect.[34] Each of these issues, if applicable in New York, can give rise to unmanageably high capacity charges applicable to charging customers with fairly low overall consumption, while failing to provide affected customers with actionable market signals that would enable them to mitigate their grid impact.

E. Several types of incentives may be needed for MHDVs, and multiple agencies will need to work collaboratively to find the right mixture, and targets, for those incentives.

EDF agrees with the Draft Scoping Plan's statement that incentives are needed for electric MHDVs and their charging stations.[35] While the total cost of ownership for many of these vehicles is decreasing and is expected to quickly reach parity with their fossil fuel equivalents, that benchmark has not yet been reached, and at this point in time, the upfront cost of the vehicles and of the requisite charging infrastructure remains a barrier. This is particularly true for small fleets, which often lack access to the capital and financial instruments to cover the upfront investment in zero-emission MHDVs. Incentives are necessary both to encourage faster overall adoption of zero-emission MHDVs, and to making the deployment of these vehicles more equitable by allowing all types and sizes of fleets to operate them. Incentives can take multiple forms, including purchase incentives that subsidize up-front costs, market incentives that allow MHDV owners to access new revenue streams and internalize existing market externalities, and financing incentives that allow up-front costs to be spread over a longer period or future value to be accessed sooner. Determining which of these incentives are needed for zero-emission MHDVs, and the scale and characteristics of those incentives, will require cross-agency collaboration by NYSERDA, DEC, DOT, and the PSC, as well as robust stakeholder involvement.

The first barrier for fleet owners considering switching from diesel to electric vehicles includes the up-front cost not only of new vehicles and charging stations but also make-ready infrastructure. Effectively overcoming that barrier will require incentives and financing that address it in full. Utility-side make-ready (the electrical infrastructure installation and upgrades outside of a customer's meter) and customer side make-ready (electrical infrastructure

[34] Letter from Senator John Hickenlooper, Senator Tillis, Representative Kuster, and Represented Johnson to the Federal Energy Regulatory Commission (June 16, 2022), *available at* https://elibrary.ferc.gov/eLibrary/filedownload?fileid=C570DAC5-C789-C37F-B7F5-81875A000000. RTO, or Regional Transmission Organization, is functionally synonymous with ISO, or Independent System Operator. These organizations are responsible for operating the transmission-level electricity market in the regions in which they operate.

[35] Draft Scoping Plan at 105.

installation and upgrades between the meter and the charging station) are essential parts of charging infrastructure. The type, size, and location of the fleet will determine what infrastructure is needed on both sides of the meter and its cost. As detailed in the attached petition appended hereto as Appendix A, the PSC must take action to ensure make-ready costs are allocated fairly, and that the necessary programs and incentives are in place to ensure that make-ready infrastructure costs do not hinder the MHDV electrification that is demanded by State policies and the overarching emissions limits established by the CLCPA. Beyond the PSC, however, the Council and New York State's government as a whole must realize that electric vehicles simply will not be competing on a level playing field against diesel vehicles unless and until their infrastructure needs are met, and that to the extent it is impracticable or inequitable for fleets or for other electric ratepayers to bear the full cost of overcoming this hurdle, making this infrastructure more affordable or funding it directly, as discussed below in Part II.F, is an appropriate, even essential, use of public funds.

As discussed above in Part II.D of these Comments, electricity rates and other price signals must encourage managing EV charging and leveraging EVs as a grid asset in order to decrease costs for EV owners and for all ratepayers. Programs designed to facilitate MHDV electrification should also recognize, and incentivize, the value of distributed energy resources ("DERs") as a tool for decreasing costs for both individual charging customers and for all ratepayers. In addition to MHDVs' own ability to function as DERs, co-locating other DERs, such as solar and battery storage, with high-capacity chargers can help vehicle owners and operators decrease their vehicles' peak power demand from the grid (i.e., peak shaving), and shift when that power is consumed (i.e., load shifting). Both peak shaving and load shifting save all ratepayers money by allowing for more efficient use of the electric grid and mitigating the need for the utility to invest in grid upgrades, and it is important for charging customers themselves to experience price signals that enable them to lower their electric bills by leveraging these approaches.[36] The PSC has a long history of encouraging the development of DERs, particularly targeting their ability to reduce grid costs. But to ensure that DERs other than EVs are leveraged specifically to make efficient charging behavior possible, programmatic encouragement including incentives for suitable DERs co-located with charging are likely needed, especially in the early years of this transition while fleets and utilities are just beginning to make their way up the MHDV electrification learning curve.

Moreover, even without co-located DERs, some MHDVs may be useful as grid assets in and of themselves. Many MHDVs spend a significant amount of time parked, often in their home depots or in other locations to which they travel regularly. When they are parked, they can, at least in principle, be connected to the electric system, and keeping them adequately charged can be seamlessly integrated with their other ongoing activities. When electric vehicles charge in these circumstances, they are well positioned to charge in an intentional, managed fashion, and

[36] *See* Gladstein, Neandross & Associates, *California Heavy-Duty Fleet Electrification Summary Report* 55, March 2021(estimating that peak load reduction could be on the order of megawatts for fleets with solar and storage collocated with EVSE), *available at* http://blogs.edf.org/energyexchange/files/2021/03/EDF-GNA-Final-March-2021.pdf.

can even provide services to the grid. School buses, for example, typically sit parked during the middle of the day, when a high level of solar power is often available on the grid, and overnight, when total electricity demand is low. Some of them also spend much of the summer, when electricity demand is typically highest, going totally unused. This gives them the potential to serve as an enormously valuable resource, charging up using cheap, excess renewable energy, and providing power back to the grid when it is most needed.

The large batteries in most electric MHDVs also make them a potentially significant source of resiliency during a time of increasing extreme weather events. During grid outages, an electric truck or bus can become a mobile emergency battery that can power buildings and keep places like hospitals and schools open, warm, and safe for those in need. New York's recent commitment to electrify its statewide fleet of 50,000 school buses by 2035 is an enormous opportunity to leverage these vehicles as a tool for the larger energy transition, and these buses represent just a small fraction of the potential grid and resiliency value of all MHDVs in New York. Making sure that electric MHDVs are operated in a manner that allows them to serve both as grid assets during normal operations, and a source of emergency power during outages, will require the existence of programs that facilitate owners' deploying them in this manner and that allow owners to be compensated for the value they thus provide to other customers.

In addition to those incentives intended to compensate MHDV owners for value they provide to others, separate incentives may be needed to directly spur the deployment of these vehicles at a faster rate than business-as-usual market update or to unlock non-grid-related benefits that are not readily monetized. This could include, for example, subsidies for vehicle purchases or payments for those fleets available to provide resiliency for essential services during grid outages and other emergencies. Such incentives should be scaled to support the necessary rate of vehicle deployment in line with State goals. Current incentive levels and their impact on vehicle deployment should be monitored and regularly reconsidered by the relevant agencies to ensure that limited available funding is prioritized for specific goals and is supporting the achievement of those goals. The timeline for any decrease or phase out in these incentives should be based on the observed pace of the transition to zero-emission MHDVs, rather than specific dates. For example, incentive levels could be set to decrease or phase out based on certain metrics being reached such as the percentage of sales or total operating MHDVs that are zero-emission, or when the cost premium for a vehicle class falls below a set dollar amount.

F. The State must identify funding sources beyond electricity rates to accelerate the transition to electric vehicles

Electric grid additions to support new demand are normally paid for by some combination of utility customers. Some improvements are paid for directly by the customers who are the source of the new demand, while the costs of other improvements are shared by some or all ratepayers. And under some circumstances, new demand can be net-beneficial to all involved, including non-participating ratepayers (that is, ratepayers who are not the source of the new load but would typically be paying, through their rates, for the cost of certain system additions), because new

load that improves system utilization can have the effect of reducing the total amount of system costs that must be recovered through every unit of energy consumption or demand. In fact, a Synapse study of new light-duty EV load in California from 2012 to 2017 examined the actual impact of that load, and found that it exerted a "downward pressure on rates"[37] – precisely the impact one would expect from new load that is not costly to integrate in the first place, and capable of manifesting primarily during periods of total system utilization (i.e., privately owned electric cars were largely able to charge off-peak, in the middle of the night, at low-capacity home chargers). That is, although some system additions were needed to serve the new load, the overwhelming impact was beneficial, presumably because the mostly fixed costs of the system were spread over more kilowatt-hours of usage.

As discussed above, MHDV electrification, like other elements of the energy transition, is likely to entail some real upfront costs for the grid, and it is not yet known whether and to what extent charging behaviors from these vehicles will have net beneficial grid impacts. Of course, the utilities and their regulators must do what they can to incentivize the most efficient possible approaches to grid additions, make-ready, and vehicle-grid integration. But as noted above, some amount of subsidy will likely be needed to overcome upfront cost barriers, for vehicle/battery purchases as well as make-ready and grid additions, and it is unwise to expect or require electric ratepayers to shoulder the full costs of all those subsidies, for two reasons: First, the total cost of energy transition is a society-wide need, not just an electric system need, and electric rates are not necessarily the most equitable way to allocate societal costs. Second, by raising the cost of electric service, assigning the cost of energy transition specifically to electric ratepayers will decrease the competitiveness of electricity compared with other fuels – perversely creating a disincentive to electrification.

To that end, urgent attention is needed to identifying funding sources other than ratepayers to overcome some upfront cost barriers. Ideally, these costs, which should be understood as urgently needed pollution mitigation, would be paid particularly by today's polluters. As detailed in Section III of these comments, policies such as cap-and-invest and polluter fees can help to fill this void. These programs serve the dual purpose of creating an emissions backstop and providing a revenue stream, funded by polluters, for clean energy investments including vehicle electrification. To the extent public funding is available, whether from federal sources such as the IIJA or state sources such as the New York State Green Bank, the *Clean Air, Clean Water, and Green Jobs Bond Act*, or some form of cap-and-invest or polluter fees, we recommend that—where possible—such funding be leveraged in a manner designed to attract additional private investment, in order to grow the total funding available for overcoming upfront cost barriers to transition.

[37] Synapse Energy Economics, *Electric Vehicles Are Driving Electric Rates Down* (Feb. 2019), *available at* https://www.synapse-energy.com/sites/default/files/EVs-Driving-Rates-Down-8-122.pdf.

III. Economy-Wide and Cross-Sector Solutions

EDF has worked on policies that limit economy-wide pollution for decades across dozens of states and countries. Through that experience and associated research, EDF has found that economy-wide policies are critical for meeting ambitious emission reduction targets. To that end, inclusion of an economy-wide emissions reduction program in New York is critical to "ensur[ing] the attainment of the statewide greenhouse gas emissions limits established"[38] in the CLCPA. Any economy-wide emissions backstop program must be designed to ensure benefits in disadvantaged communities and is not a substitute for targeted or sector-specific policies offering no-regrets opportunities to drive decarbonization shifts or create local health benefits, especially in disadvantaged communities. As the State considers a wide range of sector-specific decarbonization strategies in its Scoping Plan, the inclusion of an economy-wide program, as part of a suite of climate policies, is a necessary piece of the climate policy puzzle as it offers several significant and specific advantages sector-specific programs do not. Four key advantages of economy-wide programs include the following:

- An economy-wide program that is capable of establishing a limit on overall emissions acts as a backstop, increasing the certainty of emission reductions consistent with the State's GHG reduction targets in a way that sector-based and technology-focused policies alone cannot;
- An economy-wide program can raise revenue to invest in other policies to reduce emissions, such as grant programs to drive the adoption of zero-emission technologies and address racial, social, and economic injustice through targeting co-pollutant reductions, job creation, and economic development in disadvantaged communities;
- An economy-wide program can support and complement all other policies to reduce GHG emissions by providing a consistent price signal for reducing GHG emissions that ensures no cost-effective reduction opportunity is missed, avoids unintended and counter-productive incentives, creates a reduction incentive that does not rely on predicting the future of decarbonization technology, and has the potential to incentivize early and deep reductions, especially in sectors where the future of decarbonization is the most uncertain; and
- An economy-wide program helps maximize cumulative GHG emission reductions by setting year-over-year backstops on total emissions consistent with a declining trajectory toward the State's goals. This facilitates increased emission reductions between target years and staying within the State's multi-year "carbon budget," which is essential to preventing the most damaging long-term climate impacts.

A. Securing Emission Reductions

Based on EDF's extensive experience and analysis of climate policy solutions, a crucial component of any climate regulation is establishing an effective economy-wide limit on climate pollution that declines over time and is consistent with science-based targets. The certainty of emission reductions relates directly to how firm the pollution limit is designed to be. Broadly, we

[38] N.Y. ECL §75-0103.

believe there are two viable policy designs that can help establish an effective economy-wide limit: an economy-wide cap on emissions and a polluter fee.

1. ***Economy-Wide Cap on Emissions.*** One option for limiting GHG emissions in line with the State's goals would be to adopt regulations establishing a binding, declining emissions limit across all major sources of climate pollution. Under this policy scenario, the State would set an annual, progressively-declining limit on GHG emissions across some large subset of the economy—typically all major emitting sectors, with smaller ones exempted[39]—and establish protocols for the distribution of emission permits that do not exceed that limit.

   Any policy putting in place an economy-wide cap on emissions can and must be designed to protect disadvantaged communities, which we elaborate on in Part III.B below. In most existing cases where an economy-wide cap has been put in place, it has been as part of a *cap-and-invest* or *cap-and-trade* program. Such programs limit total climate pollution by requiring regulated entities to hold emission allowances equal to their total GHG pollution for a given year, and typically include emission credit auctions where regulated entities purchase credits from the state as well as opportunities for trading those credits.[40] However, emissions cap policies can be designed to limit—or even eliminate—trading provisions or use of offsets in cases where such measures lead to adverse impacts in disadvantaged communities.[41]

   New York already has significant experience with these types of programs through its participation in the Regional Greenhouse Gas Initiative, which limits emissions from power plants across twelves states in the Eastern U.S. EDF has supported development of similar models in states across the country, including active economy-wide or multi-sector programs in California[42], Washington[43], and Oregon[44]. While these programs all include some sort of auction or trading provisions, the essential part of each policy is the cap—by establishing a backstop in the form of an overall cap on yearly emissions, these programs have greatly increased the certainty of *overall* emission reductions in these jurisdictions.

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[39] *See* 17 Cal Code Reg. 95801–96022 (2019).

[40] See Resources for the Future, *Carbon Pricing in Oregon* (Jan. 2019), *available at* https://media.rff.org/documents/Rpt_19-01_Oregon.pdf; Resources for the Future, *Lessons Learned from Three Decades of Experience with Cap-and-Trade* (Nov. 2015), *available at* https://www.rff.org/publications/working-papers/lessons-learned-from-three-decades-of-experience-with-cap-and-trade/.

[41] For more on designing emissions caps in ways that support environmental justice priorities, *see* Nicky Sheats, *Achieving Emissions Reductions for Environmental Justice Communities Through Climate Change Mitigation Policy*, 41 William & Mary L. Pol. Rev. 378 (2017).

[42] *See* Environmental Defense Fund, *California Leads Fight to Curb Climate Change*, *available at* https://www.edf.org/climate/california-leads-fight-curb-climate-change.

[43] *See* Environmental Defense Fund, *Governor Inslee is Leading the Race Against Climate Change. Other Governors Should Keep Up* (May 18, 2021), *available at* https://blogs.edf.org/climate411/2021/05/18/governor-inslee-is-leading-the-race-against-climate-change-other-governors-should-keep-up/.

[44] *See* Environmental Defense Fund, *Oregon's New Climate Protection Program Helps Move Governor Brown's Climate Pledge to Policy, But Gaps Remain* (Dec. 16, 2021), *available at* https://www.edf.org/media/oregons-new-climate-protection-program-helps-move-governor-browns-climate-pledge-policy-gaps.

Emissions caps must also be designed to complement targeted, sector-based policies to drive GHG reductions. We believe the Climate Action Council should consider a full range of design options that could retain the benefits of a firm cap on GHG emissions while also promoting equitable outcomes through policy solutions within the pricing structure and more broadly in the larger climate policy portfolio.

2. ***Polluter Fee.*** Alternatively, a carbon pricing program that establishes a tax or fee on emissions can limit GHGs to a specific, established target (like those included in the CLCPA) so long as the price is initially set based on robust modeling of what is required to meet the reduction trajectory and there is a robust mechanism to automatically increase the fee or institute other reductions strategies if targets are missed or are projected to be missed. Unlike a cap on emissions, a polluter fee does not establish a maximum amount of climate pollution that can be emitted in a given year. For this reason, and as the draft Scoping Plan notes, carbon fees do not create the same level of emission reduction certainty as cap-and-invest programs, because they typically rely on the market to adjust carbon emissions according to the price signal established by the fee. However, an adjustment mechanism, often referred to as a tax adjustment mechanism ("TAM")[45] or an emissions assurance mechanism ("EAM"),[46] would allow the State to increase those fees if targets are missed or are projected to be missed. EDF recommends that any polluter fee program established by the State of New York include a TAM to maximize the probability that the policy achieves the CLCPA emissions targets.

   However, in order for a TAM to effectively limit emissions, several policy design components are necessary. First, the TAM must be able to ratchet polluter fees automatically, without additional legislative action or rulemaking (requiring legislative action to change the fee is likely to be too cumbersome and uncertain to enable the fee to act in a timely way and therefore as an effective limit[47]). In addition, New York regulators considering use of a polluter fee should: 1) maintain an up-to-date emission inventory that is established through emissions reporting subject to third-party verification, so that any upward fee adjustment can be effectively implemented in a timely manner; 2) frequently—at least once a year—compare measured emissions (from the inventory) to reduction targets, and make any needed adjustments to the carbon fee;[48] and 3) ensure price adjustment levels are high enough to make a meaningful impact, with a focus primarily on ensuring the State does not overshoot its emission reduction targets

[45] *See* Resources for the Future, *Carbon Tax Adjustment Mechanisms (TAMs): How They Work and Lessons From Modeling* (Aug. 2020), *available at* https://www.rff.org/publications/issue-briefs/tams-how-they-work-and-lessons-modeling/.

[46] *See* Hafstead, M., Metcalf, G. E., & Williams III, R. C. *Adding quantity certainty to a carbon tax through a tax adjustment mechanism for policy pre-commitment*, 41 *Harv. Env't. L. Rev. F.*, *41* (2017); Metcalf, G. E., Resources for the Future, *An emissions assurance mechanism: adding environmental certainty to a US carbon tax* (2018), *available at* https://www.rff.org/publications/reports/an-emissions-assurance-mechanism-adding-environmental-certainty-to-a-carbon-tax/.

[47] Metcalf, *supra* note 46, at 2–3.

