COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC UTILITIES

D.P.U. 21-91

DIRECT PRE-FILED TESTIMONY OF THE ELECTRIC VEHICLE PROGRAM PANEL

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AND

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ON BEHALF OF
MASSACHUSETTS ELECTRIC COMPANY AND NANTUCKET ELECTRIC COMPANY EACH D/B/A NATIONAL GRID

EXHIBIT NG-EVPP-1

July 14, 2021

Table of Contents

Table 1: GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
BEV	Battery Electric Vehicle, sometimes followed with "-250" to indicate 250 miles of range
Capital	Capital Expense
CCS	Combined Charging System standard
CECP	Clean Energy and Climate Plan
CHAdeMO	A direct current fast charging standard
Climate Act	Chapter 8 of the Acts of 2021
CO_2	Carbon Dioxide
Customer premise work	Portion of make-ready infrastructure on the customer side of the meter
DCFC	Direct Current Fast Charging
EDC	Electric Distribution Company
EJC	Environmental Justice Community
EV	Electric Vehicle
EVI-Pro Lite	A tool for projecting consumer demand for electric vehicle charging infrastructure
EVSE	Electric Vehicle Supply Equipment
FCEV	Fuel-cell Electric Vehicle
FTE	Full-Time Equivalent
GHG	Greenhouse Gas
GVWR	Gross Vehicle Weight Rating
GWSA	Global Warming Solutions Act
ICE	Internal Combustion Engine
IT	Information Technology
kW	Kilowatt
kWh	Kilowatt hours
L1	Level 1

L2	Level 2
LDV	Light-duty Vehicle (vehicle classes 1-2, or those vehicles <10,000 pounds)
LI/EJC	Low Income Customers and Environmental Justice Communities
LI	Low-Income
MA	Massachusetts
MassEVIP	Massachusetts Electric Vehicle Incentive Program
MECO	Massachusetts Electric Company
MHDV	Medium- and Heavy-duty Vehicle (vehicle classes 3-6 and 7-8, or those vehicles above 10,000 pounds)
MOR-EV	Massachusetts Offers Rebates for Electric Vehicles program, including MOR-EV Trucks
MUD	Multi-Unit Dwelling, specifically properties with more than five units
MW	Megawatt
Nantucket Electric	Nantucket Electric Company
National Grid	National Grid USA
NREL	National Renewable Energy Laboratory
O&M	Operations and Maintenance
Phase I Program	First phase of the Company's Electric Vehicle Program (D.P.U. 17-13)
Phase II Program	Second phase of the Company's Electric Vehicle Program (D.P.U. 18-150)
Phase III Program	Third phase of the Company's Electric Vehicle Program (D.P.U. 21-91)
PHEV	Plug-in Hybrid Electric Vehicle, sometimes followed with "-20" of "-50" to indicate 20 or 50 miles of range, respectively
PIM	Performance Incentive Mechanism
$PM_{2.5}$	Particulate Matter 2.5

Proprietary Network	Chargers using a proprietary hardware or a restricted access network available only to certain vehicle brands
PY	Program Year
QEL	Qualified Equipment List
RFP	Request for Proposals
SmartCharge Massachusetts	First phase of the Company's off-peak EV charging rebate offering
TCI-P	Transportation and Climate Initiative Program
TCO	Total Cost of Ownership
The Company	Massachusetts Electric Company and Nantucket Electric Company
Transportation Act	Section 29 of Chapter 383 of the Acts of 2020
Utility-side work	Portion of make-ready infrastructure on the utility side of the meter
V2G	Vehicle-to-Grid
V2H	Vehicle-to-Home
VGI	Vehicle Grid Integration
VIO	Vehicles in Operation
VMT	Vehicle Miles Traveled
ZEV	Zero Emission Vehicle
ZEV MOU	Zero Emission Vehicle Memorandum of Understanding

I. Introduction

Q. Mr. Sondhi, please state your full name and business address.

A. My name is Rishi Sondhi. My business address is 40 Sylvan Road, Waltham, MA 02451.

Q. Please state your position.

A. I am a Manager in the Clean Transportation Team at National Grid USA ("National Grid"). In this role, I provide services to National Grid's various operating companies, including Massachusetts Electric Company ("MECO") and Nantucket Electric Company ("Nantucket Electric"), each d/b/a National Grid (together, the "Company").

Q. Please describe your educational background and training.

A. I have a Master of Business Administration (M.B.A.), degree from Babson College - Franklin W. Olin Graduate School of Business, Wellesley, MA (2008 - 2010). I have a Master's Degree, Chemical Engineering (1997-1999) from the University of Cincinnati, Cincinnati, OH. In addition, I have a Bachelor's Degree, Chemical Engineering (1993 - 1997) from the Indian Institute of Technology (Banaras Hindu University), Varanasi, India.

Q. Please describe your professional experience.

A. I am a Manager in the Clean Transportation team. In this role, I help lead the development of programs and strategy for the residential customer segment. I also assist with developing regulatory proposals to address the transportation and climate goals of National Grid's service jurisdictions. In my previous role as the Emerging Products Manager, I led the development of Company's Phase II EV proposal and managed stakeholder engagement regarding transportation policies.

Prior to joining National Grid, I served as Product Manager, Energy Efficiency at Eversource Energy, where I developed new program offerings for business and residential customers. Prior to that, I served as Process Engineering Manager at Pall Corporation where, among other things, I guided clients in reducing energy consumption using advanced filtration technologies.

Q. Have you ever testified before the Department of Public Utilities ("Department")?

A. Yes, I testified before the Department in D.P.U. 18-150 in support of the Company's Phase II EV Program.

Q. Ms. Gold, please state your full name and business address.

A. My name is Julia Gold. My business address is 40 Sylvan Road, Waltham, MA 02451.

Q. Please state your position.

A. I am a Principal Policy and Strategy Analyst for the Clean Transportation team at National Grid USA. In this role, I provide strategic planning, policy, and regulatory support services to the Company.

Q. Please describe your educational background and training.

A. I have a Master's Degree in Urban and Environmental Policy and Planning from Tufts University (2007-2009) and a Bachelor's Degree in American Civilization from Brown University (2002-2006).

Q. Please describe your professional experience.

A. I am the Principal Analyst for Policy and Strategy within the Clean Transportation team. In this role, I assist in the development of the Company's strategy for the Clean Transportation programs, support engagements related to transportation policy, both at the state and federal level, and lead stakeholder engagement. Additionally, I represent the Company on a variety of regional and national industry groups, alliances, and membership organizations. Prior to joining National Grid, I served as the Chief of Sustainability and Innovation at the RI Department of Transportation, the Climate Change Program Manager for the RI Department of Health, and the Director of the Green Center at Bristol Community College.

Q. Have you ever testified before the Department?

A. No, I have not.

Q. Mr. Navarro, please state your full name and business address.

A. My name is Jake Navarro. My business address is 40 Sylvan Road, Waltham, MA 02451.

Q. Please state your position.

A. I am the Director of the Clean Transportation Team at National Grid. In this role, I provide services to National Grid's various operating companies, including the Company.

Q. Please describe your educational background and training.

A. I have a Master of Business Administration (M.B.A.), degree from Boston University (2014 - 2017) and a Bachelor's Degree in Economics (2003-2007) from Middlebury College.

Q. Please describe your professional experience.

A. I am the Director of the Clean Transportation Team. In this role, I lead our end-to-end product management efforts focused on the electrification of transportation, including electric vehicle ("EV") strategy, new product development, and product performance and scaling. I have held several leadership positions at National Grid including Director of Commercial Portfolio Performance, Customer Excellence, and Communications

Q. Have you ever testified before the Department?

A. No, I have not.

II. Purpose of Testimony

Q. What is the purpose of your joint testimony?

A. The purpose of our joint testimony is to present the Company's proposal to implement a third phase of its Electric Vehicle Market Development Program in its service territory. We will describe the elements of this proposal and the benefits to customers and the Commonwealth. Further, our testimony will demonstrate that the proposal complies with the directives of D.P.U. 20-69-A and the Department's relevant standards of review. In addition to our joint testimony, the Company is sponsoring separate testimony of the

Demand Charge Alternative Panel, Exhibit NG-DCA-1, proposing a commercial electric vehicle rate design tariff pursuant to Section 29 of Chapter 383 of the Acts of 2020 (the "Transportation Act"), the Cost Recovery Panel, Exhibit NG-CRP-1, addressing cost recovery and Jared Goldfarb, Exhibit NG-JG addressing the recovery of certain customer-side make-ready offerings. Together, these program elements constitute the Company's Electric Vehicle Phase III Program ("Phase III Program").

III. Program Summary

Q. Please summarize the Company's Phase III Program proposal.

A. The Phase III Program builds upon the Company's first two Programs by providing offerings to meet the diverse needs of all the Company's customers, building the infrastructure required to support statewide EV adoption, and helping to enable the Commonwealth's broader transition to a clean transportation future. Recognizing that this transition will require a complete shift in one of the economy's largest segments and that each of the Company's customers' needs are different, this Program aims to provide options to meet the diverse needs of all the Company's customers and provide shared benefits across all communities the Company serves. The Phase III Program is structured to both build the electric backbone for the transportation sector in our service territory and facilitate EV adoption, ensuring the Commonwealth's homes, workplaces, fleets, communities, and highway-corridors are ready for EVs at the scale necessary to meet the Commonwealth's zero-emission vehicle ("ZEV") targets.

The Company's proposed Phase III Program includes the following offerings for:

a. **Public and Workplace Segment**: provides financial support for Electric Vehicle Supply Equipment ("EVSE") installations at public sites and workplaces, including pole-mounted Level 2 ("L2") chargers, and a Direct Current Fast Charging ("DCFC") commitment in environmental justice communities "EJCs[1]";

b. **Residential Segment**: provides programmatic and financial support for EVSE and at-home charging enablement at:

   i. properties with 1-4-units; and

   ii. multi-unit dwellings ("MUDs") with five or more units;

c. **Fleet Segment**: provides financial support for EVSE installations, fleet electrification assessment services and tools, off-peak charging options, and support for electric school bus purchases;

d. **Other Offerings**

   i. **Expansion of the Company's Off-Peak Charging Rebate** ("Off-Peak Rebate Program") approved in D.P.U. 18-150[2] for residential and fleet customers.

   ii. **Workforce Development and Electrician Training** to support the EV workforce of the future, including new workforce entrants and incumbent workers.

   iii. **Demand Charge Alternative Rate Structure** for commercial customers with a sliding scale of demand charges and volumetric charges, in accordance with the requirements of the Transportation Act.

   iv. **Transformer Surcharge Waiver** to reflect the expense paid by the Phase III make-ready offerings and reduce G-1 customers' bills.

[1] In Massachusetts a neighborhood is defined as an Environmental Justice population if any of the following are true: Block group whose annual median household income is equal to or less than 65 percent of the statewide median ($62,072 in 2010); or 25% or more of the residents identify as a race other than white; or 25% or more of households have no one over the age of 14 who speaks English only or very well - English Isolation. https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts

[2] Massachusetts Electric Company and Nantucket Electric Company each d/b/a National Grid, D.P.U. 18-150, Order at 383-397 (2019).

The Company is proposing to run the Phase III Program for a period of four years. The Company has estimated the total cost of the Phase III Program will be approximately $277.76M, with the budget apportioned across segments as shown in the following table.

Table 2: Overview of Phase III Program

Public and Workplace Segment	**Residential Segment**	**Fleet Segment**
Targets: ~7,500 L2 and DCFC ports	**Targets**: ~24,000 L2 ports for at-home charging	**Targets**: ~600 L2 and DCFC ports, ~175 fleet assessments, and ~300 EJC school bus rebates
Cost: $96.77M	Cost: $64.08M	Cost: $98.23M
Other Supporting Offerings Off-Peak Rebate Expansion, Workforce Development and Electrician Training, Company Staffing, IT, Program Evaluation **Cost**: $18.69M		

The Company's proposed Phase III Program will support the transition to a clean energy future by reducing the barriers for residents, site hosts, and fleet owners to adopt clean transportation choices while also providing the necessary support and resources for our diverse customers to adopt EVs. The Phase III Program will support the installation of cohesive networks of charging infrastructure, assist fleet operators to develop their own electrification roadmaps, accelerate deployment of at-home charging, and increase equitable access to the benefits of clean transportation. Not only do utilities play a key role in deploying the infrastructure to support increased EV adoption, but they are critical

players to ensure the transition happens with a balance of equitable access and affordability, beneficial electrification, grid optimization, and the needs of the clean energy future.

Q. What are the goals of the Phase III Program?

A. The Company's goal is to create a future in our region where clean transportation is universal and the environmental and public health benefits are shared by all the Company's customers and communities. Although the transition to net-zero Greenhouse Gas ("GHG") emissions will happen over multiple decades, the investments necessary to support our customers in this transition must begin immediately and be aggressive. This proposal supports the Commonwealth in reaching its near-term and long-term transportation and climate goals through the acceleration of infrastructure deployment and EV adoption.

Q. How are EJCs considered across the Phase III Program offerings?

A. The Company has developed each segment of the proposal to more directly address the unique needs of EJCs and low-income customers. A guiding principle of the Phase III Program is to ensure that the proposed EV offerings are implemented equitably. EVs present a tremendous opportunity to mitigate the GHG emissions and particulate matter that exist disproportionately in EJCs. The installation of EV infrastructure and enabling EV miles driven within EJCs will provide increased access to clean transportation and promote public health. The Company recognizes that today, the upfront costs to EV adoption are high and that there is a need to tailor programs for EJCs and low-income customers, so they are not left behind in the transition to EVs.

The Company is laying the foundation for equitable access to clean transportation with specially designated EJCs and low-income offerings outlined by program segment in the table below. Additional information is detailed in the individual program segment sections.

Table 3: Overview of EJC and Low-Income Offerings

Public and Workplace Segment	**Increased Incentives** • 100% make-ready costs and up to $4,000 rebate for EVSE (compared to $2,000 for non-EJC) installed in EJCs. • Network incentive ($480 / port) for all ports installed in EJCs. **Unique Offerings** • Commitment of 20 DCFC in 10 EJCs. • Company-owned pole-mounted EVSE installed in at least 5 EJCs. **Expectations** • 20% of ports deployed in EJCs.
Residential Segment	**Increased Incentives** • Make-ready and EVSE support of up to $1,700 for 1-unit properties (compared to $700 for non-EJCs) and up to $2,700 for 2-4-unit properties (compared to $1,400 for non-EJCs). • 100% make-ready costs and $4,000 rebate for EVSE (compared to $2,000 for non-EJCs) installed at MUDs in EJCs. **Unique Offerings** • Increased financial support for LI/EJC[3] to cover costs of residential make-ready and managed-charging capable L2 EVSE. • EV Site Plans will help large MUDs (most of which are in EJCs) develop a plan for EVSE.

[3] LI/EJC customers are either on the low-income discount rate or live in Environmental Justice Communities.

	Expectations • Expect low-income customers to remain relatively small share of EV drivers through 2025. Targeting 10% of ports deployed for LI/EJC customers • Expect relatively high share (>40%) of MUD ports to be in EJCs.
Fleet Segment	**Increased Incentives** • 100% make-ready costs and $4,000 rebate for EVSE (compared to $2,000 for non-EJC) for fleets in EJCs. **Unique Offerings** • 300 EJC school bus incremental cost rebates (~$175,000 / bus). **Expectations** • 40% of 150 private and non-profit Fleet Assessments conducted in EJCs. • 40% of fleet make-ready ports in EJCs.

Q. Are you sponsoring exhibits with your joint testimony?

A. Yes. The table below lists the exhibits that we are sponsoring with our testimony:

Exhibit	Description
NG-EVPP-1	Testimony of Electric Vehicle Program Panel Rishi Sondhi, Julia Gold, and Jake Navarro
NG-EVPP-2	Summary of Estimated Phase III EV Program Costs
NG-EVPP-3	Summary of Estimated Costs by Cost Recovery Approach
NG-EVPP-4	Estimated Program Staffing Requirements
NG-EVPP-5	Estimated Public and Workplace Offerings Costs
NG-EVPP-6	Estimated Company-Owned Pole-Mounted EVSE Offering Costs
NG-EVPP-7	Estimated Residential 1-4-Unit Offerings Costs
NG-EVPP-8	Estimated Multi-Unit Dwelling Offerings Costs
NG-EVPP-9	Estimated Fleet Offerings Costs
NG-EVPP-10	Revision to Off-Peak Charging Rebate Program
NG-EVPP-11	Electric Vehicle Forecast
NG-EVPP-12	Company Stakeholder Outreach

IV. Background

Q. Please provide an overview of the Commonwealth's environmental policies related to the promotion of EVs.

A. The Commonwealth of Massachusetts has positioned itself as a leader in the United States, proactively tackling the challenges posed by climate change by implementing ambitious programs and policies to equitably maximize the health and wellbeing of its residents and environmental benefits. As one of the first states in the nation to pass ambitious GHG targets in 2008, the Commonwealth has continued to lead with the passage of An Act Creating A Next-Generation Roadmap For Massachusetts Climate Policy, Chapter 8 of the Acts of 2021 (the "Climate Act")[4] establishing a commitment to net-zero GHG emissions by 2050, with a minimum reduction of 50 percent by 2030 and a minimum reduction of 75 percent by 2040. The Company not only supports the Commonwealth's goals but has also committed to reach net-zero emissions by 2050. These collective goals will require swift innovation and action across all sectors of the economy.

With transportation being the largest contributing sector to GHG emissions in the Commonwealth (42% as of 2017)[5] and a significant source of pollutants that contribute to ground level ozone and other air pollution problems that adversely impact public health in the region, transportation electrification and EVs provide the opportunity to significantly

[4] St. 2021, c. 8, *available at* https://malegislature.gov/Laws/SessionLaws/Acts/2021/Chapter8.

[5] Transportation Sector Report: A Technical Report of the Massachusetts 2050 Decarbonization Roadmap Study December 2020; https://www.mass.gov/doc/transportation-sector-technical-report.

reduce emissions in the short- and long-term, while also supporting our grid to enable a clean energy future. Decarbonizing the transportation sector will be challenging, but the transition to a decarbonized and electric transportation future is vital and requires an immediate and aggressive set of responses to meet the Commonwealth's Climate Act goal of net-zero emissions economy-wide by 2050.[6]

The Company and its peer electric distribution companies ("EDCs") play an important role in accelerating this transition and will continue to be key enablers and partners to our customers, communities, and the industry as EV adoption grows exponentially in the coming years. Paired with support from complementary federal and state resources, such as the Massachusetts Offers Rebates for Electric Vehicles Program ("MOR-EV")[7] and the forthcoming Transportation and Climate Initiative Program ("TCI-P"),[8] the Company's comprehensive Phase III Program will ensure the Commonwealth, its communities, residents, and businesses have the infrastructure and support needed to facilitate widespread EV adoption.

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6 Climate Act, § 8.

7 Massachusetts Offers Rebates for Electric Vehicles Program, https://mor-ev.org/.

8 Transportation and Climate Initiative Program, https://www.mass.gov/info-details/transportation-climate-initiative-tci.

Q. How many electric vehicles are in Massachusetts today?

A. As of January 1, 2021, there were approximately 36,000 EVs registered in the Commonwealth, or about 0.6% of light-duty vehicles ("LDVs") in operation in the state.[9] In 2020, EVs were approximately 3.0% of new vehicle sales in Massachusetts; approximately 2.0% in the Company's service territory and 4.0% in the rest of the state.[10] This puts Massachusetts seventh in the nation in EV sales, but far from the leader (California is at nearly 8.0%).[11] Nationwide, the United States averaged 2.0% of new vehicles sales in 2020, far from EV sales leaders Europe (10%) and China (5.7%).[12] In 2020, approximately 70% of new EVs sold in the Commonwealth were battery electric vehicles ("BEVs") and 30% were plug-in hybrid electric vehicles ("PHEVs"), along with a single fuel-cell electric vehicle ("FCEV"), highlighting the importance of public and at-home charging infrastructure for BEVs.[13]

As of January 1, 2021, there were 32 medium- and heavy-duty ("MHDVs") electric vehicles out of approximately 204,000 MHDVs in the Commonwealth. All were BEVs and most are transit or school buses. However, there are currently more than 50 MHDV models

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[9] IHS-Polk Vehicle in Operation data for Massachusetts as of January 1, 2021. Data purchased by the Company. See also https://ihsmarkit.com/products/automotive-market-data-analysis.html ("IHS Polk")

[10] Company analysis of IHS-Polk data on sales by territory within the Commonwealth.

[11] Alliance for Automotive Innovation, 2020 Vehicles Sales by State, accessed May 5, 2021, at https://www.autosinnovate.org/evagenda.

[12] International Energy Agency (IEA), Global EV Outlook 2021, accessed July 12, 2021, at https://www.iea.org/reports/global-ev-outlook-2021/trends-and-developments-in-electric-vehicle-markets.

[13] Company analysis of IHS-Polk data.

available, and more than 125 models are expected to be available by 2023.[14] The total cost of ownership ("TCO") for BEV MHDVs continue to decline as manufacturing scales, and adoption is expected to transition quickly as each segment reaches TCO parity. State government resources, such as the approximately $10 million MOR-EV Trucks Program, will accelerate that vehicle transition.

