

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**Docket No. R-2024-3046523**

**Duquesne Light Company  
Statement No. 6**

**Direct Testimony of Sarah J. Olexsak  
Subject: Transportation Electrification Portfolio**

**Date: March 20, 2024**

## TABLE OF CONTENTS

I.	INTRODUCTION .....	1
III.	TRANSPORTATION ELECTRIFICATION LANDSCAPE.....	8
A.	<i>EV and Charging Market Overview</i> .....	8
B.	<i>TE Portfolio Performance</i> .....	24
IV.	CHARGING INFRASTRUCTURE OFFERINGS .....	26
A.	<i>Community, Fleet &amp; Transit Pilot</i> .....	27
B.	<i>Home Charging Pilot</i> .....	45
V.	LOAD MANAGEMENT OFFERINGS .....	52
A.	<i>EV TOU Distribution Rate Pilot</i> .....	55
A.	<i>Residential Managed Charging Pilot</i> .....	68
VI.	CUSTOMER ENGAGEMENT OFFERINGS .....	81
A.	<i>Awareness, Education, and Engagement</i> .....	82
B.	<i>Electric Fleet Advisory Service</i> .....	85
C.	<i>Registration Incentive</i> .....	91
VII.	OTHER TRANSPORTATION ELECTRIFICATION MATTERS .....	93
VIII.	CONCLUSION .....	96

1 **I. INTRODUCTION**

2 **Q. Please state your full name and business address.**

3 A. My name is Sarah J. Olexsak. My business address is Duquesne Light Company,  
4 411 Seventh Avenue, Pittsburgh, PA 15219.

5

6 **Q. What is your position at Duquesne Light Company?**

7 A. I am employed by Duquesne Light Company (“Duquesne Light” or “Company”)  
8 as Senior Manager, Transportation Electrification.

9

10 **Q. How long have you worked at Duquesne Light?**

11 A. I have been employed by Duquesne Light since May 2018.

12

13 **Q. What are your current responsibilities?**

14 A. As the Senior Manager, Transportation Electrification, my primary responsibilities  
15 include developing and implementing the Company’s transportation electrification  
16 (“TE”) programs. In this role, I oversaw the execution of the EV ChargeUp Pilot  
17 and Transportation Electrification Programs approved as part of the Company’s  
18 prior base rate cases, Docket No. R-2018-3000124 and Docket No. R-2021-  
19 3024750. I also contributed to the development of the Company’s EV Time-of-Use  
20 Rate Pilot for default supply, which was approved by the Commission at Docket  
21 No. P-2020-3019522 and has been available to customers since June 2021.

22

1 **Q. What are your qualifications, work experience and educational background?**

2 A. I have been employed in the energy and automotive sector since 2006. Prior to  
3 joining Duquesne Light, I was employed at the U.S. Department of Energy (“U.S.  
4 DOE”) within the Office of Energy Efficiency and Renewable Energy (“EERE”).  
5 During my eight-year tenure in EERE, I held a variety of positions within the Office  
6 of Strategic Programs and the Vehicle Technologies Office. These positions  
7 included Manager, Electrification and Project Manager, Innovation & Deployment,  
8 wherein I managed electric vehicle (EV) market readiness research and performed  
9 analysis to inform strategic investment across EERE’s research portfolio, and  
10 Coordinator of the Workplace Charging Challenge. I also served as a Senior  
11 Sustainability Officer on assignment to the White House Council on Environmental  
12 Quality. Prior to this, I worked as a consultant to the U.S. DOE under employment  
13 by Sentech, Inc. managing the evaluation of EV and battery manufacturing loan  
14 and tax credit proposals, and as an analyst at the U.S. Fuel Cell Council (now the  
15 Fuel Cell and Hydrogen Energy Association), the trade association of the hydrogen  
16 fuel cell industry.

17 I have previously served on the Pittsburgh Region Clean Cities Board and  
18 currently serve on the Pittsburgh Parks Conservancy Board. I have an M.S. in  
19 Energy Policy and Climate from Johns Hopkins University, and a B.S. in Biology  
20 from Muskingum University.

21

1 **Q. Are you sponsoring any exhibits, parts of exhibits or responses to the**  
2 **Commission’s filing requirements as part of your direct testimony?**

3 A. Yes. I am sponsoring the following exhibits:

4 **Exhibit SO-1:** Transportation Electrification Programs Report

5 **Exhibit SO-2:** Transportation Electrification Portfolio Evaluation Plan

6 **Exhibit SO-3:** Transportation Electrification Portfolio Budget

7 **Exhibit SO-4:** Duquesne Light Customer EV Survey Results Summary

8 **Exhibit SO-5:** Duquesne Light Electric Mobility for All Report

9 **Exhibit SO-6:** Load Management Plan

10 In addition, I am sponsoring Rider No. 4 (EV Time of Use Rate Pilot) and  
11 Rider No. 7 (Residential Managed Charging Pilot), which is included within  
12 Company witness Mr. Ogden’s Exhibit DBO-1.

13

14 **II. OVERVIEW OF TESTIMONY**

15 **Q. What is the purpose of your direct testimony?**

16 A. The purpose of my testimony is to present the Company’s proposed Transportation  
17 Electrification Portfolio (“TE Portfolio”). Within my testimony, I will: 1) describe  
18 why the Company is proposing the TE Portfolio; 2) report on the performance of  
19 the Company’s Transportation Electrification Programs (“TE Programs”) to date;  
20 and 3) describe in detail the proposed TE Portfolio.

21

22 **Q. Why is the Company proposing the TE Portfolio in this case?**

1 A. The TE Portfolio is a key component of the Company’s vision to enable a clean  
2 energy future for all and will help the Company empower its customers to  
3 experience the benefits of electric mobility. It will allow the Company to continue  
4 to serve as a trusted partner, offering innovative products and services that optimize  
5 grid use and advance the TE market in its service territory. It aligns with the  
6 Company’s CARES framework as described in witness Mr. Davis’s direct  
7 testimony, DLC St. No.1, and elaborated on below:

- 8 • Customer Centricity: TE Portfolio meets evolving customer needs and has  
9 a track record of resulting in high customer satisfaction.
- 10 • Affordability: TE Portfolio will increase electricity usage helping make  
11 rates more affordable for all customers. Additionally, the TE Portfolio  
12 makes deploying charging infrastructure and adopting EVs more affordable  
13 for participating customers.
- 14 • Resilient Culture: TE Portfolio advances the decarbonization of our  
15 region’s transportation sector.
- 16 • Energy of Things: TE Portfolio enhances customer value of the grid by  
17 increasing the utilization of grid assets.
- 18 • Strengthen our Core: TE Portfolio collects data and learnings to inform grid  
19 investment and impactful load management.

20

21 **Q. Please summarize the Company’s proposed TE Portfolio.**

22 A. The proposed TE Portfolio consists of three sets of Offerings:

- 1           • The first set is the Charging Infrastructure Offerings, comprising activities  
2           intended to increase the number of EV charging stations in the Company’s  
3           service territory, as a means of facilitating the EV market.
- 4           • The second set is the Load Management Offerings, which will build the  
5           Company’s knowledge regarding customer response to, administration of,  
6           and efficacy of active and passive load management solutions.
- 7           • The final set is the Customer Engagement Offerings, which are designed to  
8           increase customer knowledge of transportation electrification and allow the  
9           Company to engage customers more effectively.

10

11   **Q.    What are the objectives of the proposed TE Portfolio?**

12   A.    The Charging Infrastructure Offerings are designed to:

- 13           • Support customers to install charging stations at their homes and facilities.
- 14           • Support the deployment of community charging stations throughout the  
15           Company’s service territory.
- 16           • Continue to equitably apportion the benefits of its TE Portfolio to promote  
17           cleaner, healthier, and more equitable communities for generations to come.

18   The Load Management Offerings are designed to:

- 19           • Save customers money when they charge their EV when grid demand is  
20           lowest, which can drive down costs for all customers in the long run. Build  
21           knowledge regarding customer response to, administration of, and efficacy

1 of active and passive load management solutions to contribute to non-wires  
2 alternatives.

3 The Customer Engagement Offerings are designed to:

- 4 • Build visibility into and communications pathways with residential EV  
5 drivers.
- 6 • Serve as a trusted advisor for customers to make informed decisions about  
7 fueling vehicles with electricity and installing charging infrastructure.
- 8 • Support commercial customers to make informed decisions as they consider  
9 adopting EVs in their fleet by providing personalized vehicle and charging  
10 infrastructure planning and analysis support.

11

12 **Q. Will the Company require incremental headcount to administer the**  
13 **Company's TE Portfolio proposal?**

14 A. Yes. In addition to the existing headcount associated with the Company's TE cost  
15 center, the Company proposes two new employees to administer the TE Portfolio.  
16 These new headcount will support new and expanded pilot offerings and ensure the  
17 continued provision of excellent service to customers participating in the pilots.

18

19 **Q. What are the proposed costs of the Company's TE Portfolio proposal?**

20 A. The Table 1 includes projected program budgets for calendar year 2025; however,  
21 as I discuss later in my testimony, each of these activities is designed to operate on  
22 an ongoing basis through at least 2027. If the Company does not pursue a

1 distribution rate case filing in 2027, the Company will continue offering the  
 2 proposed TE Portfolio. Details can be found in Exhibit SO-3: Transportation  
 3 Electrification Portfolio Budget.

4 Table 1: TE Portfolio Budget

Component	Description	2025 Budget
<b>Charging Infrastructure Offerings</b>		
Community, Fleet and Transit Charging Pilot	Charging station investment to support Level 2 and DC fast charging stations	\$4,254,924
Home Charging Pilot	Rebates to support Level 2 charging stations.	\$271,750
<b>Load Management Offerings</b>		
EV TOU Distribution Rate Pilot	Rate to encourage customers to shift their EV charging and other household load to off-peak times.	\$263,250
Managed Home Charging Pilot	Customer incentive to reduce EV charging demand during peak events.	\$187,640
<b>Customer Engagement Offerings</b>		
Awareness, Education, and Engagement	Support for customers to make informed decisions about fueling vehicles with electricity.	\$436,000
Electric Fleet Advisory Service	Vehicle and charging infrastructure planning and analysis support for public and private fleet customers.	\$139,500
EV Registration Incentive	\$50 one-time registration incentive for customers who own or lease an EV.	\$116,029
<b>Portfolio Administration</b>		
Incremental Headcount	Addition of two headcount to TE business unit to administer offerings.	\$220,000
	Capital Program Cost For 2025	\$3,901,324
	Expense Program Cost For 2025	\$1,987,769
	Total Program Cost For 2025	\$5,889,093

5

6 **Q. What are the projected bill impacts of the Company's TE Portfolio proposal?**

1 A. The Company estimates that these proposed activities would add approximately  
2 \$0.21, or 0.15%, to the monthly bills of a typical residential customer; and \$2.77,  
3 or 0.22%, to the monthly bills of a typical nonresidential customer on rate GM.  
4

5 **III. TRANSPORTATION ELECTRIFICATION LANDSCAPE**

6  
7 ***A. EV and Charging Market Overview***

8  
9 **Q. Please describe the market for light-duty EVs at the national level.**

10 A. The EV market across the nation continues to grow, especially as the average  
11 purchase price of EVs decline and consumer choice and inventory levels increase.  
12 The U.S. surpassed three million registrations of on-road light-duty EVs in 2022, a  
13 sharp increase from a decade before when there were less than 100,000 EVs on the  
14 road.<sup>1</sup> Through November 2023, more than one million light-duty EVs were sold  
15 in 2023, marking a 51% sales increase year-over-year and the first time EV sales  
16 have exceeded the one million mark in a single sales year.<sup>2</sup> Energy Information  
17 Administration (EIA) forecasts indicate EVs will account for up to 29% of new  
18 light-duty vehicles sales and up to 26% of on-road light-duty vehicle stock in the  
19 U.S. by 2050 as purchase price decreases, vehicle range increases, and fuel

---

<sup>1</sup> International Energy Agency (2023, April). “Trends in Electric Light-Duty Vehicles,” Obtained from: <https://www.iea.org/reports/global-ev-outlook-2023/trends-in-electric-light-duty-vehicles>.

<sup>2</sup> National Automobile Dealers Association (2023, November). “NADA Market Beat,” Obtained from: <https://www.nada.org/nada/research-and-data/market-beat>

1 economy standards become more stringent. EIA also projects battery  
2 manufacturing costs will decline up to 56% from 2022 to 2050, along with  
3 continued cost declines for electric motors, power electronics, and wiring, all of  
4 which will result in EVs with between 151 miles and 250 miles of driving range  
5 reaching price parity across most car size classes by 2038 and lower EV purchase  
6 prices over time.<sup>3</sup> Vehicle manufacturers and battery makers plan to invest nearly  
7 \$210 billion in the transition to EVs in the U.S. by 2030, more than a 300% increase  
8 from investment announced in 2020. This is partially spurred by at least \$83 billion  
9 of loans, grants, and tax credits from the federal Infrastructure Investments and Jobs  
10 Act (IIJA) and the Inflation Reduction Act (IRA) to support the production of low  
11 and zero-emission vehicles, batteries, and chargers.<sup>4</sup> This investment is increasing  
12 consumer choice significantly, with nearly 90 EV model options available at the  
13 end of 2022 across most vehicle makes, sizes, and price points, compared to fewer  
14 than 40 model options available in 2018.<sup>5</sup> As the new EV market becomes more  
15 established, the used EV market will also continue to grow, offering affordable EV  
16 options for consumers. Additionally, federal tax credits extended under the IRA  
17 offer consumers up to \$7,500 on new personal EVs, which will become a point-of-

---

<sup>3</sup> U.S. Energy Information Administration (2023, May). “Incentives and lower costs drive electric vehicle adoption in our Annual Energy Outlook,” Obtained from: <https://www.eia.gov/todayinenergy/detail.php?id=56480>

<sup>4</sup> Atlas Public Policy (2023, January). “\$210 Billion of Announced Investments in Electric Vehicle Manufacturing headed for the U.S.,” Obtained from: [https://www.atlasevhub.com/data\\_story/210-billion-of-announced-investments-in-electric-vehicle-manufacturing-headed-for-the-u-s/](https://www.atlasevhub.com/data_story/210-billion-of-announced-investments-in-electric-vehicle-manufacturing-headed-for-the-u-s/)

<sup>5</sup> International Energy Agency (2023, April). “Trends in Electric Light-Duty Vehicles,” Obtained from: <https://www.iea.org/reports/global-ev-outlook-2023/trends-in-electric-light-duty-vehicles>

1 sale credit in 2024, up to \$4,000 on used EVs, and up to \$40,000 on commercial  
2 EVs.<sup>6</sup> These tax credits combined with other federal electric transportation  
3 investment are aimed at achieving the Biden-Harris administration goal for at least  
4 50% of all new vehicle sales to be electric by 2030.<sup>7</sup>

5

6 **Q. Please describe the market for medium- and heavy-duty EVs and off-road**  
7 **equipment at the national level.**

8 A. The medium- and heavy-duty (MHD) EV market across the U.S. also continues to  
9 grow including electric trucks, transit buses, school buses, and off-road equipment.  
10 As of 2022, there were an estimated 5,500 electric trucks registered in the U.S. of  
11 which, approximately 3,100 were registered in 2022 alone, which is more than the  
12 previous five years combined.<sup>8</sup> In addition, there were more than 2,100 electric full-  
13 size (Class 7-8 and 30 or more feet in length) transit buses on U.S. roadways as of  
14 2022, which is a 66% increase from the prior year, and nearly 900 electric small  
15 transit buses (Class 3-6 and shorter than 30 feet), which is a 42% increase from the  
16 prior year. The IIJA will provide historic amounts of funding for zero- and low-  
17 emission transit bus projects in the coming years through FTA's Low or No

---

<sup>6</sup> Internal Revenue Service (2023, April). "Credits for new clean vehicles purchased in 2023 or after." Obtained from: <https://www.irs.gov/credits-deductions/credits-for-new-clean-vehicles-purchased-in-2023-or-after>

<sup>7</sup> The White House (2023, December). "FACT SHEET: Biden-Harris Administration Takes Action to Accelerate America's Clean Transportation Future." Obtained from: <https://www.whitehouse.gov/briefing-room/statements-releases/2023/12/14/fact-sheet-biden-harris-administration-takes-action-to-accelerate-americas-clean-transportation-future/>

<sup>8</sup> International Energy Agency (2023, April). "Trends in Electric Heavy-Duty Vehicles." Obtained from: <https://www.iea.org/reports/global-ev-outlook-2023/trends-in-electric-heavy-duty-vehicles>.

1 Emission Bus (Low-No) Program. For example, \$5.5 billion was allocated through  
2 the Low-No Program in 2022, which is six times greater than the funding provided  
3 in the prior five years combined.<sup>9</sup> There were more than 3,000 electric school buses  
4 deployed in the U.S. as of December 2022, which is a 41% increase from the prior  
5 year. The IIJA allocates \$5 billion in grant funding and rebates to replace existing  
6 school buses with zero- and low-emission school buses over five years through  
7 EPA’s Clean School Bus Program. The first round of rebates will result in up to  
8 approx. 2,400 new electric school buses throughout the country and thousands more  
9 will be funded over the coming years of the program.<sup>10</sup> There are more than 210  
10 MHD EV models expected to be on the market in the U.S. and Canada by the end  
11 of 2024, which is a 38% increase from 2021.<sup>11</sup> Additionally, as technology  
12 improves, zero-emission vehicles are expected to reach cost parity with  
13 conventional diesel engines by 2035 for all MHD vehicle classes before accounting  
14 for incentives, which allow for cost parity even sooner.<sup>12</sup> As more models become  
15 available, costs decline, and ranges increase, the MHD EV market is expected to  
16 grow rapidly. In July 2020, seventeen U.S. states, including Pennsylvania, signed  
17 the Multi-State Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of

---

<sup>9</sup>CALSTART (2023, February). “Zeroing in on ZEBs,” Obtained from: <https://calstart.org/zeroing-in-on-zeb-2023/>

<sup>10</sup>CALSTART (2023, May). “Zeroing in on Electric School Buses: 2023,” Obtained from: <https://calstart.org/zeroing-in-on-esbs-2023/>

<sup>11</sup>CALSTART (December, 2023). “Zero-Emission Technology Inventory Data Explorer,” Obtained from: <https://globaldrivetozero.org/tools/zeti-data-explorer/>

<sup>12</sup> NREL (2022, March). “Decarbonizing Medium- & Heavy-Duty On-Road Vehicles: Zero-Emission Vehicles Cost Analysis,” Obtained from: <https://www.nrel.gov/docs/fy22osti/82081.pdf>

1 Understanding, establishing goals to make at least 30% of sales of new MHD  
2 vehicles zero-emission by 2030, and 100% of sales by no later than 2050.<sup>13</sup> Several  
3 large, nationwide fleets have already made electrification commitments, such as the  
4 federal fleet committing to purchase only zero-emission light duty vehicles by 2027  
5 and MHD vehicles by 2035, First Student committing to deploy 30,000 electric  
6 school buses by 2035, Amazon committing to deploy 100,000 electric delivery  
7 vehicles by 2030, and more.<sup>14</sup> The off-road vehicle market, particularly in  
8 construction and agriculture, is also expected to see substantial growth, rising at a  
9 compounded annual growth rate of 14% from 2023 to 2033<sup>15</sup> with 217 electric  
10 models across eight off-road categories in the market as of 2022.<sup>16</sup>

11

12 **Q. Please describe the EV market within the Company’s service territory.**

13 A. Within the Company’s service territory, EV adoption is growing at a significant  
14 rate. As of September 2023, there were approximately 10,200 light-duty EVs

---

<sup>13</sup> NESCAUM (2020, July). “Multi-State Medium- and Heavy-Duty Zero-Emission Vehicle Action Plan,” Obtained from: <https://www-f.nescaum.org/documents/multi-state-medium-and-heavy-duty-zero-emission-vehicle-action-plan/>

<sup>14</sup> The White House (2023, April). “FACT SHEET: Biden-Harris Administration Announces New Private and Public Sector Investments for Affordable Electric Vehicles,” Obtained from:

<https://www.whitehouse.gov/briefing-room/statements-releases/2023/04/17/fact-sheet-biden-harris-administration-announces-new-private-and-public-sector-investments-for-affordable-electric-vehicles>

<sup>15</sup> Future Market Insights Global and Consulting Pvt. Ltd. (2023, April). “Off-Highway Electric Vehicle Market is Poised to Surpass US\$8.36 Billion by 2033 as Various Governments Encourage Adoption of Green Technologies.” Obtained from: <https://www.globenewswire.com/en/news-release/2023/04/03/2639891/0/en/Off-Highway-Electric-Vehicle-Market-is-Poised-to-Surpass-US-8-36-Billion-by-2033-as-Various-Governments-Encourage-Adoption-of-Green-Technologies-Future-Market-Insights-Inc.html>

<sup>16</sup> “Technology and Market Assessment of Zero-Emission Off-Road Equipment,” CALSTART. October 2022. Obtained from: [https://calstart.org/wp-content/uploads/2022/10/off\\_road\\_report\\_october\\_2022.pdf](https://calstart.org/wp-content/uploads/2022/10/off_road_report_october_2022.pdf).

1 registered within the Company’s service territory, which is a 437% increase over  
2 the past five years and a 27% increase from the prior year.<sup>17</sup> The Greater Pittsburgh  
3 Auto Dealer Association reports that EVs account for approximately 6% of new  
4 vehicle sales in the Pittsburgh region as of September 2023, compared to  
5 approximately 3% in the prior year.<sup>18</sup> The Electric Power Research Institute (EPRI)  
6 indicates light-duty EV registration in the Company’s service territory will be  
7 between 79,200 and 205,000 by 2030 – representing 24% to 64% of new light-duty  
8 vehicle sales and 9% to 25% of all light-duty vehicle stock. This is consistent with  
9 the results of a recent residential customer survey from the Company, which  
10 indicates about a quarter of customer respondents are likely or extremely likely to  
11 consider purchasing or leasing an EV as their next vehicle (Exhibit SO-4: Duquesne  
12 Light Customer EV Survey Results Summary). While current MHD EV  
13 registrations are low within the Company’s service territory, modeling indicates  
14 there will be more than 800 registered by 2027.<sup>19</sup> Fleets at the state and local level  
15 are driving a portion of this demand. For example, the State of Pennsylvania aims  
16 to convert 25% of its fleet to electric by 2025, Pittsburgh Regional Transit aims to  
17 have a zero-emission fleet by 2045, the City of Pittsburgh aims to have a fossil fuel  
18 free fleet by 2030,<sup>20</sup> and the Company aims to electrify 30% of its fleet by 2030.

---

<sup>17</sup> PennDOT (2023, September). Electric Vehicle Registrations. Obtained from:  
<https://www.penndot.pa.gov/ProjectAndPrograms/Planning/EVs/Pages/default.aspx>.

<sup>18</sup> Greater Pittsburgh Auto Dealers Association (2023, October). “Greater Pittsburgh Auto Outlook.”

<sup>19</sup> Concentric Energy Advisors (2023). Duquesne Light Company Service Territory electric MHDV Sales Projections.

<sup>20</sup> City of Pittsburgh (2017, June). “Climate Action Plan 3.0,” Obtained from:  
[https://apps.pittsburghpa.gov/redtail/images/7101\\_Pittsburgh\\_Climate\\_Action\\_Plan\\_3.0.pdf](https://apps.pittsburghpa.gov/redtail/images/7101_Pittsburgh_Climate_Action_Plan_3.0.pdf)

1 **Q. What are some of the benefits of increased transportation electrification**  
2 **driving this demand?**

3 A. Increased EV adoption displaces petroleum with more efficient electric fuel, which  
4 results in benefits for customers who drive EVs, as well as those who do not. Such  
5 benefits include:

6 • Increased Distribution System Utilization: EVs support efficient use of the  
7 electric grid. A larger portion of EV charging already occurs during non-peak  
8 hours and can be further influenced by alternative rates and load management  
9 programs, which helps spread the Company’s fixed distribution costs over  
10 more kilowatt-hours, while mitigating grid impacts. This applies downward  
11 pressure on delivery rates for all customers and supports efficient planning  
12 and construction of distribution facilities.

13 • Reduced Greenhouse Gas (GHG) Emissions: As noted in Pennsylvania’s 2022  
14 Annual Report on GHG Inventory, transportation is responsible for 22% of  
15 annual CO<sub>2</sub> emissions in the state, contributing to climate change.<sup>21</sup> A key  
16 strategy to reduce these emissions is to increase the deployment of EVs.

17 According to the U.S. DOE, a light duty EV charging in PA has zero tailpipe  
18 emissions and is responsible for 80% fewer CO<sub>2</sub> emissions overall compared  
19 to a similar gasoline-fueled vehicle. The average light-duty EV on the road is  
20 estimated to save more than 10,300 lbs. CO<sub>2</sub>e per year compared to an internal

---

<sup>21</sup> PA DEP (2022, October). “2022 Pennsylvania Greenhouse Gas Inventory,” Obtained from:  
<https://www.dep.pa.gov/Citizens/climate/Pages/GHG-Inventory.aspx>

1 combustion engine vehicle.<sup>22</sup> The MHD vehicle segment also represents a  
2 significant opportunity to reduce GHG emissions, as it accounts for less than  
3 5% of the vehicles on the road, but is responsible for more than 20% of  
4 transportation-related GHG emissions.<sup>23</sup> As the local generation mix  
5 continues to shift towards clean energy sources, total emissions attributable to  
6 EV fueling will continue to decline over time. The Company’s previous TE  
7 Portfolio has already supported the reduction of 250 tons of CO<sub>2</sub> emissions  
8 (Exhibit SO-1: Transportation Programs Report).

- 9 • Improved Air Quality and Health: Increased TE will cut criteria pollutants  
10 emitted by motor vehicles including ozone, particulate matter, carbon  
11 monoxide, nitrogen dioxide and hazardous air pollutants (HAPs), leading to  
12 better overall health, including fewer respiratory conditions. This is  
13 particularly important in the Company’s service territory, as the Pittsburgh  
14 metro area is ranked the 20<sup>th</sup> worst for 24-hour particulate pollution and 14<sup>th</sup>  
15 worst for annual particulate pollution out of more than 200 metro areas  
16 nationwide according to the American Lung Association’s 2023 “State of the  
17 Air” report, which also shows these figures are worsening compared to

---

<sup>22</sup> U.S. Department of Energy (2023, December). “Emissions from Electric Vehicles,” Obtained from: [https://afdc.energy.gov/vehicles/electric\\_emissions.html](https://afdc.energy.gov/vehicles/electric_emissions.html)

<sup>23</sup> U.S. Department of Energy (2022, March). “DOE Projects Zero Emissions Medium- and Heavy-Duty Electric Trucks Will Be Cheaper than Diesel-Powered Trucks by 2035,” Obtained from: <https://www.energy.gov/articles/doe-projects-zero-emissions-medium-and-heavy-duty-electric-trucks-will-be-cheaper-diesel>

1 2022.<sup>24</sup> The MHD vehicle sector represents a significant opportunity to  
2 improve air quality and public health because MHD vehicles represent 6% of  
3 the on-road fleet as of 2020, but are responsible for nearly 60% of harmful  
4 NOx emissions and 55% of particle pollution.

- 5 • Boost to the Local Economy: TE is also benefitting Pennsylvania’s economy.  
6 According to the state’s 2022 Clean Energy Employment Report Card,  
7 statewide EV and plug-in hybrid electric subsector employment comprised of  
8 workers that support the manufacture, sales, repair, maintenance, and  
9 professional business support of EV and plug-in hybrid electric technologies  
10 increased by 27% from 2020-2021, while statewide employment increased by  
11 just 4%. As of 2021, there were more than 4,200 jobs in the EV subsector,  
12 which is a 43% increase from 2017.<sup>25</sup>
- 13 • Customer Savings: Customers that drive electric benefit from a reduced total  
14 cost of ownership when compared to an internal combustion engine vehicle.  
15 EVs require less maintenance due to fewer moving parts and electricity  
16 fueling costs are more predictable and up to 65% less expensive compared to  
17 the cost of fueling with gasoline in PA. Customers can save up to \$1,700  
18 annually on fuel and maintenance when driving electric in PA and can save up

---

<sup>24</sup> American Lung Association (2023, April). “Pittsburgh-New Castle-Weirton, PA-OH-WV,” Obtained from: <https://www.lung.org/research/sota/city-rankings/msas/pittsburgh-new-castle-weirton-pa-oh-wv>

<sup>25</sup> Pennsylvania DEP (2022). “Pennsylvania Clean Energy Employment Report,” Obtained from: [https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/EnergyEfficiency\\_Environment\\_and\\_EconomicsInitiative/Pages/Workforce-Development.aspx](https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/EnergyEfficiency_Environment_and_EconomicsInitiative/Pages/Workforce-Development.aspx).

1 to \$10,500 on the upfront purchase price with the federal tax credit and state  
2 rebate.<sup>26</sup>

- 3 • Energy Security: As noted by the U.S. Department of Energy, EVs are an  
4 important part of continuing the country’s successful trend of minimizing  
5 imported petroleum. The diversification of fuel sources used in the generation  
6 of electricity results in a more secure and domestically generated energy  
7 source for the electrified portion of the transportation sector, adding to our  
8 nation’s energy security.<sup>27</sup>

9  
10 **Q. Does transportation electrification benefit disadvantaged communities?**

11 A. Yes. TE helps to mitigate disproportionate health impacts felt by disadvantaged  
12 communities. As noted by Synapse Energy Economics, “because transportation  
13 sector emissions occur at ground level where they are less likely to be dispersed  
14 and more likely to have an impact on customers’ health, a decrease in tailpipe  
15 emissions is likely to produce the most health benefits for the customers who are  
16 physically located near where the vehicles are operated. This is particularly relevant  
17 in situations where EVs may be used to reduce emissions from transit buses, school  
18 buses, and large trucks, which disproportionately impact lower-income and

---

<sup>26</sup> U.S. Department of Energy (2023, October). “Energy Facts: Impact of the Investing in America Agenda on Pennsylvania,” Obtained from: <https://www.energy.gov/articles/energy-facts-impact-investing-america-agenda-pennsylvania>

<sup>27</sup> U.S. Department of Energy (2023, December). “Electric Vehicle Benefits and Considerations,” Obtained from: [https://afdc.energy.gov/fuels/electricity\\_benefits.html](https://afdc.energy.gov/fuels/electricity_benefits.html)

1 communities of color located near industrial and transit sites.”<sup>28</sup> This holds true in  
2 the Company’s service territory, where low-income individuals are  
3 disproportionately exposed to air pollution caused in part by ground transportation  
4 used to move people and goods throughout a community. According to the Breathe  
5 Project’s Black Carbon Map, many of the areas that are most exposed to black  
6 carbon pollution in Allegheny County are also low-income.<sup>29</sup> A shift toward TE  
7 will help reduce these impacts. Furthermore, EVs have been shown to be less  
8 expensive to own and operate over the lifetime of the vehicle compared to internal  
9 combustion engine vehicles by as much as \$12,000.<sup>30</sup> These savings can be  
10 especially impactful for individuals with limited incomes, especially as the cost of  
11 EVs continues to decrease.<sup>31</sup> That said, access to charging infrastructure has been  
12 identified as a leading obstacle to EV adoption for Black residents in disadvantaged  
13 communities within the Company’s service territory, as described in Exhibit SO-5:  
14 Duquesne Light Electric Mobility for All Report, attached to my testimony. As  
15 such, the expansion of charging infrastructure is critical to enable TE to benefit  
16 disadvantaged communities.

---

<sup>28</sup> Synapse Energy Economics (2019, November). “Making Electric Vehicles Work for Utility Customers,” Obtained from: <https://www.synapse-energy.com/sites/default/files/Making-Electric-Vehicles-Work-for-Utility-Customers.pdf>.

<sup>29</sup> Breathe Project (2024, March). “Black Carbon Nitrogen Dioxide Map,” Obtained from: <https://breatheproject.org/pollution-map/>.

Best Neighborhood (2024, March). “The Highest and Lowest Income Areas in Allegheny County, PA,” Obtained from: <https://bestneighborhood.org/household-income-allegheny-county-pa/>

<sup>30</sup> Consumer Reports (2023, June). “Electric Vehicles Save Consumers Money,” Obtained from: [https://advocacy.consumerreports.org/wp-content/uploads/2023/06/CR\\_EVSavings\\_FACTSHEET\\_6.2023.pdf](https://advocacy.consumerreports.org/wp-content/uploads/2023/06/CR_EVSavings_FACTSHEET_6.2023.pdf)

<sup>31</sup> U.S. Department of Energy (2023, November). “Correcting The Record About Electric Vehicle Sales,” Obtained from: <https://www.energy.gov/articles/correcting-record-about-electric-vehicle-sales>

1 **Q. Have the Company’s previous transportation electrification efforts been**  
2 **administered in an equitable fashion?**

3 A. Yes. As part of its previous TE Programs, as summarized in Exhibit SO-1:  
4 Transportation Electrification Programs Report, the Company has equitably  
5 apportioned its efforts so that they benefit customers across geographic and  
6 socioeconomic lines. The Company has hosted several AEE events specifically  
7 aimed at engaging with low-income communities to both provide information and  
8 resources and better understand the unique needs and perspectives of such  
9 communities as it relates to electric mobility. Through the Fleet Charging Pilot and  
10 the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company  
11 has significantly increased the availability of public charging in underserved areas  
12 in its service territory, with one out of every three projects located in or serving  
13 disadvantaged communities. The Company’s Environmental Justice Area (EJA)  
14 rebate has provided customers in disadvantaged communities with additional  
15 financial support in order to increase the number of charging stations available for  
16 use by low-income customers. Finally, the Transit Charging Pilot has enabled  
17 Pittsburgh Regional Transit to operate zero-emission buses in disadvantaged  
18 communities through Allegheny County, reducing air and noise pollution that  
19 disproportionately impact low-income communities.

20

21 **Q. Is charging infrastructure in the Company’s service territory keeping pace**  
22 **with the growing need?**

1 A. No. The Pittsburgh region needs at least 3,863 public, workplace, and multi-unit  
2 dwelling Level 2 (L2) charging ports, 158 public Direct Current Fast Charging  
3 (DCFC) ports with a 150 kW or higher power output, and 21 public DCFC ports  
4 with a 250 kW or higher power output by 2027 to keep up with a medium projection  
5 of EV growth for the area.<sup>32</sup> As of November 2023, there were only approximately  
6 586 L2 charging ports and 47 DCFC ports (many of which have a power output of  
7 less than 150 kW) in the Company’s service territory. Additionally, Pennsylvania  
8 ranks 35<sup>th</sup> in the nation for public EV chargers per capita, further demonstrating  
9 there is a significant infrastructure gap to fill.<sup>33</sup> This does not include the significant  
10 amount of charging infrastructure that will be required at customers’ homes, where  
11 EV owners are estimated to do approximately 80% of EV charging on average. This  
12 increases the criticality of the Company’s proposed Home Charging, Managed  
13 Home Charging, and EV TOU Distribution Rate pilots discussed further in my  
14 testimony. In a 2023 survey of the company’s Customer Panel, about two-thirds of  
15 customer respondents indicated that a lack of public charging stations nearby was  
16 a major barrier to adopting an EV and two-thirds also indicated they do not have an  
17 existing outlet at their home that could support charging (Exhibit SO-4: Duquesne  
18 Light Customer EV Survey Results Summary).

19

---

<sup>32</sup> U.S. Department of Energy (2023, December). “Electric Vehicle Infrastructure Projection Tool Lite,”  
Obtained from: <https://afdc.energy.gov/evi-pro-lite>

<sup>33</sup> U.S. Department of Energy (2021, January). “FOTW# 1169,” Obtained from:  
<https://www.energy.gov/eere/vehicles/articles/fotw-1169-january-18-2021-vermont-had-highest-number-public-electric-vehicle>

1 **Q. Have state and local governments recognized the need for transportation**  
2 **electrification investment?**

3 A. Yes, and both have recommended that electric distribution companies play a role  
4 in helping to meet this need. In 2019, the PA DEP released its “Electric Vehicle  
5 Roadmap” describing five years of action to drive EV adoption. The Roadmap  
6 includes a utility transportation and electrification directive, noting how  
7 Pennsylvania utilities can play a unique role in advancing TE due to their existing  
8 role in serving public interests; knowledge of installing and maintaining electricity  
9 infrastructure; stable business structure that continues to be involved in electric  
10 distribution for the long-term; and cost recovery mechanisms that allow for the  
11 installation of chargers where there is the greatest need rather than where there is  
12 greatest profit. In 2021, PA DEP released an update to this roadmap to reiterate the  
13 support needed to expand charging infrastructure, including for MHD vehicles, and  
14 noted how utilities should implement electric rate structures that encourage EV  
15 adoption.<sup>34</sup> Additionally, the City of Pittsburgh’s EV Task Force made several  
16 recommendations for TE at the local level to bridge charging gaps by creating and  
17 then promoting regional charging opportunities and networks. To address the need  
18 for more local public charging, the task force recommends working with the  
19 Company to increase L2 public charging infrastructure throughout city  
20 neighborhoods at existing and new properties and to make obtaining permits for

---

<sup>34</sup> PA DEP (2021, January). “Pennsylvania Electric Vehicle Roadmap,” Obtained from:  
<https://www.dep.pa.gov/Business/Energy/OfficeofPollutionPrevention/ElectricVehicles/Pages/default.aspx>

1 DCFC infrastructure easier.<sup>35</sup> Lastly, the Pennsylvania Public Utility Commission  
2 has issued a proposed Policy Statement on Electric Utility Rate Design for Electric  
3 Vehicle Charging, which encourages EDCs to develop EV-specific rates. The  
4 proposed Policy Statement includes the following:

5 *“...[T]he Commission is encouraging development of rate structures for*  
6 *electric-vehicle charging customers. Electric-vehicle charging will*  
7 *increase demand on existing infrastructure, and it is imperative that electric*  
8 *distribution companies are prepared to address this increased demand with*  
9 *distribution and default service generation rates structures that properly*  
10 *signal to electric-vehicle charging customer to incentivize increased*  
11 *capacity utilization of the distribution system.”<sup>36</sup>*

12 Collectively, this demonstrates there is broad support among local and state  
13 governments to invest in EV charging infrastructure, load management activities,  
14 and other TE activities.

15

16 **Q. Are other utilities and commissions in other states recognizing the need for**  
17 **utility investment in transportation electrification?**

18 A. Yes. Investor-owned utilities across the country are increasingly investing in EV  
19 activities and infrastructure, ranging from residential charging services to charging

---

<sup>35</sup> City of Pittsburgh (2019, September). “EV Task Force Recommendations,” Obtained from: [https://apps.pittsburghpa.gov/redtail/images/8371\\_EV\\_Task\\_Force\\_Recommendations.pdf](https://apps.pittsburghpa.gov/redtail/images/8371_EV_Task_Force_Recommendations.pdf).

<sup>36</sup> Proposed Policy Statement Order By the Commission. Docket No. M-2023-3040755. 10/19/2023. <<https://www.puc.pa.gov/pcdocs/1805606.pdf>>.

1 infrastructure make-ready investment to load management activities. As of  
2 December 2023, 63 investor-owned electric companies across 35 states received  
3 approval for TE-related filings, representing a total approved investment of more  
4 than \$5 billion.<sup>37</sup>

5

6 **Q. Considering the strong federal investment in transportation electrification**  
7 **from the Infrastructure Investment and Jobs Act (IIJA) and the Inflation**  
8 **Reduction Act (IRA), why is the Company proposing additional investment at**  
9 **the local level?**

10 A. The federal investment in TE through IIJA and IRA is historic and will have many  
11 positive impacts on the TE market, but it does not obviate the Company’s proposed  
12 activities for several reasons. First, customers need awareness and technical  
13 assistance to claim this federal funding, which the Company is uniquely positioned  
14 to provide as a trusted partner and utility expert. To date, the Company has worked  
15 with its customers to help them apply for more than \$27 million in federal and state  
16 funding for TE projects. Second, federal investment typically does not cover the  
17 cost of utility upgrades or all portions of the EV make-ready electrical work.  
18 Therefore, in many cases, the Company’s proposed offerings are complementary  
19 to federal funding, helping to alleviate costs even further for customers while also  
20 achieving federal funding goals. Third, federal investment in EV charging is largely

---

<sup>37</sup> Edison Electric Institute (2023, December). “Electric Transportation Biannual State Regulatory Update,”  
Obtained from: <https://www.eei.org/en/issues-and-policy/electric-transportation>

1 dedicated to improving the network of public DCFC stations along the nation’s  
2 major highways and corridors, while the Company’s proposed offerings are largely  
3 focused on improving the network of L2 charging at residential, public, workplace,  
4 multi-family, and fleet operator locations. Fourth, federal investment does not and  
5 cannot fully address load management activities, such as alternative rate structures,  
6 which must be implemented by local utilities. Lastly, available federal investment  
7 is not meeting the demand. For example, the EPA Clean School Bus program  
8 received more than 2,000 applications requesting nearly \$4 billion for Round 1 of  
9 its rebate program and approved less than 25% of requested funds.<sup>38</sup> Likewise, the  
10 Federal Transit Administration’s Low-No Program received 530 applications in  
11 2022 and less than 30% of applications received funding.<sup>39</sup> Finally, Round 1 of the  
12 National Electric Vehicle Infrastructure Program administered by PennDOT in  
13 Pennsylvania awarded funds to less than 20% of the applications received for sites  
14 within DLC’s service territory. Collectively, this demonstrates that while federal  
15 investment is having significant, positive impacts, it is not enough to meet the  
16 growing interest in TE.

17  
18 ***B. TE Portfolio Performance***  
19

---

<sup>38</sup>U.S. Environmental Protection Agency (2023, September). “Awarded Clean School Bus Program Rebates,”  
Obtained from: <https://www.epa.gov/cleanschoolbus/awarded-clean-school-bus-program-rebates>

<sup>39</sup> CALSTART (2023, February). “Zeroing in on ZEBs,” Obtained from: <https://calstart.org/zeroing-in-on-zeb-2023/>

1 **Q. What TE initiatives has the Company previously implemented?**

2 A. As part of its TE Programs, the Company implemented six (6) initiatives across a  
3 Customer Portfolio and a Charging Infrastructure Portfolio. The Customer Portfolio  
4 consisted of the Awareness, Education and Engagement Initiative, the EV  
5 Registration Incentive, and the Fleet Electrification Advisory Service. The  
6 Charging Infrastructure Portfolio consisted of the Fleet Charging Pilot, the Public,  
7 Workplace and Multi-Unit Dwelling Make-Ready Pilot, and the Transit Charging  
8 Pilot.

9

10 **Q. Has the Company successfully delivered upon the goals of its previous TE**  
11 **initiatives?**

12 A. Yes.

13

14 **Q. Is the Company providing a report in this filing on its previous TE initiatives?**

15 A. Yes. The Settlement provides at ¶ 57(j) that at the filing of this base rates  
16 proceeding, the Company will provide a report on its TE initiatives. This report is  
17 attached as Exhibit SO-1: Transportation Electrification Programs Report.

18

19 **Q. Does the Company have a plan for how it will report on the initiatives**  
20 **proposed in this testimony?**

21 A. Yes. The Company has proposed a detailed reporting plan, which is attached as  
22 Exhibit SO-2: Transportation Electrification Portfolio Evaluation Plan to my direct

1 testimony. This report will be filed in conjunction with the next distribution rate  
2 case filing.

3

4 **IV. CHARGING INFRASTRUCTURE OFFERINGS**

5

6 **Q. Please summarize the proposed Charging Infrastructure Offerings.**

7 A. The Charging Infrastructure Offerings include the following two pilot programs,  
8 which are elaborated upon in Table 2:

9 • *A Community, Fleet & Transit Pilot*, through which the Company will  
10 construct and own make-ready infrastructure to facilitate the deployment of  
11 approximately 144 Level 2 (L2) charging station ports and 23 Direct  
12 Current Fast Charging (DCFC) station ports annually for eligible  
13 commercial customers. In addition, the Company will support  
14 approximately 54 L2 charging station ports, 24 Level 1 (L1) charging ports,  
15 and 40 DCFC charging station ports annually through a rebate program to  
16 support customer-owned and installed EV make-ready infrastructure. The  
17 Pilot is expected to support 10-20% of the charging infrastructure needed in  
18 the Company's region.

19 • *A Home Charging Pilot*, through which the Company will provide  
20 residential customers a home charging rebate. The Company projects 1,700  
21 customers will participate over three years.

22 Table 2: Charging Infrastructure Offerings

	<b>Community, Fleet &amp; Transit Pilot</b>		<b>Home Charging Pilot</b>
	<i>Make-Ready Construction Pathway</i>	<i>Make-Ready Rebate Pathway</i>	
<b>Number of Installations</b>	Program will support over three years: <ul style="list-style-type: none"> <li>Level 2 (L2) Charging: ~432 ports</li> <li>DC Fast (DCFC) Charging: ~69 ports</li> <li>6 e-Micromobility station sites</li> </ul>	Program will support over three years: <ul style="list-style-type: none"> <li>Level 2 (L2) Charging: ~162 ports</li> <li>DC Fast (DCFC) Charging: ~122 ports</li> <li>Level 1 (L1) Charging: ~72 ports</li> </ul>	Program will support over three years: <ul style="list-style-type: none"> <li>1,700 Level 2 (L2) charging stations</li> </ul>
<b>Example Deployment</b>	Parcel delivery service, paratransit service, school buses, public parking garage, community recreation center, businesses	Parcel delivery service, paratransit service, school buses, public parking garage, community recreation center, businesses	Homeowner
<b>Ownership Structure</b>	DLC owns make-ready infrastructure; customer owns charging station	Customer owns make-ready infrastructure and charging station	Customer owns make-ready infrastructure and charging station
<b>Maintenance</b>	DLC maintains make-ready infrastructure; customer site-host maintains charging station	Customer maintains make-ready infrastructure and charging station	Customer maintains make-ready infrastructure and charging station
<b>Cost to Participating Customers</b>	Tariffed general service distribution rate	Tariffed general service distribution rate	Tariffed residential distribution rate
<b>Electric Mobility Priority Area Considerations</b>	Electric Mobility Priority Area Charging Station Rebate  e-Micromobility Charging Station Eligibility	Electric Mobility Priority Area Charging Station Rebate  L1 Make-Ready Eligibility	Income-qualified customers eligible for higher rebate amount

1

2 **A. Community, Fleet & Transit Pilot**

3

4 **Q. Why is the Company proposing the Community, Fleet, & Transit Pilot?**

5 A. The Company’s Community, Fleet, & Transit Pilot will help address a market need  
6 for increased charging infrastructure, improve distribution system utilization,  
7 ensure installations are done safely and economically, and expand access to the  
8 environmental and public health benefits of EVs, particularly for low-income

1 customers and those living within Electric Mobility Priority Areas, as defined in  
2 my testimony below.

3

4 **Q. How will the Community, Fleet, & Transit Pilot be structured?**

5 A. The Community, Fleet, & Transit Pilot will offer two pathways for customers to  
6 choose from to complete the installation of make-ready. Make-ready may include  
7 new service panel, conduit, and wiring. Participating customers will have the option  
8 to:

- 9 • Have the Company continue to install, own, operate, and maintain electric  
10 facilities up to the customer's service point and install, own, and maintain  
11 the make-ready infrastructure from the service point up to the charging  
12 station stub ("Make-Ready Construction Pathway"); or
- 13 • Have the Company continue to install, own, operate and maintain electric  
14 facilities up to the customer's service point and the customer will install,  
15 own, and maintain the make-ready infrastructure from the service point up  
16 to the charging station stub. The Company will provide a rebate to offset a  
17 portion of the customers' cost to install the make-ready infrastructure  
18 ("Make-Ready Rebate Pathway").

19

20 **Q. Is the Company proposing to own infrastructure as part of its proposal?**

21 A. Yes. The Company is proposing to own make-ready infrastructure for customers  
22 choosing to participate in the Make-Ready Construction Pathway. The Company is

1 not proposing to own charging station hardware.

2

3 **Q. Why is it appropriate for the Company to install and own make-ready**  
4 **infrastructure?**

5 A. Through the EV ChargeUp Pilot and Community and Fleet Charging Pilot, the  
6 Company has seen that the upfront cost of charging infrastructure, together with the  
7 time and resources necessary to manage an installation, can deter customers from  
8 deploying charging stations (Exhibit SO-1: Transportation Programs Evaluation).  
9 This exacerbates the lack of charging infrastructure and range anxiety, which, as  
10 discussed previously in my testimony, are the leading reasons the Company's  
11 customers cite for not adopting EVs. The Company's proposed investments in  
12 charging infrastructure address these primary obstacles to EV adoption, and will  
13 facilitate charging infrastructure deployment in much-needed locations, including  
14 Electric Mobility Priority Area projects. Additionally, the Company's experience  
15 with electrical infrastructure planning, and ability to achieve economies of scale,  
16 can help lower costs and produce more efficient projects for customers than they  
17 could achieve on their own.

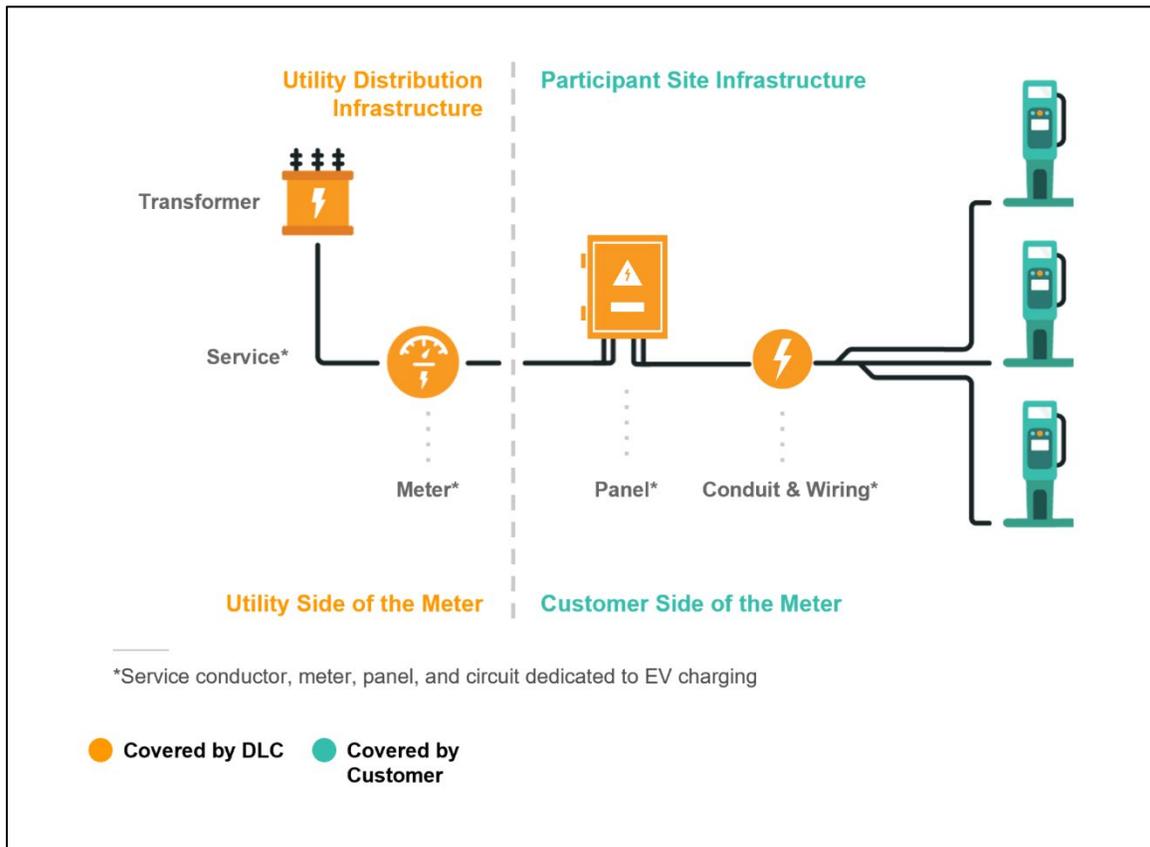
18

19 **Q. What services will the Company provide through the Community, Fleet, &**  
20 **Transit Pilot?**

21 A. Through the Make-Ready Construction Pathway, the Company will install, own, and  
22 maintain EV charging station make-ready. The Customer will own, operate, and

1 maintain the EV charging stations. A simplified typical example is depicted in the  
2 below illustration:

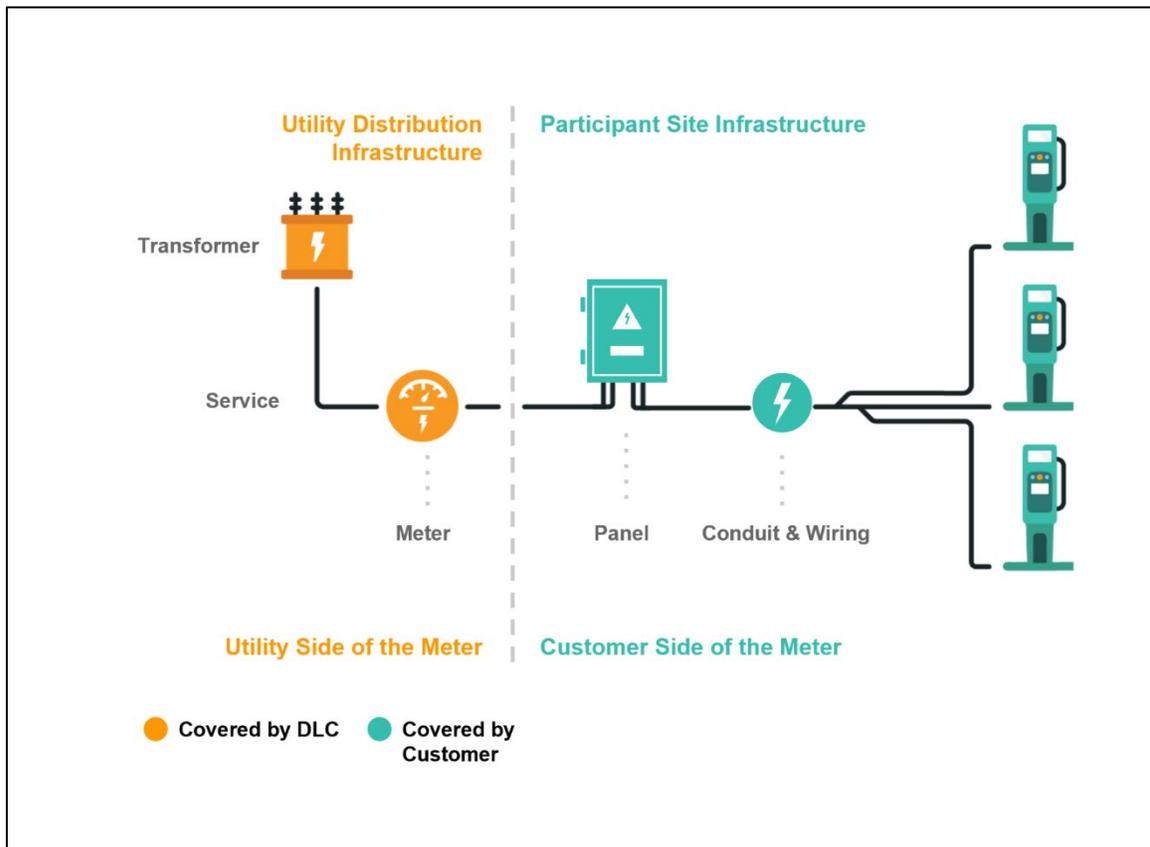
3 Figure 1: Community, Fleet & Transit Pilot – Make-Ready Construction Pathway  
4 Ownership Structure



5  
6 Through the Make-Ready Rebate Pathway, the Customer will install, own,  
7 and maintain EV charging station make-ready. The Customer will also own,  
8 operate, and maintain the EV charging stations. A simplified typical example is  
9 depicted in the below illustration:

1  
2

Figure 2: Community, Fleet & Transit Pilot – Make-Ready Rebate Pathway Ownership Structure



3

4

5 **Q. How does the Company’s proposed Community, Fleet & Transit Pilot ensure**  
6 **equitable apportionment and support Electric Mobility Priority Areas**  
7 **charging station projects?**

8 **A.** Through its Community, Fleet, & Transit Pilot, the Company will equitably  
9 apportion its Charging Infrastructure Portfolio geographically, socioeconomically,  
10 and by use-case (i.e., fleet use, public use, multi-unit dwelling resident use, etc.).  
11 In addition to incenting the project’s make-ready, the Company will provide a  
12 charging station rebate for Electric Mobility Priority Area projects. To help foster

1 the development of Electric Mobility Priority Area projects, the Company will  
 2 provide specialized technical assistance to eligible customers. The Company will  
 3 target having 25% of its Community, Fleet & Transit Pilot projects be Electric  
 4 Mobility Priority Area projects. Projects will be considered Electric Mobility  
 5 Priority Area projects if they meet one of the following conditions:

6 Table 3: Electric Mobility Priority Area Project Criteria

Condition	Justification
Projects <b>located in and serving</b> recognized low-income communities <sup>40</sup> : <ol style="list-style-type: none"> <li>1. Census tracts with a poverty rate of 20 percent or more, or</li> <li>2. Census tracts where the median family income does not exceed 80 percent of statewide median family income.</li> </ol>	Reflects the Company’s desire to expand access to EV charging among our low-income customers. Also aligns with IRS low-income community standard, which is used for EV charging infrastructure tax credit eligibility.
Projects <b>located in and serving</b> communities in census tracts identified as disproportionately impacted by environmental issues by having a PennEnviroScreen <sup>41</sup> Composite Score in the 80 <sup>th</sup> percentile or above based on their relative levels of: <ol style="list-style-type: none"> <li>1. Environmental exposures</li> <li>2. Environmental effects</li> <li>3. Sensitive populations</li> <li>4. Socioeconomic characteristics.</li> </ol>	Reflects the Company’s desire to expand access to EV charging and the clean air benefits of EVs in areas that are disproportionately environmentally burdened. Also aligns with DEP’s EJA community standard, which can inform prioritization of state funding programs.
Projects <b>located in and serving</b> a publicly subsidized income-qualified housing structure.	Reflects the Company’s desire to expand access to EV charging among our low-income customers.
Projects located at a 501(c)3 community-based non-profit organization with 250 or fewer employees that is <b>located in or serves</b> a community covered by the first two criteria.	Reflects the Company’s desire to support community-based organizations in their work to improve environmental conditions in our service territory.
Projects located at a for-profit business with 250 or fewer employees that is <b>located in or serves</b> a community covered by the first two criteria.	Reflects the Company’s desire to support small businesses in their work to improve environmental conditions in our service territory.