[48] Hafstead, M., Metcalf, G. E., & Williams III, R. C., Resources for the Future, *Designing and evaluating a US carbon tax adjustment mechanism* (2020), *available at* https://media.rff.org/documents/WP_20-04.pdf.

and keeping cumulative emissions in check.[49] Other considerations of how a pollution fee can increase the certainty of keeping climate pollution at safer levels will need to be considered, but we believe these are essential for any polluter fee to effectively act as an economy-wide emissions backstop. The Climate and Community Investment Act ("CCIA") is a good example of a robust NY polluter fee proposal that includes such an adjustment mechanism.[50]

In terms of meeting the State's emission reduction goals, the unique advantage of inclusion of one of these two economy-wide policies in New York is that, if designed well, it can act as a backstop that greatly increases the certainty that GHG emissions do not exceed levels consistent with what climate science tells is necessary and what the CLCPA requires. Absent such a backstop, regulators have limited options for meeting climate targets if sector-specific policies fall short of intended reductions. Given the significant uncertainty associated with any targeted climate mitigation policy, this backstop is a critical piece of ensuring overall emissions decline as intended.

B. Ensuring Reductions in Disadvantaged Communities

Any climate policy or program being considered by the State of New York, including economy-wide policies, can and must be designed to ensure beneficial outcomes for disadvantaged communities. While programs designed to reduce GHG emissions frequently have significant positive impacts on reductions of the local pollutants that have severe impacts on public health,[51] additional protections are necessary to ensure that policies do not perpetuate disproportionate impacts experienced by disadvantaged communities and achieve significant positive impacts. These considerations are important for evaluating all climate policies, but particularly so for economy-wide policies designed to offer compliance flexibility to reduce the cost of decarbonization and increase ambition.

For these reasons, economy-wide emission regulations, including economy-wide caps or polluter fee programs, must be deliberately and thoughtfully designed to ensure that polluters are unable to simply pay to continue polluting in disadvantaged communities. *This means that sources directly contributing to disproportionate pollution burdens should be subject to additional requirements and those requirements should be designed to reduce harmful pollution in disadvantaged communities*. This can be accomplished through limiting compliance flexibility within the pricing program and/or adopting additional policies that target cumulative pollution burden to ensure health benefits accrue directly in disadvantaged communities. For example, in 2021 EDF developed proposed climate pollution regulations in Colorado that allowed for flexibility in meeting economy-wide pollution limits, but that prevented such flexibility by banning credit trading by any facility that violated an air quality permit or that was found to

[49] *Id.*
[50] S4264A, 2021-2022 Leg., Reg. Sess. (N.Y. 2021).
[51] *See* Environmental Defense Fund, *How Are Our Air and Climate Connected?*, *available at* https://www.edf.org/health/how-are-our-air-and-climate-connected.

contribute to cumulative air pollution burden in a disadvantaged community.[52] Instead, EDF proposed that such facilities be subject to facility-level emissions limits to ensure reductions of harmful local air pollutants. When considering facility-level emissions limits, regulators should ensure they are calibrated to both 1) create substantive reductions in co-pollutants in the overburdened community that the facility is impacting, and 2) ensure the State achieves its overall greenhouse gas emissions targets.

C. Revenue Use

An important consideration for any economy-wide policy is the extent to which it generates public revenue, and how such revenue is allocated. Cap-and-invest and polluter fee policies both have the potential to generate significant public revenue, which is an advantage over alternatives like a tradable performance standard. Cap-and-invest and polluter fee programs can successfully facilitate distribution of revenues from polluting companies to communities in order to address economic inequity and distributive injustices in ways that other policies cannot. To that end, it is important that revenues raised by polluter fee or cap-and-invest be allocated in compliance with New York law, which requires that at least 35-40% of the overall benefits of spending accrue directly to disadvantaged communities.[53] Based on years of learning from the work of our environmental and social justice colleagues in locations with carbon pricing already in place, EDF believes that promoting equitable outcomes through revenue investment is critically important for any economy-wide program. Moreover, these investment decisions must center the voices of those most likely to be directly impacted and potentially benefited rather than the voices of national focused organizations like ours. We believe the revenue allocation approach in the CCIA is one strong example of how funds can be used to benefit disadvantaged communities and just transition.

As one component of this requirement—or ideally in addition to it—revenues should be used to reduce any possible regressive economic effects of such a policy, for example through cash rebates to low- and moderate-income households to hold them harmless, on average, for any increased energy costs. Low- and moderate-income households are much more likely to be energy-burdened,[54] meaning they use a significantly greater portion of their income to cover costs for basic energy services like electricity and home heating. According to analysis performed by NYSERDA published in 2016, New York's low-income households spent on average 12.9% of their income on household energy and moderate-income households spent

[52] Environmental Defense Fund, *EDF Petitions Colorado Air Quality Control Commission to Establish Legally-Binding Climate Pollution Limit* (Dec. 23, 2020), *available at* https://www.edf.org/media/edf-petitions-colorado-air-quality-control-commission-establish-legally-binding-climate.
[53] N.Y. ECL § 75-0117.
[54] The U.S. Department of Energy defines energy burden as the total percentage of household income spent on home energy including electricity, natural gas, fuel oil, or other home heating fuels. *See* U.S. Department of Energy, *Low-Income Community Energy Solutions*, *available at* https://www.energy.gov/eere/slsc/low-income-community-energy-solutions#:~:text=Energy%20burden%20is%20defined%20as,which%20is%20estimated%20at%203%25. Average energy burden among low-income households nationwide is 8.6% as of 2020. *Id.*

6.4% of their income on household energy, as compared to just 2.4% by all other households.[55] Revenues generated by cap-and-invest or polluter fee programs can also be directed to support just transition efforts for workers and communities economically displaced by the transition to a low-carbon—and increasingly electrified—economy.

In addition to overall expected revenue from economy-wide programs, the certainty of revenues in a given year is also an important consideration. While an economy-wide cap on emissions increases the certainty of overall emission reductions, conversely a polluter fee typically offers more certainty in the level of associated revenues in any given year. This is because a traditional polluter fee or tax establishes a set price per unit of pollution, whereas cap-and-invest allows the market to determine the price (of permits) through trading. This does not mean that a polluter fee eliminates all uncertainty—for example, how polluters change behavior in response to the price will determine overall revenues, and a TAM may adjust upward to meet emission reduction targets, meaning there are still revenue uncertainties with polluter fee programs. Cap-and-invest policies can also be designed to limit revenue uncertainty, commonly by setting a "price collar"—minimum and maximum permit price levels.

D. Driving Cumulative Greenhouse Gas Reductions

Climate scientists and the Intergovernmental Panel on Climate Change broadly agree that acting now to reduce greenhouse gas emissions has both near- and long-term benefits. For example, reducing emissions of short-lived climate pollutants (e.g. methane)—which govern the rate of warming—is crucial for slowing the pace of warming and limiting associated damages. Reducing emissions of long-lived climate pollutants (e.g., carbon dioxide)—which govern the maximum extent of warming—is crucial for limiting the overall amount of warming we experience in the long-term. This is because long-lived climate pollutants can last for centuries in the atmosphere, thus committing us to warming for generations to come. The amount of long-lived climate pollutants (such as carbon dioxide) emitted in any single year is less important than the overall amount emitted over several decades. In order to limit the cumulative amount of long-lived climate pollutant emissions, State leaders need to act quickly and implement policies that reduce emissions with the urgency the problem demands—with a consistent and persistent downward trajectory over the course of this decade that aligns with estimated carbon dioxide budgets.[56]

Putting in place economy-wide emissions regulations can help secure and maximize cumulative GHG emission reductions. Economy-wide policies set year-over-year backstops on total emissions consistent with a declining trajectory toward the State's goals, thus greatly increasing the likelihood of staying within the State's multi-year "carbon budget." In other words, the limits

[55] NYSERDA, *NYSERDA Low- to Moderate-Income Market Characterization Study: Special Topic Report – Household Energy Burden* (2016), *available at* https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/Program-Evaluation/2017ContractorReports/LMI-Special-Topic-Rpt---Energy-Burden.pdf.

[56] Intergovernmental Panel on Climate Change, *IPCC Special Report on Global Warming of 1.5°C, Chapter 2: Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development* (2018), *available at* https://www.ipcc.ch/sr15/chapter/chapter-2/.

on emissions that economy-wide regulations establish allows the State to not only hit point-in-time emission reduction targets as established by the CLCPA—a 40% reduction by 2030 and 85% reduction by 2050, compared to 1990 levels—but also increases cumulative emission reductions between target years. This is essential to preventing the most damaging long-term climate impacts.

In addition to requiring emission reductions year-over-year and thus providing a high degree of certainty with respect to cumulative reductions over time, an economy-wide program also reduces cumulative emissions by creating incentives to decarbonize more quickly and by fostering innovation even in hard-to-decarbonize sectors, without needing to predict where the optimal reduction opportunities will be years from now. By driving regulated entities to shift toward lower-emission economic activity based on a price signal, the program also supports achieving lowest-cost emission reductions first, with the ability to directly support as well as complement other policies that deliver protections for disadvantaged communities. Because the transition to lower-carbon technologies is unlikely to be reversed in future years, those earlier reductions are "locked in" in subsequent years, and lead to lower total cumulative reductions.

In summary, economy-wide and cross-sector policies are critical components of reducing climate pollution. They are currently unique among other climate policies in their capacity to establish an emissions backstop, which significantly increases the certainty of GHG reductions. These policies can be designed in ways that also increase the certainty of co-pollutant reductions in disadvantaged communities; they raise revenues that can be used to advance environmental justice and drive emission reductions through other programs; and by establishing a price signal, they reduce the relative cost of low-carbon technologies as compared to higher-carbon alternatives.

It is also important to acknowledge that both cap-and-invest and polluter fee policies have limitations, which can be addressed through thoughtful policy design. Examples of limitations of generic cap-and-invest and polluter fees include lack of targeted reductions in disadvantaged communities, the potential for allowance trading or offsets to displace emission reductions that improve public health, and the potential inducement of emissions leakage. Without significant attention to program design to ensure emission reductions in disadvantaged communities and that revenues are used to support those communities, emissions caps and polluter fees will only act to reduce overall emissions across the entire state without consideration of where those emissions are coming from. This limitation can and should be addressed through careful policy design within the pricing policy or in the greater climate portfolio, for example by limiting both allowance trading and the use of offsets, particularly where they could reduce direct pollution reductions in disadvantaged communities as described in detail in Part III.B. Targeting investments to overburdened communities and developing companion policies directly targeting local pollution burdens are additional ways of ensuring strong benefits for disadvantaged communities.

Together, these considerations lead to three key takeaways:

1) Economy-wide climate policies—namely either an emission cap or a polluter fee—offer an essential complement to other policies by adding an emissions backstop, creating a means of raising revenues, and incentivizing low-carbon solutions;
2) Either an emissions cap or polluter fee can and must be designed to advance critical intersectional climate priorities including racial and social justice; and
3) Each policy solution allows for, and benefits from, the range of policies designed to drive sector-specific emission reductions such as performance standards, infrastructure investments, tax incentives, and other policies the State has identified in other sections of the draft Scoping Plan.

IV. Gas System Transition

Natural gas is primarily composed of methane, and the extraction, transportation, and combustion of natural gas emits greenhouse gases that contribute to climate change. New York must dramatically reduce reliance on natural gas to achieve the emission reduction obligations established by the CLCPA.

According to the most recent New York State Greenhouse Gas Emissions Report, the buildings sector was the largest source of emissions in the state.[57] Natural gas combustion in residential, commercial, and industrial buildings was responsible for almost 50 million metric tons ("mmt") carbon dioxide equivalent ("CO2e") in New York in 2019, and natural gas leakage—fugitive methane emissions—accounted for 14 mmt CO2e.[58] The Report also found that upstream, out-of-state emissions associated with in-state natural gas use amount to 59 mmt CO2e.[59]

The Draft Scoping Plan correctly acknowledges that the natural gas distribution system—which was designed to deliver natural gas and intended to expand to continuously serve new customers—is unlikely to fit New York's future energy needs. The Plan states that "electrification of space and water heating with high efficiency heat pumps is a viable, cost-effective approach to decarbonizing operations for nearly all buildings in New York."[60] Accordingly, the "current gas distribution system . . . will need to be downsized substantially," as "the vast majority of current fossil gas customers (residential, commercial, and industrial) will transition to electricity by 2050."[61]

Achieving this transition will require comprehensive planning and investment. In the Final Scoping Plan, the Climate Action Council should support the creation of durable frameworks that facilitate the transition of the gas system consistent with CLCPA targets, while protecting customers. EDF presents the following recommendations to achieve this objective: (A) the

[57] Statewide GHG Emissions Report, *supra* note 6, at iii; *see also* Draft Scoping Plan at 119.
[58] *2021 NYS Greenhouse Gas Emissions Report, Sectoral Report #1: Energy*, *supra* note 8, at 7, Table SR1.7 (Jan. 2021); *id.* at 11, Table SR1.12.
[59] *Id.* at 14, Table SR1.15.
[60] Draft Scoping Plan at 120.
[61] Draft Scoping Plan at 264.

Council should provide guidance and support to the New York Public Service Commission as it undertakes transition planning and gas utility long-term planning; (B) the Council should seize low-hanging fruit to reduce methane emissions from gas pipelines in the near-term; and (C) the Council should exercise caution and restraint regarding low-carbon fuels.

A. Gas System Downsizing and Long-Term Gas Utility Planning

The Draft Scoping Plan aptly summarizes the need for a managed transition off natural gas, stating: "A well-planned and strategic transition of the [gas distribution] system, requiring coordination across multiple sectors, is needed to ensure the transition is equitable and cost effective for consumers without compromising reliability and safety."[62] As the Draft Scoping Plan acknowledges, there is a need for statewide analysis of the best path to downsize the gas system, as well as utility-specific analysis and planning.[63]

1. An Unmanaged Contraction of the Gas System Would be Costly, Particularly for Low- and Middle-Income Ratepayers

Reducing gas use in buildings is expected to lead to a reduction in the gas utility customer base, a diminished need for existing gas distribution infrastructure, and an accelerated time horizon for decommissioning of gas assets.[64] These pathways pose potentially significant risks for gas utilities and ratepayers without proactive management. Successful building electrification efforts should obviate the need for delivered gas in certain areas, rendering existing gas infrastructure no longer "used and useful" well before the conclusion of its originally anticipated useful life, resulting in stranded assets.

But in rate cases before the Commission, many gas utilities continue to rely on traditional assumptions that they will maintain and expand their existing gas distribution systems and depreciate assets at historic rates. In a recent gas utility rate case, an EDF analysis found that the utility's proposed depreciation rates would leave an undepreciated balance of $186 million in 2050, and the utility would be recovering the costs of existing gas infrastructure until 2086.[65] As an alternative, EDF presented an illustrative scenario under which all gas mains and services would be fully depreciated by 2050; and other stakeholders observed that it could be more appropriate to use a shorter average depreciable life of 15 or 20 years for gas infrastructure, to

[62] Draft Scoping Plan at 264.
[63] *See* Draft Scoping Plan at 267.
[64] *See* EDF, Managing the Transition: Proactive Solutions for Stranded Gas Asset Risk in California (2019), *available at* https://www.edf.org/sites/default/files/documents/Managing_the_Transition_new.pdf.
[65] This analysis considers the largest plant accounts: transmission and distribution mains accounts and distribution services accounts. *See* NYPSC Case No. 20-G-0381 et al., *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Gas Service*, Direct Testimony of James Garren on behalf of Environmental Defense Fund, at 24-27 (Nov. 25, 2020), *available at* http://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=256482&MatterSeq=63187.

reflect the expectation that segments of the distribution system may be retired well before 2050.[66]

While more analysis is needed to determine the best approach to winding down gas infrastructure investments, it is clear that the disparity between climate goals and current depreciation and ratemaking policies must be reconciled. Addressing this problem is consistent with the industry standard NARUC Depreciation Manual, which acknowledges multiple factors that drive retirement of utility infrastructure, including "requirements of public authorities," i.e., law and policy.[67]

Stranded gas assets—where the utility has not recovered all the costs of an asset that is no longer useful—could drive increasing rates and create the potential for a utility death-spiral effect. Higher gas rates will lead customers to electrify more quickly and further raise the rates for remaining customers.[68] Low-income ratepayers who are least able to make the up-front investments required to electrify could then be hardest hit by higher gas utility bills.[69]

According to a preliminary analysis by The Brattle Group for EDF, if a generic New York gas utility continued to operate under a "business as usual" scenario while 60% of its residential customers converted to electrification by 2040,[70] remaining gas customers would experience a 71% rate increase from 2020 to 2040, holding constant other variables:

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[66] *See* NYPSC Case No. 20-G-0381 et al., *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Gas Service*, Rebuttal Testimony of Ezra Hausman, Ph.D., on behalf of Sierra Club and Natural Resources Defense Council, at 13-15 (Dec. 16, 2020), *available at* http://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=257465&MatterSeq=63187. Changes to accelerate the depreciation schedule to make existing infrastructure in line with climate goals is only one method; additional options are detailed in an EDF report "Managing the Transition: Proactive Solutions for Stranded Gas Assets in California," *available at* www.edf.org/sites/default/files/documents/Managing_the_Transition_new.pdf.

[67] *See* NYPSC Case No. 20-G-0381, Direct Testimony of James Garren on behalf of EDF, at 21 (citing NARUC Depreciation Manual, at 14–15).

[68] EDF, Aligning Gas Regulation and Climate Goals: A Road Map for State Regulators, at 4 (Jan. 2021), *available at* http://blogs.edf.org/energyexchange/files/2021/01/Aligning-Gas-Regulation-and-Climate-Goals.pdf.

[69] *Id.*

[70] This analysis is based on the New York ISO Climate Change Impact Study ("CCIS"), which assumes that 60% of current residential natural gas consumption electrifies in the utility service territory via heat pumps by 2040, with a 75%/25% split between air source and ground source heat pumps. The 60% figure is an estimate derived from the NYISO study's 2040 electric heating demand and then converted to gas usage. Itron, *New York ISO Climate Change Impact Study* Dec. 2019), *available at* https://www.nyiso.com/documents/20142/10773574/NYISO-Climate-Impact-Study-Phase1-Report.pdf.