Q. What is the pace of EV adoption necessary to meet the Commonwealth's decarbonization goals?

A. As explained in the MA 2050 Decarbonization Roadmap Report:

> The current pace of EV adoption in the Commonwealth lags the pace necessary to achieve decarbonization targets compliant with the Global Warming Solutions Act (GWSA). Without new policy intervention (by the Commonwealth, California, or the federal government), less than 500,000 vehicles are projected to be electrified in 2030. In contrast, a pace consistent with meeting GWSA targets implies that over one million of the 5.5 million light-duty vehicles (LDVs) projected to be then-registered in the Commonwealth are electric in 2030."[15]

In addition to the Commonwealth's broad and ambitious climate goals, Massachusetts was among the first states to join California and others, setting its zero-emission vehicle memorandum of understanding ("ZEV MOU") targets of 300,000 LDVs registered by 2025[16] and 30 percent and 100 percent of all new MHDV sales to be ZEV

[14] Zero-Emission Technology Inventory (ZETI) tool by CALSTART, accessed July 12, 2021, at https://globaldrivetozero.org/resources/zero-emission-technology-inventory/.

[15] Transportation Sector Report: A Technical Report of the Massachusetts 2050 Decarbonization Roadmap Study December 2020, accessed July 12, 2021, at https://www.mass.gov/doc/transportation-sector-technical-report.

[16] New England States for Coordinated Air Use Management (NESCAUM), Multi-State ZEV Action Plan: 2018-2021, accessed July 12, 2021, at https://www.nescaum.org/documents/2018-zev-action-plan.pdf.

by 2030 and 2050 respectively.[17] With approximately 36,000 LDV and 32 MHDV EVs currently registered in the state, the investments and actions taken over the next few years will be critical to accelerate and support this transition successfully. Longer term, the state's interim Clean Energy and Climate Plan ("CECP") noted the need for approximately 750,000 to 1,000,000 EVs by 2030.[18] Exhibit NG-EVPP-11 provides forecasts associated with the ZEV MOU for LDVs as well as a custom forecast for MHDV through the end of 2025.

Q. What is the current state of public charging infrastructure in the Commonwealth?

A. The Company considers "publicly accessible" charging infrastructure to generally refer to parking locations that any member of the public can access and use, although there may be costs to do so (i.e., parking or access fees, fees for use of the charger, etc.). Related, some public charging networks are proprietary, indicating they only serve a subset of EVs on the road due to hardware compatibility (e.g., Tesla's plug standard) or network restrictions (e.g., Rivian is using the Combined Charging System standard ("CCS") but intends to limit many of its sites to Rivian customers[19]). Proprietary or restricted access networks arise

[17] Northeast States for Coordinated Air Use Management, Multi-State Zero Emission Medium- and Heavy-Duty Vehicle Initiative – Memorandum of Understanding (2020), accessed July 12, 2021, at https://www.nescaum.org/documents/multistate-truck-zev-governors-mou-20200714.pdf.

[18] MA Interim Clean Energy and Climate Plan for 2030 (Strategy T2, p.21), https://www.mass.gov/doc/interim-clean-energy-and-climate-plan-for-2030-december-30-2020/download.

[19] https://electrek.co/2021/03/18/rivian-reveals-map-planned-fast-charging-stations-wall-charger/.

more for fast charging than L2 charging, where nearly all vehicles can use the J1772 plug standard and there are few restrictions by vehicle brand.

As of June 30, 2021, there were approximately 3,504 publicly accessible L2 ports and 360 publicly accessible DCFC ports in Massachusetts. Of these publicly accessible ports, 1,369 L2 and 107 DCFC are located in the Company's service territory, about 38% of the statewide total. Public charging access is growing, with over 50% growth in publicly accessible L2 ports installed in 2019, 2020, and already in 2021. Public DCFC growth is slower, adding 20 ports in the past 12 months. Public DCFC development is also somewhat nuanced due to different charging standards, proprietary networks, and business models (e.g., use of Volkswagen settlement funds via Electrify America).

However, these high-level port counts can obscure the local realities of EV charging access. Public ports in Company territory were located at approximately 640 sites, however there are only 15 sites with two or more DCFC ports.[20] Existing DCFC ports are also split across the CCS, CHAdeMO, and Tesla charging standards, further reducing the likelihood of drivers being near a compatible port. At a local level, a significant number of customers

[20] Alternative Fuels Data Center, U.S. Department of Energy, *available at* https://www.afdc.energy.gov/stations/#/analyze?region=US-MA&country=US&fuel=ELEC. (Data as of June 30, 2021) The Company filtered the data to derive the approximate number of public Level 2 and DCFC ports in Massachusetts. (Under "Advanced Filters", Filter "Location" as "United States" and "Massachusetts", filter "Fuel" by "Electric" and "Charger Types" using both "Level 2" and "DC Fast" separately, filter "Station" by "Public" and "Available").

live and drive in areas with minimal public EVSE today, sometimes referred to as "charging deserts."

Q. What is the current state of at-home charging?

A. At-home charging access is critical to enabling and sustaining personal EV ownership. Among current EV owners, generally considered early adopters, approximately 95% had access to at-home charging in 2020, representing 80-85% of all EV charging energy.[21] The vast majority of BEV drivers today have L2 charging at home (95% of Tesla owners and 60% of non-Tesla BEV owners), whereas two-thirds of PHEV drivers use Level 1 ("L1") chargers at home.[22] An estimated 5% of all residential customers are L2 "EV ready" today (i.e., they have an existing 240-volt outlet near their car), although almost none of the 36% of customers living in duplex or multi-family properties have L2 EV ready spots today.[23] The Company estimates over 50% of its residential customers face a significant barrier to at-home charging, although those barriers are addressable with utility planning and financial support, especially as vehicle and charger costs are expected to decline over time.

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[21] 2020 Survey of Rhode Island EV owner from Rhode Island Electric Transportation Initiative Evaluation Final Report – Rate Year 2, page 17 (http://www.ripuc.ri.gov/eventsactions/docket/4770-NGrid RY2%20Transportation%20Initiative%20Annual%20Report%20Combined%20(10.30.2020).pdf ("RI RY2 Evaluation Report") and Finding 9 from the Phase I Program Year 2 evaluation report, D.P.U. 21-67 Exhibit NG-MM-2 ("Phase I PY2 Evaluation Report").

[22] RI RY2 Evaluation Report at 18.

[23] *Estimating EV charging infrastructure costs across major U.S. metropolitan areas*, International Council on Clean Transportation, Aug 2019, Table 6. https://theicct.org/publications/charging-cost-US

The importance of at-home charging access does not undercut the need for a robust network of public and workplace charging to ensure that customers without at-home charging access can own and operate EVs and to ensure that all customers can meet the entirety of their driving needs, including days away from home or with long-distance driving. The dynamic of drivers mostly relying on at-home charging, while still requiring robust public charging, is a major part of the difficult economics to operate profitable public EVSE, especially in the near-term with low numbers of EVs. Fleet operators are faced with similar needs. Fleets will primarily rely upon charging at a centralized depot but will also require the use of public charging infrastructure. The Company's proposed Phase III Program addresses public, workplace, at-home, and fleet charging infrastructure.

Q. Is there outside funding available to support EV adoption and EV charger deployment?

A. Yes. In addition to the existing utility programs in the Commonwealth, there are other state and federal programs and incentives that help to support EV adoption and the deployment of EV chargers. Although these programs have helped to move the market, there is much more needed to accelerate deployment of chargers and adoption of EVs. As learned during the Company's current EV offerings, the more alignment, compatibility, and cross leveraging of these resources, the better experience and process we can provide customers.

Specifically, in addition to the availability of federal tax incentives, the Commonwealth currently has six grant programs, funded by the Volkswagen Settlement and administered by the Massachusetts Department of Environmental Protection, that are aimed at

supporting electrification of the Commonwealth's transportation network. These programs have been beneficial for customers and have allowed the Company to maximize the impact of its Phase I Program. However, as learned through the Company's stakeholder outreach, it can be complicated, confusing, and burdensome for customers to navigate multiple funding programs offering similar or overlapping resources. Feedback from customers highlighted the desire for a more streamlined process. The Company aims to coordinate and leverage the funding for customers whenever feasible and recommends coordination with state entities to develop aligned and complementary offerings to ease the process for customers.

Q. What are the barriers to EV adoption?

A. The barriers to widespread EV adoption are multiple, although all are surmountable with sustained policies and investment. Key barriers to EV adoption currently include (but are not limited to):

- high costs (especially the upfront vehicle purchase and charger installation);
- lack of charging infrastructure; and
- range anxiety (the fear of being unable to complete a trip).

These primary barriers to EV adoption have been highlighted by the Company in its previous Evaluation Reports and multiple industry studies confirm they remain the same today[24]

[24] Barriers as summarized in Matteo Muratori et al 2021 Prog. Energy 3 022002 doi.org/10.1088/2516-1083/abe0ad, and further supported by research from the Phase 1 PY 1 Evaluation Report (for example, Finding 7) and Phase I Program Year 2 Evaluation Report (for example Table 4-22).

EVSE have their own set of barriers, which can be broadly classified into those affecting installation and those affecting operation. EVSE financial viability at public, workplace, and MUD sites hinges on station utilization,[25] which is largely determined today by the number of nearby EV owners, trends in vehicle technologies (i.e., vehicle range and charging capabilities), and station pricing. EVSE tend to face difficult paths to financial sustainability without ongoing subsidies from the site hosts. Sites with "dedicated" vehicles, however, such as MUDs and fleet depots, will be able to integrate EVSE into their larger operations over time. Public DCFC are more likely to be financially self-sustaining in the long run,[26] however their near-term paths to profitability are still limited due to a small BEV population fragmented across multiple charging standards (CCS, CHAdeMO, and Tesla) and the financial impacts of demand charges at low levels of station utilization. Near-term charging economics, combined with the lack of existing public and private charging infrastructure, signal a strong need for utility support for charging infrastructure and customer programs to help accelerate EV adoption and meet the Commonwealth's climate goals.

Q. How does the Phase III Program address these barriers to EV adoption?

A. Utility support for charging infrastructure and customer-facing charging programs can address many, but not all, of the top barriers to widespread EV adoption. The need for

[25] Muratori et al page 15, "PEV-charging economics vary with location and station configuration and depend critically on equipment and installation costs and retail electricity prices, which are dependent on utilization."

[26] Muratori et al page 15, "it is likely that DCFCs will be profitable with sufficient demand."

ubiquitous networks of public charging infrastructure, universal and low-cost at-home charging, and infrastructure planning and support for high-powered charging sites (such as fleet depots or highway rest stops) all require strong utility involvement. Financial support to address EVSE installation costs is paramount in each situation.[27] Additionally, the Company proposed an alternative to traditional demand-based structures to facilitate faster charging for electric LDVs, MHDVs, and fleet vehicles targeted to EVSEs at lower levels of utilization, which may reduce barriers to initial investment in new DCFC stations.

Q. Did the Company size the Phase III Program with the Commonwealth's decarbonization goals in mind?

A. Yes. The Company estimated future charging needs and segment sizes using a mix of approaches for the following segments: Public and Workplace; Residential, including those with 1-4-units, and MUDs (5 or more units); and Fleet. Overall, the segments are sized to meet the Commonwealth's ambitious EV adoption goals, focusing on the Company's service territory's share of the LDV ZEV MOU goal.

The size of the largest segment of the Phase III Program, Public and Workplace, is based upon the EVI-Pro Lite tool from National Renewable Energy Laboratory ("NREL") using an approach agreed upon by the Company, Eversource, and Unitil and reflecting the

[27] Phase I PY2 Evaluation Report Finding 2 states: "The Charging Program is very influential onsite hosts' decisions to install EV charging stations, and site hosts depend on incentives to install stations. Site hosts reported that they did not necessarily have a need to install stations but were heavily motivated by the amount of program funding available. Many of the customers interviewed in 2020 would not have pursued a station installation at the time they did without external funding covering most or all of the project cost."

statewide light-duty ZEV MOU target of 300,000 EVs in 2025. The outputs from EVI-Pro Lite were split across each utility's share of vehicles in the Commonwealth.[28] National Grid and Eversource sized their public and workplace programs to 80% of the remaining need of this output from EVI-Pro Lite to allow for deployments that might occur without the use of utility make-ready funds.

The Residential segment is sized based upon expected vehicle sales. The Residential 1-4-unit offerings are sized to serve roughly 15% of new EVs sold under the light-duty ZEV MOU forecast, reflective of market research on expected customer eligibility and participation. The MUD offerings are sized based on significant year-over-year growth in MUD ports enabled (relative to the Phase I Program). Based upon these growth assumptions, the MUD offerings are sized to address roughly two percent of long-term MUD charging needs.

The Fleet segment used a third-party market-driven forecast that incorporates MHDV availability. The Fleet segment is sized to enable both the light-duty ZEV MOU target in 2025 and the 30% of new sales of medium- and heavy-duty ZEV MOU in 2030 goals. Fleet operators are poised to quickly transition to electric fleets, as more EV models of all types become available in the coming years, corporate decarbonization goals continue to accelerate, and TCO approaches parity with ICE vehicles. The Fleet segment is sized to enable charging make-ready infrastructure for 25% of the new electric LDVs and 50% of

[28] Company analysis of IHS-Polk data of vehicles in operation data as of April 1, 2021.

the new electric MHDVs in the MECO territory. The Company plans to support this portion of the market based on prior programs and stakeholder feedback, acknowledging that fleet operators often make infrastructure decisions for reasons unrelated to EV charging programs, such as corporate goals, municipality clean transportation targets, or other economic or business expansion reasons for a specific fleet site.

V. Phase III Program Proposal

A. Comparison of Phase I, Phase II and the Proposed Phase III Programs

Q. Please provide an overview of how the Phase III Program differs from the Phase I and Phase II Programs.

A. The Phase I Program is an introductory program, the primary goal of which is to increase the availability of EV charging in the Company's service territory by facilitating the development of charging sites at public and commercial locations over a three-year period.[29] Similarly, the Phase II Program is an initial contribution to encourage residential off-peak EV charging, assist publicly funded fleet operators with vehicle electrification, and perform R&D to demonstrate the benefits of co-locating DCFC with a solar and storage site.[30] These programs have provided the Company with the experience and insights

[29] Petition of Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, for Approval of its Electric Vehicle Market Development Program, and of its Electric Vehicle Market Development Program Provision, pursuant to G.L. c. 164, §§ 76, 94, and Acts of 2016, c. 448, D.P.U. 17-13, Revised Joint Pre-filed Direct Testimony of Karsten A. Barde and Brian J. Cronin Revised Exhibit KAB/BJC-1 at 5, (February 13, 2017).

[30] See D.P.U. 18-150, at 338-344.

necessary to deploy charging infrastructure and to integrate EV charging load with the Company's electric system.

In contrast, the Phase III Program is an expansive and comprehensive program that addresses the diverse needs of different market segments as a means of advancing the Commonwealth's near-term 2025 and 2030 decarbonization goals that will place the Commonwealth on a trajectory to achieve its net-zero emissions target by 2050. The Phase III Program builds on the Phase I and II Programs and therefore some of the program components are similar; however, the scale and breadth of the Phase III Program components is significantly larger given the Company's experience and commitment to facilitate the Commonwealth's achievement of its decarbonization goals. Please see the table below for a summary of the Program offerings.

Table 4: Comparison of Phase I, Phase II and Phase III Programs

Segment offerings	**Phase I**	**Phase II**	**Phase III**
Public/Workplace Segment			
L2 make-ready and EVSE rebates	Yes	Proposed (not approved)	Yes
DCFC make-ready and EVSE rebates	Yes (make-ready only)	Proposed (not approved)	Yes
DCFC commitment in EJCs	No	No	Yes
Company-owned pole-mounted EVSE	No	No	Yes
Co-located energy storage incentives	No	R&D Approved	Yes

Residential Segment			
L2 residential make-ready and charger rebates	No	No	Yes
LI/EJC turnkey charging install	No	No	Yes
Off-peak charging rebates	No	Yes	Yes
MUD L2 make-ready and EVSE rebates	Yes	Proposed (not approved)	Yes
MUD EV Ready Site Plans	No	No	Yes
Fleet Segment			
Assessment Services	No	Yes	Yes
Make-ready and EVSE rebates	No	No	Yes
Off-peak charging rebates	No	No	Yes
Electric school bus rebates	No	No	Yes
Other Offerings			
Expansion of off-peak charging rebate	No	Yes	Yes
Workforce Development and Electrician Training	No	No	Yes
Demand Charge Alternative	No	No	Yes

Q. How does the Phase III Program build on the Phase I and Phase II Programs?

A. Over the course of the Phase I and Phase II Programs, the Company learned many lessons. These lessons informed the design of the Phase III Program.

Q. Please provide a summary of those lessons learned in Phase I and Phase II Programs.

A. During the implementation of Phase I and Phase II, the Company learned the following:

1. The Phase I Program had a strong influence on site hosts' decisions to install EV charging stations. As highlighted in the Program Year 2 ("PY2") Evaluation Report, site hosts reported that they were heavily motivated by the program funding available. Several customers reported they would not have pursued a station installation at the time they did without external funding covering most or all of the project cost. As a result, the Company learned that a robust program with sufficient funding is needed to motivate the next tranche of site hosts to deploy charging stations.

2. L2 site hosts reported a variety of interests in offering EV charging, which include amenity to attract staff, visitors, and/or customers, or as a competitive advantage in attracting EV drivers to their business but they do not anticipate revenue from EV charging to be significant in the near term. As a result, the Company learned that, in the early stages of EV adoption, utilization may remain low which requires utilities to provide financial incentives to defray the cost of deploying charging infrastructure.

3. For DCFC installations, the high installation and EVSE costs have been and continue to be a barrier. Inclusion of (limited) funding for DCFC projects via Massachusetts Electric Vehicle Incentive Program ("MassEVIP") program increased the number of applications. As a result, the Company learned that including incentives for DCFC station equipment, which directly targets the high cost of DCFC stations is necessary.

4. The EV market is still nascent; more education and awareness are needed about the program to support site hosts in making the decisions necessary to enroll in the Company's programs. As result, the Company learned that including innovative marketing approaches and channels that are tailored to hard-to-reach customer segments is necessary. For example, the Company will target outreach for low-income customers and Environmental Justice Communities ("LI/EJC") and MUD properties.

Q. Did the Company meet with stakeholders to gather feedback on Phase I and Phase II Programs?

A. Yes. Over the past year, the Company conducted extensive outreach to more than 50 entities, with stakeholders ranging from EJC representatives, municipalities, environmental groups/advocacy organizations, state agencies, and the EV industry. Over the course of the planning period, the Company met with many of the stakeholders multiple

times. These meetings were initially focused on providing updates and receiving feedback on the Phase I and II Programs. A list of the stakeholders engaged throughout this process is included in Exhibit NG-EVPP-12.

In addition to meeting with this broad group of stakeholders, the Company presented at various forums to help its site host recruitment, raise awareness efforts, and build partnerships and opportunities for collaboration. The Company attended and presented at quarterly meetings hosted by the Advanced Energy Group to provide regular updates on program status and recent activities, and to solicit and incorporate feedback from the public.

Finally, the Company maintained close coordination with Eversource through quarterly meetings to share lessons learned and discuss opportunities to collaborate jointly on the deployment of the EV programs.

Q. Did the stakeholder engagement and feedback ultimately help inform the design of the Phase III Program proposal?

A. Yes. The Company utilized the feedback received from stakeholders to inform the design of the Phase III Program. The Company received broad stakeholder support for the scope and scale of this Program, specifically the expanded nature of the programs to serve all customer segments and prioritize equity throughout. Key themes and feedback that were incorporated into this proposal include:

For Public and Workplace Segment:

- Simplify the segment design to educate and inform EV charging site hosts about available incentives and providing 100 percent coverage on the utility and customer-side make-ready work.
- Providing incentives for L2 EVSE will encourage site densification, encouraging more ports to be installed at each customer location.
- DCFC EVSE incentives are necessary to adequately support the installation of fast charging sites.
- Operation of low utilization, high power draw DCFC is a barrier to deployment without appropriate demand charge alternatives.
- Provide rebates to help support the ongoing charger networking costs.

For Residential Segment:

- Home charging is a critical component of the EV charging eco-system, and solutions for integrating EV load should be implemented.
- Provide higher levels of financial support to LI/EJC customers to ensure residents are supported to be able to make their homes or apartments EV ready.
- Expand eligibility of equity-oriented offerings to include customers on the Company's low-income discount rate. For MUDs, buildings eligible for higher incentives are those in EJCs, have 50% or more of residents on a discount rate, or are designated public or low-income housing.
- For 1-4-unit properties, provide no-cost EV charging installs for LI/EJC customers.

For Fleet Segment:

- Extend benefits of managed charging to fleet operators via managed charging rebates.
- Support for MHDV electrification to enable MOR-EV Trucks Program, through both infrastructure support and fleet assessments for public, non-profit and private fleets.
- Prioritize school bus and transit bus electrification, especially in LI/EJCs. In particular, stakeholders identified the harmful emissions from idling diesel school buses as a top priority to electrify.