<sup>40</sup> ArcGIS (2022). “Low Income Communities (2016-2020 ACS),” Obtained from: <https://www.arcgis.com/home/webmap/viewer.html?webmap=d569d79af021465893797d9d59b6cfff>.

<sup>41</sup> Pennsylvania DEP (2023). “PennEnviroScreen,” Obtained from: <https://gis.dep.pa.gov/PennEnviroScreen/>

1 **Q. Will small businesses benefit from the Community, Fleet & Transit Pilot?**

2 A. Yes. Small businesses are eligible participants in the pilot. The Company expects  
3 that many of the charging ports that will be installed in the Community, Fleet &  
4 Transit Pilot will be located at or in proximity to small businesses. Researchers  
5 from Boston University have found “evidence of the positive retail demand  
6 spillovers that arise from EV charging station infrastructure, particularly to nearby  
7 retail establishments.”<sup>42</sup> Additionally, small businesses located in Electric Mobility  
8 Priority Areas will have access to additional technical and financial assistance for  
9 charging station installations completed through the Pilot. Finally, small businesses  
10 will be invited to bid on request for proposals conducted by the Company for  
11 services needed to support the Community, Fleet & Transit Pilot.

12  
13 **Q. Please describe how learnings from the 2022-2024 TE Programs are applied  
14 to the proposed activity.**

15 A. Learnings from the 2022-2024 TE Programs regarding program structure, make-  
16 ready pathways, charging station rebates, and L1 and e-micromobility charging, as  
17 defined in my testimony below, have been applied to the proposed Community,  
18 Fleet & Transit Pilot and are summarized in Table 4 and elaborated upon below.

19 Table 4: Summary of Proposed Changes

---

<sup>42</sup> Babar, Yash and Burch, Gordon, Recharging Retail: Estimating Consumer Demand Spillovers from Electric Vehicle Charging Stations (September 19, 2023). Boston University Questrom School of Business Research Paper No. 4235748, Available at SSRN: <https://ssrn.com/abstract=4235748> or <http://dx.doi.org/10.2139/ssrn.4235748>

Proposed Change	Public, Workplace and MUD Make-Ready Pilot and Fleet & Transit Charging Pilot (2022-2024)	Community, Fleet & Transit Pilot (2025-2027)
<b>Program Structure</b>	Structured as two separate pilots for a) customer projects covering public, workplace, and MUD charging installations, and b) customer projects covering fleet and transit charging installations.	Gain operational efficiencies by consolidating into single pilot covering public, workplace, MUD, fleet, and transit charging installations.
<b>Make-Ready Pathways</b>	Provided customer with one make-ready installation option for pilot participation – the Make-Ready Construction Pathway.	<p>Provide increased customer choice by offering customers two make-ready installation options for pilot participation – the Make-Ready Construction Pathway and the Make-Ready Rebate Pathway.</p> <p>For the Make-Ready Rebate Pathway:</p> <ul style="list-style-type: none"> <li>- Community L2 sites receive a make-ready rebate of \$4,000/port up to \$24,000 total</li> <li>- Community DCFC sites receive a make-ready rebate of \$20,000/port up to \$40,000 total</li> <li>- Fleet L2 sites receive a make-ready rebate of \$4,000/port up to \$24,000 total</li> <li>- Fleet DCFC sites receive a make-ready rebate of \$12,500/port up to \$125,000 total</li> <li>- MHD Depot DCFC site receives a make-ready rebate of \$100,000/port up to \$1,000,000 total</li> <li>- Transit DCFC Site receives a make-ready rebate of \$12,500/port up to \$500,000 total</li> </ul>
<b>Charging Station Rebates</b>	<p>Provided charging station rebates of up to \$5,000 per charging station for public, workplace and multi-unit dwelling projects located in and serving Environmental Justice Areas.</p> <p>Provided charging station rebates up to 50% of charging station costs for fleet projects.</p>	Provide charging station rebate for Electric Mobility Priority Area projects of 50% of charging station package cost up to \$15,000 for L2 installations, and up to \$100,000 for DCFC fleet installations.
<b>L1 Charging and e-Micromobility</b>	L1 and e-micromobility projects ineligible for pilot participation.	Increase equitable apportionment of charging infrastructure by allowing eligibility of L1 projects for participation in the Make-Ready Rebate Pathway. L1 sites receive a

		<p>make-ready rebate of \$1,000/port up to \$6,000 total.</p> <p>Increase equitable apportionment of charging infrastructure by allowing eligibility of e-micromobility projects in conjunction with L2 and DCFC projects in the Make-Ready Construction Pathway.</p>
--	--	---

1

2 *Proposed Change #1: Program Structure*

3 While charging station use cases for the Public, Workplace and MUD Make-  
4 Ready Pilot and Fleet & Transit Charging Pilot (2022-2024) differ, there are  
5 many similarities between the two pilots that present an opportunity for the  
6 Company to consolidate the pilots and achieve greater efficiency. The Company  
7 proposes to consolidate the pilots into one Community, Fleet and Transit Pilot  
8 with standardized enrollment processes to simplify product offerings to customers  
9 and reduce administrative burden.

10

11 *Proposed Change #2: Make-Ready Pathways*

12 As discussed previously in my testimony, a complement to the Make-Ready  
13 Construction Pathway, a Make-Ready Rebate Pathway is proposed for inclusion  
14 in the Community, Fleet & Transit Pilot. The Make-Ready Rebate Pathway  
15 allows customers to construct their own make-ready between their service and the  
16 charging station, which is necessary particularly where the customer’s existing  
17 site conditions make constructing make-ready between the utility service and the  
18 charging station prohibitively expensive. For example, at sites where the customer

1 is served by primary power, such as a customer-owned substation, or where the  
2 customer is connected to low-tension circuitry, like downtown Pittsburgh,  
3 establishing the make-ready infrastructure becomes challenging and cost  
4 ineffective. This is because a separate, metered service is not easily achievable  
5 from a primary metered service or vaulted collector bus. It is also often more cost-  
6 effective overall to integrate and engineer charging station make-ready  
7 infrastructure into full site plans at new construction sites – not separately add a  
8 new service as necessitated by the Make-Ready Construction Pathway. For  
9 Customers that fit the descriptions above, make-ready construction that can be fed  
10 directly from an existing panel or be integrated into the design of a new  
11 construction development, may be a more cost-effective approach. The proposed  
12 Make-Ready Rebate Pathway will better serve these customers.

13

14 *Proposed Change #3: Charging Station Rebates*

15 The Company proposes to standardize charging station rebate offerings between  
16 fleet and other use cases to increase focus on Electric Mobility Priority Areas,  
17 streamline administration, and simplify customer education. The Company's  
18 proposed charging station rebate will be available exclusively for customers to  
19 enable Electric Mobility Priority Area projects. For L2 charging station projects,  
20 the rebate is available to customers who install a minimum of four charging station  
21 ports and will cover 50% of the hardware and software costs of the charging  
22 stations, up to \$15,000 per project site. For fleet DCFC projects, the rebate is

1 available to customers who install a minimum of two charging station ports and  
2 will cover up to \$100,000 per project site. The rebate amount is based on market  
3 conditions such as demand for the rebate, and the Company will assess the amount  
4 to enable the maximum amount of Electric Mobility Priority Area projects during  
5 implementation of the pilot.

6

7 *Proposed Change #4: L1 Charging & e-Micromobility*

8 To increase equitable apportionment of charging station infrastructure for Electric  
9 Mobility Priority Areas and enable more customers to experience the benefits of  
10 electric mobility, the Company proposes to support L1 charging and e-  
11 micromobility through the Community, Fleet & Transit Pilot.

12 In the proposed pilot, L1 charging (110-120 V) included in Electric  
13 Mobility Priority Area projects with a minimum of 6 ports will be eligible to  
14 participate in the Make-Ready Rebate Pathway. L1 charging solutions offer  
15 reduced installation costs while meeting many drivers' needs, making them a cost-  
16 effective option in many scenarios<sup>43</sup>. Expanding eligibility to include L1 charging  
17 will reduce barriers to participation for customer locations including, but not  
18 limited to, affordable housing developments, municipal fleets, non-profit  
19 organizations, and public installations in scenarios where a slower charging speed  
20 will meet the needs of the customer.

---

<sup>43</sup> Smart Electric Power Alliance (2022). "Benchmarking Equitable Transportation Electrification Program Design and Benchmarking Toolkit: Multi-unit Dwelling Programs Module."

1           In the proposed pilot, charging stations for e-micromobility options like  
2           electric bikes or electric scooters that are collocated with L2 or DCFC projects will  
3           be eligible to participate in the Make-Ready Rebate or Make-Ready Construction  
4           Pathways. Opportunities exist to partner with local e-micromobility operators to  
5           increase long term reliability and growth of shared electric bicycles and scooters.  
6           During community listening sessions conducted by Fourth Economy, participants  
7           expressed that shared e-mobility was an important way to address transportation  
8           gaps between neighborhoods especially due to the region’s hilly topography  
9           (Exhibit SO-5: Electric Mobility for All). Expanding the pilot to include e-  
10          micromobility will allow DLC to support customers to experience the benefits of  
11          electric mobility who may not own a personal vehicle or live near mass transit.  
12          Operators have expressed the need for more power than can adequately be provided  
13          through streetlights which has been the solution to date. Connecting e-  
14          micromobility charging stations to the electric grid, would allow operators to  
15          expand access, charge electric bicycles faster, and provide a better service to  
16          community members.

17

18   **Q.   How does the Company propose recovering costs associated with the Make-**  
19   **Ready Rebate Pathway?**

20   A.   The Company proposes to recover costs associated with the Make-Ready Rebate  
21   Pathway as capital costs through base rates.

22

1 **Q. Will the proposed pilot be available to Pittsburgh Regional Transit (PRT) to**  
2 **support their goal to have a zero-emissions fleet by 2045<sup>44</sup>?**

3 A. Yes. The proposed Community, Fleet & Transit Pilot will be open to PRT  
4 participation. The Company expects to build upon prior successful transit bus  
5 electrification collaboration with PRT as detailed in Exhibit SO-1: Transportation  
6 Electrification Programs Report.

7

8 **Q. How will the Company support the emerging MHD fleet electrification market**  
9 **in the proposed Community, Fleet & Transit Pilot?**

10 A. The Company will support MHD electrification through the Fleet and Transit  
11 segments of the pilot. To support the emerging MHD vehicle market, the Company  
12 will make the Make-Ready Rebate Pathway rebate available to support the  
13 development and construction of multi-use fleet depots where charging stations are  
14 shared between multiple fleet customers. The Company projects to support the  
15 development of one depot with approximately 10 DCFC charging station ports. The  
16 Company has already identified several locations where fleet customers in the same  
17 vicinity have expressed interest in electrifying their fleet. The Company will work  
18 with MHD fleet stakeholders to better understand their fleet electrification goals,  
19 infrastructure needs and how the use patterns of such infrastructure may align with  
20 other fleets in nearby proximity and help identify ideal locations for such a facility

---

<sup>44</sup> Pittsburgh Regional Transit. 2023 – 2028 Strategic Plan. Published July 2022.  
<https://www.rideprt.org/contentassets/6dc252b3785a4bb4ac9437be858fd6d0/strategicplan2022.pdf>

1 based on grid capacity. Stakeholders may also include fleet depot developers,  
2 turnkey solution providers, and other relevant entities in the MHD space who can  
3 provide best practice insight into multi-use fleet depot business models and site  
4 design.

5 A shared depot can encourage the adoption of MHD vehicles among  
6 customers who do not have the space or resources to install charging infrastructure  
7 on their property and allows for collocated fleets, or fleet vehicles traveling through  
8 the Company's territory, to have available charging solutions. This approach can  
9 also help increase utilization of the charging infrastructure assets since they will be  
10 utilized by multiple fleets. Additionally, as mentioned above, MHD electrification  
11 presents an important opportunity to reduce emissions and improve air quality,  
12 specifically in the area surrounding a depot. As the uptake of MHD vehicles grows,  
13 the Company will be able to monitor grid impacts and support fleets in early  
14 development of MHD fleet electrification.

15

16 **Q. Who will be eligible to participate in Community, Fleet & Transit Pilot?**

17 A. Non-residential customers that own, lease, or manage commercial properties or  
18 MUDs will be eligible to participate. Non-residential customers that own, lease,  
19 operate or serve a fleet of at least six on-road and/or off-road vehicles will be  
20 eligible for this pilot.

21

1 **Q: How will the Company evaluate customer applications to the Community,**  
2 **Fleet, & Transit Pilot?**

3 A: The Company will evaluate applicant sites based on a variety of factors, including  
4 technical feasibility and anticipated charging station utilization. As part of this  
5 evaluation, the Company will analyze the projected costs of the project, as well as  
6 the projected incremental distribution revenues the project may yield. The  
7 Company will reject proposed projects with disproportionately high estimated per-  
8 port costs and/or disproportionately low projected utilization.

9  
10 **Q. What will be the requirements to participate in the Community, Fleet, &**  
11 **Transit Pilot?**

12 A. Eligible customers will be required to meet the following to participate in the  
13 Community, Fleet & Transit Pilot:

- 14 • Own or lease property, and demonstrate site control thereof (which may  
15 include written permission from the property owner), suitable for charging  
16 station installation;
- 17 • Choose from a list of qualified vendors when selecting DCFC and L2  
18 charging stations;
- 19 • Subscribe to charging station networking service for DCFC and L2 stations.  
20 Customers may be exempt for projects that help DLC achieve Electric  
21 Mobility Priority Area goals;
- 22 • For L1 sites: Install a minimum of 6 ports (e.g., outlets) per site;

- 1 • For L2 sites: Install a minimum of 6 charging ports (e.g., 3 dual-port  
2 chargers). Electric Mobility Priority Area projects must include a minimum  
3 of 4 charging ports (e.g., 2 dual-port chargers). Exceptions may be made to  
4 minimum port requirements when higher powered L2 charging stations are  
5 installed;
- 6 • For DCFC sites: Install a minimum of 2 DCFC charging ports for a minimum  
7 of 50 kW for fleet projects or 100kW for community projects total at each  
8 site;
- 9 • Operate and maintain charging stations for ten years;
- 10 • Grant the Company any rights-of-way or easements deemed necessary;
- 11 • Execute a contract memorializing the Company's and customer's respective  
12 obligations under the pilot;
- 13 • For Fleet: demonstrate that on- or off-road EVs are currently in-use at the  
14 participating site(s) or provide letters of commitment of anticipated  
15 procurement date or similar documentation.

16  
17 **Q. Please describe how the Company will conduct outreach and education about**  
18 **the Community, Fleet, & Transit Pilot.**

19 A. The Company will conduct outreach and education through a variety of channels.  
20 The Company will host content on its website explaining the pilot, as well as  
21 produce print collateral materials. The Company's Business Services Managers  
22 will also discuss the program directly with non-residential customers. In addition,

1 the Company will engage with local non-profits, small businesses, and trade  
2 association groups to target groups like property managers and developers. For  
3 Fleet, the Company will leverage its relationships with Community Based  
4 Organizations (CBOs) to identify appropriate non-profit and government entities  
5 serving low-income and environmentally impacted communities. The Company  
6 will also educate participants in the Fleet Electrification Advisory Service about the  
7 pilot. The Company will seek to leverage other funding sources, such as  
8 governmental grants, to help expand the reach of the program. For example, as part  
9 of its engagement with customers through this pilot, the Company will educate  
10 customers on other funding that they may be eligible for, such as Driving PA  
11 Forward and EPA Clean School Bus rebates or grants.

12 Finally, the Company will leverage relationships with participating  
13 charging station vendors, as well as the vendor providing the fleet electrification  
14 assessments, to conduct outreach to prospective customers.

15 Costs associated with the education and outreach for the Community, Fleet  
16 & Transit Pilot are included in the Awareness, Education, and Engagement  
17 initiative.

18

19 **Q. How many customers are projected to participate in the Community, Fleet, &**  
20 **Transit Pilot?**

21 A. The Company projects that approximately 40 customers will participate in the pilot  
22 on an annual basis.

1 **Q. How will the Company maintain make-ready assets deployed through the**  
2 **Community, Fleet, & Transit Pilot?**

3 A. The Company will continue to install, own, and maintain electric facilities up to the  
4 customer's service point. The Company will install, own, and maintain the make-  
5 ready infrastructure, including new service panel, conduit, and wiring as applicable,  
6 from the service point up to the charging station stub for customers who participate  
7 in the Make-Ready Construction Pathway. The Company will conduct 5-year  
8 lifetime inspections on Company-owned make-ready infrastructure and respond to  
9 on-call repairs as needed. Consistent with the 2022-2024 TE Programs, after a  
10 period of 10 years the customer will take ownership of the make-ready  
11 infrastructure.

12 Customers who receive a make-ready rebate will be responsible for  
13 installing, owning, and maintaining the make-ready infrastructure.

14

15 **Q. What are the Company's projected costs of the Community, Fleet, & Transit**  
16 **Pilot?**

17 A. The Company's projected costs for this pilot are \$4,254,924 in 2025, \$4,360,215 in  
18 2026, and \$4,449,632 in 2027. Detailed budget included in Exhibit SO-3:  
19 Transportation Electrification Portfolio Budget.

20

21 **Q. How will the Company recover its costs of the Community, Fleet, & Transit**  
22 **Pilot?**

1 A. Costs for this pilot will be recovered through base distribution rates.

2

3 ***B. Home Charging Pilot***

4

5 **Q. Please summarize the Company's Home Charging Pilot offering.**

6 A. The Company is proposing a rebate towards the purchase of a smart Level 2 (L2)  
7 charging station for residential customers.

8

9 **Q. Why is the Company proposing a Home Charging Pilot?**

10 A. The Company is proposing the home charging rebate to reduce the cost of  
11 purchasing a smart residential charging station, helping to increase customer access  
12 to L2 charging at home, and encourage the installation of equipment needed to  
13 participate in current and future load management programs.

14

15 **Q. What are the goals of the Home Charging Pilot?**

16 A. The goals of the Home Charging Rebate are to:

- 17 1. Reduce the upfront cost of purchasing a charging station, especially for  
18 income-qualified customers.
- 19 2. Encourage smart L2 charger adoption to facilitate off-peak charging and  
20 current and future participation in load management programs.
- 21 3. Help customers select reliable charging equipment to be installed by qualified  
22 contractors.

1 4. Provide additional data and insights to help DLC assess residential charging  
2 impacts on the grid.  
3

4 **Q. What barriers does the Home Charging Pilot address?**

5 A. This offering reduces the cost to purchase smart L2 charging stations, which the  
6 Company has identified as a central obstacle to residential EV adoption. For the  
7 average EV driver, more than 80% of charging happens at home. To feel  
8 comfortable and to maximize the convenience of converting to an EV, many  
9 people need to have access to sufficiently fast charging at home. Smart L2  
10 stations provide quick and controllable charging.

11 In 2023, 64% of survey respondents from the Company's customer panel  
12 indicated that not having a place to charge at home was a major barrier in their  
13 decision to purchase an EV. Customers also indicated significant concerns about  
14 vehicle range and cost which making a charging station more affordable can help  
15 address (Exhibit SO-4: Duquesne Light Customer EV Survey Results Summary).

16 Encouraging customers to charge off-peak when demand on the grid is  
17 lower benefits customers and the Company. However, without access to L2  
18 charging, it can be difficult for customers to shift their charging to the off-peak  
19 periods and may limit their ability to participate in other load management  
20 offerings, such as the Residential Managed Charging Pilot described later in my  
21 testimony.  
22

1 **Q. Have the Company’s customers indicated an interest in this offering?**

2 A. Yes. In a survey of known EV drivers and the Company’s Customer Panel  
3 describing a similar offering, 59% of respondents indicated that they were  
4 “Extremely Likely” or “Likely” to take advantage of that rebate, including 71% of  
5 EV driver respondents and 87% of Customer Panel respondents who indicated that  
6 they are likely to consider buying or purchasing an EV (Exhibit SO-4: Duquesne  
7 Light Customer EV Survey Results Summary).

8  
9 **Q. Please describe the Home Charging Pilot.**

10 A. The Company will offer customers an incentive towards the purchase of a smart L2  
11 charging station. Customers will be able to apply for a rebate after purchase. The  
12 Company also will explore the ability to offer an instant discount through an online  
13 marketplace offering. Customers who claim the incentive will be required to enroll  
14 in either the Company’s EV TOU Distribution Rate Pilot or its Residential  
15 Managed Charging Pilot, until those pilots are fully subscribed, to help ensure they  
16 are charging their vehicle off-peak or not contributing to system peak during the  
17 days of highest demand.

18 This incentive can be paired with the Company’s proposed residential  
19 make-ready rebate to upgrade a customer’s home electrical panel or install a circuit  
20 for their charging station as described by Witness Baxter in St. No. 5. Stacking  
21 these incentives makes it more affordable for customers to purchase and install an  
22 EV charging station.

1 **Q. Explain the incentives customers will receive for participating in the Home**  
2 **Charging Pilot.**

3 A. Eligible customers can receive a \$300 incentive towards the purchase of a smart L2  
4 charging station. This is expected to cover approximately 50% of the cost of the  
5 average smart L2 charging station. The Company may adjust the rebate amount  
6 based on market trends and customer uptake.

7

8 **Q. Will the Company offer additional assistance to income-qualified customers?**

9 A. Yes. Income-qualified customers will be eligible to receive an incentive of \$500  
10 towards the purchase of a smart L2 charging station. This is \$200 additional dollars  
11 above the standard rebate amount. This amount is expected to cover approximately  
12 90% of the cost of the average smart L2 charging station. The Company may adjust  
13 the rebate amount based on market trends and customer uptake.

14

15 **Q. Who will be eligible to apply for a Home Charging Pilot?**

16 A. All residential customers who meet the following requirements will be eligible to  
17 apply:

18 

- Be a Duquesne Light residential customer in good standing<sup>45</sup>;

---

<sup>45</sup> Good Standing means that customer account is active, does not have a past due balance or an outstanding payment arrangement at the time of enrollment, and has demonstrated a timely payment history.

- 1           • Own or rent a single-family detached, row house or duplex property with a  
2           personal garage or private off-street parking suitable for charging station  
3           installation.
- 4                 ▪ If renting, the customer must provide documented permission from  
5                 their building owner/property manager to install a charging station;  
6                 and
- 7           • Provide proof of EV purchase or lease registered to the premise address.

8  
9           In addition to the requirements listed above for all customers, a customer will be  
10           considered income-qualified if they meet the following criteria:

- 11           • Income at or below 150% of the Federal Poverty Income Guidelines.
  - 12                 ○ Consistent with existing energy efficiency and conservation  
13                 programs, eligibility will be verified by the customer when they  
14                 apply for the rebate.

15           Participating customers will be required to:

- 16           • Sign a Home Charging Pilot Customer Agreement;
- 17           • Enroll in the EV TOU Distribution Rate Pilot or the Residential Managed  
18           Charging Pilot until those pilots are fully subscribed and remain enrolled in  
19           either offering for 12 months;<sup>46</sup>

---

<sup>46</sup> Income-qualified customers are exempt from the requirement to enroll in the EV TOU or Managed Charging Pilot to avoid placing undue burdens on these customers. Income-qualified customers may voluntarily elect to enroll in EV TOU and Managed Charging if they wish.

- 1           • Select a Company-qualified charging station or if using their vehicle to  
2           enroll in the EV TOU Distribution Pilot or Residential Managed Charging  
3           Pilot then select an ENERGY STAR certified model or the model provided  
4           by their vehicle original equipment manufacturer.

5

6 **Q. Is the Company’s proposal consistent with those adopted in other states?**

7 A. Yes. Utilities, including DTE and PGE, are offering similar types of incentive  
8 programs.<sup>47</sup>

9

10 **Q. Please describe how the Company will conduct outreach and education about  
11 the Pilot.**

12 A. The Company will conduct outreach and education about its pilot through a variety  
13 of channels. It will include information about the program and enrollment processes  
14 on its website. The Company will conduct social media and digital advertising and  
15 will reach out via email to customers who have previously claimed the EV  
16 registration incentive or that the Company has identified from meter data analysis  
17 as likely to own an EV. The Company will also identify ways to conduct specific  
18 outreach to potential income-qualified customers, such as via email outreach and

---

<sup>47</sup> Application of DTE Electric Company for authority to increase its rates, amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority. MPSC Case No. U-20836. Obtained from: <https://mi-psc.my.site.com/s/global-search/U-20836>.; PGE Schedule 8, Adv. No. 20-18, Residential Electric Vehicle Charging Pilot. Docket No ADV 1151. Obtained from: <https://apps.puc.state.or.us/edockets/DocketNoLayout.asp?DocketID=22516>.

1 through cross-promotion with the Company's other income-qualified offerings,  
2 such as the Customer Assistance Program and energy-efficiency offers.

3

4 **Q. How many customers are expected to participate?**

5 A. The Company projects that approximately 1,700 customers will participate in this  
6 offering over three years.

7

8 **Q. Will customers be required to select their charging station from a Qualified  
9 Product List?**

10 A. Yes. Customers who plan to enroll in the Company's Residential Managed  
11 Charging Pilot or EV-Only TOU Distribution Rate Pilot, as a condition of receiving  
12 the rebate, will be required to purchase a charging station that is compatible with  
13 the third-party platform the Company will select to help implement these pilots.  
14 Alternatively, customers can enroll in those programs using their vehicle telematics  
15 if supported by the third-party. Customers relying on vehicle telematics or those  
16 customers enrolling in the WholeHome EV TOU Distribution Rate Pilot, will be  
17 required to select a charging station that is either ENERGY STAR certified or is  
18 the charging station supplied by their vehicle original equipment manufacturer. A  
19 list of Company-qualified stations and vehicles will be published on the Company's  
20 website.

1           The Company will not provide rebates for residential charging stations  
2 greater than 13 kW due to the larger demands they place on the power grid and  
3 local transformers.

4  
5 **Q.    What are the Company’s projected costs of the pilot?**

6 A.    The Company’s projected costs for this pilot are \$271,750 in 2025, \$175,300 in  
7 2026, and \$206,300 in 2027. Detailed budget included in Exhibit SO-3:  
8 Transportation Electrification Portfolio Budget.

9  
10 **Q:    How will the Company recover its costs of the Home Charging Pilot?**

11 A:    Costs for this program will be recovered through base distribution rates.

12  
13 **V.    LOAD MANAGEMENT OFFERINGS**

14  
15 **Q.    Please summarize the Company’s proposed EV Load Management offerings.**

16 A.    The Company is proposing two pilots to help it assess the degree to which these  
17 types of offerings can be predictable and dependable load management assets that  
18 can benefit system affordability and reliability. These offerings include the:

- 19           • EV Time-of-Use (TOU) Distribution Rate, which will expand the  
20           Company’s EV TOU Supply Rate and will encourage customers to shift  
21           their EV charging to off-peak times.

- 1           • Managed Charging Pilot, which will provide customers with an incentive to  
2           reduce EV charging when demand on the grid is at its highest.  
3

4 **Q. Why is the Company proposing these load management offerings?**

5 A. The Company is proposing these Pilots to increase its knowledge and  
6 understanding of non-wires solutions (NWS) designed to help maintain system  
7 reliability and increase affordability. As highlighted in my testimony in Section II  
8 Transportation Electrification Landscape, the Company expects a significant  
9 increase in the number of EVs operating in its service territory in the next decade.

10           Driven by EVs adoption, growth of data centers, and other commercial  
11 development, the system peak demand is expected to increase by approximately  
12 6.5% and increase the number of circuits that are at or near capacity ( $\geq 90\%$ ) from  
13 25% to 31% within the next 10 years (Exhibit SO-6: Load Management Plan). This  
14 increased demand could necessitate upgrades on certain circuits and upstream  
15 system investments if customers do not have the education or incentives to alter  
16 their charging behavior.

17           The proposed NWS pilots will provide insights that can help the Company  
18 address system reliability and affordability by reducing or deferring the need for  
19 system upgrades and making better use of the Company's existing system assets.  
20 By increasing capacity on existing system assets, the Company can enhance  
21 transfer capability during outages, and reduce the likelihood of transformer  
22 overloading by reducing usage during peak demand periods.

1

2 **Q. Do the Company’s proposed pilots align with Pennsylvania Public Utility**  
3 **Commission (PA PUC) guidance?**

4 A. The Company’s proposals aligns with the PPA PUC’s proposed Policy Statement  
5 on Electric Utility Rate Design for Electric Vehicle Charging, which encourages  
6 EDCs to develop EV-specific rates. The proposed Policy Statement includes the  
7 following:

8 *“...[T]he Commission is encouraging development of rate structures for*  
9 *electric-vehicle charging customers. Electric-vehicle charging will*  
10 *increase demand on existing infrastructure, and it is imperative that electric*  
11 *distribution companies are prepared to address this increased demand with*  
12 *distribution and default service generation rates structures that properly*  
13 *signal to electric-vehicle charging customer to incentivize increased*  
14 *capacity utilization of the distribution system.”<sup>48</sup>*

15

16 **Q. How do these offerings fit within the Company’s Load Management Plan**  
17 **(Exhibit SO-6: Load Management Plan)?**

18 A. In its Load Management Plan (LM Plan), the Company has identified a pathway  
19 for progressively leveraging the EVs on its grid to maximize value for its

---

<sup>48</sup> Proposed Policy Statement Order By the Commission. Docket No. M-2023-3040755. 10/19/2023. < <https://www.puc.pa.gov/pcdocs/1805606.pdf>>.

1 customers, EV drivers, and the Company. The Company is proposing passive (EV  
2 TOU) and active (Managed Charging) non-wires solutions to understand the  
3 differences in results and costs and benefits from each approach, and to build  
4 customer confidence that shifting or reducing their charging at set times still  
5 enables customers to continue to meet their charging needs in a reliable way. As  
6 highlighted in the LM Plan, the Company will likely need multiple load  
7 management solutions to help address the increase in TE and other demand. These  
8 proposed pilots, along with the Behavioral Load Management pilot proposed in  
9 Witness Hilderbrand’s testimony (Statement No. 4) will enable the Company to  
10 gain knowledge and experience to better understand customer response and  
11 concerns, better assess grid impacts and benefits, and determine appropriate full-  
12 scale approaches for the future, a key objective of the Load Management Plan.

13

14 ***A. EV TOU Distribution Rate Pilot***

15

16 **Q. Please describe the EV TOU Distribution Rate Pilot (EV Rate Pilot).**

17 A. The EV Rate Pilot will be offered to eligible residential customers. As described in  
18 Witness Coleman’s testimony in Statement No. 15, the EV Rate Pilot will provide  
19 time-varying prices for distributed electricity delivered during “on-peak” and “off-  
20 peak” periods. Eligible customers will be able to enroll in either the WholeHome  
21 EV TOU Distribution Rate (WholeHome Dist. Rate) or the EV-only TOU Rate  
22 (EV-only Rate). When customers sign up for the WholeHome Dist. Rate, the rate

1 will apply to all the electricity use at their premise. EV-only Rate customers will  
2 need to have a Company-qualified EV or charging station or consent to another  
3 method, like a next-generation meter, so that the Company can track their energy  
4 use from charging to apply the EV-only Rate to only that usage. The remainder of  
5 their usage will be billed at their normal assigned RS, RH, or RA distribution rate.  
6 See Witness Coleman’s testimony Statement No. 15 for additional information  
7 about the EV Rate Pilot’s rate design.

8

9 **Q. Why is the Company proposing the EV Rate Pilot?**

10 A. The Company is proposing the EV Rate Pilot because it provides environmental,  
11 economic, and operational benefits for customers and for the Company. The  
12 Company wants to expand its EV TOU Supply Rate pilot (WholeHome EV rate)  
13 that was proposed as part of DSP IX (Docket No. P-2020-3019522) to the  
14 distribution side of its service. By offering an EV TOU rate for both supply and  
15 distribution, customers will receive an additional price signal to further encourage  
16 them to shift their electricity use to the off-peak period to help reduce the impacts  
17 of TE on the grid.

18 The WholeHome EV rate has cumulatively enrolled over 1,000 customers  
19 since the pilot launched in June 2021. The WholeHome EV rate has been successful  
20 in encouraging customers to shift their electricity use to the super off-peak period

1 and saved the average customer \$7.19 monthly.<sup>49</sup> The Company believes that  
2 extending an EV TOU rate to the distribution side can further encourage EV-  
3 driving customers to shift load to off-peak times, making better use of existing  
4 system assets.

5

6 **Q. Why is the Company proposing an EV-only Rate option?**

7 The Company is also proposing an EV-only Rate that would apply only to a  
8 customer's EV charging to better meet the needs of our customers and to help  
9 encourage additional load shift to off-peak times among EV-drivers. In a survey of  
10 the Company's EV driving customers who had not enrolled in the existing  
11 WholeHome EV rate, only 27% indicated that they were likely to enroll in the rate  
12 in the next year. For those who indicated they were unlikely to enroll, inability to  
13 shift load and the rate only applying to the supply side were two of the most  
14 frequently cited reasons for not enrolling in the rate. When asked if they would be  
15 more likely to enroll if the rate only applied to their EV charging, 64% indicated  
16 being much or somewhat more interested (Exhibit SO-4: Duquesne Light Customer  
17 EV Survey Results Summary).

18 The Company understands that for a variety of reasons the WholeHome  
19 TOU rate may not be a good option for all EV-drivers. Offering an EV-only rate  
20 option can encourage EV drivers who otherwise might be charging during the peak

---

<sup>49</sup> DSP IX EV TOU Pilot Program Report. June 1, 2021 through December 31, 2023. Duquesne Light Company.

1 period to shift their EV load to the off-peak period to lessen the demand on  
2 distribution assets. Additionally, the EV-only Rate will allow the Company to test  
3 managed charging to avoid timer peaks, which I address in more detail in my  
4 testimony below.

5

6 **Q. What are the goals of the EV TOU Pilot?**

7 A. In addition to the goals identified in Witness Coleman’s testimony (Statement No.  
8 15) about the rate structure, the EV TOU Pilot’s goals include:

- 9 1. Determine the shift to the off-peak in customer electricity usage.
- 10 2. Assess customer interest, preference, and satisfaction with the WholeHome EV  
11 and the EV-only Rates.
- 12 3. For the EV-only TOU rate:
  - 13 a. Evaluate ability to successfully optimize charging start time to avoid  
14 timer peaks.
  - 15 b. Test the reliability of the technology, assess the data quality, and the  
16 satisfaction with the customer interface platform.
- 17 4. Use the results of the analysis to better estimate longer-term grid impacts and  
18 benefits from these types of offerings.

19

20 **Q. Have the Company’s customers indicated an interest in the Pilot?**

21 A. Yes. In a survey of its known EV drivers (those that have claimed the EV  
22 registration incentive) and members of DLC’s Customer Panel, 46% of respondents

1 said they would be likely to enroll in a similarly described WholeHome EV rate  
2 (Exhibit SO-4: Duquesne Light Customer EV Survey Results Summary).

3  
4 **Q. Is the Company's proposal consistent with those adopted in other states?**

5 A. Yes. For example, beginning May 15, 2023, Potomac Edison in Maryland  
6 implemented an EV-Only TOU Rate to replace its similar off-bill credit program.  
7 The rate has peak and off-peak pricing windows and applies only to EV charging  
8 via vehicle telematics or smart L2 charging station managed by a third-party  
9 vendor. The pricing windows remain the same on weekdays, while weekends and  
10 holidays are always considered off-peak. Residential customers with an eligible  
11 vehicle or smart L2 charging station are eligible to enroll, however there are several  
12 eligibility restrictions including, but not limited to, customers cannot be enrolled in  
13 net metering and cannot have multiple metered premises linked to one Company  
14 account. As of December 31, 2023, there were 518 customers actively enrolled in  
15 this rate and approximately 80% of charging occurred during off-peak times. On  
16 March 1, 2024, PE submitted a proposal to continue the rate without major  
17 modifications beyond 2024 with projected total enrollment of 4,890 customers by  
18 December 31, 2029.<sup>50</sup> Baltimore Gas & Electric and New Jersey Central Power &  
19 Light offer similar programs.

20  

---

<sup>50</sup>See Maryland Public Service Commission Case No. 9478. Obtained from:  
<https://webpsc.psc.state.md.us/DMS/case/9478>.

1 **Q. How will the EV TOU Distribution Rate on-peak and off-peak hours be**  
2 **defined?**

3 A. On-peak hours are defined as the period extending from 3:00 pm to 9:00 pm during  
4 non-holiday weekdays. The off-peak period will be defined as all other hours.  
5 Holidays follow the PJM definition and include New Year's Day, Memorial Day,  
6 Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

7  
8 **Q. Who will be eligible to participate in the EV TOU Pilot?**

9 A. All residential customers who meet the following requirements will be eligible to  
10 apply:

- 11 • Be a Duquesne Light residential customer;
- 12 • Customer account must be in good standing, signifying that the Account is  
13 active, does not have a past due balance or an outstanding payment  
14 arrangement at the time of enrollment, and the customer has demonstrated  
15 a timely payment history;
- 16 • Own or lease an EV, which is registered to the service address;
- 17 • Not enrolled in the Company's proposed Managed Charging pilot or the  
18 proposed Behavioral Load Management Pilot and;
- 19 • Not enrolled in CAP, virtual meter aggregation or budget billing programs.

20 EV-only Customers:

- 1           • Have a Company-qualified<sup>51</sup> Level 2 charging station or EV with telematics  
2           capabilities that can be enrolled in the managed charging platform.

3           Participating customers will be required to:

- 4           • Complete an EV TOU Rate Pilot enrollment form;
- 5           • Comply with Rider 4 – Electric Vehicle Time-of-Use Distribution Rate  
6           Pilot;
- 7           • If EV-only rate option, agree to allow the third-party platform access to  
8           vehicle telematics or charging station energy consumption data;
- 9           • Provide a copy of their PA vehicle registration or similar documentation  
10          and;
- 11          • If the customer un-enrolls in the EV TOU rate, they will not be permitted to  
12          re-enroll for 12 consecutive months.

13

14   **Q.    Can customers be un-enrolled from the EV-only Rate?**

15   **A.**    Yes. If an EV-only Rate customer is repeatedly unable to provide timely charging  
16          data through their enrolled device then the Company may un-enroll them from the  
17          rate after three months if efforts to resolve the issue are unsuccessful or if the  
18          customer is non-communicative or non-cooperative. For example, if a customer  
19          enrolls their charging station in the EV-only Rate, but does not have their station  
20          connected to wi-fi for 3 months so it cannot transmit its charging data, then the

---

<sup>51</sup> The Company will include a list of Company-qualified charging stations and EVs on its website. This list will be dependent on the vendor selected to assist with this pilot.

1 Company may elect to un-enroll the customer. The customer will then be charged  
2 at their standard distribution rate for all their household load. The Company will  
3 make good-faith efforts to work with customers to resolve any technology issues  
4 and will notify customers prior to un-enrollment.

5

6 **Q. Will customers receive any incentives for participating in the EV TOU Pilot?**

7 A. Customers that do not have a qualifying L2 station or vehicle may be eligible to  
8 receive a \$300 rebate (or \$500 for income-qualified customers) for L2 charging  
9 station through the Company's proposed Home Charging Rebate pilot, which is  
10 described elsewhere in my testimony. Additionally, some customers may be  
11 eligible to claim the residential make-ready rebate to upgrade their home electrical  
12 panel or install a circuit for their charging station (see St. No. 5 - Witness Baxter's  
13 testimony). Customers who shift their charging to the off-peak period may also see  
14 savings.

15

16 **Q. Please describe how the Company will conduct outreach and education about  
17 the pilot.**

18 A. The Company will disseminate information about the pilot through a variety of  
19 channels. It will include information about the program and enrollment processes  
20 on its website. It will conduct outreach via email to customers who have previously  
21 claimed the EV registration incentive or that the company has identified as likely

1 to own an EV from its meter data analysis. Finally, the Company will conduct social  
2 media and digital advertising about the rate.

3 Additionally, the Company will enhance its existing online Rate Advisor<sup>52</sup>  
4 or create a new one to help customers understand how much they may be able to  
5 save on the rate and make an informed decision about enrolling. After a customer  
6 enrolls, customers will continue to receive educational communications to help  
7 them evaluate how well the rate works for them and give them tips for how to shift  
8 usage away from the peak period, similar to those received by customers enrolled  
9 in the existing WholeHome EV Rate.

10

11 **Q. How many customers are expected to participate in the pilot?**

12 A. The Company will limit enrollment in this pilot to 1,500 customers.

13

14 **Q. How will the Company track, report, and bill the EV energy consumption for  
15 the EV-only Rate?**

16 A. Through a Request for Proposal (RFP) process, the Company will identify and  
17 contract with one or more vendors to track and report on energy use for EV  
18 charging. The Company will explore a variety of solutions, but anticipates that  
19 vendors will communicate with charging stations or vehicle telematics to gather  
20 and report this information back to the Company.

---

<sup>52</sup> See Rate Advisor Tool: <https://ev.duquesnelight.com/rates>.

1           Charging stations and vehicles record a wide range of information including  
2           the amount of energy consumed at specific intervals via embedded metrology and  
3           OEM telematics (or similar) respectively. Third-party managed charging platforms  
4           have data relationships with charging stations and vehicles OEMs or aggregators to  
5           receive and process this data, typically via API. Once they receive this data, it will  
6           be shared with the Company via a defined format and secure platform and  
7           integrated into the Company’s Meter Data Management system. From there, the  
8           EV usage will be subtracted from the overall premise meter usage and billed at the  
9           EV-Only rate, while the remainder of the customer’s usage will be assessed at the  
10          standard RS, RH, or RA distribution rate.

11           If a charging station or EV does not transmit data initially, but later comes  
12          online and is able to communicate the consumption data, the Company will follow  
13          its standard re-bill procedures as it does for all residential customers.

14           Customers will enroll their charging station or vehicle when they sign-up  
15          for the pilot. The Company will seek a vendor that has relationships with a wide  
16          number of charging station manufacturers and vehicle OEMs to ensure that as many  
17          customers as possible are eligible to participate in the pilot.

18

19   **Q.    Why is the Company not requiring the installation of a second meter?**

1 A. The Company is not requiring the installation of a second meter due to the cost.<sup>53</sup>  
2 Today, the Company effectively offers an EV-only rate through its WholeHome  
3 EV TOU supply rate since customers are permitted to install a separate meter for  
4 their EV charging. However, since the launch of the WholeHome EV TOU supply  
5 rate no customers have elected that option. The capabilities exist today through  
6 charging stations and vehicle telematics to track and report the energy consumption  
7 data necessary to apply the rate to a customer's EV charging and are more cost  
8 effective than requiring a second meter. Additionally, more advanced metering  
9 technology (AMI 2.0) may also soon eliminate the need for a second meter.

10

11 **Q. How will the Company validate the charging station or vehicle telematics**  
12 **data?**

13 A. The Company proposes to install 50 non-billing sub-meters at select participating  
14 customer homes to compare sub-metered EV electricity consumption to electricity  
15 consumption reported by the vehicle and/or charging station. This will help to  
16 assess the accuracy of the charging station metrology or telematics data for energy  
17 consumption reporting and billing purposes. Through this effort, the Company will  
18 sample the equipment accuracy of 10% of customers enrolled in this pilot. For  
19 comparison, in a typical year the Company sample tests less than 1% of residential  
20 customer meters. Customers will be asked if they would be willing to participate in

---

53 The expected cost of installing a second meter is approximately \$900 based on online research for local providers. Costs would likely be higher if additional work is required to refinish walls, etc. Xcel Energy estimates the cost of a second meter installation at \$2,000. See: <https://ev.xcelenergy.com/ev-charging-programs>.

1 this effort during the EV-Only Rate enrollment process. These sub-meters would  
2 be installed at no cost to the participating customers.

3

4 **Q. How does the Company propose to address EVs participating in the EV TOU**  
5 **rate beginning to charge at the same time when the off-peak period begins?**

6 To help prevent timer peaks<sup>54</sup> which can also put undue strain on distribution assets,  
7 for a sub-set of customers, the Company will test controlling when those customers  
8 begin charging to avoid having all EVs begin charging at exactly 11:01 pm at the  
9 start of the super off-peak period, for example. The TE Team will collaborate with  
10 the Company's System Planning Team to identify high-EV penetration areas where  
11 circuits may already be overloaded or are forecasted to become overloaded to pilot  
12 this approach with customers and study the effects. Although timer peaks are not a  
13 challenge to the distribution system today, the Company recognizes that as EV  
14 growth continues this could be an issue in the future and wants to test the  
15 technology and customer comfort with more optimized charging.

16

17 **Q. When does the Company propose the EV TOU Dist. Rate take effect?**

18 A. The Company proposes to delay the launch of the rate until June 1, 2025. The  
19 Company plans to propose an updated EV TOU rate as part of its Default Service  
20 Plan for 2025-2029. This proposed rate will mirror the distribution EV TOU rate.

---

<sup>54</sup> A timer peak can occur when EVs in enrolled in a TOU rate all begin to charge at the start of the off-peak period and can create new peaks that strain the grid.

1 The Company requests to delay the launch of the EV TOU Dist. Rate so that it can  
 2 align with the launch of the DSP EV TOU supply-side rate. The Company believes  
 3 aligning the effective date of the distribution and supply rates will be a better  
 4 customer experience from a communications and enrollment perspective and will  
 5 be operationally easier for the Company. This will also simplify the transition for  
 6 those currently enrolled in the supply-side WholeHome EV rate.

7

8 **Q. Does the Company propose any limitations on the EV TOU Rate Pilot options**  
 9 **customers can elect between distribution and supply rates?**

10 A. Yes, the Company is proposing some limitations on rate options for this pilot phase  
 11 due to technical and customer experience challenges of implementing certain rate  
 12 combinations and to prioritize rate combinations that the Company thinks will be  
 13 of greatest interest to customers. Table 5 shows which rate combinations will be  
 14 permitted. Customers interested in selecting an Energy Generation Supplier will  
 15 not be restricted from participating in any distribution rate option. The Company  
 16 will reexamine rate options in the future based on the results of the pilot.

17 Table 5: Permitted Distribution and Supply EV TOU Rate Combinations

Supply Rate Options	Distribution Rate Options		
	WholeHome	EV-Only	Standard Distribution Rate
Default Service - WholeHome	Permitted	Not Permitted	Permitted
Default Service - EV-Only	Not Permitted	Permitted*	Not Permitted
Default Service - Standard	Not Permitted	Not Permitted	Permitted
Energy Generation Supplier	Permitted	Permitted	Permitted

1           \*Remainder of supply must be on Default Service - Standard

2

3   **Q.    What are the Company’s projected costs of the pilot?**

4   A.    The Company’s projected costs for this pilot are \$263,250 in 2025, \$168,200 in  
5       2026, and \$179,440 in 2027. Detailed budget included in Exhibit SO-3:  
6       Transportation Electrification Portfolio Budget. Costs of the program platform and  
7       IT set-up are divided between EV TOU Distribution Rate, Residential Managed  
8       Charging Pilot, and the Default Service EV TOU Supply rate since all the programs  
9       will be able leverage the same platform.

10

11       ***A.   Residential Managed Charging Pilot***

12

13   **Q.    Please summarize the Company’s Residential Managed Charging Pilot.**

14   A.    The Company is proposing a Residential Managed Charging Pilot to reduce EV  
15       charging during peak demand times by offering residential customers an incentive  
16       to pause their charging during peak events.

17

18   **Q.    Why is the Company proposing a Managed Charging Pilot?**

19   A.    The Company is proposing the Residential Managed Charging Pilot to evaluate  
20       how EVs can support the grid as a non-wires alternative and benefit customers by  
21       reducing system demand during peak periods. As addressed earlier in my  
22       testimony, the Company expects a significant increase in the number of EVs

1 operating in its service territory in the next decade which will lead to increased  
2 system demands and the Company is evaluating how to most cost effectively  
3 address this additional EV load.

4 A subset of the Company’s EV-driving customers have indicated in  
5 previous customer surveys that they are unlikely to enroll in a WholeHome TOU  
6 (47% reported being “Not very likely” or “Not likely at all”) or EV-Only TOU rate  
7 (36%) (Exhibit SO-4: Duquesne Light Customer EV Survey Results Summary).  
8 This indicates that if the Company wants to further reduce EV charging during peak  
9 periods, then another offering will likely be needed to encourage customers for  
10 whom TOU rates may not be viable or appealing.

11

12 **Q. What are the goals of the Managed Charging Pilot?**

13 A. The Managed Charging Pilot has three goals:

- 14 1. Assess the degree to which EV managed charging can be a reliable and  
15 meaningful load management asset for our grid by reducing EV charging during  
16 peak times.
- 17 2. Assess customer participation and response to incentives.
- 18 3. Assess the ability of technology interfaces to successfully manage charging  
19 reductions and customer participation.

20

21 **Q. Have the Company’s customers indicated an interest in the pilot?**

1 A. Yes. The Company surveyed its known EV drivers (those that have claimed the EV  
2 Registration Incentive) and members of DLC’s Customer Panel. Forty-five percent  
3 of respondents indicated that they would be “Extremely Likely” or “Likely” to  
4 enroll in a managed charging pilot. Among non-EV drivers who indicated that they  
5 were likely to consider buying or leasing an EV, 75% indicated they would be  
6 “Extremely Likely” or “Likely” to enroll. See Exhibit SO-4: Duquesne Light  
7 Customer EV Survey Results Summary for further details.

8

9 **Q. Please describe the Managed Charging Pilot.**

10 A. The Company will enroll eligible customers in the pilot on an on-going basis.  
11 Customers enrolled in the pilot will be asked to participate in an estimated 10-15  
12 demand reduction events over the course of the summer (likely June through  
13 September). For each event, customers will receive a notification ahead of time  
14 (approximately 24 hours) and will have the option to opt-out. During the event,  
15 customers' EV charging will be paused for the duration of the event. Events are  
16 expected to last 2-4 hours and take place between 12-8pm and most commonly  
17 between 3-9 pm when the grid is at its peak demand. Once the event has ended,  
18 charging will resume.

19

20 **Q. Explain the incentives customers will receive for participating in the Managed**  
21 **Charging Pilot.**

1 A. Participating customers will receive an incentive of \$20 per month in the form of a  
2 pre-paid debit card or direct bank deposit so long as they participate in  $\geq 50\%$  of  
3 events for that month. The Company expects to call events over approximately four  
4 months so customers could earn up to \$80 annually if they participate each month.  
5 The Company reserves the authority to modify the incentive value by up to 25%,  
6 without advance notice to the customer.

7 Customers that do not have a qualifying L2 station or vehicle may also be  
8 eligible to receive a \$300 rebate (or \$500 for income-qualified customers) for a L2  
9 charging station through the Company's proposed Home Charging Pilot, which is  
10 described elsewhere in my testimony. Additionally, some customers may be  
11 eligible to claim the residential make-ready rebate to upgrade their home electrical  
12 panel or install a circuit for their charging station (see Witness Baxter St. No. 5).

13

14 **Q. Who will be eligible to participate in the Managed Charging Pilot?**

15 A. All residential customers who meet the following requirements will be eligible to  
16 apply:

- 17
- Be a Duquesne Light residential customer;
  - Customer account must be in good standing, signifying that the Account is  
18 active, does not have a past due balance or an outstanding payment  
19 arrangement at the time of enrollment, and the customer has demonstrated  
20 a timely payment history;
- 21

- 1 • Own or rent a single-family detached, row house or duplex property with a
- 2 personal garage or private off-street parking suitable for charging station
- 3 installation;
- 4 • Own or lease an EV, which is registered to the service address;
- 5 • Have a private, dedicated L2 charging station installed at their residence;
- 6 • Have a Company-qualified L2 charging station or EV that can be enrolled
- 7 in the managed charging platform; and
- 8 • Not currently enrolled in the Company’s proposed Rider No. 4 – Electric
- 9 Vehicle Time-of-Use Distribution Rate Pilot, the EV TOU rate under Rider
- 10 No. 8 – Default Service Supply, nor Rider No. 23 - Behavioral Load
- 11 Management Pilot.

12 Participating customers will be required to:

- 13 • Complete a Residential Managed Charging Pilot enrollment form;
- 14 • Comply with Rider 7 – Residential Managed Charging Pilot;
- 15 • Remain enrolled in the pilot for 12 consecutive months;
- 16 • Charge at least once for 15 minutes during each event month to be eligible
- 17 to receive the incentive; and
- 18 • Agree to allow a third-party platform access to vehicle telematics or
- 19 charging station to control charging during events.

20

21 **Q. Is the Company’s proposal consistent with those adopted in other states?**

1 A. Yes. For example, beginning in May 2021, National Grid began offering a managed  
2 charging program in Massachusetts, through which they curtail the EV charging  
3 load of participating customers during called demand reduction events through  
4 direct load control via a third-party vendor. Participating customers receive a \$25  
5 enrollment incentive and a \$10-20 per-event rebate based on level of charging or a  
6 flat \$20 annual incentive that was distributed if customers did not participate in any  
7 peak events. Through September 2021, the program enrolled more than 150 EVs.<sup>55</sup>  
8 Similarly, in 2020, AES Indiana began offering a managed charging program,  
9 through which it can fully curtail participating residential customers' EV charging  
10 during peak demand events. As of January 2023, more than 100 residential  
11 customers were enrolled. In November 2023, AES Indiana was approved to extend  
12 this program for another three years. Participating customers receive a one-time  
13 \$250 enrollment incentive and an annual participation incentive of up to \$50.<sup>56</sup>

14

15 **Q. Please describe how the Company will conduct outreach and education about**  
16 **the pilot.**

17 A. The Company will conduct outreach and education about its pilot through a variety  
18 of channels. It will include information about the program and enrollment processes  
19 on its website. It will conduct outreach via email to customers who have previously

---

<sup>55</sup>See Electric Vehicle Managed Charging Offering Comparison Study. Obtained from: <https://ma-ceac.org/?s=managed+charging>.

<sup>56</sup>See Indiana Utility Regulatory Commission Cause No. 4583. Obtained from: <https://www.in.gov/iurc/docketed-cases/>.

1           claimed the EV registration incentive or that the company has identified as likely  
2           to own an EV from its meter data analysis. Finally, the Company will conduct social  
3           media and digital advertising about the pilot.

4

5   **Q.    How many customers are expected to participate in the pilot?**

6   A.    The Company projects that 500 customers will participate in the pilot over three  
7        years.

8

9   **Q.    How will the Company decide when to call a Peak Demand Event?**

10  A.    A Peak Demand Event will be scheduled when electricity demand is expected to be  
11        particularly high. These criteria will likely be weather-based (linked to certain  
12        temperature lows and highs or the heat index), linked to PJM Demand Response  
13        events, and/or based on distribution grid needs as identified by the Company.

14

15  **Q.    How will the Company effectuate a demand response event?**

16  A.    Through a Request for Proposal process, the Company will identify and contract  
17        with one or more vendors that can execute demand response events for EV  
18        charging. The Company expects that vendors will communicate through charging  
19        stations or vehicle telematics to pause charging. Customers will enroll their  
20        charging station or vehicle when they sign-up for the program. The Company will  
21        seek a vendor that has relationships with a wide number of charging station

1 manufacturers and vehicle OEMs to ensure that as many customers as possible are  
2 eligible to participate in the pilot.

3

4 **Q. Will the Company conduct an evaluation of this pilot?**

5 A. Yes. To support the pilot reporting identified in its TE Portfolio Evaluation Plan  
6 (Exhibit SO-2), the Company anticipates hiring a third-party consultant to assist  
7 with an evaluation of this pilot. This is identified as Managed Charging  
8 Effectiveness Study in the Transportation Electrification Portfolio Budget (Exhibit  
9 SO-3).

10

11 **Q. Does the Company plan to have a control group for evaluation purposes?**

12 A. Yes. The Company plans to recruit around 50 customers to participate in a control  
13 group to compare behaviors on event and non-event days between managed  
14 charging participants and the control group. The Company expects to incentivize  
15 these customers on the same basis as participating customers, but they will not be  
16 asked to alter their behavior during Peak Demand Events. The Company believes  
17 that having a control group will help the Company to have a better assessment of  
18 the effectiveness of the Managed Charging Pilot. The cost of this control group is  
19 in the budget on Page 16, O&M, Line 2 (Exhibit SO-3: Transportation  
20 Electrification Portfolio Budget).