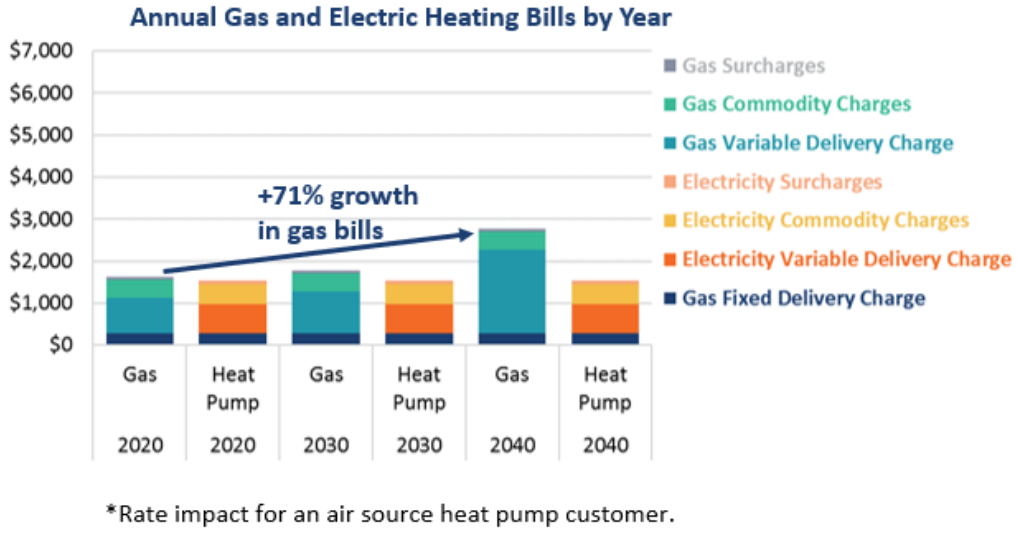

Figure 1. Comparison of 2020, 2030, and 2040 Annual gas and Electric Heating Bills by Year

While rapid building electrification is desirable to facilitate GHG emission reductions, this "death spiral" impact requires that the interests of low- and middle-income customers be put front and center in policy decisions. The Climate Action Council should prioritize policies that protect low- and middle-income customers from exorbitant monthly gas bills, and support rapid electrification of their homes and apartments.

The Council and Climate Justice Working Group ("CJWG") acknowledge the impact low-income ratepayers will face and have made suggestions in the Draft Scoping Plan and in other documents to reduce rates for low-income customers. The Council proposes subsidized rates or expanded bill discounts for low-income households that adopt heat pumps.[71] The CJWG supports the denial of fossil gas infrastructure permits[72] and recommends the build out of microgrids in Disadvantaged Communities to increase affordability.[73] Furthermore, the Power Generation Advisory Committee lists three possible ways the Commission can make rates more affordable for low-income customers: expand the Low-Income Affordability Program, study alternative rate structures, and appoint a lead at the Department of Public Service ("DPS") specifically for Equity and Environmental Justice.[74] Where relevant, the Council should direct the Commission to act to improve low- and middle-income customers' access to building electrification and protection from gas rate increases. For example, the Commission should consider rate design changes that ensure low-income customers are not subject to increasing distribution rates as gas utility revenue requirements are spread over a diminishing customer sales base.

[71] Draft Scoping Plan at 139.
[72] Draft Scoping Plan at 267.
[73] Draft Scoping Plan at 159 (addressing the deployment of large-scale renewable systems).
[74] Power Generation Advisory Panel Meeting 11 Slides 49–50. (May 3, 2021), *available at* https://climate.ny.gov/CAC-Meetings-and-Materials/Advisory-Panel-Meetings-and-Materials.

2. Recent Commission Actions and Legislation Enhance Gas Utility Oversight

To avoid a costly, unmanaged contraction of the gas system as discussed above, long-term planning by each gas utility is essential.[75] Since the Draft Scoping Plan was issued, the Commission has taken action to align its oversight of gas utilities with the CLCPA objectives—as the CLCPA requires.[76] Comprehensive planning can improve transparency and accountability, manage costs of the gas system, and drive GHG emission reductions while protecting customers.

On May 12, 2022, the Commission issued two relevant orders, (1) instituting a natural gas planning process ("Planning Order");[77] and (2) instituting a proceeding to track and assess the advancements made towards meeting the CLCPA mandates and provide policy guidance for additional actions needed to help achieve the objectives of the CLCPA ("Implementation Order").[78]

Gas Planning Order.
The Planning Order is the culmination of the first phase of the Gas Planning Proceeding,[79] which was initiated in March 2020 when the Commission directed DPS Staff to develop "a proposal for a modernized gas planning process that is comprehensive, suited to forward-looking system and policy needs, designed to minimize total lifetime costs, and inclusive of stakeholders."[80] After utilities and stakeholders submitted public comments in May and June 2021,[81] the Commission issued the Planning Order in May 2022, adopting Staff's planning proposal with modifications. The Commission established a roadmap by which "planning must be conducted in a manner consistent with the recently enacted [CLCPA]," stating that "[t]he gas system planning process we adopt in this Order will ensure that the Commission has the necessary information to consider

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[75] *See* EDF, Aligning Gas Regulation and Climate Goals: A Road Map for State Regulators, at 16 (Jan. 2021), *available at* http://blogs.edf.org/energyexchange/files/2021/01/Aligning-Gas-Regulation-and-Climate-Goals.pdf; NY PSC Case 20-G-0131, *Proceeding on Motion of the Commission in Regard to Gas Planning Procedures*, Comments of EDF on Staff Gas System Planning Proposal (May 3, 2021), *available at* https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=266341&MatterSeq=62227.

[76] Section 8 of the CLCPA clearly directs the Commission, along with other agencies, to develop policies to contribute to achieving the statewide greenhouse gas emissions limit and equity goals to protect disadvantaged communities. CLCPA, 2019 N.Y. Laws 106, §8.

[77] Case 20-G-131, *Proceeding on Motion of the Commission in Regard to Gas Planning Procedures*, Order Adopting Gas System Planning Process, at 1 (May 12, 2022) ("Planning Order").

[78] Case 22-M-0149, *In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act*, Order on Implementation of the Climate Leadership and Community Protection Act at 3 (May 12, 2022) ("Implementation Order").

[79] Case 20-G-0131, *Proceeding on Motion of the Commission in Regard to Gas Planning Procedures*, Order Instituting Proceeding (Mar. 19, 2020).

[80] Planning Order at 9.

[81] *See, e.g.*, Case 20-G-0131, *Proceeding on Motion of the Commission in Regard to Gas Planning Procedures*, Comments of Environmental Defense Fund on Staff Gas System Planning Proposal (May 3, 2021), https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=266341&MatterSeq=62227; Case 20-G-0131, Reply Comments of Environmental Defense Fund (June 4, 2021), https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=268290&MatterSeq=62227.

the [utilities'] long-term plans and alternative solutions to ensure that New York's residents can continue to have safe, adequate, and reliable gas service as we transition to alternative energy sources to reduce GHG emissions."[82] The Commission also acknowledged the importance of transparency and public engagement in long-term planning, stating that "the public interest demands that gas utilities provide information to and communicate with customers in a way that promotes effective customer planning, reduces confusion, and avoids inequities or the appearance of inequities."[83]

Under the Planning Order, each New York gas utility must submit an initial long-term (20-year) plan proposal; undergo a review process involving DPS Staff, an independent consultant, and public engagement; and ultimately receive Commission approval of a final long-term plan. The Commission established a schedule so that the first round of long-term plans for all utilities will be developed between December 2022 and January 2025.[84] For proposed traditional capital projects, the utility must also propose a "no infrastructure scenario" and detail a non-pipes alternative that could involve energy efficiency, demand response, and electrification.[85]

The Planning Order sets in motion additional processes that will shape the development of long-term gas utility plans. Regarding depreciation, the Commission "recognize[s] that failure to fully depreciate assets in a timely fashion while [utilities] still have robust customer bases may lead to stranded costs," and accordingly directs the gas utilities to file depreciation studies in November 2022 that will "inform future discussions of how best to recover the costs of assets and reduce potential stranded costs."[86] Regarding gas line extensions to new customers, the Planning Order directs utilities to submit cost assessments and Staff to undertake a rulemaking to revise the existing "100-foot rule."[87] It also directs Staff to convene an Avoided Cost of Gas Working Group that will address issues such as commodity, peaking, pipeline capacity costs, and the marginal cost of gas related to transmission and distribution facilities, gas for company use, and system losses.[88]

CLCPA Implementation Order.

The Implementation Order establishes a process to study how gas and electric utilities[89] will reduce natural gas use in New York to achieve the objectives of the CLCPA, consistent with the Draft Scoping Plan. The Order states that the Commission must "understand the investments, programs, and initiatives the Utilities will need to undertake to effectuate the reduction in natural gas usage across the State," and thus directs the gas and electric utilities to develop a proposal for

[82] Planning Order at 4, 17–18.
[83] *Id.* at 5.
[84] *See id.* at 21.
[85] *See id.* at 13.
[86] *Id.* at 61–62.
[87] Planning Order at 59–60.
[88] Planning Order at 63.
[89] The order defines the term "Utilities" as "the State's major electric and gas IOUs (collectively, the Utilities)," Implementation Order at 15. Thus, it appears that the Order intends that the Pathways Study Proposal should be developed by both gas and electric utilities in coordination.

a "GHG Emissions Reduction Pathways Study."[90] The study will "analyze[] the scale, timing, costs, risks, uncertainties (translated into sensitivity analyses around key cost and availability assumptions), and customer bill impacts of achieving significant and quantifiable reductions in GHG emissions from the use of gas delivered by the Utilities."[91] The Commission explicitly acknowledges that this Study should be aligned with "any recommendations for the decarbonization of the gas delivery system that may be included in the Climate Action Council's Scoping Plan once finalized," including "the coordinated plan for the orderly downsizing of the gas system included in the Climate Action Council's draft Scoping Plan should that recommendation be incorporated within the Final Scoping Plan."[92] The Implementation Order requires that the utilities facilitate a scoping process and invite stakeholder feedback on the draft study proposal, and requires that DPS Staff must approve the "underlying methodology and assumptions" of the proposal.[93]

The Implementation Order takes much-needed action to formalize GHG emissions accounting in all processes, stating that the Commission "must establish clear and consistent statewide guidelines for GHG emissions reporting requirements to ensure that the State's major electric and gas IOUs (collectively, the Utilities) are on track to meet the CLCPA targets."[94] Thus, the Commission directs DPS Staff and electric and gas utilities to develop a proposal for an annual GHG Emissions Inventory Report that "[w]ill allow the Commission to evaluate the impact of the Utilities' planning measures and operational changes each year."[95] And crucially, the Implementation Order requires "all Utilities in future rate filings to include an assessment of the GHG emissions impacts of each specific investment, capital expenditure, program, and initiative included in their rate filings."[96] EDF has long advocated for the importance of clear GHG emissions accounting in utility rate cases to ensure consistency with CLCPA Section 7(2), which requires that "all state agencies," in "considering and issuing permits, licenses, and other administrative approvals and decisions," "shall consider whether such decisions are inconsistent with or will interfere with the attainment of the statewide greenhouse gas emissions limits."[97]

Utility Thermal Energy Network and Jobs Act.
SB9422 passed out of the New York Legislature on June 3, 2022 and was delivered to the Governor for signature on June 23, 2022. The bill seeks to remove the legal barriers to utility

[90] Implementation Order at 25, 26.
[91] *Id.* at 26.
[92] *Id.* at 28.
[93] *Id.* at 27.
[94] *See* Implementation Order at 14–15.
[95] *Id.* at 15.
[96] *Id.* at 16.
[97] CLCPA, 2019 N.Y. Laws 106, § 7(2), *see, e.g.*, Cases 20-E-0380 & 20-G-0381, Statement of Neutrality on Joint Proposal by Environmental Defense Fund (Oct. 22, 2021), *available at* https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=275375&MatterSeq=63187; Cases 19-G-0309 & 19-G-0310, Post-Hearing Brief of Environmental Defense Fund (Apr. 6, 2020), *available at* https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=244048&MatterSeq=59676.

ownership and development of thermal energy networks by authorizing "gas and electric utilities to sell and furnish thermal energy for heating or cooling," and authorizing "gas utilities to provide thermal energy in areas where natural gas has become inadequate or insufficient to give reasonable service to consumers."[98] The bill also directs the Commission to develop a regulatory structure for utility thermal energy networks that scales affordable and accessible building electrification, protects customers, and balances the role of incumbent monopoly utilities with other market and public actors. If the Governor signs SB9422 into law, it will create a new opportunity for gas utilities to participate in the clean energy transition away from natural gas.

3. The Council Should Provide Guidance to Inform Gas Utility Planning

The Commission's recent actions in furtherance of CLCPA objectives are designed to ensure consistency with the Climate Action Council process to issue a Final Scoping Plan. The Planning Order "set[s] up a flexible planning process that can incorporate the [Climate Action Council] recommendations when they are finalized, while requiring [gas utilities] to develop plans to limit infrastructure build."[99] And the Implementation Order states that DPS Staff and the gas and electric utilities should ensure that the GHG Emissions Reduction Pathways Study proposal is aligned with the Climate Action Council's final "coordinated plan for the orderly downsizing of the gas system."[100]

The Council should consider the relationship between its recommendations for the Gas System Transition (Draft Scoping Plan Ch. 18) and Buildings Sector (Draft Scoping Plan Ch. 12) and the proceedings underway before the Commission. The Council should ensure that the Final Scoping Plan provides additional, clear guidance to the Commission where appropriate, including where Commission actions to date lack clarity and may benefit from direction from the Council. As the Draft Scoping Plan states, "[a]dditional regulatory actions by PSC will likely be necessary to effectuate the required transition away from gas."[101] The Draft Scoping Plan already provides numerous important directives to the Commission (and other State agencies) regarding the gas system transition, and in this comment EDF seeks to provide additional recommendations to benefit the Final Scoping Plan.

i. Gas Transition Plan Alignment

The Draft Scoping Plan identifies the need for "a detailed analysis to determine the most equitable and cost-effective strategy for transitioning from fossil gas while maintaining affordable, safe, and reliable service."[102] The Draft also states that the Final Scoping Plan will include "a framework through which agencies can develop a coordinated plan for the orderly

[98] Utility Thermal Energy Network and Jobs Act, Senate Bill S9422, § 9 (Delivered to Governor June 23, 2022), *available at* https://www.nysenate.gov/legislation/bills/2021/S9422.
[99] Planning Order at 19.
[100] Implementation Order at 28.
[101] Draft Scoping Plan at 266.
[102] Draft Scoping Plan at 267.

downsizing of the gas system," with development of the plan "led by DPS, and supported by NYSERDA, LIPA, NYPA, and DEC."[103] Meanwhile, the Commission recently directed a GHG Emissions Reduction Pathways Study to "to understand the investments, programs, and initiatives the Utilities will need to undertake to effectuate the reduction in natural gas usage across the State."[104] The Commission directed the major gas and electric utilities to submit a detailed proposal for the study to the Commission by March 31, 2023, after seeking input from DPS Staff and the public.[105]

To ensure efficient use of resources by regulators, stakeholders, utilities, and the public, the Climate Action Council should consider how the Commission-mandated Study could inform a broader gas transition plan, or if the two efforts could overlap. The Council should consider if there are additional government (or other) stakeholders whose participation would improve the development of the Study, and if so, it should recommend their participation in the development of the Study Proposal and Study. For example, NYSERDA could be a meaningful participant in light of its Carbon Neutral Buildings Roadmap.[106]

The Commission has not indicated—and perhaps has not yet determined—who will conduct the GHG Emissions Reduction Pathways Study. The Council should include in the Final Scoping Plan any recommendations it has for the Commission to ensure that the Study is objective and fully aligned with the CLCPA objectives and the Final Scoping Plan. For example, the Draft Scoping Plan proposes that 1 to 2 million homes should be electrified and 10-20% of commercial space should be electrified for space heating and cooling by 2030; and from 2030 onward, more than 250,000 homes and thousands of commercial buildings each year should be electrified for primary heating, cooling, and hot water.[107] The Commission's Study should be consistent with those proposals at minimum.

ii. Clarity Regarding Low-Carbon Fuels

The Climate Action Council should provide clarity in the Final Scoping Plan regarding acceptable levels of investment and usage of low-carbon fuels, particularly in the context of the gas distribution system. While there may not be absolute certainty about the role of hydrogen and biomethane (also referred to as "renewable" natural gas or "RNG") in 2050, at minimum the Final Scoping Plan should establish guardrails to limit inappropriate over-investment by gas utilities in low-carbon fuels, which in turn will provide guidance to the Public Service Commission. See *infra*, Part IV(C) for discussion of the need for caution regarding low-carbon fuels.

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[103] Draft Scoping Plan at 271.
[104] Implementation Order at 25.
[105] Implementation Order at 27, 48.
[106] *See* NYSERDA, Carbon Neutral Buildings Roadmap, Presentations Day 1 & 2 (June 15-16, 2021), *available at* https://www.nyserda.ny.gov/all-programs/carbon-neutral-buildings.
[107] Draft Scoping Plan at 121.

iii. Gas Utility Ownership of Thermal Infrastructure

Given that the CLCPA makes dramatic reductions in New Yorkers' natural gas consumption a near certainty, gas utilities need to prepare for a future with greatly reduced demand. It is critically important that utilities, especially standalone gas utilities, mindfully plan and prepare for a future in which their role in meeting their customers' energy needs may be greatly reduced (although still critically important[108]), and actively engage in the retirement of assets previously serving as the basis for their earnings. The ability of gas utilities to participate robustly in New York's decarbonized energy system will determine the structure of long-term planning that is needed, as well as how difficult it will likely be to engage utilities productively in such planning.

New York will be able to achieve its climate objectives more efficiently if gas utilities have an opportunity to share in the upside associated with the energy transition—for example, by providing, owning, and maintaining infrastructure and equipment that continues to meet their customers' thermal needs.[109]

Establishing a role for gas utilities could help accelerate adoption of clean technologies, particularly if the utility owns or subsidizes the decarbonization investment.[110] Electrification of heating will require capital-intensive infrastructure deployment over long planning horizons. Early adoption of technology would improve climate outcomes and help reduce customer costs.

Such interpretation would be consistent with how other utility regulators have addressed this issue, including the Massachusetts Department of Public Utilities ("DPU"). The Massachusetts DPU approved NSTAR Gas Company's proposal to own and operate a geothermal network in D.P.U. 19-120, finding that the intent of the Company's proposal is consistent with the Global Warming Solutions Act and the Commonwealth's energy climate policies, including the

[108] Even operating at a much smaller scale to meet a comparatively narrow range of niche applications, elements of the gas system may remain critically important to society as a whole. For example, natural gas-fired electric generation resources, potentially using carbon capture and sequestration, may continue to play a critical role in a future electric system that runs primarily on intermittent renewables, with ramifications for electric reliability and affordability for all electric customers. *See* A. Cohen et al., *Clean Firm Power is the Key to California's Carbon-Free Energy Future*, Issues in Science & Technology (Mar. 24, 2021), *available at* https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/.

[109] *See* NYPSC Case 20-G-0131, Comments of Environmental Defense Fund on Staff Gas System Planning Proposal at 45–48 (May 3, 2021) (proposing a statutory interpretation by which the Commission could allow gas utilities to own geothermal infrastructure by finding that it could satisfy the statutory definition of "gas plant"), *available at* https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=266341&MatterSeq=62227.