B. Consistency with Department Standard of Review

Q. Has the Department established a standard of review for EV charging proposals that is relevant to this proposal?

A. Yes. The Department opened an investigation regarding EVs and EV charging in 2013.[31] At the conclusion of the first part of the investigation, the Department established the standard of review to be applied to any electric distribution company's proposal for cost recovery associated with ownership and operation of EVSE. Specifically, any such proposal must: (1) be in the public interest; (2) meet a need regarding the advancement of EV in the Commonwealth not likely to be met by the competitive EV charging market; and (3) not hinder the development of the competitive EV charging market.[32]

Q. In your opinion, does the Phase III Program meet the Department's standard of review?

A. Yes. The Phase III Program meets each of the Department's criterion. The Phase III Program supports the Commonwealth's public policy goals, meets a need for ramping up the EVSE in the state that has not been met by the competitive market and is not likely to be met by 2025 and supports, rather than hinders, the development of the competitive market by expanding the opportunities for market participants to gain experience in owning and operating EVSE. The Company's proposed Phase III Program received broad support from industry stakeholders, further indicating that the Phase III Program supports, rather

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[31] Order On Department Jurisdiction Over Electric Vehicles, The Role Of Distribution Companies In Electric Vehicle Charging And Other Matters, D.P.U. 13-182-A at 13 (August 4, 2014), affirmed in D.P.U. 17-05 Revenue Order and in D.P.U. 17-13 Final Order.

[32] Id.

than hinders the competitive EV charging market. The Company has carefully designed and sized the Phase III Program offerings to address existing market barriers to EVSE and EV charging. The Phase III Program will promote and work with qualified EVSE vendors in the Commonwealth and help make Massachusetts residences EV ready for the future. The Company will address herein how each element of the Phase III Program is consistent with the Department's standard of review for utility EV proposals.

Q. Did the Department provide directives in D.P.U. 20-69-A relevant to EV proposals?

A. Yes, the Department's Order in D.P.U. 20-69-A provides that each company must file an EV proposal with: (1) a commercial EV rate design proposal addressing alternatives to demand charges; and (2) any new or expanded EV charging infrastructure proposals. The filing must be made on or before July 14, 2021.[33]

For EV infrastructure proposals, the Department directed the EDCs to coordinate future EV infrastructure program proposals to ensure a consistent approach for host recruitment and incentives – at a minimum and ensure the proposal is not duplicative of other build out incentive programs.[34] Additionally, new proposals should mitigate barriers that impede recruitment of DCFC site hosts for strategic locations.[35] Further, the Department directed the EDCs to incorporate analyses of traffic and EV charging patterns to identify priority

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33 Grid Modernization, D.P.U. 20-69-A at 40-41 (May 21, 2021).

34 Id. at 46.

35 Id. at 47.

locations for public stations and coordinate and propose statewide and company-specific performance metrics associated with EV charging infrastructure programs.[36]

For EV charging incentives, the Department directed the EDCs to avoid overlap by coordinating their EV charging incentive offerings. Additionally, the Department noted in any proposal, the EDCs should address issues related to customers charging their EV in multiple service territories.[37]

Lastly, for any proposed alternatives to traditional demand rate structure the Department directed the EDCs to consider the following: (1) converting kW-based charges to kilowatt-hour-based charges; (2) off-peak charging demand charge rebates or discounts; and (3) sliding scale demand charges based on the load factor of the electric vehicle charging site.[38] Additionally, the Department provided that all proposed demand charge alternatives should be based on EV charging data collected through one of the following: (1) smart chargers or networked chargers; (2) EV telematics; (3) interval meters installed at request of customer.[39] The EDCs must coordinate development of demand charge alternative proposals for C&I EV customers, including public EV charging site hosts with L2 and/or DCFC stations.[40] The EDCs must identify a timeline and approach to transition all

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36 Id.

37 Id. at 49, n. 32.

38 Id. at 42.

39 Id. at 42-43.

40 Id. at 43.

proposed demand charge alternatives to the future demand charge rate designs that will be enabled through the full deployment of advanced metering functionality.[41] Finally, any proposed tariff included as part of the EDC's demand charge alternative proposals must be filed as an exemplar tariff.[42]

Q. In your opinion, does the Phase III Program satisfy the D.P.U. 20-69-A directives?

A. Yes, the Phase III Program satisfies the Department's D.P.U. 20-69-A directives. The Company coordinated extensively with the Massachusetts EDCs on the development of its EV infrastructure program to ensure a consistent approach for host recruitment and incentives. In particular, the Company worked with Eversource and Unitil to make sure the EDCs' proposed programs are as consistent as possible. Based on the Company's and Eversource's respective experience to date with EV charging programs, the companies worked together to revise their program designs with the goal of offering all Massachusetts customers a consistent offering and EV charging experience. The Company also developed new offerings to address barriers to the recruitment of site hosts for the deployment of DCFC stations at strategic locations, as discussed further in Section VII. A. The Company will coordinate with EDCs to incorporate traffic analysis and intends to use traffic pattern and charging analyses in its system planning efforts in the future as discussed below. The Company also worked with the EDCs to develop and propose common statewide and company-specific performance metrics for the Program, as discussed below. Lastly, the

41 Id.

42 Id.

Company coordinated with the EDCs on the development of demand charge alternative offering. As part of this coordination, the EDCs discussed a timeline and approach to transition all proposed demand charge alternatives to the future demand charge rate designs that will be enabled through the full deployment of advanced metering functionality. The Company proposes a sliding scale of demand and volumetric charges for commercial customers, based on the load factor of the EV charging site, as discussed in the Demand Charge Alternative Panel testimony, Exhibit NG-DCA-1.

Q. How closely aligned are the EDCs' electric vehicle proposals?

A. The Company coordinated with Eversource and Unitil throughout the process of designing the Phase III Program. As a result of that coordination, the EDCs' proposals include consistent rebate levels, eligibility requirements and delivery methods for the Public and Workplace and Residential segments. Based on the companies' respective experience with earlier programs, however, there are slight differences, including that Eversource is not offering make-ready incentives for proprietary charging equipment, is not proposing a pole-mounted L2 charger offering and is not offering any L1 charger incentives for long-dwell time sites. Additionally, based on its experience in the Phase II Program, the Company is proposing a robust Fleet Segment offering, whereas Eversource's proposal includes a more limited Fleet pilot. The Company is also proposing an expansion of its Off-Peak Rebate offering from the Phase II Program, which Eversource has not included in its proposal. The Company also worked with Eversource and Unitil to jointly propose a Workforce Development and Electrician Training offering. However, as this is Unitil's

first EV charging incentive program, and due to Unitil's service territory size, Unitil's other EV program offerings differ to a greater extent.

Q. Will the Company incorporate analyses of traffic and EV charging patterns to identify priority locations for future public charging stations?

A. The Company has included in its proposed Phase III Program an effort to ensure public DCFC are installed in a number of strategically important locations within the program term, an effort that will involve assessing gaps in public charging. Beyond that initiative, however, the Company's Phase I and proposed Phase III Programs offer consistent financial support across the service territory, only differentiating support by market segment (e.g., public versus MUD charging) and whether the site is in an EJC. Thus, public station locations are otherwise largely determined by customers. The Company discusses below the proposed approach of assessing gaps in DCFC deployments near EJCs and initiating installations. Further, the Company intends to use traffic pattern and charging analyses in its network planning efforts in the future.

Q. Did the Company and EDCs coordinate to develop statewide performance metrics to report on the progress of their EV charging infrastructure programs?

A. Yes, the Company consulted with Eversource and Unitil regarding performance metrics that each company would report for their service territory and programs. The Company proposes to track and report on the following statewide performance metrics for its Phase III Program:

- Program implementation metrics:
    - Total number of charging sites developed;

- Total number of ports installed by port type (i.e., L2 and DCFC) by market segment (e.g., public, workplace, MUD, fleet, and EJC);
- Program financial support provided to DCFC stations;
- Program financial support provided to stations in EJCs; and
- Total number of participants in the Workforce Development and Electrician trainings.

- Program benefit metrics:
  - EVSE utilization (e.g., kWh delivered per port per year); and
  - CO_2 emissions avoided from EVs relative to ICE vehicles.

Q. Did the Company coordinate with EDCs to develop company-specific performance metrics to report on the progress of its Phase III Program?

A. Yes, the Company proposes to track and report on the following company-specific performance metrics for its Phase III Program:

- Program implementation metrics:
  - Total number of pole-mounted EVSE installed;
  - Total number of Residential Charger Rebates distributed;
  - Total number of Residential Make-Ready Rebates distributed;
  - Total number of Residential LI/EJC Offerings distributed;
  - Total number of fleet assessments completed; and
  - Total number of electric school buses enabled.

Q. Is the Company proposing to recover incentives associated with these metrics?

A. No. The statewide and company-specific performance metrics listed above are for purposes of reporting progress on the Company's Phase III Program over time. In addition to these reporting metrics, however, the Company is proposing two performance incentive mechanisms that will track the progress of other aspects of the Phase III Program and

provide an opportunity for the Company to earn incentives based on its progress. These performance incentive metrics are described in detail in Section IX, herein.

VI. Program Details

A. Public and Workplace Segment

Q. Please describe the Public and Workplace Segment.

A. Building off the success of the Phase I Program, the Public and Workplace Segment will provide similar make-ready infrastructure incentives and expand those offerings based on the lessons learned from the Phase I Program. The Company has found that additional financial incentives and offerings are needed to sufficiently spur EV adoption, make public and workplace charging more affordable for site hosts, and equitably serve its customers. The Public and Workplace Segment will include the following offerings:

i. a Make-Ready offering with utility-side make ready incentives, customer-side make ready incentives, EVSE rebates, and a networking stipend for eligible ports;
ii. a DCFC commitment in EJCs;
iii. a pole-mounted EVSE offering;
iv. and an offering to provide incentives for technologies to expedite DCFC installations at constrained locations on the Company's system.

The Commonwealth's Decarbonization Roadmap's Transportation Technical Report[43] highlights the continued need for Public and Workplace charging to accelerate EV adoption at the pace necessary to reach the Commonwealth's goals.

[43] Massachusetts Executive Office of Energy and Environmental Affair's (EEA) 2050 Decarbonization Roadmap Study, Transportation Sector Technical Report, https://www.mass.gov/doc/transportation-sector-technical-report/download, Section 5.1.2.4.

Q. What is the goal of the Public and Workplace Segment?

A. The goal of the Public and Workplace Segment is to provide ubiquitous charging away from home within the Company's service territory. The Public and Workplace Segment will provide incentives for make-ready infrastructure for L2 chargers, DCFC, and in special cases of long-dwell time parking, L1 chargers. The Company proposes to provide make-ready incentives to deploy approximately 2,500 Public L2 Ports, 4,700 Workplace L2 Ports, 32 megawatts ("MW") of Public DCFC ports, and a mix of 500 Public and Workplace L1 ports.

Table 5: Public and Workplace Approximate Port and MW Targets

Public L2	2,500 ports
Workplace L2	4,700 ports
Pole-Mounted L2	200 ports
Public DCFC	32 MW
Level 1	500 ports

The Public and Workplace Segment aims to deploy approximately 20% of its ports within EJCs. The Company is proposing to install a MW target of DCFC as the capacity of DCFC ports can range from 24-kW to 350-kW. It is important to note that a port target may not result in equal outcomes for meeting the Commonwealth's DCFC needs, which serves as the motivation for adopting a capacity-based target.

Q. How did the Company size the Public and Workplace Make-Ready offering?

A. The Company used EVI-Pro Lite[44] to inform the sizing of the Make-Ready offering within the Public and Workplace segment. EVI-Pro Lite is an accepted and useful tool in helping to size EVSE infrastructure, however the outputs of the tool are highly sensitive to variability in the inputs. For example, a 1 percent shift in the input of percent of drivers with access to home charging changes the L2 and DCFC outputs by 2-3 percent. Similarly, a 1 percent shift between share of PHEVs and BEVs changes the number of L2 chargers by about 3 percent. Without being able to predict the exact ratio of BEVs to PHEVs on the road, as well as the exact future charging behaviors of those EVs, the Company emphasizes the importance of maintaining flexibility in the deployment of these port targets as well as their associated budgets.

When using EVI-Pro Lite, the Company started with the Commonwealth's light-duty ZEV MOU target for the end of 2025 which was scaled to the fraction of the Commonwealth's vehicles in operation ("VIO") that exist in the Company's service territory. The rest of the inputs to EVI-Pro Lite include: 50 percent PHEV support (approximately half of PHEV miles are electric), 77 percent of charging is done at home, 67 percent of vehicles being BEV-250, 5 percent of vehicles being PHEV-50, and 28 percent of vehicles being PHEV-20. As stated previously, the offering proposes to deploy EVSE to match the 80 percent of

[44] U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, Alternative Fuels Data Center, Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite, https://www.afdc.energy.gov/evi-pro-lite

the remaining charging need to support the ZEV MOU target, and thereby align with Eversource. The Company believes this is a reasonable target accounting that some chargers may be installed without the assistance of the Company's make-ready incentives. Additionally, EVI-Pro Lite outputs a DCFC count of 150-kW chargers. As discussed earlier, not all DCFC provide the same charging capacity, and the Company proposes to target the overall DCFC capacity given by EVI-Pro Lite, which is by 150-kW DCFC port count.

Public and Workplace Make-Ready Offering

Q. Please describe the Public and Workplace Make-Ready offering.

A. The Company proposes continuing a Public and Workplace Make-Ready offering to provide the charging infrastructure needed to support the Commonwealth's ZEV MOU target and other decarbonization goals including the 2030 CECP. The Public and Workplace Make-Ready offering will provide incentives for make-ready infrastructure for L2, DCFC, and, in select cases, L1 chargers. According to the PY2 Evaluation Report, customers (site hosts) found this program very influential in their decision to install charging stations.[45] The Company proposes to provide these incentives at similar incentive levels to what was provided in Phase I. The incentives below were determined based on the averages of the Phase I Make-Ready Program in addition to being benchmarked by peer utilities with similar program offerings.

[45] Phase I PY2 Evaluation Report, Section 4.1.1

The portion of the make-ready infrastructure on the utility side of the meter ("utility-side work") will be completely paid for by the Company, so long as the new service is used exclusively for EV Charging. The Company will determine whether a new or upgraded service is necessary to serve EV loads for a site host.

The portion of the make-ready infrastructure on the customer's side of the meter ("customer premise work") will be covered up to 100-percent of the average installation cost for that installation type, not to exceed actual installation costs. To account for certain site-specific characteristics and potential cost-shifts in the industry, the Company may allow up to 150-percent of the average costs on a case-by-case basis. The average cost for the customer premise work for each installation type will be recalculated periodically to keep up with market dynamics.

Q. Will the Company provide make ready incentives for proprietary networks?

A. Yes. The Company will provide make-ready incentives for proprietary networks. Under this offering, proprietary networks are defined as those that either use proprietary hardware or restrict access to specific vehicle brands. The utility-side make-ready incentives will be the same level as non-proprietary networks. The customer side make-ready incentive for proprietary network EVSE will be 50 percent of the average installation costs for non-proprietary network EVSE incentive. In the event that a site hosts co-locates a proprietary network EVSE with non-proprietary network EVSE at a 4 to 1 ratio of proprietary network EVSE ports to non-proprietary network EVSE ports, those co-located proprietary network

EVSE ports will receive incentives equal to 65 percent of the non-proprietary network EVSE customer premise make-ready incentives.

The Company is proposing to provide incentives for proprietary networks to accelerate the deployment of these DCFCs within the Company's service territory. Across Massachusetts, there are 32 Tesla DCFC ports in the Company's service territory, and 186 Tesla DCFC ports outside the Company's service territory. Given that the Company has half of the VIO, it is reasonable to conclude that the Company should support further deployment of these chargers even if the other utilities do not at this time.

Q. Will the Company offer EVSE Rebates as a part of the Public and Workplace Segment?

A. Yes. the Company is proposing to offer the following EVSE rebates for L2 and DCFC EVSE, which are broadly aligned with Eversource's and Unitil's proposed programs. Regarding DCFC, the Company experienced in its Phase I Program that DCFC deployment was challenging due to the high upfront costs for site hosts. However, when MassEVIP offered a limited DCFC EVSE rebate, the Company saw an increase in the number of DCFC project applications. Given the need for greater DCFC deployment, the Company is proposing to add DCFC EVSE rebates in the Phase III Program.

A summary of the proposed rebates levels is in the table below.

Table 6: Public and Workplace EVSE Rebates

L2 EVSE Rebate Levels	
Customer Segment	Rebates Levels
EJC	100% of installed costs for up to 10 ports
Muni	50% of installed costs for port 3-10
Other (Non-EJC / on-Muni Public and Workplace)	50% of installed costs for port 5-10
DCFC EVSE Rebate Levels	
Customer Segment	Rebates Levels
Public, Non-EJC	$40,000/port; Ports must be above 50 kW, minimum 100 kW/site, site max EVSE incentive ($400,000).
Public, EJC	$40,000/port for ports above 50 kW and up to 150 kW, minimum 100 kW/site, site max EVSE incentive ($400,000) For ports 150 kW and above, up to $80,000/port.

Q. Will the Company require networking for all public and workplace chargers?

A. Yes. The Company will require networking for all workplace and public L2, and public DCFC chargers. Networking allows customers to more effectively locate and efficiently use chargers via mapping and queueing in charging apps. Additionally, networking provides the Company with charging data which can be leveraged for future program design and current program refinements.

Q. Will the Company offer a networking allowance as part of the Public and Workplace Make-Ready offering?

A. Yes, for certain segments. The Company recognizes the challenge posed to site hosts by networking fees. Therefore, the Company proposes to offer a stipend to support 4 years of networking at a level of $480/port for public L2 chargers and any EJC L2 chargers.

Q. What are the eligibility requirements for the Public and Workplace Make-Ready offering?

A. To be eligible for the Public and Workplace Make-Ready offering, the Company will continue to require EVSE installed at the site be on the Company's Qualified Equipment List ("QEL"). Additionally, the Company will continue to require that data is reported for 5 years for public L2 chargers and DCFC, and for any workplace charging stations that include networking.

Site hosts will continue to be required to qualify as a non-residential customer and own or control the location where the EVSE will be deployed, including the associated parking spots for EV drivers.

Q. How is the Company ensuring DCFC access in EJCs?

A. DCFC access within or in close proximity to EJCs is a critical part of ensuring an equitable transition to clean transportation. All communities need accessible DCFC, but EJCs have unique needs, often having higher percentages of MUDs (therefore more limited at-home charging), as well as often having a higher percentage of ride hailing drivers. To ensure these communities and customers have access to DCFC, the Company proposes a DCFC commitment in EJCs offering to ensure the deployment of DCFC in up to ten underserved or high-need EJCs. These communities will be identified at the start of the Phase III Program and the Company with work with its communities, stakeholders, EV charging developers, and the industry to support deployment in EJCs. Before the mid-point of the Phase III Program, the Company will assess where gaps in DCFC deployment may still

exist. If no DCFC have been installed or are planned for installation within or in close proximity to the identified communities, the Company proposes to build, own, and operate up to (20) 150-kW DCFC ports across these targeted areas during the final two years of the Program. Prior to the Company building DCFC in EJCs, a six-month notice would be provided to station developers to highlight these EJC gaps and give them the opportunity to deploy DCFC prior to the Company doing so. The Company aims to collaborate with these EJCs and other stakeholders to identify sites for deployment, such as municipal public parking, commercial properties with willing site hosts, or other areas that are highly trafficked or easily accessible to the community being served.

Pole-Mounted EVSE Offering

Q. Please provide an overview of the Company's proposed pole-mounted EVSE offering.

A. The Company is proposing to install, own and operate, pole-mounted EVSE, which are charging stations mounted on electric distribution poles, located near on-street parking locations. The Company proposes to work with up to 10 municipalities to deploy approximately 200 ports on Company-owned electric distribution poles over four years. After four years of the Program, the Company will offer to sell the pole-mounted EVSE to the municipality or the open market thereafter.

To ensure that the pole-mounted EVSE will reach underserved customers, the Company will target at least five EJCs. The Company will require the partnership of the municipality to identify suitable poles that will minimize the amount of make-ready infrastructure

needed and ensure the ports are sited in areas where customers with on-street parking are most likely to have access to the chargers. Eligibility criteria for the municipalities participating in the pilot include, but are not limited to, willingness to partner with the Company to deploy the chargers and compliance with agreements of other existing third-party attachments on poles or commit to being compliant with existing agreement by the end of the Company ownership period. The costs for the Company-owned pole-mounted EVSE offering are detailed in Exhibit NG-EVPP-6.

Q. What are the benefits of pole-mounted EVSE?

A. Pole-mounted EVSE will serve our customers that do not have access to private or designated parking. Customers without access to private or designated parking are more likely to live in a rented space in MUDs and customers who live in MUDs are also more likely to live in an EJC.[46] Therefore, deploying pole-mounted EVSE in EJCs can increase equitable access to EV charging. This solution will allow the Company to supplement the Public and Workplace segment offering to better address the EV charging needs in our service territory.