21

1 **Q. The Commission’s Policy Statement on Alternative Distribution Ratemaking**  
2 **Mechanisms, 52 PA Code §§ 69.3301 and 69.3302, identifies a number of**  
3 **factors the Commission may consider when evaluating an alternative**  
4 **distribution rate mechanism. Has the Company considered these factors with**  
5 **respect to the Residential Managed Charging Pilot?**

6 A. Yes. I address each of them below.

7

8 *(1) How the ratemaking mechanism and rate design align revenues with cost*  
9 *causation principles as to both fixed and variable costs.*

10 Customers that participate in the Residential Managed Charging Pilot will be  
11 billed at standard rates for all residential customers, namely on Rate Schedules  
12 RS, RH, and RA. The Company’s residential rates are based on cost  
13 causation principles. Potential incentives earned as a result of curtailing demand  
14 will not disrupt the principles of cost causation.

15 <sup>57</sup>

16 *(2) How the ratemaking mechanism and rate design impact the fixed utility’s*  
17 *capacity utilization.*

18 The Residential Managed Pilot incentive is derived from reduction in usage during  
19 the hours of highest system demand and shifting the utilization to hours when  
20 the system is less utilized. This will lead to increased utilization of the

---

<sup>57</sup> 2021 TRC Test Final Order. Pennsylvania Public Utility Commission.  
<https://www.puc.pa.gov/pcdocs/1648126.docx>.

1           Company’s distribution system during off-peak times and a reduction in the  
2           Company’s capacity utilization at peak times.

3

4           (3) *Whether the ratemaking mechanism and rate design reflect the level of demand*  
5           *associated with the customer’s anticipated consumption levels.*

6           The expected level of demand reduction resulting from lower usage during peak  
7           events is estimated to be cost-effective at incentive levels proposed.

8

9           (4) *How the ratemaking mechanism and rate design limit or eliminate interclass*  
10           *and intraclass cost shifting.*

11           The cost of the Pilot will be borne exclusively by the Residential customer  
12           class since they are the only class eligible for the Pilot. No cost shifting between or  
13           among rate classes are expected as a result of this Pilot.

14

15           (5) *How the ratemaking mechanism and rate design limit or eliminate disincentives*  
16           *for the promotion of efficiency programs.*

17           The Pilot is not expected to reduce total energy consumption, but rather shift energy  
18           consumption to periods of lower system demand. The rates for which  
19           participating customers are billed are volumetric, therefore the pilot does not  
20           disincentivize energy efficiency.

21

1           (6) *How the ratemaking mechanism and rate design impact customer incentives to*  
2                    *employ efficiency measures and distributed energy resources.*

3           As noted above, since the Pilot is not expected to reduce total energy consumption,  
4           the Pilot should have limited impact on residential customer’s desire to invest  
5           in energy efficiency and distributed energy resource measures. Since overall  
6           electricity use is likely to increase with the addition of an EV, the customer  
7           may be, if anything, more motivated to invest in energy efficiency and  
8           distributed energy resources.

9

10          (7) *How the ratemaking mechanism and rate design impact low-income customers*  
11                    *and support consumer assistance programs.*

12           Low-income and CAP customers are eligible to participate and receive \$20  
13           per Event Month.

14

15          (8) *How the ratemaking mechanism and rate design impact customer rate stability*  
16                    *principles.*

17           The customer’s rate stability remains the same as the demand reduction  
18           incentive is essentially a discount to the customer’s Energy Charge which is linked  
19           to current residential rates. The incentive terms offered through the pilot, as  
20           described in Rider No. 7 – Residential Load Management Pilot, are predictable and  
21           transparent.

22

1           (9) *How weather impacts utility revenue under the ratemaking mechanism and rate*  
2 *design.*

3           A Peak Demand Event will be scheduled when electricity demand is  
4 expected to be particularly high on days when temperature and humidity are high.

5

6           (10) *How the ratemaking mechanism and rate design impact the frequency of rate*  
7 *case filings and affect regulatory lag.*

8           This rate design will not impact the frequency of rate case filings or regulatory  
9 lag.

10

11           (11) *If or how the ratemaking mechanism and rate design interact with other*  
12 *revenue sources, such as Section 1307 automatic adjustment surcharges, 66*  
13 *Pa.C.S. § 1307 (relating to sliding scale of rates; adjustments), riders such as*  
14 *66 Pa.C.S. § 2804(9) (relating to standards for restructuring of electric*  
15 *industry) or system improvement charges, 66 Pa.C.S. § 1353 (relating to*  
16 *distribution system improvement charge).*

17           Not applicable.

18

19           (12) *Whether the alternative ratemaking mechanism and rate design include*  
20 *appropriate consumer protections.*

1           The Pilot is an optional program which provides an incentive to participate  
2           in optional demand reduction events. There is no penalty for failure to curtail and  
3           participation is voluntary.

4

5           *(13) Whether the alternative ratemaking mechanism and rate design are*  
6           *understandable to consumers.*

7           In addition to the outreach and education described above, the Pilot was  
8           designed to offer a simple demand reduction incentive that is transparent and  
9           optional to participate.

10

11           *(14) How the ratemaking mechanism and rate design will support improvements*  
12           *in utility reliability.*

13           By pursuing non-wires solutions to effectively manage system peaks, the  
14           Company may reduce or defer the need for system upgrades and optimize the  
15           utilization of the Company's current system assets. By boosting capacity on  
16           existing system assets, the Company can enhance transfer capability during  
17           outages, thereby decreasing the likelihood of transformer overloading by  
18           minimizing usage during peak demand periods.

19

20           *(b) In any distribution rate filing by a fixed utility under 66 Pa.C.S. § 1308*  
21           *(relating to voluntary changes in rates) that proposes an alternative ratemaking*

1           *mechanism and rate design, the fixed utility shall explain how these factors impact*  
2           *the distribution rates for each customer class.*

3           The costs associated with the Residential Managed Charging Pilot are reflected in  
4           the proposed distribution rate impacts that are reflected in the all-encompassing  
5           Transportation Electrification program bill impacts that are addressed earlier in my  
6           testimony.

7

8   **Q.    What are the Company’s projected costs of the pilot?**

9    A.    The Company’s projected costs for this pilot are \$187,640 in 2025, \$112,500 in  
10       2026, and \$159,000 in 2027. Detailed budget included in Exhibit SO-3:  
11       Transportation Electrification Portfolio Budget. Costs of the program platform and  
12       IT set-up are divided between EV TOU Distribution Rate, Residential Managed  
13       Charging Pilot, and the Default Service EV TOU Supply rate since all the programs  
14       will be able leverage the same platform.

15

16   **Q:    How will the Company recover its costs of the Managed Charging Pilot?**

17    A:    Costs for this program will be recovered through base distribution rates.

18

19   **VI.    CUSTOMER ENGAGEMENT OFFERINGS**

20

21   **Q.    Please summarize the Company’s proposed Customer Engagement Offerings.**

22    A.    The Customer Engagement Offerings includes the following three components:

- 1           • Awareness, Education, and Engagement (“AEE”), which will allow the  
2           Company to provide TE informational services to customers.
- 3           • Electric Fleet Advisory Service, which will support an average of 18 fleet  
4           customers annually.
- 5           • A Registration Incentive, which will allow the company to engage with EV  
6           drivers and gather data to assist with distribution system planning.

7

8           *A. Awareness, Education, and Engagement*

9

10   **Q.    Why is the Company proposing to continue customer transportation**  
11   **electrification awareness, education, and engagement?**

12   A.    The Company’s AEE efforts are intended to (1) fill an information gap in the  
13   Company’s service territory around EVs and charging stations generally; and (2)  
14   educate customers about the Company’s TE and other federal and state funding  
15   programs. The Company will build upon its education and outreach efforts to date,  
16   as discussed in Exhibit SO-1: Transportation Electrification Programs Report, to  
17   continue educating residential and commercial customers on the quickly evolving  
18   TE market. This includes customers that have not yet adopted EVs or installed  
19   charging to ensure they are aware of their options and are equipped to make  
20   informed EV decisions, as well as customers that have already adopted to ensure  
21   they have the tools and resources they need to manage the electric load from their  
22   charging cost-effectively.

1           Based on customer surveys and the Company’s experience implementing  
2           the TE Programs, it is clear that lack of awareness and education surrounding EVs  
3           and charging continues to be a major barrier to customer adoption, and an  
4           increasing number of customers are turning towards the Company for that  
5           information. While EV awareness is increasing each year, nearly 70% of customer  
6           survey respondents indicate they are only somewhat familiar or know very little or  
7           nothing about EVs. Customer respondents also indicate that the more well  
8           researched on EVs they are, the more likely they are to buy or lease an EV as their  
9           next vehicle. See Exhibit SO-4: Duquesne Light Customer EV Survey Results  
10          Summary for further details.

11           The Company is well-positioned to address this barrier. Many aspects of  
12          EV education bear directly on the Company’s systems and functions. For example,  
13          current and prospective EV owners may require fundamental information regarding  
14          different EV charging technologies, how to connect EV charging equipment to the  
15          Company’s grid, and bill impacts. This information can often best be provided and  
16          in some instances, can only be provided by the Company.

17

18   **Q.    Please describe the Company’s plans for AEE activities.**

19    A.    The Company will continue program-specific outreach to ensure residential and  
20          commercial customers are aware of the TE Portfolio offerings available to them  
21          and educate them on the offerings’ benefits and participation requirements. Second,  
22          the Company will continue hosting educational events for customers, as well as

1           engaging in community-based events to meet customers where they're at.  
2           Additionally, the Company will continue using digital and print communication  
3           channels to reach customers, including the Company's website, social media, bill  
4           messages and inserts, email campaigns, and more. Lastly, the Company will expand  
5           the digital tools it offers to customers to help increase awareness and education  
6           surrounding EVs and charging, such as rate advisor tools, consumer guides, product  
7           catalogs, etc. Through all its efforts, the Company aims to maintain its role of  
8           serving as a trusted source of information for all customers, offering the technical  
9           assistance needed to make informed and cost-effective decisions. The Company  
10          will also continue to regularly examine customer feedback and adjust its  
11          communication approaches accordingly.

12  
13   **Q.    Does the Company plan to engage low-income customers and communities**  
14   **through its AEE activities?**

15   A.    Yes. The Company plans to continue engaging low-income customers and  
16   communities through its AEE activities building on the existing low-income AEE  
17   efforts as described in Exhibit SO-1: Transportation Electrification Programs  
18   Report. Ensuring AEE efforts serve low-income customers and communities,  
19   especially those within the Company's Electric Mobility Priority Areas, is of the  
20   highest importance to the Company. The Company recognizes the needs of the  
21   customers and communities it serves vary widely, and therefore AEE must be  
22   responsive and inclusive to those varied needs. AEE efforts tailored to low-income

1 customers will be informed by equitable best practices, including those that were  
2 identified in the Company’s “Electric Mobility for All” report further outlined in  
3 Exhibit SO-5 as well as those included in similar resources from organizations  
4 across the country, such as the Greenlining Institute, Forth Mobility<sup>58</sup>, and  
5 EVHybridNoire<sup>59</sup>.

6

7 **Q. What are the Company’s projected costs of the AEE activities?**

8 A. The Company’s projected costs for 2025 are \$436,000, costs for 2026 are \$307,000,  
9 and 2027 are \$272,000. Detailed budget included in Exhibit SO-3: Transportation  
10 Electrification Portfolio Budget.

11

12 **Q. How will the Company recover its costs of the AEE activities?**

13 A. These costs will be recovered through base distribution rates.

14

15 ***B. Electric Fleet Advisory Service***

16

17 **Q. Please summarize the Company’s proposed Electric Fleet Advisory Service.**

18 A. This service will provide targeted outreach to customers with vehicle fleets to help  
19 them to develop fleet electrification plans with a focus on municipalities, school

---

<sup>58</sup> Greenlining Institute and Forth Mobility (2022, June). “Towards Equitable Electric Mobility,” Obtained from: <https://forthmobility.org/storage/app/media/Reports/TEEM%20EVS%20Report.pdf>.

<sup>59</sup> EVHybridNoire (2022, January). “Advancing Transportation Electrification in Diverse Communities,” Obtained from: <https://evhybridnoire.com/public-policy-toolkit/>

1 districts, non-profits, and local and regional businesses. Through this service, the  
2 Company will build upon its Electric Fleet Advisory efforts to date, as discussed in  
3 Exhibit SO-1: Transportation Electrification Programs Report. The Company will  
4 continue to collect and analyze customer fleet data and produce fleet strategic  
5 electrification plans for participating customers. The plan will identify which  
6 vehicles are the best candidates for electrification, calculate total cost of ownership,  
7 estimate GHG emissions and emission reductions, identify available financial  
8 incentives, and estimate the charging infrastructure required to support  
9 electrification. The end result will be a plan that the customer can use to guide its  
10 decision-making about fleet electrification efforts going forward. Where  
11 applicable, the Company will further assist participating customers in  
12 implementing these plans through the Community, Fleet & Transit Pilot.

13

14 **Q. Why does the Company believe it is important to continue to offer this**  
15 **service?**

16 A. This service will build upon the Company's growing expertise to help fleet  
17 customers overcome unique challenges to fleet electrification. The Company has  
18 found that many fleet customers interested in electrification face financial and  
19 operational challenges when considering converting fleet vehicles to EVs (Exhibit  
20 SO-1 Transportation Electrification Programs Report). The Electric Fleet Advisory  
21 Service addresses this gap.

1           In addition to benefitting participating customers, this program will also  
2 benefit the Company by providing early, detailed insight into customers' electric  
3 service needs. The Company anticipates that engaging with customers early in the  
4 planning process will help inform the Company's distribution system planning,  
5 construction, and operation decisions.

6

7 **Q. Please describe how learnings from the 2022-2024 Transportation**  
8 **Electrification Programs Fleet Electrification Advisory Service are applied to**  
9 **the proposed activity.**

10 A. Through the implementation of the 2022-2024 Fleet Electrification Advisory  
11 Service, the Company found that a customer's fleet size and type, as well as vehicle  
12 uniformity and fleet-specific operational needs impact the level of support needed  
13 to produce fleet electrification analyses and recommendations. The Company  
14 recognizes changes that could be made to be more efficient with Company and  
15 Customer time in the development of fleet assessment reports based on fleet size  
16 and other characteristics (Exhibit SO-1: Transportation Electrification Programs  
17 Report). A self-serve or partially self-serve online fleet electrification evaluation  
18 tool could shorten analysis time and provide quicker results for certain fleets.

19           The proposed 2025-2027 Electric Fleet Advisory Service will continue to allow  
20 customers to compare EV models, see total cost of ownership savings, view  
21 environmental impact analyses, and be made aware of incentives they are eligible  
22 for. However, the Company will modify its previous one-size-fits-all approach and

1 instead offer two levels of support to provide electrification assessments to fleet  
2 customers:

3 • *Full-Service Assessment:* Customers with fleets of more than 15 vehicles,  
4 fleets with complex operations, and fleets with many vehicle types, will be  
5 eligible to participate in a full-service assessment consistent with what the  
6 Company provided in the 2022-2024 TE Programs Fleet Electrification  
7 Advisory Service. The Company proposes to maintain this successful  
8 approach because such fleets require support and modeling beyond what an  
9 online assessment may be able to support.

10 • *Online Guided Assessment:* Customers with fleets of less than 15 vehicles,  
11 partial fleets, and uniform fleets will be supported through an online  
12 assessment tool. An online platform for fleet assessment will be easily  
13 accessible and readily available to fleets of all sizes but targeted at  
14 supporting the fleet types mentioned above. Customers will have the option  
15 of using the platform self-service style or choose a Company-assisted route  
16 for completing an assessment through the online tool.

17  
18 **Q. Please describe how the Company will conduct outreach and education for the**  
19 **Electric Fleet Advisory Service.**

20 A. The Company will recruit municipal governments, school districts that own bus  
21 fleets, school bus operators, non-profits, and private sector commercial customers  
22 to participate in this service. The Company will build out a robust Electric Fleet

1 Advisory Service webpage with educational resources, relevant fleet funding  
2 opportunities, and information on the Service, and will conduct direct customer  
3 outreach via its Business Services, Government Affairs, and TE teams to identify  
4 fleet customers in the service territory. The Company will also work with local non-  
5 profits, small businesses, and trade associations to help inform customers of this  
6 opportunity and identify good candidates for inclusion.

7

8 **Q. How many customers are projected to participate in the service?**

9 A. The Company is anticipating that an average of 18 customers will be supported  
10 through the Service annually.

11

12 **Q. How will low-income customers and communities benefit from this service?**

13 A. The Company has learned that even more than other customers with fleets, these  
14 entities may lack the resources or expertise to undertake a fleet electrification  
15 evaluation, even if doing so would ultimately benefit their operations and the  
16 communities they serve. The Company plans to continue engaging municipal  
17 governments, authorities, and non-profit organizations that serve Electric Mobility  
18 Priority through its Electric Fleet Advisory Service building on the existing fleet  
19 electrification equity efforts as further described in Exhibit SO-1: Transportation  
20 Electrification Programs Report. The Company has provided analyses and reports  
21 for 11 Electric Mobility Priority Area-serving municipal governments, authorities,  
22 or non-profit organizations out of a total of 19 organizations (i.e., 58%). Across the

1 11 assessments, 6 materialized into Fleet Charging projects through the pilot with  
2 28 ports being installed. 5 customers applied for either State or Federal funding to  
3 support the purchase of charging stations and/or vehicles. The Company is aware  
4 of 6 electric vehicles being purchased by fleets. The Company anticipates  
5 approximately 10 Electric Mobility Priority Area fleets participating on an annual  
6 basis.

7

8 **Q. What are the Company's projected costs for this service?**

9 A. The Company's projected costs for 2025 are \$139,500, costs for 2026 are \$134,500,  
10 and 2027 are \$134,500. Detailed budget included in Exhibit SO-3: Transportation  
11 Electrification Portfolio Budget.

12

13 **Q. How will the Company recover its costs of the service?**

14 A. The costs of this service will be recovered through base distribution rates. The  
15 Company is proposing that the Electric Fleet Advisory Service remain a zero-cost  
16 service for participating customers. This approach will help lower the barriers fleets  
17 experience when taking initial steps in planning fleet electrification. The Electric  
18 Fleet Advisory Service also supports lead generation for fleets interested in  
19 participating in the Community, Fleet & Transit Pilot. The Company expects to  
20 continue to reevaluate whether there should be a service fee in the future as the  
21 market matures.

22

1        ***C. Registration Incentive***

2

3        **Q.     Please summarize the Company’s proposed Registration Incentive.**

4        A.     The Registration Incentive will offer a one-time incentive to customers that register  
5            their EV with the Company. It is designed to provide the Company with  
6            information regarding the location and usage patterns of customers with EVs, to  
7            assist with future distribution system planning, and to support the Company’s  
8            efforts to directly engage with EV-driving customers on educational topics, such as  
9            load management.

10

11       **Q.     Why is the Company proposing to continue the Registration Incentive?**

12       A.     As of September 2023, there were approximately 10,400 EVs in operation in the  
13            Company’s service territory. As of November 2023, approximately 21% of these  
14            vehicles were registered with the Company. The customer information collected to  
15            date continues to serve as a good foundation, but more responses are needed to  
16            maintain a representative sample and evaluate evolving trends and grid impact over  
17            time as more customers drive EVs. The collected data also helps the Company  
18            identify other customers that exhibit similar electricity consumption behavior and  
19            therefore may also be driving electric, as described further in Exhibit SO-1:  
20            Transportation Electrification Programs Report.

21

22       **Q.     Is the Company proposing any changes to the Registration Incentive?**

1 A. No. Since it has been received well by customers to date and is consistent with other  
2 utility programs, the Company plans to continue offering a \$50 incentive to  
3 customers in the form of a pre-paid debit card or direct bank deposit.

4  
5 **Q. How will customers apply for the Registration Incentive?**

6 A. Customers apply for the Registration Incentive by visiting Duquesne Light's  
7 website and accessing the application link. Applicants must complete the  
8 application and include the required documentation, including proof of electric  
9 vehicle registration.

10

11 **Q. What are the eligibility requirements for the Registration Incentive?**

12 A. The applicant must be a residential or nonresidential customer who owns or leases  
13 an EV. Applications are evaluated to ensure that each vehicle is registered only  
14 once; only one incentive is available per qualified vehicle. Only plug-in EVs, as  
15 identified by the U.S. Environmental Protection Agency and U.S. Department of  
16 Energy's fueleconomy.gov database, qualify.

17

18 **Q. How many customers do you expect to receive the Registration Incentive?**

19 A. The Company projects that customers will claim approximately 5,200 registration  
20 incentives from 2025-2027. This estimate is based EPRI's medium EV adoption  
21 scenario for DLC's service territory and assumes an uptake of 20% of EVs in  
22 operation in 2025, 2026 and 2027.

1 **Q. What are the Company’s projected costs of the Registration Incentive?**

2 A. The Company’s projected costs for 2025 are \$116,029, costs for 2026 are \$136,637,  
3 and 2027 are \$152,760. Detailed budget included in Exhibit SO-3: Transportation  
4 Electrification Portfolio Budget.

5

6 **Q. How will the Company recover its costs of the Registration Incentive?**

7 A. These costs will be recovered through base distribution rates.

8

9 **VII. OTHER TRANSPORTATION ELECTRIFICATION MATTERS**

10

11 **Q. Does the Company’s proposal include other TE aspects related to previous**  
12 **base rates case settlement?**

13 A. Yes. The Settlement in the Company’s previous base rates case deferred resolution  
14 of certain TE Programs issues to this proceeding. These issues are (1) recovery of  
15 Fleet and Transit Charging Pilot rebate costs; and (2) a plan for an EV load  
16 management program. I address each of these issues in this section.

17

18 **Q. What did the 2021 Settlement provide with respect to Fleet and Transit**  
19 **Charging Pilot rebate expenses?**

20 A. In relevant part, the Settlement authorized the Company to invest in expense in the  
21 form of rebates behind the meter. Each rebate provided to a participating customer  
22 will not exceed more than 50 percent (for customers participating in the Fleet

1 program) or 100 percent (for customers participating in the Transit program) of the  
2 customer's contribution for the costs of EV charging stations. The Settlement  
3 provides that "All cost incurred by the Company through the rebates will be  
4 recorded in a regulatory asset. The Company may seek recovery of these costs" in  
5 this base rate case proceeding. Settlement ¶ 57(b).

6

7 **Q. How much expense did the Company incur in Fleet and Transit charging**  
8 **station rebate costs?**

9 A. As of December 31, 2023, the Company incurred \$406,416 of Transit charging  
10 station rebate costs and \$75,181.50 of Fleet charging station rebate costs under this  
11 pilot. The Company projects incurring costs for an additional \$147,745 of Fleet  
12 charging station rebates between January 1, 2024 and December 31, 2024. I address  
13 the Company's proposed treatment of these expenses below.

14

15 **Q. What is the Company's proposal with respect to Fleet and Transit Charging**  
16 **Pilot rebate expenses?**

17 A. The Company is proposing to recover the amount normalized over a three-year  
18 period. Company witness Mr. O'Brien's testimony addresses this in further detail  
19 in his direct testimony, DLC St. No. 8.

20

21 **Q. Please summarize the 2021 Settlement's provisions regarding load**  
22 **management.**

1 A. The Settlement provides at ¶ 57(i) that at the filing of this base rates proceeding,  
2 the Company will provide a non-confidential report describing its load management  
3 programs implemented to date; and plans for the development of additional load  
4 management programs. Approximately six months prior to the issuance of the  
5 report, the Company will convene a collaborative meeting of stakeholders to  
6 discuss the Company's load management initiatives.

7

8 **Q. Did the Company convene a load management collaborative?**

9 A. Yes. On October 31, 2023, the Company held a virtual Load Management  
10 Collaborative working group session. The convening covered a presentation by the  
11 Company on the state of the grid and emerging need for load management  
12 activities, the Company's past and current activities in load management and future  
13 consideration and opportunities for load management.

14

15 **Q. Please summarize the feedback the Company received on its Load  
16 Management Plan presentation.**

17 A. The Company received limited comments and feedback during and after the  
18 stakeholder meeting. During the meeting there was interest in how tax incentives  
19 were factored into the underlying analyses and whether the Company's receipt of  
20 Department of Energy matching grants for grid modernization are reflected in  
21 current rates. Other comments were supportive of price signals as an effective load  
22 management strategy, the recommendation to explore differences between

1 individual EV and fleet owner load management interventions, and curiosity about  
2 whether customer-owned battery storage or Vehicle-to-X will become meaningful  
3 load management solutions.

4

5 **Q. Describe the Company's load management report.**

6 A. The Company submits Exhibit SO-6: Load Management Plan. This report describes  
7 the Company's assessment of the state of its grid, its grid modernization efforts,  
8 projected grid impacts from the effects of transportation and building  
9 electrification, and a roadmap to advance its load management capabilities and  
10 offerings. Finally, this plan addresses the Company's load management programs  
11 implemented to date and plans for the development of additional load management  
12 programs.

13

14 **VIII. CONCLUSION**

15 **Q. Does that conclude your testimony?**

16 A. Yes it does. I reserve the right to supplement my testimony through the course of  
17 this proceeding.



# **Transportation Electrification Portfolio Evaluation and Assessment Report**

**Dated: March 1, 2024**

# Contents

- Introduction ..... 2
- Evaluation and Assessment Overview ..... 2
- Executive Summary ..... 3
- TE Portfolio Summary and Goals ..... 5
- Equitable Apportionment ..... 6
  - Unserved or Underserved Areas ..... 6
  - Urban, Suburban and Rural ..... 8
  - Inside or Outside of the City of Pittsburgh ..... 8
  - Allegheny or Beaver County ..... 9
  - Use Case (Public, Workplace, Multi-Family, Fleet) ..... 9
- Evaluation of Initiatives ..... 10
  - Awareness, Education and Engagement Initiative ..... 10
  - EV Registration Incentive ..... 16
  - Fleet Electrification Advisory Service ..... 22
  - Fleet Charging Pilot ..... 27
  - Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot ..... 41
  - Transit Charging Pilot ..... 57
- Conclusion ..... 66
- Appendix A: Program Informational Materials ..... 67
  - Fleet Electrification Advisory Service Fact Sheet ..... 67
  - Fleet Charging Pilot Fact Sheet ..... 68
  - Fleet Charging Pilot Program Guide ..... 69
  - Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Fact Sheet ..... 70
  - Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Program Guide ..... 71
- Appendix B: AEE Activities List ..... 72
- Appendix C: Electric Mobility for All ..... 84
- Appendix D: Fleet Charging Pilot Customer Application ..... 85
- Appendix E: Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Customer Application ..... 85

## Introduction

Duquesne Light Company (the “Company”) hereby submits this Transportation Electrification (“TE”) Portfolio Evaluation and Assessment Report (“Evaluation Report”) pursuant to the *Joint Petition for Approval of Settlement Stipulation* (“Settlement”), approved in relevant part by the Pennsylvania Public Utility Commission by Order entered December 16, 2021 at Docket No. R-2021-3024750. The Evaluation Report aligns with the Company’s Transportation Electrification Portfolio Evaluation and Assessment Plan (“Evaluation Plan”). The Evaluation Plan was developed by the Company in the first half of 2022 based on the requirements in the Settlement and sent to all parties for review and comment on June 29, 2022. Having received no comments on the draft Evaluation Plan, the Company entered its final Evaluation Plan on August 5, 2022.

The Company’s TE Portfolio consists of the Awareness, Education and Engagement Initiative, the EV Registration Incentive, the Fleet Electrification Advisory Service, the Fleet Charging Pilot, the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, and the Transit Charging Pilot. These programs commenced on January 15, 2022 and run through December 31, 2024. The Evaluation Report covers the period January 15, 2022, through December 31, 2023 and includes reporting on all elements identified in Settlement paragraphs 57(h) and (j). Additionally, the Evaluation Report includes items that are not necessarily direct indicators of the performance of the Company’s current programs but are included to provide additional context.

## Evaluation and Assessment Overview

The Evaluation Report employs the following structure: executive summary, TE Portfolio summary and goals, initiative-by-initiative evaluation methodology and results, and conclusion.

The Executive Summary details major TE portfolio successes, challenges, key findings, and opportunities for improvement. The Executive Summary is followed by a summary of the TE Portfolio and the overarching goals of the Company’s work.

The Company then includes a section describing its efforts to meet the Settlement provision that the charging infrastructure program budgets are equitably apportioned.

Next, the Evaluation Report details an initiative-by-initiative evaluation of the six major TE portfolio components. For each initiative, the Company provides an overview of the initiative, outlines the initiative’s objectives, and details the initiative’s evaluation methodology and evaluation results, including key findings.

Finally, the report includes a conclusion and identifies key recommendations.

## Executive Summary

Between the commencement of the Company's TE portfolio of initiatives on January 15, 2022, and December 31, 2023, the Company has successfully administered its initiatives while learning from its experiences to better serve its customers. The TE portfolio includes 5 initiatives: (i) The Awareness, Education and Engagement Initiative, (ii) the Electric Vehicle Registration Incentive Initiative, (iii) the Fleet Electrification Advisory Service, (iv) the Fleet Electrification Advisory Service, and (v) the Transit Charging Pilot.

The Awareness, Education and Engagement Initiative has provided support for customers to make informed decisions about fueling vehicles with electricity and installing charging infrastructure. As a result of its efforts, the Company has seen increasing customer familiarity with electric vehicles ("EVs"). The Company hosted 6 events in 2022 and 13 in 2023 and has seen over 30,000 views of the Company's online EV Guide each year. The Company has also played an active role in more than 60 events to date that have helped establish its role as a trusted partner on electric transportation and charging infrastructure for municipalities, school districts, commercial customers, residential customers, and disadvantaged communities.

The Electric Vehicle Registration Incentive Initiative has played a valuable role in helping the Company to identify where EV customers are located in its service territory and to engage with those customers. Approximately 20% of all EVs registered in the Company's service territory have received the EV Registration Incentive, representing customers across the entire geography. The Company has used the information it has gained from the EV Registration Incentive to analyze how EV adoption impacts customers' electric usage, evaluate customer impact on the Company's system peak and the effectiveness of its EV time-of-use supply rate, and to proactively identify other likely EV drivers. The Company has also used this information to help inform its EV load growth forecasts and incorporated that information into its prioritization of its Long-Term Infrastructure Improvement Plan.

The Fleet Electrification Advisory Service has helped 19 commercial customers to date make informed decisions as they consider adopting EVs in their fleet by providing personalized vehicle and charging infrastructure planning and analysis support for public and private fleet customers. Over 1,600 vehicles have been evaluated across these customers' fleets, and the Company has helped identify opportunities for over \$18 million in customer savings and over 56,000 metric tons of greenhouse gas emissions reductions.

The Fleet Charging Pilot has supported customers to install charging stations at their facilities to enable them to adopt EVs for their fleets. Eight (8) projects have been completed as part of this initiative to date. The Company has supported customers as they address fleet electrification challenges including vehicle availability and diversity of options for fleet use, buy-in from organization leadership, and timing constraints related to organizations' capital project funding schedules. This initiative has succeeded in deploying 38 charging ports to date and helping customers deploy the first electric school buses and some of the first electric police vehicles in Western Pennsylvania.

The Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot has supported the deployment of Level 2 and DC fast charging stations throughout the Company's service territory. Twenty-one (21) projects have been completed as part of this initiative to date, with station hosts including municipal parking lots, multi-unit dwellings, workplaces, and residential neighborhood

curbsides. Through its deployment of 160 charging ports, the initiative has increased the availability of public charging infrastructure, including in disadvantaged communities.

The Transit Charging Pilot has enabled the deployment of electric transit buses by supporting the installation of DC fast charging stations at PRT's East Liberty Garage. The initiative has resulted in the installation of 6 charging stations that have supported the deployment of 8 battery electric transit buses primarily serving communities in Allegheny County that are disadvantaged communities according to PRT's equity index<sup>1</sup>. The deployment of these stations and the lessons learned from the deployment of the electric buses have helped lay the foundation of Pittsburgh Regional Transit's ("PRT," formerly known as the Port Authority of Allegheny County) plans to operate exclusively with zero-emission vehicles by 2045.<sup>2</sup>

Throughout its entire TE portfolio, the Company has equitably apportioned its efforts so that they benefit customers across geographic and socioeconomic lines. The Company has hosted several Awareness, Education and Engagement ("AEE") events specifically aimed at engaging with low-income communities to both provide information and resources and better understand the unique needs and perspectives of such communities as it relates to electric mobility. Through the Fleet Charging Pilot and the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company has significantly increased the availability of public charging in disadvantaged communities in its service territory, with nearly 1 out of every 3 projects located in or serving disadvantaged communities. Finally, the Transit Charging Pilot has enabled PRT to operate zero-emission buses in disadvantaged communities through Allegheny County, reducing air and noise pollution that disproportionately impact disadvantaged communities.

---

<sup>1</sup> American Public Transportation Association, *Equity Index of Mobility Need*, <https://www.apta.com/wp-content/uploads/Equity-Index-of-Mobility-Need-Port-Authority-of-Allegheny-County.pdf>

<sup>2</sup> Pittsburgh Regional Transit, *Going Green*, <https://www.rideprt.org/inside-Pittsburgh-Regional-Transit/community-involvement/going-green>

## TE Portfolio Summary and Goals

The Company’s TE Portfolio consists of 6 major initiatives that can be broadly grouped into 2 sub-portfolios: the Customer Portfolio and the Charging Infrastructure Portfolio. The Company’s Customer Portfolio comprises 3 programs designed to increase customer knowledge of transportation electrification and allow the Company to engage customers more effectively. These programs include the Awareness, Education and Engagement Initiative, the EV Registration Incentive, and the Fleet Electrification Advisory Service. The Company’s Charging Infrastructure Portfolio comprises 3 programs intended to increase the number of EV charging stations in the Company’s service territory, as a means of facilitating the EV market. These programs are the Fleet Charging Pilot, the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, and the Transit Charging Pilot. These 6 initiatives are summarized in Table 1.

Table 1.– The Company’s TE Portfolio

Component	Description
<b>Charging Infrastructure Portfolio</b>	
Fleet Charging Pilot	DLC installs and covers the cost of installing electrical make-ready from the power grid up to the charging station for qualified fleet projects. Additionally, DLC rebates up to 50% of the charging station cost.
Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot	DLC installs and covers the cost of installing electrical make-ready from the power grid up to the charging station for qualified public, workplace, or multi-unit dwelling projects. Projects located in an Environmental Justice Area and serving a disadvantaged community may be eligible for a rebate on the charging station cost.
Transit Charging Pilot	DLC installs and covers the cost of installing electrical make-ready from the power grid up to the charging station for qualified transit projects. Additionally, DLC rebates up to 100% of the charging station cost.
<b>Customer Portfolio</b>	
Awareness, Education and Engagement Initiative	Support for customers to make informed decisions about fueling vehicles with electricity.
EV Registration Incentive	\$50 one-time registration incentive for customers who own or lease an EV.
Fleet Electrification Advisory Service	Vehicle and charging infrastructure planning and analysis support for public and private fleet customers.

TE market trends demonstrate that there is a need and benefit for utility planning and investment in infrastructure and programs. The goal of the Company’s TE Portfolio is to increase utilization of and equitable access to safe and reliable electric transportation fuel in the Company’s service territory. The key objectives of the TE Portfolio are:

1. Maximize the benefits of transportation electrification for customers and communities by evaluating the impacts that EVs have on the electric grid, informing the Company's distribution system planning, and advancing our ability to serve our customers' evolving needs;
2. Serve as a trusted advisor to customers to help them transition to an electrified transportation environment; and
3. Leverage learnings from the Company's 2019 EV ChargeUp Pilot and the Company's unique position to mitigate market obstacles through new products and services.

## Equitable Apportionment

Throughout the Company's TE Portfolio, it has made efforts to equitably apportion the benefits across its service territory. In this section the Company describes its efforts towards equitable apportionment of TE Portfolio's initiative.

The Company has evaluated equitable apportionment from a range of factors including:

- Unserved or underserved area;
- Urban, suburban and rural;
- Inside or outside of the City of Pittsburgh;
- County (Allegheny or Beaver); and
- Use case (public, workplace, multi-family, fleet).

In this Evaluation Report, the Company explains each factor used in assessing equitable apportionment, and how the corresponding data were assessed.

Additionally, the Company describes:

- Awareness, outreach and recruiting efforts for these programs to achieve equitable apportionment.
- Successes and challenges with achieving equitable apportionment.
- Lessons learned and recommendations for future efforts.

## Unserved or Underserved Areas

Throughout the implementation of its TE Portfolio of initiatives, the Company has made efforts to ensure that the benefits of its programs were shared with unserved or underserved communities (hereafter referred to as disadvantaged communities). Communities were identified as disadvantaged by assessing a variety of factors, including demographics such as household income and racial composition, exposure to environmental pollution, residents' health outcomes, etc. In its AEE initiative, the Company has undertaken numerous activities to specifically engage residents of such communities with electric vehicle information. Many of the Company's AEE activities were hosted for or in disadvantaged communities, including but not limited to the POGOHO Wheels and Wellness event, the Congress of Neighboring Communities ("CONNECT") EVs in Action Tour, the National Electric Vehicle Infrastructure ("NEVI") Community Engagement Session, and a series of Community Meetings held in disadvantaged communities. The Community Meetings were held as part of a months-long engagement that the Company undertook with a community development consultant to better understand the unique needs of disadvantaged communities with regards to electric mobility. The work has guided the Company's

continued engagement with disadvantaged communities, helping to build strong relationships and position the Company as a trusted partner. As part of that continued engagement, the Company has undertaken a focused engagement with 4 disadvantaged communities in its service territory in which it met frequently with community leaders including municipality staff, borough managers, community development corporation directors, and city council members to answer questions, provide information, and address concerns around EVs and available funding sources. The Company has incorporated common concerns and questions into its ongoing AEE planning process to better support disadvantaged communities.

Additionally, the Company has updated the EV Guide on its website to include used vehicles. Because EVs are still a relatively new product, the used market is relatively small compared to that for gas vehicles. Because of their lower up-front prices, used EVs are more accessible to low-income customers and disadvantaged communities than new vehicles. By highlighting the average sales prices of used EVs on the EV Guide, the Company is making it easier for low-income customers to assess the cost of EV ownership and expanding access to EVs for those customers.

To help make the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot more accessible to organizations in disadvantaged communities, the Company has offered a rebate to qualified customers serving Environmental Justice Areas (“EJAs”), as defined by communities where at least 20% of residents earn below the federal poverty line or where 30% of residents identify as a non-white minority, to help offset the cost of charging stations for projects that serve low-income communities or otherwise disadvantaged communities. Table 51 and Table 52 in the “*Charging Station Rebates Issued*” section of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Evaluation show the number of EJA Rebates that the Company has provided, along with their dollar value. Seven (7) of the projects (33.3%) built through the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot have been built in EJ Areas. This exceeds the Company’s stated goal of 25% of projects serving or sited within disadvantaged communities. Similarly, 2 of the projects (25%) build through the Fleet Charging Pilot have been built in EJ Areas. Additionally, the Company’s commitment to equitable apportionment of its projects is reflected in its dollar spend, as 37.7% (\$437,217) of its spending on EV charging station infrastructure through the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot and 24.5% (\$96,060) of its spending on EV charging station infrastructure through the Fleet Charging Pilot has been in such disadvantaged communities.

During the administration of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot and the Fleet Charging Pilot, the Company has found that projects with organizations in disadvantaged communities require an extra level of technical support and personalized assistance, especially for the pursuit of outside funding opportunities. This specialized partnership with such customers has helped the Company to better understand the needs of such communities and better support them to assess the benefits of and opportunities around EVs, access funding, and generate community buy-in. For example, the Company has begun identifying and discussing relevant funding sources earlier in the process for disadvantaged communities and utilized the Company’s experience to help them apply for those funds as early as possible, dedicating considerable time to support those applications. The Company has also engaged extensively with municipal and community leaders to assess potential sites for EV charging, discuss critical financial considerations, and communicate key considerations for managing EV charging stations.

Through the Transit Charging Pilot, the Company has made zero-emission vehicles accessible to communities with low car ownership and helped to reduce air pollution in over-burdened communities. Routes served by the electric buses traverse communities with high equity indexes (which indicates communities with high percentages of low-income households, persons with disabilities, minority populations, low vehicle ownership, etc.), indicating that they are disadvantaged communities. These communities include the City of Pittsburgh's Hill District, Garfield, East Liberty, Larimer, and Homewood communities, as well as the Borough of Wilkinsburg.

## Urban, Suburban and Rural

Throughout the implementation of its TE Portfolio of initiatives, the Company has made efforts to ensure that the benefits of its programs were shared across urban, suburban, and rural communities. While a significant majority of the Company's service territory is considered urban or suburban, the Company completed 1 Fleet Charging project in a census-designated rural area,<sup>3</sup> as well as 5 in suburban communities and 2 in urban communities. The Company's Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot included 1 rural project, 11 suburban projects and 9 urban projects, with its budget allocated similarly (see Pilot Budget in the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Evaluation). The Company has participated in AEE events with each community type, for example engaging with rural audiences at the North Hills Council of Governments Vendor Show and the Beaver County Council of Governments Conference, suburban audiences at Mt. Lebanon Earth Day and the Penn Hills Community Meeting, and with urban audiences at POGOH Wheels and Wellness and the NEVI Community Engagement Session. Many other events engaged audiences across geographies, including the widely attended Electric Fleet Expo and virtual events such as the Electric School Bus Webinar series.

## Inside or Outside of the City of Pittsburgh

Throughout the implementation of its TE Portfolio of initiatives, the Company has made efforts to ensure that the benefits of its programs were experienced both inside and outside of the City of Pittsburgh. The Company has estimated that 93% of Allegheny County residents and 89% of Beaver County residents live in its service territory, yielding a total service territory population of 1,290,181<sup>4</sup>. With a population of 302,905 entirely located in the Company's service territory, the City of Pittsburgh comprises 23.2% of the Company's service territory population.

In its AEE initiative, the Company participated in 28 events held in the City of Pittsburgh, 26 events held outside of the City of Pittsburgh, and 16 events held virtually. While a majority of the EV Registration Incentives were offered to customers with Pittsburgh mailing addresses, many of those customers live outside of the City of Pittsburgh borders, and 8 of the 10 most common zip codes for registrants fell outside of the City limits. Across the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot and the Fleet Charging Pilot, 6 projects were completed in the City of Pittsburgh while 23 were completed outside. While all of the ports built in the Transit Charging Pilot were located in the City of Pittsburgh, the bus routes served by the electric buses

---

<sup>3</sup> U.S. Census Bureau Geography Division, *TIGERweb*, <https://tigerweb.geo.census.gov/tigerweb/>

<sup>4</sup> United States Census Bureau, *2022: ACS 1-Year Estimates Subject Tables*, [https://data.census.gov/table/ACSST1Y2022.S0101?q=United+States&g=050XX00US42003,42007\\_160XX00US4261000](https://data.census.gov/table/ACSST1Y2022.S0101?q=United+States&g=050XX00US42003,42007_160XX00US4261000).

that those ports enabled spanned a wide geography including communities outside of the City of Pittsburgh such as Wilkinsburg, Carnegie, Braddock, etc.

## Allegheny or Beaver County

Throughout the implementation of its TE Portfolio of initiatives, the Company has made efforts to ensure that the benefits of its programs were experienced in both Allegheny and Beaver County. To accurately assess the Company's apportionment of its initiatives between the two counties, the size of each must be considered. Based on Company estimates, Allegheny County has approximately 1.1 million residents within its service territory while Beaver County has less than 150,000<sup>5</sup>, meaning that Beaver County holds just 11.3% of the Company service territory's population.

In its AEE initiative, the Company participated in 49 events held in Allegheny County, 4 events held in Beaver County, and 16 events held virtually. This implies that 29.0% of these events were accessible for Beaver County residents which is greater than the portion of the population living in Beaver County.

Of the 1,156 EV Registration Incentive participants, 78 (6.7%) live in Beaver County while 1,077 (93.3%) live in Allegheny County. However, Allegheny County has 9,617 EVs registered within its borders (7.8 per thousand residents) while Beaver County has 597 EVs registered within its borders (3.6 per thousand residents)<sup>6</sup>. As such, while just 5.6% of EVs in the Company's territory are registered in Beaver County, 6.7% of the EV Registration Incentives have been claimed by Beaver County residents.

Across the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot and the Fleet Charging Pilot, 2 projects (6.9%) were completed in Beaver County while 27 projects (93.1%) were completed in Allegheny County. Additionally, there are several projects in the pipeline in Beaver County to be completed in 2024. As such, the Company's charging projects have been distributed in close alignment with the overall population distribution between the two counties.

The Company continues to build on its AEE and EV Registration Incentive efforts in Beaver County. Within Beaver County, the Company has partnered on events with the Beaver County Chamber of Commerce, Beaver County Regional Council of Governments, and RiverWise to reach new residential, business, school district, and local government audiences in those areas on electric mobility topics.

## Use Case (Public, Workplace, Multi-Family, Fleet)

Throughout the implementation of its TE Portfolio of initiatives, the Company has made efforts to ensure that the benefits of its programs were experienced across use cases. In the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company has built 43 public charging stations across 11 projects, 20 multi-unit dwelling charging stations across 5 projects and 20 workplace charging stations across 5 projects. In the Fleet Charging Pilot, the Company has

---

<sup>5</sup> United States Census Bureau, 2022: *ACS 1-Year Estimates Subject Tables*, [https://data.census.gov/table/ACSST1Y2022.S0101?q=United+States&g=050XX00US42003,42007\\_160XX00US4261000](https://data.census.gov/table/ACSST1Y2022.S0101?q=United+States&g=050XX00US42003,42007_160XX00US4261000).

<sup>6</sup> PA Department of Transportation, *Electric Vehicle Registrations*, <https://pennshare.maps.arcgis.com/apps/instant/sidebar/index.html?appid=0a3fa176cbb544638b87336b87b89853>.

built 19 charging stations across 8 projects. Additionally, the Company has engaged with stakeholders from each use case as part of its AEE initiative as detailed in Appendix B: AEE Activities List.

## Evaluation of Initiatives

### Awareness, Education and Engagement Initiative

#### Initiative Summary

Through its AEE initiative, the Company aims to increase customer awareness and adoption of EVs and charging infrastructure. The Company provides online educational resources for customers and holds and participates in-person and virtual events to educate customers about EVs and EV charging.

Although a range of factors will ultimately inform a customer's decision-making about purchasing an EV or installing charging infrastructure, the Company aims to be a trusted source for high-quality, unbiased information that can help customers evaluate electric transportation fuel.

Due to the often-difficult nature of assessing the direct impact of AEE activities, the Company relies on surveys of customer attitudes about EVs, along with feedback on Company-resources when possible.

#### Key Objectives

- Increase customer awareness of EVs and EV charging.
- Increase customer likelihood of EV adoption.
- Increase customer awareness of publicly available incentives for EVs and EV charging.
- Be viewed as a trusted partner for our customers seeking information about EVs.
- Identify barriers that impede EV adoption among customers.

#### Evaluation Methodology and Data Sources

##### *Evaluation Methodology*

The evaluation of the AEE initiative consists of the following components:

- A description of AEE activities undertaken, including the target audience, channel, and results by year.
- A budget breakdown by major categories by year.
- A description of activities that were targeted toward low-income customers by year.
- A summary of annual customer EV survey results, including customer familiarity with EVs, likelihood of adoption, and adoption concerns.
- A description of key takeaways from customer feedback on Company-provided resources and events.

##### *Data Sources*

The data sources used for the evaluation of the AEE initiative include:

- Customer surveys and feedback

The Company surveys its residential customers annually to understand and track their familiarity and interest in EVs, as well as how they utilize Company-provided resources. The Company also surveyed commercial customers who participated in its charging infrastructure programs to glean additional qualitative insights about the program processes and impacts. The Company sought continual feedback from customer participants to ensure customer satisfaction.

- Program materials, data, and tracking systems

The Company has shared and evaluated the program materials (see Appendix A: Program Informational Materials) it produced to educate customers and disseminate information about its offerings. The Company has also leveraged data from platforms like Google Analytics to report on the usage of program webpages and digital tools.

## Evaluation Results

### *Description of Events*

The Company has hosted, participated in, or sponsored more than 60 AEE activities throughout its service territory. These activities have enabled the Company to serve as a trusted electric vehicle partner to customers and increased customers' familiarity with EVs and EV charging. The Company's efforts have targeted audiences including municipal governments and school districts, commercial customers such as building owners and fleet operators, residential customers, and low-income communities. Additionally, the Company has intentionally worked to ensure that activities are broadly accessible to customers by engaging in activities throughout its service territory's geographic footprint as well as virtually, and by hosting activities that are free of charge to attend.

Table 2 presents a summary of these activities, broken down by audience and event type. A full list of the activities the Company engaged in can be found in Appendix B: AEE Activities List. Each of the Company's target audiences was the audience for at least 5 AEE activities each year, indicating that the Company was successful at reaching a broad swath of customers with its AEE programming. The most common event type was 'Presentations, Workshops, and Speaking Opportunities.' Additionally, the large number of 'Educational Tabling and Vehicle Demonstrations' targeting residential customers aimed to increase that segment's EV familiarity and help the Company to identify and reach more EV-driving customers.

Nearly a quarter of the Company's AEE activities were focused on disadvantaged communities. These activities included a series of community workshops and listening sessions in disadvantaged communities across the Company's service territory, during which residents and stakeholders shared about how electric mobility could benefit their communities. The lessons learned during these sessions helped inform ongoing engagement with disadvantaged communities, including with follow-up workshops for local leaders, educational events for residents, and media interviews to raise awareness around opportunities for disadvantaged communities to benefit from electric mobility.

Table 2.– Summary of AEE Activities

Target Audience	Presentations, Workshops, and	Educational Tabling and Vehicle Demonstrations	Media or Podcast Interviews	Total
-----------------	-------------------------------	--	-----------------------------	-------

<b>Speaking Opportunities</b>				
<b>2022</b>				
Municipal Governments and School Districts	5	0	0	<b>5</b>
Commercial Customers	9	1	2	<b>12</b>
Residential Customers	1	6	0	<b>7</b>
Disadvantaged Communities	2	1	2	<b>5</b>
<b>2023</b>				
Municipal Governments and School Districts	6	2	4	<b>12</b>
Commercial Customers	8	1	1	<b>10</b>
Residential Customers	0	4	3	<b>7</b>
Disadvantaged Communities	3	2	5	<b>10</b>
<b>Total</b>	<b>34</b>	<b>17</b>	<b>17</b>	<b>68</b>

Event Highlights

In May 2023, the Company hosted the region’s first-ever Electric Fleet Expo for more than 200 local fleet operators and sustainability leaders, including a charging station vendor fair, an electric fleet vehicle expo, and six panel discussions tailored to the unique needs of commercial businesses, school districts, and local governments. The event included more than 30 speakers, giving attendees an opportunity to learn from other electric fleet operators and experts on topics such as funding opportunities and charging infrastructure considerations. Additionally, attendees had the opportunity to see more than 20 electric fleet vehicles firsthand, including electric box, refuse, bucket, and pickup trucks, school buses, cargo vans, and SUVs.

In Summer 2022, the Company hosted a two-part webinar series for more than 50 local school districts representatives and other school bus operators in partnership with Southwestern Pennsylvania Commission (“SPC”), Pittsburgh Region Clean Cities (“PRCC”), and the U.S. Environmental Protection Agency (“EPA”). As part of series, attendees learned about planning for electric school buses, considerations for charging infrastructure, and funding opportunities, specifically the EPA Clean School Bus Rebate Program, from the Company, EPA, PRCC, SPC, and several electric school bus manufacturers and service providers.

In both 2022 and 2023, the Company sponsored “Electric Avenue” at the annual Pittsburgh International Auto Show, which included an educational display on public and residential electric vehicle charging and an indoor electric vehicle ride-along track. Over the three-year period, this event was attended by more than 102,000 people and resulted in more than 6,000 EV ride-alongs.

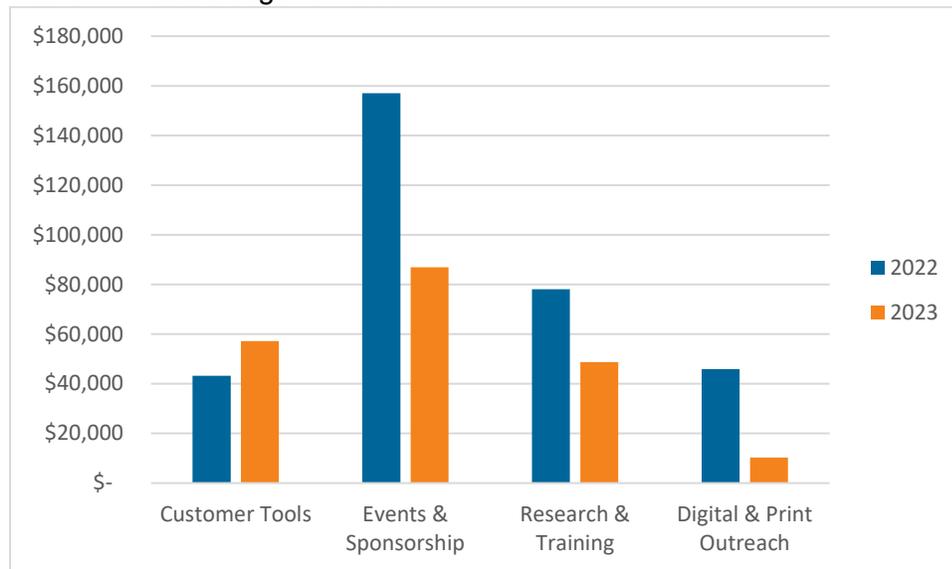
In addition to events, the Company undertook email and advertisement campaigns to raise awareness for EVs and for its programs. In 2022, the Company deployed 9 residential email campaigns with the joint aims of educating non-EV drivers about driving electric and making EV drivers aware of the Company’s EV offerings including the EV Registration Incentive. In 2023, the Company deployed 6 such email campaigns, 2 of which were targeted to residential customers that were identified as likely to own EVs based on modeling performed by the

Company utilizing data from the EV Registration Incentive program (see *EV Registration Incentive’s Role in Reaching EV Driving Customers*) leading to click-to-open rates (CTORs) near 15% compared to an industry benchmark of 6.13%<sup>7</sup>. In 2022, the Company purchased educational advertisements on PRT electric buses that educated riders about EVs and the buses that they were riding on enabled by the Transit Charging Pilot. Additionally, the Company placed advertisements in the published materials at events for which it served as a sponsor that informed participants about different programs depending on the event’s target audience.

**Budget Breakdown**

Table 3 shows the amount that the Company spent on its AEE activities in 2022 and 2023, broken down by category.

Table 3.– AEE Budget Breakdown



**Activities Targeted Toward Low-Income Customers**

The Company has undertaken numerous AEE activities to specifically engage Low-Income customers and disadvantaged communities on electric mobility. Many of the Company’s AEE activities were hosted for or in disadvantaged communities, including but not limited to the POGO Wheels and Wellness event, the Congress of Neighboring Communities (“CONNECT”) EVs in Action Tour, the National Electric Vehicle Infrastructure (“NEVI”) Community Engagement Session, and a series of community meetings held in disadvantaged communities. The community meetings, furthermore, were held as part of a months-long engagement the Company undertook with a community development consultant to better understand the unique needs of low-income and disadvantaged communities with regards to electric mobility. This work included research to understand other utilities’ electric mobility programs for low-income customers, listening sessions to better understand the priorities of different communities in the Company’s service territory, and a phone survey to discern adoption, attitudes, and awareness of electric mobility in those communities. The engagement led to the production of a report

<sup>7</sup> Questline Digital, *2023 Energy Utility Benchmarks Report*, <https://marketing.questline.com/benchmarks-2023>.

entitled ‘Electric Mobility for All’ (see Appendix C: Electric Mobility for All) which has guided the Company’s continued engagement with disadvantaged communities, helping to build strong relationships and enabling the Company to serve as a trusted partner.

The Company has updated its online EV Guide to include used vehicles. Because EVs are still a relatively new product, the used market is relatively small compared to that for gas vehicles. Because of their lower up-front prices, used EVs are more accessible to low-income customers than new vehicles. By highlighting the average sales prices of used EVs on the EV Guide, the Company is making it easier for low-income customers to assess the cost of EV ownership and expanding access to EVs for those customers.

*Key Takeaways from Customer Feedback*

The Company conducted an annual customer survey in Fall 2022 and Fall 2023 to assess the impacts of its AEE activities. The survey was distributed to the Company’s DLC Viewpoint Panel members. Table 4 shows the results of key EV-related survey questions in 2022 and 2023. In general, customers appear to be more familiar with EVs and more aware of the Company’s efforts to encourage EV adoption, provide information about EVs, and offer tools and resources to help them make informed decisions about EVs. Fewer customers have concerns about initial EV price and total cost of ownership, while slightly more customers have concerns about EV range. Slightly fewer customers indicated that they are likely or extremely likely to purchase or lease an EV as their next vehicle. The Company performed further analysis of the survey results to understand that decline and found that the likelihood to purchase an EV is correlated with a customer’s familiarity with EVs, pointing to the importance of AEE activities to overcome negative perceptions of EVs.

Table 4.– Annual Customer EV Survey Results

<b>Metric</b>	<b>2022</b>	<b>2023</b>
Customers who are somewhat or very familiar with EVs	77%	81%
Customers who are likely or extremely likely to purchase or lease an EV as their next vehicle	26%	23%
Customers who note vehicle range as a major factor in their decision to not purchase or lease an EV as their next vehicle	74%	75%
Customers who note initial vehicle price as a major factor in their decision to not purchase or lease an EV as their next vehicle	74%	71%
Customers who note total vehicle cost of ownership as a major factor in their decision to not purchase or lease an EV as their next vehicle	69%	65%
Customers who somewhat or strongly agree that the Company is committed	34%	46%

to encouraging customer adoption of EVs		
Customers who somewhat or strongly agree that the Company is a trusted EV advisor	30%	34%
Customers who somewhat or strongly agree that the Company has the tools and resources to help me make informed decisions about EVs	25%	32%

Table 5.– EV Guide Views

	2022	2023
EV Guide Views	32,689	48,762

Additionally, the Company surveyed attendees of its Electric Fleet Expo event held in May 2023 to understand the value that the event provided and assess ways to improve future events. Overall, attendees that responded to the survey had a very favorable impression, with an average rating of 4.7 out of 5 stars. Respondents highlighted the usefulness of hearing directly from fleet operators about their experiences and lessons learned when beginning the transition to EVs, the value of information about financial models and incentives, and the opportunity to meet and speak with other people with similar experiences and challenges as key aspects of the event that they appreciated. On the other hand, respondents expressed desire for more vehicles, especially heavy-duty models, to have been included in the expo for demonstrations and test drives.