[110] *See, e.g.*, NYPSC Case No. 20-G-0381 et al., *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Gas Service*, Direct Testimony of Future of Heat Panel, at 11–64 (July 31, 2020) ("Being able to invest in geothermal projects would encourage gas utilities to consider this for NPAs, reducing the net gas capital investments to meet customer needs, avoiding gas demand growth and limiting the need for incremental investment in delivery infrastructure.").

statewide emissions limit for 2050.[111] Noting that large upfront capital costs and infrastructure maintenance outside an individual or entity's premises are significant barriers to widespread adoption of geothermal networks, the DPU found that the experience of developing and maintaining a company-owned geothermal network could inform the potential regulatory policies related to broad scale geothermal deployment and the role of gas utilities in the future.[112]

If signed into law, the Utility Thermal Energy Network and Jobs Act (currently pending before the Governor as SB9422), would eliminate perceived legal barriers to utility ownership and development of thermal energy networks.[113] The Council should monitor this legislation and, if this legislation is signed into law, the Council should incorporate a framework for utility-owned geothermal networks into the Final Scoping Plan, particularly the Gas System Transition chapter.

B. Reduce Methane Emissions from Gas Infrastructure

With natural gas expected to remain an important part of the energy mix during the transition, it is important to seize near-term opportunities to reduce methane emissions from gas pipelines and other infrastructure. The Draft Scoping Plan correctly acknowledges the emissions reduction opportunities from gas distribution systems and proposes multiple responsive actions.[114] The Council should enhance these recommendations in the Final Scoping Plan with greater specificity.

Peer-reviewed research demonstrates that gas distribution pipelines leak significantly more methane than previously reported. Researchers estimate that there are over 600,000 gas distribution main leaks nationwide, and that national gas distribution methane emissions are approximately five times greater than the U.S. EPA's GHG Inventory estimate.[115] Peer-reviewed research has found that utility crews using traditional leak survey technologies were able to locate only 35% of the pipeline leaks that were found using advanced leak detection methods.[116] Importantly, the leaks missed by these utilities included large leaks (greater than 10 standard cubic feet per hour ("scfh")) and leaks graded as immediate safety hazards.

Furthermore, methane emissions in the downstream sector come from more sources than just distribution pipelines. Peer-reviewed research based on aerial surveys found observed methane

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[111] *Petition of NSTAR Gas Company doing business as Eversource Energy for Approval of a General Increase in Base Distribution Rates for Gas Service and a Performance Based Ratemaking Mechanism*, D.P.U. 19-120, at 139 (October 30, 2020).
[112] *Id.* at 140.
[113] Utility Thermal Energy Network and Jobs Act, Senate Bill S9422, § 9 (Delivered to Governor June 23, 2022), *available at* https://www.nysenate.gov/legislation/bills/2021/S9422.
[114] Draft Scoping Plan at 269–271.
[115] Weller et al., *A National Estimate of Methane Leakage from Pipeline Mains in Natural Gas Local Distribution Systems*, Environ. Sci. Technol. 2020, 54, 8958–8967 (2020), *available at* https://pubs.acs.org/doi/pdf/10.1021/acs.est.0c00437.
[116] Weller, Zachary *et al.*, Vehicle Based Methane Surveys for Finding Natural Gas Leaks and Estimating their Size: Validation and Uncertainty, Environmental Science and Technology, 2018, 52, 20, 11922–11930 (2018), *available at* https://pubs.acs.org/doi/abs/10.1021/acs.est.8b03135.

emissions from eastern U.S. cities to be 2 to 6 times greater than reported in the U.S. EPA inventory.[117] More recently, researchers observed urban methane emissions in the Boston area 3 times higher than state emissions inventories had previously indicated, and found that methane levels remained consistently high over the last eight years despite multiple programs aimed at reducing methane pipeline leakage.[118] These findings indicate that buildings and behind-the-meter appliances may also be a significant source of methane emissions. Researchers have estimated total national methane emissions from gas stoves to be 28.1 Gg/year, with 76% of emissions originating when the stove is turned off.[119] Total national methane emissions from water heaters are estimated at 82 Gg/year.[120]

To find and fix the largest leaks on gas pipelines, the Council should direct gas utilities to use advanced leak detection technology and data analytics ("ALD+"), a commercially available, effective technology. ALD+ uses high-sensitivity methane analyzers (with detection limits on the order of parts per billion), GPS, and wind sensors deployed on survey vehicles to identify where natural gas is leaking from distribution systems. In contrast to traditional survey technologies, the sensors in ALD+ can quantify much smaller departures from the local background concentration and thus find more leaks. ALD+ uses advanced data analytics that examine the overall neighborhood patterns in the methane concentration to discern when the concentrations are elevated. Survey vehicles drive selected routes to collect emissions data, and then the data are analyzed using algorithms to draw out key leak information such as location, estimated leak flow rate (e.g., liters per minute), leak density (e.g., leaks per mile), and probable grade (e.g., Grade 1, 2, or 3).[121]

The ability of ALD+ to estimate leak size is significant, because utilities can use leak size information to prioritize their leak repair and pipe replacement efforts of non-hazardous leaks to address the largest leaks fastest. By remediating large, super-emitting leaks earlier, a utility can reduce near-term methane emissions from the system. Peer-reviewed research estimates that on average, fugitive methane emissions on a distribution system could be cut in half by repairing the largest 20% of leaks.[122] National Grid and Con Edison in New York are already using ALD+ in

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[117] G. Plant et al., *Large Fugitive Methane Emissions from Urban Centers Along the U.S. East Coast*, Geophysical Research Letters, 46, 8500-07 (July 2019), *available at* https://agupubs.onlinelibrary.wiley.com/doi/abs/10.1029/2019GL082635.

[118] Sargent et al., *Majority of US urban natural gas emissions unaccounted for in inventories*, PNAS (Oct. 25, 2021), *available at* https://www.pnas.org/doi/10.1073/pnas.2105804118.

[119] Lebel et al., *Methane and NOx Emissions from Natural Gas Stoves, Cooktops, and Ovens in Residential Home*s, Environ. Sci. Technol. 2022, 56, 4, 2529–2539 (Jan. 2022), *available at* https://pubs.acs.org/doi/full/10.1021/acs.est.1c04707.

[120] Lebel et al., *Quantifying Methane Emissions from Natural Gas Water Heaters*, Environ. Sci. Technol. 2020, 54, 9, 5737–5745 (Apr. 2020), *available at* https://doi.org/10.1021/acs.est.9b07189.

[121] *See* Weller, Z. D., Yang, D. K., & von Fischer, J. C. (2019). An open source algorithm to detect natural gas leaks from mobile methane survey data. Plos One, 14(2), e0212287, *available at* https://doi.org/10.1371/journal.pone.0212287.

[122] *See* Fischer, J. von, et al. (2017). Rapid, Vehicle-Based Identification of Location and Magnitude of Urban Natural Gas Pipeline Leaks. *Environmental Science & Technology*, *51*(7), 4091–4099, *available at* https://doi.org/10.1021/acs.est.6b06095; *see also* A. Brandt et al., Methane leaks from natural gas systems follow

programs to target high-emitting leaks[123]—but these companies could broaden their application of the technology, and other utilities are still reliant on traditional, less-effective survey methods.

As the Draft Scoping Plan states, "[t]he State should develop an integrated plan and coordinate efforts to with utilities, gas producers, infrastructure owners, and local municipalities to deploy advanced leak detection technology and to repair leaks in remaining gas infrastructure while maintaining affordable, safe, and reliable service."[124] It may also be productive for the Department of Environmental Conservation to be involved in this process, pursuant to the Draft Scoping Plan recommendation that "[i]n addition to DEC's ongoing oil and gas methane rulemaking, the State should support future efforts from DEC to further control, reduce, and eliminate methane emissions from gas infrastructure."[125]

The Draft Scoping Plan also recommends improved reporting around gas leaks and gas infrastructure components. EDF strongly agrees with this recommendation, and has previously presented detailed recommendations to the Public Service Commission to improve gas leak reporting and transparency, though the Commission has not acted on that rulemaking.[126]

C. Caution Regarding Low-Carbon Fuels

While some stakeholders argue that low-carbon fuels should be a major player to replace fossil gas in the clean energy transition, the Council should carefully assess the opportunities and limitations of each fuel. It is particularly important to identify the best application of low-carbon fuels that will facilitate decarbonization of New York's energy system and most effectively drive GHG emission reductions. Hydrogen and biomethane (also referred to as renewable natural gas or RNG) could be valuable to decarbonizing the energy sector in certain, tailored applications. For example, clean firm power is important to ensuring a reliable and potentially zero-emissions electric system, and zero-carbon hydrogen or biomethane could fulfill this role under the appropriate circumstances.[127] However, the incorporation of biomethane or hydrogen into the gas distribution system poses several concerns detailed herein.

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extreme distributions, Environ. Sci. Technol., 2016, 50 (22), pp 12512–12520, *available at* https://pubs.acs.org/doi/10.1021/acs.est.6b04303.

[123] *See* NYPSC Cases 19-G-0309 & 19-G-0310, National Grid, Enhanced High Emitter Methane Detection Program Report (May 2022), *available at* https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=286497&MatterSeq=59676; NYPSC Cases 22-E-0064 & 22-G-0065, Con Edison Climate Leadership & Community Protection Act Panel Direct Testimony, at 45 (Jan. 28, 2022).

[124] Draft Scoping Plan at 270.

[125] *Id.*

[126] *See* NYPSC Case 20-G-0487, *In the Matter of Facilitating the Availability of Gas Leak Information to Public Safety Officials*, Comment of Environmental Defense Fund (Dec. 21, 2020), *available at* https://documents.dps.ny.gov/public/MatterManagement/MatterFilingItem.aspx?FilingSeq=257731&MatterSeq=63677.

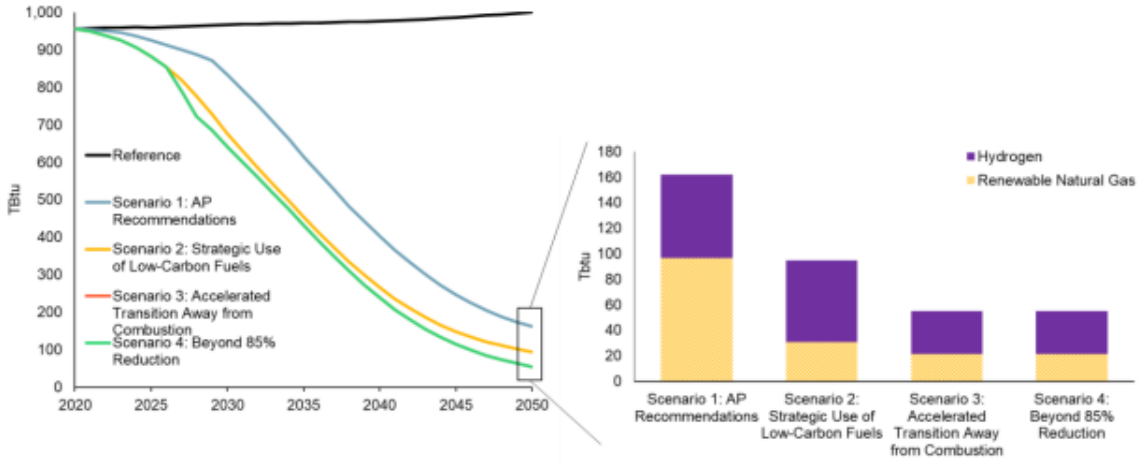
[127] *See* Draft Scoping Plan at 74 ("Firm, zero-emission resources, such as green hydrogen or long-duration storage, will be important to ensuring a reliable electricity system beyond 2040."); A. Cohen et al., *Clean Firm Power is the Key to California's Carbon-Free Energy Future*, Issues in Science & Technology (Mar. 24, 2021), *available at* https://issues.org/california-decarbonizing-power-wind-solar-nuclear-gas/.

Regarding hydrogen and biomethane, the Draft Scoping Plan states that under Scenario 2 (Strategic Use of Low-Carbon Fuels):

> [N]early all RNG is used in the buildings sector, assuming a 9% RNG blend in gas pipelines by 2030 and 100% RNG to meet dramatically reduced gas demand in buildings by 2050. The scope of RNG use is limited by available feedstocks and by the need to mitigate statewide emissions from all sectors (since under the Climate Act requirements for emissions accounting, RNG is a low-carbon fuel but it is not zero-emissions). [G]reen hydrogen use is limited mostly to transportation, industrial purposes, and electricity reliability, though a small amount of hydrogen is used to power the Con Ed district system by 2050, with steam demand reduced by about 66% as many existing customers electrify in whole or in part.[128]

The Integration Analysis includes the following figure demonstrating annual end-use gas demand on the left, and indicating anticipated reliance on hydrogen and biomethane in 2050 on the right :[129]

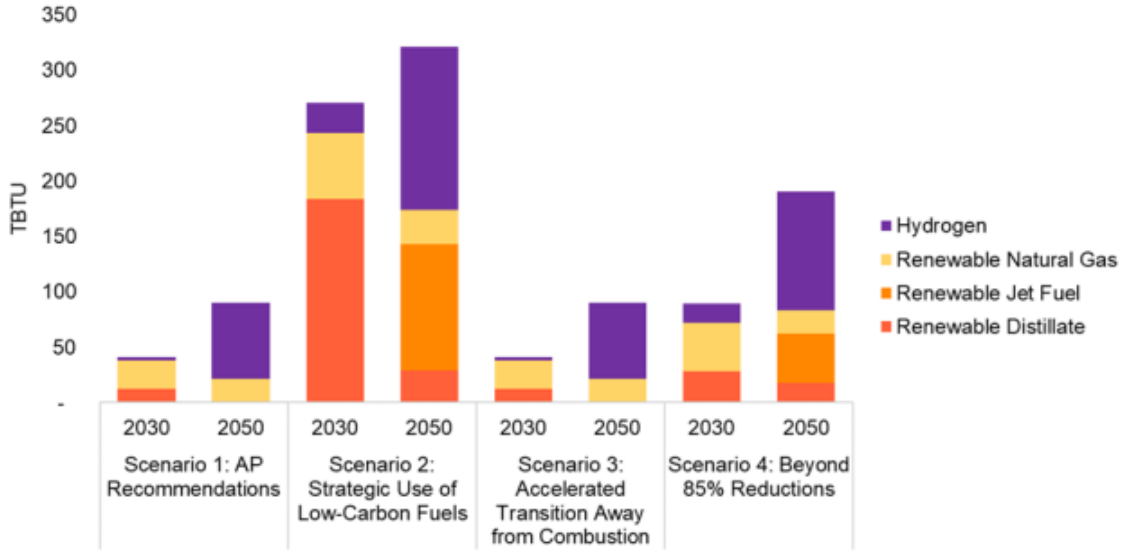
Figure 18. Annual End-Use Gas Demand by Scenario (left) and 2050 End-Use Gas Demand by Fuel (right)[14]



The Integration Analysis includes the following figure showing projected use of biomethane and green hydrogen in 2030 and 2050 under each scenario:[130]

[128] Draft Scoping Plan at 121 note 158.
[129] N.Y. State Climate Action Council Draft Scoping Plan, Appendix G: Integration Analysis Technical Supplement at Section I – Page 24 (Dec. 2021), *available at* https://climate.ny.gov/Our-Climate-Act/Draft-Scoping-Plan/.
[130] *Id.* at Section I – Page 25.

Figure 19. Bioenergy and Green Hydrogen Utilization[15]



1. Biomethane

Not all biomethane is carbon neutral, and it is important to distinguish between different sources and their corresponding GHG emissions profiles. Biogenic methane is typically emitted from sources such as landfills, lagoons, and animal-feeding operations, and capturing and using such currently emitted biogas can be beneficial because it can yield a net reduction in methane emissions, even if there is some leakage. But if new biomethane were generated from sources not already producing it—for example, wood product wastes or purpose-grown crops—subsequent leakage of that new biogenic methane would increase overall atmospheric methane concentrations and be counterproductive to addressing climate change.[131]

For a biomethane source to provide genuine climate benefit, the fuel must result in a net reduction in methane emissions. To demonstrate that benefit, biomethane production and use must not result in new or excess methane emissions relative to current waste management practices.[132] This is an unlikely hurdle for biomethane to achieve, however, due to leakage issues throughout the supply chain.[133] Gasifying organic sources of biomethane would likely result in more net climate pollution due to methane leakage during production, processing and end-use applications. A study from Lawrence Livermore Laboratory found that organic sources such as

[131] Joe Rudek & Stefan Schwietzke, *Not all biogas is created equal*, EDF Energy Exchange (Apr. 15, 2019), *available at* https://blogs.edf.org/energyexchange/2019/04/15/not-all-biogas-is-created-equal/.
[132] Mark Omara & Joe Rudek, *Careful accounting is critical to assessing the climate benefits of biomethane*, EDF Energy Exchange (Mar. 24, 2021), *available at* https://blogs.edf.org/energyexchange/2021/03/24/careful-accounting-is-critical-to-assessing-the-climate-benefits-of-biomethane/.
[133] *See, e.g.*, Alvarez et al., *Assessment of methane emissions from the U.S. oil and gas supply chain*, Science Vol. 361, Issue 6398, 186-188 (2018), *available at* https://www.science.org/doi/10.1126/science.aar7204.

forest biomass and agricultural residue are not viable source materials for biomethane because they would not yield a net reduction in climate pollution.[134]

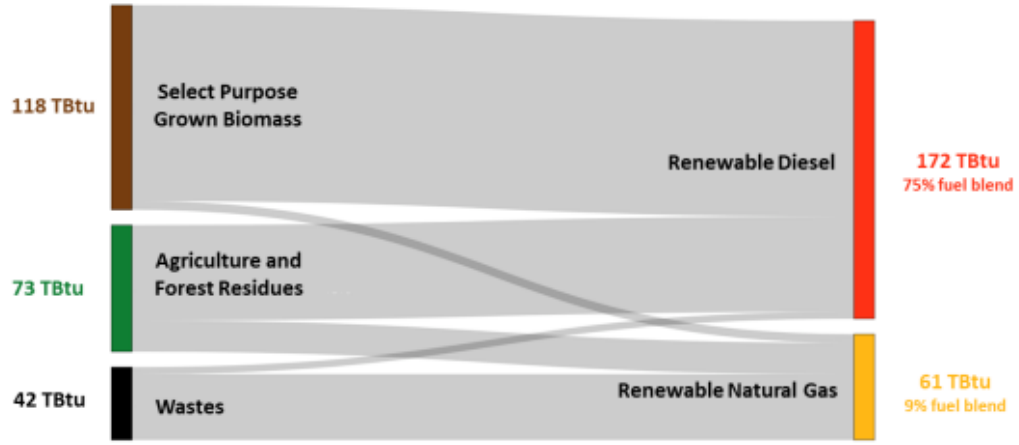
Furthermore, biomethane combustion releases carbon dioxide (CO2) and local pollution at the same rates as natural gas, since both are comprised primarily of methane. CO2 from biomethane does not increase the atmospheric CO2 levels as it is derived from pre-existing CO2 via photosynthesis, unlike fossil natural gas sources. However, local emissions of air pollution (such as NOx) from biomethane combustion are equivalent to natural gas combustion and contribute to negative health effects—which could be eliminated by converting homes from gas combustion to electrification.