Q. Has the Company conducted any pole-mounted demonstration projects?

A. Yes. The Company is conducting a demonstration project of pole-mounted EVSE through a partnership with the City of Melrose. The demonstration uses Company-owned electric distribution poles, which carry the electric wires throughout the city, meaning that

[46] Company analysis of customer data and expected EJC areas.

electricity to power the charger is available directly on the pole.[47] The project in Melrose includes 15 chargers on nine poles. The chargers are designed to accommodate a single or dual charger on each pole. To date, eight chargers have been deployed and the remaining chargers are planned to be deployed by Fall 2021.

Q. Are there any initial findings or lessons learned from the demonstration project in the City of Melrose?

A. Yes. Initial results show an approximately 70% reduction in installation costs compared to ground-mounted chargers, supporting the Company's hypothesis that pole-mounted EVSE would reduce installation costs because the electric infrastructure to power the chargers is pre-existing on the distribution pole. Additional learnings from the partnership with Melrose also exposed the complex processes for third-party pole attachments. Third-party pole attachments require several highly specialized tasks for which the City of Melrose was not equipped with the necessary personnel and therefore the Company provided the necessary support to complete the process. In addition, the City of Melrose incurred several addition costs[48] to comply with the third-party attachments process. Asking future municipalities to follow the same third-party attachments process may be burdensome to the municipalities and hinder scaling up this product. Therefore, the Company is proposing to install, own and operate pole-mounted EVSE.

[47] In Massachusetts, the streetlighting infrastructure is only designed to support the voltage needed for lighting and is not able to support a charging station without costly rewiring. For this reason, installing pole-mounted chargers is simplest to install on utility electric distribution poles.

[48] Such as surety bonds and insurance requirements of the third-party attachments.

Q. Why is the Company best positioned to install, own, and operate pole-mounted EVSE?

A. The Company has many years of experience attaching products to our distribution poles and is not subject to the third-party attachments process. Therefore, the Company is in a unique position to own and operate EVSE mounted on Company-owned distribution poles. After a period of four years, the Company will offer to sell the EVSE to the municipality or to the open market, with the municipality having right of first refusal. The Company will work closely with the municipality to coordinate the transfer of the pole-mounted EVSE and expects the transition to be similar in scope to the ownership transfer of streetlights. Company ownership of pole-mounted EVSE will achieve three major benefits for customers. First, the Company will take on the risk of installing EVSE targeting areas with on-street parking that may not be financially feasible for the open market to install. Second, the Company will manage the pole attachments process, which eliminates costs of adhering to the third-party attachments process because the Company is not subject to the third-party attachment requirements for Company-owned attachments to poles. The Company will have the right to install the pole-mounted EVSE at its own discretion on jointly-owned poles because the equipment will be Company-owned. The Company will alert the joint-owner of the installation of the pole-mounted EVSE to ensure the all parties stay up to date on the equipment added to jointly-owned poles. Lastly, the Company's ownership of the pole-mounted EVSE will significantly decrease the timeline to deployment because the pole-mounted EVSE is no longer subject to the third-party

attachments process, ensuring that the EVSE is available to customers in the shortest timeline possible. As station utilization increases, the Company expects that the participating municipalities and/or open market will be financially motivated to purchase the EVSE from the Company.

Q. How will the Company determine the price a customer pays to charge their vehicle at the Company-owned pole-mounted EVSE?

A. The Company will work closely with the municipal partners to address the specific needs of the municipality. At a minimum, pricing will be set to recover costs of the electricity. Working closely with the municipality will also allow the Company to address parking policies, access controls, or priorities the city or town is looking to support.

Co-located Energy Storage Incentives

Q. Is the Company proposing incentives to support the use of energy storage technology to enable expedited installation of EV fast charging in locations with existing grid constraints?

A. Yes, the Company is proposing to offer incentives to support DCFC and energy storage integrated technologies. This proposal will incentivize energy storage integrated with DCFC to reduce short to medium term barriers to the installation of high powered DCFCs in areas which provide considerable value to EV drivers due to their proximity to major thoroughfares but where current distribution system capacity may be insufficient to support DCFC sites without a system upgrade. Where the traditional wires solutions to alleviate these capacity constraints present both high system modification costs and multi-year implementation timeframes, the Company proposes offering additional incentives to

support rapid deployment of DCFC through the installation of commercially available DCFC and energy storage combination products. These products effectively reduce the capacity required from the grid while maintaining the customer delivered charging rate through the direct coupling of charging ports with dedicated energy storage.

In evaluating suitable locations for this small-scale program, the Company will consider the costs and implementation timeframes for infrastructure upgrades at a given location as a part of the Company's overall capital improvement plan to ensure that the incentive provides sufficient value versus a traditional wires solution. While the addition of such combination products at select locations is not expected to eliminate the need for infrastructure investment in a given area, it will play a key role in enabling the Company to accelerate the deployment of DCFCs in high value areas in the near term. The Company will budget $2M for a maximum of five sites for this customer-owned solution, with the explicit purpose of enabling rapid DCFC deployment in high value areas where there are significant distribution capacity limitations.

Q. What is the Company's proposed budget for the Public and Workplace Segment?

A. The Company's proposed budget is in the table below summarized from Exhibit NG-EVPP-5.

Table 7: Public and Workplace Segment Estimated Budget

Category	Budget
Utility Side Make Ready (Capital)	*~$18M*

Customer Side Make-Ready (O&M)	~$56M
EVSE Rebates (O&M)	~$19M
Pole-mounted EVSE Operating Expense (O&M)	~$0.2M
Operating Expense for EJC DCFC Commitment (O&M)	~$0.5M
Networking Rebates (O&M)	~$1M
Marketing (O&M)	~$2M
Total	~$97M

Q. How does the Public and Workplace Segment meet the Department's standard of review for utility EV proposals?

A. The Public and Workplace Segment is in the public interest as it sets incentives at a level that will foster an accelerated deployment of EVSE, while efficiently utilizing ratepayer funds. The Company has also coordinated with Eversource and Unitil to provide consistent approaches for incentives and site host recruitment and to ensure that the EDCs' incentives are complimentary, not duplicative. The Department has recognized that the widespread adoption of EVs in the Commonwealth will improve air quality, reduce GHG emissions from the transportation sector, and require adding new technologies to the electric grid, including an increase of EV-related infrastructure.[49]

The Company's Public and Workplace offerings will also meet the needs that have not and will not likely be met by the competitive EV charging market. The Department has also found that there is a need for increased charging station deployment in the Company's

[49] D.P.U. 17-13, at 2, citing D.P.U. 13-182, at 3.

service territory to encourage EV adoption and that make-ready and other EVSE incentives address existing barriers to the development of charging stations at this time.[50]

The Company's Public and Workplace offerings will help facilitate the development of the private EVSE market by supporting the costs to site hosts and allowing site hosts to choose from a range of technologies, ownership models and pricing approaches. Finally, the Company is not proposing to meet one-hundred-percent of the market need and will not "crowd out" EVSE deployments that might not be able to accept utility make-ready funding.

B. Residential Segment

Q. Please provide a description of the offerings for the Residential Segment.

A. Given the importance of at-home charging and the needed scale to support it, the Company is proposing Residential offerings to support all residential customers. The Residential offerings include:

1) for 1-4-unit properties:
   i) support for EVSE costs; and
   ii) residential make-ready, which encompasses:
      (a) 240V wiring near the customer's parking space (e.g., in garage, driveway, or parking lot);
      (b) 240V outlet equipment and installation;
      (c) EVSE installation;
      (d) associated panel upgrades, service upgrades, and permits; and
2) for MUDs:
   i) an expanded make-ready program; and
   ii) support for site-specific EVSE plans for 20+ unit properties.

[50] D.P.U. 17-13, at 16.

The financial and programmatic support is tailored to housing types (i.e., 1-unit, 2-4 unit, and 5-or-more unit residences) and equity-related criteria (e.g., customer lives in an EJC, customer is on a discounted rate). The goal of the offerings is to enable affordable, ubiquitous at-home charging for the Company's residential customers to accelerate EV (particularly BEV) ownership and enable the lower-cost, more convenient, and more grid-optimized charging that at-home EVSE provides. The Residential offerings will advance the adoption of EVs in the Commonwealth, which is in the public interest and is not likely to be done by the competitive market in time to meet the Commonwealth's climate goals.

Support for 1-4-unit properties will decrease the upfront costs associated with at-home charging by offering two types of rebates: one towards residential make-ready and one towards managed charging capable EVSE. The Residential Make-Ready Rebate will address the variable and significant costs associated with residential make-ready, including 240V wiring in the garage or driveway of a property. The Company proposes to provide customers in 1-unit properties with a rebate up to $700 and customers in 2-4-unit properties up to $1,400, not to exceed actual costs. The Charger Rebate will support at-home charging by reducing the equipment costs of managed charging capable L2 EVSE. The Company proposes a one-time rebate per residential account of up to $300 to offset the incremental cost difference between a networked and non-networked L2 EVSE. Finally, the LI/EJC offering will provide increased financial support to qualifying customers.

Support for MUDs will follow the design of the Public and Workplace Segment described earlier and build upon the lessons learned from the Phase I Program. In summary, MUDs will receive financial support to cover 100% utility-side costs, up to 100% of average customer-side make-ready costs per port, 100% of typical EVSE costs for sites in EJCs and 50% of EVSE costs for all other MUDs, and Networking Stipends where requested.

Table 8: Overview of Residential Segment Offerings

Offering	**Description**
1-4-Unit Properties	
Residential Make-Ready Rebate	Reduces the costs associated with residential make-ready and EVSE installation in a customer's driveway or garage. Up to $700 for customers in 1-unit properties, and up to $1,400 for customers in 2-4-unit properties, not to exceed actual costs. Enrollment in a managed charging program is required to take advantage of this rebate.
Charger Rebate	Reduces the cost of purchasing managed charging capable EVSE. Up to $300 per customer towards the cost of a managed charging capable L2 EVSE, not to exceed actual costs. Enrollment in a managed charging program is required to take advantage of this rebate.
LI/EJC Offering	Increased financial support for qualifying customers. No-cost managed charging capable L2 EVSE and residential make-ready up to $1,700 for customers in 1-unit properties and up to $2,700 for customers in 2-4-unit properties, not to exceed actual costs.

5+ Unit Properties (MUDs)	
Support for utility-side infrastructure	100% of actual costs (with the right of the Company to deny program support to high-cost projects)
Support for customer-side infrastructure	Up to 100% (with the right of the Company to approve support up to 150% of the average cost per port on a case-by-case basis)
EVSE and EVSE installation support	Up to 100% of the average cost per port for sites in EJCs and 50% of the average cost per port for other sites, budgeted at $4,000 per L2 port and $2,000 per L2 port respectively, but not more than actual costs.
Networking Rebate	Upfront rebate of $120 per port / year for 4 years ($480 per port)
20+ Unit Properties	
EV Ready Site Plans	Up to $6,000 to cover the cost of a site plan on the long-term infrastructure and equipment approach to installing at least one L2 port per residential unit. (Ideally done before any further make-ready or EVSE installations take place.)

Q. How has the Company supported at-home charging in its prior programs?

A. The Company has only supported at-home charging in a limited capacity to date. The Company has successfully activated or committed 70 stations at MUDs as part of the Phase I Program through 2020, with the Program Year 2 Evaluation Report finding "the Charging Program continues to support MUD site hosts to provide opportunities for home charging." The report also recommended the Company "[c]ontinue to engage MUD site hosts to promote station development and EV ownership. At-home charging is often less accessible to people living in MUDs than in single-family residences. A robust MUD infrastructure

would support EV ownership for residents."[51] The Company also offers an off-peak charging rebate program for residential EV drivers, providing discounts for off-peak charging (which is typically at home). The current off-peak charging rebate program, however, does not directly promote access to at-home charging.[52]

Q. Why is at-home EV charging important for advancing EV adoption?

A. At-home EV charging is critically important to enabling EV ownership, reducing the cost of EV ownership,[53] and creating opportunities to manage EV charging in grid-optimized and consumer-friendly ways.[54] At-home EV charging access has been rated as a primary criterion for those considering buying an EV.[55] Further, at-home charging can meet the charging needs of over 95% of travel days for long-distance BEVs, a sign of its tremendous importance in a BEV-oriented future.[56] Finally, research shows that EV owners with L2 charging at home are half as likely to discontinue their EV ownership (i.e., go back to internal combustion engine ("ICE") vehicles) as those with L1 charging at home,

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51 Phase I PY 2 Evaluation Report, at 2 and 31.

52 D.P.U. 18-150 Order at 385.

53 Borlaug et al., *Levelized Cost of Charging Electric Vehicles in the United States*, Joule (2020), https://doi.org/10.1016/j.joule.2020.05.013 reports the lowest cost charging being at-home charging, with potential Lifetime Fuel Cost Savings (relative to internal combustion engine vehicles) of $4,500 to $9,400 for a BEV in Massachusetts. Fuel savings are maximized when at-home charging under time-of-use rates is maximized.

54 Residential Electric Vehicle Rates That Work, SEPA, November 2019, page 10. https://sepapower.org/resource/residential-electric-vehicle-time-varying-rates-that-work-attributes-that-increase-enrollment/

55 2018 National Grid Customer Council EV Research, slides 8-9. Home charging was rated the top of eight items rated for purchase consideration of EVs, and home charging was rated the most important charging consideration among five options.

56 Wei, W., Ramakrishnan, S., Needell, Z.A. et al. Personal vehicle electrification and charging solutions for high-energy days. Nat Energy 6, 105–114 (2021). https://doi.org/10.1038/s41560-020-00752-y, Figure 7, page 110.

highlighting the importance of L2 at-home charging to the EV ownership experience.[57]

Approximately 95% of EV owners in 2020 had access to at-home charging,[58] resulting in 80-85% of charging happening at home.[59] The vast majority of BEV drivers today have L2 charging at home (95% of Tesla owners and 60% of non-Tesla BEV owners), whereas two-thirds of PHEV drivers use L1 charging at home.[60]

Q. Are there barriers to residential at-home charging?

A. Yes, there are still many barriers for customers to charge at-home, especially those who do not live in single-family residences. These barriers include:

- having limited existing electric service or panel capacity to add EV charging;
- parking spots with no or limited existing electrical access;
- renting (e.g., landlords lacking incentives to invest their funds on EVSE, given the low share of EVs on the road today; tenants not wanting to invest their own funds on equipment and infrastructure for a property they do not own);[61]
- having only on-street parking;
- determining fair EVSE management, access, and payment/pricing approaches for EVSEs serving renters, multi-unit dwellings, or other shared parking, compounded by a lack of familiarity with these concepts among decision makers (e.g., condo boards); and

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[57] "For access to level-2 charging from home compared to level-1, there are 52.8% lower odds of discontinuing [EV] ownership. … This shows the importance of having higher speed level-2 charging at home over low speed level-1 charging." From Hardman, S., Tal, G. Understanding discontinuance among California's electric vehicle owners. Nature Energy (2021). https://doi.org/10.1038/s41560-021-00814-9

[58] RI RY2 EV 2020 Survey of Rhode Island EV owner

[59] 80% figure from Department of Energy at https://www.energy.gov/eere/electricvehicles/charging-home. 85% figure is the share of charging at home for those with home-charging, 2020 Bloomberg New Energy Finance EV Outlook, page 185.

[60] RI RY2 Evaluation Report, Figure 4-2.

[61] "Homeowners are six times more likely than renters to own an electric vehicle." from Lucas W. Davis (2019) Evidence of a homeowner-renter gap for electric vehicles, Applied Economics Letters, 26:11, 927-932, https://doi.org/10.1080/13504851.2018.1523611

- other circumstances resulting in high installation or operating costs or lack of interest among the decision-makers to enable at-home charging.

The Company estimates that *more than half* of the Company's residential customers face one or more of these barriers, particularly among the 9% who rent single-family homes, the 20% living in 2-4 unit dwellings, and the 17% living in 5+ unit dwellings.[62] Further, residential EVSE purchase and installation costs can be high and variable,[63] adding to the upfront cost barrier EVs still face relative to ICE vehicles.[64] As 62% of the Company's customers living in two-or-more-unit dwellings live in EJCs, these cost and access issues are significant. And while there is a growing amount of free or low-cost charging available at public and workplace locations, in the long run customers without home charging are likely to face far greater fueling costs for their EVs as they pay the more expensive retail charging rates.[65, 66]

Of particular importance to multi-unit dwellings is the need to plan for future EVSE and charging loads to help reduce cost and simplify EVSE installations. Many residential sites, in the long run, will need to provide one L2 port per residential unit (a ratio that some new

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[62] Company analysis of residential customer data and American Community Survey (ACS) data. https://www.census.gov/programs-surveys/acs/data.html.

[63] *Estimating EV charging infrastructure costs across major U.S. metropolitan areas*, International Council on Clean Transportation, August 2019, at 4. https://theicct.org/publications/charging-cost-US.

[64] The 2020 Bloomberg New Energy Finance EV Outlook, Figure 295 shows a purchase price gap for BEVs, relative to ICE vehicles, in 2020 of nearly $4,000.

[65] Borlaug et al.

[66] "The United States Needs More Fast Chargers: China Can Show How," Rocky Mountain Institute Blog (January 29, 2021), https://rmi.org/the-united-states-needs-more-fast-chargers-china-can-show-how/.

construction building codes are adopting[67]). For example, a 30-unit building will need at least 30 L2 ports in the long run but will likely only use a few of them in the next couple years. Given these long-term needs, it is imperative to plan for charging infrastructure growth over time, as well as anticipate any cost efficiencies from consolidating the make-ready and construction work. Without proper planning, MUDs may start down an "incremental" path that does not scale well, only adding a few chargers at a time—resulting in higher construction and infrastructure costs—and possibly struggling to match the few EVSE locations with those of EV owner's parking spots. The utility can play a unique and critical role in supporting site planning for long-term EVSE needs, helping sites anticipate EV-related load growth and find cost-reduction strategies. Without utility support, such forward-looking approaches are unlikely to occur.

One to Four Unit Offerings

Q. Please describe the financial and programmatic support the Company is proposing to offer customers in 1-4-unit properties.

A. The Company is proposing to offer two types of rebates to encourage residential charging: 1) a Residential Make-Ready Rebate towards the cost of necessary electrical upgrades required to install at-home EVSE; and 2) a Charger Rebate for the purchase of a managed charging capable L2 EVSE. These offerings enable at-home charging and solve unique challenges for residents in 1-unit properties, 2-4-unit properties, and LI/EJC customers.

[67] British Columbia has examples of such codes at https://pluginbc.ca/policy/. E.g., The City of Nelson requires "One stall per dwelling unit is required to be EV ready in new single family and multi-unit residential." Massachusetts currently only requires one EV Ready space for certain new construction with 15 or more parking spaces.

LI/EJC customers are defined as: 1) customers who are on the Company's low-income discount rate or 2) customers who reside in a property that meets at least one of the Commonwealth's EJC criteria. If a customer meets the LI/EJC definition and lives in a 1-unit property, they qualify for the LI/EJC offering only if they own or lease a new or used EV with a purchase price of less than $50,000, a purchase price requirement reflective of the Commonwealth's MOR-EV rebate.[68]

Q. Please describe the Residential Make-Ready Rebate offering.

A. The Company is proposing a Residential Make-Ready Rebate to enable at-home L2 EV charging by reducing the customer's cost for residential make-ready infrastructure. The Residential Make-Ready Rebate would enable at-home charging for the property's current inhabitant(s) and would "future proof" the Company's territory for at-home EV charging by providing L2 EV charging capability to the property's future inhabitants. The Residential Make-Ready Rebate provides a one-time rebate per residential account to offset the high and variable costs to enabling L2 charging at home. The Company proposes to provide customers in 1-unit properties with a rebate up to $700 and customers in 2-4-unit properties up to $1,400, not to exceed actual costs.[69] Customers receiving this rebate would

[68] The State's MOR-EV rebate requires the purchase price of a new vehicle to be less than $50,000. https://mor-ev.org/eligible-vehicles. (Accessed June 29, 2021).

[69] The rebate amounts are informed by International Council on Clean Transportation's findings that the average cost to install an L2 charger is $680 in a detached house and $2,000 in an attached house. Hardware and installation costs are included, and installation is composed of labor, materials, taxes, utility upgrades, and permits. Average costs do not include the L2 EVSE. *Estimating EV charging infrastructure costs across major U.S. metropolitan areas*, International Council on Clean Transportation, August 2019, at 6. https://theicct.org/publications/charging-cost-US

be required to enroll in one of the Company's managed charging programs: the Off-Peak Rebate Program, which incentivizes customers to charge during off-peak times (defined as 9:00 P.M. to 1:00 P.M. on weekdays), or the EV Demand Response Program, which incentivizes customers to limit charging on system peak days (typically in the summer).

The minimum enrollment period in one of the Company's managed charging programs is expected to be 12 months, with an option to opt out after the 12-month period. The Company will consider good cause exceptions to the managed charging enrollment requirement for a portion of customers in 2-4-unit properties because they have shared parking or do not own or lease an EV.