**Key Findings**

As part of its Transportation Electrification Portfolio Evaluation and Assessment Plan from August 2022, the Company established Key Performance Indicators (“KPIs”) by which to judge the success of its Awareness, Education and Engagement Initiative. Table 6 depicts the KPI targets alongside the Company’s actual results.

In 2022, the Company achieved all its AEE Initiative goals. In 2023, the Company achieved all its AEE Initiative goals except for the ‘Customer likelihood to purchase an EV,’ the reasons for which are discussed in *Key Takeaways from Customer Feedback*.

Table 6.– Awareness, Education and Engagement Key Performance Indicators

KPI	2022 Target	2022 Actual	2023 Target	2023 Actual	2024 Target	2024 Actual
Customer familiarity of EVs	65%	77%	68%	81%	71%	TBD
Customer likelihood to purchase an EV	23%	26%	24%	23%	25%	TBD
Events Held (virtual and in-person)	4	6	6	13	6	TBD

EV Guide Annual Views	28,000	32,689	30,000	48,762	32,000	TBD
-----------------------	--------	--------	--------	--------	--------	-----

Note: Green indicates that a KPI achieved its target, Yellow indicates that a KPI was within 75% of its target, and Red indicates that KPI was at less than 75% of its targeted level.

## EV Registration Incentive

### Initiative Summary

The Company's EV Registration Incentive enables the Company to know where EV customers live in its service territory and helps the Company to communicate with those customers. The survey that customers complete when claiming the registration incentive provides the Company with additional information about EV driving customers, including when they charge their vehicles and the type of charging they have in their home. This information has helped with grid planning and provided a deeper understanding of customer charging behavior.

### Key Objectives

- Identify EV driving customers in the Company's service territory.
- Use EV registration incentive data to help communicate with EV-driving customers.
- Use EV registration incentive data to inform grid planning.

### Evaluation Methodology and Data Sources

#### Evaluation Methodology

The evaluation of the EV Registration Incentive consists of the following components:

- A report on the number of EV registration incentives claimed, including by year, Federal Poverty Level ("FPL") ranges (based on voluntary customer responses), confirmed low-income, and CAP customers.
- A report with aggregated information about registration incentive recipients, including geographic area, and zip code; and based on customer self-reporting, the time-of-day customers charge and the type of home charging they have (Level 1 or Level 2).
- A report on customer feedback about the EV registration incentive, as data is available.
- A description of how EV registration data enabled the Company to reach EV driving customers.
- A description of how EV registration data helped to inform the Company's grid planning efforts.

#### Data Sources

The data sources used for the evaluation of the EV Registration Incentive include:

- Customer surveys and interviews

To assist with the evaluation, the Company has surveyed its customers, including residential customers, to understand how they have utilized Company provided resources such as the EV Registration Incentive and garner their feedback.

- Program materials, data, and tracking systems

The Company has used information from the EV Registration Incentive’s administration to inform analysis regarding the incentive’s uptake as described above.

## Evaluation Results

### *EV Registration Incentive Participation*

The Company first began offering the EV Registration Incentive in 2019. Prior to the current reporting period beginning in 2022, 1,002 customers had claimed the EV Registration Incentive. Between January 1<sup>st</sup>, 2022, and December 31, 2023, 1,156 customers claimed the EV Registration Incentive. As shown in Table 7, 642 customers claimed the EV Registration Incentive in 2022 and 514 customers claimed the EV Registration Incentive in 2023. In February and September of 2022, the Company undertook email campaigns to spread awareness of the EV Registration Incentive, resulting in significant increases in uptake during those months. In August 2023, the Company undertook a targeted email campaign, reaching out to those customers that were identified as most likely to own an EV based on analysis performed by the Company (see *EV Registration Incentive’s Role in Reaching EV Driving Customers*) leading to CTORs near 15%.

Table 7.– EV Registration Incentives Claimed by Year

Year	EV Registration Incentives Claimed
2022	642
2023	514
<b>Total</b>	<b>1,156</b>

When registering for the EV Registration Incentive, customers are given the opportunity to self-report their household size and income, data which can be used to calculate the household’s Federal Poverty Level (FPL) range. Because the data were self-reported, some customers left one or both fields blank. When calculating FPL these customers were considered to have not reported. Additionally, data cleaning was performed to analyze the self-reported data, for example by removing data with apparent errors (e.g., household sizes greater than 30).

Table 8 shows the number of EV Registration Incentives claimed by FPL ranges. Overall, 11 customers with household incomes below 100% of the FPL and 29 customers with household incomes between 100% and 200% of the FPL claimed the EV Registration Incentive. Of the 1,156 customers who received EV Registration Incentives during the reporting period, 648 did not report the data needed to calculate FPL range.

Table 8.– EV Registration Incentives Claimed by Federal Poverty Level Ranges

Federal Poverty Level Range	EV Registration Incentives Claimed		
	2022	2023	Total
< 50%	3	5	<b>8</b>
51-100%	2	1	<b>3</b>
100-150%	1	8	<b>9</b>
151-200%	3	13	<b>16</b>
200-250%	3	10	<b>13</b>

251-300%	2	12	<b>14</b>
> 300%	154	291	<b>445</b>
Not Reported	474	174	<b>648</b>
<b>Total</b>	<b>642</b>	<b>514</b>	<b>1,156</b>

The Company compared the list of customers who received the EV Registration Incentive to lists of customers who are enrolled in the Customer Assistance Program (CAP) or have been confirmed to be Low-Income but do not participate in CAP. While no customers who received the EV Registration Incentive were identified to be actively enrolled in CAP as of December 31, 2023, 5 customers who received the EV Registration Incentive were identified to be Low-Income but not enrolled in CAP.

Table 9.– EV Registration Incentives Claimed by Confirmed Low-Income or CAP Customers

<b>EV Registration Incentives Claimed</b>	
Confirmed Low-Income	5
CAP Customers	0
<b>Total</b>	<b>5</b>

*EV Registration Incentive Customer Details*

Table 10 and Table 11 show the 10 most common cities (by mailing address) and zip codes where customers who received the EV Registration Incentive live. By far the most common city is Pittsburgh, with 682 recipients (59.0% of all registrants). However, the Pittsburgh mailing address encompasses a broader geographical footprint than the City of Pittsburgh, including large neighboring communities such as Mt. Lebanon, Penn Hills, Ross Township, Wilkinsburg, and more. Other leading cities in Table 10 include Gibsonia, Sewickley, Coraopolis, Allison Park, Monroeville, Beaver, Baden, McKees Rocks, and Aliquippa – several of which are identified as disadvantaged communities or are in Beaver County. The top zip code for EV Registration Incentive recipients is 15217, in the Squirrel Hill neighborhood of the City of Pittsburgh. Of the top 10 zip codes, however, 8 are located outside of the City of Pittsburgh, including 5 of the top 6.

Table 10.– Top 10 Cities for EV Registration Incentive Uptake

<b>City</b>	<b>EV Registration Incentives Claimed</b>
Pittsburgh	682
Gibsonia	61
Sewickley	58
Coraopolis	54
Allison Park	37
Monroeville	20
Beaver	19

Baden	16
McKees Rocks	16
Aliquippa	14

Table 11.— Top 10 Zip Codes for EV Registration Incentive Uptake

Zip Code	EV Registration Incentives Claimed
15217	82
15044	61
15108	60
15143	59
15237	58
15238	50
15206	41
15228	39
15101	37
15215	37

Figure 1 shows a cluster map of EV Registration Incentive recipients and indicates that many of the 682 registrations listed in Pittsburgh come from surrounding communities. This map also shows that EV Registration Incentive recipients are located throughout the Company’s service territory in Allegheny and Beaver Counties.

Figure 1.— Map of EV Registration Incentives

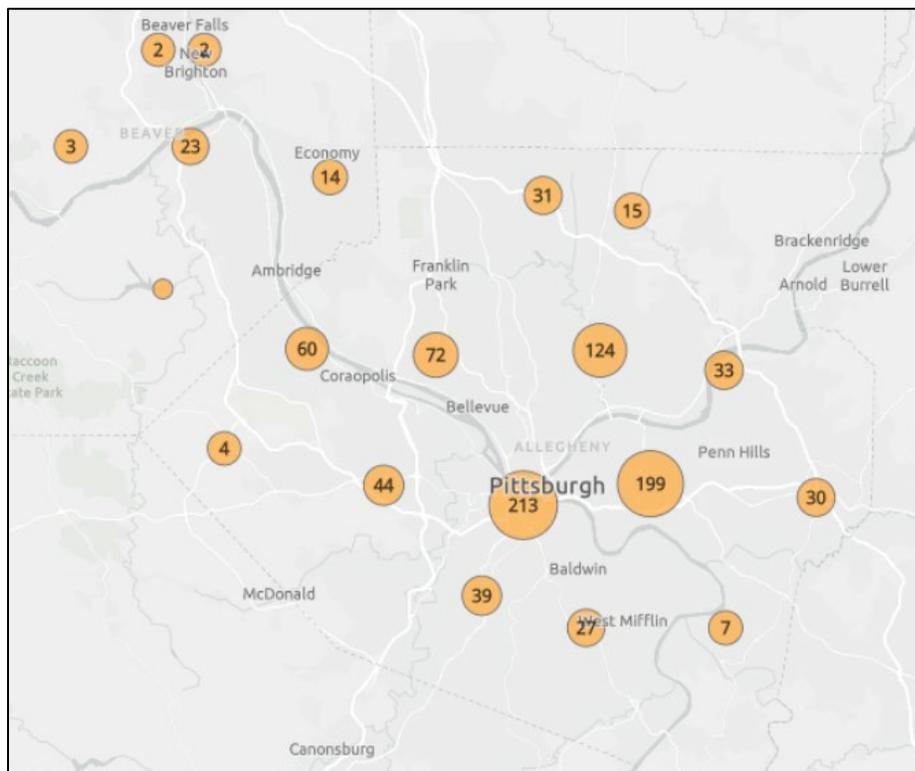


Table 12 shows the time-of-day during which EV Registration recipients charge their vehicles at home if they shared that information. Of the 915 recipients who responded to this question, 816 (89.2%) charge during the evening or at night while less than 100 charge during the morning or afternoon. Slightly more respondents charge at night compared to in the evening.

Table 12.– EV Registration Incentive Uptake by Self-Reported Charging Time-of-Day

<b>Time-of-Day Vehicle is Charged</b>	<b>EV Registration Incentives Claimed</b>
Morning	44
Afternoon	55
Evening	404
Night	412
No Response	241
<b>Total</b>	<b>1,156</b>

Table 13 shows the type of charger that EV Registration recipients use to charge their vehicles at home if they shared that information. Of the 917 recipients who responded to this question, 527 (57.5%) use a faster Level 2 charger while 390 (42.5%) use a slower Level 1 charger.

Table 13.– EV Registration Incentive Uptake by Charging Type

<b>Type of Charger Used at Home</b>	<b>EV Registration Incentives Claimed</b>
Level 1	390
Level 2	527
No Response	239
<b>Total</b>	<b>1,156</b>

### *Customer Feedback*

The Company has not received feedback from customers specifically about the EV Registration Incentive. That said, several customers have inquired about the wait time for receiving the incentive after applying, indicating that there may be some interest in reducing the processing time where possible. Currently, customers receive the incentive within 12 weeks of submitting a complete and eligible application.

### *EV Registration Incentive’s Role in Reaching EV Driving Customers*

The data obtained from the EV Registration Incentive has allowed the Company to identify and communicate with potential EV drivers in its service territory more effectively. Using the meter data from accounts that have received the EV Registration Incentive (and thus have EVs) and those that have separately responded to surveys indicating that they do not have EVs, the Company produced a propensity model to assess each residential customer’s likelihood of owning an EV. Those identified as most likely to own an EV based on their residential load

curves were communicated with to confirm their EV ownership status and inform them of the company’s EV Registration Incentive offering. The associated email campaign saw CTORs of nearly 15%, over double the industry standard for email communications, indicating that the Company’s efforts to identify customers for whom EV messaging is relevant was successful. Additionally, recipients of the EV Registration Incentive were invited to participate in the Company’s survey panel to provide feedback on the EV programs offered by the Company.

*EV Registration Incentive’s Role in Grid Planning Efforts*

The data obtained from the EV Registration Incentive has allowed the Company to incorporate EV ownership into grid analysis and planning efforts. For example, the Company used meter data from customers who had claimed the registration incentive to calculate customers’ additional energy consumption following the purchase of an EV. This helps to inform estimates of the total throughput increases the Company can expect to occur because of EV adoption, helping to increase the accuracy of the Company’s forecast. Additionally, it enabled the Company to produce load curves to better understand when customers were charging their vehicles and generate comparisons of customers enrolled in DLC’s EV WholeHome TOU rate and EV-driving customers who were not enrolled in the rate to assess rate effectiveness at shifting load. Understanding the location of current EV drivers has helped DLC to forecast future adoption and begin to assess the impact of that adoption at the circuit level to help inform grid upgrade planning.

**Key Findings**

As part of its Transportation Electrification Portfolio Evaluation and Assessment Plan from August 2022, the Company established KPIs by which to judge the success of its EV Registration Incentive Initiative. Table 14 depicts the KPI targets alongside the Company’s actual results. In each year, the Company’s goal was for 20% of EVs in the Company’s service territory to have received the incentive. At the end of 2022, 1,644 customers had received the Company’s EV Registration Incentive since the Company first began offering it in 2019. As there were approximately 7,375 EVs in the Company’s service territory at the end of 2022, 23% of EVs in the service territory had received the incentive and so the Company achieved its goal. At the end of 2023, 2,199 customers had received the Company’s EV Registration Incentive since the Company first began offering it in 2019. As there were approximately 11,392 EVs in the Company’s service territory at the end of 2023, 19.3% of EVs in the service territory had received the incentive. While this is slightly below the Company’s target of having 20% of the EVs in its service territory receive the EV Registration Incentive, the processing of registration incentives can take up to three months. As such, it is likely that additional EVs have been identified that are not yet reflected in these numbers.

Table 14.– EV Registration Incentive Key Performance Indicators

KPI	2022 Target	2022 Actual	2023 Target	2023 Actual	2024 Target	2024 Actual
Incentives issued	20% of EVs in Company’s service territory	23%	20% EVs in Company’s service territory	19%	20% EVs in Company’s service territory	TBD

*Note: Green indicates that a KPI achieved its target, Yellow indicates that a KPI was within 75% of its target, and Red indicates that KPI was at less than 75% of its targeted level.*

## Fleet Electrification Advisory Service

### Initiative Summary

The Company's Fleet Electrification Advisory Service provides customers with information to make the transition to EVs. The service helps the Company understand customers' emerging electricity needs for their fleet and allows the Company to provide technical assistance to customers, including, reducing customer barriers to participating in the Fleet Charging Pilot.

### Key Objectives

- Increase fleet customer awareness of cost-effective EV options.
- Increase the number of electric vehicles deployed by fleets.
- Help customers understand the total cost-of-ownership impacts from converting to electric.
- Help customers understand other impacts (environmental, operational) from converting.
- Deepen Company knowledge of the operational considerations and impacts as fleets convert to electric.

### Evaluation Methodology and Data Sources

#### *Evaluation Methodology*

The evaluation of the Fleet Electrification Advisory Service consists of the following components:

- A report on the number of customers participating by year, including the type of entity and customer class.
- A report on the number of fleet vehicles evaluated and vehicles identified as cost-effective to deploy as electric, including by the type of entity.
- A report on the estimated total cost of ownership savings by type of entity.
- A report on the estimated GHG savings from fleet conversions by type of entity.
- A report, to the extent known, on the number of EVs deployed by customers after participating in the advisory service.
- A report on the challenges, including operational and financial, customers faced when considering converting to electric vehicles.
- A description of key takeaways from discussions with customers about program processes and outcomes.
- A description of changes made to the fleet electrification advisory service process and deliverables during the pilot.
- A budget breakdown by major categories by year.

#### *Data Sources*

The data sources used for the evaluation of the Fleet Electrification Advisory Service include:

- Customer surveys

To assist with the evaluation, the Company has surveyed customers who participated in its Fleet Electrification Advisory Service to glean additional qualitative and quantitative insights about the program processes and impacts.

- Program materials, data, and tracking systems

The Company has shared and evaluated the program materials (see Appendix A: Program Informational Materials) it produced to educate customers and disseminate information about its offerings. The Company has also used information from the Fleet Electrification Advisory Service’s administration to inform analysis regarding the service’s uptake and outcomes as described above.

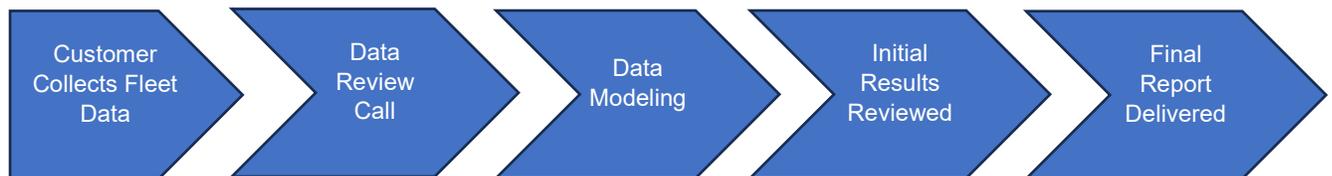
## Evaluation Results

### *Barriers to Fleet Electrification*

Based on information shared by customers during the Fleet Advisory Service, and surveys distributed after participation was complete, the Company identified several common financial and operational challenges that customers faced when considering converting to EVs. These challenges were indicated as their primary motivations for participating in the Fleet Electrification Advisory Service. The most common challenge that participants reported was the up-front purchase cost of EVs relative to their combustion engine counterparts and the difficulty of accessing incentives to offset that cost. The cost to install charging stations was similarly referenced as a challenge. Another common challenge that participants shared was the integration of EV charging into their organization’s operations. Participants cited having difficulty assessing how many charging stations and what level of charging they would need to meet an electric fleet’s charging requirements and the change management of transitioning employees from fueling the vehicles with gasoline to charging the vehicles with electricity. Other operational challenges that participants noted included the need to increase education on EVs within their organization, difficulty finding EVs available for purchase that meet their organization’s functional needs with reasonable wait times, and concerns about EVs’ ability to perform their functions reliably and at the same level as combustion engines. The Fleet Electrification Advisory Service sought to remediate these customer concerns. As discussed further in the “Customer Feedback and Takeaways” section below, customers indicated that the Fleet Electrification Advisory Service aided them in addressing these concerns.

### *Fleet Electrification Advisory Process Overview*

Customer recruitment into the Fleet Electrification Advisory occurred through proactive prospecting undertaken by Company employees and the Company’s AEE Initiative efforts. Customers submitted fleet vehicle data, including make, model, purchase year, average daily mileage, via an Excel spreadsheet. Once customer data had been collected, “kick-off meetings” were held with customers to review their fleet data. After initial data modeling, another meeting was held to present the results of the model to the customer and discuss options for further tailoring the report to the customer’s needs. A final report was produced and delivered to the customer. Upon completion of the advisory service, customers were sent an online survey to provide feedback on the service.



## Fleet Electrification Advisory Service Customer Impacts

### Fleet Electrification Advisory Service Participation

Nineteen (19) organizations have completed the Company's Fleet Electrification Advisory Service, including 3 educational organizations, 1 for-profit organization, 9 government organizations, and 6 non-profit organizations. A breakdown of program participation by year and entity type is included in Table 15.

Table 15.– Fleet Electrification Advisory Service Participation by Type of Entity

Year	Education Organizations	For-Profit Organizations	Government Organizations	Non-Profit Organizations	All Organizations
2022	1	0	3	3	7
2023	2	1	6	3	12
<b>Total</b>	<b>3</b>	<b>1</b>	<b>9</b>	<b>6</b>	<b>19</b>

Across the nineteen participants in the Company's Fleet Electrification Advisory Service, a total of 1,676 fleet vehicles were evaluated for potential electrification. Of these, 1,001 vehicles were identified to be cost-effective to replace as electric, offering total cost of ownership savings of \$18,531,861 and reduction in greenhouse gas emissions of 56,446 metric tons over their operational lifespan. A breakdown of program results by entity type and by year is included in Table 16.

Table 16.– Fleet Electrification Advisory Service Evaluation Results

Type of Entity	Number of Fleet Vehicles Evaluated	Number of Vehicles ID'd as Cost-Effective to Deploy as Electric	Total Cost of Ownership Savings	Estimated GHG Savings from Fleet Conversions (MT)
<b>2022</b>				
Education	136	60	\$604,313	1,656
Government	646	438	\$11,946,472	33,964
Non-Profit	121	70	\$645,305	3,933
<b>2022 Total</b>	<b>903</b>	<b>568</b>	<b>\$13,196,090</b>	<b>39,553</b>
<b>2023</b>				
Education	58	44	\$649,391	3,745
For-Profit	361	219	\$1,181,237	3,552
Government	324	147	\$3,277,857	9,067
Non-Profit	30	23	\$227,286	529
<b>2023 Total</b>	<b>773</b>	<b>433</b>	<b>\$5,335,771</b>	<b>16,893</b>
<b>Program Total</b>	<b>1,676</b>	<b>1,001</b>	<b>\$18,531,861</b>	<b>56,446</b>

An additional 3 fleets are in progress, consisting of 1 business, 1 government/public institution, 1 educational organization, representing an additional 769 vehicles under assessment. The Company intends to support another 12 organizations through the Fleet Electrification Advisory Service in 2024.

### Charging Station and Vehicle Adoption

Participation in the Fleet Electrification Advisory Service has impacted fleet customers' decision to install EV charging infrastructure and purchase EVs. Program participants have installed 22 dual-port charging stations for a total of 44 ports as of December 31, 2023. The Company is aware of participant purchases of 34 EVs within one year of Advisory Service participation, with another 4 expected. Not every participant has shared their vehicle purchases with the Company after participating in the Fleet Electrification Advisory Service, so these figures may not reflect the full number of EVs added to fleets.

The Fleet Electrification Advisory Service has also led to 10 participants applying for additional funding to support electrification at their fleet locations. Customers have applied for and received funding from the Pennsylvania Department of Environmental Protection's Driving PA Forward L2 Rebate Program and Alternative Fuels Incentive Grant program. One customer applied and received funding from Allegheny County Health Department toward the purchase of a heavy-duty vehicle and infrastructure to support it. Participation in the Service gave customers recommendations regarding vehicles of which they did not have prior knowledge and enabled them to apply for funding for vehicles that were not previously in their plan to convert to electric. The Company has provided technical assistance on these grants, helping participants navigate application portals, calculate necessary environmental impact estimates, and prepare the necessary application narratives and other supporting materials.

#### Customer Feedback and Takeaways

After completing the advisory service, each participating customer was asked to complete a survey to help the Company assess the value of the service and the advisory process to help with continuous improvement efforts. The Company received 11 responses to the survey, representing 58% of participants in the advisory service. Through these surveys, the Company identified several common takeaways about the program's process and outcomes. Every participant who completed a survey agreed that the program provided value to their organization and would recommend it to another organization. On a scale from 1 to 10, every respondent ranked their overall experience with the program between a 7 and a 10, with all but 2 ranking it as either a 9 or 10. When discussing benefits of participation in the Fleet Electrification Advisory Service, several participants spoke to the savings that following their report's recommendations would yield for their fleet vehicle total cost of ownership. Other participants highlighted the value of having tangible end products that can be used to guide future electric vehicle purchasing decisions and the value of having tailored federal and state vehicle electrification incentive information.

When discussing how the Service could be improved, one customer noted that the data collection process was time intensive. Another customer suggested that reducing the overall time commitment to the Service and having clearer Service timelines would improve their experience. When asked how the Company could continue to support their fleet electrification efforts, the majority of customer responses requested that they be kept up to date with available funding sources for infrastructure and vehicles.

#### *Program Changes*

The Company and its third-party service provider have continuously made changes to the Services' deliverables and process to improve participants' experience and increase the value provided to them.

To provide participants with insights into charging infrastructure needed to support an electric fleet at their fleet locations, the Company developed a site impact assessment segment of the report which quantifies the charger needs, load impacts, and cost of charger hardware and installation. To better serve smaller fleets, the Company developed an abbreviated report structure that condenses results to cater to fleets with fewer than 10 vehicles.

In response to requests for information on available vehicle models and funding opportunities relevant to fleets, the Company produced “one pagers” and market overviews tailored to specific market segments. Examples included: Shuttle Bus Market Overview including applicable incentives, Municipal Electric Vehicles Fact Sheet, Electric School Bus Fact Sheet, Mobile Charging Overview, MHD Market Availability, and Available State and Federal Funding Opportunities.

The Company has also continuously implemented Fleet Assessment Model Improvements to keep the model up to date with current data. Some improvements included: continuously updating the EV Library, continuously updating available incentives, continuously updating underlying assumptions, such as fuel costs, vehicle and fuel price projections, efficiency projections, EVSE costs, expanding EVSE recommendation options from two to seven options, and incorporating scaled cost assumptions based on network capabilities and output levels.

In addition to the abbreviated report mentioned above, which would reduce time spent on report creation, the Company conducted fleet assessment timeline analyses to identify and correct inefficiencies and reduced all intake and delivery calls from 1.5 hours to 1 hour to reduce the overall timeline from intake to report delivery.

The Company recognizes future service structure changes could be made to improve participants’ experience and better serve customers. Based on the Company’s experience implementing the pilot, customers with smaller fleets, fleets with limited staffing to dedicate to fleet electrification planning, fleets that lack access to detailed fleet operational data, and fleets with uniform vehicle types may benefit from a simpler and more expeditious fleet assessment approach than the one currently offered by the Company. The Company will explore how self-serve or partial self-serve assessment tools could be used by Customers to lower the barrier of entry into electrification planning for such fleets.

*Fleet Electrification Advisory Budget Breakdown*

The Company has spent a total of **\$285,753.99** on the Fleet Electrification Advisory Service, broken down by year as shown in Table 17 **Error! Reference source not found..** These expenditures included hiring with a third-party consulting firm to assist with analysis and reporting of fleet electrification data, an engagement led by the Smart Electric Power Alliance to help utilities prepare for customer fleet electrification, and the purchase of commercial fleet data to help the Company better understand the fleets and range of vehicle types in its service territory.

Table 17.– Fleet Electrification Advisory Service Budget by Year

Year	Dollars Spent
2022	\$165,187.91

Fleet Advisory Third Party Consultant	\$138,487.91
Multi-utility Fleet Electrification Study Engagement	\$25,000
Commercial Fleet Data	\$1,700
<b>2023</b>	<b>\$120,566.08</b>
Fleet Advisory Third Party Consultant	\$120,566.08
<b>Total</b>	<b>\$285,753.99</b>

**Key Findings**

As part of its Transportation Electrification Portfolio Evaluation and Assessment Plan from August 2022, the Company established KPIs by which to judge the success of its Fleet Electrification Advisory Service. Table 18 depicts the KPI targets alongside the Company’s actual results. In 2022, the Company’s goals were to have 12 customers participate in the Fleet Electrification Advisory Service and evaluate 240 vehicles. While the Company fell short of its customer participation goal, with 7 participating customers, it exceeded its vehicles evaluated goal with 903 vehicles evaluated. The Company missed its participation goal in 2022 because of delays that it faced when hiring and training new employees to manage the program during a historically tight labor market.<sup>8</sup> Once an employee was brought on to manage the program, the time required to generate fleet leads and enroll them into the program, and then for customers to collect, organize, and return their fleet data so that a kick off call could be scheduled limited the number of customers that were able to participate. In 2023, the Company’s goals were to have 12 customers participate in the Fleet Electrification Advisory Service and evaluate 240 vehicles. The Company achieved its customer participation goal, with 12 participating customers, and exceeded its vehicles evaluated goal with 773 vehicles evaluated.

Table 18.– Fleet Electrification Advisory Service Key Performance Indicators

KPI	2022 Target	2022 Actual	2023 Target	2023 Actual	2024 Target	2024 Actual
Number of unique customers participating	12	7	12	12	12	TBD
Number of vehicles evaluated	240	903	240	773	240	TBD

Note: Green indicates that a KPI achieved its target, Yellow indicates that a KPI was within 75% of its target, and Red indicates that KPI was at less than 75% of its targeted level.

**Fleet Charging Pilot**

**Initiative Summary**

Fleet owners typically have insufficient information about making the investment in electric vehicles and infrastructure, and do not always have the staff or time to manage a charging installation project. The Company’s Fleet Charging Pilot is designed to help address these issues

<sup>8</sup> Federal Reserve Economic Data, *Unemployment Rate*, <https://fred.stlouisfed.org/series/UNRATE>.

by reducing the cost and project management burden to customers and ultimately increase the charging infrastructure available to fleets. The pilot provides the Company with greater insight into customer challenges with installing fleet charging infrastructure and vehicle operations, along with a better understanding of project costs and electricity usage and load profiles of electric fleets.

### **Key Objectives**

- Increase charging station installations serving fleet vehicles.
- Reduce greenhouse gases and other air pollutant emissions.
- Understand the energy consumption and incremental revenue attributable to charging.
- Determine fleet charging infrastructure needs, including utility costs and charging power levels required to serve fleets.
- Evaluate the cost impacts to the vehicle fleet (to the extent possible).
- Evaluate the charging behavior of fleet customers.
- Better understand how fleet electrification impacts fleet operations.
- Better understand customer barriers to installing charging infrastructure.
- Use charging data to help inform grid planning.

### **Evaluation Methodology and Data Sources**

#### *Evaluation Methodology*

For its evaluation of its Fleet Charging Pilot, the Company has focused its evaluation on two overarching areas: the program process and the program impact. Evaluating the program process has helped identify the successes and challenges with the program design. The impact evaluation has helped assess the degree of success of the program, along with the benefits and costs accrued to participating customers and the Company.

For the process evaluation, the Company includes the following evaluation components:

- A description of the Fleet Charging Pilot project process from customer recruitment through project close-out.
- A report on average/median project timelines for major project milestones.
- A description of key takeaways and feedback from discussions with customers about program processes and outcomes.
- A description of process bottlenecks, changes made throughout the Pilot, and identified opportunities for improvement.
- A description of barriers to program participation by customers.
- A description of known customer challenges after station installation, including with station uptime or maintenance.
- A description of the process and procedures to procure fleet charging pilot-related products and services, including charging station vendor qualification.

For the impact evaluation, the Company includes the following evaluation components:

- Descriptions of the types of fleets that participated, including fleet size, and if the fleet was in or served a disadvantaged community.
- A report on the number of charging stations installed, including by:
  - station type (Level 2 or Direct Current Fast Charging “DCFC”)
  - location
  - customer segment

- year
- census tract
- nine-digit zip code
- A report on charging station usage, including:
  - number of sessions
  - energy (“kWh”) dispensed
  - average number of sessions per day
  - average kWh per charging session
  - charging station utilization (percentage of time the EV is plugged in)
- A report on incremental Company distribution revenues from charging stations, including by:
  - customer segment
  - rate class
- A report on charging station infrastructure installation costs, including by:
  - year
  - average cost per site
  - average cost per port
  - disadvantaged community
- A report on overall Fleet Charging Pilot costs by major categories.
- A report on the charging station rebates issued, including by customer segment.
- An estimate of the environmental impacts from charging station usage, including reductions in GHG emissions and other air pollutants
- EV charging load curves, including size and timing of peak, total program load shape, and average load shape by port.
- A description of how charging data has helped inform grid planning.
- A description of operational impacts to the participating fleets, including costs (to the extent known).
- A description of the potential for changes to the Fleet Charging Pilot.

### *Data Sources*

The data sources used for the evaluation of the Fleet Charging Pilot include:

- Customer surveys
 

The Company has surveyed customers who participated in its charging infrastructure programs to glean additional qualitative insights about the program processes and impacts. The Company sought continual feedback from customer participants to ensure customer satisfaction.
- Program materials, data, and tracking systems
 

The Company has used information from its internal tracking systems to help inform analysis, such as project costs and timelines for key milestones.
- Company advanced metering infrastructure and billing data
 

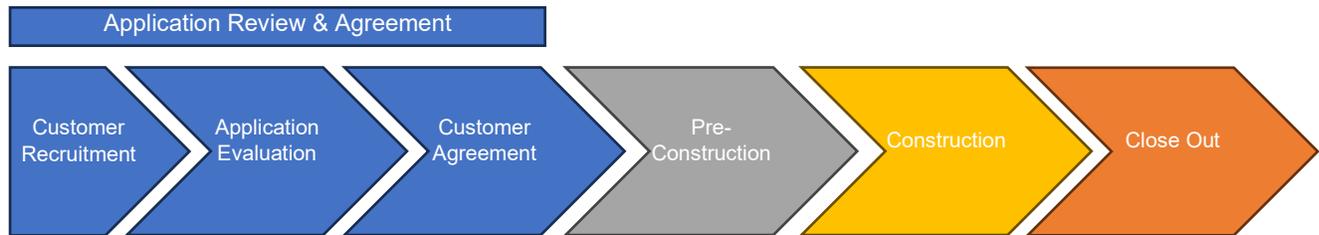
The Company has used advanced metering infrastructure (AMI) and billing data to inform revenue and net project benefit calculations. AMI data has also been used to help validate charging station utilization data.

- Charging station utilization data

Since all stations installed through its charging infrastructure pilots are networked, the Company has collected and analyzed this data to assess station use and produce load curves.

## Evaluation Results

### *Pilot Process Overview*



### Vendor Qualification

The Company issued a Request for Qualification (“RFQ”) for charging station packages to establish the Company’s Qualified Product List (“QPL”). To be eligible for the Company’s QPL, the network providers were required to demonstrate they could provide a reliable and secure network and charging station hardware options, meet certain minimum functionality and safety standards, be responsive to customer needs, and be able to share non-personally identifiable data with the Company in an easily transmittable format. The Company also issued a Request for Proposal (“RFP”) for engineering, procurement, and construction services. The Company issued a contract to a single bidder, covering all projects’ make-ready engineering, procurement, and construction under the pilot.

### Application Review and Agreement

Customer recruitment into the Fleet Charging Pilot occurred through proactive prospecting undertaken by Company employees, the Company’s AEE Initiative efforts, and through customers’ previous participation in the Fleet Advisory Service. Customers also reached out directly to DLC through the pilot webpage. Initial “kick-off meetings” were held with customers and preliminary site evaluations were performed to assess project feasibility. Customers submitted an application (see Appendix D: Fleet Charging Pilot Customer Application) to the Company to formalize their participation in the pilot.

Upon receipt of the customer’s application, a site visit was coordinated between the customer and the Company. The Company then assessed the necessary distribution upgrades, produced a preliminary engineering design study that included approximate costs of the make-ready infrastructure, and performed a station usage projection to inform potential station utilization. Based on the outcomes of this assessment, the Company determined whether to approve or reject the application. If a project was approved, the Company extended a customer agreement and license agreement to the customer. In cases where the customer was eligible for a charging station rebate, the customer agreement included the rebate amount.

### Pre-Construction

Upon execution of the customer agreement by both the customer and the Company, the Company completed the distribution engineering designs and final make-ready engineering designs and

obtained necessary construction permits. For municipal customers, the customer agreement was filed with the PUC. The customer purchased their charging stations.

Construction and Energization

Following pre-construction activities, the Company performed any necessary distribution grid upgrades and installed the electrical make-ready between the power grid and the charging station. Once the Company’s work was complete, the customer installed the charging station equipment. Following a successful inspection, the stations were turned on, commissioned by the customer, and integrated into the Company’s data system.

Project Close Out

A final site walk was held to close out the construction phase of the project. To ensure the safety and reliability of the charging stations and the make-ready infrastructure over the 10-year charging station operation period of the Fleet Charging Pilot, the Company will perform annual inspections of the infrastructure. To ensure customer satisfaction, the Company will also respond to customer-identified issues as they arise and address damages according to the terms of the project’s customer agreement.

*Pilot Process Evaluation*

Project Length

Table 19 shows the average and median length of the major project phases, including application review, pre-construction, and construction. Overall, projects have taken an average of 256 days (8.4 months) and a median of 252 days (8.3 months) from the receipt of an application to the energization of the charging stations. The Company continues to work to shorten this average completion time via the process improvements referenced elsewhere in this report.

Table 19.– Fleet Charging Pilot Project Timeline

<b>Project Phase</b>	<b>Average Length (Days)</b>	<b>Median Length (Days)</b>
Application Review and Agreement	125	121
Pre-Construction	78	65
Construction and Energization	53	35
<b>Total Project</b>	<b>256</b>	<b>252</b>

Process Bottlenecks and Solutions

*Application Review and Agreement*

In the application review and agreement stage, the Company identified and corrected several process bottlenecks throughout the course of pilot administration. One delay in customer recruitment into the Fleet Charging Pilot stemmed from delays in completing their Fleet Advisory Service report, which included infrastructure recommendations. To reduce the delay between Fleet Advisory Service completion and the application submission, the Company worked to shorten turnaround time of reports. The Fleet Charging Pilot also received fewer organic (i.e., customer initiated) leads compared to the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, requiring additional time to research and qualify potential leads in the Company’s service territory.

### *Pre-Construction*

In the pre-construction stage, long turnaround times from external permitting offices responsible for issuing construction permits caused bottlenecks in project timelines. The Company's service territory is highly fragmented, with over 100 local government jurisdictions, making it possible that any given Fleet Charging project is the first such electrical permitting request that a permitting office has seen. As such, the Company worked closely with permitting offices to provide technical assistance and address their questions in a timely manner.

### *Construction and Energization*

In the construction phase, the Company experienced supply chain issues that delayed project construction because of multi-month lead time delays for panel boards, meter sockets, and charging stations. To address this issue, the Company engaged with new vendors to source components with reduced lead times and when applicable was able to purchase two smaller sized panels with shorter lead times than a larger, single panel. When there were customer charging station equipment shipping delays, the Company work to align vendor shipments with construction timelines and proactively plan projects with consideration for product lead times. Some customers have experienced delays in installing and activating the charging stations due to vendor scheduling issues or difficulties working with the vendors' activation process. The Company has engaged with customers and the vendors in these instances to expedite resolution.

### Customer Challenges and Efforts to Address

The Company has identified several barriers to participation faced by fleet customers. Where vehicle availability and diversity of options for fleet use was a barrier, the Company worked with customers to first complete the Fleet Advisory Service to understand their fleet electrification potential, then determine infrastructure that would support the first few years of electrification recommendations in anticipation for an increase in market availability. The Company provided customers with contacts at various OEMs to learn more about vehicle options and held an Electric Vehicle Fleet Expo (see Event Highlights) for fleet customers to learn more about their options and meet with OEMs. Additionally, when a customer was weighing costs to participate in the pilot, they not only factored in charging station costs, but the cost to purchase new vehicles to their fleet. Even with federal and state funding opportunities and the Company's infrastructure support, some customers were unable to move forward due to internal prioritization of projects and/or budgets. In such cases, the Company maintained a follow up cadence to stay abreast of any developments or changes to the customer's timeline. The Company also continued to make customers aware of available state and federal funding and offered technical assistance during the grant writing process. For customers who preferred a slower ramp up to electrification, the Company worked with them to design a mixed used case where charging stations were made available to both the fleet and the public to increase utilization in the first few years.

### Barriers to Participation

When evaluating potential charging station installation sites with customers, the Company found that certain scenarios presented particularly costly make-ready construction when building new services. Such scenarios included customer sites with utilities located underground or within a vault or certain services that are master metered or use a customer-owned substation. The pilot's minimum fleet size requirement was also a barrier to participation for some small fleet customers.

### Potential Changes to Pilot

The Company has identified opportunities for improving the Fleet Charging Pilot. Adjusting the program structure to allow for the provisioning of rebates for make-ready infrastructure installed by the customer directly off their own electrical panel could increase the feasibility of projects where existing site conditions make make-ready infrastructure constructed between the utility service and the charging station prohibitively expensive.

### Customer Feedback

In Fall 2023, the Company surveyed customers who participated in its charging infrastructure programs to glean additional qualitative insights about the program processes and impacts. Two (2) of the Fleet Charging Pilot participants responded to the survey, and both rated their overall experience working with the Company to install EV charging stations as five (5) out of five (5) stars. These customers cited the Company's technical knowledge, effectiveness, funding support, and clear communications as the most beneficial parts of the Fleet Charging Pilot and both indicated that they would recommend the program to peers. Neither of the respondents indicated that they would like to see any changes to the Pilot, though one customer indicated that they would have preferred to have the option of a rebate program as described above. Another customer with national operations described the Company as 'the easiest utility thus far that we have worked with for installing EV charging,' indicating their satisfaction with the design of the Fleet Charging Pilot.

### Post Installation Challenges

Both Fleet Charging Pilot customers who responded to the survey in Fall 2023 indicated that they were 'very satisfied' with the uptime and performance of their stations and did not indicate that they have had any challenges since installing the stations.

### *Pilot Impact*

#### Participant Details

Eight (8) customers have completed participation in the Company's Fleet Charging Pilot. A completed project is defined as one for which the Company has completed all necessary make-ready infrastructure and electricity service has been activated. Several other projects are in progress as of the time of this report. As shown in Table 20, 8 of the completed project participants are government entities while 1 is an education entity. Combined, these customers have fleets totaling 378 vehicles. 2 of the completed project sites (25%) are in a disadvantaged community, as defined by communities where at least 20% of residents earn below the federal poverty line or where 30% of residents identify as a non-white minority. This meets the Company's stated goal of 25% of projects serving or sited within disadvantaged communities.

Table 20 also shows the status of each customer's project as of December 31, 2023. A completed project status of 'Plant in Service' means that the charging stations are online and usable, and the Company's make-ready asset has been placed in use for the purpose of accounting. A completed project status of 'Activated' means that the charging stations are online and usable, but the Company's make-ready asset has not yet been placed in use for the purpose of accounting. A completed project status of 'Installed' means that the charging stations are in place but have not been activated by the network service provider. Finally, a completed project status of 'Energized' means that the make-ready infrastructure has been installed and

electricity service has been activated but the customer has not yet installed their charging stations.

Table 20.– Fleet Charging Pilot Completed Project Participant Details

Participant Number	Entity Type	Fleet Size	Disadvantaged Community?	Completed Project Status
1	Government	78	No	Plant in Service
2	Education	89	No	Plant in Service
3	Government	22	Yes	Plant in Service
4	Government	6	No	Activated
5	Government	37	Yes	Installed
6	Government	14	No	Energized
7	Government	104	No	Installed
8	Government	28	No	Energized
<b>Total</b>		<b>378</b>		

In addition to the projects that have already been completed as part of the Fleet Charging Pilot, the Company anticipates completing additional projects in 2024.

Charging Station Installation

Table 21 through Table 26 show the number of charging stations and ports for Fleet Charging Pilot completed projects broken down by level (i.e., Level 2 or DCFC), county, customer sector, year, census tract, and zip code. In total, completed projects include 19 stations and 38 ports. Three (3) of the stations were dual-port DCFC charging stations, while 16 of them were dual-port Level 2 charging stations. Seventeen (17) of the stations were built in Allegheny County, while 2 of them were built in Beaver County. Three (3) of the stations were built for an education-sector customer, while 16 of them were built for government-sector customers.

Table 21.– Completed Project Fleet Charging Stations and Ports by Level

Station Type	Number of Stations Installed	Number of Ports Installed
Level 2	16	32
DCFC	3	6
<b>Total</b>	<b>19</b>	<b>38</b>

Table 22.– Completed Project Fleet Charging Stations and Ports by County

Station Location	Number of Stations Installed	Number of Ports Installed
Allegheny County	17	34
Beaver County	2	4
<b>Total</b>	<b>19</b>	<b>38</b>

Table 23.– Completed Project Fleet Charging Stations and Ports by Customer Sector

<b>Customer Segment</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
Education	3	6
Government	16	32
<b>Total</b>	<b>19</b>	<b>38</b>

Table 24.– Completed Project Fleet Charging Stations and Ports by Year

<b>Year</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
2022	3	6
2023	16	32
<b>Total</b>	<b>19</b>	<b>38</b>

Table 25.– Completed Project Fleet Charging Stations and Ports by Census Tract

<b>Census Tract</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
4080.01	3	6
4295	2	4
4690	2	4
4883	2	4
4885	3	6
5190	2	4
5467	3	6
6042	2	4
<b>Total</b>	<b>19</b>	<b>38</b>

Table 26.– Completed Project Fleet Charging Stations and Ports by Zip Code

<b>Zip Code</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
15122-1037	3	6
15044-6050	3	6
15003-2377	2	4
15235-4952	2	4
15221-2125	3	6
15122-2902	2	4
15220-3503	2	4
15237-3102	2	4
<b>Total</b>	<b>19</b>	<b>38</b>

Charging Station Usage

Table 27 shows the usage at each charging station built as part of a Fleet Charging Pilot project which has a completed project status of 'Activated' or 'Plant in Service.'<sup>9</sup> To calculate the number of sessions per day and the station utilization, the Company has used the date of the first charging sessions as the 'starting point' to determine the number of days in operation. While Site 4's charging stations have been activated by the customer, they have not yet had any charging sessions and so there are no data associated with their usage. Additionally, the customer's charging station vendor at Site 3 experienced a technical error in September and October 2023 that allowed the charging stations to be used but prevented usage data from being collected. As such, the Site 3 project has likely seen higher than reported usage.

Usage has varied significantly across projects, with a maximum of 3.3 charging sessions per day and a minimum of 0.5. Overall, the projects have seen an average of 2.3 charging sessions per day, resulting in a total utilization of 0.3% (i.e., each port has a vehicle plugged into it 10.3% of the time).

Table 27.– Fleet Charging Station Usage by Site

Site Number	Number of Ports	Number of Sessions	Energy (kWh) Dispensed	Days in Operation	Average Number of Sessions per Day	Average kWh per Charging Session	Charging Station Utilization
1	6	707	17,778	314	2.3	24.8	19.5%
2	4	826	26,189	252	3.3	31.7	2.5%
3	6	82	506	152	0.5	6.2	1.0%
4	4	--	--	--	--	--	--
<b>Total</b>	<b>20</b>	<b>1,625</b>	<b>44,474</b>	<b>718</b>	<b>2.3</b>	<b>27.4</b>	<b>10.3%</b>

#### Incremental Company Distribution Revenue

Table 28 and Table 29 show the distribution revenues from the charging stations built as part of the Fleet Charging Pilot, by customer segment and rate class. Due to an internal Company error, several of the charging stations were billed as GS accounts when first installed, resulting in reduced company revenue relative to their correct rate classes. This error was addressed upon a review of the accounts' monthly peak demands, and the stations were re-assigned to the correct rate classes.

Table 28.– Fleet Charging Pilot Revenue by Customer Class

Customer Segment	Distribution Revenue
Education	\$4,442
Government	\$3,195
<b>Total</b>	<b>\$7,637</b>

Table 29.– Fleet Charging Pilot Revenue by Rate Class

<sup>9</sup> While completed projects with a 'Energized' or 'Installed' status have had all necessary infrastructure completed, the charging stations for those projects are not yet activated and so have no reported usage.

Rate Class	Distribution Revenue
GS	\$1,034
GM < 25	\$813
GM > 25	\$5,790
<b>Total</b>	<b>\$7,637</b>

### Charging Infrastructure Installation Cost

Table 30 shows the cost that the Company incurred to install Fleet Charging Pilot make-ready infrastructure, broken down to show how costs differed across disadvantaged communities and non-disadvantaged communities. Overall, the average cost of make-ready infrastructure at each site was \$48,993, with disadvantaged communities costing slightly less and other areas costing slightly more. The average cost per port was \$10,314. Disadvantaged communities cost slightly less per port than other areas, at \$9,606 versus \$10,567, though the limited sample size of just 8 projects makes it impossible to draw any conclusions about general trends from these results.

Table 30.– Fleet Charging Pilot Completed Project Make-Ready Cost by Disadvantaged Communities

	Number of Sites	Average Cost per Site	Number of Ports	Average Cost per Port	Total Cost of Make-Ready
Disadvantaged Communities	2	\$48,030	10	\$9,606	\$96,060
Other Areas	6	\$49,314	28	\$10,567	\$295,884
<b>Total</b>	<b>8</b>	<b>\$48,993</b>	<b>38</b>	<b>\$10,314</b>	<b>\$391,944</b>

### Costs by Major Categories

Table 31 shows the costs that the Company incurred to install Fleet Charging Pilot make-ready infrastructure, broken down by category and completed project status (as defined in the Participant Details section of the Fleet Charging Pilot evaluation). These costs, and those in Table 30, do not include any costs incurred by the Company to upgrade its distribution system to accommodate the increased load introduced by the chargers as those are outside the scope of the Fleet Charging Pilot. A significant majority of the reported cost was spent on external engineering, materials, and construction, which was performed by a single contractor whose contract awarding process was described as part of the Fleet Charging Evaluations' Pilot Process Overview.

Table 31.– Fleet Charging Pilot Make-Ready Cost by Category and Completed Project Status

Completed Project Status	Category	2022 Projects	2023 Projects	Total
<b>Plant-in-Service</b>	Labor	\$1,1701	\$613	\$3,448
	Materials	\$9,418	\$27,918	\$37,336
	Engineering	\$11,977	\$26,015	\$37,993
	Construction*	\$16,719	\$38,276	\$54,995

	Indirect	\$3,798	\$7,130	\$10,928
	<b>Total</b>	<b>\$43,084</b>	<b>\$99,952</b>	<b>\$143,036</b>
<b>Activated</b>	Labor	---	\$155	\$155
	Materials	---	\$11,121	\$11,121
	Engineering	---	\$12,500	\$12,500
	Construction*	---	\$17,359	\$17,359
	Indirect	---	\$3,393	\$3,393
	<b>Total</b>	<b>---</b>	<b>\$44,527</b>	<b>\$44,527</b>
<b>Installed</b>	Labor	---	\$1,066	\$1,066
	Materials	---	\$47,302	\$47,302
	Engineering	---	\$20,134	\$20,134
	Construction*	---	\$32,496	\$32,496
	Indirect	---	\$3,908	\$3,908
	<b>Total</b>	<b>---</b>	<b>\$104,907</b>	<b>\$104,907</b>
<b>Energized</b>	Labor	---	\$442	\$442
	Materials	---	\$30,236	\$30,236
	Engineering	---	\$25,000	\$25,000
	Construction*	---	\$39,682	\$39,682
	Indirect	---	\$4,114	\$4,114
	<b>Total</b>	<b>---</b>	<b>\$99,474</b>	<b>\$99,474</b>
<b>All Projects</b>	<b>Total</b>	<b>\$43,084</b>	<b>\$348,860</b>	<b>\$391,944</b>

\* Includes all labor, equipment, and incidental costs associated with construction of make-ready infrastructure.

The Company also incurred \$103,542 in costs that are not attributable to specific completed projects, and include work done for projects prior to a customer agreement being executed. That figure includes costs for projects that were completed in 2022 and 2023, are in the pipeline to be completed in 2024, or were not completed.

#### Charging Station Rebates Issued

As part of the Fleet Charging Pilot, the Company offers participating customers a rebate for the charging stations that they are responsible for purchasing. The rebate amount is capped at the lesser of 50% of the customer's cost or \$20,000 per project. Additionally, if the customer receives funding from other incentive programs, the Company limits its rebate to the customer's realized expenses (i.e., a customer cannot receive total rebates greater than their total costs). Seven (7) of the 8 completed projects of the Fleet Charging Pilot have claimed the rebate, and the final project is expected to claim the rebate in 2024. The average value of the claimed rebates was \$10,740. In total, \$75,182 has been granted in rebates across the 38 ports built as part of the Fleet Charging Pilot, equating to \$1,978 per port.

Table 32.– Fleet Charging Rebates Issued by Year

Project Year	Number of Rebates Issued	Average Value per Rebate	Average Number of Ports per Rebate
2022	1	\$11,905	6
2023	6	\$10,546	4.7
<b>Total</b>	<b>7</b>	<b>\$10,740</b>	<b>4.9</b>

Table 33.– Fleet Charging Rebates Issued by Customer Segment

<b>Customer Segment</b>	<b>Number of Rebates Issued</b>	<b>Average Value per Rebate</b>	<b>Average Number of Ports per Rebate</b>
Education	1	\$20,000	6
Government	6	\$9,197	4.7
<b>Total</b>	<b>7</b>	<b>\$10,740</b>	<b>4.9</b>

Charging Station Usage Environmental Impact

Table 34 shows the Fleet Charging Pilot’s environmental impacts based on the electricity usage at the charging stations recorded in Table 27. In total, 77,103 pounds of CO<sub>2</sub> emissions and 127 pounds of NO<sub>x</sub> emissions have been avoided, while SO<sub>2</sub> emissions have slightly increased. However, emissions associated with EVs occur at power plants rather than at vehicles’ tailpipes and as such have a decreased public health impact. The calculations to determine the stations’ environmental impacts were based on typical vehicle electricity and gasoline efficiency, the pollution profile for gasoline use, and the power generation mix of Pennsylvania based on data from the Energy Information Administration (EIA). These numbers are likely conservative, as the Company has reason to believe its local energy generation mix is less polluting than that of Pennsylvania as a whole. Additionally, the energy generation mix in Pennsylvania and the United States continues to become less polluting overall on an annual basis, indicating that the displacement of gasoline usage enabled by these charging stations will have a greater environmental benefit over time.

Table 34.– Fleet Charging Pilot Environmental Impacts

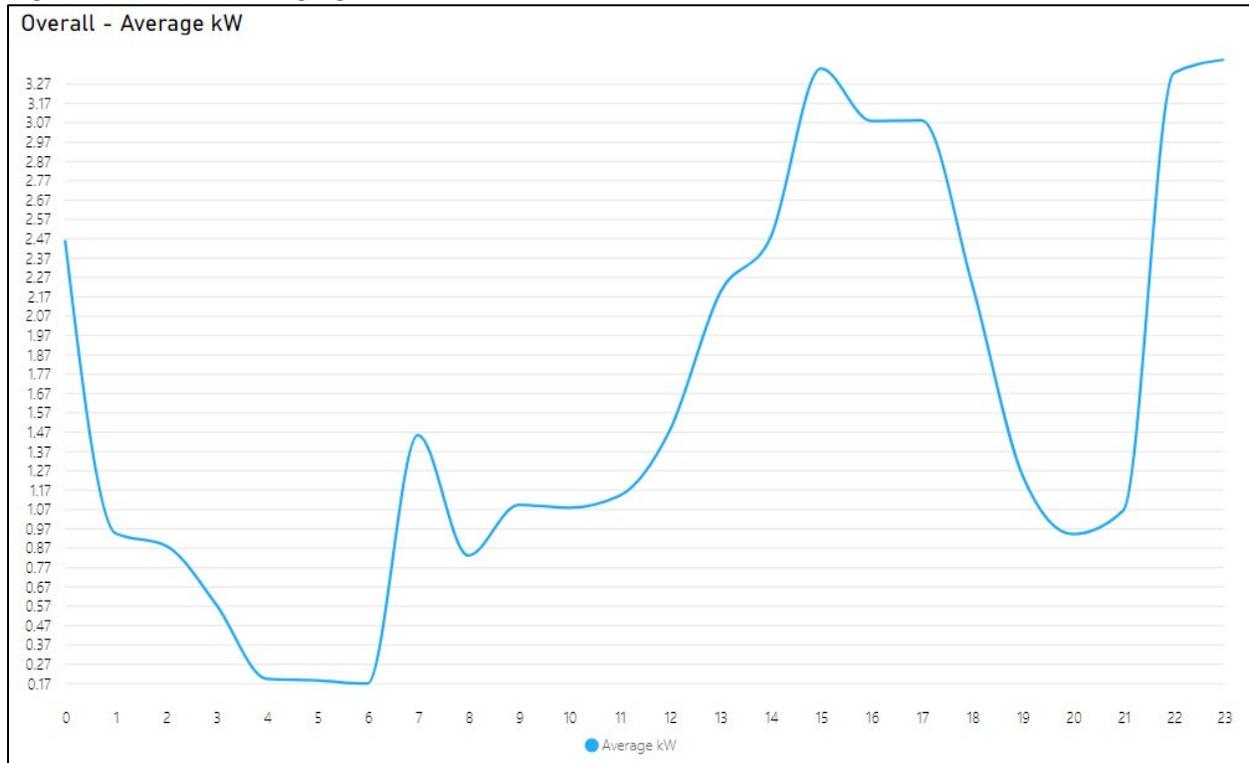
<b>Emissions Type</b>	<b>Emissions Avoided</b>
CO <sub>2</sub> (Pounds)	77,103
NO <sub>x</sub> (Pounds)	127
SO <sub>2</sub> (Pounds)	-16

EV Charging Load Curves

Figure 2 shows the average load throughout the day for December 2023, averaged across all 16 ports that have been built in the Fleet Charging Pilot for which the Company has charging data. The peak load has been at approximately 11 PM, while the minimum load has been

between 4 and 6 AM. Overall, the ports have averaged a daily peak of slightly more than 3.2 kW per port.