Gas utilities may perceive greater business opportunity in the development of low-carbon fuels over building electrification, since low-carbon fuel use could allow for continued investment and use of the existing gas distribution network. For example, National Grid recently released a "Clean Energy Vision" document proposing that 50% of New York buildings should be connected to a "fossil-free gas system," including 25% of buildings that rely solely on "fossil-free gas" for heating.[135]

But the Draft Scoping Plan is more cautious regarding biomethane, stating that "[d]etermining limited and strategic best uses for energy produced from biogas derived from organic waste is needed," and that "[e]nd use should be focused on applications where no new gas transmission infrastructure will be needed."[136] The Integration Analysis states that "Scenarios 2 and 3 include actions to divert 100% of waste from landfills and reduce methane leakage 10% every 5 years from existing landfills, with anaerobic digesters in solid waste running at capacity in 2030 with 75% methane leakage reduction by 2050, waste combustion held constant, and methane leakage reduction from wastewater treatment facility anaerobic digesters."[137] The Integration Analysis includes the following table indicating bioenergy feedstock sources under Scenario 2:

[134] S. Baker et al., *Getting to Neutral: Options for Negative Carbon Emissions in California* at Fig. 15, Lawrence Livermore National Laboratory, LLNL-TR-796100 (Jan. 2020), *available at* https://www.osti.gov/biblio/1597217.
[135] National Grid, Our clean energy vision, at 6 (Apr. 2022), *available at* https://www.nationalgrid.com/document/146251/download.
[136] Draft Scoping Plan at 250.
[137] N.Y. State Climate Action Council Draft Scoping Plan, Appendix G: Integration Analysis Technical Supplement at 52-53 (Dec. 2021), *available at* https://climate.ny.gov/Our-Climate-Act/Draft-Scoping-Plan/.

Figure 20. Bioenergy by Feedstock and Final Fuel in 2030, Scenario 2: Strategic Use of Low-Carbon Fuels



The Council should exercise caution when considering the appropriate role of biomethane to achieve New York climate goals. Based on the findings detailed in this comment, it appears that only the 42 TBtu of biomethane derived from Wastes in the above feedstock chart is likely to yield a climate benefit under current methane leakage rates. Assumptions of huge reductions in methane leakage rates do not represent a legitimate basis to justify production of biomethane from agriculture and forest residue or purpose-grown crops. The Climate Action Council should not adopt use of biomethane in the Final Scoping Plan unless it can be demonstrated to have a genuine climate benefit. And the Council should revisit its assumption of a 9% RNG blend in gas pipelines by 2030, because it seems unlikely that there is sufficient supply of climate-beneficial RNG to satisfy that demand.[138]

The Public Service Commission recently stated in its Planning Order that RNG "continues to evolve" as an option and "should remain a consideration in planning" because "guidance is expected from the [Climate Action Council or] CAC." The Order states that "final recommendations from the CAC will guide how RNG will be part of the [gas utilities'] supply portfolio."[139]

The Council should incorporate into the Final Scoping Plan clear direction regarding the appropriate role, if any, of blending biomethane into the gas distribution system. The Council should provide explicit direction to the Commission that because biomethane use should be targeted at applications with minimal transportation to reduce leakage, gas utility proposals to incorporate biomethane into the gas distribution system should be reviewed with great caution to

[138] *See, e.g.*, NRDC Issue Brief, A Pipe Dream or Climate Solution? The Opportunities and Limits of Biogas and Synthetic Gas to Replace Fossil Gas (June 2020), *available at* https://www.nrdc.org/sites/default/files/pipe-dream-climate-solution-bio-synthetic-gas-ib.pdf.
[139] Planning Order at 33-34.

assess whether they are prudent, cost-effective, and yield a net climate benefit.[140] Some applications of biomethane may be appropriate under the limited circumstances described above, where biomethane is captured from already-emitting sources such as landfills, lagoons, or animal-feeding operations, and is not transported long distances to reduce leakage.

2. Hydrogen

Low and zero-carbon hydrogen has emerged as a key strategy in the transition to clean energy. It offers the potential to solve pressing energy challenges for "hard to decarbonize" industrial sectors like steel and cement, as well as global transportation, where there are no ready alternatives to fossil fuels and feedstocks. Hydrogen presents risks, however, and development must be undertaken carefully and responsibly. Hydrogen leakage risks should be included immediately in decision making, while more research is pursued to understand this and other issues further.

i. Hydrogen Leakage Research

Scientists at EDF have recently been investigating the climate consequences of hydrogen leakage. In a new research article currently under peer review, they reveal that hydrogen has a stronger indirect greenhouse gas effect than broadly perceived, which can undermine the anticipated climate benefits of decarbonization efforts when it leaks from infrastructure, particularly in the near- and medium term.[141]

Hydrogen is a potent, short-lived indirect greenhouse gas that can easily leak into the atmosphere due to its small molecular size. Its presence in the atmosphere increases the concentration of other greenhouse gases, namely methane, tropospheric ozone and stratospheric water vapor, resulting in significant warming potential.

Despite long-existing scientific awareness of this effect, hydrogen's warming potential has been largely left out of policy considerations to date, most likely due to the set of climate impact metrics utilized that have downplayed its potency. Like methane, hydrogen is a short-lived gas that is often assessed from a long-term impact perspective. Standard climate metrics that consider the impact of a pulse of emissions over the following 100 years (i.e., Global Warming Potential; GWP-100) hide the near-term potency of hydrogen, methane and other short-lived gases. However, given that the impacts of climate change are already perceptible across societies and ecosystems on every continent and in every ocean, New York must minimize near-term

[140] Planned transportation of biomethane must be carefully scrutinized. At least one U.S. gas utility recently proposing to transport biomethane by truck from Michigan and New Jersey, which would have significant emissions impacts. *See* Tom DiChristopher, *South Jersey Industries' clean energy strategy comes into focus with RNG deal*, S&P Global (Feb. 25, 2021), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/south-jersey-industries-clean-energy-strategy-comes-into-focus-with-rng-deal-62855205.

[141] Ocko, Ilissa and Hamburg, Steve (2022). "Climate consequences of hydrogen leakage." Preprint under review for the journal Atmospheric Chemistry and Physics. 2/18/22. *Available at* https://acp.copernicus.org/preprints/acp-2022-91/.

warming as much as possible to limit further damage. Therefore, near-term warming matters, and the use of GWP-100 metrics do not convey the near-term impacts of our actions.

We know based on its physical characteristics that hydrogen is prone to leak from infrastructure throughout the value chain, particularly during transport. However, very little data exists on leakage rates from hydrogen system components, especially small leaks that are below flammable levels but could matter for the climate in the aggregate. In fact, scientists currently lack the instruments and analytics needed to adequately measure and quantify total hydrogen leakage, as current sensors are designed to detect only those leaks large enough to be a safety concern.

The extent of this near-term warming consequence will depend on how much hydrogen is leaking—but forthcoming EDF research suggests that if leaks are moderately high, it can significantly undercut the intended benefits.

Moreover, the climate risk is even more pronounced for hydrogen produced from methane reformation, given the added risk of upstream methane leakage—which is nearly always undervalued in life cycle assessments of GHG emissions from hydrogen. For example, the estimated methane leakage rate in the Permian Basin currently exceeds 3%, significantly above the Oil & Gas Climate Initiative's target of 0.20%.[142]

ii. Hydrogen Blending into Pipelines

Using hydrogen as an alternative to natural gas in commercial and residential buildings raises serious concerns. Electrification, combined with energy efficiency measures (e.g., insulation), is generally a more energy-efficient and more economic pathway to decarbonize the building sector – and can generate public health co-benefits (e.g., removing sources of combustion improves indoor and outdoor air quality). Projects seeking to integrate hydrogen into existing gas distribution systems (e.g., gas pipeline blending) should not be prioritized unless building electrification is deemed infeasible.

If hydrogen blending projects are considered, project proponents should be required to undertake a comprehensive study on the climate, health, safety, end-use and cost impacts relative to alternative systems; retrofit or replace pipelines and storage facilities with proven hydrogen capable coatings, sealants and other materials (to prevent leaks); implement Monitoring, Reporting and Verification (MRV) and Leak Detection and Repair (LDAR) provisions; and avoid prolonging fossil fuel-related pollution.

The Council should exercise caution when considering the appropriate role of hydrogen to achieve New York climate goals, particularly regarding blending hydrogen into natural gas

[142] *See* EDF, Press Release: New Data: Permian Oil & Gas Producers Releasing Methane at Three Times National Rate (Apr. 7, 2020), *available at* https://www.edf.org/media/new-data-permian-oil-gas-producers-releasing-methane-three-times-national-rate.

pipelines. The Council should incorporate into the Final Scoping Plan clear direction for the Public Service Commission regarding the appropriate role, if any, of blending hydrogen into the gas distribution system. It may be appropriate for the Council to propose further study in this space—perhaps by NYSERDA or NYDEC in collaboration with academic partners—before investments are supported.

V. Climate Adaptation and Resilience

EDF is a leader in coastal resilience with more than 40 years of experience advancing science-based and publicly informed decision making and policy, innovating community engagement processes and securing billions of dollars for natural infrastructure to reduce risks to coastal communities. EDF's impact in New York includes active work through research, policy, advocacy, and coalitions to build resilience by: advancing inclusive, evidence-based policy; expanding cutting-edge science and public engagement to inform climate-aware planning and decision-making; integrating equitable, natural, and holistic approaches to land use and infrastructure that will prepare the region for climate risks; building and supporting coalitions that empower communities to secure a more resilient future, especially those most impacted by climate change; and securing billions for resilience, expanding and diversifying financial resources for natural infrastructure to reduce flood risks, promote environmental justice and increase ecosystem health.[143]

In the past ten years, climate change-fueled extreme storms, most notably Hurricanes Sandy and Ida, led to the loss of dozens of lives and caused more than $100 billion in damages. We are operating in an impacted system, in which a loss of natural infrastructure that used to protect us has contributed to rising risks, especially paired with the impacts of climate change. These risks are borne unequally, hitting hardest in low-wealth communities and communities of color. But New York State has the power to shift that trajectory.

The following comments are focused on Chapter 21 (Adaptation and Resilience) and Appendix H (Adaptation and Resilience Strategy Components), organized by section and strategy. We support the proposed strategies, with the overall feedback that several of the strategies could likely be consolidated for greater impact and manageability. We encourage the State to evaluate and modify existing State levers that play a role in adaptation and resilience, with an eye to avoiding redundant or disconnected efforts (e.g. creating a single adaptation and resilience plan that includes multiple components currently proposed as separate plans in this document, or clearly nesting these plans) and only creating new structures or policies where they are necessary. Specific recommendations for implementation are included below.

A. Building capacity

AR1. Commit to Creating, Implementing, and Updating a Comprehensive and Equitable State Climate Change Adaptation and Resilience Plan

[143] *See* Environmental Defense Fund, *Natural Infrastructure Strengthens our Climate Resilience*, *available at* https://www.edf.org/ecosystems/natural-infrastructure-strengthens-our-climate-resilience.

- **Provide executive-level coordination of adaptation and resilience activities:** we strongly support the establishment of a whole-of-government approach to resilience governance, led by a Chief Resilience Officer ("CRO"), a priority advocated for previously by the Environmental Defense Fund and Rise to Resilience coalition, among others. We recommend first ensuring that the CRO is provided the appropriate authorities to engage other State agencies and supported by an accompanying budget and staff support (either in the CRO office or assigned from other agencies) to support planning and projects, and that this role is solely dedicated to climate resilience (i.e., not shared with other duties). In establishing the resilience subcabinet, we encourage a clear designated resilience lead at every State agency, charged with evaluating vulnerabilities and resilience solutions for both associated facilities, infrastructure and services provided.
- **Develop an adaptation and resilience plan:** we strongly support a statewide plan as a critical step toward reducing the risks that people and nature face in a changing climate. Such a plan should be developed in an interagency manner, leveraging the resilient subcabinet to help establish goals, a framework for coordinating collective action across jurisdictions, prioritize actions and track progress over time. Additionally, we recommend establishing a robust participatory process and oversight body or role within the subcabinet, comprised of frontline community representatives. We encourage any statewide plan to 1) define shared goals & set clear expectations; 2) anchor plans in science; 3) account for uncertainty and residual risk; 4) take collective action; 5) focus on impacts to people; and 6) identify funding and challenges. Additionally, such a plan should provide a framework that builds upon or integrates existing local plans such as those developed through the ResilientNY, Climate Smart Communities Program, the forthcoming New York City Comprehensive Adaptation Plan, and community-based plans. We also encourage the State to incorporate, rather than separately produce, a green infrastructure plan (as proposed in *AR7. Develop Policies and Programs to Reduce Human Health Risks Associated with New Patterns of Thermal Extremes*). This will enable natural and green infrastructure solutions to be more fundamentally integrated at the outset into strategies for combatting flooding and urban heat.

AR2. Incorporate Equitable Adaptation and Risk-Reduction Considerations into Relevant State Funding and Regulatory Programs, Projects, and Policies

The strategies considered in this section are all important to many aspects of State policy and practice. **For planning design, and regulation of land use and infrastructure,** we encourage the State to pursue the most streamlined approach possible to reduce risks to climate threats through integrating climate science, equity, and justice into existing requirements, as well as establishing mechanisms for ensuring that communities most likely to be impacted are included in decision-making.

- **Provide guidance on use of climate change projections:** we support the development of guidance to integrate climate science across agencies and encourage a particular focus on not only guidance but also adapting regulations to a changing climate. While due to the Community Risk & Resiliency Act of 2014, the State adopted clear sea level rise projections and guidance for building elevation, the ability of these guidelines to effect change is limited without clear requirements. Reviewing and fundamentally changing

current practices with an eye toward clear target outcomes will help to increase impact and avoid adding layers of unnecessary review burden on both the State and practitioners. The State should pursue rulemaking and collaboration with stakeholders to integrate requirements into building code and land use regulation.

- **Coordinate infrastructure investments:** the complexity and scale of infrastructure development to address the impacts of climate change is enormous, and establishing a means to facilitate coordination across federal, state, and local governments is increasingly important for maximizing efficient use of public dollars. It is important that in addition to oversight from and reporting to the CRO, that this role be adequately staffed with a team that can track, coordinate, and play an advisory role in resilience projects across the state, particularly those that cross jurisdictional lines.
- **Evaluate equity and justice:** we strongly support evaluating the equity and justice impacts of all climate decision-making as well as increasing the capacity of disadvantaged communities - providing funding as well as technical expertise. In developing such a framework, we encourage the State not only to use quantitative metrics, but to establish a two-way feedback process between the State and the communities likely to be most impacted by these decisions.
- **Adopt resilient design guidelines:** while design guidelines can serve as an interim measure prior to regulatory adoption, we encourage the State to (as part of a streamlined approach, mentioned above) build the program with the intention of not only guiding State investments, but as a clear phased pathway to integration of climate science more seamlessly into standard State building code, permitting, construction, maintenance, and replacement requirements for public and private infrastructure and building development more broadly. Some of this work has already been done regionally through the Estimating Guideline Elevations State guidance, and in the urban context, through New York City's Resilient Design Guidelines development. Florida's Sea Level Impact Projection (SLIP) study tool is another useful example of this.[144]
- **Enhance design capacity:** while we support the intent of this effort, we encourage the State to work with a diverse stakeholder and practitioner group to develop clear requirements for integrating climate science, equity, and justice across the board into design, regulation, and implementation of infrastructure projects, as described above, and to focus education and capacity development efforts on meeting or exceeding those requirements.

AR3. Strengthen Meaningful Community Engagement and Public Education and Build Adaptive Capacity across All Sectors

- **Raise student and public awareness:** we strongly support the intent of this strategy and encourage the State to include resources to hire staff charged with engaging community members in planning and infrastructure development projects where the State plays a role (either State-led, or where the State is a key partner, as is often the case in U.S. Army Corps of Engineers projects).

[144] Florida Department of Environmental Protection, *Sea Level Impact Projection Study Tool, available at* https://www.floridadep-slip.org/.

- **Establish a resilience home audit program:** we encourage the State to find ways to build and learn from existing resilience and energy audit programs in the creation of a resilience audit program, with the aim to both develop an effective program and to make it easy for end users, homeowners and small businesses, to receive efficiency & resilience services at once should they so choose. Such programs include, but are not limited to NYSERDA's Retrofit NY, the NYC Accelerator Program, Center for NYC Neighborhoods' Flood HelpNY, and other programs.

AR4. Identify and Evaluate Options for Supporting Equitable Adaptation and Resilience Practices and Projects, and to Enhance Insurance Protection

- **Create a resilient infrastructure fund; establish an insurance premium surcharge for high-value, high-risk properties:** We strongly support the development of increased funding for resilience, prioritizing disadvantaged communities (with at least 40% invested in those communities) through a resilient infrastructure fund and insurance premium surcharge, provided that the surcharge is adequately priced to ensure strong revenue, protect low-income subscribers, and not deter subscription. In developing such a fund, we encourage the State to ensure that it is flexible enough to be capitalized by multiple sources of funding including, but not limited to, the *Clean Air, Clean Water, and Green Jobs Bond Act*, federal revolving loan funds authorized via the STORM Act, State budget investments, and an insurance-premium surcharge. There are currently no dedicated funding sources to address the risks we face due to climate impacts, and these up-front investments would pay dividends over time in losses avoided, cleaner air, cleaner water, and environmental justice.
- **Explore hazard mitigation funding alternatives:** in addition to exploring measures to ensure streamlined payouts and recovery following a disaster for critical infrastructure, which we support, the State should also consider options to support such innovations for individuals and families to support rapid recovery. Parametric and other insurance models that could support rapid base payouts following a triggering event have been little explored as options for low- and moderate-income families and individuals. Such models could potentially provide an important lifeline that is currently a barrier to many being able to get back on their feet following a disaster. The State should coordinate with the Center for NYC Neighborhoods who is exploring these issues in New York City.

B. Communities and infrastructure

AR5. Provide State Agency Planning and Technical Support for Equitable Regional and Local Adaptation and Resilience Plans and Projects

- **Develop local adaptation capacity:** ongoing investment in the Climate Smart Communities and Climate Leadership Coordinators program is critically important to advancing statewide adaptation and resilience. In doing so, the State should prioritize compensated community partnerships to help facilitate planning efforts, provide local context, and translation services where appropriate.
- **Promote economic resilience**: in addition to the strategies mentioned for boosting local economic resilience, the state should work with localities to evaluate the risk of their

municipal tax base over the long-term, and strategies for reducing that risk through diversifying their revenue portfolio, incentivizing better land use and building practices, and other means.