Q. Please describe the Residential Charger Rebate offering.

A. The Company is proposing a Charger Rebate to support at-home charging by reducing the costs of managed-charging-capable L2 EVSE. The Charger Rebate will provide a one-time rebate per residential account to offset the incremental cost difference between a networked and non-networked L2 EVSE.[70] The rebate would be applied to the purchase of a managed charging capable L2 EVSE from a QEL that will be developed by the Company. Rebates would be distributed on a first-come, first-served basis. If this offering is approved, the Company will conduct a more comprehensive evaluation of EVSE available in the market and use those results to establish the rebate level and participation requirements. For

[70] Based on the Company's analysis of the incremental difference between the average cost of a networked and non-networked L2 charger.

purposes of the cost estimate developed for this filing, the Company has assumed a rebate amount of $300 per residential account.

Customers receiving this rebate would be required to enroll in one of the Company's managed charging programs (the Off-Peak Rebate Program or the EV Demand Response Program) for a minimum of 12 months, with the option to opt out after the 12-month period.

Q. Are there unique benefits provided to LI/EJC customers?

A. Yes, the Company expects LI/EJC customers to be eligible to receive no cost managed charging capable L2 EVSE and residential make-ready infrastructure, up to $1,700 for customers in 1-unit properties, and up to $2,700 for customers in 2-4-unit properties, not to exceed actual costs. The LI/EJC EVSE and residential make-ready offering requirements reflect the same requirements outlined for the Residential Make-Ready Rebate and Charger Rebate.

Q. How many customers does the Company expect to serve with the Residential Make-Ready Rebate, Charger Rebate, and LI/EJC offerings?

A. The Company's proposed Residential EV Charging Program targeted at 1-4-unit properties seeks to enable approximately 20,000 ports at customers' properties. The Residential Make-Ready Rebate and the Charger Rebate can be "stacked," meaning that customers would be eligible to obtain both rebates.[71] If a customer receives the LI/EJC offering, they

[71] The Company estimates 100% of customers who obtain a Charger Rebate will obtain a Charging Readiness Rebate.

are neither eligible to receive the Residential Make-Ready Rebate nor the Charger Rebate (and vice versa). The offerings are estimated to address approximately 15% of the customers needed to reach the ZEV MOU light-duty passenger vehicle goal by the end of 2025.

Five or More Unit Offerings (MUDs)

Q. Please describe the MUD Make-Ready offering.

A. The Company proposes a make-ready offering to serve MUDs with 5-or-more residential units. The program will be a revised and significantly expanded version of the Phase I Program for this segment. The program will provide support in line with the Public and Workplace offering. The MUD offering will cover 100% of the costs for utility-side make-ready work, if any. The Company will retain the right to review and deny program support for high-cost projects. The MUD offering will cover up to 100% of average costs per port for customer-side make-ready work, but not more than actual costs, with the ability for the Company to approve up to 150% of the average cost per port on a case-by-case basis.

The program will also provide financial support for qualified EVSE and EVSE installation and activation costs, budgeted at $4,000 per L2 port for MUDs located in EJCs (estimated to be 64% of MUD residential customers)[72] and $2,000 per L2 port for all other MUDs, but not more than actual costs. These financial support levels reflect an $8,000 dual-port station purchase and installation cost benchmark ($4,000 per port) and the program funding

[72] Company analysis of customer data and expected EJC areas.

100% of the cost per port for sites in EJCs and 50% of the cost per port for all other MUDs. Actual rebates offered may vary over time as the station price benchmark changes and based upon the availability of third-party funding and customer interest in program. The Company will offer these rebate levels on all qualified EVSE installed at MUDs and does not propose any site-level caps on program funding at this time. Customers choosing qualified networked EVSE may also request support for networking costs. The Networking Stipend will cover up to $120 per port per year for four years. Combined, the program's financial support is estimated to cover 85% of average infrastructure and EVSE installation costs and likely 100% for EJC sites.

Q. Please describe the EV Ready Site Plan offering.

A. To help larger MUDs gain comfort with installing EVSE, reduce costs, and plan for future EVSE growth, the program will offer financial support for EV Ready Site Plans. EV Ready Site plans will create a plan for the infrastructure, EVSE, and management practices required to provide at least one L2 EV Ready parking spot per housing unit located on the property (or 100% of resident parking spaces if there are fewer parking spaces than housing units). "L2 EV Ready" means the parking space features a nearby energized outlet with a cover that provides a final connection point in an electrical wiring installation for a L2 EVSE (the term "L2 ports enabled" is also used, such as in the Eversource Phase I EV Program, to refer to areas with make-ready infrastructure installed but no EVSE installed). EV Ready Site Plans will be created by qualified charging station installers or electricians and will adhere to a set of minimum requirements regarding their contents and the cost-

saving approaches considered, including a description of the property, number of units, number parking spots, type of parking (e.g., shared or assigned), and existing electric service type and remaining capacity; approaches to managing on-site EV loads to minimize infrastructure costs, sometimes referred to as EV Energy Management Systems; types of EVSE considered and why they are appropriate for that site, and recommendations regarding phased implementation approaches (e.g., "install infrastructure for these 20 parking spaces first"). Interested MUD properties with twenty or more housing units are eligible to do an EV Ready Site Plan. The Company expects to contribute up to $6,000 per EV Ready Site Plan and has budgeted for 200 plans over four years.

Q. How will the EV Ready Site Plans support the MUD Make-Ready offering?

A. The EV Ready Site Plans will have three primary benefits. First, they will generate interest in the offering for larger properties. By having a plan in place, decision makers can become comfortable with the investments and changes required (i.e., parking management, costs and pricing of station use, etc.) which will spur interest in the make-ready offering.

Second, the site plans will allow the Company to authorize greater investments in make-ready infrastructure. For MUDs with EV Ready Site Plans, the offering will allow infrastructure work to support additional EV ready parking spots (beyond any parking spots installing EVSE) in accordance with their plan. In practice, this will typically mean installing additional conduit and outlets, sizing the service or electric panel differently to anticipate future load growth, and supporting on-site EV-related energy management

systems, such as power-sharing EVSE. The Company estimates the make-ready costs for these incremental ports enabled to be lower due to the economies of scale of larger make-ready projects, offsetting the net costs of offering EV Ready Site Plans.[73]

Third, the Company expects site plans to help avoid utility-side infrastructure costs through the use of EV energy management systems, such as power sharing between EVSE or devices that support power sharing between EVSE and the rest of the property. This is particularly important for MUDs as the long-term expectation for EVSE growth is high and on-site load constraints will be prevalent.

Q. How did the Company size the MUD offerings?

A. The MUD offerings are sized to support up to 2,200 L2 ports installed at approximately 550 sites over four years and another 1,600 L2 ports enabled (with make-ready infrastructure but without EVSE installed) at sites receiving EV Ready Site Plans, totaling 3,800 ports. These figures were based upon significant year-over-year growth targets compared to EVSE installations at MUDs during the Phase I Program.

Q. Is the Company applying any lessons learned to the MUD program design?

A. Yes. MUDs are incredibly diverse across their size, density and layout, parking, tenure (rent/own), resident demographics, and many other factors. In order to achieve these

[73] *Estimating EV charging infrastructure costs across major U.S. metropolitan areas*, International Council on Clean Transportation, August 2019, Table 3, at 3. https://theicct.org/publications/charging-cost-US

ambitious targets, the program needs to be responsive to market and customer feedback. Three lessons learned for MUDs include:

- Networking costs are a known barrier to installations at MUDs, especially in the years before EV ownership is common among residents which would allow site hosts to offset operating costs from station revenue. The Phase III Program will not require networked chargers at MUDs and will provide limited financial support for stations that do opt for networked stations (the Networking Stipend).

- MUDs have been installing an average of 4 ports per site to date, but larger MUDs will need far more than that in the long term. Further, many sites have been hesitant to engage due to the uncertainty and costs involved.[74] EV Ready Site Plans will help address long-term EVSE planning and help decision makers get comfortable with an EV future.

- Different parking arrangements, such as shared versus assigned parking, may warrant different EVSE approaches. In accordance with their EV Ready Site Plans, the Company will allow MUDs installing EVSE to also install site-appropriate 240-volt outlets or make-ready infrastructure at additional customer parking spots. This will allow for different EVSE approaches (e.g., customer-provided EVSE, which may appeal to buildings with renters, high-turnover, or deeded parking).[75]

Q. What is the Company's proposed budget for the Residential Program?

A. The proposed Residential Program budget is $64.08 million over the program term, with $26.4M going to 1-4-unit properties and $37.7M going to MUDs. The estimated 1-4-Unit offerings costs are detailed in Exhibit NG-EVPP-7 and the estimated MUD offerings costs are detailed in Exhibit NG-EVPP-8.

[74] Phase I RY 2 Evaluation Report at 31: "While the program has experienced significant progress in [Program Year 2] for public and workplace stations, progress continues to be slower for MUD stations and DCFC stations."

[75] A Company analysis of American Community Survey data suggests 85% of the Company's MUD residential customers are renters. A detailed review of MUD sites in Company territory further suggests considerable diversity in parking arrangements. https://www.census.gov/programs-surveys/acs/data.html

Table 9: Residential Segment Estimated Outcomes and Budget

Offering	Budget ($M)	Outcome
1-4-unit Properties		
Residential Make-Ready Rebate	$16.07	20,250 ports enabled.
Charger Rebate	$2.35	
LI/EJC Offering	$3.97	
Program admin. & Marketing	$4.00	
5+ Unit Properties (MUDs)		
Utility-side Make-ready	$4.43	3,800 L2 ports, with 2,200 ports installed and1,600 enabled.
Customer-Side Make-ready	$21.36	
EVSE Rebates	$8.05	
Program admin. & Marketing	$2.64	
20+ Unit Properties		
EV Ready Site Plans	$1.20	200 EV Ready Site Plans
Total Residential Program		
Total	$64.08	

Q. How do the Residential offerings meet the Department's standard of review for utility EV proposals?

A. The Company has analyzed evidence on EV sales, charging and travel behaviors, and trends for future EV technology to inform its Residential offerings. Given the importance of at-home charging to enable greater levels of EV adoption, the difficult path to installing and operating EVSE for many residential customers, and the long-term infrastructure cost reductions possible via well-planned at-home charging, the Company has a unique and important role to reduce station installation costs, directly enable a large number of

installations, and anticipate and manage the associated grid-impacts. This is a role that will not otherwise be met by the private market. Failure to support customers in addressing these barriers will result in far slower and less-equitable EV adoption than the Commonwealth's policy goals demand and will result in more public EVSE required to be built. The Company's Residential offerings are aimed at addressing existing barriers to enabling at home charging, particularly in MUDs, which have been harder to reach in the Company's prior programs. The Company has also proposed an increased focus on serving low-income and EJC customers through the Residential offerings. The Company has also coordinated with Eversource and Unitil to provide consistent approaches for incentives and site host recruitment and to ensure that the EDCs' incentives are complementary, not duplicative. The Company has also proposed program requirements to avoid overlapping EV charging incentives. Lastly, the Company has appropriately sized the Residential segment to advance EVSE availability consistent with meeting the Commonwealth's near-term emissions reductions goals, without over-serving the market in a way that could hinder the development of the competitive charging market.

C. Fleet Segment

Q. What are the Fleet Segment offerings and what outcomes do they achieve?

A. The Fleet Segment is a comprehensive set of offerings to address fleet customer challenges, including providing fleet assessment services, providing charging make-ready infrastructure, providing EVSE rebates, school bus purchase price rebates for EJC schools, and expanding off-peak charging rebate eligibility to fleet customers (to expand the

available load management solutions for fleet customers). This segment accelerates climate goals, improves community health with cleaner air, provides equitable access to clean transportation, creates future electric load management capabilities & insights for long-term EV planning, and supplies crucial tools & services for fleets to accelerate their clean transportation transition. Fleet Segment cost estimates and assumptions are detailed in Exhibit NG-EVPP-9.

Fleet vehicles are a crucial segment to electrify in order to meet the Commonwealth's goals, and the program enables over 3,500 electric fleet vehicles, providing substantial benefits to all community members through Carbon Dioxide ("CO_2") emission reduction, air pollution reduction, and equitable access to clean transportation:

- **CO_2 reduction:** On a per vehicle basis, fleet vehicles emit more CO_2 than passenger vehicles – fleet LDVs typically travel twice the annual miles as passenger vehicles (and therefore emit twice the CO_2), and MHDVs emit 8-30 times the amount from a personal LDV.
  - MHDV fleet vehicles have a dramatic impact on the state's emissions: MHDVs account for approximately 3% of the Commonwealth's on-road vehicles but are approximately 6% of the vehicle miles traveled ("VMT"), and approximately 29% of the on-road CO_2 emissions.[76]
  - MHDV CO_2 emissions have doubled since 1990, growing from approximately 19% to 29% of on-road CO_2 emissions.[77]
- **Pollution reduction:** Particulate Matter 2.5 ($PM_{2.5}$) is the largest environmental health risk factor in the US (responsible for more than 60% of the deaths from

[76] Transportation Sector Report: A Technical Report of the Massachusetts 2050 Decarbonization Roadmap Study December 2020, at 40; https://www.mass.gov/doc/transportation-sector-technical-report

[77] Id.

environmental causes)[78], and fleet vehicles have a disproportionate health impact – fleet LDVs typically have twice the $PM_{2.5}$ emissions of passenger vehicles, and MHDVs are 30-150 times worse per vehicle[79].

- $PM_{2.5}$ reduction can provide local and immediate health benefits – the American Lung Association estimates the state could save approximately $1B in health costs annually in 2050 with a transition to clean transportation[80], and $PM_{2.5}$ represents approximately 83% of the air pollution savings from ICE conversion.

- **Equitable access to clean transportation:** Every community member deserves clean air and access to clean transportation vehicles, for both their own transportation needs and from the goods and services operated in their community. The Company expects to deploy more than 40% of its Fleet infrastructure investment in EJC communities, in addition to the EJC electric school bus rebate program.

  - The Commonwealth's EJC communities suffer disproportionate pollution impacts: Black, Asian, and Latinx residents are exposed to approximately 30% more vehicle pollution than white residents, while almost 70% of all white residents live in areas with concentrations below the state average.

Q. What are the main components of the Fleet Segment?

A. The Fleet Segment consists of five main components:

1. **Fleet Make-Ready Offering (Fleet Make-Ready):** Support for up to approximately 600 EVSE ports (approximately 70% L2, 30% DCFC) to enable approximately 2,000 fleet EVs in the Company's territory (approximately 1,150 LDV, 850 MHDV).
2. **EVSE Rebate Offering:** Support for 50% of EVSE costs for all fleet customers, and 100% of EVSE costs for EJC-eligible fleet customers.
3. **Fleet Assessment Services Offering:** Provide Fleet Assessment Services for up to 150 private & non-profit fleet customers and expand the Company's Phase II Fleet

[78] Union of Concerned Scientists, Inequitable Exposure to Air Pollution from Vehicles in Massachusetts, June 2019, at 2; https://www.ucsusa.org/sites/default/files/attach/2019/06/Inequitable-Exposure-to-Vehicle-Pollution-MA.pdf

[79] U.S. Environmental Protection Agency, Office of Transportation and Air Quality, Apr. 6, 2018, Table 4-43; https://www.bts.gov/content/estimated-national-average-vehicle-emissions-rates-vehicle-vehicle-type-using-gasoline-and

[80] American Lung Association, The Road to Clean Air: Benefits of a Nationwide Transition to Electric Vehicles, September 2020, at 10; https://www.lung.org/getmedia/99cc945c-47f2-4ba9-ba59-14c311ca332a/electric-vehicle-report.pdf.

Assessment Services provided to public fleets to include 25 additional assessments in 2025. In addition, the program will develop online self-assessment tools for customers to conduct fleet electrification planning and estimate TCO savings.

4. **EJC School Bus Rebate Offering:** Provide approximately 300 school bus rebates for schools operating in EJCs to cover the incremental purchase price of an electric school bus. The 300 buses will be scaled up over four years to a level that is approximately equal to one year of procurement for all EJC school districts in the Company's territory.

5. **Off-Peak Charging Rebate Offering:** Provide operating costs saving opportunities by expanding eligibility for the existing off-peak charging rebate offering to include up to 1,000 fleet and MHDVs, such as trucks and buses.

Q. How did the Company determine the components to achieve these outcomes?

A. The Fleet Segment is a holistic approach to enabling both LDV and MHDV fleet electrification and is designed to meet the Commonwealth's clean transportation and climate goals while solving the fleet customer challenges outlined in Section III above. The sizing methodology, scale, eligibility requirements, incentive levels, and lessons learned from prior programs are described below.

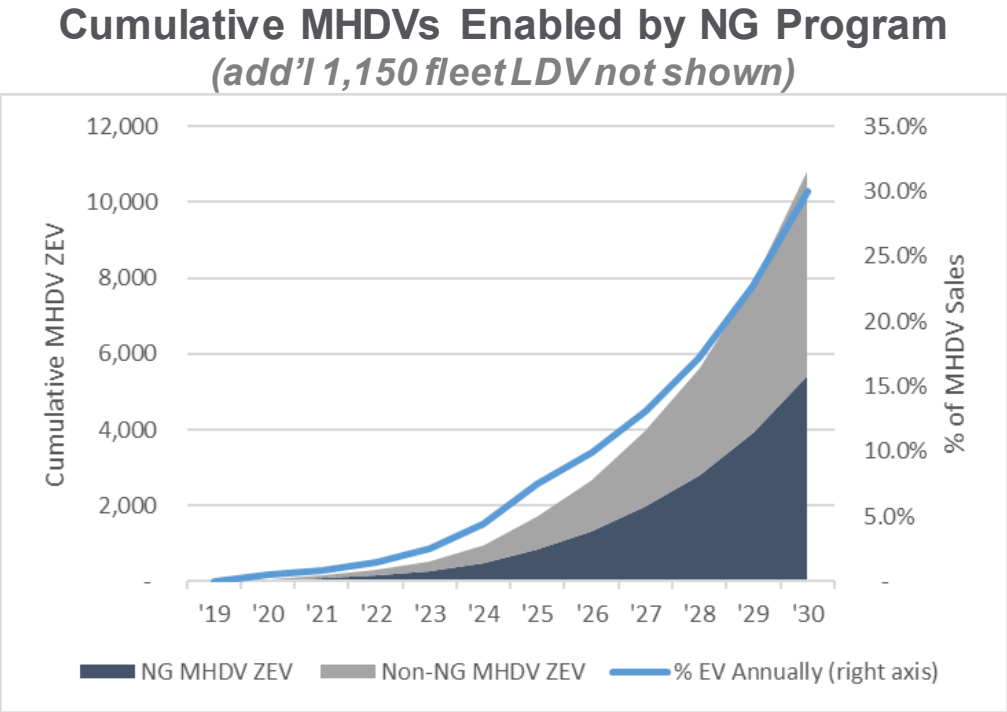
Methodology and Scale:

1. **Fleet Make-Ready:** The Fleet Make-Ready offering provides support for make-ready charging infrastructure to accelerate both the LDV and MHDV ZEV MOU goals.

    a. MHDVs: Less than 1% of the current approximately 98,000 MHDV fleet vehicles in the Company's territory are currently ZEV. The MHDV ZEV MOU requires approximately 3,000 annual MHDV ZEV sales in MECO in 2030 (30% of approximately 10,000 annual sales). To stay on pace to reach 30% of new sales by 2030, the Company estimates approximately 750 annual MHDV ZEV sales in MECO in 2025 (7.5% of approximately 10,000 annual sales). The

Fleet Make-Ready offering enables approximately one-half of the necessary new sales in the territory, scaling to ~3.75% of new MHDV sales in 2025 (~370 MHDV ZEVs sold in 2025). Cumulatively, the Company enables a total of approximately 850 MHDV ZEVs in its territory (approximately 50% of the total estimated MHDV ZEV vehicles in the territory).

Figure 1: MHDVs Enabled by Fleet Segment Offerings



b. LDVs: Similarly, less than 1% of the commercial LDVs are currently ZEV (537 in 2019). The Fleet Make-Ready offering enables LDV fleet vehicles to grow to approximately 8% of annual sales in 2025 and enables the infrastructure for

25% of those vehicles. Cumulatively, this represents make-ready infrastructure to support approximately 1,150 LDVs.

2. **EVSE Rebates:** EVSE costs typically represent more than 30% of the total infrastructure costs,[81] and are often a limiting factor for customer ZEV adoption, particularly for MHDV fleets that are installing higher power level EVSE. In line with the Public and Workplace Make-Ready offering, the Company proposes the following EVSE rebates for fleet customers:

Table 10: Fleet Segment EVSE Rebates

EVSE Type	EJC Fleets	Non-EJC Fleets
L2	Up to $4,000 / port	Up to $2,000 / port
DCFC	Up to $80,000 / port	Up to $40,000 / port

3. **Fleet Assessment Services:** The Company has assessed the fleet customers in its territory and is proposing fleet assessment services for up to 150 private and non-profit fleet customers. This is in addition to the Company's Fleet Assessment Services provided to 100 public customers currently in progress. The services would be targeted to customer segments, including but not limited to: corporate, delivery, private transport, refuse, and general services. Within those segments, there are more than 150

81 81 Phase I PY2 Evaluation Report, Section 4.2.2

customers with fleets larger than 100 vehicles, and more than 450 customers with fleets larger than 50 vehicles.[82]

In addition, the Company proposes to develop online fleet planning and TCO tools for fleet customers. Standardized reports and scalable educational tools are key factors in a fleet operator's decision-making process, and these tools help fleet customers of all sizes transition to clean transportation, providing services including (but not limited to): Fleet Make-Ready offering eligibility, vehicle availability, funding options, infrastructure and EVSE choices, fuel savings calculator, TCO estimates, and electric rate summaries. This offering is built in response to the Company's engagement with fleet customers, industry stakeholder events, and experience with current fleet assessment services programs in its Massachusetts and Rhode Island affiliate's service territories. In order to maintain a consistent customer experience for fleet operators across the state, the Company will collaborate with Eversource to ensure the capabilities and user experience are consistent for fleet customers in both territories.