Figure 2.— Fleet Charging Pilot Overall Load Curve, December 2023



### Grid Planning

The Company has incorporated the pilot fleet charging installations in its GIS system with an EV charging identifier and in its distribution system circuit maps to ensure DLC personnel are aware of these DLC system assets.

In 2024, as it has more charging data, DLC will leverage the load curves and charging data generated through this pilot to continue to refine its understanding of the energy and load impacts that electrifying fleets have on its grid as part of its grid impacts analysis for its load management work (see DLC’s Load Management Report).

As DLC deploys its distribution management system (“DMS”) and distributed energy resources management system (“DERMS”) in the coming years, having these installations identified in GIS will enable the Company to better forecast the expected load on its circuits and to better target customer for future load management offerings to help address load issues on certain circuits.

### Operational Impacts

In the Company’s Fall 2023 survey for Fleet Charging Pilot participants, respondents were asked to indicate whether they have noticed any operational or maintenance savings due to their participation in the Pilot. One (1) of the respondents indicated affirmatively that they have noticed savings, while the other two (2) respondents said they have not yet noticed savings.

## Key Findings

As part of its Transportation Electrification Portfolio Evaluation and Assessment Plan from August 2022, the Company established KPIs by which to judge the success of its Fleet Charging Pilot. Table 35 depicts the KPI targets alongside the Company’s actual results. In 2022, the Company’s goals were to have 38 ports installed through the Fleet Charging Pilot. The Company missed its port installation goal, with 6 ports installed. In 2023, the Company’s goal was to have 66 ports installed through the Fleet Charging Pilot. The Company missed its port installation goal, with 38 ports installed. The Company and its customers faced several challenges that resulted in the missing of its ports goal, as described in the Process Bottlenecks and Solutions, Customer Challenges and Efforts to Address, and Barriers to Participation sections of the Fleet Charging Pilot Evaluation. The lessons learned from those challenges have helped to inform process improvements that will allow the program to be successful in 2024.

Table 35.– Fleet Charging Pilot Key Performance Indicators

KPIs	2022 Target	2022 Actual	2023 Target	2023 Actual	2024 Target	2024 Actual
Number of charging ports installed	38	6	66	38	82	TBD

*Note: Green indicates that a KPI achieved its target, Yellow indicates that a KPI was within 75% of its target, and Red indicates that KPI was at less than 75% of its targeted level.*

## Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot

### Initiative Summary

The Company’s Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot is designed to increase publicly available charging infrastructure at public parking facilities, workplaces and multi-family housing. The Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot reduces cost and project management burdens for customers since the Company is responsible for the design and execution of the project. The Pilot also provides the Company with greater insight into customer challenges with installing charging infrastructure, along with a better understanding of project costs, revenue, and station usage.

### Key Objectives

- Increase public, workplace and multi-family charging station installations.
- Reduce costs to participating customers.
- Reduce greenhouse gas emissions and other air pollutant emissions.
- Understand the energy consumption and incremental revenue attributable to charging.
- Evaluate charging behavior by market segment.
- Better understand customer barriers to installing charging infrastructure.
- Use charging data to help inform grid planning.

## Evaluation Methodology and Data Sources

## *Evaluation Methodology*

For its evaluation of its Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company has focused its evaluation on two overarching areas: the program process and the program impact. Evaluating the program process has helped identify the successes and challenges with the program design. The impact evaluation has helped assess the degree of success of the program, along with the benefits and costs accrued to participating customers and the Company.

For the process evaluation, the Company includes the following evaluation components:

- A description of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot project process from customer recruitment through project close-out.
- A description of Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot budget apportionment, consistent with the Company's obligation to equitably apportion the annual budget across its service territory.
- A report on average/median project timelines for major project milestones.
- A description of key takeaways and feedback from discussions with customers about program processes and outcomes.
- A description of process bottlenecks, changes made throughout the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, and identify opportunities for improvement.
- A description of barriers to program participation by customers.
- A description of known customer challenges after station installation, including with station uptime or maintenance.
- A description of the process and procedures to procure Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot-related products and services, including charging station vendor qualification.

For the impact evaluation, the Company includes the following evaluation components:

- A report on the number of charging stations installed, including by:
  - station type (L2 or DCFC)
  - location
  - site host type
  - year
  - census tract
  - nine-digit zip code
- A report on charging station usage, including:
  - number of sessions
  - kWh dispensed
  - average number of sessions per day
  - average kWh per charging session
  - Charging station utilization (percentage of time spent plugged in)
- A report on incremental Company distribution revenues from charging station, including by:
  - site host type
  - rate class
- A report on charging station infrastructure installation costs, including by:
  - year

- average cost per site
- average cost per port
- disadvantaged communities
- A report on overall Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot costs by major categories.
- An estimate of the environmental impacts from charging station usage, including reductions in GHG emissions and other air pollutants.
- EV charging load curves, including size and timing of peak, total program load shape, and average port load shape by use type.
- A description of how charging data has helped inform grid planning.
- A description of the potential for changes to the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot.

### *Data Sources*

The data sources used for the evaluation of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot include:

- Customer surveys

The Company has surveyed customers who participated in its charging infrastructure pilots to glean additional qualitative insights about the pilot processes and impacts. The Company sought continual feedback from customer participants to ensure customer satisfaction.

- Program materials, data, and tracking systems

The Company has used information from its internal tracking systems to help inform analysis, such as project costs and timelines for key milestones.

- Company advanced metering infrastructure and billing data

The Company has used advanced metering infrastructure (“AMI”) and billing data to inform revenue and net project benefit calculations. AMI data has also been used to help validate charging station utilization data.

- Charging station utilization data

Since all stations installed through its charging infrastructure pilots are required to be networked, the Company has collected and analyzed this data, as available, to assess station use and produce load curves.

## **Evaluation Results**

### *Pilot Process Overview*

See “Pilot Process Overview” as part of the Evaluation of the Fleet Charging Pilot. One process change between the two programs was customer recruitment. For the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, AEE Initiative efforts, direct customer inquiries, and proactive outreach to customers constituted the recruitment into the program.

## Pilot Process Evaluation

### Project Length

Table 36 shows the average and median length of several major project phases, including application review, pre-construction, and construction. Overall, projects have taken an average of 241 days (7.9 months) and a median of 203 days (6.7 months) from the receipt of an application to the energization of the charging stations. The Company continues to work to shorten this average completion time via the process improvements referenced elsewhere in this report.

Table 36.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Project Timeline

Project Phase	Average Length (Days)	Median Length (Days)
Application Review and Agreement	90	79
Pre-Construction	110	105
Construction	40	40
<b>Total Project</b>	<b>241</b>	<b>203</b>

### Pilot Budget

Throughout the implementation of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company has made efforts to ensure that the benefits of EV charging infrastructure were widely shared in an equitable manner. The Company's commitment to equitable apportionment of its projects is reflected in its dollar spend across various equitable apportionment criteria, which is shown in Table 37. The Company has allocated 38% (\$437,217) of its spending on EV charging station make-ready infrastructure through the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot to disadvantaged communities, as defined by communities where at least 20% of residents earn below the federal poverty line or where 30% of residents identify as a non-white minority. The Company has spent 57% of its pilot budget in urban areas, 38% in suburban areas, 5% in rural areas. This distribution is in line with expectations given the mix of urban, suburban, and rural areas with the Company's service territory<sup>10</sup>. The Company has spent 40% (\$465,368) of its pilot budget within the City of Pittsburgh, while 23.2% of its service territory's population lives within the City of Pittsburgh<sup>11</sup>. Similarly, the Company has spent 4% (\$45,868) of its pilot budget within Beaver County, slightly less than the portion of the Company's service territory population within that county (see the Allegheny or Beaver County section under Equitable Apportionment). Finally, the Company has allocated its budget across project use cases, with 21% (\$248,229) on multi-unit dwelling projects, 56% (\$654,229) on public projects, and 22% (\$258,495) on workplace projects.

Table 37.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Budget Apportionment

Equitable Apportionment Criteria	Equitable Apportionment Category	Dollar Spend	Percent of Total
Disadvantaged Communities	Yes	\$437,217	37.7%
	No	\$723,736	62.3%
	<b>Total</b>	<b>\$1,160,953</b>	<b>100%</b>
	Urban	\$663,325	57.1%

<sup>10</sup> U.S. Census Bureau Geography Division, *TIGERweb*, <https://tigerweb.geo.census.gov/tigerweb/>

<sup>11</sup> Based on Company estimates that 93% of Allegheny County and 89% of Beaver County residents live in its service territory. See the Equitable Apportionment section for more details.

<b>Urban, Suburban and Rural</b>	Suburban	\$444,952	38.3%
	Rural	\$52,676	4.5%
	<b>Total</b>	<b>\$1,160,953</b>	<b>100%</b>
<b>Inside or Outside of the City of Pittsburgh</b>	City of Pittsburgh	\$465,368	40.1%
	Other	\$685,585	59.9%
	<b>Total</b>	<b>\$1,160,953</b>	<b>100%</b>
<b>Allegheny or Beaver County</b>	Allegheny County	\$1,115,085	96.0%
	Beaver County	\$45,868	4.0%
	<b>Total</b>	<b>\$1,160,953</b>	<b>100%</b>
<b>Use Case</b>	Multi-Unit Dwelling	\$248,229	21.4%
	Public	\$654,229	56.3%
	Workplace	\$258,495	22.3%
	<b>Total</b>	<b>\$1,160,953</b>	<b>100%</b>

Process Bottlenecks and Solutions

*Application Review and Agreement*

In the application review and agreement stage, the Company identified and corrected several process bottlenecks throughout the course of pilot administration. One delay in this stage of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot stemmed from long legal review time needed by customer to sign the customer agreement. To address this delay, the Company shares the customer agreement earlier in the process and encourages customers to engage their legal team from the onset of the project.

*Pre-Construction*

See “*Pre-Construction*” in the Process Bottlenecks and Solutions section of the Fleet Charging Pilot Evaluation.

*Construction and Energization*

See “*Construction and Energization*” in the Process Bottlenecks and Solutions section of the Fleet Charging Pilot Evaluation.

Customer Challenges and Efforts to Address

Similar to the Fleet Charging Pilot, cost was one of the main challenges that customers faced. Some customers needed more time to include project costs in their budget planning process, or to get additional buy-in for the investment in the project. In those situations, the Company has kept communications open with the customer. At least one company approached the Company one-year after the project was originally discussed when they were better prepared budgetarily.

Barriers to Participation

See the Customer Challenges and Efforts to section of the Fleet Charging Pilot Evaluation.

Potential Changes to Pilot

See the Potential Changes to Pilot section of the Fleet Charging Pilot Evaluation.

Customer Feedback

In Fall 2023, the Company surveyed customers who participated in its charging infrastructure programs to glean additional qualitative insights about the program processes and impacts. Nine (9) of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot participants responded to the survey, and they all rated their overall experience working with the Company to install EV charging stations as 5 out of 5 stars. These customers cited the Company’s technical knowledge, effectiveness, funding support, and clear communications as the most beneficial parts of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot and all indicated that they would recommend the program to peers. The only change to the Pilot that any customers suggested was for an expanded list of qualified charging station providers, which was indicated by 1 customer. Regarding the program’s design, one customer stated that “if we were undertaking the project on our own (finding electrical engineers, verifying capacity, contracting infrastructure contractors) it would take a significant amount of additional effort,” indicating that the design of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot makes it easier for customer to achieve their EV charging goals. Other respondents commented that the Company “led and guided us every step of the way,” “made it a straightforward process for us and were there for us from the start of the project through its completion,” and “shared comprehensive information about the EV charging stations program and provided helpful and timely support throughout both the application process and the installation of the stations.”

#### Post Installation Challenges

Of the 9 Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot participants who responded to the Fall 2023 survey, 7 indicated that they are ‘very satisfied’ with the uptime and performance of their stations and did not indicate that they have had any challenges since installing the stations. Two (2) of the respondents indicated that they are ‘neither satisfied nor dissatisfied’ with the uptime and performance of their stations but also did not indicate that they have had any challenges since installing the stations.

#### *Pilot Impact*

#### Charging Station Installation

Table 38 through Table 45 show the number of charging stations and ports for Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot completed projects. These projects are broken down by project status (as defined in the Participant Details section of the Fleet Charging Pilot evaluation), level (i.e., Level 2 or DCFC), county, customer segment, year, census tract, and zip code. In total, completed projects include 83 stations and 160 ports. One hundred and fifty-six (156) of the ports have been Level 2, while 4 of them have been DCFC. Seven (7) of the projects (33.3%) have been built in disadvantaged communities, as defined by communities where at least 20% of residents earn below the federal poverty line or where 30% of residents identify as a non-white minority. This exceeds the Company’s stated goal of 25% of projects serving or sited within disadvantaged communities. One hundred and fifty-six (156) of the ports have been built in Allegheny County, while 4 have been built in Beaver County. Forty (40) ports have been built at workplace customer locations, 81 have been built at public locations such as municipal parking lots, and 39 have been built at multi-unit dwellings. In addition to the projects that have already been completed as part of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company anticipates completing additional projects in 2024.

Table 38.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Project Status

Completed Project Status	Number of Projects	Number of Stations Installed	Number of Ports Installed
Plant-in-Service	5	11	22
Activated	10	46	88
Installed	5	22	42
Energized	1	4	8
<b>Total</b>	<b>21</b>	<b>83</b>	<b>160</b>

Table 39.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Level

Station Type	Number of Stations Installed	Number of Ports Installed
Level 2	79	156
DCFC	4	4
<b>Total</b>	<b>83</b>	<b>160</b>

Table 40.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Disadvantaged Communities

Disadvantaged Community?	Number of Projects	Number of Stations Installed	Number of Ports Installed
Yes	7	32	60
No	14	51	100
<b>Total</b>	<b>21</b>	<b>83</b>	<b>160</b>

Table 41.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by County

Station Location	Number of Stations Installed	Number of Ports Installed
Allegheny County	81	156
Beaver County	2	4
<b>Total</b>	<b>83</b>	<b>160</b>

Table 42.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Customer Segment

Site Host Type	Number of Stations Installed	Number of Ports Installed
Public	43	81
Workplace	20	40
Multi-Unit Dwelling	20	39
<b>Total</b>	<b>83</b>	<b>160</b>

Table 43.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Year

<b>Year</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
2022	0	0
2023	83	160
<b>Total</b>	<b>83</b>	<b>160</b>

Table 44.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Census Tract

<b>Census Tract</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
203	12	24
603	4	7
1115	6	10
1209	8	16
4080.01	4	8
4211	8	16
4315	3	6
4350	2	4
4520	2	4
4721	6	10
4762	2	4
5154.01	3	5
5213.01	7	14
5253	3	6
5509	5	10
5615	3	6
6037	2	4
9805	3	6
<b>Total</b>	<b>83</b>	<b>160</b>

Table 45.– Completed Project Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Stations and Ports by Zip Code

<b>Zip Code</b>	<b>Number of Stations Installed</b>	<b>Number of Ports Installed</b>
15202-1454	2	4
15146-2675	2	4
15234-4217	2	4
15139-1937	3	6
15216-2610	6	10
15005-1338	2	4
15221-3807	3	6
15202-3523	3	6

15201-3206	4	7
15218-2335	3	5
15222-4227	3	6
15201-1438	9	18
15213-3830	3	6
15206-1087	8	16
15238-2301	4	8
15108-3846	2	4
15206-3018	6	10
15044-9746	4	8
15146-2760	5	10
15132-2422	5	10
15238-2618	4	8
<b>Total</b>	<b>83</b>	<b>160</b>

### Charging Station Usage

Table 46 shows the usage at each charging station built as part of a Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot project which has a completed project status of 'Activated' or 'Plant in Service.'<sup>12</sup> While site 14's charging stations have been activated by the customer, they have not yet had any charging sessions and so there are no data associated with their usage. For calculating the number of sessions per day and the station utilization, the Company has used the date of the first charging sessions as the 'starting point' to determine the number of days in operation. Usage has varied significantly across projects, with a maximum of 6.9 charging sessions per day and a minimum of 0.2. Overall, the projects have seen an average of 1.1 charging sessions per day, resulting in a total utilization of 2.3% (i.e., each port has a car plugged into it 2.3% of the time).

Table 46.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Station Usage by Site

Site Number	Number of Ports	Number of Sessions	Energy (kWh) Dispensed	Days in Operation	Average Number of Sessions per Day	Average kWh per Charging Session	Charging Station Utilization
1	4	75	1,310	326	0.2	17.5	0.7%
2	4	193	3,327	285	0.7	17.2	2.1%
3	4	77	556	308	0.3	7.2	0.4%
4	6	388	4,039	283	1.4	10.4	2.1%
5	10	1,144	27,952	165	6.9	24.4	2.4%
6	4	159	2,329	256	0.6	14.6	1.5%
7	6	43	702	233	0.2	16.3	0.6%
8	6	174	2,632	170	1.0	15.1	1.9%
9	7	140	2,323	149	0.9	16.6	7.6%
10	6	38	605	96	0.4	15.9	0.5%
11	18	65	1,451	98	0.7	22.3	3.6%

<sup>12</sup> While completed projects with a 'Energized' or 'Installed' status have had all necessary infrastructure completed, the charging stations for those projects are not yet activated and so have no reported usage.

12	5	70	1,291	95	0.7	18.4	2.4%
13	6	99	734	69	1.4	7.4	6.3%
14	16	--	--	--	--	--	--
15	8	18	194	15	1.2	10.8	1.5%
<b>Total</b>	<b>110</b>	<b>2,683</b>	<b>49,446</b>	<b>2,548</b>	<b>1.1</b>	<b>18.4</b>	<b>2.3%</b>

### Incremental Company Distribution Revenue

Table 47 and Table 48 show the distribution revenues from the charging stations built as part of the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, by customer segment and rate class. Due to an internal Company error, some charging stations were billed as GS or GMH accounts when first installed, resulting in reduced company revenue relative to their correct rate classes. This error was addressed upon a review of the accounts' monthly peak demands, and the stations were re-assigned to the correct rate classes.

Table 47.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Revenue by Site Host Type

<b>Site Host Type</b>	<b>Total Distribution Revenue</b>
Public	\$10,497
Workplace	\$1,348
Multi-Unit Dwelling	\$3,524
<b>Total</b>	<b>\$15,369</b>

Table 48.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Revenue by Rate Class

<b>Rate Class</b>	<b>Total Distribution Revenue</b>
GS	\$176
GM < 25	\$3,488
GM > 25	\$9,172
GMH > 25	\$2,534
<b>Total</b>	<b>\$15,369</b>

### Charging Infrastructure Installation Cost

Table 49 shows the cost that the Company incurred to install Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot infrastructure, broken down to show how costs differed across disadvantaged and non-disadvantaged communities. Overall, the average cost of infrastructure at each site was \$55,283, with disadvantaged communities costing \$62,460 and other areas costing \$51,695. The average cost per port was \$7,255.

Table 49.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Make-Ready Cost by Disadvantaged Communities

Year	Number of Sites	Average Cost per Site	Number of Ports	Average Cost per Port	Total Cost of Make-Ready
Disadvantaged Communities	7	\$62,460	60	\$7,287	\$437,217
Other Areas	14	\$51,695	100	\$7,237	\$723,736
<b>Total</b>	<b>21</b>	<b>\$55,283</b>	<b>160</b>	<b>\$7,255</b>	<b>\$1,160,953</b>

### Costs by Major Categories

Table 50 shows the costs that the Company incurred to install Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot infrastructure, broken down by category and completed project status (as defined in the Participant Details section of the Fleet Charging Pilot evaluation). These costs, and those in Table 49, do not include any costs incurred by the Company to upgrade its distribution system to accommodate the increased load introduced by the chargers as those are outside the scope of the Pilot. A significant majority of the reported cost was spent on external engineering, materials, and construction, which was performed by a single contractor whose contract awarding process was described as part of the Fleet Charging Evaluations' Pilot Process Overview.

Table 50.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Make-Ready Cost by Category

Completed Project Status	Category	2022 Projects	2023 Projects	Total
<b>Plant-in-Service</b>	Labor	---	\$2,674	\$2,674
	Materials	---	\$33,139	\$33,139
	Engineering	---	\$56,748	\$56,748
	Construction*	---	\$83,646	\$83,646
	Indirect	---	\$16,483	\$16,483
	<b>Total</b>		---	<b>\$192,691</b>
<b>Activated</b>	Labor	---	\$2,705	\$2,705
	Materials	---	\$176,448	\$176,448
	Engineering	---	\$106,947	\$106,947
	Construction*	---	\$258,438	\$258,438
	Indirect	---	\$49,108	\$49,108
	<b>Total</b>		---	<b>\$593,647</b>
<b>Installed</b>	Labor	---	\$1,616	\$1,616
	Materials	---	\$126,144	\$126,144
	Engineering	---	\$65,550	\$65,550
	Construction*	---	\$113,893	\$113,893
	Indirect	---	\$20,266	\$20,266
	<b>Total</b>		---	<b>\$327,469</b>
<b>Energized</b>	Labor	---	\$675	\$675
	Materials	---	\$14,118	\$14,118
	Engineering	---	\$12,500	\$12,500
	Construction*	---	\$18,757	\$18,757
	Indirect	---	\$20,266	\$20,266

	<b>Total</b>	---	<b>\$47,146</b>	<b>\$47,146</b>
<b>All Projects</b>	<b>Total</b>	---	<b>\$1,160,953</b>	<b>\$1,160,953</b>

\* Includes all labor, equipment, and incidental costs associated with construction of make-ready infrastructure.

The Company also incurred \$130,368 in costs that are not attributable to specific completed projects, and include work done for projects prior to a customer agreement being executed. That figure includes costs for projects that were completed in 2023, are in the pipeline to be completed in 2024, or were not completed.

### Charging Station Rebates Issued

To help make the pilot more accessible to organizations in disadvantaged communities, the Company has offered a rebate to qualified customers serving EJAs to help offset the cost of charging stations for projects that serve low-income communities or otherwise disadvantaged communities. Table 51 and Table 52 show the number of EJA Rebates that the Company has provided, along with their dollar value. While 7 projects were in areas that *could* qualify for the EJA rebate, only 2 received the rebate based on them actually serving the broader community in those areas as public stations. The 5 projects that did not qualify for the rebate were sited at multi-unit dwellings that did not include affordable housing, were at privately owned parking facilities, or received external grants that covered 100% of the cost of the charging stations.

Table 51.– EJA Charging Station Rebates Issued by Year

<b>Year</b>	<b>Number of EJA Rebates</b>	<b>Value of EJA Rebates</b>
2022	0	\$0
2023	2	\$27,500
<b>Total</b>	<b>2</b>	<b>\$27,500</b>

Table 52.– EJA Charging Station Rebates Issued by Customer Segment

<b>Year</b>	<b>Number of EJA Rebates</b>	<b>Value of EJA Rebates</b>
Government	2	\$27,500
<b>Total</b>	<b>2</b>	<b>\$27,500</b>

### Charging Station Usage Environmental Impact

Table 53 shows the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot's environmental impacts based on the usage at the charging stations recorded in Table 46. In total, 70,611 pounds of CO<sub>2</sub> emissions and 18 pounds of NO<sub>x</sub> emissions have been avoided, while SO<sub>2</sub> emissions have slightly increased. However, emissions associated with EVs occur at power plants rather than at vehicles' tailpipes and as such have a decreased public health impact. The calculations to determine the stations' environmental impacts were based on typical vehicle electricity and gasoline efficiency, the pollution profile for gasoline use, and the power generation mix of Pennsylvania based on data from the EIA. These numbers are likely conservative, as the Company has reason to believe its local energy generation mix is less polluting than that of Pennsylvania as a whole. Additionally, the energy generation mix in

Pennsylvania and the United States continues to become less polluting overall on an annual basis, indicating that the displacement of gasoline usage enabled by these charging stations will have a greater environmental benefit over time.

Table 53.— Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Environmental Impacts

Emissions Type	Emissions Avoided
CO <sub>2</sub> (Pounds)	70,611
NO <sub>x</sub> (Pounds)	18
SO <sub>2</sub> (Pounds)	-17

### EV Charging Load Curves

Figure 3 shows the average load throughout the day for December 2023, averaged across the 94 ports that have been built in the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot for which the Company has charging data. The peak load has been at approximately 3 PM, while the minimum load has been at approximately 4 AM. Overall, the ports have averaged a daily peak of slightly more than 3.5 kW each.

Figure 3.— Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Overall Load Curve, December 2023

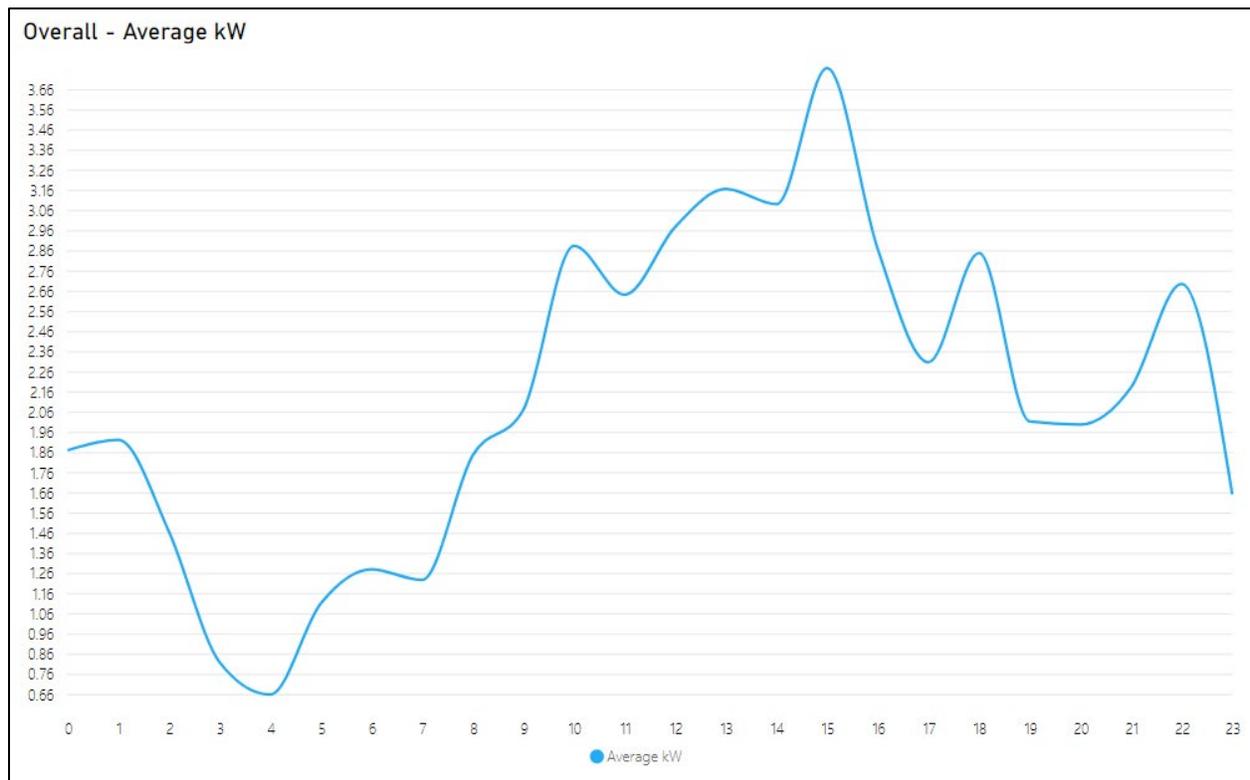


Figure 4 through Figure 6 shows the average load throughout the day for December 2023, averaged across the ports that were built for public, workplace, and multi-unit dwelling projects,

respectively, for which the Company has charging data. For public projects, the peak load has been slightly more than 5.6 kW at approximately 10 PM each day. For workplace projects, the peak load has been slightly more than 5.2 kW at approximately 11 PM each day. For multi-unit dwelling projects the peak load has been slightly more than 1.4 kW at approximately 3 PM each day.

Figure 4.— Public Completed Projects' Load Curve, December 2023

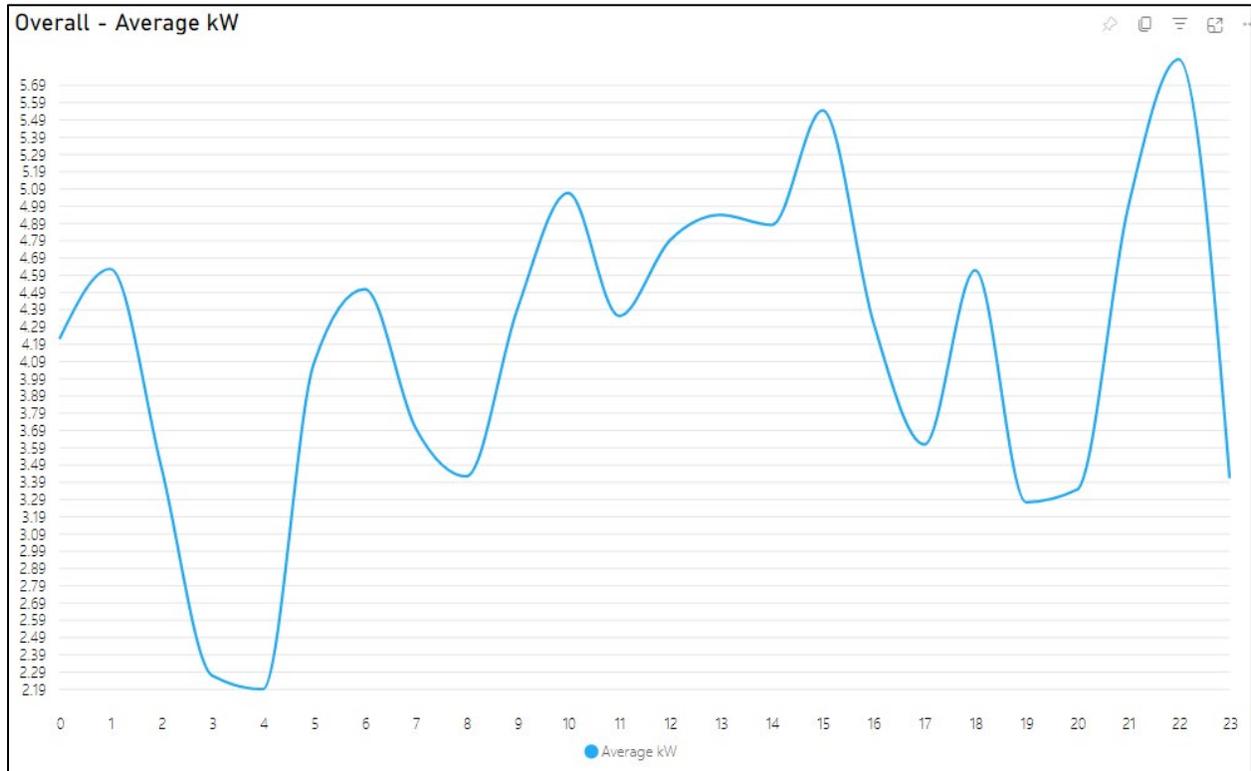


Figure 5.— Workplace Completed Projects' Load Curve, December 2023

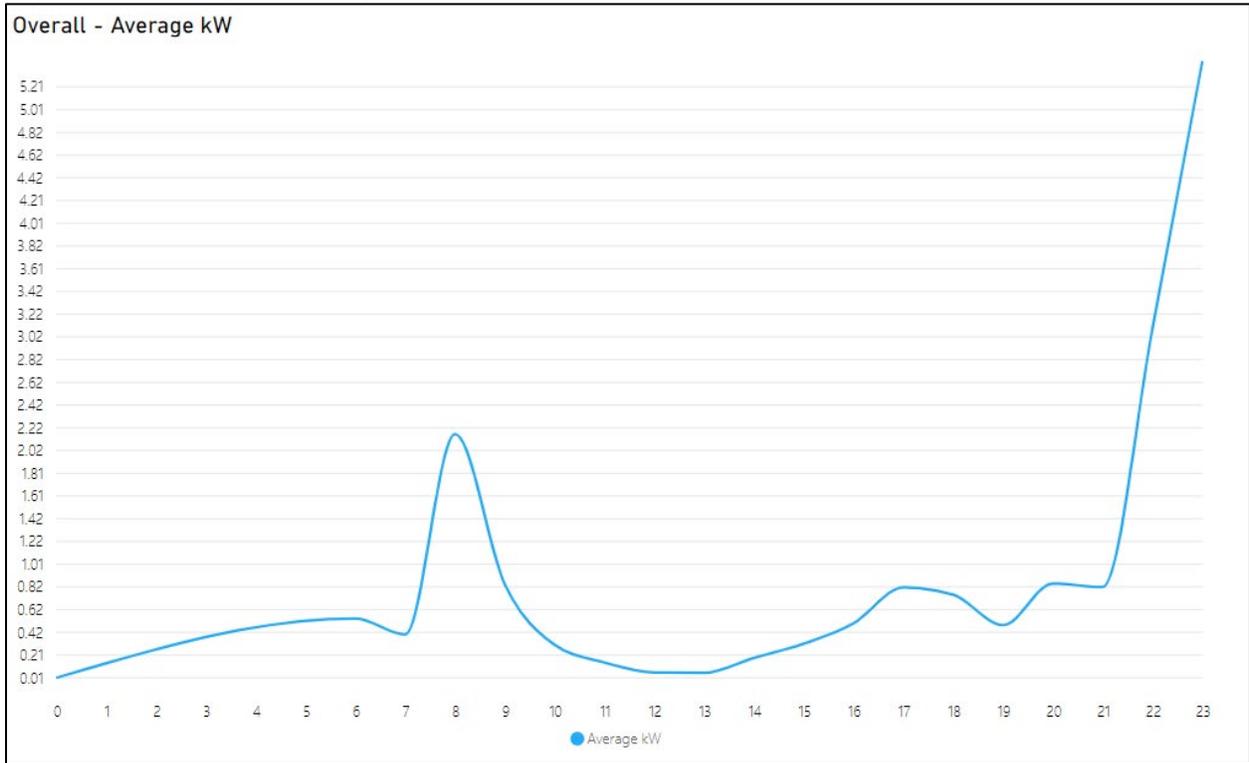
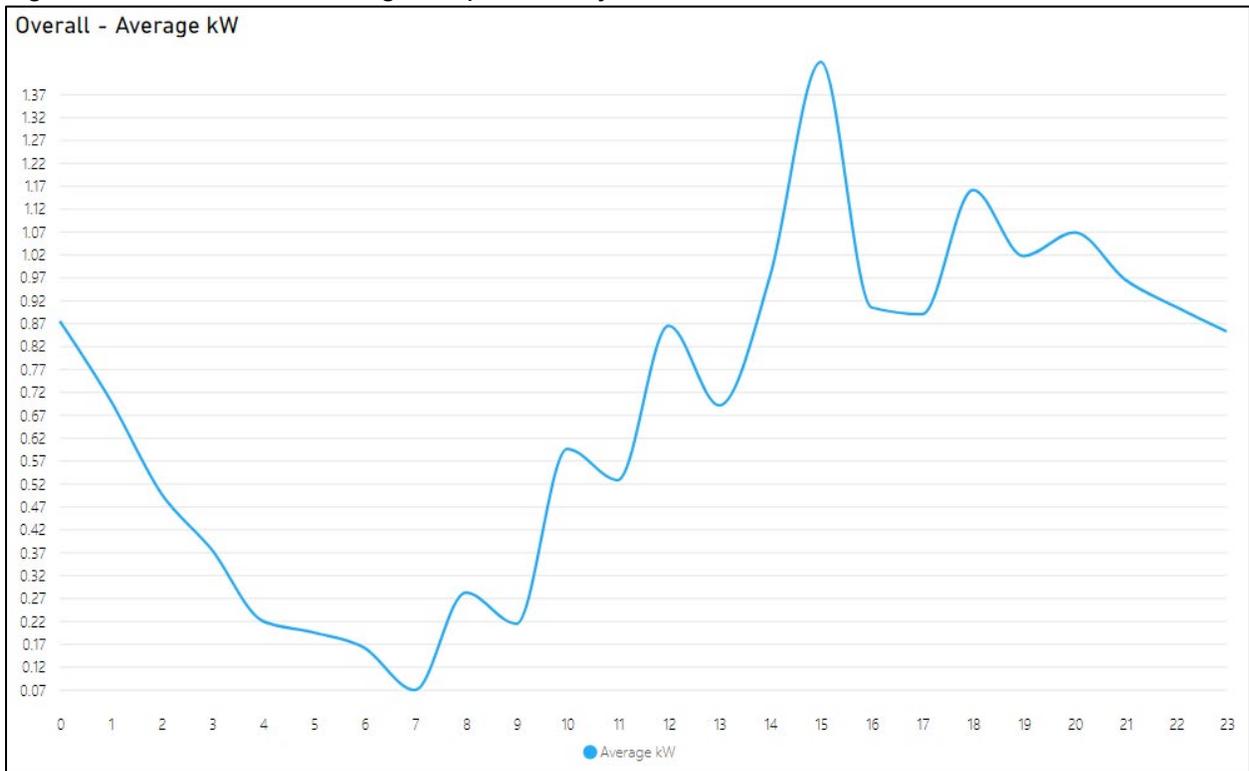


Figure 6.— Multi-Unit Dwelling Completed Projects' Load Curve, December 2023



## Grid Planning

The Company has incorporated the pilot public, workplace, and multi-unit dwelling charging installations in its GIS system with an EV charging identifier and in its distribution system circuit maps to ensure DLC personnel are aware of these DLC system assets.

In 2024, as it has more charging data, DLC will leverage the load curves and charging data generated through this pilot to continue to refine its understanding of the energy and load impacts these types of charging installations have on its grid as part of its grid impacts analysis for its load management work (see DLC’s Load Management Report).

As DLC deploys its DMS and distributed energy resources management system (DERMS) in the coming years, having these installations identified in GIS will enable the Company to better forecast the expected load on its circuits and to better target customer for future load management offerings to help address load issues on certain circuits.

## **Key Findings**

As part of its Transportation Electrification Portfolio Evaluation and Assessment Plan from August 2022, the Company established Key Performance Indicators (KPIs) by which to judge the success of its Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot. Table 54 depicts the KPI targets alongside the Company’s actual results. In 2022, the Company’s goals were to have 64 ports installed through the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot. The Company missed its port installation goal, with zero (0) ports installed. The Company and its customers faced several challenges that resulted in the missing of its ports goal, as described in the Process Bottlenecks and Solutions, Customer Challenges and Efforts to , and Barriers to Participation sections of the Fleet Charging Pilot Evaluation. Additionally, the Company undertook the development of a high-quality customer experience prior to launching the Pilot in order to ensure the Pilot’s success. This prevented the Company from operating the Pilot for the entirety of 2022, and as such the first application for the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot was received in May 2022 – based on the average project time from application to completion of 7.9 months, projects initiated in 2022 were not able to be completed until 2023. The Company continues to work to shorten this average completion time via the process improvements referenced elsewhere in this report. In 2023, the Company’s goal was to have 64 ports installed through the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot. The Company achieved its port installation goal, with 160 ports installed.

Table 54.– Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Key Performance Indicators

<b>KPIs</b>	<b>2022 Target</b>	<b>2022 Actual</b>	<b>2023 Target</b>	<b>2023 Actual</b>	<b>2024 Target</b>	<b>2024 Actual</b>
Number of charging ports installed	64	0	64	160	64	TBD

*Note: Green indicates that a KPI achieved its target, Yellow indicates that a KPI was within 75% of its target, and Red indicates that KPI was at less than 75% of its targeted level.*

## Transit Charging Pilot

### Initiative Summary

The Company's Transit Charging Pilot supports PRT's efforts to electrify its bus fleet by installing make-ready infrastructure and providing rebates for DCFC charging stations. Similar to the other charging infrastructure programs, this project helps reduce costs and the project management burden for the customer, while enabling the Company to continue to learn more about serving large-scale, high-demand electric fleet customers.

### Key Objectives

- Increase electric bus charging installations.
- Reduce greenhouse gas emissions and air pollutants.
- Understand the energy consumption and the incremental distribution revenue attributable to charging.
- Better understand customer barriers to installing charging infrastructure.

### Evaluation Methodology and Data Sources

#### *Evaluation Methodology*

For its evaluation of its Transit Charging Pilot, the Company has focused its evaluation on two overarching areas: the program process and the program impact. Evaluating the program process has helped identify the successes and challenges with the program design. The impact evaluation has helped assess the degree of success of the program, along with the benefits and costs accrued to PRT and the Company.

For the process evaluation, the Company includes the following evaluation components:

- A description of the Transit Charging Pilot project process.
- A description of process bottlenecks, changes made throughout the Pilot, and identify continued opportunities for improvement.
- A description of known customer challenges after charging infrastructure installation, including with station uptime or maintenance.
- A description of key takeaways from discussions with customer about program processes and outcomes.
- A description of the process and procedures to procure transit charging pilot-related products and services.

For the impact evaluation, the Company includes the following evaluation components:

- A report on the number of charging stations installed, including:
  - year
  - census tract
  - nine-digit zip code
- A report on charging station usage, including:
  - Number of sessions
  - kWh dispensed
  - Average number of sessions per day
  - Average kWh per charging session
  - Charging station utilization (percentage of time spent plugged in)

- A report on financial impacts, including Pilot costs.
- Reports on routes served, including routes that serve disadvantaged communities.
- An estimate of the environmental impacts from charging station usage, including reductions in GHG emissions and other air pollutants.
- EV charging load curves, including size and timing of peak and total program load shape.
- A description of how charging data has helped inform grid planning.

### *Data Sources*

The data sources used for the evaluation of the Transit Charging Pilot include:

- Customer interview  
The Company interviewed PRT to glean additional qualitative insights about the pilot processes and impacts.
- Program materials, data, and tracking systems  
The Company has used information from its internal tracking systems to help inform analysis, such as project costs and timelines for key milestones.
- Company advanced metering infrastructure and billing data  
The Company has used advanced metering infrastructure (AMI) and billing data to inform revenue and net project benefit calculations. AMI data has also been used to help validate charging station utilization data.
- Charging station utilization data  
Since all stations installed through its Transit Charging Pilot are required to be networked, the Company has collected and analyzed this data, as available, to assess station use and produce load curves.

## **Evaluation Results**

### *Pilot Process Overview*

The Transit Charging Pilot went into effect in January 2022. On January 28, 2022, the Company and PRT entered into an agreement for the program entitled “Installation, Operation & Maintenance Agreement” which outlined key components of the program and reviewed the organizations’ historical collaboration on charging station infrastructure. The agreement described PRT’s intention to add six electric buses to its fleet and the Company’s commitment to installing electric make-ready infrastructure and provide rebates to PRT for the purchase of six DCFC units to power those buses. On March 4, 2022, the Company received approval of the agreement from the PA PUC.

To streamline the Transit Charging Pilot with other construction work occurring at PRT’s East Liberty Garage, the Company used engineer drawings provided by PRT to inform the make-ready construction. To procure the make-ready construction services needed for the Transit Charging Pilot, the company issued an RFP on December 1, 2021. Four electrical contractor vendors were invited to bid in the RFP, and two declined to do so resulting in two bids. Schultheis Electric was

awarded the make-ready construction contract in February 2022. The Company also issued a purchase order for equipment for the make-ready installation from Graybar Electric Company in February 2022, and additional equipment was ordered from Wesco International in July 2022. The Company experienced significant project time delay due to supply chain issues that impacted receiving this equipment. For example, materials originally quoted by the vendor to ship in one month took eight months to receive. These supply chain issues were consistent with what the Company and Schultheis Electric experienced throughout the 2022-2023 timeframe.

Electrical make-ready construction was completed in April 2023, though one (1) DCFC was able to be installed and commissioned in January 2023 based on the structure of the make-ready. PRT procured and installed the six DCFC and the remaining five (5) units were commissioned in May 2023. PRT provided the Company with proof of DCFC purchase costs in July 2023 and the Company issued PRT a rebate for the cost of the charging stations in August 2023.

### *Pilot Process Evaluation*

#### Process Bottlenecks and Solutions

Throughout the administration of the Transit Charging Pilot, unprecedented and unanticipated supply chain challenges created process bottlenecks. As a result of these supply chain challenges, the Company experienced significant time lag relative to original expectations in obtaining equipment need to construct the electrical make-ready infrastructure for the program and PRT experienced time lag associated with the order of the charging station hardware. See “Pilot Process Overview” for more information on the processes and procedures that were undertaken to procure necessary products and services.

The only changes made to the Transit Charging Pilot during the program’s administration were in the Company’s attempts to mitigate challenges brought about by supply chain issues. These attempts included sourcing materials from suppliers outside of the Company’s typical procurement partners and purchasing some make-ready equipment at the component level instead of pre-assembled level in order to expedite orders for long lead time equipment.

#### Potential Changes to Pilot

The Transit Charging Pilot and its enabling “Installation, Operation & Maintenance Agreement” highlight the important of cooperative long-term planning when undertaking charging infrastructure design and deployment for large fleets in the Company’s service territory. Continuously improving the process of long-term planning can result in cost-effectiveness gains for both PRT and the Company. Another opportunity for improvement is in the use of load management as PRT’s electrification program matures to optimize scheduling of vehicle charging to maximize charging infrastructure assets’ effectiveness and utilization.

#### Customer Feedback

Discussions with PRT about program processes and outcomes revealed several key takeaways. First, the customer felt that their voice was heard throughout the process and their feedback considered, stating that “all decisions felt like a collaborative effort.” They described the partnership as successful and as a valuable learning experience. Overall, the customer emphasized that the “project was a very positive collaborative effort between [the Company] and

PRT” and that they “look forward to working more with [the Company] in the future as [PRT] expands Zero Emission infrastructure.”

### Post Installation Challenges

Following charging infrastructure installation, the customer has not faced any challenges with the electrical make-ready, charging station uptime or maintenance. PRT experienced charging station configuration challenges because they acquired motorized reels to dispense the electricity to their buses from a different vendor than the charging stations themselves. Difficulties integrating the motorized reels’ cables into the charging station delayed the stations’ activation by approximately three weeks.

### *Pilot Impact*

#### Charging Stations Installed

Six (6) single-port DCFC stations were installed in 2023 at PRT’s East Liberty Garage, which is in census tract 1209, zip code 15206-4481, as part of the Transit Charging Pilot.

#### Charging Station Usage

Table 55 shows the usage at each charging station built as part of the Transit Charging Pilot. For calculating the number of sessions per day and the station utilization, the Company has used the date of the first charging sessions as the ‘starting point’ to determine the number of days in operation. Usage has varied considerably across stations, with a maximum of 1.3 charging sessions per day and a minimum of 0.7. Overall, the stations have seen an average of 1.0 charging sessions per day, resulting in a total utilization of 10.9% (i.e., each port has a car plugged into it 10.9% of the time), and have averaged 117.2 kWh per session.

Table 55.— Transit Charging Station Usage

Station Number	Number of Sessions	Energy (kWh) Dispensed	Days in Operation	Average Number of Sessions per Day	Average kWh per Charging Session	Charging Station Utilization
1	466	60,424	355	1.3	129.7	13.2%
2	216	22,795	220	1.0	105.5	11.3%
3	205	21,973	214	1.0	107.2	10.0%
4	174	19,206	214	0.8	110.4	11.7%
5	144	15,923	214	0.7	110.6	10.2%
6	120	14,978	174	0.7	124.8	6.9%
<b>Total</b>	<b>1,325</b>	<b>155,298</b>	<b>1,391</b>	<b>1.0</b>	<b>117.2</b>	<b>10.9%</b>

#### Charging Infrastructure Installation Cost

The construction of the make-ready infrastructure for the 6 stations built as part of the Transit Charging Pilot cost \$701,779, plus a \$406,416 rebate issued to PRT for the purchase of the 6 DCFC stations. In total, this is \$124,195 more than the \$984,000 estimated for the pilot in Docket No. R-2021-3024750. The higher than estimated make-ready infrastructure cost was

due to record high inflation in the electrical equipment sector that could not have reasonably been anticipated<sup>13</sup>.

### Revenue

The Company has received \$39,700 in distribution revenue from the 6 charging stations built as part of the Transit Charging Pilot. Unlike in the Fleet Charging Pilot and the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, the Company did not install a separate meter for the charging stations built through the Transit Charging Pilot, instead adding them to the same metered system as 2 DCFC stations that the Company built as part of the EV ChargeUp Pilot in 2020. To determine the revenue attributable to the Transit Charging Pilot, the Company used the date of the earliest recorded charging session for each new charger as its installation date and attributed a proportional amount of the account's revenue to that charger from that date forward. For example, the first charger installed was in operation for 5 days during the first billing cycle it was part of and so was attributed one-third of the revenue from those 5 days based on the total monthly revenue and the number of days in the billing cycle.

### Routes Served

Figure 7 through Figure 10 depict several of the routes that have been served by electric buses as a result of the Transit Charging Pilot, which include the 69, 82, 86, and 88. Additionally, each map includes coloring to represent PRT's equity index<sup>14</sup> (which reflects low-income households, persons with disabilities, minority populations, vehicle ownership, etc.), the legend for which can be found in Figure 11. Each of these routes traverse several communities with high equity indexes, indicating that they are disadvantaged communities. These communities include the City of Pittsburgh's Hill District, Garfield, East Liberty, Larimer, and Homewood communities, as well as the Borough of Wilksburg.

---

<sup>13</sup> Federal Reserve Economic Data, *Producer Price Index by Industry: Electrical Equipment and Appliance Manufacturing*, <https://fred.stlouisfed.org/series/PCU335335#0>

<sup>14</sup> American Public Transportation Association, *Equity Index of Mobility Need*, <https://www.apta.com/wp-content/uploads/Equity-Index-of-Mobility-Need-Port-Authority-of-Allegheny-County.pdf>

Figure 7.—PRT Route 69

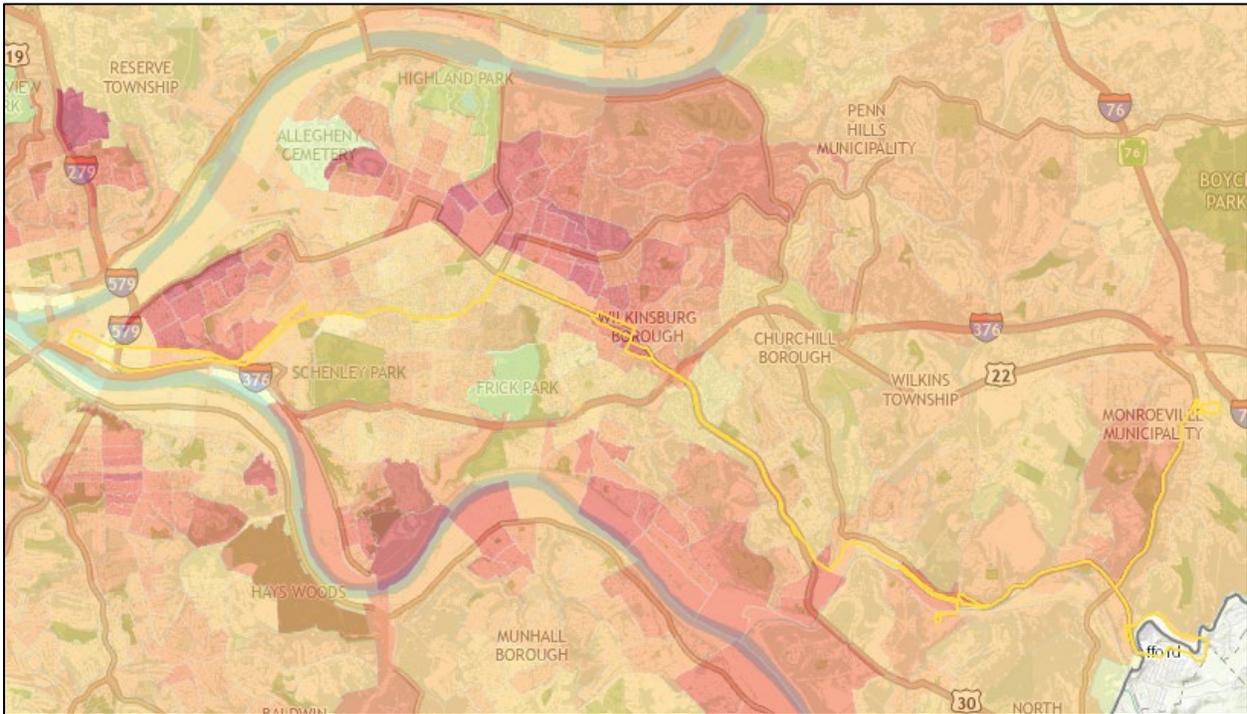


Figure 8.—PRT Route 82

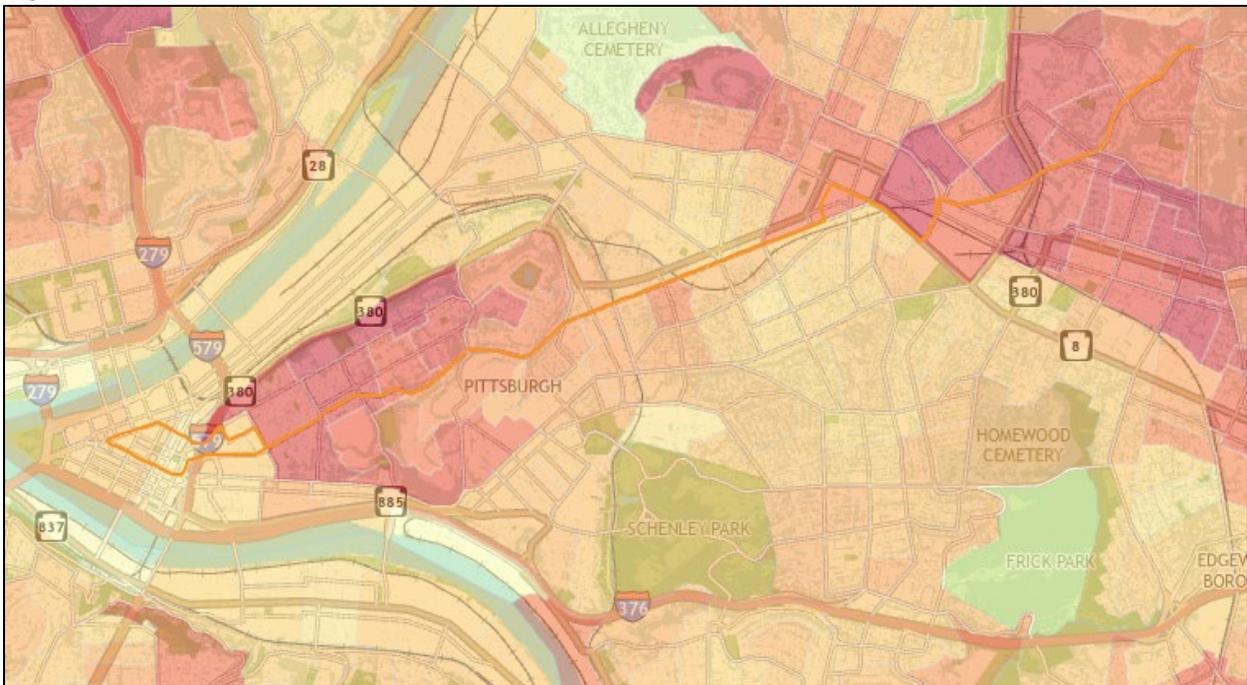


Figure 9.—PRT Route 86



Figure 10.—PRT Route 88

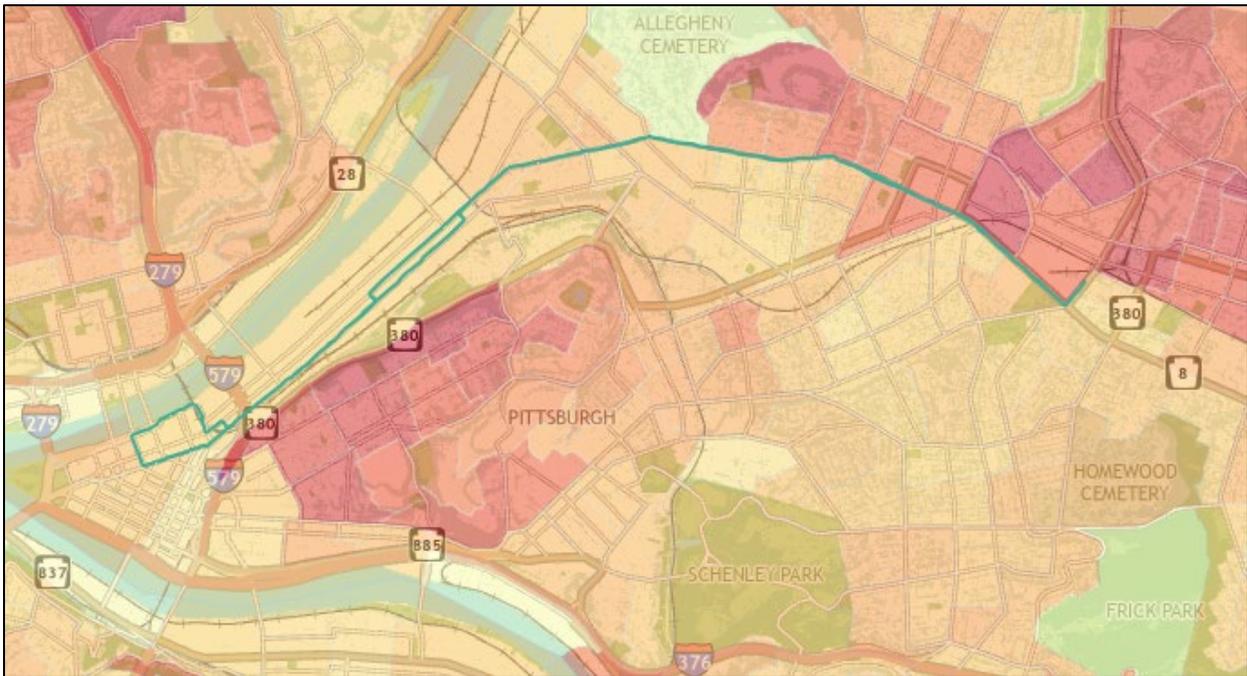
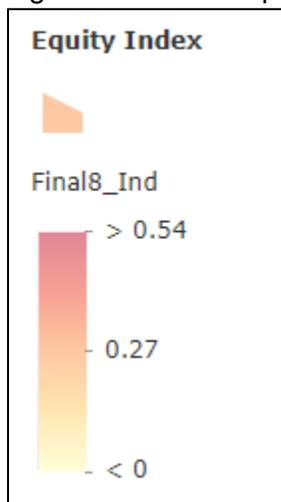


Figure 11.—PRT Equity Index



Charging Station Usage Environmental Impact

Table 56 shows the Transit Charging Pilot’s environmental impacts based on the usage at the charging stations recorded in Table 55. In total, 386,291 pounds of CO<sub>2</sub> emissions and 431 pounds of NO<sub>x</sub> emissions have been avoided, while SO<sub>2</sub> emissions have slightly increased. However, emissions associated with EVs occur at power plants rather than at vehicles’ tailpipes and as such have a decreased public health impact. The calculations to determine the stations’ environmental impacts were based on typical vehicle electricity and gasoline efficiency, the pollution profile for gasoline use, and the power generation mix of Pennsylvania based on data from the EIA. These numbers are likely conservative, as the Company has reason to believe its local energy generation mix is less polluting than that of Pennsylvania as a whole. Additionally, the energy generation mix in Pennsylvania and the United States continues to become less polluting overall on an annual basis, indicating that the displacement of gasoline usage enabled by these charging stations will have a greater environmental benefit over time.