- **Consider relocation and buyouts; plan for climate migration:** in addition to the analysis recommended, the State should not only consider, but develop an ongoing, well-communicated, and equitable buyout and floodplain restoration program in areas of high risk. If passed, there will be dedicated funding for buyouts via the *Clean Air, Clean Water, and Green Jobs Bond Act* ballot measure, and a clear strategy for how to spend these funds and resource the program over time should be developed in concert with efforts to plan for climate migration. This could also be supported through securing federal funding for rapid buyouts via seeking partnership with FEMA's Swift Current program. There are significant gaps in relocation and buyout options for residents in the urban context (public housing and multi-family residents) that EDF and Cornell University are seeking to characterize through research in 2022-2023 that we will share with the State upon completion.

AR6. Evaluate Opportunities to Ensure Equitable Consideration of Future Climate Conditions in Land-Use Planning and Environmental Reviews

There is much overlap with the strategies in this section and those in *Incorporate Equitable Adaptation and Risk-Reduction Considerations into Relevant State Funding and Regulatory Programs, Projects, and Policies.* We strongly encourage a review and amendment of all relevant permitting, land use planning and regulation, and environmental review within the State's purview, driven by clear goals for climate, equity, and benefits to people and nature.

We strongly support the proposal to include biodiversity and migration in a changing climate as part of this process.

AR7. Develop Policies, Programs, and Decision Support Tools to Reduce Risks Associated with Coastal and Inland Flooding

- **Strengthen state building code:** we strongly support reforming the building code with climate resilience in mind and encourage the State to pursue these changes in concert with the development of design guidelines and land use regulatory reform, building from existing models where feasible.
- **Develop a statewide mapping strategy:** improving multi-hazard and riverine flood risk mapping is an important State goal and something needed both nationally and locally. We encourage the State to build from existing data sets where feasible (NYC's stormwater map and flood hazard mapper, First Street Foundation, and others), and to adopt a statewide map that can be used as a point of reference for land use planning and regulation, without which, specificity and enforcement are difficult. As one example, in the recent drafting of a flood risk disclosure bill, advocates and legislators were unable to spatially define and therefore require disclosure in areas of future flood risk, settling instead for language that acknowledges that sea level rise and climate change are shifting the baseline of the current 100- and 500-year FEMA floodplain.

AR8. Develop Policies and Programs to Reduce Human Health Risks Associated with New Patterns of Thermal Extremes

- **Develop cooling centers and enhance accessibility:** we encourage the State to pursue centers that are safe and resilient to any climate or environmental hazard (e.g., located above the floodplain, with clean back-up power to withstand outages, considerate of health hazards, etc.). Investing in the retrofitting of existing community centers where feasible should also be prioritized, to strengthen public awareness about these refuges and local community amenities in times when there is not a disaster.
- **Adopt a green infrastructure plan:** we encourage the State to prioritize approaches for reducing urban heat that have multiple benefits, such as green infrastructure, and to integrate green and natural infrastructure planning into the proposed statewide adaptation and resilience plan. Further, we encourage the State to reform shoreline permitting review processes to better incentivize natural and nature-based approaches and support wetland migration.

AR9. Ensure the Reliability, Resilience, and Safety of a Decarbonized Energy System

- **Establish energy system resilience standards and assess vulnerabilities:** We strongly support the PSC establishing resilience standards and requiring all its regulated entities to conduct climate vulnerability assessments and complete risk-reduction plans. EDF, the City of New York, Natural Resources Defense Council, and Sabin Center for Climate Change Law jointly submitted a petition to the PSC in 2021 calling for similar steps, and that petition remains under consideration.[145] We encourage the State to review the detailed information and recommendations in that petition, and in subsequent supportive submissions in the docket, in designing its approach here. We additionally refer the State to the relevant journal article *Climate Risk in the Electricity Sector: Legal Obligations to Advance Climate Resilience Planning by Electric Utilities*, published in the Environmental Law Review in 2021, by Romany Webb, Michael Panfil, and Sarah Ladin.[146] We strongly encourage the State to incorporate the use of forward-looking climate projections and localized or down-scaled data in its standards, among other best practices noted in the aforementioned journal article.

C. Living systems

AR10. Develop Policies and Programs to Reduce Risks Threatening Ecosystems and Biodiversity

In addition to the proposals included in this section, we encourage the State to incorporate proposals for increasing ecosystem connectivity in the State adaptation and resilience plan. This could include both spatially explicit priority areas and habitat types and model zoning or land use policies that facilitate habitat connectivity in a changing climate, including wetlands migration.

[145] Case 21-M-1099, *Petition of the City of New York, Sabin Center for Climate Change Law, and Environmental Defense Fund to Comprehensively Study the Impacts of Climate Change on Utility Infrastructure* (Mar. 19, 2021).
[146] Romany M. Webb, Michael Panfil, & Sarah Ladin, *Climate Risk in the Electricity Sector: Legal Obligations to Advance Climate Resilience Planning by Electric Utilities*, 51 Env't L. Rev. 577 (2021).

VI. Conclusion

The Draft Scoping Plan is an important achievement, but our experience to date has persuaded us that the policy uncertainty arising from this protracted process is actively delaying efforts to build the clean energy marketplace that New York needs. The CLCPA as a whole (particularly sections 7 and 8 of the Act) contemplates an holistic, whole-of-government approach to decarbonization, but it is now apparent that overextended regulators are waiting on the sidelines, understandably reluctant to invest limited institutional capabilities in aspects of statewide decarbonization that are not stated with precision on the face of the CLCPA—even if they can be readily inferred based on what is currently known about New York's actual greenhouse gas footprint. Additionally, where meeting CLCPA goals entails changes in business practices that implicate the jurisdiction and expertise of multiple state agencies, success will demand more intentional cross-agency cooperation and coordination in policymaking than has occurred to date. The Final Scoping Plan will be critical for martialing this government- and state-wide action. This includes coordinating the transition of electric and gas utilities, and decarbonizing whole sectors of the economy, such as transportation. Alongside this, an economy-wide GHG regulatory scheme is needed to establish a backstop on total emissions and provide funding for communities and decarbonization efforts. Finally, the State must adopt resiliency strategies and programs to protect residents from the impacts of climate change that cannot be avoided despite the State's actions. We appreciate the opportunity to comment on the Draft Scoping Plan, and look forward to the Final Scoping Plan providing sufficient specificity that New York's agencies can begin to row more effectively in the same direction, and providing market participants with the confidence they need to begin investing in the statewide, economy-wide transformation on which New York is now just beginning to embark.

/s/ *Elizabeth B. Stein*
ELIZABETH B. STEIN
Lead Counsel, Energy Transition
estein@edf.org

/s/ *Alex DeGolia*
ALEX DEGOLIA
Director, State Legislative and Regulatory Affairs
adegolia@edf.org

/s/ *Erin Murphy*
ERIN MURPHY
Senior Attorney, Energy Markets & Utility Regulation
emurphy@edf.org

/s/ *Kate Boicourt*
KATE BOICOURT
Director, Coasts & Watersheds, New York – New Jersey
kboicourt@edf.org

Appendix A: Petition on MHDV Charging Readiness

(attached behind)

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure — Case 18-E-0138

PETITION OF CALSTART, ENVIRONMENTAL DEFENSE FUND, NATURAL RESOURCES DEFENSE COUNCIL, SIERRA CLUB, SOUTH BRONX UNITE, AND WE ACT FOR ENVIRONMENTAL JUSTICE FOR THE INITIATION OF A PROCEEDING AND INTERIM MEASURES ADDRESSING ELECTRIC VEHICLE SUPPLY EQUIPMENT AND INFRASTRUCTURE FOR MEDIUM- AND HEAVY-DUTY ELECTRIC VEHICLES

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure — Case 18-E-0138

I. Introduction

On January 13, 2020, New York Department of Public Service ("DPS") Staff ("Staff") released a whitepaper (the "Staff Whitepaper") recommending that the Public Service Commission ("PSC or "Commission") establish a statewide program to incentivize the installation of electric vehicle ("EV") charging stations to support light-duty vehicles through the creation of subsidies for make-ready infrastructure.[1] On July 16, 2020, the Commission published its Order Establishing Electric Vehicle Infrastructure Make Ready Program and Other Programs ("Make-Ready Order").[2] This order largely followed the Staff Whitepaper's recommendations, focusing primarily on supporting light-duty EV deployment.

Both the Commission and Staff have recognized, however, that the medium- and heavy-duty vehicle ("MHDV") sector cannot be ignored, even in the short term. In its Staff Whitepaper, Staff wrote that it "recognizes the need to take additional steps beyond light duty vehicles and anticipates that issues of assuring adequate and useful charging infrastructure for medium and heavy-duty vehicle types will be addressed expeditiously in the open EVSE&I proceeding."[3] The Commission similarly recognized the immediate need for policies to advance MHDV electrification. In the Make-Ready Order, the Commission explicitly agreed with comments from several parties that "more work is urgently needed to support the transition to electrified medium- and heavy-duty vehicles."[4] It went on to take limited, but meaningful, action on this topic, directing the utilities to create MHDV make-ready pilot programs and fleet assessment services, and directing the New York State Energy Research and Development Authority ("NYSERDA") to create the Clean Medium-Duty and Heavy-Duty Innovation Prize, now known as the Electric Truck and Bus Challenge.[5] It did not, however, establish any program or

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[1] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Staff Whitepaper Regarding Electric Vehicle Supply Equipment and Infrastructure Deployment (Jan. 13, 2020) [Hereinafter "EVSE Whitepaper"].
[2] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, Order Establishing Electric Vehicle Infrastructure Make-Ready Program and Other Programs (July 16, 2020) [Hereinafter "Make-Ready Order"].
[3] EVSE Whitepaper, *supra* note 1 at 9.
[4] Make-Ready Order, *supra* note 2, at 127.
[5] Make-Ready Order, *supra* note 2, at 5–6.

framework for facilitating the transition of the MHDV sector over any particular time horizon. This petition seeks to move the Commission expeditiously to assure the existence and efficient operation of adequate and useful charging infrastructure for medium and heavy-duty vehicles.

Transitioning the MHDV sector from internal combustion of fossil fuels to non-emitting technologies is an essential element of any strategy to avert the worst impacts of climate change and to advance public health and justice, especially in disadvantaged communities. New York's governor and legislature have both expressly acknowledged the criticality of this transition and have mandated that it move forward, and the DEC has followed suit, adopting vehicle regulations that require an adoption curve in line with those of other leading states. This shift to zero-emission MHDVs will be a crucial component of meeting the emissions requirements of the Climate Leadership and Community Protection Act ("CLCPA"), the state's landmark 2019 climate law, which set statewide greenhouse gas emissions limits.[6] Transportation is currently responsible for twenty-eight percent of the state's greenhouse gas emissions,[7] with emissions from diesel fuel combustion the fastest growing source within this sector.[8] Policies supporting a transition to zero-emission MHDVs are crucial for reducing the disproportionate levels of air pollution burdening New York's disadvantaged communities, and may in fact be necessitated by the CLCPA's requirement that state agencies "prioritize reductions of greenhouse gas emissions and co-pollutants in disadvantaged communities."[9]

But, as detailed below, electric MHDVs will be reliant on charging infrastructure for their daily operations, and to enable the levels of adoption required by current policy and environmental regulations, significant Commission action is needed to support the installation of this infrastructure and prepare New York's grid for these vehicles. The challenge consists not merely of installing chargers where they happen to be needed; rather, it will be necessary to anticipate and plan for the upstream, system-level impacts that this charging will have as it scales up, and to put in place from the start the enabling technology and business practices that will enable MHDVs to provide value to the grid as soon as possible. The limited current programs in place for MHDVs are not calibrated to complement the ambition of the state's goals and mandates for the deployment of these vehicles, nor do they recognize the criticality of deploying sufficient MHDV charging infrastructure for the state to meet the CLCPA's emissions limits. The current programs also fail to contemplate the significant lead time that can be required to prepare the distribution grid for effective integration of potentially significant new load. Both short-term and long-term action is needed in a variety of areas to align the PSC's policies with the expected

[6] Climate Leadership and Community Protection Act, 2019 N.Y. Laws 106.
[7] New York State Department of Environmental Conservation, *2021 Statewide GHG Emission Report: Summary Report*, at v (2021), *available at* https://www.dec.ny.gov/docs/administration_pdf/ghgsumrpt21.pdf.
[8] New York State Department of Environmental Conservation, *2021 Statewide GHG Emission Report: Sectoral Report #1*, at 8 (2021), *available at* https://www.dec.ny.gov/docs/administration_pdf/ghgenergy21.pdf (finding that diesel emissions in New York State grew 60% between 1990 and 2019, while gasoline emissions grew 5%).
[9] Climate Leadership and Community Protection Act §7(3), 2019 N.Y. Laws 106.

pace of MHDV electrification and the unique needs of these vehicles.

Therefore, in order to meet climate and environmental justice imperatives, and to ensure consistency with the legislative, regulatory, and executive mandates regarding the deployment of zero-emissions vehicles ("ZEVs") in the MHDV sector, CALSTART, Environmental Defense Fund, Natural Resources Defense Council, Sierra Club, South Bronx Unite, and WE ACT for Environmental Justice (collectively, "Petitioners") respectfully request that the Commission promptly take the following three actions:

1. Work with the utilities and the Commission's sister agencies to collect information on the current level of deployment of electric MHDVs and associated charging infrastructure in New York, the timeline for vehicle and charging infrastructure deployment that can be anticipated based on the state's goals and requirements, and the current and anticipated costs of chargers and make-ready infrastructure;

2. Review and modify pilot programs involving the deployment of charging infrastructure for zero-emission MHDVs to address program features that are limiting their current use and align these programs with New York State's near-term goals for zero-emission MHDV deployment as well the State's larger vision of an efficient, decarbonized energy system; and

3. Initiate a comprehensive stakeholder process, modeled on the light-duty EVSE proceeding but adapted to the special needs of the MHDV sector, that addresses the full suite of MHDV charging issues not covered by the existing initiatives and creates a framework for the New York electric utilities to implement programs aligned with the state's long-term goals for zero-emission MHDV deployment and the role these vehicles will play in meeting statewide renewable energy goals and greenhouse gas targets.

II. Interest of the Parties

CALSTART is a nonprofit organization working nationally and internationally with businesses and governments to develop clean, efficient transportation solutions. CALSTART has offices in New York, Michigan, Colorado, and California, as well as industry partners worldwide. We have more than 300 member companies and agency innovators working to build a prosperous, efficient, and clean high-tech transportation industry. CALSTART has kept a Northeast Regional Office in Brooklyn, NY since 2013 and in that time has supported NYSERDA in the development and implementation of incentives for clean trucks, buses, and workplace charging, led demonstration projects for emerging zero-emission heavy-duty technologies, and provided direct technical assistance to vehicle fleets navigating electrification. CALSTART has engaged in several regulatory proceedings in New York including organizing the EV Industry Stakeholder

Coalition in 2020, which helped inform the Public Service Commission's ultimate ruling in that year's Make-Ready Order, particularly the inclusion of assistance and resources for medium- and heavy-duty fleet operators.

Environmental Defense Fund ("EDF") is a membership organization whose mission is to preserve the natural systems on which all life depends. Guided by science and economics, EDF seeks practical solutions to resolve environmental problems, using the power of markets to speed the transition to clean energy resources. EDF has been focused on driving the adoption of clean trucks and buses for over 20 years, including advocacy before state and federal environmental regulators, as well as utility regulators in several states, where EDF has advocated for charging infrastructure programs and business models that are cost-effective, beneficial for the grid and the environment, and equitable. Before this Commission, EDF has long advocated for efficient integration of distributed energy resources, price signals that incentivize customers of all types to manage their demand to improve system utilization and enable flexibility in support of decarbonization, and utility metering infrastructure and business practices needed to support this evolution of the electric system. In the instant proceeding and in other proceedings, EDF has also advocated for timely, tailored consideration of the needs and capabilities of electric MDHVs as a key component of New York's energy transition.

Natural Resources Defense Council ("NRDC") is a national non-profit organization dedicated to protection of the environment with more than 3 million members and activists. NRDC has worked for decades to cut pollution from the transportation sector through pushing for stronger emission and fuel-economy standards in passenger vehicles and trucks, policies encouraging the adoption of electric vehicles, advocating for cleaner fuels, and policies that reduce the need to drive. Ensuring strong and equitable utility electrification support is an essential part of NRDC's work to accelerate electrification of the transportation sector, reduce reliance on petroleum and associated pollution, and slow climate change.

Founded in 1892, Sierra Club is the nation's oldest and largest grassroots environmental organization with approximately 800,000 members nationwide including nearly 50,000 members in New York State. Sierra Club's mission is to explore, enjoy and protect the planet; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out those objectives. Consistent with this mission, Sierra Club has been working at the federal, state, and local levels across the country to address the adverse health and climate impacts associated with vehicular pollution, including from medium- and heavy-duty vehicles, and to promote zero emission transportation alternatives. In New York, Sierra Club petitioned the Commission to open this EV docket to clarify the important role for utilities in supporting transportation electrification. Sierra Club has participated actively from the inception of this docket, including repeatedly highlighting the need to address strategies to support the

electrification of medium- and heavy-duty vehicles.

South Bronx Unite brings together neighborhood residents, community organizations, academic institutions, and allies to improve and protect the social, environmental, and economic future of Mott Haven and Port Morris. The South Bronx is NYC's epicenter for environmental injustice, where generations of people of color have grown up overburdened with environmental pollution, including a disproportionate number of waste transfer stations, peak power plants, expressways, heavy manufacturing, and diesel truck intensive shipping operations. As such, much of our advocacy efforts are focused on mitigating and removing environmental harms, primarily air pollution. And we have been dedicating an increasing amount of our attention to the electrification of medium and heavy-duty vehicles, which are a primary source of pollution in our community. We are partnering with organizations and companies that are engaged in pilot initiatives to electrify fleets of buses and trucks in NYC, helping them to collect community input for the initiatives. We are also participating in a national cohort of frontline communities to move forward a federal campaign to center overburdened communities in EPA rulemaking for the power and transportation sectors. The cohort and campaign are exploring the full scope of opportunity for the EPA to pursue mandatory emission reductions for all criteria of air pollution, including from medium and heavy-duty vehicles.