4. **EJC School Bus Rebates:** Massachusetts has more than 9,000 school buses, and the Company has more than 4,000 in its territory (Gross Vehicle Weight Rating ("GVWR") Classes 6-8). Providing 300 incremental cost rebates for school buses operating in EJCs is less than 8% of those buses. The 300 buses will be scaled up over the four years of the offering, to a level that is approximately equal to one year of procurement for all

[82] IHS-Polk

EJC school districts in the Company's territory. Approximately 40% of the Company's residents live in EJCs, and school buses are typically replaced on a ten-year cycle, so replacing one full year of EJC school districts is approximately 160 buses. The EJC school bus rebate offering is projected to support 20 school buses in 2022, 40 in 2023, 80 in 2024, and 160 in 2025.

School buses are a vital segment to support during the transition to clean transportation, for several reasons:

a. Local air pollution affects student performance as well as public health. For example, The Union of Concerned Scientists notes that chronic exposure to Particulate Matter ($PM_{2.5}$) air pollution in children has been linked to slowed lung-function growth and the development of asthma, among other negative health impacts, and school buses have a disproportionate negative impact because of the faster breathing rate of children, the idling of school buses, and the stop/start nature of bus route operation.[83]

b. School districts continue to identify the upfront capital costs for electric school buses as one of the largest barriers to adoption during discussions with the Company, particularly as they collaborate with school bus solution providers to consider implementing large-scale projects.

[83] Union of Concerned Scientists, Inequitable Exposure to Air Pollution, at 10.

c. Electric school buses have a large future potential benefit via vehicle grid integration ("VGI"), and the Company sees opportunity to have visibility into future opportunities for real-time curtailment, peak management, vehicle-to-grid ("V2G"), and duty cycle optimization solutions in the long term.

Because the school bus market represents a relatively new sector of electric vehicles, the Company will evaluate the deployment of these 300 rebates as part of the mid-term review. The Company is including all 300 vehicles in this proposal, because it is crucial to provide long-term transparency to local school boards and city councils as they consider their long-term school bus fleet electrification plans in their budgeting processes in 2022 and 2023.

5. **Off-Peak Charging Rebates:** This Fleet Segment expands the eligibility for the off-peak charging rebate offering approved in the Phase II program, to include up to 1,000 fleet MHDVs in addition to the up to 11,000 residential EVs approved in D.P.U. 18-150. This enables the Commonwealth to meet both of its ZEV MOU goals and provides significant peak load reduction as larger fleets electrify. It allows the Company to gain the insights and experience necessary to develop new time-of-use rates for fleet customers. This program expansion is discussed in more detail in Section D.

Q. Please describe the incentive structure for the Fleet offerings.

A. To meet the Commonwealth's clean transportation goals, the Fleet offerings will provide holistic support to fleet customers. The levels of support are summarized in the table below:

Table 11: Overview of Fleet Segment Offerings

	Fleet Assessment Services	Fleet Make-Ready	EJC School Bus Rebates
Ports / Vehicles Supported	~150 private & non-profits, 25 incremental public fleets, and tools & support for fleets of all sizes ~2,625 vehicles	~600 Ports (~30% DCFC + ~70% L2) ~850 MHDV ~1,150 LDV	300 buses
Incentive Levels	50% cost for private No-cost for non-profit and public	Up to 100% Make-Ready (Utility- and Customer-side) Up to 50% EVSE rebate	Incremental cost: up to ~$175,000 / bus
EJC Support	Target 40% EJC fleets	Expect 40% of ports in EJCs Up to 100% Make-Ready and EVSE Rebate	Schools or contractors that serve primarily EJC communities

Q. Are private and public fleets eligible for the Fleet Make-Ready offering?

A. Yes. In order to accelerate fleet EV deployments as rapidly as possible, the Fleet Make-Ready offering is designed to support the needs for both private and public fleets. As part of its ongoing interactions with stakeholders, and to ensure equitable distribution of the Fleet Segment support funding, the Company will monitor and adjust the allocation of funds to projects in order to maintain an equitable distribution to a diverse set of customers and projects (e.g., limiting support for a specific private fleet project if that customer segment has received an unbalanced portion of the Fleet Make-Ready offering funds).

For fleets to be eligible for the EJC level of support, fleet operators must either be registered in or operate more than 50% of the time within census block groups that meet any of the Commonwealth's EJC definitions. This expands on the Commonwealth's eligibility for the

MOR-EV Trucks program, which includes census block groups within the income eligibility component of EJC definition.

Q. Is the Company utilizing lessons learned in the Fleet Segment design?

A. Yes. The Company will draw upon successes from prior efforts, both in Massachusetts and in its affiliates' service territories in New York and Rhode Island. These lessons include:

- Fleet Assessment Services programs identify significant opportunities for electric transportation. Phase I of the Company's Fleet Assessment Services Program (concluded in April 2021) has shown substantial TCO savings, lifetime emissions reduction, and vehicle conversion potential as part of the first 10 customers assessed. Collectively, 773 vehicles were found to be cost effective in a transition to EVs, representing approximately 35% of the 2,240 vehicles analyzed. Those 773 vehicles could require up to 770 EVSE ports and represent more than $40 million in net present value of TCO savings and more than 160 thousand metric tons of CO_2 eliminated over the lifetime of the vehicles. In addition, 9 of the 10 fleets operate in EJCs, tripling the 30% EJC target of the Phase 1 Fleet Assessment Services Program. These findings are encouraging and serve as both an indicator of future success in the proposed expansion of the Fleet Assessment Services, as well as a pipeline for the Fleet Make-Ready offering.
- Ongoing fleet customer support is crucial. Fleets considering electric transportation options have significant questions, including vehicle performance, grid upgrade costs, fuel cost changes, and operational changes. These customers need technical assistance from beginning to end for EVSE installation and choosing EVs, and these attributes are a key driver of expanding the Company's Fleet Assessment Services and online tools for fleet customers.
- Developers appreciate insight into the long-term plans of fleet customers, and fleet assessments provide an accurate and reliable pipeline of future electrification projects.
- Flexibility in EVSE technology and vehicle availability is crucial. The EV marketplace, especially in the MHDV space is rapidly evolving, and the Fleet Make-Ready offering is designed to adapt to changing market conditions as the Company's fleet customers progress through a transition to electric fleet vehicles.
- Right sizing vehicles for specific use cases is important for some fleet operators, and specific requirements can vary based on individual fleet performance needs.

These specific needs are to be included as part of a key capability of the online fleet electrification planning and TCO tools offerings.

- The cost of vehicles and EVSE can be prohibitive, and significant infrastructure cost barriers exist, particularly for large-scale fleet deployments. Fleet customers ae reluctant to invest in infrastructure due to the high upfront cost of grid-side upgrades, customer-side upgrades, and EVSE costs. The Fleet Segment offerings are designed to reduce some of these upfront costs to allow fleet customers to achieve the TCO benefits of fleet electrification.

Q. What technical solutions are included to integrate fleet EV charging with the grid?

A. The Fleet Segment includes expanding the eligibility of the Off-Peak Charging Rebate offering to include fleet customers. See Section D below for a detailed explanation of this offering and the grid benefits it achieves.

Q. What is the proposed budget of the Fleet Segment?

A. The five components of the Fleet Segment represent a total budget of approximately $98 million in the years 2022-2025. The offerings are summarized in the table below, and detailed in Exhibit NG-EVPP-9:

Table 12: Fleet Segment Estimated Outcomes and Budget

Offering	Budget ($M)	Outcomes
Utility-Side Make-Ready	~$5.65	• Support for ~600 ports (~70% L2, ~30% DCFC) • 2,000 Fleet EVs enabled (1,150 LDV, 850 MHDV) • 40% of ports deployed in EJCs
Customer-Side Make-Ready	~$12.16	
EVSE Rebates	~$8.47	
EJC School Bus Rebates	~$52.50	• 300 incremental cost rebates for EJC school districts • Ramp up to approximately one full procurement cycle (~160 buses in 2025)

Fleet Assessment Services	~$3.25	• 150 private & non-profit fleet assessments • 25 incremental public fleet assessments in 2025 (beyond 100 fleets in Phase II) • Online fleet electrification planning and TCO savings tools
Utility-Side System Expansion	~$15.00	• System upgrades to accommodate estimated large-scale fleet loads
Fleet Program Marketing	~$1.20	• Fleet awareness of electrification support services, incentives, and rebates • Qualified leads & applications for Fleet Make-Ready and Assessment Services
Segment Total	~$98.23	

Q. How does the Fleet Segment meet the Department's standard of review for EV proposals?

A. The Company has used its experience in providing make-ready infrastructure, support, and assessment services to fleet operators in its territory throughout the northeast to inform this Fleet Segment design. Fleet LDVs and MHDVs represent more than 30% of the Commonwealth's CO_2 emissions, and therefore represent a significant portion of the public's interest in clean transportation solutions. In addition, the current needs of fleet operators in the Commonwealth are not being met entirely by the private market, and this proposed Fleet Segment provides the holistic infrastructure support, assessment services, and EVSE rebates necessary to effectively scale the fleet vehicles to meet ZEV goals. Finally, these fleet offerings are designed to be complementary to existing services from the private market, as the infrastructure support, incentives, and rebates will complement

and accelerate the rapidly evolving technology solutions and business models of the private market.

D. Off-Peak Charging Rebate Program

Q. Please describe the Company's efforts to integrate EV charging into the electric grid.

A. EV charging presents multiple challenges and opportunities for the electric grid. The Department has acknowledged the importance of managing EV charging in approving the Company's Off-Peak Charging Rebate Program in D.P.U. 18-150 and again recently in D.P.U. 20-69-A.[84]

The Company supports a layered approach to integration of EV charging, including pricing signals (i.e., through cost-based and time-varying price signals), thoughtful infrastructure planning at the site, distribution, and system levels, and customer-facing education and load management programs (i.e., the off-peak rebate and demand response programs). Bidirectional V2G or vehicle-to-home (V2H) technologies add even more opportunities to reduce infrastructure and energy costs, reduce customer bills, support energy resiliency, and more. The supporting hardware, software, policies and procedures, and customer acceptance for smarter EV integration are quickly evolving, highlighting the need to test and adapt these approaches over time.

[84] Grid Modernization, D.P.U. 20-69-A Order at 47-48 "It is important that electric vehicle customers are provided with appropriate pricing signals, through load management incentive programs, to encourage the electric vehicle charging behavior that will advance the Commonwealth's climate goals and the Department's grid modernization objectives."

In the Phase III Program, the Company is supporting EVSE integration in several ways, including support for EV Ready Site Plans for MUDs, Fleet Assessment Services, rebates for managed charging capable L2 EVSE for residential customers, and, as described below, a proposed expansion of the Company's current Off-Peak Charging Rebate Program.

Q. Please describe the current Off-Peak Charging Rebate Program.

A. In D.P.U. 18-150, the Department approved the Company's Phase II Off-Peak Charging Rebate Program for residential EV customers, providing three or five-cent per kWh rebates for EV charging occurring during off-peak hours (9:00P.M. to 1:00P.M.). The program pursues three main benefits: 1) shifting EV charging off-peak to avoid increases in peak demand; 2) evaluating the responsiveness of EV customers to time-differentiated price signals to inform future time-varying rate design; and 3) evaluating technologies to monitor charging that can be used to inform future offerings.[85]

In approving the Off-Peak Rebate Charging Program, the Department said "the Company will be able to gain experience and gather data necessary to develop new time-of-use rates for EV customers in the future. Further, we expect the Company to use the information and results from this incentive program to develop new load management techniques and mechanisms as EV penetration increases."[86]

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85 D.P.U. 18-150, at 340-341.

86 D.P.U. 18-150, at 388-389 (internal citations omitted).

The Company launched the Off-Peak Rebate Charging Program in September 2020, enrolling over 500 residential customers in the program. The Company is tracking charging behavior by on-peak and off-peak, by vehicle type, by at-home versus away-from-home, and more. The Company recently filed an initial analysis with the Phase II Program evaluation report.[87] The initial analysis details a review of the participants' baseline charging data and concludes some key findings that will be considered as the company continues to administer the program. The Company is currently planning to grow the customer enrollment and methods by which customers can participate after selecting a new implementation vendor in the second half of 2021.

Q. What new objectives does the Company hope to pursue through the expanded Off-Peak Charging Rebate Program?

A. There are several important, near-term research objectives regarding time-varying rate design, load management techniques, and enabling technologies that require additional Department approval to pursue within the existing Off-Peak Rebate Charging Program. Specifically, the Company is interested in understanding and testing automated "flexible scheduling" approaches to shift more charging off-peak. In addition, the Company is interested in understanding and testing approaches to prevent or mitigate the impacts of "timer peaks," where EV charging can cause spikes in demand at the beginnings or ends of the off-peak window (in this case, 9:00 P.M.).

[87] D.P.U 21-67 Exhibit NG-MM-9 Off-Peak Charging Rebate Program Evaluation Memo.

Further, the Company proposes to expand the scope of the program beyond the D.P.U. 18-150 Order by:

1. extending the Off-Peak Charging Rebate Program through 2025 in order to align with the timeline of the other segments proposed in the Phase III Program; and
2. expanding the Off-Peak Charging Rebate Program to include up to 1,000 additional fleet EVs.

These proposed revisions and expansions are described below in more detail and are consistent with the Department's recent guidance on charging incentive programs.[88] The Company notes there are many other potential objectives and demonstrations around EVs, managed charging, time-varying rates design, and load management techniques it may wish to pursue in the future or through other means. However, at this time the Company believes these are important new objectives on managing EV charging that can leverage the already-approved Off-Peak Charging Rebate Program.

Q. Please describe the proposed revision around flexible scheduling of EV charging.

A. The Company proposes to include within the Off-Peak Charging Rebate Program automated, flexible scheduling of EV charging functionality for customers. Flexible scheduling is defined here as scheduling and synchronizing customer charging to optimize off-peak charging performance.

[88] D.P.U. 20-69-A Order at 47-49.

The need for flexible scheduling is evident from two results in the Company's affiliate, The Narragansett Electric Company's, similarly designed SmartCharge Rhode Island program. First, timer peaks are shown by the purple 'treatment' line in Figure 2 below, relative to the 'unmanaged' load profile in blue.[89] Timer peaks have been documented elsewhere also.[90] Timer peaks can initially cause issues at the local distribution level, such as service transformers and secondary conductors.[91] In the future, if left unmanaged, timer peaks could cause both feeder and system-level issues as well. Second, the SmartCharge Rhode Island program documented that participants continue to charge roughly 30% of their kWh on-peak, even with the off-peak incentive.[92] Active scheduling of EV charging is a leading possibility to mitigate these timer impacts and increase the share of charging off-peak, in addition to potential other benefits, and could be tested via the Off-Peak Charging Rebate Program with the Department's approval.

This program modification would be accomplished by allowing customers in the Off-Peak Charging Rebate Program to opt-in to a "flexible scheduling" service, expected to be provided by the same third-party implementation vendor the Company will select later this

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89 RI RY2 Evaluation Report, Figure 1 . Further, a key finding of that report was "National Grid will need to investigate technologies and incentives to mitigate and manage any timer or rebound peaks induced from TOU rates." Id. at 5. page 5)

90 A Comprehensive Guide to Managed Charging, SEPA, May 2019, page 15. https://sepapower.org/resource/a-comprehensive-guide-to-electric-vehicle-managed-charging/

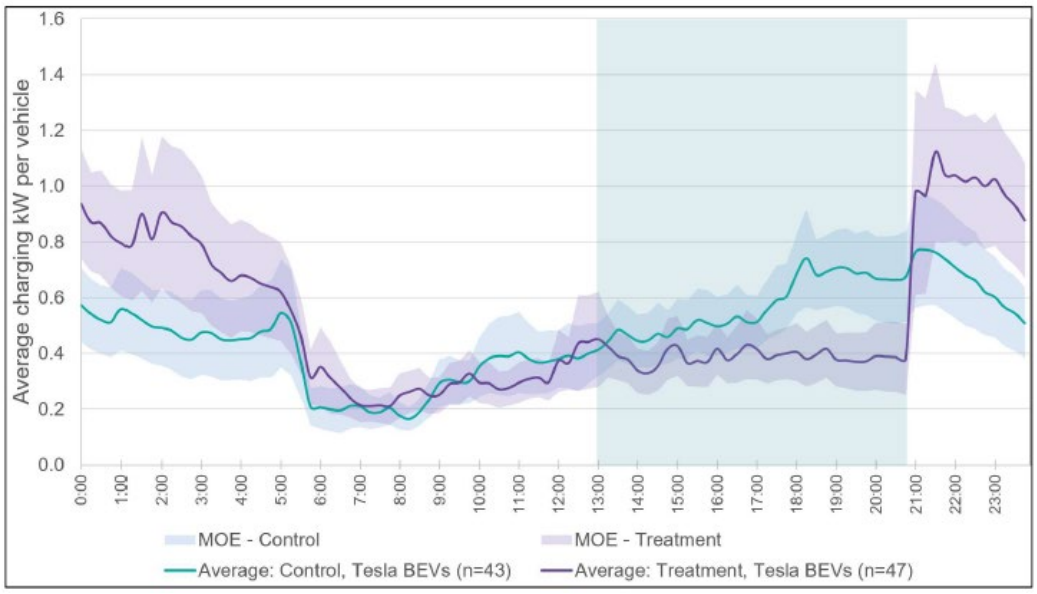
91 Muratori, M. Impact of uncoordinated plug-in electric vehicle charging on residential power demand. *Nat Energy* 3, 193–201 (2018). https://doi.org/10.1038/s41560-017-0074-z

92 RI RY2 Evaluation Report Table 4-19.

year. Customers will let the vendor schedule their charging to help maximize their off-peak charging rebates, while always having the option to override that schedule and charge on-demand. In return, the vendor's technology platform will synchronize charging to both increase the share happening off-peak (and thus maximize the customer's off-peak rebates) and do so in a way that avoids timer peaks.

The research effort would help inform time-varying rate designs (e.g., defining off-peak time-period windows), the technical potential and effectiveness of load management techniques to mitigate the impacts of timer peaks, customer acceptance of such charging scheduling solutions, and more.

Figure 2: Charging Load Profile Comparing Control (Blue) and Treatment (Purple) - Tesla BEVs



Q. Does the Company wish to extend the Off-Peak Charging Rebate Program through 2025 for passenger EVs?

A. Yes. The Company is requesting authorization to extend the Off-Peak Charging Rebate Program through 2025 to ensure that the program is aligned with the duration of the Phase III Program proposed in this filing, particularly the 1-4-unit residential rebates which enable at-home charger installations and require participation in a charging incentive program.

Q. Does the Company wish to extend the Off-Peak Charging Rebate Program to include fleet EVs?

A. Yes. The Company proposes to expand eligibility for the Off-Peak Charging Rebate Program to include light, medium, and heavy-duty fleet vehicles for 2022 through 2025. The program would keep the same program and rebate design and implementation vendor. Including fleet vehicles provides these primary benefits:

- accelerating the adoption of MHDVs, enabling the state to meet its ZEV MOU goals of 30% of new sales by 2030;
- increasing the rate of CO_2 emissions reduction in the program – vehicles above 10,000 pounds (GVWR classes 3-8) reduce between 6 and 29 times the amount of CO2 per vehicle, as compared to passenger BEVs;
- increasing the rate of air pollution reduction in the program – vehicles above 10,000 pounds (GVWR classes 3-8) reduce between 30 and 150 times the amount of Particulate Matter 2.5 (PM2.5) per vehicle, as compared to passenger BEVs; and
- expanding the program's sample for research and testing to include passenger fleet vehicles and MHDVs, which are not currently eligible to participate. The Company may be able to understand the behaviors of a greater variety of EV use cases, including but not limited to: municipal LDV fleets, corporate LDV fleets, delivery vehicles, buses, and freight trucks. Fleet and MHDVs have significantly different use cases, less flexibility on when and where to charge, and larger peak charging loads compared to passenger vehicles.

Including fleet and MHDVs in the Off-Peak Charging Rebate Program allows the Company to develop and apply lessons learned from all vehicle types to future EV programs.

Additionally, the similarly designed SmartCharge New York program run by Consolidated Edison in the New York City region went through a similar expansion several years ago. The New York Public Service Commission approved an expansion of that program to include Fleet and MHDVs after initially approving a residential-only program, a decision that affirmed many of the benefits and reasons described above.[93] Incorporating these Fleet and MHDVs into the Off-Peak Charging Rebate Program allows the Company to greatly expand the benefits of the off-peak program to all vehicle types and incorporate those findings into future programs as EVs grow to meet the Commonwealth's climate goals.