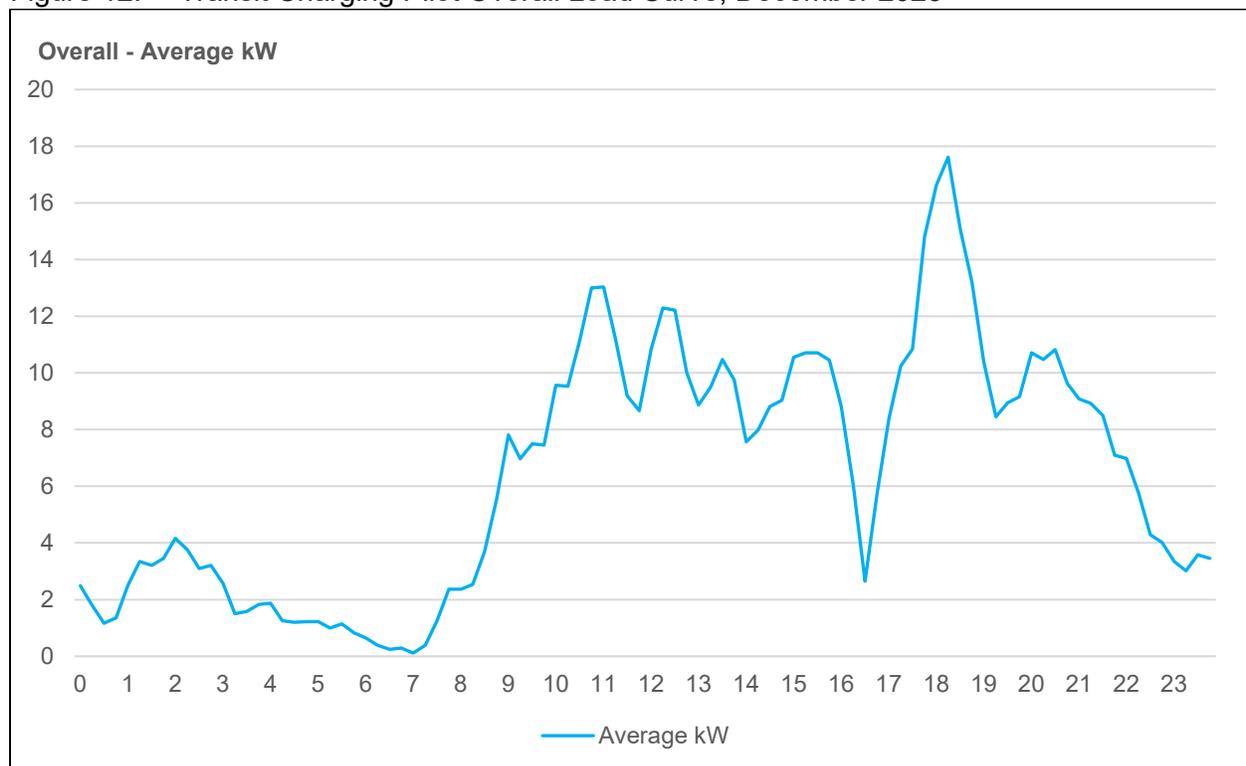
Table 56.— Transit Charging Pilot Environmental Impacts

<b>Emissions Type</b>	<b>Emissions Avoided</b>
CO <sub>2</sub> (Pounds)	386,291
NO <sub>x</sub> (Pounds)	431
SO <sub>2</sub> (Pounds)	-56

EV Charging Load Curves

Figure 12 shows the average load throughout the day for December 2023, averaged across the 8 ports that have been built in the current and previous phase of the Transit Charging Pilot. The peak load has been at approximately 6 PM, while the minimum load has been at approximately 7 AM. Overall, the ports have averaged a daily peak of slightly less than 18 kW each.

Figure 12.— Transit Charging Pilot Overall Load Curve, December 2023



### Grid Planning

In 2024, as it has more charging data, DLC will leverage the load curves and charging data generated through this pilot to continue to refine its understanding of the energy and load impacts these types of charging installations have on its grid as part of its grid impacts analysis for its load management work (see DLC’s Load Management Report).

As DLC deploys its DMS and distributed energy resources management system (DERMS) in the coming years, having these installations identified in GIS will enable the Company to better forecast the expected load on its circuits and to better target customer for future load management offerings to help address load issues on certain circuits.

### **Key Findings**

As part of its Transportation Electrification Portfolio Evaluation and Assessment Plan from August 2022, the Company established KPIs by which to judge the success of its Transit Charging Pilot. Table 57 depicts the KPI targets alongside the Company’s actual results. In 2022, the Company’s goal was to have 6 ports installed through the Transit Charging Pilot. The Company missed its port installation goal, with 0 ports installed. In 2023, the Company completed the installation of 6 ports. This delay was due to unprecedented and unanticipated supply chain issues experienced by the Company during the order and receipt of make-ready materials.

Table 57.– Transit Charging Pilot Key Performance Indicators

KPIs	2022 Target	2022 Actual	2023 Target	2023 Actual	2024 Target	2024 Actual
Number of charging ports installed	6	0	0	6	0	0

*Note: Green indicates that a KPI achieved its target, Yellow indicates that a KPI was within 75% of its target, and Red indicates that KPI was at less than 75% of its targeted level.*

## Conclusion

The Company has successfully carried out its TE Portfolio since January 15, 2022, consisting of the Awareness, Education and Engagement Initiative, the EV Registration Incentive, the Fleet Electrification Advisory Service, the Fleet Charging Pilot, the Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot, and the Transit Charging Pilot. This Report covers the period January 15, 2022, through December 31, 2023 and includes reporting on all elements identified in Settlement paragraphs 57(h) and (j).

The Company has seen its efforts tangibly impact electric mobility in its service territory, resulting in increased awareness and interest in EVs, expanded access to charging infrastructure, and deployment of EVs across its geography. The Company recommends that its efforts be continued and expanded to continue to create a clean energy future for all.

# Appendix A: Program Informational Materials

## Fleet Electrification Advisory Service Fact Sheet



### Your Custom Roadmap to an Electric Fleet



Whether it's ownership savings, advanced performance, reduced greenhouse gas emissions, or more, there are many reasons why organizations are choosing to power their fleet vehicles with electricity. Through DLC's free Electric Fleet Advisory Service, we'll help you explore your fleet electrification options, and then you may be eligible to receive incentives and assistance for the installation of fleet charging stations through DLC's Fleet Charging Program.

#### PROGRAM BENEFITS



##### Receive Technical Assistance

We'll analyze your fleet data and work closely with you to understand your fleet requirements so we can provide you with a free customized roadmap to fleet electrification, including:

- EV acquisition recommendations for up to 10 years
- Capital, O&M, and Total Cost of Ownership comparisons
- EV charging infrastructure requirements
- Available financial incentives
- Environmental impact analysis



##### Achieve Your Goals

Use your electric fleet roadmap as a guide for fleet purchasing decisions to lower your total fleet operating costs and reduce your fleet's environmental impact.

#### HOW IT WORKS

1. You'll provide your historical fleet data and requirements to DLC.
2. We'll review your data together, identify any gaps, and agree on assumptions.
3. Our team will analyze your data and produce an assessment report for your organization.
4. We'll review the report and results with decision-makers within your organization to help them understand your fleet electrification opportunities.

Your organization will be asked to commit your fleet data and limited time of key fleet personnel to participate.

#### READY TO GET STARTED?

Contact a DLC EV specialist at [electricvehicles@duqlight.com](mailto:electricvehicles@duqlight.com).

Visit [www.DuquesneLight.com/ElectricFleet](http://www.DuquesneLight.com/ElectricFleet) to learn more about how our free Electric Fleet Advisory Service can provide you with a customized roadmap for electrifying your fleet.

# Fleet Charging Pilot Fact Sheet



## Saving You Time & Money on Charging for Your Fleet



Whether it's ownership savings, advanced performance, reduced greenhouse gas emissions, or more, there are many reasons why organizations are choosing to power their fleet vehicles with electricity. Through DLC's Fleet Charging Program, you may be eligible to have DLC design and cover the cost to install the electric infrastructure from the power grid to the charging station.

### PROGRAM BENEFITS



#### Receive Technical Assistance

We'll provide you with the support you need to make electrifying your fleet successful.



#### Experience the Savings

As you electrify your fleet and install charging, we can help you save time and money.



#### Achieve Your Goals

We're here to help you achieve lower fleet operating costs and reduce the environmental impact of your fleet.

### KEY CUSTOMER REQUIREMENTS

1. Start by discussing your project with a DLC EV Specialist.
2. Complete the Fleet Charging Program application and submit it to DLC for review.
3. Upon approval, purchase approved charging station hardware from DLC's qualified vendor list.
4. Sign agreement and easement with DLC allowing us to install the electrical infrastructure between the power grid and the charging station.
5. Install charging station hardware and keep it operational for at least 10 years.
6. Provide DLC with charging station usage data via your charging station network vendor for 10 years.

## READY TO GET STARTED?

Contact a DLC EV specialist at [electricvehicles@duqlight.com](mailto:electricvehicles@duqlight.com).

Visit [www.DuquesneLight.com/ElectricFleet](http://www.DuquesneLight.com/ElectricFleet) to learn more about how DLC's Fleet Charging Program can save you time and money on installing electric vehicle charging.



# Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Fact Sheet



## Saving You Time & Money on Installing EV Charging



As more people in our region drive electric, be prepared to attract them to your business with electric vehicle charging. Through DLC's Community Charging Program, you may be eligible to have DLC design and cover the cost to install the electric infrastructure from the power grid to the charging station.

### PROGRAM BENEFITS



#### Receive Technical Assistance

We'll provide you with the support you need to make your project successful. Specialized assistance is available for projects serving disadvantaged communities.



#### Experience the Savings

We can help you save time and money on installing charging at your property.



#### Achieve Your Goals

Grow your business by attracting a quickly growing number of consumers driving electric.

### KEY CUSTOMER REQUIREMENTS

1. Start by discussing your project with a DLC EV Specialist.
2. Complete the Community Charging Program application and submit it to DLC for review.
3. Upon approval, purchase approved charging station hardware from DLC's qualified vendor list.
4. Sign agreement and easement with DLC allowing us to install the electrical infrastructure between the power grid and the charging station.
5. Install charging station hardware and keep it operational for at least 10 years.
6. Provide DLC with charging station usage data via your charging station network vendor for 10 years.

## READY TO GET STARTED?

Contact a DLC EV specialist at [electricvehicles@duqlight.com](mailto:electricvehicles@duqlight.com).

Visit [www.DuquesneLight.com/CommunityCharging](http://www.DuquesneLight.com/CommunityCharging) to learn more about how DLC's Community Charging Program can save you time and money on installing electric vehicle charging.



## Appendix B: AEE Activities List

Activity	Description	Target Audience	Channel/ Location	Results
<b>2022</b>				
Feb. 3: Building Owners & Managers Association of Pittsburgh – Continuing Education Session	Educational presentation on commercial electric vehicle charging	Commercial customers: Building owners, managers, and real estate agents	In-Person at Rivers Casino in Pittsburgh’s North Shore	50+ in attendance; Increased education surrounding EV charging at commercial properties
Feb. 18 – 24: Pittsburgh International Auto Show	Sponsored “Electric Avenue” at the Auto Show including educational tabling and EV ride-alongs.	Residential customers	In-Person at David L. Lawrence Convention Center in Pittsburgh’s Downtown	47,000+ in attendance and 2,000+ EV ride-alongs; Increased awareness of electric mobility options
April 24: Mt. Lebanon Earth Day	Educational tabling and presentation on electric vehicles and consumer incentives	Residential customers	In-Person at Main Park in Mt. Lebanon	Increased awareness of electric mobility options
April 29: Sustainable Business Breakfast	Panel discussion on sustainable business practices, including vehicle electrification and charging	Commercial customers	In-Person at The Fairmont Pittsburgh in Pittsburgh’s Downtown	100+ in attendance
May 4: SAE Sustainable Energy & Transportation Symposium	Panel discussion on preparing for mass electric mobility adoption	Industry: Energy professionals, manufacturers, and government agencies	Virtual	Increased education surrounding electric mobility market
May 11: Building Owners & Managers	Co-hosted an EV charging expo with BOMA during which DLC	Commercial customers:	In-Person at Nova Place in	50+ in attendance; Increased

Association (BOMA) – EV Charging Expo	presented on how it can help building owners and managers with EV charging and organized an EVSE expo.	Building owners and managers	Pittsburgh's North Shore	education surrounding EV charging at commercial properties
May 19: Pittsburgh Downtown Partnership – Pittsburgh Opens	Educational tabling on electric vehicles and consumer incentives	Residential customers	In-Person at PPG Place in Pittsburgh's Downtown	Increased awareness of electric mobility options
June 18: SolarFest	Educational tabling and sponsorship of Electric Car Show made up of local EV drivers	Residential customers	In-Person at Hazelwood Green in Pittsburgh's Hazelwood	Increased awareness of electric mobility options
June 20: RiverWise Summer Sustainability Institute	Educational presentation on electric vehicles and charging	Beaver County High School Students	In-Person at DLC's Woods Run Campus	6 students in attendance; Increased education surrounding EV opportunities
June 28: Electric School Bus Webinar – Part 1	Educational webinar hosted by DLC, PRCC, SPC, and EPA on Electric School Bus considerations and EPA's Clean School Bus Rebate Program	Commercial customers: School District Administrators, Public & Private School Bus Operators	Virtual	40+ in attendance; Increased education surrounding school bus electrification and funding
July 9: Women-Owned Market	Educational Tabling	Residential customers	In-Person at the Terminal in Pittsburgh's Strip District	Increased awareness of electric mobility options
July 28: Local Government Academy Lunch & Learn	Educational webinar on considerations for municipal electric vehicle charging and fleet electrification	Commercial customers: Municipal managers, supervisors,	Virtual	15+ in attendance; Increased education surrounding electric mobility

		fleet operators, and leaders		options for local governments
Aug. 4: Electric School Bus Webinar – Part 2	Educational webinar hosted by DLC, PRCC, SPC, and EPA on Electric School Bus considerations, including presentation from various school bus and EVSE manufacture	Commercial customers: School District Administrators, Public & Private School Bus Operators	Virtual	50+ in attendance; Increased education surrounding school bus electrification and funding
Aug. 13: POGOHO Wheels and Wellness	Educational tabling and sponsorship to raise awareness of growing electric bikeshare system and demonstration of electric fleet vehicle	Residential customers	In-Person at Westinghouse Park in the heart of Pittsburgh's Point Breeze North	Increased awareness of electric mobility options, especially e-assist bicycles
Sept. 7: Pittsburgh Regional Transit Fleet Event	Delivered remarks to show DLC's support as a trusted partner to PRT as they commit to a zero-emission fleet by 2045	Residential customers: Transit riders	In-Person at MLK Jr. East Busway in Pittsburgh's Downtown	Increased awareness of electric transit options
Sept. 8: IREM Pittsburgh Presentation	Educational presentation on considerations for installing and hosting electric vehicle charging	Commercial customers: Property managers and real estate professionals	Virtual	Increased education surrounding EV charging at commercial properties
Sept. 14: NEVI Community Engagement Session	Educational presentation on electric vehicles and charging.	Residential and commercial customers	In-Person at Manchester Citizen Corporation Office in Pittsburgh's Manchester	Increased awareness of electric mobility options and funding opportunities

Sept. 21: Global Clean Energy Action Forum	Educational tabling and demonstration of electric fleet vehicle at welcome event	Industry: Environmental and energy	In-Person at Energy Innovation Center in Pittsburgh's Lower Hill District	Increased awareness of electric mobility options
Oct. 1: Pittsburgh Drive Electric Week Event	Educational tabling and demonstration of electric fleet vehicle	Residential customers	In-Person at CCAC West Hills Center in Oakdale	Increased awareness of electric mobility options
Oct. 6: Local Government Academy Webinar	Educational webinar on considerations for municipal electric vehicle charging and fleet electrification	Commercial customers: Municipal managers, supervisors, fleet operators, and leaders	Virtual	30+ in attendance; Increased education surrounding electric mobility options for local governments
Oct. 7: Odyssey Day	Educational tabling and demonstration of electric fleet vehicle	Commercial customers: Fleet managers and sustainability leaders	In-Person at CCAC West Hills Center in Oakdale	Increased education surrounding fleet electrification
Nov. 3: NEVI - Business Community Session	Presentation and educational tabling on utility's role in electric vehicle charging projects and NEVI application process	Commercial customers and state agencies	In-Person at Chatham Center in Pittsburgh's Downtown	Increased education on utility role in electric mobility funding opportunities
Nov. 9: Electric League of Western PA "EV Business Opportunities" Panel	Panel discussion business opportunities and working with the utility on EV charging installations	Industry: Electrical engineers and contractors	In-Person at Treesdale Country Club in Gibsonia	Increased education surrounding electric mobility market and working with DLC

Nov. 14: POGOH Video Series	Sponsorship of first video in a series highlighting the capabilities of POGOH's e-assist bicycles	Residential customers	Virtual (YouTube)	Increased awareness of the availability and capabilities of POGOH's e-assist bicycles
Nov. 15: ICF Podcast - "Energy in 30"	Podcast discussion on utility's role in fleet electrification and electric vehicle charging installations	Industry: Energy and Utility Professionals	Virtual	Increased education surrounding the utility's role in electric mobility
Sept. 28: SAE Podcast - "Tomorrow Today"	Podcast discussion on the utility's role in the shift to electric mobility	Industry: Automotive manufacturers and suppliers	Virtual	Increased education surrounding the utility's role in electric mobility
Dec. 9: Congress of Neighboring Communities' Activator Series Event: "Putting Plans into Action"	Educational presentation and tabling on consideration for installing and hosting EV charging stations	Commercial Customers: Municipal manager, supervisors, fleet operators, and leaders	In-Person at Ross Municipal Center in Ross Township	Increased education surrounding electric mobility options for local governments
Dec. 20: Sci-Tech Educational Session	Educational presentation on electric vehicles and charging infrastructure and related career pathways	Students: Local middle school students	In-Person at DLC's Woods Run Campus	40+ students; Increased education surrounding electric mobility market and careers
Activity	Description	Target Audience	Channel	Results
2023				
Jan. 3: POGOH Video Series	Sponsorship of second video in a series highlighting the capabilities of POGOH's e-assist bicycles	Residential Customers	Virtual (YouTube)	Increased awareness of the availability and capabilities of POGOH's e-assist bicycles

Feb. 13: School Bus Fleet Electrification Forum	Panel discussion on considerations for school bus electrification and working with the local electric utility	Commercial Customers: School District Administrators, Public & Private School Bus Operators	In-Person at A.W. Beattie Career Center in Allison Park	Increased education surrounding school bus electrification
Feb. 17 – 20: Pittsburgh International Auto Show	Sponsored “Electric Avenue” at the Auto Show including educational tabling, electric fleet vehicle demo, and EV ride-alongs.	Residential customers	In-Person at David L. Lawrence Convention Center in Pittsburgh’s Downtown	55,000+ in attendance and 4,000+ EV ride-alongs; Increased awareness of electric mobility options
Feb. 18: Pittsburgh Today Live Interview	Educational media interview on residential considerations for driving electric and charging at home	Residential customers	In-Person at David L. Lawrence Convention Center in Pittsburgh’s Downtown	Increased education surrounding residential EV charging
March 16: West Mifflin Ribbon Cutting	Ribbon-cutting ceremony for the new EV charging stations in West Mifflin	Residential and commercial customers	In-Person at West Mifflin Borough Building	Increased awareness of EV charging availability in West Mifflin area
March 21: Coraopolis Community Meeting	Educational presentation and workshop on electric mobility considerations in the Coraopolis community	Residential and commercial customers	In-Person at Snappy’s Tap House in Coraopolis	Increased education and awareness surrounding electric mobility options in Coraopolis
March 23: National Electrical Contractors	Educational panel discussion on electric mobility market	Industry: Electrical engineers and	In-Person at Acrisure Stadium in	Increased awareness on how contractors can get

Association Pittsburgh Panel		electrical contractors	Pittsburgh's North Shore	involved in the electric mobility market and work with DLC
April 6: Penn Hills Community Meeting	Educational presentation and workshop on electric mobility considerations in the Penn Hills community	Residential and commercial customers	In-Person at Penn Hebron Garden Club in Penn Hills	Increased education and awareness surrounding electric mobility options in Penn Hills
April 14: Allegheny League of Municipalities Spring Educational Conference	Educational presentation and tabling on considerations for municipal fleet electrification and electric vehicle charging	Commercial customers: Municipal leaders	In-Person at Seven Springs Mountain Resort in Seven Springs	Increased education surrounding electric mobility options for local governments
April 17: Clairton Community Meeting	Educational presentation and workshop on electric mobility considerations in the Clairton community	Residential and commercial customers	In-Person at municipal building in Clairton	Increased education and awareness surrounding electric mobility options in Clairton
April 18: Soul Pitt Interview	Educational interview on growing number of electric mobility options for all	Residential customers	Virtual	Increased awareness of electric mobility options, including transit and e-bikes
April 22: Earth Day Event	Educational event about beneficial electrification, including transportation	Residential customers	In-Person at the Energy Innovation Center in Pittsburgh's Lower Hill District	Increased awareness of transportation electrification options
April 24: WTAE Interview	Media interview about the new EV charging available in Oakmont	Residential customers	In-Person at Riverside Park in Oakmont	Increased awareness of new public EV charging infrastructure

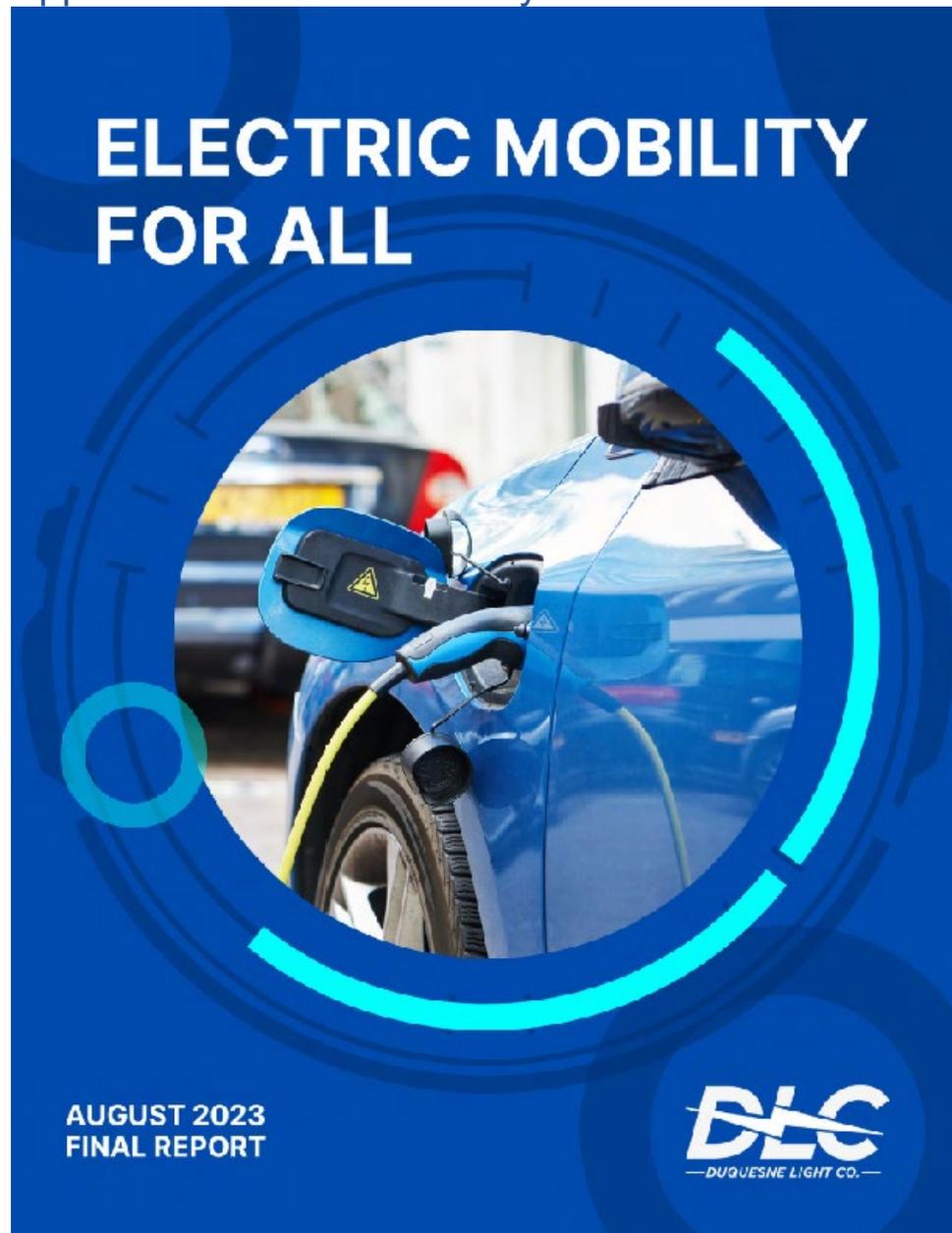
May 2: POGOH Video Series	Sponsorship of third video in a series highlighting the capabilities of POGOH's e-assist bicycles	Residential consumers and community members	Virtual (YouTube)	Increased awareness of the availability and capabilities of POGOH's e-assist bicycles
May 19: Oakmont Ribbon Cutting	Ribbon-cutting ceremony for the new EV charging stations in Oakmont	Residential and commercial customers	In-Person at Riverside Park in Oakmont	Increased awareness of new public EV charging infrastructure
May 24: Electric Fleet Expo	Educational event hosted by DLC, Sustainable Pittsburgh, PRCC, Local Government Academy, and Southwestern PA Commission about fleet electrification, including educational panel discussions, speakers, fleet charging vendor fair, and electric fleet vehicle expo	Commercial customers: commercial, nonprofit, local government, and school district fleet managers and sustainability leads	In-Person at Robert Morris University in Moon Township	Attended by 200+ fleet and sustainability leaders; Increased education surrounding fleet electrification options
June 3: Pride Parade and Tabling	Educational participation and tabling at Pittsburgh's Pride Parade	Residential customers	In-Person in Pittsburgh's Downtown and North Side	Increased awareness of electric mobility options in the Pittsburgh region
June 13: PRCC Annual Stakeholder Meeting	Educational presentation on the electric mobility market and programming in the Pittsburgh region	Stakeholders: Local sustainability and transportation leaders	In-Person at CCAC's West Hills Center in Oakdale	Increased education surrounding the growing electric vehicle market
June 15: North Hills Council of Governments Vendor Show	Educational tabling on fleet electrification	Commercial customers: municipal managers and fleet leaders	In-Person at Ross Township's Public Works Building in Ross Township	Increased education surrounding fleet electrification and charging

June 17: Juneteenth Festival	Educational tabling on electric mobility options	Residential customers	In-Person at Point State Park in Pittsburgh's Downtown	Increased awareness of electric mobility options
June 28: Pittsburgh City Paper Interview	Media interview about residential EV charging	Residential customers	Virtual	Increased awareness of options for charging an EV at home
July 17: National School Transportation Association Annual Meeting and Convention	Educational panel discussion on school bus electrification	Commercial customers: School districts and bus operators	In-Person at Westin Hotel in Pittsburgh's Downtown	Increased education surrounding school bus electrification and working with electric utilities on related projects
July 18: Green Building Alliance Partner Showcase	Educational presentation on transportation electrification options	Commercial customers: building/property owners and managers, and sustainability leaders	Virtual	Increased education on EV charging at commercial properties
July 20: DLC Supplier Diversity Summit	Educational presentation on electric vehicle market and supply chain	Commercial customers and suppliers	In-Person at Doubletree Hotel in Pittsburgh's Green Tree	Increased education on EV market and supply chain
July 22-23: Pittsburgh Vintage Grand Prix	Educational tabling on electric mobility options with DLC electric fleet vehicle	Residential customers	In-Person at Schenley Park in Pittsburgh's Oakland	Increased awareness of electric mobility in the Pittsburgh region
July 26: PennEnvironment Press Conference	Educational speaking on electric mobility for local governments	Commercial customers: local government leaders	In-Person at the City-County Building in Pittsburgh's Downtown	Increased education surrounding electric mobility

				options for local governments
Aug. 15: Dirt Podcast	Educational podcast interview on increasing public EV charging in Beaver County	Residential and commercial customers	In-Person at Sister's of St. Joseph Campus in Baden	Increased awareness of public EV charging in Beaver County
Aug. 16: Sisters of St. Joseph Ribbon Cutting	Ribbon-cutting ceremony for the new EV charging stations in Baden	Residential and commercial customers	In-Person at Sister's of St. Joseph Campus in Baden	Increased awareness of public EV charging in Beaver County
Aug. 24: Beaver County Council of Governments Conference	Educational tabling on electric mobility options for local governments	Commercial customers: local government leaders	In-Person at Hilton Garden Inn in Monaca	Increased education on electric mobility options for local governments
Sept. 6: New Pittsburgh Courier Interview	Educational interview on increasing access to public EV charging for local residents	Residential customers	Virtual	Increased awareness of public EV charging in residential areas
Sept. 20: EVs in Action: Bus Tour and Lunch for Municipal Planning	Educational event hosted by DLC, CONNECT, and PRCC on local government electric mobility options including EV charging site tours on an electric school bus and a planning workshop	Commercial customers: local government leaders	In-Person at CCAC Braddock Hills, Swissvale, and Wilkinsburg	Increased education on electric mobility options for local governments
Sept. 28: Swissvale Ribbon Cutting	Ribbon-cutting ceremony for the new EV charging stations in Swissvale	Residential and commercial customers	In-Person in Swissvale	Increased awareness of public EV charging in Swissvale
Sept. 28: Beaver County Chamber of Commerce Fall Brunch	Educational tabling on electric mobility options for organizations in Beaver County	Commercial customers	In-Person at the Club at Shadow Lakes in Aliquippa	Increased education surrounding commercial electric mobility options

Sept. 30: POGOH's End of Summer Rollup	Educational tabling on residential electric mobility options with an emphasis on e-bikes	Residential customers	In-Person at Westinghouse Park in Pittsburgh's Point Breeze North	Increased awareness of electric-assist bicycles and other electric mobility options
Oct. 3: Clairton City Council Workshop	Educational workshop on fleet electrification and charging	Commercial customers: Local government	In-Person at municipal building in Clairton	Increased education surrounding fleet electrification and charging options for Clairton
Oct. 6: Odyssey Day	Educational tabling and speaking on considerations for fleet electrification	Commercial customers: local fleet and sustainability leaders	In-Person at CCAC West Hills Center in Oakdale	Increased education surrounding fleet electrification
Oct. 24: Student Transportation of America (STA) Media Day	Educational event on DLC's partnership with STA to bring the first electric school buses to western PA	Commercial customers: school districts and school bus operators	In-Person at STA school bus depot in Gibsonia	Increased education surrounding school bus electrification
Oct. 25: Green Voice Speakers Series	Educational panel discussion on electric mobility market	Residential and commercial customers	In-Person at #1 Cochran dealership in Pittsburgh's Strip District	Increased education surrounding local electric mobility market
Nov. 2: Southwest Pennsylvania Decarbonization Forum	Educational presentation on transportation electrification as a decarbonization solution	Commercial customers: local transportation and sustainability leaders	In-Person at Mill 19 in Pittsburgh's Hazelwood	Increased education surrounding transportation electrification as a decarbonization solution
Nov. 15: Sustainable Pittsburgh's CEOs for Sustainability	Educational tabling on fleet electrification and charging	Commercial customers	In-Person at the Energy Innovation Center in Pittsburgh's	Increased education surrounding fleet

			Lower Hill District	electrification and charging
Nov. 18: Mobilify's Transportation Camp	Sponsorship and education on transportation electrification solutions in the Pittsburgh region	Commercial customers: local transportation and sustainability leaders	In-Person at University of Pittsburgh's Benedum Hall in Pittsburgh's Oakland	Increased education surrounding transportation electrification solutions
Dec. 5: EPA Clean School Bus Rebate Webinar	Educational webinar hosted by DLC, PRCC, Highland Electric Fleets, and EPA on Electric School Bus considerations and EPA's Clean School Bus Rebate Program	Commercial customers: School districts and school bus operators	Virtual	~20 in attendance; Increased education surrounding school bus electrification and funding



## Appendix D: Fleet Charging Pilot Customer Application



DLC\_Fleet\_Charging\_Application\_Final.xlsx

## Appendix E: Public, Workplace and Multi-Unit Dwelling Make-Ready Pilot Customer Application



DLC\_Community\_Charging\_Application\_Final



# **Transportation Electrification Portfolio Evaluation and Assessment Plan**

**Dated: March 1, 2024**

## Contents

- Introduction..... 3
- Evaluation and Assessment Overview..... 3
- Data Sources and Methodology..... 4
- Equitable Apportionment..... 4
- Evaluation Approaches ..... 5
  - Awareness, Education and Engagement ..... 5
  - Electric Fleet Advisory Service..... 6
  - EV Registration Incentive..... 7
  - Community, Fleet, & Transit Pilot ..... 8
  - Home Charging Pilot..... 10
  - Managed Home Charging Pilot..... 11
  - EV TOU Distribution Rate Pilot ..... 13

## Introduction

Duquesne Light Company (the “Company”) hereby submits this Transportation Electrification (TE) Portfolio Evaluation and Assessment Plan (“Evaluation Plan”). The Company will include its TE Portfolio Evaluation and Assessment (“Evaluation Report”) in its next base rate proceeding filing. This Plan and programs hereunder are subject to approval and modification by the Pennsylvania Public Utility Commission in the Company’s base rate proceeding at Docket No. R-2024-3046523

## Evaluation and Assessment Overview

The Evaluation Report will employ the following high-level structure: executive summary, TE Portfolio summary and goals, offering-by-offering evaluation methodology and results, and conclusion.

The Executive Summary will detail major TE Portfolio successes, challenges, key findings, and opportunities for improvement.

This section will be followed by a high-level summary of the TE Portfolio and the overarching goals of the Company’s work.

The Company will provide a description of its work to target the equitable apportionment of its efforts so that they benefit customers across geographic and socio-economic lines.

Next, the Company will detail an offering-by-offering evaluation of the TE Portfolio. For each offering, the Company will provide an overview of the initiative, outline the initiative’s objectives, and detail the initiative’s evaluation methodology and evaluation results, including key findings.

Finally, the report will include a conclusion and identify key recommendations.

The Company may adjust offering implementation as it evaluates program performance, which will be discussed in the Evaluation Report.

## Data Sources and Methodology

To produce its Evaluation Report, the Company will use a variety of data sources. Relying on a variety of data sources will enable the Company to assess offering results, but also to assess the program design and process which produced the results. Data sources will include:

### **Customer surveys**

To assist with the evaluation, the Company will survey its customers to understand their views about electric vehicles (EVs) and to understand how they have utilized Company provided resources. The Company will also interview or survey customers who participated in its Charging Infrastructure Offerings to glean additional qualitative insights about the program processes and impacts.

### **Program materials, data, and tracking systems**

The Company will share and evaluate the program materials it produced to educate customers and disseminate information about its offerings. Additionally, the Company will use information from its internal tracking systems to help inform analysis, such as project costs and timelines for key milestones. The Company will also leverage data from platforms like Google Analytics to report on website and program resources usage.

### **Company advanced metering infrastructure and billing data**

The Company will use advanced metering infrastructure (AMI) and billing data to inform revenue and net project benefit calculations. AMI data will also be used to help validate charging station utilization data.

### **Charging station utilization data**

For the stations installed through its Charging Infrastructure Offerings that are networked, the Company will collect and analyze this data, as available, to assess station use and produce load curves. This data will also help to identify usage differences among customer types (public, workplace, multi-family, fleet) and vehicle types (light, medium, and heavy-duty vehicles).

The Company anticipates that there may be gaps, errors, or potential inconsistencies in some of the charging station data. The Company will report on its data collection, verification and cleaning processes and identify notable data omissions in its Evaluation Report for charging station data and any other data sources as relevant.

## Equitable Apportionment

The Company will target the equitable apportionment of its program budgets across geographic and socio-economic lines. The Company will include a section describing its efforts towards equitable apportionment of its TE Portfolio.

The Company has designated certain communities in its service territory as Electric Mobility Priority Areas, based on criteria including median family income, poverty rate, environmental vulnerability as determined by the PennEnviroScreen Composite Score, and more. The Company will report on the number of projects built in such areas as part of its Charging

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

Infrastructure Offerings. The Company will also evaluate its TE Portfolio's equitable apportionment from a range of other factors including:

- Urban, suburban and rural
- Inside or outside of the City of Pittsburgh
- County (Allegheny or Beaver)
- Use case (public, workplace, multi-family, fleet)

In its Evaluation Report, the Company will explain each factor used in assessing equitable apportionment, and how the corresponding data were assessed. It will also report on the number of charging projects and the portion of its Charging Infrastructure Offerings' budgets that was spent across each criterion.

Additionally, the Company will describe:

- Awareness, outreach and recruiting efforts to achieve equitable apportionment.
- Successes and challenges with achieving equitable apportionment.
- Lessons learned and recommendations for future efforts.

## Evaluation Approaches

Below, the Company describes in detail its evaluation approach for each TE offering, including a summary of the offering, key objectives, contents of the evaluation, and key performance indicators (KPIs), targets, and data sources.

### Awareness, Education and Engagement

#### Initiative Summary

Through its Awareness, Education, and Engagement (AEE) activity, the Company aims to increase customer awareness and adoption of EVs. The Company will provide online educational resources for customers and will hold and attend in-person and virtual events to educate customers about EVs and EV charging.

Although a range of factors will ultimately guide a customer's decision-making about purchasing an EV or installing charging infrastructure, the Company aims to be a trusted source for high-quality information that can help customers in that process.

Due to the often-difficult nature of assessing the direct impact of AEE activities, the Company will rely on surveys of customer attitudes about EVs, along with feedback of Company resources when possible.

#### Key Objectives

- Increase customer awareness of EVs and EV charging.
- Increase customer likelihood of EV adoption.
- Increase customer awareness of publicly available incentives for EVs and EV charging.
- Be viewed as a trusted partner for our customers seeking information about EVs.
- Identify barriers that impede EV adoption among customers.

#### Evaluation Components

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

- Provide a description of AEE activities undertaken, including the target audience, channel, and results by year.
- Provide a budget breakdown by major categories by year.
- Provide a description of activities that were targeted toward low-income customers and/or Electric Mobility Priority Areas by year.
- Summarize annual customer EV survey results, including customer familiarity with EVs, likelihood of adoption, and adoption concerns.
- Describe key takeaways from customer feedback on Company-provided resources and events.

### KPIs, Targets and Data Sources

In addition to the evaluation components described above, the Company has established and will report on the below metrics and targets.

KPI	2025 Target	2026 Target	2027 Target	Measurement/ Data Source
Customer familiarity of EVs	76%	80%	84%	Annual EV Customer Survey (Customer Panel)
Customers that agree DLC Has the Tools and Resources Needed to Make Informed Decisions about EVs	33%	36%	39%	Annual EV Customer Survey (Customer Panel)
Events Supported (virtual and in-person)	25	25	25	Tracked during offering administration
EV Guide Annual Views	50,000	60,000	72,000	Google analytics

### Electric Fleet Advisory Service

The Company's Electric Fleet Advisory Service will provide customers with information to make the transition to EVs. The service will give the Company advanced intelligence about customers that are considering electrifying their fleet. It will also provide an opportunity for the Company to provide technical assistance to customers, including, where applicable, helping customers participate in the Fleet Charging Program.

### Key Objectives

- Increase fleet customer awareness of cost-effective EV options.
- Increase the number of electric vehicles deployed by fleets.
- Help customers understand the total cost-of-ownership impacts from converting to electric.

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

- Help customers understand other impacts (environmental, operational) from converting to electric.
- Deepen Company knowledge of the operational considerations and impacts as fleets convert to electric.
- Gain advanced knowledge of potential charging installations to assist with grid planning.

### Evaluation Components

- Report on the number of customers participating by year, including the type of entity.
- Report on the number of fleet vehicles evaluated and the number of vehicles identified as cost-effective to deploy as electric.
- Report on the estimated total cost of ownership savings by type of entity.
- Report on the estimated GHG savings from fleet conversions.
- Report, to the extent known, the number of EVs deployed by customers after participating in the advisory service.
- Report challenges, including operational and financial, customers faced when considering converting to electric vehicles and how the advisory service helped to address those challenges.
- Report on customer satisfaction with the advisory service.
- Provide a budget breakdown by year.

### KPIs, Targets and Data Sources

In addition to the evaluation components described above, the Company has established and will report on the below KPIs and targets.

KPI	2025 Target	2026 Target	2027 Target	Measurement/ Data Source
Number of unique customers participating	18	18	18	Fleet assessments
Number of vehicles evaluated	500	500	500	Fleet assessments

### EV Registration Incentive

The Company's EV Registration Incentive will enable the Company to know where EV customers live in its service territory and will help the Company to communicate with those customers. The survey customers complete when claiming the registration incentive will provide the Company with additional information about EV driving customers, including when they charge their vehicles, where they work, and the type of charging they have in their home. This information can help with grid planning and provide a deeper understanding of customer charging behavior.

### Key Objectives

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

- Identify EV driving customers in the Company’s service territory.
- Use EV registration incentive data to help communicate with EV-driving customers.
- Use EV registration incentive data to inform grid planning.

### Evaluation Components

- Report the number of EV registration incentives claimed, including by year, Federal Poverty Level (FPL) ranges (based on voluntary customer responses), confirmed low-income, and CAP customers.
- Report aggregated information about registration incentive recipients, including geographic area, and zip code; and based on customer self-reporting, the time-of-day customers charge and the type of charging they have (Level 1 or Level 2).
- Report on customer feedback about the EV registration incentive, as data is available.
- Describe how EV registration data enabled the Company to reach EV driving customers.
- Describe how EV registration data helped to inform the Company’s grid planning efforts.

### KPI, Targets and Data Sources

In addition to the evaluation components described above, the Company has established and will report on the below KPI and targets.

KPI	2025 Target	2026 Target	2027 Target	Measurement/ Data Source
Incentives issued (cumulative)	20% of EVs in Company’s service territory	20% EVs in Company’s service territory	20% EVs in Company’s service territory	Incentive data

### Community, Fleet, & Transit Pilot

The Company’s Community, Fleet, & Transit Pilot is designed to reduce cost and project management burden to customers, increase the charging infrastructure available to fleets and publicly available charging infrastructure at public parking facilities, workplaces and multi-family housing, and support Pittsburgh Regional Transit’s (PRT) efforts to electrify its bus fleet. The pilot will also provide the Company with greater insight into customer challenges with installing charging infrastructure and fleet vehicle operations, along with a better understanding of project costs, revenue, and station usage.

### Objectives

- Increase charging station installations serving fleet, public parking facilities, workplace, multi-family and transit customers.
- Increase charging station installations serving Electric Mobility Priority Areas.
- Reduce costs to participating customers.
- Reduce greenhouse gases and other air pollutant emissions.
- Understand the energy consumption and the incremental distribution revenue attributable to charging.
- Evaluate charging behavior by market segment.
- Better understand customer barriers to installing charging infrastructure.

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

- Use charging data to help inform grid planning.

### Evaluation Components

For its evaluation of its Community, Fleet, & Transit Pilot, the Company will assess the degree of success of the pilot, along with the benefits and costs accrued to participating customers and the Company. For the evaluation, the Company will include the following evaluation components:

- Report on average/median project timelines for major project milestones.
- Report on the number of charging ports enabled, including by:
  - Make-ready construction pathway vs. make-ready rebate pathway
  - Project status (Plant in Service, Activated, Installed, Energized)<sup>1</sup>
  - Station type (Level 1, Level 2, or Direct Current Fast Charging “DCFC”)
  - Location
  - Sites collocated with e-micromobility stations
  - Customer segment / site host type (community, fleet, or transit)
  - Year
  - census tract
  - five-digit zip code
  - Electric Mobility Priority Area
- Report on charging station usage, when data are available, including:
  - Total Number of charging sessions by:
    - Customer segment
    - Station type (Level 2 or DCFC)
  - Total amount of energy (kWh) dispensed by:
    - Customer segment
    - Station type (Level 2 or DCFC)
  - Average number of sessions per day
  - Average kWh per charging session
  - Charging station utilization (percentage of time the EV is plugged in)
  - Estimated environmental impacts from charging station usage, including reductions in GHG emissions and other air pollutants.
- Report on incremental Company distribution revenues from charging stations<sup>2</sup>, including by:
  - Customer segment / site host type
  - Rate class
- Report on charging station infrastructure installation costs, including by:

---

<sup>1</sup> A completed project status of ‘Plant in Service’ means that the charging stations are online and usable, and the Company’s make-ready asset has been placed in use for the purpose of accounting. A completed project status of ‘Activated’ means that the charging stations are online and usable, but the Company’s make-ready asset has not yet been placed in use for the purpose of accounting. A completed project status of ‘Installed’ means that the charging stations are in place but have not been activated by the network service provider. Finally, a completed project status of ‘Energized’ means that the make-ready infrastructure has been installed and electricity service has been activated but the customer has not yet installed their charging stations.

<sup>2</sup> Only applicable to stations built as part of the Company’s make-ready ownership pathway.

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

- Year
- Project status
- Average cost per site by customer segment
- Average cost per port by customer segment
- Report on overall Charging Program costs by major categories.
- Report the number of charging station rebates issued, including by customer segment.
- Produce EV charging load curves, including size and timing of peak, and average load shape by customer segment.
- Describe how charging data has helped inform grid planning.

### KPIs, Targets and Data Sources

In addition to the evaluation components described above, the Company has established and will report on the below KPIs and targets.

KPIs	2025 Target (ports)		2026 Target (ports)		2027 Target (ports)		Measurement/ Data Source
	Construction Pathway	Rebate Pathway	Construction Pathway	Rebate Pathway	Construction Pathway	Rebate Pathway	
Level 1 Installations	0	12	0	18	0	22	Program materials, data, and tracking systems
Level 2 Installations	108	27	144	41	144	49	
DCFC Installations	17	12	23	18	23	58	
Micromobility Sites	0	1	0	2	0	2	
MD/HD Fleet Depot Ports	0	0	0	0	0	10	
% of Projects in EMPAs	25%	25%	25%	25%	25%	25%	

### Home Charging Pilot

The Company's Home Charging Pilot is designed to facilitate the installation of L2 charging stations in residential customers' homes, which the Company has identified as a central obstacle to residential EV adoption. The pilot will provide the Company insights into installed charger power in its service territory, which can facilitate distribution system investment that may be required to ensure grid reliability and safety.

### Objectives

- Increase home charging adoption to help drive EV adoption.
- Reduce costs to participating customers.
- Reduce greenhouse gases and other air pollutant emissions.
- Encourage networked L2 adoption to facilitate off-peak charging and participation in load management programs.
- Use program data to help inform grid planning.

### Evaluation Components

For its evaluation of its Home Charging Pilot, the Company will assess the degree of success of the pilot, along with the benefits and costs accrued to participating customers and the Company. For the evaluation, the Company will include the following evaluation components:

- Report on the number of customers who claimed the rebate, including by:
  - Rate class
  - Year
  - Census tract
  - Five-digit zip code
  - Charging station power level
  - Income-qualified participants
- Report on rebate dollars issued, including by:
  - year
  - Standard and income-qualified rebate
- Report on the average cost per charging station.
- Report on overall Home Charging Pilot costs by major categories.
- Report on the Home Charging Pilots' participation in other programs, such as the EV TOU Distribution Rate Pilot and the Managed Home Charging Pilot.
- Report on customer satisfaction with the Home Charging Pilot.
- Describe how pilot data has helped inform grid planning.

### KPIs, Targets and Data Sources

In addition to the evaluation components described above, the Company has established and will report on the below KPIs and targets.

KPIs	2025 Target	2026 Target	2027 Target	Measurement/ Data Source
Number of standard rebates issued	525	400	500	Program materials, data, and tracking systems
Number of income-qualified rebates issued	10	18	23	
% of customers reporting being satisfied or greater with the pilot program	80%	80%	80%	Pilot participant survey

### Managed Home Charging Pilot

The Company's Managed Home Charging Pilot is designed to increase EV adoption and throughput while encouraging off-peak charging to mitigate increased peak demand. The pilot will provide the Company insights into customer response to, administration of, and efficacy of active load management solutions, allowing it to leverage data to help inform its on-going load management strategy.

## Duquesne Light Company Transportation Electrification Portfolio Evaluation and Assessment Plan

### Objectives

- Assess degree to which EV managed charging can be a reliable and meaningful load management asset for the grid.
- Assess customer participation and response to incentives.
- Assess the ability of technological devices to successfully manage charging reductions and the use of a third-party platform to keep customers informed of their progress.

### Evaluation Components:

- Report on the number of customers who enrolled, including by:
  - Year and month
  - Census tract
  - Five-digit zip code
  - Vehicle type (i.e., BEV vs. PHEV)
  - Technology pathway (charging station, vehicle, etc.)
- Report on the event participation, including by:
  - Event
  - Technology pathway
  - Vehicle Type
  - Device status
- Report on the event impact, including by:
  - Event
  - Device
  - Customer vs. Control group
  - Vehicle Type
- Produce EV charging load curves, including average hourly load shapes by:
  - Household
  - Rate Class
  - Season
  - Weekday/Weekend
- Report on total dollar amount of incentives provided by year.
- Report on customer satisfaction with the Pilot.
- Report on success directly managing charging through end-devices. Describe any challenges encountered and how they were addressed.
- Report on success of leveraging a third-party platform to enroll, facilitate customer participation, and keep customers informed of progress. Describe any challenges encountered and how they were addressed.
- Report on differences in impact between participants and control group.
- Describe how pilot results have been used to estimate longer-term grid impacts and benefits.

Duquesne Light Company Transportation Electrification Portfolio  
Evaluation and Assessment Plan

**KPIs, Targets and Data Sources**

In addition to the evaluation components described above, the Company has established and will report on the below KPIs and targets.

KPIs	2025 Target	2026 Target	2027 Target	Measurement/ Data Source
Number of customers enrolled	50	150	200	Program materials, data, and tracking systems
Number of events called	4	10	10	
% of customers reporting being satisfied or greater with the pilot program	80%	80%	80%	Pilot participant survey

**EV TOU Distribution Rate Pilot**

The Company’s EV TOU Distribution Rate Pilot is designed to encourage off-peak charging to mitigate increased peak demand. The pilot will provide the Company insights into customer response to, administration of, and efficacy of passive load management solutions, allowing it to leverage data to help inform its on-going load management strategy.

**Objectives**

- Assess degree to which an EV TOU Distribution Rate can be a reliable and meaningful load management asset for the grid.
- Assess customer participation and response to rate price signals.
- Assess the ability of a third-party platform to successfully report on customer EV-only charging and enable customer interactions.

**Evaluation Components:**

- Report on the types of customers who enrolled, including by:
  - Rate type (WholeHome or EV-only)
  - Rate class
  - Year
  - Census tract
  - Five-digit zip code
  - Vehicle type (i.e., BEV vs. PHEV)
- Report on net customer bill impacts as compared to the standard distribution rate by:
  - Rate type
  - Rate class
- Report on energy usage shifted from on-peak hours (for those customers for whom the Company has sufficient historical usage data) from pre- to post-enrollment by:
  - Rate type
  - Rate class

Duquesne Light Company Transportation Electrification Portfolio  
Evaluation and Assessment Plan

- Supply rate type enrollment (EGS, POLR, WholeHome, etc.).
- Produce EV charging load curves, including average load shape by:
  - Household
  - Rate Class
  - Season
  - Weekday/Weekend.
- Report on customer satisfaction with the Pilot.
- Report on ability to execute scheduled charging to avoid timer peaks. Share results comparing scheduled charging and non-scheduled charging enrollees.
- Report on success of tracking and reporting EV-only customer energy use by technology pathway. Describe any challenges encountered and how they were addressed.
- Report on the data accuracy comparison of EV-only non-billing submeter data to EV-only data obtained through other technology pathways.
- Report on customer usage of pre-enrollment tools
- Report on customer interaction with post-enrollment behavioral load shaping communications
- Describe how pilot results have been used to estimate longer-term grid impacts and benefits.

**KPIs, Targets and Data Sources**

In addition to the evaluation components described above, the Company has established and will report on the below KPIs and targets.