WE ACT for Environmental Justice ("WE ACT") is a Northern Manhattan based member organization whose mission is to build healthy communities. We do this by ensuring communities of color and people of low-income lead in creating sound and fair environmental health and protection policies and practices. For many years, WE ACT has fought for clean transportation policies that improve air quality and health for environmental justice communities across New York who are overburdened by diesel pollution from trucks and buses. Our Dirty Diesel Campaign led the Metropolitan Transportation Authority (MTA) to invest in cleaner buses, resulting in 95% reductions in tailpipe emissions citywide. Most recently, we successfully passed Intro 455, a law which requires school buses serving New York City public schools to be all-electric by 2035. At the city, state, and federal levels, we continue to focus our advocacy efforts on MHDV electrification, complemented by mandatory emissions reductions and locally-driven solutions that bring clean air, health improvements, and economic opportunities to environmental justice communities.

III. The Urgent Need for Action

New York State policies will drive the deployment of zero-emission MHDVs, including electric MHDVs, in the coming years. Through a memorandum of understanding with sixteen other states, the District of Columbia, and the Canadian province of Quebec, signed by New York's Governor just two days before the issuance of the Commission's Make Ready Order (the "ZEV MOU"), New York committed to having ZEVs make up at least thirty percent of all MHDV

sales by 2030 and one hundred percent by 2050.[10] The state enshrined even more ambitious vehicle electrification goals in statute with Governor Hochul's signing of legislation that sets a goal of one hundred percent of MHDVs operating in the state being zero-emissions by 2045 "everywhere feasible."[11]

The Department of Environmental Conservation ("DEC") has now gone a step further, by setting mandatory targets for zero-emissions MHDV sales. The recently adopted Advanced Clean Truck rule (the "ACT Rule") establishes requirements for MHDV manufacturers to sell ZEVs as an increasing percentage of their New York sales between model years 2025 and 2035.[12] Beginning with model year 2025, ZEVs must make up 7% of class 2b-3 vehicle sales, 11% of class 4-8 straight truck sales, and 7% of truck tractor sales.[13] By 2035, the ZEVs requirements rise to 55% of class 2b-3 vehicles sales, 75% of class 4-8 straight truck sales, and 40% of truck tractor sales.[14] The agency justified its adoption of the ACT Rule by emphasizing its importance for helping the state to meet the greenhouse gas emission reduction requirements established by the CLCPA.[15] Furthermore, a budget agreement was reached in April between Governor Hochul and state legislators that commits the state to achieve a fully electric statewide school bus fleet by 2035.[16] Electrifying New York's 50,000 school buses will require advanced charging infrastructure planning and significant investment in the coming decade that is yet to be fully understood.

Even without these policy mandates, New York fleet owners would likely be on the cusp of demanding rapid deployment of charging capacity, for reasons of simple economics. A recent study from the National Renewable Energy Laboratory estimates that all zero-emission MHDVs will be cost-competitive with fossil fuel MHDVs on a total cost of ownership ("TCO") basis in

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[10] Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding (July 14, 2020), *available at* https://www.nescaum.org/documents/multistate-truck-zev-governors-mou-20200714.pdf; *see also* NESCAUM Welcomes Nevada's Participation in the Multi-State Zero-Emission Electric Trucks Initiative, *available at* https://www.nescaum.org/documents/nescaum-welcomes-nevada-s-participation-in-the-multi-state-zero-emission-electric-trucks-initiative/nescaum-welcomes-nevada-s-participation-in-the-multi-state-zero-emission-electric-trucks-initiative#.

[11] A4302, 2021-2022 Leg., Reg. Sess. (N.Y. 2021); *see also* Press Release, In Advance of Climate Week 2021, Governor Hochul Announces New Actions to Make New York's Transportation Sector Greener, Reduce Climate-Altering Emissions (Sep. 8, 2021), *available at* https://www.governor.ny.gov/news/advance-climate-week-2021-governor-hochul-announces-new-actions-make-new-yorks-transportation.

[12] Medium- and Heavy- Duty Zero Emission Truck Annual Sales Requirements and Large Entity Reporting, 44 N.Y. Reg. 8 (Jan. 19, 2022) [hereinafter "ACT Rule"].

[13] N.Y. COMP. CODES R. & REGS. tit. 6, §218-4 (2022).

[14] *Id.*

[15] ACT Rule, *supra* note 12, at 12 ("The Department emphasized the importance of ACT adoption for both criteria and GHG pollutant reduction, to support the GHG emission reduction requirements of the CLCPA"); Climate Leadership and Community Protection Act §7(2), 2019 N.Y. Laws 106.

[16] *See* Rachel Silberstein, *New York Schools Have Five Years to Begin Electric Bus Conversion*, Albany Times Union (Apr. 13, 2022), *available at* https://www.timesunion.com/news/article/New-York-schools-have-five-years-to-begin-17072485.php.

all vehicle classes by 2035, with some medium-duty vehicles reaching that point by 2026.[17] That same study found that some electric buses are cost-competitive today.[18] Another study by M.J. Bradley and Associates concluded that EVs may be cost-competitive with equivalent internal combustion vehicles on a TCO basis for more than two-thirds of MHDVs by 2025.[19] And a study conducted this year by Roush Industries for EDF concluded that by 2027, seven of the eight types of electric MHDVs analyzed will have a lower TCO than their fossil fuel equivalent.[20] This means that for many fleet operators, an electric truck or bus may be the most cost-effective option when they next replace their current vehicles. And, a prolonged period of the high fuel prices we are seeing today, should they persist, will only make a shift away from diesel and towards electricity as a fuel more attractive to operators. A rapid and successful transition away from diesel vehicles would be enormously beneficial for fleet owners, for the communities that continue to suffer from truck congestion together with the local air pollution generated by today's diesel-powered MHDVs, and for the climate. However, these TCO studies rely on the assumption that sufficient charging infrastructure is available.[21] The Commission has never instructed its regulated utilities to take actions that lay the groundwork for a transition of this magnitude. At this juncture, there is an urgent need for the Commission to build on its prior actions to ensure the charging infrastructure necessary to support the electrification of these vehicles is in place in time to meet the new demand that will materialize rapidly as a result of the ACT Rule and other state targets. Without affirmative steps that are tailored to the change that is coming to the truck and bus marketplace, these infrastructure needs may go unmet.

Although the Commission has taken initial steps, these steps are merely incremental—that is, they were not scaled to support achievement of State policy goals even when they were initiated, and further delay will imperil the state's ability to meet the MHDV targets it has now established. The fact that the ACT Rule's initial requirements begin with model year 2025 means that New York will start seeing large numbers of electric MHDVs on the road in 2024 at the latest. Based on the average annual replacement rate for MHDVs, New York could see more than 2,900 electric MHDVs joining New York fleets in just the ACT Rule's first model year, more than twenty-five times greater than the current total of zero-emissions MHDVs in the

[17] National Renewable Energy Laboratory, *Decarbonizing Medium- and & Heavy-Duty On-Road Vehicles: Zero-Emission Vehicles Cost Analysis* 19 (March 2022), *available at* https://www.nrel.gov/docs/fy22osti/82081.pdf [hereinafter "NREL Study"].
[18] *Id.* at 27.
[19] M.J Bradley and Associates, Medium- & Heavy-Duty Vehicles: Market Structure, Environmental Impact, and EV Readiness 23 (July 2021), *available at* https://www.mjbradley.com/reports/medium-heavy-duty-vehicles-market-structure-environmental-impact-and-evreadiness (projecting that electric MHDVs in vehicle classes representing 72% of the current fleet could achieve cost parity with equivalent fossil fuel vehicles by 2025).
[20] Roush Industries, Medium and Heavy-Duty Electrification Costs for MY 2027-2030, at 18 (February 2022), *available at* http://blogs.edf.org/climate411/files/2022/02/EDF-MDHD-Electrification-v1.6_20220209.pdf.
[21] *See* NREL study, *supra* note 17, at 13 ("charging is assumed to become progressively available as [electric MHDVs] are adopted").

state.[22] The diverse array of new EV models with ever-improving capabilities expected to come on the market in the intervening years, and rapidly improving economics, could mean EV market share in the MHDV sector grows even faster. This rapid, near-term transition expected in the vehicle marketplace stands in stark contrast with the customary slowness of more traditional sources of electric demand growth, which by their nature come with build-in lead time for a utility to prepare.[23] Further, the electrification of fleets in certain areas will likely require new or upgraded substations, which will require careful planning to avoid artificially long lead times. Given the speed with which this new demand is expected to arrive, and the lead time some of the new infrastructure will require, the time to begin preparing the electric grid for MHDV charging demand at scale is now.

Commission action is needed now to avoid misalignment of ZEV sales mandates with utility policies and programs needed for ZEV owners to charge their vehicles in a manner that allows for smooth fleet operations without overloading the electric grid. For these reasons, Petitioners respectfully request that Commission promptly take the three actions called for in this petition to understand and address the infrastructure needs of public and private MHDV fleets, and to position New York's utilities to address those needs at the scale and pace that is consistent with the State's ZEV goals and the economy-wide greenhouse gas reductions and equity provisions established in the CLCPA.

IV. Requested Relief

A. The Commission should take action now to understand the current state of MHDV electrification in New York, the expected infrastructure needs for future deployments, and the associated costs.

Currently, to our knowledge, there is no publicly available information from the Commission, NYSERDA, DEC, the New York State Department of Transportation ("NYSDOT"), or other New York State agency concerning the number, type, or cost of chargers currently serving electric MHDVs in the state, nor is there a systematic effort underway to gather such information. While the Make-Ready Order does direct the utilities to create a "customer

[22] This figure assumes an average annual replacement rate of 6.1 percent for class 2b trucks and 4.7 percent for classes 3–8 for New York's approximately 685,000 MHDVs. *See* .M.J. Bradley & Associates, *supra* note 19, at 10. *See also* CALSTART, *Zeroing in on Zero-Emission Trucks* 12, January 2022, *available at* https://calstart.org/wp-content/uploads/2022/02/ZIO-ZETs-Report_Updated-Final-II.pdf (listing 113 zero-emission trucks currently deployed in New York State).

[23] The acquisition of the vehicles themselves can happen in a matter of weeks or months, rather than the several years a traditional commercial or industrial facility can take to connect to the grid. *See* United States Department of Energy, *An EV Future: Navigating the Transition* 28 (Oct. 2021) *available at* https://www.evplusgridworkshop.com ("The magnitude of a customer's load could change overnight. Traditionally, a utility might be aware of a new five-megawatt customer years before the building is constructed. Soon, five megawatts of load will be able to drive up without warning if a 100-kilowatt distribution center decides to electrify a fleet of 20 to 30 Class 8 trucks.").

satisfaction survey" for those participating in the make-ready pilot, the absence of any participation in the pilot (discussed further below) means this cannot be a significant source of data. Moreover, even if the pilot were successful, reliance on this survey alone would mean that the Commission will not learn about the experiences of those MHDV operators who electrify without using the pilot program. Understanding the experiences, and costs, of early adopters will be essential to appropriately designing and scaling programs beyond the pilot stage. Therefore, the Commission should direct the utilities to collect and provide to the Commission data on chargers serving MHDVs that have already been interconnected or have applied to be interconnected in their service territory, regardless of whether those EV charging customers have participated in the MHDV make-ready pilot or fleet assessment programs. The data collected could be based on the categories laid out in the light-duty reporting requirements—reporting period program participation information, utility system and billing information, plug and charging session data, and financial information—but should be tailored to the unique characteristics of the MHDV sector.[24] At minimum, the data collected should include, to the extent available to the utilities, the number and location of chargers, capacity of those chargers, the cost of customer- and utility-side make-ready and what portion of those costs were covered by the utility, the types of vehicles using those chargers, and representative charging behavior of those vehicles.

In addition to better understanding the current state of MHDV charging in New York, the Commission and other state agencies also need to have a sense of what is expected to happen in the coming years. This includes an estimate of how many chargers will be needed to serve the growing number of electric MHDVs in the state, the types of chargers needed and their location to best serve the MHDV market, and the expected cost of those chargers and associated make-ready infrastructure (including any savings through leveraging co-located distributed energy resources that can decrease total grid upgrade costs). One estimate from Atlas Public Policy found that New York will need approximately 2,500 to 2,800 public and private chargers dedicated to MHDVs by 2024, with that number rising to more than 31,000 by 2030.[25] Given the typical operating patterns and unique charging needs of these vehicles, the majority of these chargers will need to be located at depots, meaning they cannot, to any significant extent, piggyback off of current efforts to deploy public charging for light-duty vehicles. NYSDOT's role in distributing the federal funding for charging infrastructure appropriated by the Infrastructure Investment and Jobs Act (IIJA) will make it an essential partner in understanding, and influencing, the transition to electric MHDVs. In addition, the policies and programs of local governments, in particular the City of New York, will affect where and when MHDV electrification will happen, and Commission actions should incorporate this information. The Commission will need to work with NYSERDA, DEC, NYSDOT, and other relevant agencies to

[24] Make-Ready Order, *supra* note 2, at 104–06.
[25] Atlas Public Policy, *U.S. Medium- and Heavy-Duty Truck Electrification Infrastructure Assessment* (*see* Appendix A).

develop estimates of the expected annual incremental fleet charging need over the coming years, to keep such projections up to date, and to ensure that the policies and programs implemented by all these agencies are designed to be complementary and aligned with the electrification targets of New York State and its local governments.

B. The Commission should move expeditiously to modify its current MHDV programs in light of the near-term realities of MHDV electrification in New York State.

Because the ZEV MOU was signed just two days before the Commission issued the Make-Ready Order, Commissioners did not have a genuine opportunity to align that order with the MOU's targets. The nearly two years that have elapsed since then, along with the Governor's signing of Assembly Bill A4302 and the adoption of the ACT Rule, have widened the gap between New York State's increasingly ambitious MHDV electrification goals and the utilities' readiness to support achievement of these goals. Because, as recognized by DEC, the ACT Rule is an important building block toward attaining the statewide greenhouse gas emissions limits established in the CLCPA, adequate charging infrastructure for the vehicles that come online as part of the ACT Rule is also essential to ensure consistency with attainment of those limits – and the absence of adequate charging infrastructure risks interfering with that attainment.

The timeline of the ACT Rule will mean at least some MHDV fleets need to start thinking about electrifying, including installing charging infrastructure, now. This in turn means the utilities serving these fleets, and the Commission, need to be thinking about this as well. Although a comprehensive proceeding addressing infrastructure and price signals for efficiently charging MHDVs will ultimately be essential, it is already too late for such a comprehensive proceeding to be completed in time to address this immediate need. Therefore, the Commission must review and order modifications of the MHDV make-ready pilot and the fleet advisory services programs with the aim of aligning them with the expected near-term MHDV electrification that will be driven by the ACT Rule.

Based on information Petitioners have gathered in recent conversations with New York State electric utilities, it appears there had been little to no participation in the make-ready pilot by fleets as of the date of our inquiries. The Commission cannot assume, however, that this limited participation means that there is no demand for the vehicles or for financial support for the associated infrastructure. Based on Petitioners' conversations with utilities, as well as with MHDV fleets and logistics companies, there are multiple limitations to the current programs that have contributed to their minimal uptake to this point, which are discussed in detail in Appendix B. In summary, several of the pilot's requirements, including participation in the truck voucher programs and the limitation of funding to utility-side make-ready, make the pilot unattractive or even inaccessible to the fleets that are most likely to electrify in the near future. The pilot is also completely inaccessible to customers who do not themselves own MHDVs but own facilities

where MHDVs are expected to operate, such as repair shops and logistics companies who rent facilities to fleets—a revealing flaw that evinces a fundamental lack of understanding of the needs of these future MHDV charging customers. Similarly, the narrow focus of the Commission-approved fleet assessment services means many fleet operators will still need to procure costly third-party consultants to gain a full picture of the cost and operational impact of electrifying, limiting the ability of small businesses in particular to see the full picture of what electrification will mean for them.[26] Petitioners also understand that for some large fleets that are electrifying quickly, there is an urgent need for significant additional capacity to be provided to existing premises on an expedited timeline, something that neither standard utility practices nor the MHDV make-ready pilots is addressing in a manner that complements fast-moving vehicle acquisition programs. The Commission should consider ordering modifications to the pilot programs to encourage uptake and achieve near-term successes. It is important to recognize that in addition to fleets needing these programs to familiarize themselves with their charging needs, the Commission itself is relying on these programs for much-needed information. Only by ensuring the participation of a diverse array of customers can the Commission reasonably rely on these pilots to provide data and insights that can inform the development of a full-scale program, as the Make Ready Order contemplates.[27]

The Commission should also reassess the scale of the pilot programs to align with near-term needs. Because a full-scale program for MHDV charging infrastructure, as discussed below in Section IV.C, will take time to create and implement, such a program cannot be relied on to support New York State's electrification goals over the next few years, including the early years of the ACT Rule. If modifications are made to the make-ready pilot and it becomes popular with early-adopter fleets, the currently authorized $26 million may be depleted before a full-scale program can be implemented. And, newly created or expanded federal funding sources appropriated by IIJA could provide New York State with significant resources to purchase electric MHDVs and install the necessary charging infrastructure without needing to rely solely on ratepayer funds.[28] The Commission should also consider, based on estimates for MHDV charger need in the coming years, the expected cost of infrastructure to support those chargers, the ability of this infrastructure to generate additional revenue, and the availability of funding sources other than ratepayer dollars, increasing the amount of authorized funding to support the expected level of deployment in the interim period before a comprehensive stakeholder process can be completed and a full-scale program implemented. To the extent near-term funding needs exceed what can reasonably be funded through electric rates, there is no time to lose in working

[26] For an example of a more comprehensive fleet assessment program, *see* https://www.massfleetadvisor.org/, which has been launched by the Massachusetts Clean Energy Center (a Massachusetts state economic development agency) and CALSTART.
[27] *See* Make Ready Order, *supra* note 2, at 129 ("This relatively small-scale Medium- and Heavy-Duty Fleet Make-Ready Pilot Program will inform fleet electrification throughout New York State.").
[28] *See* HDR Inc., *What to Know and Do to Receive IIJA Zero Emission Funding in 2022* (February 17, 2022), *available at* https://www.hdrinc.com/insights/what-know-and-do-receive-iija-zero-emission-funding-2022 (detailing the funding authorized by the law for zero-emission vehicles and associated charging/fueling infrastructure).

with other policymakers and agencies to identify alternative funding sources that can help ensure upfront transition costs are borne equitably.

Relatedly, once the Commission recognizes that today's pilots must provide a foundation for transitioning the MHDV sector, the Commission should examine whether the pilots as currently constituted rely on a framework of uniform technology and communications standards that is an appropriate foundation for a fully electrified MHDV sector, and, to the extent appropriate standards are not yet specified in the pilots, order program modifications that will remedy that omission.