Q. How will the expanded Off-Peak Charging Rebate Program address EV charging in multiple service territories?

A. The Department recently indicated that any future charging incentive proposals must "address issues related to customers charging their electric vehicles in multiple service territories."[94] The ability and need to differentiate EV charging by location depends upon the monitoring technologies used and what types of charging qualify for incentives. The Company expects to conduct further analysis to be able to monitor and differentiate at-

[93] NY PSC Order in Case 16-E-0060, Order Expanding Electric Vehicle Charging Program Eligibility, Sept 12, 2018.

[94] D.P.U. 20-69-A at 49, note 32.

home and away-from-home charging and may also be able to report on in-territory and out-of-territory charging during the Phase III Program and can report on any findings at a later date.

Currently, in the Phase II Program, the Company offers rebates for any charging during the hours of 9 p.m. to 1 p.m. Monday through Friday and excluding holidays.[95] The Company has used, to date, on-board vehicle monitoring, allowing monitoring of all vehicle charging, in or out of the Company's service territory. Networked EVSE are also capable of implementing off-peak rebate programs, however, given their fixed locations, would only capture charging in the Company service territory.

The Company does not recommend any changes in how it offers off-peak rebates at this time as the off-peak rebate amounts, three or five-cents per kWh depending on the season, were based upon an analysis of ISO New England supply and capacity costs. Given the high-level geography used in the analysis and data showing that over 80% of charging occurs at home overall, particularly Monday to Friday when the participants earn off-peak rebates, the Company does not recommend any changes in how it offers off-peak rebates at this time.

[95] Massachusetts Electric Company and Nantucket Electric Company, Electric Vehicle Program Provision, M.D.P.U. No. 1447, *available at* https://www.nationalgridus.com/media/pdfs/billing-payments/tariffs/mae/ev_adjmt_prov.pdf.

Q. How will these proposed changes affect the budget of the Off-Peak Charging Rebate offering?

A. The Company can accommodate flexible scheduling functionality within the originally estimated Off-Peak Rebate Program budget. As described in D.P.U. 18-150-A, the Department did not approve a specific budget with this program and noted that all costs would be recovered through the annual cost recovery filings.[96] Further, the Department noted that it expected the costs of the program to adhere close to the Company's estimated budget,[97] about $5.6 million through the approved program term ending September 30, 2024. Thus, the Company requests that it be allowed to test and implement flexible scheduling approaches within the Off-Peak Charging Rebate Program and that it be allowed to include any direct costs in its cost recovery filings (e.g., added vendor fees), but the Company is not requesting an incremental budget beyond $5.6 million to be able to integrate flexible scheduling in the Off-Peak Charging Rebate Program.

The Company is requesting to increase the estimated budget by $2.25 million to extend the Off-Peak Charging Rebate Program for residential customers through 2025 and an additional $1.58 million to allow the participation of fleet EVs. The extension of the current program through 2025 assumes the program cap remains at 11,000 residential customers. The added costs for the fleet vehicles are needed to accommodate both the increase in

[96] D.P.U. 18-150-A at 19-20.

[97] D.P.U. 18-150-A at 20. "The Department expects any variance between those estimated costs and actual costs would be minimal."

participation over and above the passenger vehicles accounted for in D.P.U. 18-150 and the larger energy demand and associated off-peak rebates of fleet and MHDVs.

In summary, the Company requests approval to implement flexible scheduling and requests an increase in the estimated budget to accommodate the program extension through 2025 for passenger vehicles and participation of fleet vehicles, as shown in Table 13. The changes proposed here would be implemented as revisions to the EV Program Factor tariff, amending the section currently titled "Residential Off-Peak Charging Rebate." The estimated Off-Peak Charging Rebate Program costs are detailed in Exhibit NG-EVPP-10.

Table 13: Summary of Off-Peak Charging Rebate Program Offering Requested Revisions

Off-peak Rebate Program	2020	2021	2022	2023	2024	2025
Residential EVs	Approved in 18-150 ($5.6M) *Request for flexible scheduling ability via Phase III.*					Phase III ($2.2M)
Fleet EVs	n/a		Phase III ($1.5M)			

Q. How does the expanded Off-Peak Charging Rebate Program meet the Department's standard of review for utility EV proposals?

A. The Department's order in D.P.U 20-69-A included two directives regarding future charging incentive programs to which the expanded Off-Peak Charging Rebate Program adheres. First, the Company described earlier how the program currently addresses participating customers charging their EVs in multiple service territories and will be able to report additional findings on this topic at a later date. Second, the Company will continue to adhere to the language in D.P.U. 18-150 regarding overlap between the off-peak rebate program and related charging incentive offerings run as part of the Company's demand

response program. Specifically, the Company is only allowing a participant to be enrolled in one charging incentive program to avoid "duplicate incentives to a customer for the single action of charging during off-peak hours."[98] The proposed modifications to the Off-Peak Charging Rebate Program, including the addition of fleet vehicles and the extension of the residential program for an additional year will continue to adhere to those requirements.

VII. Transformer Surcharge Waiver for Make-Ready Program Participants

Q. Why is the Company requesting a waiver of the transformer surcharge of the Company's General Service – Small Commercial and Industrial G-1 tariff ("Rate G-1")?

A. The transformer surcharge within the Minimum Charge provision of Rate G-1 exists to recoup the capital expense associated with the installation of a larger transformer than is typically needed for a customer of the size receiving electric service on Rate G-1. Since the make-ready portions of the various components of the EV Phase III Program will pay for this capital expense just as the make-ready component from the EV Phase I Program has already paid for this capital expense, there is no need for a transformer surcharge for these customers. Therefore, Rate G-1 customers that required a larger dedicated transformer that was funded via make-ready components in the EV Phase I and III Programs would not be subject to a transformer surcharge, associated with the transformer paid for by the make-ready program, on their monthly bill going forward.

[98] D.P.U. 18-150 at 389.

VIII. Workforce Development and Electrician Training

Q. Please provide an overview of the Company's proposed Workforce Development and Electrician Training offerings.

A. The EDCs are proposing to co-sponsor two statewide offerings to invest in the EV workforce of the future. These offerings are 1) a Workforce Development initiative to support underrepresented entrants to the electric vehicle workforce and 2) an Electrician Training initiative to upskill incumbent electricians.

Q. Why is Workforce Development and Electrician Training needed?

A. The rapid growth of the EV market emphasizes the importance of understanding its current workforce and opportunities for continued growth and development. Developing a skilled workforce is an investment, not a cost.[99] The transition to EVs presents a strong opportunity to support inclusive, quality jobs for all Massachusetts residents. The Company's proposed Workforce Development and Electrician Training initiatives help ensure future EV workforce entrants and incumbent electricians have access to developing the needed skillsets and technical knowledge to be included in the EV transition. To reach the ambitious port targets proposed in the Phase III Program, as well as provide a positive customer experience, the Company views workforce development and electrician training as necessary. The EV workforce needs to grow over the next four years to meet the demand created by this proposed Phase III Program. Ensuring a seamless customer experience is

[99] California Workforce Development Board, A Jobs and Climate Action Plan for 2030 at ii, available at: https://laborcenter.berkeley.edu/wpcontent/uploads/2020/09/Putting-California-on-the-High-Road.pdf.

imperative to the Company. It is critical that the workforce is knowledgeable about charging infrastructure and can provide expert advice to customers on the topic.

To ensure equity in the EV transition, investments need to be made in both people and in capital. Charging infrastructure can be viewed by some as a symbol of displacement and gentrification. Workforce development initiatives targeted at low-income residents and residents in EJCs can foster acceptance of equitable infrastructure deployment. [100]

Q. Please describe the Company's proposed Workforce Development initiative.

A. The Workforce Development initiative aims to collectively (among the EDCs) support approximately 75 participants, prioritizing populations that are underrepresented in the EV workforce. The proposed initiative has the following targets:

- Create a sustained increase in the supply of qualified electric vehicle workers;
- Increase the diversity of the workforce; and
- Foster participation from low-income residents and residents in EJCs to increase their awareness of EVs, EV infrastructure, and the EDCs' EV offerings, ultimately driving EV program participation in hard-to-reach communities.

The EDCs propose to partner with a vendor that has expertise in workforce development to identify market needs, develop curriculum, outline a structure to the initiative, and execute it. Workforce development needs currently under consideration include, but are

[100] Slowik, P. "Expanding Zero-Emission Mobility Equity and Access," ZEV Alliance and ICCT 2019 at 9. http://www.zevalliance.org/wp-content/uploads/2019/12/ZEV_access_workshop_report-_fv.pdf

not limited to, the design, development, manufacture, repair and installation of EVs and charging infrastructure.

Q. Please describe the Company's proposed Electrician Training initiative.

A. In addition to promoting the development of new entrants to the electric vehicle workforce, the EDCs are also proposing to sponsor a state-wide Electrician Training initiative to upskill incumbent electricians. Achieving the Company's ambitious port targets outlined in the Phase III Program will require a strong pipeline of electricians. The initiative aims to collectively (among the EDCs) train more than 1,000 electricians. The initiative has the following goals:

- Educate existing electricians on electrical work related to electric vehicle charging infrastructure across segments (Public and Workplace, Residential, and Fleet);
- Educate existing electricians on the EDCs' EV-related offerings;
- Develop a list of qualified electricians that the co-sponsors can share with customers; and
- Ensure electricians can provide a seamless and well-informed customer experience.

In order to achieve these goals, the co-sponsors will facilitate training by partnering with organizations such as the Electric Vehicle Infrastructure Training Program and charging station providers.

Q. Do comparable workforce development and electrician training initiatives exist?

A. The Company is not currently aware of existing local, state, or federal workforce development or electrician training initiatives to support the electric vehicle workforce of the future. The co-sponsors will coordinate with key partners (i.e., IBEW, MassCEC, the

MA Clean Cities Coalition, MassHire, etc.) to develop the proposed initiatives, avoid duplication, and ensure consistency. Furthermore, the co-sponsors will explore opportunities to recruit additional sponsors that are aligned with the goals of the workforce development initiative, such as automakers and charging station providers, in order to expand the initiative's reach and/or decrease each sponsor's costs.

Q. What is the proposed budget for the Electrician Training and Workforce Development initiatives?

A. As outlined in the table below, the total budget for the Workforce Development and Electrician Training initiatives is $2.3M and will be split between the EDCs. Collectively between the EDCs, the Workforce Development initiative aims to reach approximately 75 participants, and the Electrician Training initiative aims to reachapproximately 1,000 trainees. The Company proposes that the offering be examined after two years to determine if these initiatives warrant increase support. The Workforce Development and Electrician Training budget is also included in Exhibit NG-EVPP-2.

Table 14: Overview of Workforce Development and Electrician Training Initiatives

Program	Total Estimated Budget (Split between the EDCs)	Estimated National Grid Budget	Outcome
Workforce Development	$2,000,000	$1,000,000	Approximately 75 participants statewide
Electrician Training	$300,000	$150,000	Approximately 1,000 trainees statewide

IX. Performance Incentive Mechanisms ("PIM")

Q. What is the purpose of a PIM?

A. The purpose of a PIM is to better align the utility's regulatory and financial interests with the interests of the public. A PIM provides a regulated utility with a financial incentive to pursue an outcome aligned with a public policy objective, shared by regulators and key stakeholders, which typically falls outside of the utility's core service obligations and may be uneconomic or impractical for the utility to pursue otherwise. A PIM may also provide a utility with an incentive to drive outperformance in areas that are related to its core business.

The Company is proposing PIMs to control the cost of EVSE deployment and advance the Commonwealth's clean energy and environmental goals.

Q. What PIMs are the Company proposing?

A. The Company proposes two PIMs: (1) Cost Containment and (2) Clean Fleet, Clean Air. The Cost Containment PIM is comprised of two independent metrics: (1) L2 Cost Containment; and (2) DCFC Cost Containment.

Q. Please provide an overview of the Company's PIMs proposal.

A. The Company proposes two PIMs consisting of a total of three metrics.

Table 15: Summary of PIMs

PIM	Description	Metric
Cost Containment	A PIM to maximize the deployment of EVSE within the proposed budget, by minimizing the ratepayer cost per port and sharing the savings with customers.	L2 Cost Containment: $\left\{\left(\frac{Cost\ Target}{L2\ Port} - \frac{Actual\ Costs}{L2\ Port}\right) \times L2\ Ports\ deployed\right\} \times 30\%$
		DCFC Cost Containment: $\left\{\left(\frac{Cost\ Target}{DCFC\ kW} - \frac{Actual\ Costs}{DCFC\ kW}\right) \times DCFC\ kW\ deployed\right\} \times 30\%$
Clean Fleet, Clean Air	A PIM to maximize the abatement of PM2.5 emissions of the vehicles enabled by the Fleet Make-Ready offering by providing a company incentive to prioritize the projects with the largest PM2.5 emissions per vehicle.	Total Particulate Matter 2.5 Abatement

Q. What are the Department's criteria for evaluating PIMs?

A. The Department set forth its standard for evaluating a proposed incentive mechanism in D.P.U. 18-150. The Department uses a two-prong test to evaluate whether an incentive mechanism is appropriate: (1) whether the PIM satisfies certain threshold principles; and (2) whether the PIM meets the design guidelines. D.P.U. 18-150, at 120. For the first prong, the PIM must first be found to meet the threshold principles that: (1) it advances specific public policy goals; and (2) the affected activity is clearly outside a distribution company's public service obligations. If the PIM meets the threshold principles, the Department will evaluate whether the proposed incentive mechanism meets the second

prong design guidelines, where the incentive mechanism must: (1) be designed to encourage program performance that best achieves the Commonwealth's energy goals; (2) be designed to enable a comparison of (i) clearly defined goals and activities that can be monitored, quantified, and verified after the fact to (ii) the cost of achieving the target to the potential quantifiable benefits; (3) be available only for activities where the distribution company plays a distinct and clear role in bringing about the desired outcome; (4) be consistent across all electric and gas distribution companies, where possible, with deviations across companies clearly justified; (5) be created to avoid perverse incentives; and (6) ensure the distribution company is not rewarded for the same action through another mechanism. D.P.U. 18-150, at 121.

Q. Please describe the proposed Cost Containment PIM.

A. The Cost Containment PIM will establish cost targets as described below for the Public and Workplace, MUD, and Fleet offerings within the Phase III Program to identify the expected cost to achieve a given outcome. In the case of L2, a cost per port, and in the case of DCFC, a cost per kW deployed are proposed. Based upon the Company's actual port and kW deployments, the PIM will calculate any savings against the cost targets and allow the Company to retain a 30% share of those savings as an incentive while the other 70% of the savings will be benefits for customers. Finally, the Company is proposing limits regarding minimum and maximum earnings potential. The Company proposes that it must reach at least 75% of the total L2 port installed target for the Public and Workplace, MUD, and Fleet offerings, or roughly 8,500 L2 ports, and for DCFC approximately 35,000 kW

installed (approximately 236 150 kW stations). In addition, the Company proposes to cap the total cost containment incentive at $8 million over the term, or roughly 2.9% of the proposed Phase III Program budget.

Q. What are the benefits of the Cost Containment PIM?

A. The Cost Containment PIM will result in a more cost-efficient program with lower costs and bill impacts for a given level of charging deployments. Given the still early stage of the EV market, there are likely areas of cost reduction potential that the Company would be motivated to discover and pursue.

Q. Why is a Cost Containment PIM appropriate?

A. In DPU 17-13, the Department urged the Company to consider performance incentive designs that encourage cost containment.[101, 102] Related, an incentive following a similar cost containment design was recently approved for the Company's affiliate.[103]

Q. Please describe the method for measuring the two Cost Containment metrics.

A. The Company is currently required to perform annual cost recovery filings for the Phase I and Phase II Programs. In future cost recovery filings, the Company will use the program costs and outcomes for L2 ports and DCFC kW enabled to determine program savings.

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101 D.P.U. 17-13 at 45.

102 D.P.U. 18-150 at 126.

103 NY Public Service Commission Case 18-E-0138, Order July 16, 2020, at 84: The Commission finds that an EAM tied to incentivizing EV charging infrastructure at least cost is the most effective method to ensure customer benefits, at this time as customers will benefit from both the anticipated increase in penetration from EVs themselves, and also benefit by decreasing expenditures below the currently forecasted budget amounts. Further, an EAM tied to decreasing program expenditures provides a counterbalance against a utility's natural business incentive to increase Rate Base by maximizing capital expenditure spending.]

Any project level utility-side make-ready or customer-side make-ready for L2 or DCFC projects will be applied to their respective outcomes. Any projects installing both L2 and DCFC will use appropriate methods of allocating costs, if needed. In addition, the number of ports will be reported, as will the number of ports and kW installed for any DCFC. The Company proposes the PIM as a one-time measurement done at the end of the Phase III Program.

Q. Please describe the proposed cost targets and how they were established.

A. The Company is proposing a method to determine the cost per ports (L2 and DCFC) and the cost per kW target that reflects the total of utility-side make-ready and customer-side make-ready. For L2 ports, the Company proposes to use the average cost of Company support per L2 port from the Phase I program for utility-side and customer-side make-ready work (i.e., any customer-paid costs will not count towards the cost per port target). For DCFC ports, the Company proposes to use the average costs from the Phase I program per kW installed for utility-side make-ready and customer-side make-ready. The Company expects final historical cost targets to be calculated after the Phase I program is complete.

Q. Please describe the actions the Company may take to achieve Cost Containment PIM goals.

A. While the Company strives to be judicious with costs, an incentive allows additional dedication of resources to drive novel or effort-intensive opportunities to create customer value. The Cost Containment PIM will incentivize the Company to manage each type of cost. To minimize utility-side make ready, the Company will leverage existing services

where possible, rather than always require new service, and will restrict program support to overly expensive service upgrades. For customer-side make-ready costs, the Company will be judicious in approving above average financial support levels and will strive to reduce costs per port installed. Finally, because the incentive scales with the number of installations and amount of cost savings, the Company will strive to be maximally efficient in program administration, supporting as many projects as possible within the program budget.

Q. Does the proposed Cost Containment PIM meet the Department's criteria for PIM proposals?

A. Yes. The Phase III Program advances the specific public policy goal of electrifying transportation to improve societal and environmental outcomes. In D.P.U. 18-150, the Department found that a charging station cost containment PIM generally meets the threshold principles but noted the need to use actual costs in determining cost targets.[104] The Company has now filed two years' worth of cost recovery information and proposes to finalize the cost targets after the Phase I program is complete.

The proposed Cost Containment PIM also meets all the Department's design principles for evaluating PIM proposals, as it supports the Commonwealth's clean energy goals by supporting access to clean transportation ownership and operation; can be clearly monitored, quantified, and verified; demonstrates the Company's clear and distinct role to

[104] D.P.U. 18-150, at 85-87, 125-127.

facilitate, interconnect, and plan for EV charging; and does not lead to double collection of incentives (i.e., the Company is not otherwise rewarded or incentivized to reduce such costs). The Company's make-ready offerings provide consistent financial support across market segments (i.e., public, workplace, MUD, fleet, EJCs) and is designed to avoid perverse incentives.

Q. Did the Company perform a net benefit analysis for the Cost Containment PIM?

A. No, the two metrics are designed to allow the Company to earn an incentive for maximizing budget efficiency and EVSE deployment. The incentives are based on actual savings delivered to customers rather than an estimate of net benefits.

Q. Please describe the proposed Clean Fleet, Clean Air PIM.

A. The Clean Fleet, Clean Air PIM will establish program term targets for the projected lifetime air emissions of the vehicles supported by the Fleet Segment. The Fleet Segment is projected to directly support 2,000 EVs with make-ready infrastructure, and the Clean Fleet, Clean Air PIM is designed to maximize the reduction of Particulate Matter 2.5 (PM2.5) emissions from those vehicles. Fleet vehicles have a disproportionate impact on air quality compared to passenger vehicles – fleet LDVs can have up to twice the $PM_{2.5}$ emissions of passenger vehicles due to the magnitude of miles traveled, and MHDVs are 30-150 times worse per vehicle.

The Clean Fleet, Clean Air PIM establishes a baseline of supporting the mix of vehicles as presented in Exhibit NG-EVPP-9. To incentivize vehicle segments with higher PM2.5

emissions per vehicle, this PIM establishes 5%, 10%, and 15% thresholds above the budgeted mix of vehicles supported. Based upon the Company's actual mix of deployed vehicles, the PIM will calculate the incremental health benefit of additional PM2.5 emissions reduction. Like the Cost Containment PIM, the Company is proposing to claim a 30% share of those savings as an incentive.

Q. What are the benefits of the Clean Fleet, Clean Air PIM?

A. The U.S. Environmental Protection Agency's ("EPA") Bureau of Transportation Statistics provides PM2.5 emissions per mile of travel,[105] as well as the estimated society health benefits of PM2.5 emissions reduction.[106] The EPA estimates a society value of $400,000 for every metric ton of PM2.5 pollution. That value is applied to the estimated total miles driven for the mix of vehicles supported by the Fleet Segment.