<b>KPIs</b>	<b>2025 Target</b>	<b>2026 Target</b>	<b>2027 Target</b>	<b>Measurement/ Data Source</b>
EV Only Participants	100	125	175	Program materials, data, and tracking systems
WholeHome Participants	200	300	500	
Share of energy consumed by WholeHome participants during off-peak periods	65%	65%	65%	
Share of energy consumed by EV-only participants during off-peak periods	90%	90%	90%	
Customer Satisfaction – % of customer reporting being satisfied or greater with the pilot program	80%	80%	80%	

**TE Portfolio Budget Summary**

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$ 3,901,324	\$ 3,984,779	\$ 4,070,737	\$ 11,956,840
O&M	\$ 1,987,769	\$ 1,629,573	\$ 1,702,894	\$ 5,320,235
Total	\$ 5,889,093	\$ 5,614,351	\$ 5,773,631	\$ 17,277,075

**Budget Information**

Line No.	Item Description	Year 1			Year 2		
		Capital	Expense	Total Cost	Capital	Expense	Total Cost
1	Awareness, Education, and Engagement		\$ 436,000	\$ 436,000		\$ 307,000	\$ 307,000
2	EV Registration Incentive		\$ 116,029	\$ 116,029		\$ 136,637	\$ 136,637
3	Electric Fleet Advisory Service		\$ 139,500	\$ 139,500		\$ 134,500	\$ 134,500
4	Community, Fleet & Transit Charging Pilot	\$ 3,824,324	\$ 430,600	\$ 4,254,924	\$ 3,907,779	\$ 452,436	\$ 4,360,215
5	Home Charging Pilot		\$ 271,750	\$ 271,750		\$ 175,300	\$ 175,300
6	Managed Home Charging Pilot		\$ 187,640	\$ 187,640		\$ 112,500	\$ 112,500
7	EV TOU Distribution Rate Pilot		\$ 263,250	\$ 263,250		\$ 168,200	\$ 168,200
8	Incremental Headcount	\$ 77,000	\$ 143,000	\$ 220,000	\$ 77,000	\$ 143,000	\$ 220,000

Line No.	Item Description	Year 3			Program Total		
		Capital	Expense	Total Cost	Capital	Expense	Total Cost
1	Awareness, Education, and Engagement		\$ 272,000	\$ 272,000		\$ 1,015,000	\$ 1,015,000
2	EV Registration Incentive		\$ 152,760	\$ 152,760		\$ 405,425	\$ 405,425
3	Electric Fleet Advisory Service		\$ 134,500	\$ 134,500		\$ 408,500	\$ 408,500
4	Community, Fleet & Transit Charging Pilot	\$ 3,993,737	\$ 455,895	\$ 4,449,632	\$ 11,725,840	\$ 1,338,931	\$ 13,064,770
5	Home Charging Pilot		\$ 206,300	\$ 206,300		\$ 653,350	\$ 653,350
6	Managed Home Charging Pilot		\$ 159,000	\$ 159,000		\$ 459,140	\$ 459,140
7	EV TOU Distribution Rate Pilot		\$ 179,440	\$ 179,440		\$ 610,890	\$ 610,890
8	Incremental Headcount	\$ 77,000	\$ 143,000	\$ 220,000	\$ 231,000	\$ 429,000	\$ 660,000

Exhibit SO-3: Transportation Electrification Portfolio Budget

<b>Program Name:</b>	Awareness, Education, and Engagement
----------------------	--------------------------------------

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$ -	\$ -	\$ -	\$ -
O&M	\$ 436,000	\$ 307,000	\$ 272,000	\$ 1,015,000

**Budget Information**

O&M		Year 1			Year 2		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total
1	Customer Tools			\$ 145,000			\$ 104,000
2	Events & Sponsorships			\$ 82,000			\$ 112,000
3	Customer Research			\$ 80,000			\$ 60,000
4	Digital & Print Outreach			\$ 129,000			\$ 31,000
<b>Total</b>				\$ 436,000			\$ 307,000

		Year 3			Program Total		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total
1	Customer Tools			\$ 114,000			\$ 363,000
2	Events & Sponsorships			\$ 97,000			\$ 291,000
3	Customer Research			\$ 20,000			\$ 160,000
4	Digital & Print Outreach			\$ 41,000			\$ 201,000
<b>Total</b>				\$ 272,000			\$ 1,015,000

Exhibit SO-3: Transportation Electrification Portfolio Budget

<b>Program Name:</b>	Awareness, Education, and Engagement
----------------------	--------------------------------------

**Supporting Information**

Table 1: Budget Detail		Year 1	Year 2	Year 3	Total	Notes
<b>Line No.</b>	<b>Customer Tools</b>					
1	EV Guide	\$ 60,000	\$ 60,000	\$ 60,000	\$ 180,000	Based on historical costs, no escala
2	Dealership Tool	\$ 20,000	\$ 20,000	\$ 20,000	\$ 60,000	Based on vendor quote
3	Rate Advisor Enhancements	\$ 50,000	\$ 24,000	\$ 24,000	\$ 98,000	Based on historical costs.
4	Other Tools & Enhancements	\$ 15,000		\$ 10,000	\$ 25,000	
	<b>Events &amp; Sponsorships</b>					
5	Auto Show (Sponsorship + Display)	\$ 57,000	\$ 57,000	\$ 57,000	\$ 171,000	Based on historical costs.
6	DLC-Hosted Events	\$ 15,000	\$ 30,000	\$ 15,000	\$ 60,000	Assumes 3-5 smaller events in all years (~\$5,000 each) + 1 large event in Year 2 (~\$15,000).
7	Priority Area Sponsorships/Events	\$ 5,000	\$ 10,000	\$ 10,000	\$ 25,000	Assumes 4-6 activites in Y2 and Y3 and 2-4 activities in Y1 (~\$2,500 each).
8	Other Sponsorships/Events	\$ 5,000	\$ 15,000	\$ 15,000	\$ 35,000	Assumes 1-2 activites in Y1 and 3-5 activites in Y2 and Y3 (~\$5,000 each).
	<b>Customer Research</b>					
9	Commercial Segmentation & Lead Generation	\$ 40,000	\$ 10,000	\$ 10,000	\$ 60,000	Based on historical costs.
10	Other Research	\$ 40,000	\$ 50,000	\$ 10,000	\$ 100,000	Based on historical costs.
	<b>Digital &amp; Print Outreach</b>					
11	Program Material	\$ 55,000			\$ 55,000	Based on historical costs.
12	Program Material Printing	\$ 4,000	\$ 1,000	\$ 1,000	\$ 6,000	Based on historical costs.
13	New webpages	\$ 30,000			\$ 30,000	Based on historical costs.
14	Landing page refresh	\$ 20,000			\$ 20,000	Based on historical costs.
15	Advertising	\$ 15,000	\$ 15,000	\$ 15,000	\$ 45,000	
16	Giveaways		\$ 10,000	\$ 20,000	\$ 30,000	
17	Email	\$ 5,000	\$ 5,000	\$ 5,000	\$ 15,000	Based on historical costs.
18	Other Outreach					
<b>Total</b>		\$ 436,000	\$ 307,000	\$ 272,000	\$ 1,015,000	

**Table 2: Budget Breakdown**

Line No.	Item Description	Year 1	Year 2	Year 3
1	Customer Tools	33%	34%	42%
2	Events & Sponsorships	19%	36%	36%
3	Customer Research	18%	20%	7%
4	Digital & Print Outreach	30%	10%	15%
<b>Total</b>		100%	100%	100%

Exhibit SO-3: Transportation Electrification Portfolio Budget

<b>Program Name:</b>	EV Registration Incentive
----------------------	---------------------------

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$ -	\$ -	\$ -	\$ -
O&M	\$ 116,029	\$ 136,637	\$ 152,760	\$ 405,425
Number of Units Incentivized	1,392	1,750	2,031	5,173

**Budget Information**

O&M		Year 1			Year 2			Notes and Assumptions
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total	
1	Customer Incentive	1,392	\$ 50	\$ 69,590	1,750	\$ 50	\$ 87,510	Capturing 20% of EVIO. See Table 1.
2	Processing Fees	1,392	\$ 8	\$ 10,439	1,750	\$ 8	\$ 13,127	See Table 2.
3	Monthly Admin Fee	12	\$ 3,000	\$ 36,000	12	\$ 3,000	\$ 36,000	See Table 2.
<b>Total</b>				\$ 116,029			\$ 136,637	

		Year 3			Program Total			Notes and Assumptions
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total	
1	Customer Incentive	2,031	\$ 50	\$ 101,530	5,173	\$ 50	\$ 258,630	Capturing 20% of EVIO. See Table 1.
2	Processing Fees	2,031	\$ 8	\$ 15,230	5,173	\$ 8	\$ 38,795	See Table 2.
3	Monthly Admin Fee	12	\$ 3,000	\$ 36,000	36	\$ 3,000	\$ 108,000	See Table 2.
<b>Total</b>				\$ 152,760			\$ 405,425	

**Supporting Information**

**Table 1: EV Registrations**

Line No.	Item Description	2024*	2025	2026	2027	Total	Source/Notes
1	Number of Registered EVs	16,329	23,288	32,039	42,192		EPRI 2023 Projections
2	% Registration Target	20%	20%	20%	20%		Historical Performance
3	Target EV Incentives	3,266	1,392	1,750	2,031	5,173	20% of Registered EVs less credits already administered

\*budget assumes 3,266 total credits are administered by end of 2024

**Table 2: Unit Pricing**

Line No.	Item Description	2025	2026	2027	Source/Notes
1	Customer Incentives	\$ 50	\$ 50	\$ 50	
2	Processing Fees	\$ 8	\$ 8	\$ 8	Based on vendor quote
3	Monthly Admin Fee	\$ 3,000	\$ 3,000	\$ 3,000	Based on vendor quote

Exhibit SO-3: Transportation Electrification Portfolio Budget

<b>Program Name:</b>	Electric Fleet Advisory Service
----------------------	---------------------------------

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$ -	\$ -	\$ -	\$ -
O&M	\$ 139,500.00	\$ 134,500.00	\$ 134,500.00	\$ 408,500.00
Number of Units Incentivized (Full Fleet Assessment)	18	18	18	54

**Budget Information**

O&M		Year 1			Year 2		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total
1	Customer Assessment	8	\$ 11,000	\$ 88,000	8	\$ 11,000	\$ 88,000
2	3rd Party Technical Research Assistance	1	\$ 6,500	\$ 6,500	1	\$ 6,500	\$ 6,500
3	Commercial Data Refresh	1	\$ 5,000	\$ 5,000			
4	Online Fleet Assessment Tool	1	\$ 40,000	\$ 40,000	1	\$ 40,000	\$ 40,000
<b>Total</b>				\$ 139,500			\$ 134,500

		Year 3			Program Total		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total
1	Customer Assessment	8	\$ 11,000	\$ 88,000	24	\$ 11,000	\$ 264,000
2	3rd Party Technical Research Assistance	1	\$ 6,500	\$ 6,500	3	\$ 6,500	\$ 19,500
3	Commercial Data Refresh				1	\$ 5,000	\$ 5,000
4	Online Fleet Assessment Tool	1	\$ 40,000	\$ 40,000	3	\$ 40,000	\$ 120,000
<b>Total</b>				\$ 134,500			\$ 408,500

**Supporting Information**

**Participation**

**Table 1: Full Fleet Assessment\***

Line No.	Item Description	2025	2026	2027	Total
1	Number of Customers	8	8	8	24
2	Average Fleet Size (based on 2022-2023)	200	200	200	200

\*Fleet assessment to be executed by a 3rd party provider

**Table 2: Online Tool - Supported\***

Line No.	Item Description	2025	2026	2027	Total
1	Number of Customers	10	10	10	30
2	Average Fleet Size (based on 2022-2023)	10	10	10	10

\*Fleet assessment facilitated via DLC and online tool

**Budget Assumptions**

**Table 3: Assessment Costs**

Line No.	Item Description	Cost	Notes
1	Per Assessment Cost	\$11,000	Based on 2022-2023 program and includes program management costs
2	3rd Party Technical Research Assistance	\$6,500	Based on 2022-2023 program

**Table 4: Education and Outreach**

Line No.	Item Description	2025	2026	2027	Notes
1	Online Fleet Assessment Tool	\$40,000	\$40,000	\$40,000	Based on vendor quote
2	Commercial Data Refresh	\$5,000			Supports one refresh commercial fleet data

Exhibit SO-3: Transportation Electrification Portfolio Budget

<b>Program Name:</b>	Community, Fleet & Transit Charging Pilot
----------------------	---

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$3,824,324	\$3,907,779	\$3,993,737	\$11,725,840
O&M	\$430,600	\$452,436	\$455,895	\$1,338,931
Number of Units Incentivized (Ports)	269	279	309	857

**Budget Information**

Capital Line No.	Item Description	Year 1			Year 2		
		Quantity	Unit Cost	Total Cost	Quantity	Unit Cost	Total Cost
1	Community L2 Project Development & Evaluation (sites)	18	\$ 8,240	\$ 148,320	18	\$ 8,487	\$ 152,770
2	Community L2 Customer Make-Ready Construction (sites)	18	\$ 54,590	\$ 982,620	18	\$ 56,228	\$ 1,012,099
3	Community L2 Utility Second Service (sites)	5	\$ 25,750	\$ 128,750	5	\$ 26,523	\$ 132,613
4	Community DCFC Project Development & Evaluation (sites)	2	\$ 8,240	\$ 17,304	2	\$ 8,487	\$ 17,823
5	Community DCFC Customer Make-Ready Construction (sites)	1	\$ 95,790	\$ 95,790	1	\$ 98,664	\$ 98,664
6	Community DCFC Utility Second Service (sites)	1	\$ 64,890	\$ 64,890	1	\$ 66,837	\$ 66,837
7	Community Micromobility Charging Station Make-Ready (sites)	2	\$ 4,120	\$ 8,240	2	\$ 4,244	\$ 8,487
8	Fleet Project Development & Evaluation (sites)	6	\$ 8,240	\$ 49,440	6	\$ 8,487	\$ 50,923
9	Fleet L2 Customer Make-Ready Construction (sites)	6	\$ 85,490	\$ 512,940	6	\$ 88,055	\$ 528,328
10	Fleet DCFC Customer Make-Ready Construction (sites)	2	\$ 257,500	\$ 540,750	2	\$ 265,225	\$ 556,973
11	Fleet L2 Utility Second Service (sites)	2	\$ 28,840	\$ 57,680	2	\$ 29,705	\$ 59,410
12	Fleet DCFC Utility Second Service (sites)	2	\$ 87,550	\$ 175,100	2	\$ 90,177	\$ 180,353
13	Community L2 Make-Ready Rebate	7	\$ 24,000	\$ 168,000	7	\$ 24,000	\$ 168,000
14	Community DCFC Make-Ready Rebate	1	\$ 40,000	\$ 40,000	1	\$ 40,000	\$ 40,000
15	Fleet L2 Make-Ready Rebate	2	\$ 24,000	\$ 48,000	2	\$ 24,000	\$ 48,000
16	Fleet DCFC Make-Ready Rebate	2	\$ 125,000	\$ 262,500	2	\$ 125,000	\$ 262,500
17	L1 Make-Ready Rebate	4	\$ 6,000	\$ 24,000	4	\$ 6,000	\$ 24,000
18	Transit Make-Ready Rebate						
19	Multi-Use Fleet Depot Rebate	1	\$ 500,000	\$ 500,000	1	\$ 500,000	\$ 500,000
<b>Total</b>				\$ 3,824,324			\$ 3,907,779

Line No.	Item Description	Year 3			Program Total		
		Quantity	Unit Cost	Total Cost	Quantity	Unit Cost	Total Cost
1	Community L2 Project Development & Evaluation (sites)	18	\$ 8,742	\$ 157,353	54	\$ 8,489.67	\$ 458,442
2	Community L2 Customer Make-Ready Construction (sites)	18	\$ 57,915	\$ 1,042,462	54	\$ 56,244.08	\$ 3,037,180
3	Community L2 Utility Second Service (sites)	5	\$ 27,318	\$ 136,591	15	\$ 26,530.23	\$ 397,953
4	Community DCFC Project Development & Evaluation (sites)	2	\$ 8,742	\$ 18,358	6	\$ 8,489.67	\$ 53,485
5	Community DCFC Customer Make-Ready Construction (sites)	1	\$ 101,624	\$ 101,624	3	\$ 98,692.44	\$ 296,077
6	Community DCFC Utility Second Service (sites)	1	\$ 68,842	\$ 68,842	3	\$ 66,856.17	\$ 200,569
7	Community Micromobility Charging Station Make-Ready (sites)	2	\$ 4,371	\$ 8,742	6	\$ 4,244.84	\$ 25,469
8	Fleet Project Development & Evaluation (sites)	6	\$ 8,742	\$ 52,451	18	\$ 8,489.67	\$ 152,814
9	Fleet L2 Customer Make-Ready Construction (sites)	6	\$ 90,696	\$ 544,178	18	\$ 88,080.35	\$ 1,585,446
10	Fleet DCFC Customer Make-Ready Construction (sites)	2	\$ 273,182	\$ 573,682	6	\$ 265,302.25	\$ 1,671,404
11	Fleet L2 Utility Second Service (sites)	2	\$ 30,596	\$ 61,193	6	\$ 29,713.85	\$ 178,283
12	Fleet DCFC Utility Second Service (sites)	2	\$ 92,882	\$ 185,764	6	\$ 90,202.77	\$ 541,217
13	Community L2 Make-Ready Rebate	7	\$ 24,000	\$ 168,000	21	\$ 24,000	\$ 504,000
14	Community DCFC Make-Ready Rebate	1	\$ 40,000	\$ 40,000	3	\$ 40,000	\$ 120,000
15	Fleet L2 Make-Ready Rebate	2	\$ 24,000	\$ 48,000	6	\$ 24,000	\$ 144,000
16	Fleet DCFC Make-Ready Rebate	2	\$ 125,000	\$ 262,500	6.3	\$ 125,000	\$ 787,500
17	L1 Make-Ready Rebate	4	\$ 6,000	\$ 24,000	12	\$ 6,000	\$ 72,000
18	Transit Make-Ready Rebate	1	\$ 500,000	\$ 500,000	1	\$ 500,000	\$ 500,000
19	Multi-Use Fleet Depot Rebate				2	\$ 500,000	\$ 1,000,000
<b>Total</b>				\$ 3,993,737			\$ 11,725,840

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Budget Information**

O&M		Year 1			Year 2		
		Quantity	Cost	Total	Quantity	Cost	Total
1	Community L2 Charging Station Rebate (Equity)	10	\$ 15,000	\$ 150,000	10	\$ 15,000	\$ 150,000
2	DCFC Fleet Charging Station Rebate (Equity)	1	\$ 100,000	\$ 100,000	1	\$ 100,000	\$ 100,000
3	L2 Fleet Charging Station Rebate (Equity)	4	\$ 15,000	\$ 60,000	4	\$ 15,000	\$ 60,000
4	Make-Ready Maintenance: On call repairs	2	\$ 10,300	\$ 20,600	4	\$ 10,609	\$ 42,436
5	L2 Make-Ready Maintenance: 5-year Lifetime Inpsection						
6	DCFC Make-Ready Maintenance: 5-year Lifetime Inpsection						
7	Awareness, Education, Engagement						
8	Customer Technical Assistance Support	1	\$ 100,000	\$ 100,000	1	\$ 100,000	\$ 100,000
<b>Total</b>				\$ 430,600			\$ 452,436

Line No.	Item Description	Year 3			Program Total		
		Quantity	Cost	Total	Quantity	Cost	Total
1	Community L2 Charging Station Rebate (Equity)	10	\$ 15,000	\$ 150,000	30	\$ 15,000	\$ 450,000
2	DCFC Fleet Charging Station Rebate (Equity)	1	\$ 100,000	\$ 100,000	3	\$ 100,000	\$ 300,000
3	L2 Fleet Charging Station Rebate (Equity)	4	\$ 15,000	\$ 60,000		\$ 15,000	\$ 180,000
4	Make-Ready Maintenance: On call repairs	4	\$ 10,927	\$ 43,709	10	\$ 10,675	\$ 106,745
5	L2 Make-Ready Maintenance: 5-year Lifetime Inpsection	1	\$ 2,185	\$ 2,185	1	\$ 2,185	\$ 2,185
6	DCFC Make-Ready Maintenance: 5-year Lifetime Inpsection						
7	Awareness, Education, Engagement						
8	Customer Technical Assistance Support	1	\$ 100,000	\$ 100,000	3	\$ 100,000	\$ 300,000
<b>Total</b>				\$ 455,895			\$ 1,338,931

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Supporting Information**

**Table 1: Community Level 2 Port Assumptions**

Line No.	Value	Description
1	3863	L2 ports needed in Pittsburgh region by 2027 for MUD/public/workplace (See Table 10 for detail)
2	750	L2 ports existing in DLC service territory (Source: L2 ports in AFDC is 586 L2 as of Nov 2023, plus 164 ports installed or planned to install through the Community Charging Pilot by the end of 2024.)
3	1038	L2 ports needed to be added annually, on average to achieve 2027 port need.
4	14.5%	Percentage of public L2 charging infrastructure that DLC aims to support through Community Charging Program (Note: As of June 2023, 30% of L2 community ports in existence in PGH MSA were supported via DLC)
5	150	L2 ports DLC supports annually through Community Charging Program
6	6	L2 ports required per site, non-equity, supported via DLC make-ready construction pathway AND make-ready rebate pathway
7	4	L2 ports required per site, equity, supported via DLC make-ready construction pathway AND make-ready rebate pathway
8	25	L2 sites DLC supports annually through Community Charging Program (Note: assume 6 ports per site, on average)
9	75	L2 sites DLC supports across 3 year program through Community Charging Program
10	248	L2 ports legacy from 2022-2024 Community Charging Program
11	41	L2 sites legacy from 2022-2024 Community Charging Program

**Table 2: Level 2 Equity Assumptions**

Line No.	Value	Description
1	60%	Percentage of sites that are non-equity
2	40%	Percentage of sites that are equity
3	15	L2 sites that are non-equity, annually
4	10	L2 sites that are equity, annually

**Table 3: Community Level 2 Distribution Upgrade & Pathway Assumptions**

Line No.	Value	Description
1	25%	Percentage of L2 sites requiring utility second service annually (include only DLC make-ready construction pathway). Estimate based on analysis of historical data.
2	5	Number of L2 sites requiring utility second service annually
3	70%	Percentage of L2 sites supported via DLC make-ready construction pathway
4	30%	Percentage of L2 sites supported via make-ready rebate pathway
5	18	Number of L2 sites supported annually via DLC make-ready construction pathway
6	7	Number of L2 sites supported annually via make-ready rebate pathway

**Table 4: Community Level 2 Budget Assumptions**

Line No.	Value	Description
<b>Engineering &amp; Construction</b>		
1	\$ 8,000	L2 site Project Development & Evaluation costs. Estimate based on data from Community Charging Pilot.
2	\$ 25,000	L2 site second service cost. Estimate based on data from Community Charging Pilot.
3	\$ 53,000	L2 site customer make-ready amount. Estimate based on data from Community Charging Pilot.
<b>Charging Station Package Equity Rebate</b>		
4	\$ 15,000	Max L2 site charging station package rebate. Eligible sites that meet Equity criteria receive a rebate of 50% of charging station package cost up to \$15k total.
<b>Make-Ready Rebate Pathway Rebate</b>		
5	\$ 24,000	L2 site make-ready rebate max amount. Sites receive a make-ready rebate amount of up to \$4,000/port up to \$24k total; roughly 50% of make-ready costs). Source: Table 19

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Supporting Information**

**Table 5: Community DCFC Port Assumptions**

Line No.	Value	Description
1	179	DCFC ports needed in Pittsburgh region by 2027 for public (See Table 10).
2	53	DCFC ports existing in DLC service territory (Source: DCFC ports in AFDC is 47 DCFC as of Nov 2023, plus 6 ports installed or planned to install through the Community Charging Pilot by the end of 2024)
3	42	DCFC ports needed to be added annually, on average to achieve 2027 port need.
4	10%	Percentage of public DCFC charging infrastructure that DLC aims to support through Community Charging Program
5	4	DCFC ports DLC supports annually through Community Charging Program
6	2	DCFC ports required per site
7	2	DCFC sites DLC supports annually through Community Charging Program (Note: assume 2 ports per site, on average)
8	6	DCFC sites DLC supports across 3 year program through Community Charging Program
9	12	DCFC ports legacy from 2022-2024 Community Charging Program
10	6	DCFC sites legacy from 2022-2024 Community Charging Program

**Table 6: Community DCFC Distribution Upgrade & Pathway Assumptions**

Line No.	Value	Description
1	100%	Percentage of DCFC sites requiring utility second service annually (include only DLC make-ready construction pathway). Estimate based on analysis of historical data.
2	1	Number of DCFC sites requiring utility second service annually
3	50%	Percentage of DCFC sites supported via DLC make-ready construction pathway
4	50%	Percentage of DCFC sites supported via make-ready rebate pathway
5	1	Number of DCFC sites supported annually via DLC make-ready construction pathway
6	1	Number of DCFC sites supported annually via make-ready rebate pathway

**Table 7: Community DCFC Budget Assumptions**

Line No.	Value	Description
<b>Engineering &amp; Construction</b>		
1	\$ 8,000	DCFC site Project Development & Evaluation costs. Estimate based on data from Community Charging Pilot.
2	\$ 63,000	DCFC site second service cost. Estimate based on data from Community Charging Pilot.
3	\$ 93,000	DCFC site customer make-ready amount. Estimate based on data from Community Charging Pilot.
<b>Make-Ready Rebate Pathway Rebate</b>		
4	\$ 40,000	DCFC site make-ready rebate max amount (DCFC sites receive a make-ready rebate amount of up to \$20,000/port up to \$40k total, assumes 2 ports per site). Source: Table 20

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Supporting Information**

**Table 8: Community & Fleet L1 and Micromobility Assumptions**

Line No.	Value	Description
1		4 Number of L1 sites supported annually via DLC make-ready rebate pathway. Assumption based on anticipated need from and uptake by customers.
2		24 Number of L1 ports supported annually via DLC make-ready rebate pathway. Assumes 6 L1 ports/site. A port is equivalent to one outlet installed.
3	\$ 6,000	L1 site make-ready rebate max amount. Equity only. L1 sites receive a make-ready rebate amount of up to \$1,000/L1 port up to \$6,000 total. Cost assumption based on contractor estimate.
4		2 Number of micromobility sites supported annually via DLC make-ready construction pathway. Assumption based on projection of co-located City of Pittsburgh or Pittsburgh Parking Authority L2 charging sites where a POGOH micromobility could be installed adjoining the L2 sites.
5	\$ 4,000	Micromobility site customer make-ready amount. Assumption based on cost estimates provided by electrical contractor.

**Table 9: Preventative Maintenance Cost Assumption Detail (Fleet and Community)\***

Line No.	Value	Description
1	\$ 2,500	Transit DCFC and make-ready preventative maintenance and inspection.
2	\$ 10,000	Fleet/Community and Transit DCFC and make-ready on call repairs. Estimate \$10k needed per 100 ports or 15 sites to escalate.
3	\$ 2,000	L2 lifetime inspection. Inspected after 5 years.
4	\$ 3,000	DCFC lifetime inspection. Inspected after 5 years.

\*Costs estimates based off of historical data.

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Supporting Information**

**Table 10: Community EV Charging Station Ports-Needed in PGH Region by 2027 Forecast Assumption Detail\***

Line No.	Values	Description	Notes
<b>Inputs</b>			
1	42,192	Supported Electric Vehicles	Source: 2027 EPRI Medium Projection, provided to DLC in Oct 2023
2	35%	Sedan Vehicle Mix	Source: Default assumption based on PEV Mix in 2021.
3	45%	C/SUV Vehicle Mix	Source: Default assumption based on PEV Mix in 2021.
4	16%	Pickup Vehicle Mix	Source: Default assumption based on PEV Mix in 2021.
5	4%	Van Vehicle Mix	Source: Default assumption based on PEV Mix in 2021.
6	31%	PHEV Share of PEVs	Source: Default assumption based on share in 2021.
7	50%	PHEV Support	Source: Default model assumption.
8	75%	Home Charging Access	Source: TE Team assumption based on customer make-up in PGH region.
<b>Outputs</b>			
9	34,595	Total Ports Needed	
10	20,777	Single Family L2	
11	9,697	Single Family L1	
12	79	MUD L1	
13	172	MUD L2	
14	1,445	Private Workplace L2	
15	2,246	Public L2	
16	179	Public DCFC	
17	158	150 kW DCFC	
18	21	250 kW DCFC	
19	3,863	Total Ports MUD L2, Workplace L2, Public L2	

\*Source: US DOE EVI Pro Lite Model at [afdc.energy.gov/evi-pro-lite](https://afdc.energy.gov/evi-pro-lite) (accessed November 2023)

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Supporting Information**

**Table 11: Fleet Port Assumptions**

Line No.	Values	Description
1	1600	L2/DCFC ports needed in Pittsburgh region by 2027 for Fleet (Source: Table 16, rounded down. Assumes needed ports 1:1 with vehicle)
2	960	L2 Ports needed (60% of total, source: Table 17)
3	640	DCFC needed (40% of total, source: Table 17)
4	15%	Percentage of L2 fleet charging infrastructure that DLC aims to support through Fleet Charging Program
5	20%	Percentage of DCFC fleet charging infrastructure that DLC aims to support through Fleet Charging Program
6	272	Total ports supported <b>across 3 year program</b> through Fleet Charging Program (breakdown below)
7	91	Ports Total DLC supports <b>annually</b> through Fleet Charging Program (breakdown below)
8	48	# L2 Ports expect to support <b>annually</b>
9	144	# L2 Ports expect to support <b>across 3 year program</b>
10	43	# DCFC Ports expect to support <b>annually</b>
11	128	# DCFC Ports expect to support <b>across 3 year program</b>
12	6	L2 Ports required per site, non-equity, supported via DLC make-ready construction pathway AND make-ready rebate pathway
13	4	L2 Ports required per site, equity, supported via DLC make-ready construction pathway AND make-ready rebate pathway
14	2	DCFC ports required per site
15	12	Sites DLC supports <b>annually</b> through Fleet Charging Program (assumes 7 ports per site, on average)
16	37	Sites DLC supports <b>across 3 year program</b> through Fleet Charging Program
17	8	L2 sites supported annually (assumes 6 ports on average)
18	4	DCFC sites support annually (assumes 10 ports on average)
19	116	Ports legacy from 2022-2024 Fleet Charging Program
20	19	Sites legacy from 2022-2024 Fleet Charging Program

**Table 12: Fleet Equity Assumptions**

Line No.	Values	Description
1	60%	Percentage of sites that are non-equity
2	40%	Percentage of sites that are equity
3	7	Sites that are non-equity, annually
4	4	L2 Sites that are equity, annually (75% of equity projects will be L2)
5	1	DCFC Sites that are equity, annually (25% of equity projects will be DCFC)

**Table 13: Fleet Distribution Upgrade & Pathway Assumptions**

Line No.	Values	Description
1	30%	Percentage of Fleet L2 sites requiring utility second service annually (include only DLC make-ready construction pathway). Estimate based on analysis of historical data.
2	2	Number of Fleet L2 sites requiring utility second service annually
3	100%	Percentage of DCFC sites requiring utility second service annually (include only DLC make-ready construction pathway). Estimate based on analysis of historical data.
4	2	Number of DCFC sites requiring utility second service annually
5	70%	Percentage of L2 Fleet sites supported via DLC make-ready construction pathway
6	30%	Percentage of L2 Fleet sites supported via make-ready rebate pathway
7	6	Number of L2 Fleet sites supported annually via DLC make-ready construction pathway
8	2	Number of L2 Fleet sites supported annually via make-ready rebate pathway
9	50%	Percentage of DCFC Fleet sites supported via DLC make-ready construction pathway
10	50%	Percentage of DCFC Fleet sites supported via make-ready rebate pathway
11	2	Number of DCFC sites supported annually via DLC make-ready construction pathway
12	2	Number of DCFC sites supported annually via make-ready rebate pathway

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** Community, Fleet & Transit Charging Pilot

**Supporting Information**

**Table 14: Fleet Budget Assumptions**

Line No.	Values	Description
<b>Engineering &amp; Construction</b>		
1	\$ 8,000	Fleet site Project Development & Evaluation costs. Estimate based on data from Fleet Charging Pilot.
2	\$ 28,000	L2 only - Fleet site second service cost. Estimate based on data from Fleet Charging Pilot.
3	\$ 85,000	DCFC only - Fleet site second service cost. Estimate based on data from Fleet Charging Pilot.
4	\$ 83,000	L2 Fleet site customer make-ready amount (Source: Table 18)
5	\$ 250,000	DCFC Fleet Site customer make-ready amount (Source: Table 18)
<b>Charging Station Package Equity Rebate - Fleet</b>		
6	\$ 100,000	Max DCFC site charging station package rebate. Eligible sites that meet Equity criteria receive a rebate of 50% of charging station package cost up to \$100k total.
7	\$ 15,000	Max L2 site charging station package rebate. Eligible sites that meet Equity criteria receive a rebate of 50% of charging station package cost up to \$15k total.
<b>Make-Ready Rebate Pathway Rebate</b>		
8	\$ 24,000	L2 Fleet site make-ready rebate max amount (Fleet sites receive a make-ready rebate amount of up to \$4,000/port up to \$24k total; roughly 50% of make-ready costs). Notes: same for equity and non-equity sites. Unit cost based on the fact that we do not anticipate that our rebate covers full make-ready costs, engineering/permitting costs, and majority of project sites will not require new panel. Source: Table 19
9	\$ 125,000	DCFC Fleet site make-ready rebate max amount (Fleet sites receive a make-ready rebate amount of up to \$12,500/port up to \$125k total assuming 10 ports per site; roughly 50% of make-ready costs). Notes: same for equity and non-equity sites. Unit cost based on the fact that we do not anticipate that our rebate covers full make-ready costs, and engineering/permitting costs. Source: Table 20
10	\$ 500,000	DCFC Transit site make-ready rebate max amount (Transit sites receive a make-ready rebate amount of up to \$12,500/port up to \$500k total assuming 40 ports per site). Notes: same for equity and non-equity sites. Unit cost based on the fact that we do not anticipate that our rebate covers full make-ready costs, and engineering/permitting costs. Source: Table 20
11	40	Max Transit ports supported via rebate program

**Table 15: Multi-Use Fleet Depot Sites**

Line No.	Values	Description
1	\$ 1,000,000	Fleet multi-use fleet depot project. Max rebate amount.
2	10	Ports supported via MD/HD depot rebate

<b>Program Name:</b>	Community, Fleet & Transit Charging Program
----------------------	---

**Supporting Information**

**Table 16: Determining Total Vehicle Recommendations by Vehicle Class Across 2025-2027**

Line No.	Description	Total Vehicles	LD*	MD**	HD
1	<b>Fleet Adoption Projections 2025-2027</b>	1603		641	864
2	<b>Percent of total</b>			40%	54%
					98%

\*Ratio of LD and MD/HD estimated based on DLC Fleet Advisory Service data and market projections.

\*\*Includes additional school bus ports in MD category based on upcoming projects known to DLC

**Table 17: Percent Chargers Needed**

Line No.	Description	Quantity*	Percent
1	<b>Total L2 needed</b>	939	59%
2	<b>Total DCFC needed</b>	664	41%

\*Note: 1:1 vehicle to charger ratio; Assume LD and some MD use L2. Some MD (school buses) and HD vehicles (trucks and buses) use DCFC.

**Table 18: Annual Fleet Project Forecast**

Line No.	Description	Quantity
1	<b>Average Make-Ready Cost L2 Project</b>	\$ 83,000
2	<b>Average Make-Ready Cost DCFC Project (excluding transit cost)*</b>	\$ 250,000

\*Based on DLC Fleet Charging Pilot data and associated utility program benchmarking.

**Table 19: L2 Make-Ready Rebate Path Assumptions**

Line No.	Description	Cost Per Port	Suggested Rebate Amount	Percent of Cost Covered
1	<b>Historical Average Make-Ready Cost per L2 Port</b>	\$ 7,782	\$ 4,000	51%

**Table 20: DCFC Make-Ready Rebate Path Assumptions**

Line No.	Average Make-Ready Cost DCFC Project	Rebate %	Rebate Cap Amount	Make-ready Cost per port*	Type
1	\$ 250,000	50%	\$ 125,000	\$ 12,500	<b>Fleet</b>
2	\$ 1,000,000	50%	\$ 500,000	\$ 25,000	<b>Transit</b>
3	\$ 92,678	50%	\$ 40,000	\$ 20,000	<b>Community</b>

\*Assuming 10 ports per site for fleet, 40 ports for transit and 2 ports per site for community. Data based on historical and benchmarking averages.

Exhibit SO-3: Transportation Electrification Portfolio Budget

Program Name: Home Charging Pilot

Summary Table

	Year 1	Year 2	Year 3	Total
Capital	\$ -	\$ -	\$ -	\$ -
O&M	\$ 271,750	\$ 175,300	\$ 206,300	\$ 653,350
Number of Units Incentivized	716	383	439	1,538
Throughput (kWh)	1,881,648	1,006,524	1,153,692	4,041,864

Budget Information

O&M		Year 1			Year 2			Year 3			Program Total		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total	Quantity	Cost	Total	Quantity	Cost	Total
1	Rebate - Standard	700	\$ 300	\$ 210,000	400	\$ 300	\$ 120,000	500	\$ 300	\$ 150,000	1,600	\$ 300	\$ 480,000
2	Rebate - Income Qualified	25	\$ 500	\$ 12,500	30	\$ 500	\$ 15,000	30	\$ 500	\$ 15,000	85	\$ 500	\$ 42,500
3	Application - Processing	725	\$ 10	\$ 7,250	430	\$ 10	\$ 4,300	530	\$ 10	\$ 5,300	1,685	\$ 10	\$ 16,850
4	Application - Program Admin	12	\$ 3,000	\$ 36,000	12	\$ 3,000	\$ 36,000	12	\$ 3,000	\$ 36,000	36	\$ 3,000	\$ 108,000
5	Application - Set-up	1	\$ 6,000	\$ 6,000							1	\$ 6,000	\$ 6,000
<b>Total</b>				\$ 271,750			\$ 175,300			\$ 206,300			\$ 653,350

Supporting Information

Table 1: Breakdown of Home Charging

Line No.	Power Level	Share*
1	Level 1	44%
2	Level 2	56%

\*Percentages reflect division among known level of charging for DLC customers who have claimed the EV registration incentive. Approximately 10% of customers did not answer the question.  
 \*Source: EV Charging Registration Incentive PowerBI data. Accessed 11/13/2023.

Table 2: EV and Rebate Projections

Line No.	Year	Number of Vehicles*	EVs with Level 1 Charging	EVs with Level 1 Charging	Number of Rebates	% of Level 1 EVs Supported	Income Qualified Rebates	Income-Qualified Share of Rebates
1	2025	23,237	10,224	10,224	716	7%	25	3%
2	2026	31,934	14,051	3,827	383	10%	30	8%
3	2027	41,906	18,439	4,388	439	10%	30	7%
4	Total				1,538	8%	85	6%

\*Source: EPRI DLC Annual EV Projections. October 2023.

Table 3: Charger Cost

Line No.	Charger Cost	Cost*
1	Smart Level 2	\$ 543

\*Source: Average of online pricing of top home charging stations

Table 4: Rebate Amount

Line No.	Rebate Type	Amount	Share of Charger Cost Covered
1	Standard	\$ 300	55%
2	Income-qualified	\$ 500	92%

Table 5: Throughput

Line No.	Throughput	kWh
1	Throughput per L2 Residential Customer*	2628

\*Source: DLC analysis of EV driving customer energy use

Table 6: Application Processing Costs\*

Line No.	Type	Cost
1	Per Rebate Processing	\$ 10
2	Monthly Program Admin Fee	\$ 3,000
3	One-Time Set-up	\$ 6,000

\*Source Vendor quotes

Exhibit SO-3: Transportation Electrification Portfolio Budget

<b>Program Name:</b>	Managed Home Charging Pilot
----------------------	-----------------------------

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$ -	\$ -	\$ -	\$ -
O&M	\$ 187,640	\$ 112,500	\$ 159,000	\$ 459,140
Number of Units Incentivized				

**Budget Information**

O&M		Year 1			Year 2			Year 3			Program Total		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total	Quantity	Cost	Total	Quantity	Cost	Total
1	Participation Incentive	225	\$ 20	\$ 4,500	525	\$ 20	\$ 10,500	750	\$ 20	\$ 15,000	1500	\$ 20	\$ 30,000
2	Control Group Participant Incentive	32	\$ 20	\$ 640	100	\$ 20	\$ 2,000	200	\$ 20	\$ 4,000	332	\$ 20	\$ 6,640
3	IT Set-up	1	\$ 62,500	\$ 62,500							1	\$ 62,500	\$ 62,500
4	Annual Program Platform	1	\$ 80,000	\$ 80,000	1	\$ 80,000	\$ 80,000	1	\$ 80,000	\$ 80,000	3	\$ 80,000	\$ 240,000
5	Program Set-up	1	\$ 20,000	\$ 20,000							1	\$ 20,000	\$ 20,000
6	Managed Charging Effectiveness Study	1	\$ 20,000	\$ 20,000	1	\$ 20,000	\$ 20,000	1	\$ 60,000	\$ 60,000	3	\$ 33,333	\$ 100,000
<b>Total</b>				\$ 187,640			\$ 112,500			\$ 159,000			\$ 459,140

**Supporting Information**

**Table 1: Participant Summary**

Line No.	Participants	2025	2026	2027
1	Number of Participants	75	175	250
2	Cumulative Enrollment	75	250	500
3	Control Group Participants	8	25	50

**Table 2: Event Participation**

Line No.	Participation	2025	2026	2027
1	Number of Event Months Per Year	4	4	4
2	Average Participation Per Month	75%	75%	75%

**Table 3: Incentive Summary**

Line No.	Incentives	2025	2026	2027
1	Monthly Participation Incentive	\$20	\$20	\$20

**Table 4: Program Administration Costs**

Line No.	Program Administration Costs*	2025	2026	2027
1	Initial IT Set-up	\$ 62,500		
2	Annual Program Platform	\$ 80,000	\$ 80,000	\$ 80,000
3	Program Set-up	\$ 20,000		

\*Source: Vendor quotes

Exhibit SO-3: Transportation Electrification Portfolio Budget

**Program Name:** EV TOU Distribution Rate Pilot

**Summary Table**

	Year 1	Year 2	Year 3	Total
Capital	\$ -	\$ -	\$ -	\$ -
O&M	\$ 263,250	\$ 168,200	\$ 179,440	\$ 610,890
Number of Units Incentivized				

**Budget Information**

O&M		Year 1			Year 2			Year 3			Program Total		
Line No.	Item Description	Quantity	Cost	Total	Quantity	Cost	Total	Quantity	Cost	Total	Quantity	Cost	Total
1	IT Set-up	1	\$ 31,250	\$ 31,250							1	\$ 31,250	\$ 31,250
2	EV-Only Monthly Program Admin	1	\$ 72,000	\$ 72,000	1	\$ 72,000	\$ 72,000	1	\$ 72,000	\$ 72,000	3	\$ 72,000	\$ 216,000
3	Program Set-up	1	\$ 20,000	\$ 20,000							1	\$ 20,000	\$ 20,000
4	Customer Tools	1	\$ 105,000	\$ 105,000	1	\$ 35,000	\$ 35,000	1	\$ 35,000	\$ 35,000	3	\$ 58,333	\$ 175,000
5	Second Meter Install	10	\$ 2,000	\$ 20,000	20	\$ 2,060	\$ 41,200	20	\$ 2,122	\$ 42,440	50	\$ 2,073	\$ 103,640
6	EV TOU Effectiveness Study	1	\$ 15,000	\$ 15,000	1	\$ 20,000	\$ 20,000	1	\$ 30,000	\$ 30,000	3	\$ 21,667	\$ 65,000
<b>Total</b>				\$ 263,250			\$ 168,200			\$ 179,440			\$ 610,890

**Supporting Information**

**Table 1: Participant Summary**

Line No.	Participants	2025	2026	2027
1	Number of Participants - EV Only	150	150	200
2	Number of Participants - WholeHome	200	300	0
3	Cumulative Enrollment	350	800	1000

**Table 2: Program Administration Costs**

Line No.	Program Administration Costs*	2025	2026	2027
1	Initial IT Set-up	\$ 31,250		
2	EV-Only Annual Program Platform	\$ 72,000	\$ 72,000	\$ 72,000
3	EV-Only Program Set-up	\$ 20,000		

\*Source: Vendor quotes

**Table 3: Second Meter Summary**

Line No.	Second Meter Install	2025	2026	2027
1	Number of Second Meters	10	20	20
2	Second Meter Install	\$ 2,000	\$ 2,060	\$ 2,122

**Table 4: Customer Tools Summary**

Line No.	Customer Tools*	2025	2026	2027
1	Rate Coach	\$ 20,000		
2	Rate Advisor Tool	\$ 25,000	\$ 10,000	\$ 10,000
3	Advisor Emails and Platform	\$ 60,000	\$ 25,000	\$ 25,000

\*Source: Current costs or vendor quotes

Exhibit SO-3: Transportation Electrification Portfolio Budget

TE Portfolio Throughput Summary

Summary Table

	Year 1	Year 2	Year 3	Year 4	Total
Throughput (kWh)	4,645,680	15,100,302	26,769,541	32,629,841	79,145,364

Throughput Information

By Program

Line No.	Item Description	Year 1	Year 2	Year 3	Year 4	Total	Notes and Assumptions
1	Awareness, Ed, Engagement						No throughput associated with this program
2	EV Registration Incentive						No throughput associated with this program
3	Electric Fleet Advisory Service						
4	Community, Fleet & Transit	3,701,005	12,650,662	23,069,021	28,238,731	67,659,419	
5	Home Charging	944,675	2,449,640	3,700,520	4,391,110	11,485,945	
6	Managed Home Charging						No throughput associated with this program
7	EV TOU Distribution Rate						
	Total	4,645,680	15,100,302	26,769,541	32,629,841	79,145,364	

By Rate Class

Line No.	Item Description	Year 1	Year 2	Year 3	Year 4	Total	Notes and Assumptions
1	Residential	944,675	2,449,640	3,700,520	4,391,110	11,485,945	
2	GS	-	-	-	-	-	
3	GM<25	90,277	270,831	451,385	541,662	1,354,155	
4	GM>25	941,408	3,212,686	5,483,963	6,425,371	16,063,428	
5	GL	2,669,320	9,167,145	20,153,112	25,800,856	57,790,434	
	Total	4,645,680	15,100,302	29,788,980	37,158,999	86,693,961	

Exhibit SO-3: Transportation Electrification Portfolio Budget

TE Portfolio Throughput Summary

Supporting Information

Table 1: Home Charging Throughput Summary

Line No.	Home Charging	Year 1	Year 2	Year 3	Year 4	Total	Notes and Assumptions
1	Number of Participants	725	430	530		1,685	
2	Annual Throughput Per Customer	2,606	2,606	2,606	2,606		
3	Incremental Annual Throughput	944,675	560,290	690,590		2,195,555	
4	Cumulative Annual Throughput	944,675	2,449,640	3,700,520	4,391,110	11,485,945	

5	Daily Throughput Per Customer*	7.14
---	--------------------------------	------

\*Source: Analysis of AMI data of customers who have claimed the EV registration incentive

Table 2: Community Charging Throughput Summary

Line No.	Community	Year 1	Year 2	Year 3	Year 4	Total	Notes and Assumptions
1	Number of L2 Ports	150	150	150		450	
2	Number of DCFC Ports	4	4	4		12	
3	Incremental Annual Throughput	346,431	346,431	346,431	2,078,586	3,117,879	Assumes not all projects installed January 1; so discounts incremental throughput by 50%
4	Cumulative Annual Throughput	346,431	1,039,293	1,732,155	2,078,586	5,196,465	

5	Annual Throughput Per L2 Port**	3,600
6	Annual Throughput Per DCFC Port**	36,000

\*\*Source: Analysis of utilization of ports incented by DLC

Table 3: Community Charging Throughput by Rate Class

Line No.	Rate Class	Year 1	Year 2	Year 3	Year 4	Total	Notes and Assumptions
1	Residential						
2	GS						
3	GM<25	90,277	270,831	451,385	541,662	1,354,155	Assumes 1/3 of L2 projects are classified as GM<25 based on current project distributions
4	GM>25	180,554	541,662	902,770	1,083,324	2,708,310	Assumes 2/3 of L2 projects are classified as GM>25 based on current project distributions
5	GL	75,600	226,800	378,000	453,600	1,134,000	Assumes all DCFC projects are classified as GL
6	Total	346,431	1,039,293	1,732,155	2,078,586	5,196,465	

Exhibit SO-3: Transportation Electrification Portfolio Budget

TE Portfolio Throughput Summary

Supporting Information

Table 4: Fleet Charging Throughput Summary

Line No.	Fleet	Year 1	Year 2	Year 3	Year 4	Total	Notes and Assumptions
1	Number of L2 Ports	48	48	48		144	
2	Number of DCFC Ports	43	43	43		128	
3	Incremental Annual Throughput	3,354,574	4,902,220	4,823,278	26,160,145	13,080,072	Assumes not all projects installed January 1; so discounts throughput by 50%
4	Cumulative Annual Throughput	3,354,574	11,611,369	21,336,866	26,160,145	62,462,954	

Table 5: Fleet Charging Throughput by Fleet Type

Line No.	Fleet Types	Annual Vehicle Miles*	Vehicle Efficiency** (mi/kWh)	Annual kWh	Year 1 Number of Vehicles	Year 2 Number of Vehicles	Year 3 Number of Vehicles	Notes and Assumptions
1	Bus (all non-transit)	20,715	1.52	13,672	10	10	4	Assumes 2 buses per port
2	Transit Bus	43,647	0.43	100,648	0	0	30	Assumes 1 installation in Year 3 coming online Q1 2027; Assume 30 buses arrive in 2026, additional 30 in 2027 and 30 in 2028; GL
3	School Bus	12,000	0.72	16,559	25	25	25	Assume GL
4	HDT (truck > 14,000 lbs.)	62,751	0.43	144,898	32	48	32	Assumes 2 vehicles per port; GL; 8 port depot; 4 vehicles per port - 50% HD and 50% MD starting in year 2
5	MDT (truck between 8,500 and 14,000)	37,593	0.77	48,558	30	46	30	GM>25
6	LD Truck/Car	11,505	3.19	3,610	18	18	18	GM>25

\*Vehicle Miles Source: <https://afdc.energy.gov/data/10309>

\*\*Fleet Vehicle Efficiency Source: <https://ev-database.org/cheatsheet/energy-consumption-electric-car>.

Table 6: Fleet Charging Throughput by Rate Class

Line No.	Rate Class	Year 1	Year 2	Year 3	Year 4	Total
1	Residential					
2	GS					
3	GM<25					
4	GM>25	760,854	2,671,024	4,581,193	5,342,047	13,355,118
5	GL	2,593,720	8,940,345	19,775,112	25,347,256	56,656,434
6	Total	3,354,574	11,611,369	24,356,305	30,689,303	70,011,551

## Duquesne Light Electric Vehicle Customer Research Summary of Findings (2018-2023)

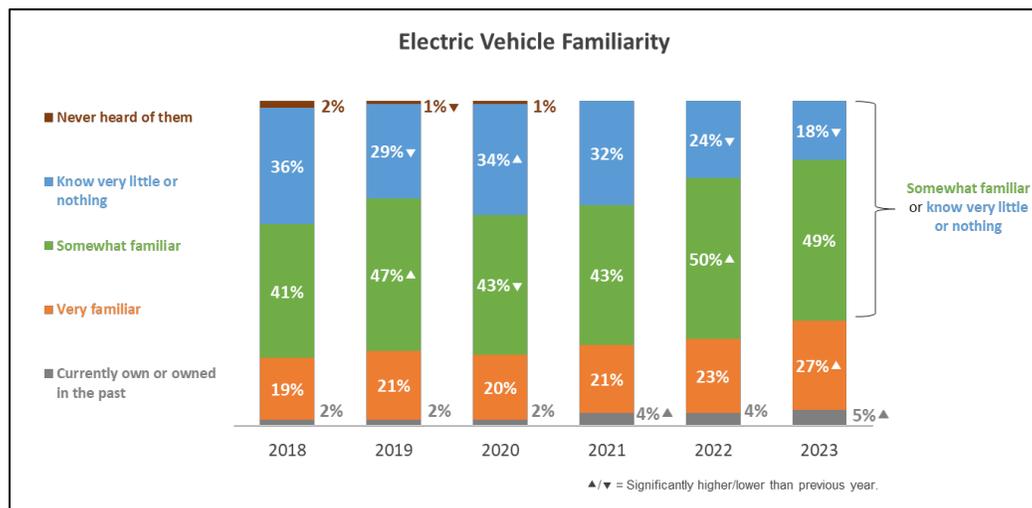
### Introduction

To support the development and evaluation of its electric vehicle (EV) education and outreach efforts, Duquesne Light Company (DLC) has retained Schmidt Market Research to conduct primary research to gather feedback and insights among customers. Since 2018, eight EV studies have been executed and topics have included interest in owning an EV, familiarity, and knowledge of various aspects of EVs (e.g., at-home and public charging, technology, pricing) as well as the perceived benefits and challenges associated with driving an EV. Insights about at-home charging and time of use pricing reveal specific opportunities for DLC to help its customer base overcome specific barriers to adoption and inform load management strategies.

### Section 1: Awareness & Attitudes related to Electric Vehicles

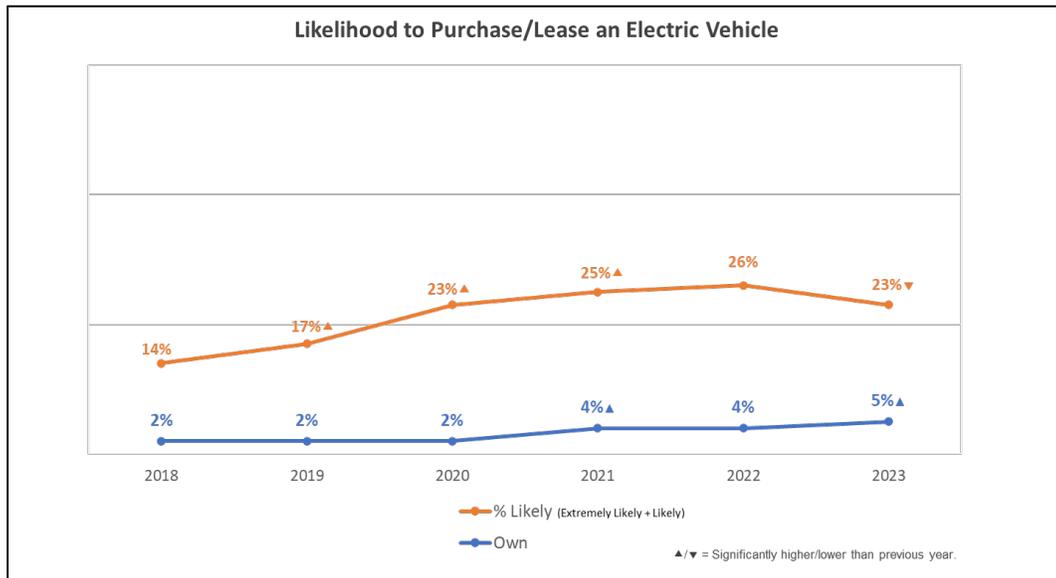
While EV awareness is increasing each year, about two-thirds of customer survey respondents indicate they are only somewhat familiar or know very little or nothing about EVs demonstrating there is still an educational gap to be filled (Figure 1). Additionally, perceptions that EVs are much worse or somewhat worse than gas vehicles have grown each year since 2021, further suggesting there is a continued need for data-backed information about EVs. As time progresses, more customer survey respondents are turning to DLC for educational information about EVs. About a third of customer survey respondents agree DLC has the tools and resources they need to make informed decisions about EVs in 2023, up from 25% in 2022 and 2021.

**Figure 1**

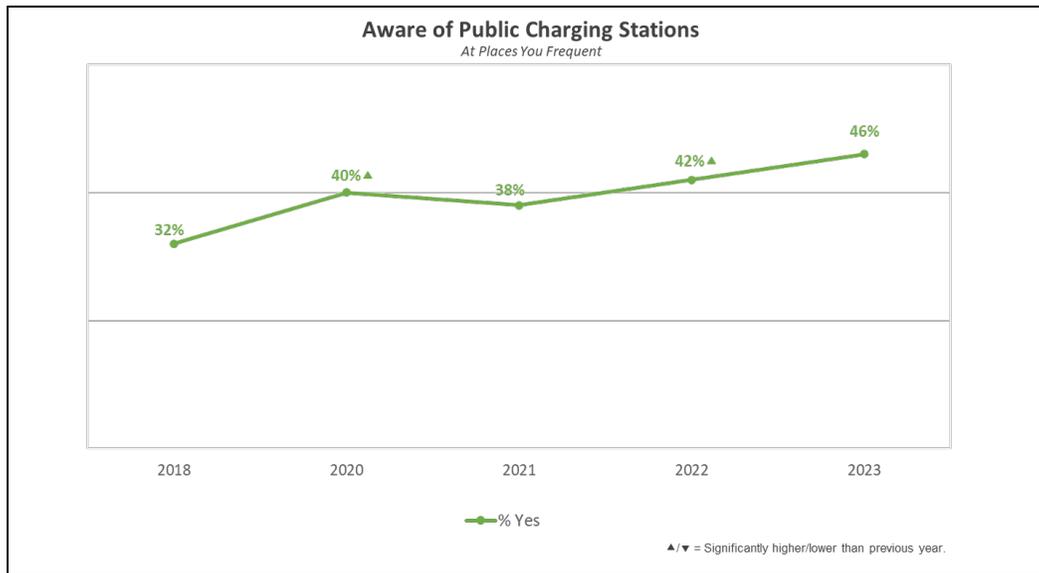


Findings from an annual survey of the company's Customer Panel indicate that the likelihood of buying or leasing an EV (Extremely Likely or Likely) has stood between 23-26% overall in recent years, while ownership remains relatively low (Figure 2). In 2023, 40% of customer respondents between 18-44 years of age reported they were likely to purchase or lease an EV.

**Figure 2**



Awareness of public charging stations located in areas DLC customers frequent has increased to 46% in 2023 (Figure 3). However, in a 2023 survey of the company's Customer Panel, about two-thirds of customers indicate that a lack of public charging stations nearby and/or at home is a major barrier to buying/leasing an EV. Two-thirds of survey respondents indicate they do not have an existing outlet at their home that could support charging. Low cost and a manufacturer's warranty are cited as the most important features of a Level 2 charger by nearly one-half of Non-EV Owners. Other significant concerns include limited vehicle driving range (75%) and high initial purchase/lease prices (71%).

**Figure 3**

## Section 2: Impact of EV Programs on EV Adoption

In a 2023 survey of the company's Customer Panel that sought feedback about several EV program concepts, among customers who do not currently own an EV but are "Extremely Likely" or "Likely" to purchase an EV:

- 87% are interested in an EV Charging Program that would provide a rebate for installing a Level 2 charging station at their home.
- 75% are interested in a Managed Charging Pilot that would provide a rebate for installing a Level 2 charging station at their home, in addition to incentives for participating in load management events.
- 61% indicate that a Managed Charging Pilot would make them more likely to drive an EV.

Customers cite affordability by way of defraying some of the upfront costs and support for an easy transition to EVs as appealing aspects of these programs.

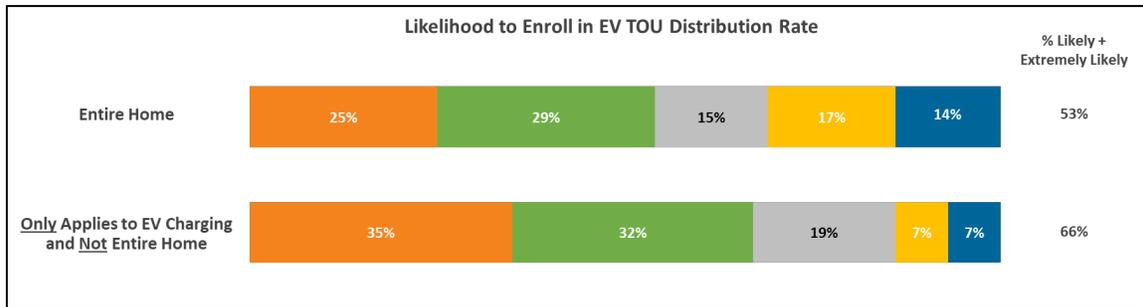
## Section 3: Customer Interest in Shifting Usage

The company surveyed its known EV drivers (those that have claimed the EV Registration Incentive) and members of DLC's Customer Panel in 2023 about their interest in shifting EV charging electricity use. 45% of respondents indicated that they would be "Extremely Likely" or "Likely" to enroll in a managed charging pilot that includes incentives for participating in load management events.