C. The Commission should initiate a comprehensive stakeholder process with the intent of producing an EVSE order specific to MHDVs, scaled to align with New York's long-term goals

On many fronts, New York has positioned itself to be a leader on EVs. But failure to move the utilities beyond their current pilot-scale programs for MHDVs risks leaving New York far behind other leading states. To achieve the ambitious goals of New York, the Commission needs to take affirmative steps to ensure the necessary charging infrastructure and price signals are in place to make it possible for fleets to electrify while still operating in a reliable and economical way. Moreover, meaningful action in this area is obligatory under Section 8 of CLCPA, which directs state agencies including the PSC to "promulgate regulations to contribute to achieving the statewide greenhouse gas emissions limits…."[29] Although the exact temporal and factual prerequisites for this obligation are not stated expressly in the CLCPA, it is clear that without the effective, efficient deployment of infrastructure to support the necessary chargers, electric MHDVs will not replace the gas- and diesel-powered vehicles currently on New York's roads, and transportation-sector emissions reductions will be insufficient for the statewide greenhouse gas emissions limits to be met.

While improvements to the MHDV make-ready pilot are important for the state's short-term MHDV electrification goals, there are multiple areas of utility activity that are critically needed to support long-term MHDV electrification but that do not pertain directly to the provision of make-ready for a particular requesting customer, which is the focus of the pilots. These include, for example: forecasting for electric MHDV load throughout the system; rate design and vehicle-grid integration opportunities; leveraging distributed energy resources to mitigate infrastructure costs; bidirectional charging using vehicle-to-grid systems to displace stationary storage, equity in access, ownership, and geographic distribution of chargers; marketing, education, and outreach; and any issues pertaining to hardware, software, and communications standards that are not addressed elsewhere. And, a comprehensive process would allow the Commission to consider its long-term goals for MHDV electrification and the funding, whether from ratepayers

[29] Climate Leadership and Community Protection Act §8, 2019 N.Y. Laws 106.

or other sources, necessary to achieve those goals, helping to assure fleet operators and other market actors that the Commission is committed to supporting their electrification beyond the limited scope of today's pilot programs.

The profound mismatch between the current pilot structure and the needs of actual fleets, as discussed above in section IV.B of this petition, speaks to an urgent need for the utilities and their regulators to develop a practical understanding of how buses and trucks actually operate. This will be essential for ensuring any grid impacts can be mitigated as adoption of electric vehicles accelerates and their electricity demand grows.[30] At least four states[31] have responded to this need for shared understanding by conducting public utility commission proceedings to solicit robust stakeholder input for the purpose of enabling MHDV electrification. Hearing directly from fleet operators will be an essential part of this process. Fleet owners and operators are part of a complex business ecosystem—much of which is new to the utilities—and developing a shared understanding will also require the participation of vehicle manufacturers, charging providers, and the companies that own the facilities where fleets will operate and charge. Moreover, the diesel trucks and buses currently in use have profound impacts on communities, and the voices of community groups, environmental justice organizations, and other interested parties will also be essential to ensuring that the impacts of trucks and buses on communities are properly understood and that the benefits of electrifying them are optimized.

Finally, ensuring that MHDV charging is affordable for customers while not placing undue strain on the grid or driving unnecessary grid upgrades will require price signals that reward efficient charging and discharging. Focusing on the price signals and enabling technology that will shape vehicle-grid integration is also critical to ensuring that vehicle batteries can be leveraged to improve the feasibility and cost of integrating large amounts of renewable generation onto the system. Both the Commission and New York lawmakers have recognized the importance of creating price signals that incentivize the efficient charging of electric MHDVs and are reflective of the expected charging behavior of these vehicles. Senate Bill S7836, recently signed by Governor Hochul, establishes a new Section 66-s of the Public Service Law, which directs the Commission to initiate a proceeding "to establish a commercial tariff utilizing alternatives to

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[30] *See* New York ISO, *Power Trends 2021*, at 14, *available at* *https://www.nyiso.com/documents/20142/2223020/2021-Power-Trends-Report.pdf/471a65f8-4f3a-59f9-4f8c-3d9f2754d7de* (estimating that EVs could add up to three gigawatts of peak load to New York's grid by 2040); *see also* U.S. Department of Energy, *supra* note 23, at 87–90 (discussing the unique challenges of electrifying fleets and the importance of hearing directly from operators).

[31] *See generally* New Jersey Board of Public Utilities Docket No. QO21060946, *In The Matter of Medium and Heavy Duty Electric Vehicle Charging Ecosystem*; California Public Utilities Commission Docket No. R1812006, *Order Instituting Rulemaking to Continue the Development of Rates and Infrastructure for Vehicle Electrification*; IIllionois Commerce Commission, *Beneficial Electrification Workshops 2021-2022, available at* https://www.icc.illinois.gov/informal-processes/beneficial-electrification-workshops-2021-2022; Connecticut Public Utilities Regulatory Authority, Investigation into Medium and Heavy-Duty Electric Vehicle Charging [21-09-17], *available at* http://www.dpuc.state.ct.us/dockcurr.nsf/(Web+Main+View/All+Dockets)?OpenView&StartKey=21-09-17.

traditional demand-based rate structures, other operating cost relief mechanisms, or a combination thereof (collectively, "solutions") to facilitate faster charging for eligible light duty, heavy duty, and fleet electric vehicles."[32] The Commission has already begun implementing the law, issuing a notice soliciting public comments and establishing a new docket (Case 22-E-0236, Proceeding to Establish Alternatives to Traditional Demand-Based Rate Structures for Commercial Electric Vehicle Charging (hereinafter the "Rate Alternatives" proceedings) on April 21, 2022.[33] But this is not the first time the Commission has considered rate designs intended to support emerging demand-side technologies like electric vehicles. In fact, the Commission and stakeholders have already put significant effort into developing a tariff paradigm suitable for flexible demand, paired with behind-the-meter resources. In its order establishing the net metering successor tariff in the Value of Distributed Energy Resources ("VDER") proceeding, the Commission highlighted the newly created standby rate as "most likely to benefit customers with multiple DER technologies, such as solar PV coupled with energy storage and electric vehicle charging."[34] Unfortunately, despite the salience of MHDV charging use cases on the future grid and the need for rapid MHDV uptake to meet state goals, the VDER proceeding has, to date, never analyzed MHDV charging use cases. The Rate Alternatives proceeding, which must focus on those use cases, will be an essential component of the larger project of developing a regulatory approach for MHDV charging infrastructure, and stakeholder insights developed in the process of developing that overall regulatory approach will provide essential insight into the development of these tariffs and other solutions. But this proceeding alone will not be sufficient to address the broader array of issues relevant to electric MHDVs. By combining or coordinating the Rate Alternatives proceeding with more comprehensive attention to MHDV electrification, the Commission could ensure that intertwined issues of electricity price signals and charging infrastructure needs are considered together, rather than in entirely separate silos.

V. Conclusion

The three needs identified in this petition—understanding current charger deployment and expected need, modifying and rescaling current MHDV pilot programs, and initiating a comprehensive stakeholder process to create a full-scale MHDV infrastructure program—are essential if New York is to be a leader in the effective deployment of ZEV trucks and buses. Failure to align utilities' charging infrastructure programs with the state's MHDV deployment requirements risks these ZEV vehicles being sold but not actually displacing the MHDVs currently on the roads of New York, jeopardizing the achievement of statutory and regulatory ZEV goals, as well as attainment of statewide greenhouse gas emissions reduction targets and

[32] S7836, 2021-2022 Leg., Reg. Sess. (N.Y. 2022)
[33] Case 22-E-0236, *Proceeding to Establish Alternatives to Traditional Demand-Based Rate Structures for Commercial Electric Vehicle Charging*, Notice Soliciting Comments (April 21, 2022).
[34] Case 15-E-0751, *In the Matter of the Value of Distributed Energy Resources*, Order Establishing Net Metering Successor Tariff, at 18 (Jan. 13, 2020).

equity provisions established in the CLCPA. On the other hand, a well-designed program, in conjunction with the stopgap measures needed before that program can be implemented, would accelerate the transition of New York's MHDV sector away from fossil fuels and the attendant greenhouse gas emissions, local air pollution, and public health harms that come with fossil fuel combustion.

Appendix A: Estimated Cumulative Annual MHDV Charger Needs in New York State through 2030 (Source: Atlas Public Policy)

(attached behind)

Atlas Public Policy U.S. Vehicle Infrastructure Assessment, Medium- and Heavy-duty Truck Charging, November 2021.
For assumptions, methodology and further results, see full published slide deck here:
https://atlaspolicy.com/u-s-medium-and-heavy-duty-truck-electrification-infrastructure-assessment/
For questions on this analysis, contact Lucy.Mckenzie@AtlasPolicy.com

ATLAS PUBLIC POLICY

In both scenarios:

Location
- Personally-owned class 4 – 8 trucks & all long-haul trucks use on-road charging

Utilization
- 80% utilization of depot chargers during 9 overnight hours

In low-cost scenario:

Location
- Class 3 personal & class 3 – 8 fleet vehicles (excl. long-haul) charge 90% at depot/home, 10% on road

Utilization
- 40% utilization of on-road charging
- 70% utilization of long-haul truck parking chargers

In high-cost scenario:

Location
- Class 3 personal & class 3 – 8 fleet vehicles (excl. long-haul) charge 75% at depot/home, 25% on road

Utilization
- 20% utilization of on-road charging
- 40% utilization of long-haul truck parking chargers

Lower-cost scenario (see above for details):

Cumulative charging ports needed in the state of New York:

	Charger type	2022	2023	2024	2025	2026	2027	2028	2029	2030
Home charging:	Home charging for class 3 trucks	74	252	559	1071	1788	2569	3652	4767	6139
Charging at depots:	Depot - Level 2 for Class 3 trucks	109	372	855	1,620	2,753	4,145	6,072	8,270	10,950
	Depot - Level 2 for Class 4 - 6 trucks	80	298	718	1,415	2,536	3,966	5,707	7,399	9,524
	Depot - 50kW for Class 4 - 6 trucks	17	52	132	277	503	888	1,233	1,607	2,058
	Depot - 50kW for class 7- 8 trucks	32	111	279	551	929	1,488	1,976	2,564	3,241
	Depot - 150kW for class 7- 8 trucks	21	76	179	349	596	967	1,260	1,637	2,063
On-road charging (based on energy need & utilization assumptions, does not guarantee geographic coverage):	On-road - 350kW for class 4 - 8 trucks excl. long-haul, plus motorhomes	6	14	27	47	75	112	149	190	239
	On-road - 350kW truck parking spaces for long-haul trucks***	7	29	68	142	248	419	548	727	922

Charging need for all vehicles other than long-haul trucks are based on no. of vehicles registered in the state. For long-haul trucks, charging need is assigned to each state based on the state's percent of the nation's truck parking.

*** or, as an alternative to these 350MW charging ports for long-haul trucks, number 2MW charging ports needed (In reality a mix of both power levels and others could be needed. See slides 20 - 24 of full results deck):

	2022	2023	2024	2025	2026	2027	2028	2029	2030
On-road - 2MW for long-haul trucks:	1	5	12	26	45	76	99	132	167

Higher-cost scenario (see above for details):		Cumulative charging ports needed in the state of New York:								
		2022	2023	2024	2025	2026	2027	2028	2029	2030
Home charging:	Home charging for class 3 trucks	62	210	466	892	1,490	2,140	3,044	3,973	5,116
Charging at depots:	Depot - Level 2 for Class 3 trucks	91	310	713	1,350	2,294	3,455	5,060	6,891	9,125
	Depot - Level 2 for Class 4 - 6 trucks	66	248	598	1,180	2,114	3,305	4,756	6,165	7,937
	Depot - 50kW for Class 4 - 6 trucks	14	44	110	231	419	740	1,028	1,339	1,715
	Depot - 50kW for class 7- 8 trucks	26	91	228	451	760	1,218	1,620	2,104	2,661
	Depot - 150kW for class 7- 8 trucks	19	63	150	291	498	806	1,051	1,366	1,720
On-road charging (based on energy need & utilization assumptions, does not guarantee geographic coverage):	On-road - 150kW for class 4 - 6 trucks	9	33	77	149	257	393	555	719	919
	On-road - 350kW for class 7 - 8 trucks excl. long-haul, plus motorhomes	7	17	36	65	106	164	212	270	337
	On-road - 350kW truck parking spaces for long-haul trucks***	12	52	118	248	435	733	958	1,273	1,613

Charging need for all vehicles other than long-haul trucks are based on no. of vehicles registered in the state. For long-haul trucks, charging need is assigned to each state based on the state's percent of the nation's truck parking.

*** or, as an alternative to these 350MW charging ports for long-haul trucks, number 2MW charging ports needed (In reality a mix of both power levels and others could be needed. See slides 20 - 24 of full results deck):

	2022	2023	2024	2025	2026	2027	2028	2029	2030
On-road - 2MW for long-haul trucks:	3	11	24	51	90	152	199	264	334

Appendix B: Observations and Recommendations on the MHDV Make-Ready Pilot and Fleet Assessment Programs

Truck Voucher Program requirement

The requirement that fleets participate in the New York Truck Voucher Incentive Program or the New York City Clean Trucks Program in order to access the make-ready pilot funds unnecessarily limits who can qualify for the pilot funding.[35] Because of this requirement, make-ready pilot funding is unavailable to entities that do not themselves own MHDVs but provide vital services to fleets (including logistics companies that lease out warehouses and other facilities to fleets, and repair shops that services fleet vehicles) as well as to vehicle owners that find that the voucher program itself presents challenges. The exclusion of these prospective participants from the utilities' pilot programs is depriving the Commission and the utilities of important information about cost, timeline, and other aspects of installing charging infrastructure. Eliminating the requirement that a customer participate in one of the current truck voucher programs to access the make-ready pilot funding would allow a broader array of customers to participate in the pilot, which would support the state's near-term MHDV electrification goals, and allow the Commission and utilities to collect data from a broader array of customers to inform future action on the subject.

Utility-side make-ready limitation

While the light-duty make-ready program covers both utility-side and customer-side costs, the MHDV make-ready pilot does not. This limitation (for which no clear rationale is provided in the Make-Ready Order) ignores the reality of how utility-side costs are currently treated and is a significant contributor to demonstrated lack of interest in the program.

Although some fleets with ambitious near-term electrification plans may quickly bump up against limitations on the electric capacity currently available at their premises, many fleets looking to electrify in the near-term can do so without utility-side infrastructure upgrades because excess capacity presently exists on the distribution grid in their area. As a general matter, the utilities also already cover least-cost upgrade costs associated with increasing site capacity, with customers responsible only for costs above this amount if they require capacity to be distributed at the site in a manner that diverges from the utility's least-cost approach. This means that for many prospective early-adopter electric truck or bus customers, utility-side make-ready costs may make up a negligible part of the total costs to install charging infrastructure, or may even be zero. By contrast, customer-side make-ready costs can be a substantial fraction of total up-front infrastructure costs for an electrifying fleet – but these costs are entirely excluded from the pilot.

[35] Make Ready Order, *supra* note 2, at 131.

Modifying the pilot to provide the same fifty percent subsidy for chargers that are not publicly accessible, equivalent to what is available under the light-duty make-ready program, would better reflect the reality of EV infrastructure costs and would likely improve uptake.

DCFC requirement (applicable to Con Edison only)

The limitation of the make-ready pilot for Con Edison customers to Direct-Current Fast Chargers ("DCFCs") fails to consider the charging needs of many MHDVs. In the Make-Ready Order, the Commission told Con Edison to implement the "Fleet DC Fast Charger Make-Ready Program" for which the utility had received approval for in its 2019 rate case, rather than include the utility in the generic MHDV make-ready program to be developed by the rest of the PSC-jurisdictional utilities.[36] Con Edison's program, however, only included incentives for fleets installing DCFCs. While the largest vehicles will likely require DCFCs, many medium-duty vehicles such as delivery vans can be adequately served by level 2 chargers.[37] These chargers are much less expensive than DCFCs, and their lower charging capacity means the associated make-ready infrastructure can often be smaller and cheaper. Level 2 chargers can also encourage efficient charging behavior, as the lower capacity of the chargers leads fleet operators to spread charging over many hours.

Directing Con Edison to revise MHDV make-ready program to open eligibility to fleets looking to install level 2 chargers would encourage fleets to participate in the program without installing unnecessarily large infrastructure, decrease both utility-side and customer-side costs, and encourage more efficient charging.

Ambiguous approach to disadvantaged communities

The focus of the program on disadvantaged communities is laudable but ambiguous. The Make Ready Order sets out the following qualification for the MHDV make-ready pilot: "charging stations located in environmental justice areas, or that are dedicated for fleets operating a significant portion of the time in environmental justice areas, as defined in the Accessibility section of the Eligibility Criteria for the Make-Ready Program are of heightened interest."[38] The Joint Utilities' implementation plan for the pilot largely restates this language.[39] Neither the Commission nor the Joint Utilities, however, define what is considered a significant

[36] Make Ready Order, *supra* note 2, at 129–30.
[37] *See* North American Council for Freight Efficiency, *Electric Trucks Have Arrived: The Use Case for Vans & Step Vans*, at 8 (April 2022), available at https://nacfe.org/vans-step-vans/ (explaining that because local delivery vehicles typically operate in a single shift out of a depot, fast charging is not necessary and level 2 chargers are adequate).
[38] Make-Ready Order, *supra* note 2 at 131–32.
[39] Case 18-E-0138, *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*, NY Electric Vehicle Infrastructure Medium- and Heavy-Duty Make-Ready Pilot Program Implementation Plan (Oct. 15, 2020) ("the participating utilities will prioritize providing incentives to projects located in or that support fleets that are operating a signification portion of the time in DACs and that demonstrate greater commitment to reducing diesel emissions in DACs.").

portion of time for a fleet to qualify for this priority or how this "heightened interest" would be applied in allocating funding. It is difficult to know whether this ambiguity has contributed to the pilot programs' failure to attract participants, but going forward, it certainly could—and uncertainty about the meaning of this language could suppress future applications by prospective participants who, if they had applied, would have been admitted to the program.

To address the ambiguity in the current order and implementation plan, the Commission should clarify how the utilities should prioritize applicants and what constitutes a significant portion of time. And, the Commission should again ensure the restrictions on accessing the pilot's funding are consistent with the fundamental purposes that make these pilot programs worth doing: that is, what should be supporting near-term infrastructure needs and obtaining data to inform the development of a full-scale program.

Narrow focus of fleet assessment services

The limitation of the fleet assessment services to a site feasibility study and rate analysis means fleets will need to look elsewhere for necessary information, including analysis of the total cost of ownership and available incentives, and options for vehicles, chargers and distributed energy resources, before choosing to electrify. Without this support, it will overwhelmingly be the multi-state and multi-national operators with the capital to pay for this work who will electrify in the near term. If the Commission wants to make sure that commercial customers of various sizes and types can participate in the earliest stages of MHDV, it must explore ways to ensure that more robust fleet assessment services (including, e.g., TCO analysis and vehicle/charger options), are made available to those who need them, whether those services are provided by electric utilities or otherwise.