Q. Please describe the proposed targets for the Clean Fleet, Clean Air PIM.

A. The targets for this PIM are shown in the following table:

[105] U.S. Environmental Protection Agency, Office of Transportation and Air Quality, Apr. 6, 2018, Table 4-43, available at: https://www.bts.gov/content/estimated-national-average-vehicle-emissions-rates-vehicle-vehicle-type-using-gasoline-and

[106] EPA, 'Estimating the Benefit per Ton of Reducing PM2.5 Precursors from 17 Sectors', February 2018, at 14. Available at: https://www.epa.gov/sites/production/files/2018-02/documents/sourceapportionmentbpttsd_2018.pdf

Table 16: PM 2.5 Abatement Targets

Target	Value (tons of $PM_{2.5}$)
Target	26.1
Min (5% above target)	27.4
Mid (10% above target)	28.7
Max (15% above target)	30.0

The targets for this PIM are set for a term of four years, 2022 through 2025.

Q. Please describe how the proposed targets for the Clean Fleet, Clean Air PIM were established, and how the Company will work to achieve them.

A. The targets for the estimated PM2.5 emissions reduction are presented in the table below. The targets are established using the estimated vehicles enabled by the Fleet Make-Ready offering, described in Section C and detailed in Exhibit NG-EVPP-9. The lifetime $PM_{2.5}$ emissions are then calculated using the estimated annual VMT and $PM_{2.5}$ emissions per mile. This Clean Fleet, Clean Air PIM will provide an incentive for the Company to maximize the $PM_{2.5}$ reduction of the make-ready projects by prioritizing those projects that have the greatest $PM_{2.5}$ abatement on a per vehicle basis.

Table 17: Estimated $PM_{2.5}$ Emission Baseline

	EVs Enabled	Annual VMT / vehicle	Annual $PM_{2.5}$ (g / mi)	Annual $PM_{2.5}$ (g / mi / vehicle)	Lifetime $PM_{2.5}$ (Tons)	Total Value at $400k / Ton
LDV	1,150	23,000	0.008	188	2.2	$865,634
MDV	720	20,000	0.129	2,577	18.6	$7,422,922
HDV	130	19,303	0.213	4,105	5.3	$2,134,578
Total	**2,000**	**15,092**	**0.065**	**1,303**	**26.1**	**$10,423,134**

Q. Please describe the proposed incentive levels for the Clean Fleet, Clean Air PIM and how the Company would qualify to earn on those incentives.

A. The incentive levels for this PIM are shown in the following table. The baseline is based upon the mix of vehicle types presented in Table 17 above, providing an estimated 26.1 tons of PM2.5 reduction over the lifetime of the vehicles. The min, mid, and max targets represent the incremental savings from the estimated total lifetime PM2.5 reductions of the actual Fleet Make-Ready offering above and beyond the baseline.

Table 18: Clean Fleet, Clean Air Savings and Incentives

Incentive Level	Incremental Savings, $	Company Incentive, $
Target	$ 0	$ 0
Min (5% above target)	$521,157	$156,347
Mid (10% above target)	$1,042,313	$312,694
Max (15% above target)	$1,563,470	$469,041

Q. Please provide the Company's role and its ability to influence the outcomes proposed in the Clean Fleet, Clean Air PIM.

A. The Department, in D.P.U. 18-150, at 126, outlined how factors outside the Company's control can have a significant impact on the adoption rates in the passenger EV market. However, fleet vehicles are procured in a significantly different manner, and this Clean Fleet, Clean Air PIM is designed to provide a framework to increase the Company's ability to influence the deployment of fleet vehicles in its territory to maximize the air pollution reduction benefits from the Fleet Make-Ready offering. The Company's Fleet Make-Ready

offering is not negatively impacted from the same limitations of publicly facing passenger vehicles and can therefore be more influential in selecting projects for the Make-Ready offering. Vehicle availability changes, fleet specific EVSE technology and design, large-scale decision making, and the Company's Fleet Assessment Services all provide the company the ability to influence the mix of fleet vehicle procurement. With this PIM in place, the Company can prioritize fleet EV projects that represent the largest PM2.5 abatement, which can sometimes require additional customer, stakeholder, and industry partner conversations to implement. As outlined above, air pollution has a disproportionate impact on the most disadvantaged communities, and this PIM provides a mechanism for the Company to prioritize those projects with the most benefit for those communities.

Q. Please explain how the proposed Clean Fleet, Clean Air PIM meets the Department's criteria for PIM proposals.

A. The Clean Fleet, Clean Air PIM aligns with the Department's criteria in D.P.U. 18-150, at 121, and as outlined earlier in the testimony. This PIM complements the Cost Containment PIM, as it provides an incentive for the Company to maximize the societal and environmental outcomes of the Fleet Segment offerings and maximizes the total public health benefit of PM2.5 abatement for the make-ready projects deployed within the Fleet Segment Make-Ready offering.

The proposed Clean Fleet, Clean Air PIM aligns with the Department's two threshold criteria: (1) The PIM maximizes the specific public policy goal of electrifying transportation to improve societal and environmental outcomes by maximizing PM2.5

abatement, while (2) also incentivizing the Company to accelerate activities and market behaviors outside the Company's service obligations.

The Clean Fleet, Clean Air PIM also meets the Department's six design guidelines: (1) The PIM encourages program performance to achieve the Commonwealth's goals of zero emission transportation, with a specific focus on the MHDV segment. (2) The costs and outcomes of the PIM can be clearly defined and monitored during the term of the program, using project deployment data to determine the mix of vehicles that have been electrified. (3) Because the Company approves the projects within the Fleet Make-Ready offering, the Company also plays a role in achieving the desired PM2.5 abatement outcomes by prioritizing fleet make-ready projects that maximize that outcome per vehicle. (4) This PIM is specific to the Company, given the Company's focus on the MHDV segment per the recent ZEV MOU MHDV targets. (5) This PIM also prevents a perverse incentive of deploying infrastructure projects that are focused primarily on LDV fleets, with less of an emphasis on the larger public health benefits from electrifying MHDV fleets with substantially higher $PM_{2.5}$ emissions per vehicle. (6) Finally, the Clean Fleet, Clean Air PIM does not reward the Company for actions taken through other mechanisms within the Fleet Make-Ready offering – specifically, the Company is incentivized to reduce total costs to achieve program goals as part of the Cost Containment PIM and incentivized to maximize the societal and environmental outcomes for every port deployed through this Clean Fleet, Clean Air PIM.

Q. How does the Company propose to report on PIM performance results and what process is proposed for Department review and confirmation of these PIM targets being achieved?

A. The Company proposes to report on PIM performance results in its annual cost recovery filings. During the implementation of the program, the Company would include an assessment in each Phase III Program cost recovery of the calculated savings against the cost targets and progress towards clean air targets.

X. Resources Needed for Program Implementation

Q. What resources did the Company include to implement the Phase III Program?

A. In order to successfully implement the Phase III Program, the Company is proposing to include the following necessary resources: Company Staffing, Information Technology, Marketing and Outreach, Program Management, and Evaluation.

Q. What are the Company's proposed staffing needs?

A. The Phase III Program expands the Company's existing EV offerings, requiring additional staffing resources. The Company is proposing 17.0 incremental FTEs, 10 of which are for Program Management roles and 7 of which are dedicated support roles within the Company. The 10 Program Management roles include incremental project managers and analysts for each segment. Additionally, the 7 dedicated support roles within the company include roles in Customer Connections, Distribution Design, and Distribution Planning, all of which will be necessary for planning, design, and construction of the projects at the scale proposed in this filing. Exhibit NG-EVPP-4 details the timing of the hires as well as the

cost. The cost of all incremental FTEs for the duration of the Phase III Program is approximately $9M in non-capitalized labor cost.

XI. Information Technology (IT)

Q. What IT resources has the Company included in the budget for the Phase III Program?

A. The Company is filing Exhibit NG-EVPP-2 that includes the budget for IT for the following purposes:

- Develop and maintain a web portal to accept and manage customer applications to the Public and Workplace, MUD, and Fleet segment offerings. This will be an expanded version of the online customer portal the Company recently developed for the new charging station program run by the Company's affiliate in New York, the Niagara Mohawk Power Company.[107] The customer portal integrates into Company backend systems and serves as a more scalable and reliable approach to managing charging station projects. The Company proposes to make additional investments to ensure the portal meets Company IT standards for data and access management and the specifics of the Phase III Program. The Company estimates $1.1 million of initial investment and another $600,000 to maintain and update the portal over the term of the program.
- The Company is requesting $60,000 for IT staff time required to help evaluate RFPs and support administration of the residential 1-4-unit offerings, as those offerings expect to use customer data to help administer rebates.

Q. Why are the investments in IT resources necessary for the Phase III Program?

A. The Phase III Program has ambitious targets for the number of EVSE ports installed, reflecting roughly eight to ten times the pace of activity from the Phase I program. In addition, the number of Company staff required to administer the program will increase.

[107] In Case 18-E-0138, Order July 16, 2020, at 95, the New York Commission ruled "The Joint Utilities are directed to develop an online EV Infrastructure service application portal, which may utilize existing software capability, or may be a new tool." and included specific requirements for the operation and consistency of the portal across New York utilities.

Investment in the charging station web portal will allow the Company to efficiently scale its administration of the program, improve customer experience, improve data management, and enable workflows that better support the larger project management team required for such an effort. In addition, while the Company has made significant improvements to its Excel-based project tracking system,[108] and may continue to leverage Excel-based tracking for some elements of the Phase III Program, there is a need for a more robust, secure system to improve administration efficiency and effectiveness and the customer experience.

XII. Marketing and Outreach

Q. Please describe the Company's proposed approach to Marketing and Outreach.

A. The Company is proposing a Marketing and Outreach Plan to drive awareness of and participation in the proposed EV offerings, including new customer offerings among residential, commercial, and fleet customers through targeted outreach and communications. Consumer education pertaining to electric vehicle charging continues to be a barrier, making a dedicated Marketing and Outreach Plan a vital component of the proposal and the success of each program to meet participation targets. The Company's communication channels have a reach throughout its service territory, and the Company communicates with customers regularly through a variety of channels including bills, home energy reports, email, social media, billboards, digital, print and radio media serving as a

[108] Phase I PY2 Evaluation Report, Finding 5.

trusted advisor for their energy needs. The Company proposes that it leverage these capabilities to execute a Marketing and Outreach Plan that will: empower residential and commercial customers to make informed decisions about the benefits of installing EV charging stations for home, business or public charging; highlight opportunities to accelerate fleet electrification; and increase access to charging among LI/EJC customers.

In addition to traditional marketing and outreach techniques, the Company intends to leverage existing and future community and stakeholder relationships to target hard to reach customers, underserved and overburdened populations, as well as other customer segments. Working with municipalities, state agencies, CAP agencies/local non-profit organizations, the Chambers of Commerce, the EVSE installer network, car dealerships, etc., the Company will be able to expand its reach and ensure customers are aware of the resources available to them. The Company also plans to utilize existing points of contact with customers, such as those through the Energy Efficiency programs, to co-market programs, maximize reach and customer experience, and lower costs.

Q. Why is a Marketing and Outreach Plan necessary?

A. The Marketing and Outreach Plan will enable the Company to meet the ambitious port and fleet vehicle targets of the Phase III Program. The Phase I Program Evaluation had the below conclusions which have helped inform the Marketing and Outreach Plan. While these conclusions relate to DCFC public and workplace installations specifically, their essence can be applied to other segments and types of charging installations:

- "To shorten the DCFC sales cycle, develop sales and marketing strategies for different segments of businesses targeted for DCFC installations."

- "Utilities can play a valuable role in educating prospective site hosts about DCFC installation and help build the business case to facilitate decision-making...Programs can also increase their outreach through mass marketing, case studies, education, and internal champions at prospective site hosts."

- "All [prospective site hosts] who we spoke with agreed that [in order to remove barriers to DCFC installation] the market needs education on EVs, EV charging, and the Charging Program. Getting the word out about the program can be accomplished through mass marketing, vendors, word of mouth from early participants, and program materials and website."[109]

Furthermore, a survey conducted by the Company in 2018 found that residential customers would be open to and trust EV-related information from National Grid and messaging that addresses the barriers to EV adoption.[110] These initial findings indicate the importance of Marketing and Outreach in driving the success of the Phase III Program.

Q. How will the Company develop the Marketing and Outreach Plan?

A. The Company will work with an advertising agency, informed by findings from currently offered programs, communication to internal EV/Energy Efficiency teams, and external partnerships to develop a Marketing and Outreach Plan that will:

- identify and prioritize residential customers who are likely to install charging infrastructure in their homes;

- perform dedicated outreach to targeted environmental organizations, non-profits, state agencies, and consumer advocacy groups to ensure the Company is reaching LI/EJC customers and appropriate stakeholders across the jurisdiction;

[109] Phase I RY1 Evaluation Report at 3, 23 and 33.

[110] 2018 National Grid Customer Council EV Research. Slides 4; 12-16

- identify and prioritize consumer and site host benefits for EV charging accessibility and increase site hosts' familiarity with EV charging as an amenity for employees, customers, tenants, or visitors;

- identify corporate parties and commercial customers that may benefit from fleet electrification and on-premises charging;
- develop messages that highlight the Company's charging infrastructure and fleet offerings and deliver them through multiple channels, listed below, and direct communication to internal teams and external partners:
    - Company channels (website, social media, bill inserts, call centers, sales team)
    - Partner channels (EVSE vendors, local auto dealers and automakers, and trade groups)
    - Press coverage
    - Purchased media
    - EV advocacy groups
    - Site host communication and engagement.

The Company will leverage existing marketing and outreach efforts (such as within EE, municipal programs, etc.) to increase uptake, lower costs, and provide a streamlined customer experience. The Company proposes the above-mentioned foundational tactics will be refined with the advertising agency using data derived from research with input from the partners prior to any campaign launch.

Q. What are the estimated costs of the Marketing and Outreach Plan?

A. The Company estimates the cost of the Marketing and Outreach Plan to be approximately $5,571,000 (or 2.0% of the total proposed Phase III Program budget). The Company identified similarly themed awareness and participation campaigns to establish costs for the Marketing and Outreach Plan. The Company included line items for Marketing budget within various Exhibits: NG-EVPP-5, NG-EVPP-7, NG-EVPP-8, and NG-EVPP-9.

XIII. Program Management

Q. Is flexibility important in managing the Phase III Program?

A. Yes, to meet the needs of our customers and to be positioned to respond to the evolving transportation market, the Company is requesting flexibility to adjust our spending and the details of our offerings over the four-year term of the Phase III Program. To meet the ambitious goals of the Commonwealth through a market and customer-driven program, the Company is requesting the ability to move funds within and between program segments, while managing the overall Phase III Program within the proposed budget. This will enable the Company to optimize its strategy in real time. Specifically, we are proposing the flexibility to move funding, without prior approval, between offerings within the program segments and move up to 20 percent of the Phase III Program funds from one program segment to another. To ensure the needs of customers are being met given the quickly evolving market and to enable the Company to effectively support the Commonwealth's transportation electrification goals in an agile manner, the Company also proposes to have the flexibility to adjust components within the offerings, including incentives and rebate levels, customer eligibility requirements, and the distribution of port types. To address more substantive changes, the Company is interested in having the flexibility to initiate a mid-term review at the end of the second year of the Program. During this review, substantial modifications could be proposed with supportive justification and evidence including, for example, on-bill repayment. In the Phase I PY2 evaluation report, customers

indicated interest in an on-bill repayment program. The Company plans to evaluate this option to gather more information for this potential offering.

XIV. Program Evaluation

Q. How will the Company evaluate the Phase III Program?

A. The Company proposes to implement a comprehensive evaluation of the Phase III Program, assessing its impacts and, where possible, drawing conclusions on their effects on EV adoption. The Company will hire an independent, third-party evaluation expert to complete this work. Upon selection of the vendor, a detailed evaluation workplan will be completed to clarify the researchable questions and the evaluation methods to be utilized.

Q. What will be the objective of the evaluation?

A. The overall goal of the evaluation will be to characterize the Phase III Program implementation and to assess the effectiveness of its offerings. The evaluation will be conducted over a four-year program period. The evaluation will be focused on, but not limited to:

- tracking, documenting, and assessing program performance, and participation;
- understanding the experiences of participating customers in each of the program components;
- assessing barriers to non-participants, and identify opportunities to engage them;
- characterizing the experiences of low-income customers and other disadvantaged groups within each program (see additional details below);
- evaluating accessibility of charging stations for customers across the Company's territory;
- studying how program incentives, rebates and funding sources affect the adoption of EV charging stations and fleet vehicle conversion;
- identifying program barriers and barriers to electric fleet vehicle adoption; and,

- determining how program elements affect customers' charging behaviors at home, in public, and at workplaces.

Q. How will the Program impact on LI/EJC customers be evaluated?

A. The research will evaluate equity considerations with respect to the Phase III Programs by characterizing the efforts to reach and serve low-income and other disadvantaged customers. The study will assess program performance and participation and identify barriers to deploying charging stations for electric vehicles and electric fleet vehicles in EJCs, as well as the experiences of LI/EJC customers served by the Residential Program. The evaluators will conduct special outreach efforts for EJCs and low-income customers as needed to ensure diverse voices are heard; these efforts may include mixed-mode surveys, in-depth interviews with CAP agencies and municipal partners, and interviews or surveys with income-eligible owners and property managers.

Q. What type of tasks will be performed in the evaluation of the Phase III Program?

A. Evaluation activities may include : (1) periodic surveys of a broad or targeted sample of National Grid customers, both residential and non-residential; (2) pre- and post-surveys of residential and commercial customers who frequent residential charging stations and site host facilities; (3) surveys or interviews of participating and non-participating site hosts; (4) the collection and analysis of program and charging data; and (5) in-depth interviews with program and support staff, external stakeholders, market actors, and industry experts as needed.

Q. What type of reporting will occur?

A. Evaluation results will be shared with the program team as they are completed in order to inform ongoing program improvement. The evaluation will cover the four-year term of the programs. After each year, an annual report will be produced summarizing evaluation results. After the conclusion of Year 4, a final evaluation report will be completed in the months following the programs' completion. The Company's target for estimating results is at the 90% confidence level, within +/- 10% precision. The Company will develop sampling protocols based on this standard. However, actual evaluation results may deviate from this standard.

Q. How will the evaluation results be leveraged by the Company?

A. Evaluation results may recommend changes or improvements to program design. The third-party evaluation expert and the Company's evaluation staff will discuss these recommendations with Program staff. The evaluation staff typically coordinate closely with program implementation to ensure they understand areas of uncertainty and opportunities to refine program design and how markets are evolving. Evaluation staff seek to ensure consistent, on-going communication of evaluation research to enable the program to leverage insights from evaluation in a timely manner.

Q. Why is evaluation important for stakeholders?

A. Evaluation provides data, analysis, and insights regarding the performance of the program that enables stakeholders to gain a deeper understanding of program strengths, limitations, and opportunities for improvement. This analysis ultimately helps to ensure that the

program is valuable for ratepayers and other stakeholders. This type of research is focused on the future and how the program can improve to serve customers better, adjust to changing conditions, and achieve program targets.

Q. What is the proposed budget for evaluation?

A. The Company has budgeted approximately $2,387,000 of program costs to fund evaluation efforts across five years. This is in-line with other recently completed EV evaluations across the Company's service territories. Actual evaluation expenses may be higher or lower. The proposed budget includes funds for the following activities: planning and workplan development, project management, impact evaluations, surveys and interviews, and reporting. The Company has also set aside some funds for ad hoc research to support any new research area needs and priorities which emerge throughout the duration of the program.

Q. Will the Company remain flexible during the evaluation?

A. Yes, as needed over the course of the four-year program, the Company will coordinate with the independent evaluator to develop additional research tasks to characterize the effects of the program and identify areas of continued process improvement.

XV. Program Costs

Q. What is the Company's total estimated cost of the proposed Phase III EV Program?

A. The Company is estimating the costs of the proposed Program at approximately $277.76 million, as shown in Exhibit NG-EVPP-2. Please see below table a summary of the costs by component.

Table 19: Estimated Budget of the Phase III Program

Program Component	Total Budget ($M)
Public and Workplace Total	**$96.77**
Make-Ready	$72.85
EVSE Rebates	$18.62
Pole-Mounted EVSE	$1.58
DCFC Commitment	$.50
Networking Rebates	$1.38
Program Management	$1.84
Residential Total	**$64.08**
Make-Ready	$41.86
EVSE Rebates	$10.41
LI/EJC Offering	$3.97
Site Plans	$1.20
Program Management	$6.64
Fleet Total	**$98.23**
Make-Ready	$17.81
EVSE Rebates	$8.47
Fleet Assessment Services	$3.25
EJC School Bus Rebate	$52.50
Utility-Side System Expansion	$15.00
Program Management	$1.20
Other Supporting Elements Total	$18.68
Expansion of Off-Peak Rebate Offering	$3.84
Workforce Development and Electrician Training	$1.51
Company Staffing	$9.17
IT and Back-Office System Costs	$1.78
Program Evaluation	$2.39
Total	$277.76

XVI. Conclusion

Q. Does this conclude your testimony?

A. Yes, it does.