About one-half of EV owners indicated that they would be "Extremely Likely" or "Likely" to enroll in an EV Time of Use (TOU) Distribution Rate and two-thirds would be likely to enroll if the rate only applied to the EV Charging (Figure 4). While interest in EV TOU Distribution rates is high, some cite uncertainty about how the rate will affect their

monthly bill indicating a need for educational resources to inform customers on this topic.

**Figure 4**



In a separate 2022 survey of the company's EV driving customers who had not enrolled in the existing WholeHome EV TOU Supply Rate, only 27% indicated that they were likely to enroll in the rate in the next year. For those who indicated they were unlikely to enroll, inability to shift load and the rate only applying to the supply side were two of the most frequently cited reasons for not enrolling in the rate. When asked if they would be more likely to enroll if the rate only applied to their EV charging and not their entire house, 64% indicated being much or somewhat more interested.

# ELECTRIC MOBILITY FOR ALL



**AUGUST 2023  
FINAL REPORT**

**DLC**  
—DUQUESNE LIGHT CO.—

## Report by Fourth Economy



Fourth Economy is a national community and economic development consulting firm. Powered by a vision for an economy that serves the people, our approach is centered on principles of competitiveness, equity, and resilience. We partner with communities and organizations, public and private, who are ready for change to equip them with tools and innovative solutions to build better communities and stronger economies.

[www.fourtheconomy.com](http://www.fourtheconomy.com) • [engage@fourtheconomy.com](mailto:engage@fourtheconomy.com)



# TABLE OF CONTENTS

Executive Summary	4
<b>Baseline Understanding of Influences, Economics, and Environment</b>	<b>6</b>
Electric Mobility Definition	6
Benefits	6
Challenges	7
Equity and E-mobility	8
<b>Community Engagement</b>	<b>9</b>
Community Engagement Best Practices	9
Selecting Communities	11
Community Conditions	13
Phone Survey Results	16
Neighborhood Conversations	19
<b>Common Topics of Neighborhood Conversations</b>	<b>20</b>
EV Charging Stations	20
Fleet Electrification	21
Shared E-mobility	22
Mapping	24
<b>Emerging Community Priorities</b>	<b>27</b>
Next Steps per Community	29
<b>Promising Equity Practices of Utility Providers in Electric Mobility</b>	<b>31</b>
Education	31
Charging Station Infrastructure	33
Shared E-mobility	36
Fleet Electrification	39
<b>Recommendations</b>	<b>41</b>
<b>Conclusion</b>	<b>46</b>
<b>Appendix</b>	<b>47</b>



# Executive Summary

As the electric utility provider for most of Allegheny and Beaver Counties, Duquesne Light Company (DLC) envisions a clean energy future for all. As part of this vision, DLC is working to empower all its customers to experience the benefits of electric mobility.

DLC's work in advancing electric mobility, specifically in geographically diverse communities outside the urban core, and for disadvantaged, underserved, or underrepresented populations within its service territory, is guided by its five electric mobility equity objectives:

- Strengthening public engagement in communities that are traditionally underrepresented or underserved
- Increasing the availability of electric vehicle (EV) charging infrastructure at public, multifamily, and workplace sites
- Facilitating commercial customer fleet conversions to EVs
- Heightening awareness and availability of electric public transit and micromobility options
- Assisting communities in applying for funding opportunities

It also relates to [DLC's commitment to diversity, equity, and inclusion](#), which includes investing in community partners.

As part of DLC's efforts to evaluate its approach to administering electric mobility efforts equitably among its customers, including people of color and those within traditionally underserved, low-income, geographically diverse, and otherwise vulnerable population areas, the company partnered with Fourth Economy Consulting to help evaluate and guide its current and future work in this area.

Beginning in January 2023, Fourth Economy engaged with members of the DLC team to document DLC's work to date and understand current levels of electric mobility in their service territory overall and in various communities. Fourth Economy also conducted desktop research to identify the ways that other communities around the country are approaching electric mobility equity and opportunity, with the goal of answering these key questions:

- *How are communities defining their areas of greatest need and/or areas that will have barriers to electric mobility adoption?*

- *What are the best practices and strategies that other communities are implementing to advance electric mobility equity?*

DLC and Fourth Economy also worked collaboratively to identify communities to conduct community engagement in, using criteria such as household income, proximity to job centers, commuting patterns, car ownership, proximity to major commuting corridors (tailpipe emission proximity), and density of population. Community engagement included a mix of in-person sessions and phone surveying. Communities selected by geography include:

- Beaver County: Beaver Falls
- Monongahela River Valley: Clairton, McKeesport
- Ohio River Valley: Coraopolis, McKees Rocks
- Adjacent to City of Pittsburgh: Penn Hills

To provide critical information on consumer behavior, community concerns, and opinions about electric mobility, Fourth Economy partnered with Bellwether Research and Consulting to conduct a phone survey of three hundred residents within the selected communities.

In addition, to dig deeper and build on the findings from the phone survey and initial research, as well as hear directly from residents and community leaders about the opportunities or barriers that may exist to electric mobility adoption across charging stations, fleet electrification, and shared e-mobility, Fourth Economy

organized neighborhood conversations that took place in four of the selected communities. Reflecting the lessons learned from those neighborhood conversations, this report documents several best practices for equitable community engagement around electric mobility.

Desktop research also yielded promising practices regarding equity-based interventions, programs, and activities for utility providers to advance electric mobility in disadvantaged communities. These are captured as case studies of examples of how utilities around the country have approached equity-based e-mobility advancement.

Finally, based on learnings from the community dialogue, promising practices, case studies, and desktop research, this report offers recommendations on next steps for DLC per community, as well as topic-specific strategic actions DLC may take to advance e-mobility adoption, awareness, and advocacy throughout the DLC service territory. Recommendations are tied to and are meant to help achieve DLC's five electric mobility equity objectives. They include making EV charging more accessible; assisting in fleet electrification; investing in traditionally underserved, low-income, minority, and otherwise vulnerable population areas; increasing EV awareness, education, and technical capacity; supporting shared e-mobility options; easing administrative costs and building community capacity; and helping stakeholders pursue e-mobility funding opportunities.



## Baseline Understanding of Influences, Economics, and Environment

### **Electric Mobility Definition**

*Electric mobility, or e-mobility, refers to the electrification of a wide range of transit options, from personal vehicles to public transit and micromobility options like e-bikes or e-scooters. Pittsburgh Regional Transit (PRT) has committed to a zero-emission fleet by 2045 and already has eight all-electric transit buses on the roadways. POGO launched an electric bike-share system in 2022 and expects to expand it significantly in the coming years.*

### **Benefits**

**Air and Environmental Quality:** E-mobility is a critical component of carbon reduction plans and carbon-neutrality pledges. The City of Pittsburgh's Climate Action Plan notes that 18 percent of greenhouse gas emissions result from transportation sources and seeks to reduce transportation emissions by 50 percent by 2030. EVs have zero tailpipe emissions and are responsible for 80 percent fewer greenhouse gas emissions overall when charged in Pennsylvania. E-mobility can provide positive benefits to the public, beyond individual users, including air-quality improvements in commuting corridors often in economically disadvantaged areas.

Reductions can also contribute to more equitable environments, as Black/African Americans, Hispanics, Asians, and other people of color are disproportionately exposed to air pollution. A 2021 study in Science Advances found this disparity present across all major types of emissions.

**Less Gasoline Dependence:** Gasoline costs have been rising. In 2022, the average US households spent approximately \$5,000 annually on gasoline, up from \$2,800 in 2021.

---

**THERE ARE MORE THAN  
8,200 LIGHT-DUTY EVS  
REGISTERED IN DLC'S  
SERVICE TERRITORY—A  
NEARLY 500 PERCENT  
INCREASE FROM FIVE  
YEARS PRIOR.**

---

**Long-Term Affordability:** Total cost of ownership is typically less for EVs compared to internal combustion engine vehicles because of lower, more stable maintenance costs, since EVs have fewer moving parts, require no oil changes, and have reduced brake wear. According to [AAA's 2022 Your Driving Costs analysis](#), on average, “electric vehicles cost \$330 less than a gas-powered car [to maintain], a total of \$949/annually.”

**Economic Growth:** Transitions to e-mobility will support a skilled workforce. [As of 2019](#), there were 4,400 jobs involved in the electric transportation supply chain in Pennsylvania. The workforce is expected to grow 24 percent by 2024, compared to overall state growth at 3 percent.

## Challenges

In their [Pennsylvania Electric Vehicle Roadmap](#), the Pennsylvania Department of Environmental Protection notes barriers to EV deployment in Pennsylvania fall into categories: awareness, decision-making, economic, policy and regulatory, technical and infrastructure, and supply chain. As a utility, DLC is positioned to lead in breaking down awareness and decision-making barriers. Additionally, as heard through neighborhood conversations, DLC, along with community partners, could serve to educate and advance electric mobility in a way that supports a community's specific goals.

**Questions:** Many questions still surround electric mobility, particularly around technology. Mass-market transition will occur over the next decade. Therefore, unbiased, accurate, and data-driven **education programs are needed to prepare consumers and answer questions** about battery and charging technologies. Additionally, creating a one-stop shop that connects consumers to various incentive programs and electric options can further assist with decision-making barriers.

**Engagement:** When communities have overwhelming immediate needs, it can be difficult to engage in future planning. In this way, engagement should **complement existing community processes**. This requires meeting communities where they are by actively participating in events and partnering with local organizations. Projects should also **align with other infrastructure improvements**. As capacity varies across communities, assistance and resources could be provided in recognition of the value of participation and local social capital.

**Equity Considerations:** DLC's approach to e-mobility centers equity in order to ensure communities aren't left behind while also working to ensure electric mobility investments support the community's specific goals, especially surrounding equity. Community engagement is necessary in order to understand existing community needs and opinions on e-mobility. In order to engage the broadest community, work should be centered around e-mobility broadly, not just personal EV ownership.

## Equity and E-mobility

In order to address electric mobility challenges and promote benefits across its service area, DLC as an electric utility company is working to ensure transitions to e-mobility continually center on equity. DLC's efforts to engage and deploy electric mobility in underserved areas are not designed to be at the expense of other areas; rather, DLC recognizes that underserved areas may have special considerations that require additional attention to understand and address. The Pennsylvania Department of Transportation's Electric Vehicle Equity Guiding Principles include:

- A. Make EVs more affordable
- B. Make EV charging more accessible
- C. Invest in fleet electrification
- D. Invest in traditionally underserved, low-income, minority, and otherwise vulnerable population areas
- E. Increase EV awareness, education, and technical capacity

These principles inform the promising practices and engagement topics explored later in this report.



# How Might We...

## 1. How might we invest in or implement this?

### 1a. What stakeholders or partners are needed to help drive implementation?

Who are potential electric mobility champions who can help drive this forward?

Local Government

Residents

### 1b. What resources are needed? Where can those resources be sourced?

Larger power Grids or Solar Panels

Building Materials

### 1c. What questions still need to be answered? What additional information do we need?

Location(s)

Cost of Charging Stations.  
- Installation  
- Upkeep

## Community Engagement

In order to understand what interventions might work locally, Fourth Economy engaged several communities via a phone survey and in-person neighborhood conversations across DLC's service territory. Communities were selected based on a number of indicators and preliminary research.

## Community Engagement Best Practices

### Best Practices in Equitable Community Engagement for Electric Mobility

Community engagement within any planning process is important, because it empowers individuals to participate and weigh in on decisions that change their towns, cities, and neighborhoods in ways that affect their lived experience.

This is critical given recent initiatives like the [National Electric Vehicle Infrastructure Formula Program](#), which aim to direct billions of federal infrastructure dollars to enable electric mobility in communities throughout the United States. Given gaps in current approaches to e-mobility transitions, which often neglect our most disadvantaged or underrepresented communities in the absence of intervention, programs like the federal [Justice40 Initiative](#) may help align some of this investment with communities of need, by directing benefits of certain federal investments to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. However, Fourth Economy's experience gathering insights from policymakers and program operators shows that there is a lot of ground to cover to

**FORMAL COMMUNITY PLANNING PROCESSES THAT CENTER EQUITY ARE MORE LIKELY TO CREATE ALIGNMENT WITH COMMUNITY DESIRES AND PRIORITIES, BUILD ACCOUNTABILITY OF DECISION MAKERS, AND LEAD TO MEASURABLE RESULTS THAT ARE ACCEPTED WITHIN COMMUNITIES THAT HAVE BEEN HISTORICALLY DISADVANTAGED, MARGINALIZED, OR DISINVESTED IN.**

truly create meaningful positive impacts when it comes to these types of investments in communities. DLC's efforts to ensure electric mobility for all can serve to demonstrate as a model for action that enables true equitable impact.

Guidance from the *Stanford Social Innovation Review* notes, "Engaging a community is not an activity that leaders can check off on a list. It's a continuous process that aims to generate the support necessary for long-term change. The goal is to encourage intended beneficiaries not just to participate in a social change initiative but also to champion it."<sup>1</sup>

By creating the right underlying conditions to have ongoing neighborhood conversations, DLC can design engagement that elevates voices of community members within historically disadvantaged communities and makes underserved or underrepresented constituents a key part of the planning process. Alignment of actions and investment with community members' desires can improve the likelihood of successful adoption of electric mobility programs as well as help improve inequities.

By undergoing inclusive engagement that seeks full representation of residents across a spectrum of interests, ages, and socioeconomic backgrounds, communities are more likely to achieve:

- **More Informed Plans and Better Outcomes:** Plans that are developed with inclusive representation are better informed and have a higher potential for positive impact for all community members.
- **Creativity and Collaboration:** Listening and learning from a variety of voices rather than engaging only like-minded representatives spurs creativity and a more honest assessment within the planning process.
- **Improved Buy-In and Participation:** Early engagement creates greater understanding among the public during strategy development and thus improves buy-in and participation during implementation.

Best practices within equitable community engagement include identifying the right blend of stakeholder representation, promoting a range of outreach efforts to meet people where they are, utilizing targeted facilitation techniques that add value and are not purely extractive, and providing monetary and other support to participants to enable committed involvement from community members. DLC should design future community engagement with these equity considerations in mind:

- **Identification of Stakeholders:** Equitable community engagement efforts are highly localized and typically serve marginalized groups or take place in areas that have historically been underserved by providers, disinvested in, or underrepresented in terms of past community engagement. Identifying stakeholders across demographics, geographic locations, and target populations (such as historically disadvantaged or affinity groups) is important to ensuring full representation of viewpoints within the engagement effort.
- **Outreach Efforts:** Outreach to stakeholders should include a variety of communication platforms and methods, including by digital and physical means. Some communities use channels like social media to learn about events and get involved, while others are less digitally literate and rely exclusively on printed

---

<sup>1</sup> [https://ssir.org/articles/entry/community\\_engagement\\_matters\\_now\\_more\\_than\\_ever](https://ssir.org/articles/entry/community_engagement_matters_now_more_than_ever).

communication, such as flyers in public gathering places, doorknob hangers, and notices in local publications. Oftentimes, the best way to reach target populations is through known respected community leaders. Spending time to establish relationships with community leaders and brief them about the goals of a project and desired outcomes from community engagement can be an effective way to activate their network.

- **Facilitation:** Facilitation should seek to develop activities that are not exclusively extractive. A good community partner identifies how they are going to deliver value to participants while also learning from the community.
- **Support for Participants:** Some community members may have financial barriers or other difficulties participating in engagement that they may be otherwise interested in. Supports for those participants could include stipends to cover transportation or other costs, as well as food and childcare at the event.

## How Community Engagement Worked in This Project

Fourth Economy conducted neighborhood conversations in four communities identified using the criteria described previously. These conversations took the findings from the phone survey and other desktop research and explored firsthand what opportunities or barriers exist to electric mobility adoption among residents living in representative communities in DLC's territory. These conversations were conducted with a range of community leaders and residents to allow for a robust exploration of perspectives and ideas for future strategies around electric mobility adoption.

## Selecting Communities

### How to Select Communities to Engage in “E-Mobility for All” Efforts

DLC should select communities for its “e-mobility for all” efforts with geographic, demographic, and economic diversity in mind and evaluate how well the communities fit within criteria such as:

- Location within DLC's service territory in Allegheny and Beaver Counties
- Geographical distribution
- Representation from lower-income and disadvantaged, underserved, or underrepresented communities
- Vehicle ownership rates
- Location designated as environmental justice area
- Presence of a defined Main Street district
- Presence of key outreach, planning, and implementation partners
- A population that is racially and ethnically diverse

### Specific Data and Sources

The specific data to select communities may include:

- **Median Household Income:** Median household income can serve as a proxy for identifying low-to-moderate-income (LMI) communities. Within this project, LMI communities were selected if they had a median household income level lower than

80 percent of the area median income for a single adult household in Allegheny County or Beaver County, Pennsylvania, a threshold that is under \$47,500. *Source: Census, American Community Survey*

- **Percent of Noncar Households:** Given that e-mobility improvements can benefit those with and without a personal vehicle, we considered communities with a variety of car ownership levels. However, low car ownership can contribute to economic instability among individuals by making it more challenging to participate in activities like work and education, so targeting communities with low vehicle ownership rates can help bridge inequities and create pathways to pursuing economic opportunity. *Source: Census, American Community Survey*
- **Designated Environmental Justice Areas:** The Pennsylvania Department of Environmental Protection defines an environmental justice area as any census tract where 20 percent or more individuals live at or below the federal poverty line, and/or 30 percent or more of the population identifies as a nonwhite minority, based on data from the US Census Bureau and the federal guidelines for poverty. *Source: PA Environmental Justice Areas*
- **Diverse Population:** Measuring nonwhite, Hispanic or Latino, and other BIPOC populations within a given community can indicate the presence of a diverse population based on race and ethnicity. *Source: Census, American Community Survey*
- **Air Quality:** Targeting efforts toward communities that are most affected by poor air quality can maximize electric mobility's transition benefits to those populations. Allegheny County air quality operates an extensive network of air monitoring equipment throughout the county. This network collects information on a variety of pollutants, including criteria pollutants and hazardous air pollutants. *Source: Allegheny County Air Quality Monitored Data*
- **Presence of a Main Street Business District with Active Outreach, Planning, and Implementation Partners:** Ensuring that representative communities have an active Main Street organization, commercial district corporation, business association, or other engaged community group that has the capacity to serve as a partner is key to establishing relationships with business owners and municipal partners that can help engage residents, do strategic planning, and create action.

## How Community Selection Worked for This Project

In this project, DLC identified several diverse regional geographies within its service area that communities should be selected from. The Monongahela Valley, Ohio River Valley, and Beaver County, as well as communities closer to the city, served as important cross sections of the region and areas of interest.

Fourth Economy presented DLC with a matrix of the nearly 150 municipalities that have a population of more than a thousand people each across these four regional geographies. This matrix included the variables described previously, like population, median household income, and number of households with no vehicles. The matrix also identified which communities are designated as low to moderate income. Together, communities selected for this project needed to total more than thirty thousand people to establish a

statistically significant phone survey pool with an acceptable margin of error. Ultimately, Beaver Falls, Clairton, Coraopolis/McKees Rocks, McKeesport, and Penn Hills were selected for surveying and neighborhood conversations. Of the communities selected, McKeesport/Clairton and Beaver Falls met the criteria of LMI communities.

## Community Conditions

### Beaver Falls

As of 2020, Beaver Falls was home to just over nine thousand residents. With a median income of \$34,640, Beaver Falls is an LMI community and an environmental justice community. Almost 23.8 percent of Beaver Falls households do not own a vehicle. Beaver Falls is home to Geneva College and a large Main Street but surrounded by a more rural environment. Investigating community needs and perceptions in this setting can inform strategies beyond dense or suburban communities.

Race	2020	Share of Population
White	6,023	67%
Black or African American	1,899	21%
Asian	78	1%
Some Other Race	168	2%
Two or More Races	800	9%

Source: Census 2020

### Coraopolis

As of 2020, Coraopolis was home to 5,559 residents. With a median income of \$52,594, Coraopolis is not classified as an LMI community, but it is an environmental justice community. Just above the regional average, almost 13 percent of Coraopolis households do not own a vehicle.

Race	2020	Share of Population
White	4,254	77%
Black or African American	644	12%
Asian	27	0%
Some Other Race	161	3%
Two or More Races	454	8%

Source: Census 2020

Coraopolis is home to a growing Hispanic/Latino population, a group historically underrepresented in the region.

Ethnicity	2020	Share of Population
Hispanic/Latino	343	6%

Source: Census 2020

## McKees Rocks

A similar size as Coraopolis, McKees Rocks was home to just over 5,920 residents in 2020. With a median income of \$32,800, McKees Rocks is classified as an LMI community and an environmental justice community. More than one-third (35.9 percent) of McKees Rocks households do not own a vehicle.

Race	2020	Share of Population
White	2,878	49%
Black or African American	2,454	41%
Asian	75	1%
Some Other Race	68	1%
Two or More Races	429	7%

Source: Census 2020

## McKeesport

As of 2020, McKeesport was home to 17,727 residents. With a median income of \$32,042, McKeesport is an LMI community and an environmental justice community. Almost 30 percent of McKeesport households do not own a vehicle. As a PRT hub and Great Allegheny Passage trail city, expanded e-mobility could go beyond just personal car usage in McKeesport.

Race	2020	Share of Population
White	9,175	52%
Black or African American	6,937	39%
Asian	49	0%
Some Other Race	252	1%
Two or More Races	1,257	7%

Source: Census 2020

## Clairton

As of 2020, Clairton was home to 6,181 residents. With a median income of \$37,544, Clairton is an LMI community and an environmental justice community. More than 16 percent of households do not own a vehicle. Home to the Clairton Coke Works, Clairton suffers from poor air quality.

Race	2020	Share of Population
White	3,604	55%
Black or African American	2,759	42%
Asian	0	0%
Some Other Race	0	0%
Two or More Races	107	2%

Source: Census 2020

## Penn Hills

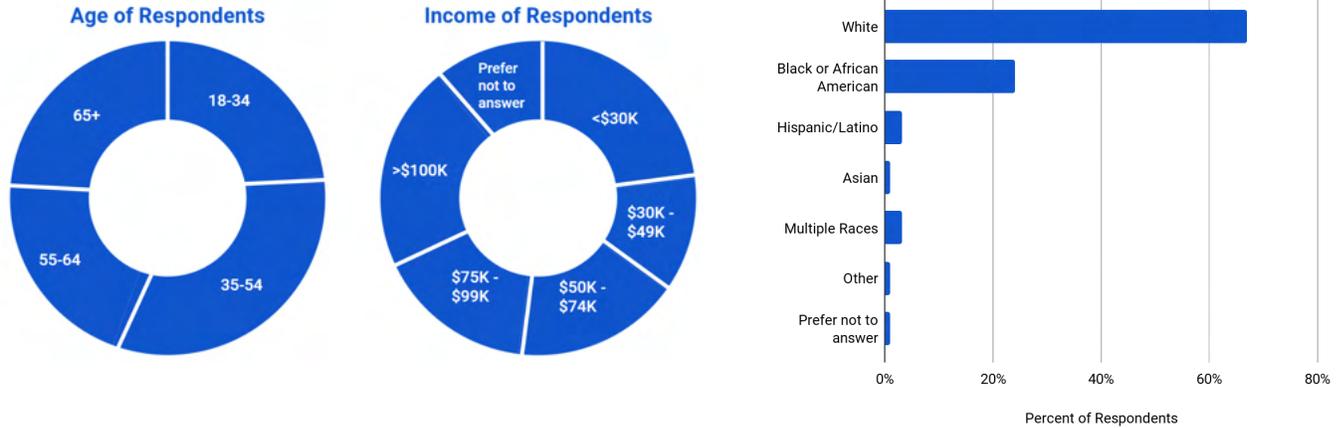
As of 2020, Penn Hills was home to 41,059 residents. With a median income of \$57,196, Penn Hills is not classified as an LMI community, but it is an environmental justice community. However, Penn Hills has become the most common destination for households distanced from the City of Pittsburgh in recent years. Approximately 10 percent of households do not own a vehicle, similar to the regional average. Penn Hills' diversity of residents and housing types makes it an interesting case that can serve as a model for Pittsburgh-adjacent communities in the region.

Race	2020	Share of Population
White	21,032	51%
Black or African American	16,753	41%
Asian	316	1%
Some Other Race	488	1%
Two or More Races	2,409	6%

Source: Census 2020

# Phone Survey Results

The phone survey, conducted by Bellwether Research and Consulting, surveyed three hundred adults (eighteen years of age or older) across zip codes that contain Beaver Falls, Coraopolis/McKees Rocks, McKeesport, and Penn Hills. Participants were contacted via landlines and cell phones.



Results were balanced for age, income, race, and gender. Survey respondents were representative of the population.

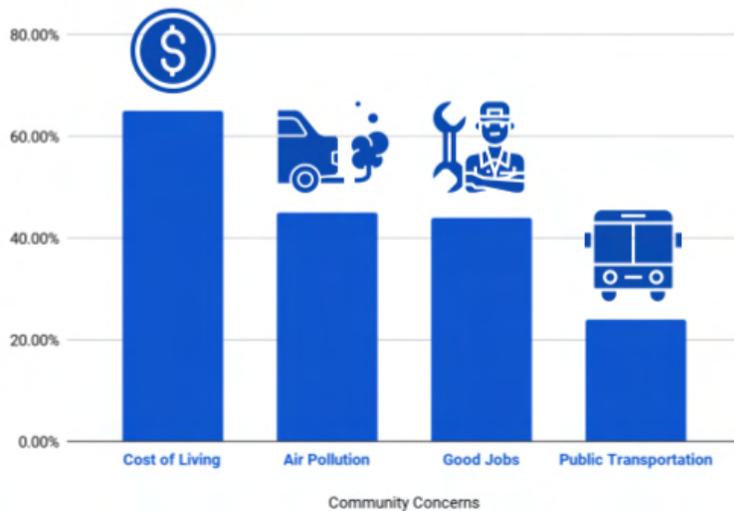
Race/Ethnicity	Population	Survey
White	72%	67%
Black or African American	20%	24%
Hispanic/Latino	2%	3%
Asian	2%	1%
Multiple Races	4%	3%
Other	1%	1%

The survey captured top concerns of residents across communities:

- **Cost of living** is a very big issue for residents in these communities: 90 percent say they are concerned about it, including 65 percent who are very concerned.
- A similar share of respondents are concerned about **good jobs** (75 percent) and **air pollution** (73 percent).

## TOP CONCERNS

Percent of Respondents Who Answered 'Very Concerned' Across the Following Categories



Those most concerned about air pollution include Black residents (62 percent very concerned), women under fifty-five (65 percent very concerned), non-college-educated women (64 percent very concerned), and those expressing an interest in EVs (57 percent very concerned).

Most residents currently own personal, conventional gas vehicles:

- Most surveyed use a personal car for transportation (88 percent) and say they own a gas-powered vehicle (84 percent). Except for those at the highest income level, a **majority bought their cars used**.

But many residents are interested in electric cars:

- **One-third** of respondents reported that they are interested in purchasing or leasing an EV.
- Those most interested include high-income (\$100K+) earners (51 percent), people under thirty-five (47 percent), and those living in multiunit apartments (48 percent).

Top benefits listed of EVs included contributing to positive environmental impacts and not paying for gas, but responses varied by race and income:

- **Black residents strongly prioritize the environment** (39 percent) over not paying for gas (22 percent), while white residents focus on gas savings (36 percent) over the environment (26 percent).
- The highest-income earners (\$100K+) strongly prioritize the environmental benefit of an EV, while all others rank not paying for gas as the top benefit.

The lack of places to charge EVs was the top concern surrounding their use, followed by limited battery range, but responses varied by sex and race:

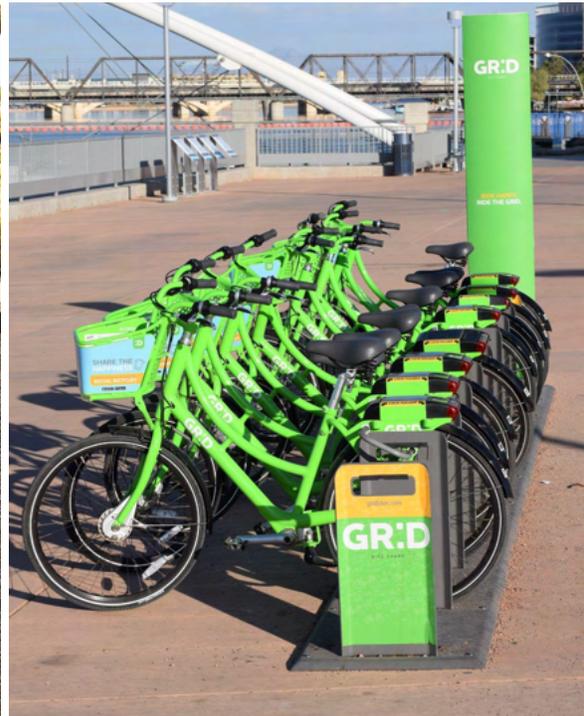
- Having **more electric charging stations** in the community addresses a top concern (“no place to charge”) for women. Men are more likely to focus on “limited battery range” as a top concern.
- Having no place to charge an EV at home or in the community is a leading concern for Black residents, while white residents rank limited battery range as their leading issue.

The presence of charging stations was influential to participants:

- Thirty-six percent agreed the presence of charging stations in the community would make them **more likely to consider driving an EV** in the future.
- Among those who initially said they were interested in an EV, **two-thirds (66 percent)** say charging stations in their community would make them more likely to consider driving an EV.

Majorities agree that having publicly shared e-bikes (56 percent) or e-scooters (55 percent) would be a good addition to their community:

- There are significant population differences on the value of shared e-bikes and e-scooters: **a strong majority of women say they would be a good thing**, while the majority of men disagree.
- **Black residents were significantly more supportive** of adding publicly shared e-bikes and e-scooters and **much more likely than white residents to say they would use them**.



## Neighborhood Conversations

Neighborhood conversations took place in Coraopolis (3/21/23), Beaver Falls (3/22/23), Penn Hills (4/6/23), and Clairton (4/17/23). Food and beverages were provided to all attendees, and all ages were welcome. Conversations were approximately two hours each, and stipends of thirty dollars were offered to attendees on an opt-in basis. Stipends recognize the inherent cost of attendance as well as barriers to attendance, such as transportation or childcare.

Fourth Economy worked with community partners to spread the word about events. These community groups included Coraopolis Community Development Corporation, Beaver Falls Library, the City of Beaver Falls, RiverWise, Penn Hills Community Development Corporation, the Penn Hebron Garden Club, Mon Valley Initiative, Tube City Renaissance, and Clairton Community Center. Outreach occurred via emails, phone calls, online posts, poster distribution, church outreach, and more.

After a brief presentation on the project and phone survey results, participants were split into subject-area groups to provide their opinions around the potential and perceived impacts of three electric mobility project categories: (1) public charging, (2) fleet electrification, and (3) shared e-mobility options. Participants also shared questions they had about e-mobility and identified both opportunities and barriers that may exist to implementation within their community. Results of the sessions were synthesized for consideration by DLC and shared back out to participants.

We posed the same series of prompts across each category:

- *How might we benefit from this as a community?*
- *How might we help solve existing transportation issues in our community?*
- *What questions still need to be answered?*
- *How might we invest in or implement this?*
  - *What stakeholders or partners need to help drive implementation?*
  - *What resources are needed?*
  - *What questions still need to be answered?*
- *How might we engage local employers and small businesses to help drive implementation?*
  - *Name employers, organizations, and businesses that might want to be involved.*
  - *What's in it for them?*
  - *How might we engage them?*
- *How might we leverage other planning and momentum happening in the community?*
- *How might we best inform the public about electric mobility?*

# Common Topics of Neighborhood Conversations

While patterns of responses emerged across themes, each community spoke to its specific needs and place constraints. Overlapping opinions as well as the unique experiences of each community by topic area are documented below.

## EV Charging Stations

EV charging station infrastructure was a primary topic discussed in every community.

### Benefits

There was substantial overlap across community-identified benefits of public charging stations, including **attracting new residents or shoppers to their business districts**. Beaver Falls participants in particular expressed that the presence of public charging stations could **disrupt negative stereotypes** that outsiders and residents may have about the community, by showcasing the community's commitment to **environmentalism and being forward-looking**. In Penn Hills, which is already grappling with **increasing transportation and infrastructure needs**, participants identified an opportunity to build momentum around e-mobility infrastructure.

**WHEN ASKED HOW E-MOBILITY MAY HELP EXISTING TRANSPORTATION ISSUES, HALF OF COMMUNITIES CITED LESS AIR POLLUTION OR ENVIRONMENTAL BENEFITS.**

### Implementation Needs

Community conversation participants identified **capital** as the tool most needed for charging stations. Several communities hoped DLC would assist them with submitting

Type of Electric Mobility

## CHARGING Stations

### How Might We...

1. How might we invest in or implement this?

1a. What stakeholders or partners are needed to help drive implementation? Who are potential electric mobility champions who can help drive this forward?

1b. What resources are needed? Where can those resources be sourced?

1c. What questions still need to be answered? What additional information do we need?

2. How might we engage local employers and small businesses to help drive implementation?

2a. Name local employers, organizations, and businesses that might want to be involved:

2b. What's in it for them? Why might they want to get involved?

2c. How might we engage them?

grant applications or connecting them to related resources. Other common answers were **experts or technical resources** to inform the public and assist with the transition. Concerns about **power grid capacity** and/or the ability to harness **solar energy** for e-mobility use came up in multiple conversations.

## Potential Locations

In Coraopolis, Beaver Falls, and Clairton, **business districts** were identified as places of gathering and best candidates for public installations. As a large topographically diverse suburb, Penn Hills identified the **shopping center** at the corner of Frankstown Road and Rodi Road as a focal point in the community, along with several other hubs throughout the community (see the mapping section for more detail).

## Communicating to the Public

In terms of communication, each community mentioned their **local or regional newspaper** and **social media** as primary news sources for residents. Additional attention was placed on education, with emphasis on educating both **school-aged youth and educators** through STEM programming. Others mentioned that **face-to-face** conversations are most effective for spreading information and suggested making **presentations** to Borough Council, business associations, or other meetings at community gathering spots, as well as in concert with **respected, trusted, and well-known community organizations** like the local garden club or area churches. Finally, many community members said that **community events**, where **demonstrations** of charging technology, shared mobility, and/or e-vehicles could be displayed, could be powerful communication and education methods.

## Questions Remaining

Many questions emerged surrounding charging infrastructure. Every community asked about both the **cost** of charging and the **responsibility of maintenance**. Municipal leaders especially wanted to know who is responsible for the **electric bill** at these stations and whether they would receive a **preferential rate**. Long-term planning questions also emerged, such as what will happen if stations need maintenance or **technology changes**. Ongoing questions about the **capacity of charging stations**, such as their ability to handle daily trips or the backup plan in case of power outages, remain. Any public charging program should make this information as open and readily available as possible.

## Fleet Electrification

Fleet electrification was discussed in most communities, though participants noted the need to involve business owners and other municipal leaders in these types of conversions.

## Benefits

Communities discussed fleet conversions in terms of economic and community impacts. In terms of economics, participants noted electrifying fleets would allow for **cost and gas/diesel saving for public entities** such as municipalities and school districts. In terms of community impact, some participants recognized air-quality benefits in replacing diesel

fleets with EVs, and many saw fleet electrification as a way to make up for past cuts and existing limits to public transit. For example, Clairton participants expressed a desire for an **electric minibus or van** that could make a regular loop through the community to help older residents reach shopping centers and other points of interest. Several communities, such as Coraopolis and Penn Hills, noted **older adults** are specifically in need of nonpersonal vehicle solutions. In Penn Hills, residents note experiences picking up older adults headed on foot to grocery stores along the sides of busy roads.

## Implementation Needs

In terms of achieving fleet conversions, participants noted the need for **education, capital, and expertise**—in essence, a program. Again, communities sought support in connecting businesses to grants or resources. In Penn Hills, it was noted that fleet conversion may be **contingent on depreciation schedules and business budgets**. Several communities highlighted **school buses and vans as priorities** given their diesel dependence and the risk they impose on young lungs.

## Shared E-mobility

Shared e-mobility (including e-bikes, e-scooters, and shared e-car services) received more hesitancy across communities compared to charging stations or fleets. In Coraopolis, participants were eager to discuss shared e-mobility, with half the room working on it as a breakout activity topic. In Penn Hills, by contrast, shared e-mobility was not dismissed outright but deemed more difficult because of safety issues posed by fast roads and dangerous intersections.

The benefits of shared e-mobility cited by communities differed from those of charging stations and fleets. Benefits were generally more human centric, stating shared e-mobility promotes healthy/active living, greater community connection (mentioned in three communities), and fun (mentioned in all communities). Lower gas consumption, less pollution, and affordability were also mentioned across communities. Required resources overlapped with charging stations and fleet conversations.



## Benefits

Shared e-mobility options were framed as **a method to address transportation gaps** in Coraopolis, Beaver Falls, and Clairton, especially for youth and older adults, and particularly given the **hilly topography** of several of the communities in the region. Particular emphasis was placed on shared e-mobility as a way to address **last-mile transportation**, as a way to bridge the gap from home to a bus stop that may be far away. Participants also cited shared e-mobility as a way to help increase connectivity to neighboring business districts. Additional strategies brainstormed included tying the

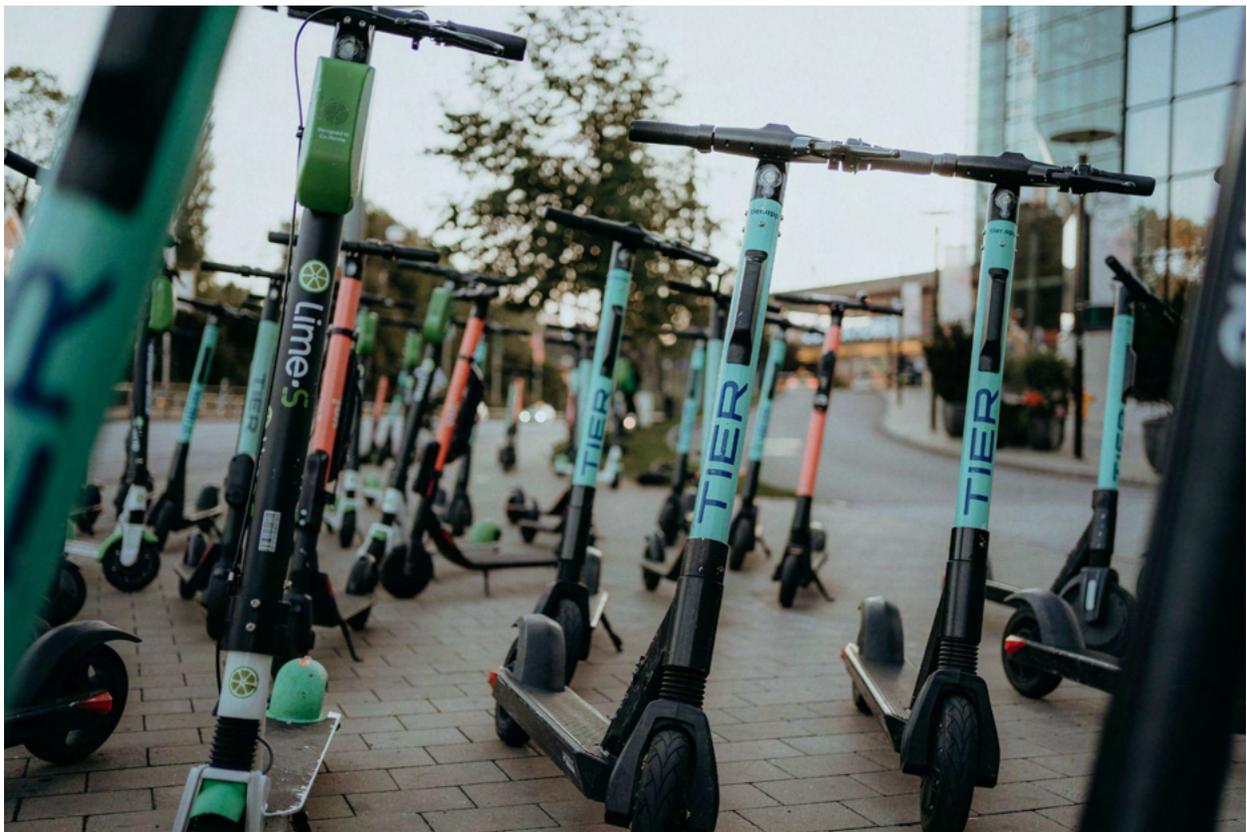
introduction of shared mobility to existing infrastructure improvements. For example, Coraopolis struggles with traffic and speeding through its business district and recognized that **multimodal design and streetscape modernization** could make streets safer for everyone. In Beaver Falls, the presence of a growing number of **privately owned scooters and bikes** was noted, particularly in relation to **Geneva College**.

## Communicating to the Public

Community leaders stated there is opportunity to create a culture around e-mobility more widely by complementing this trend with public investments. Beaver Falls also advocated for a community bike/scooter day or **demonstrations to inform the public** and increase engagement around station placement and program rollout.

## Questions Remaining

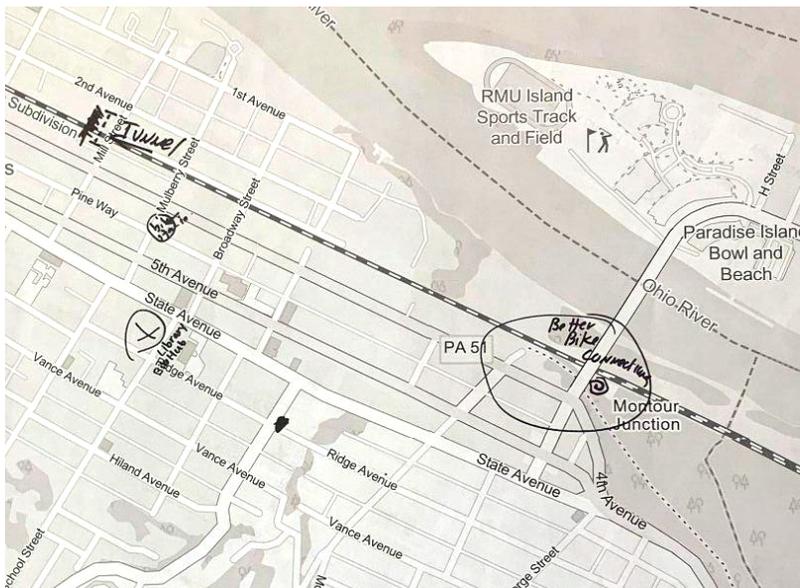
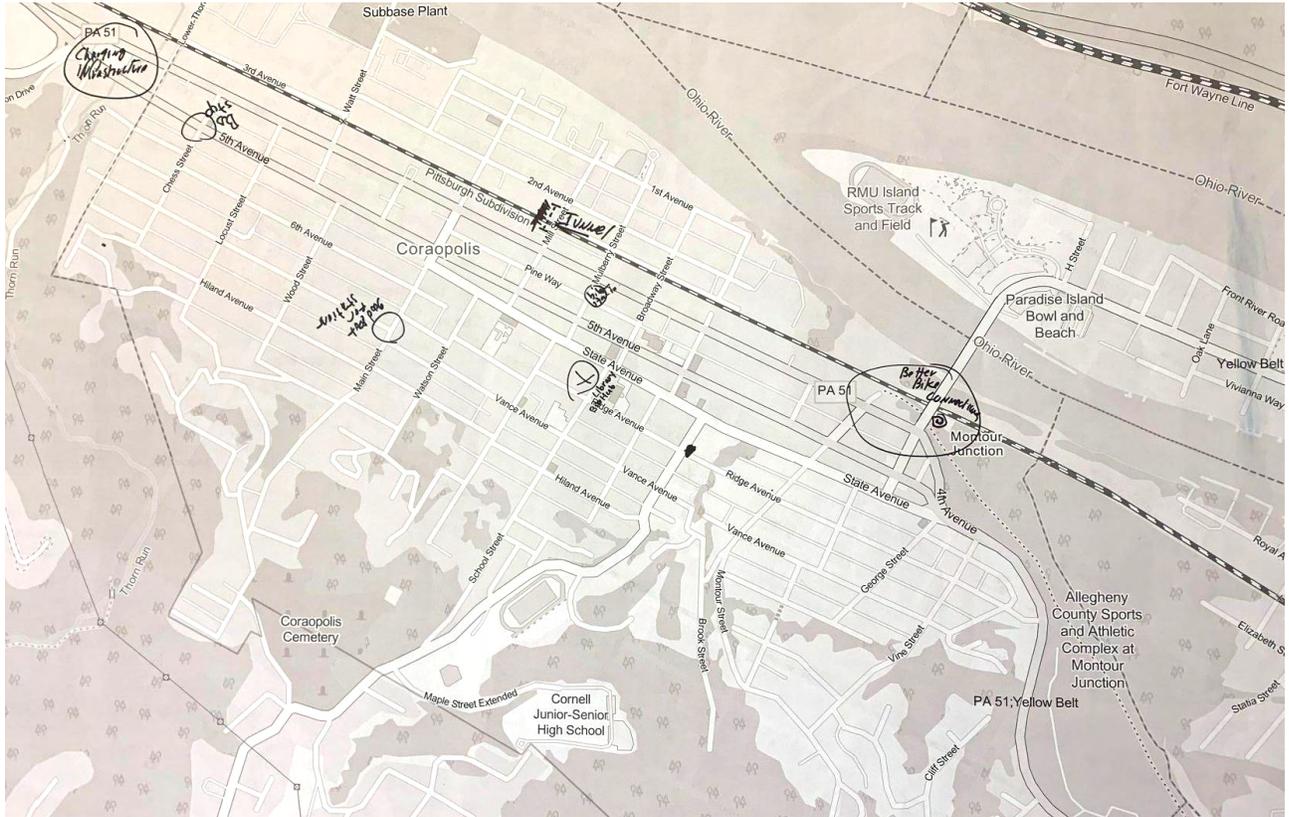
Many participants asked questions about the rules and regulations surrounding shared-mobility options. Other questions around the ability of e-bikes and e-scooters to make it up hills, minimum and maximum speed, cost per ride, how residents would pay (i.e., credit card versus prepaid ride card), cost to install, maintenance, safety, liability, and how to avoid vandalism were also posed. Communities once again desired support in applying for state and federal grants and resources.



# Mapping

Participants also took part in a mapping exercise to identify places of gathering and ongoing infrastructure challenges in their business districts. Examples from a few communities are shown in the following pages.

## Coraopolis



# Beaver Falls







## Emerging Community Priorities

Shared themes emerged across neighborhood conversations. At a high level, many outstanding questions revolved around **resources and responsibilities**. Communities noted **additional resources would be needed** to institute any public improvements. Additionally, across communities, residents noted how such improvements should benefit more than just car users and complement other community investments. Finally, community members recognized that e-mobility needs to be made **approachable and fitting for existing transportation habits**. Coraopolis and Beaver Falls both noted that **demonstrations**, particularly of shared e-mobility options, at community events may serve to both educate and excite communities about e-mobility. The following emerging community priorities were shared across communities.

### Increase Community Capacity

Across topics, communities responded well to the conversation format and recommended similar approaches toward future engagements. Just as stipends were used during neighborhood conversations to compensate individuals, community-level resources are needed for further engagement. Community organizations' ability to provide valuable social capital but limited capacity was noted in several communities. Particularly in Beaver Falls, community members suggested that grants should accompany transition programs to increase community capacity. All communities expressed the need for assistance in learning about and applying to state and federal grants.

### Engage More than Just EV Users

Communities were especially warm to utilitarian applications of e-mobility infrastructure—interventions that would positively impact the largest number of people, beyond just EV owners. Examples of this practice include integrated lighting, as well as proximity to small businesses and public space. Across communities, special attention was paid to children and seniors in terms of transportation needs. Penn Hills was particularly conscious of existing transportation challenges in their community and how e-mobility should aim to alleviate them. Programs with audiences beyond those who already own personal EVs can also serve as spaces to communicate and educate energy-minded customers on electric mobility.

## Decompile Programming

Across communities, there was notable overlap between the resources and stakeholders needed to engage charging station, fleet, or shared e-mobility projects. There is opportunity to maintain and build up relationships with groups and individuals within each community to engage stakeholders in future potential projects. Streamlining processes means not only ensuring more direct benefit gets to LMI communities but also simplifying messaging around qualifications. Other utilities demonstrate decomplication through people-based approaches: In Colorado, customers already receiving discounts or assistance through the utility are automatically eligible for e-mobility assistance programs. In Oregon, eligibility is expanded to all recipients of state and federal assistance programs. Beyond the people-based approach, Clairton wanted to know how these changes can tie into existing projects and benefit businesses. Streamlining qualifications and programs will translate to less administrative cost for DLC.

## Partnerships

Partnership will be essential for all programs, but they are particularly necessary for programs outside the direct domain of energy provision—such as with bike shares, scooters, or connections to transit. Coraopolis was very interested in and excited by shared e-mobility options but had many questions that would likely require both DLC and a provider to field. Here, DLC's role should be connector or strong partner. In the case of PRT, DLC is more likely a strong partner because of PRT's own capacity, administration, and zero-emission fleet vision. However, DLC could be a connector between communities outside the City of Pittsburgh and electric micromobility networks within the city like POGO and Spin.

## Next Steps by Community

All communities would benefit from DLC-published FAQs and/or an information hub that provides information about EV technology, costs, and benefits. Additionally, several community leaders asked for phone survey data to be shared. Communities that engaged in the neighborhood conversations were eager for engagement with DLC to continue, often asking, “When will you be back?” In order to build from this momentum and maintain community connections, DLC can take the following steps requested by specific communities.

### Coraopolis

Coraopolis expressed much interest in micromobility options but had a lot of questions surrounding their application. To continue community engagement, DLC can:

- Host a community discussion about what e-mobility would look like in the community, particularly bikes and scooters.
- Bring demonstration charging stations or e-bikes/e-scooters to the farmers’ market or other community celebrations.
- Coordinate discussions between Coraopolis leadership and POGO to explore possible bike-share expansion to Coraopolis and/or advisement on how to partner to set up and operate a shared e-bike network.
- Advocate for PRT to improve bus network connectivity to Coraopolis and include electric buses along routes serving Coraopolis.

### Beaver Falls

Beaver Falls was also interested in micromobility options and is already observing use of private bikes and scooters. Community members noted a lot of planning efforts are occurring in Beaver Falls, providing opportunity to DLC to plug into existing programming and community events. Additionally, Geneva College was identified as an important stakeholder that should be intentionally engaged.

- Bring demonstration cars, charging stations, or e-bikes/e-scooters to the car show or other community celebrations.
- Review upcoming parking and streetscape improvements to Beaver Falls to understand where e-mobility infrastructure may correspond. Assist with relevant grant applications.
- Meet with Geneva College to understand their existing relationship with micromobility providers and potential opportunities for collaboration with DLC.

### Penn Hills

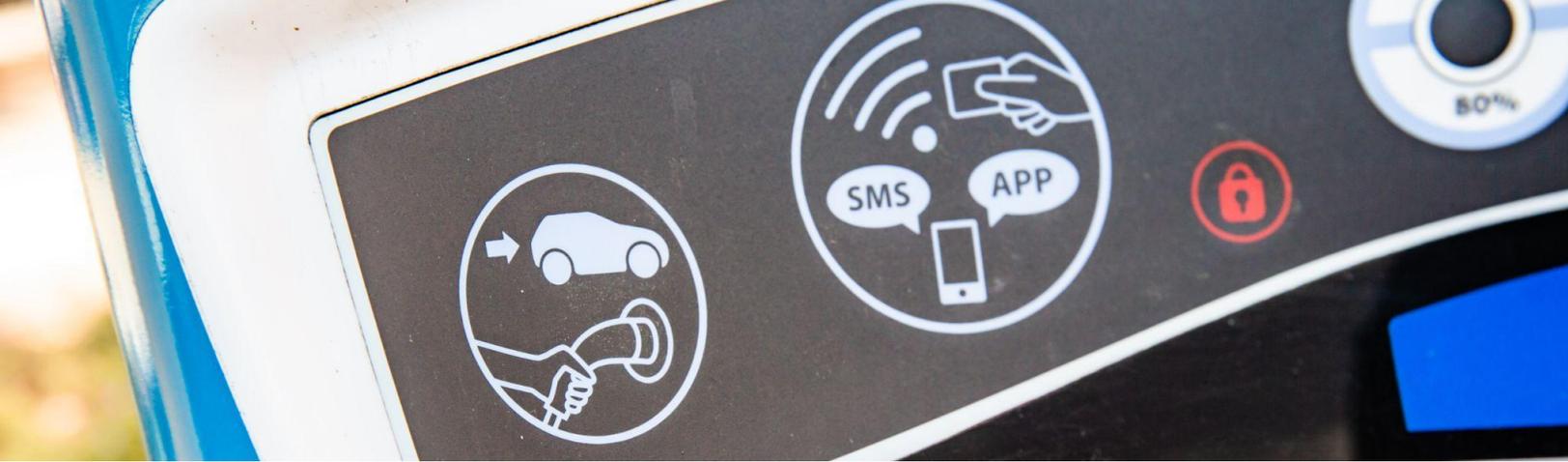
Penn Hills was eager to keep the conversation going, acknowledging electrification is actively being discussed across the municipality.

- Present “the EV family” panel. Conversation participants noted how helpful it was to have their neighbors be able to speak to their experience with EVs. Elevate these resident voices as another means of community education and to differentiate information provision so it is not always top-down.
- Discuss with Penn Hills Council DLC’s existing offerings as well as potential for pilot programs at a working session. Assist with relevant grant applications.
- Meet with Krise Transportation (private provider to area school districts) to understand its approach to fleet electrification.

## Clairton

Clairton wanted to be sure that transitions benefit existing residents and business owners, and residents had questions about tax credits and rebates. In addition to a standard FAQ on e-mobility, an information sheet on the benefits for business owners would be a good resource DLC could provide to the community.

- Connect with business owners to discuss benefits to business owners and community.
- Bring demonstration charging stations or e-bikes/e-scooters to the library or other community celebrations.
- Host focus group discussions of youth and elders to understand specific transportation needs, gathering places, and preferences for micromobility or fleet options.



## Promising Equity Practices of Utility Providers in Electric Mobility

Utility providers are in unique positions to be leaders, information providers, and conveners of partners in the transition to electric mobility. We thus considered promising practices from communities around the country where utilities were primary actors in electric mobility transitions, either as the administrator or provider. These case studies can be sorted in four main categories:

- Education
- Charging station infrastructure
- Shared e-mobility
- Fleet electrification

### Education

According to DLC's internal *Perceptions of DLC in EV Adoption* report, 27 percent of customer survey respondents currently own or are "very familiar" with the fundamentals of owning an electric-only vehicle. Meanwhile, 26 percent are likely to consider purchasing or leasing an EV.

The top three barriers to purchasing or leasing an electric-only vehicle are concerns about vehicle range (74 percent), too-high initial purchase/lease price (74 percent), and too-high total cost of ownership (69 percent).

Utilities are uniquely poised to serve as educators about electric mobility to help overcome some of these adoption barriers for a number of reasons. First, utilities have established expertise in energy and electricity. Relatedly, utilities have a large audience and name recognition. Having utilities facilitate consumer education on electric energy, rather than introducing new agencies or organizations, will decomplicate processes and ease transitions.

### Education in Schools

The [American Public Power Association](#) ran a program in 2021 where public power utilities could share EV education through a multimedia curriculum with teachers of

grades six through twelve. This program was facilitated through a national STEM education partnership with Electrify America and the National Energy Foundation.

## Public Campaigns

Utilities can also serve as partners with state and local governments on larger campaigns. In Colorado, the [Colorado Energy Office](#) launched a public awareness [campaign](#). Partners in the campaign include the Colorado Automobile Dealers Association, Xcel Energy, the Tri-State Generation and Transmission Association, [Drive Electric Colorado](#), nonprofit [Drive Clean Colorado](#), and Boulder (city and county) and Durango.

## Customer Tools

DLC provides a guide to EVs on its [website](#). The guide connects users to available EVs, incentives, and a map of charging stations. A tool also allows users to compare the cost of EVs to that of conventional gas vehicles.

In addition to websites, utilities often also use third-party tools as a way to inform electrification transitions, logistics, and benefits in their service areas. DLC and many other utilities use the [J.D. Power ZappyRide](#) tool to provide education and equity considerations related to e-mobility. The tool assists in educating about EVs technology and acquisition, fleet assessment and management, and connection to regional and federal resources.

Another tool, ChooseEV, is currently helping more than five hundred utilities in thirty-six states communicate how their unique rates impact their customers' operation costs. The ChooseEV platform, a tool operated by Yenter Group and distributed by [D+R International](#), can provide information about carbon and financial savings of EV compared to internal combustion engine vehicles, incentives calculators, and complete lists of EVs currently on the market. Utilizing tools like ChooseEV can help relieve some of the burden on utilities and ensure that information is complete and accessible to all customers.

---

**EDUCATION IS FOUNDATIONAL TO ALL OTHER EQUITY-BASED ELECTRIC MOBILITY WORK. PROVIDING EDUCATION TO RESIDENTS, BUSINESSES OWNERS, AND LOCAL GOVERNMENTS WILL ADDRESS INFORMATION GAPS PERPETUATED BY INEQUITY AND DISINVESTMENT AS WELL AS CREATE A PATHWAY TO CONNECT CONSUMERS TO OTHER ELECTRIC MOBILITY PROGRAMS.**

---

## LMI/Equity Considerations

These types of customer tools can be made more equitable by carefully considering the lived experience of the target audience. For example, instead of showing only new EVs, communications can also link to used EVs to better accommodate low-income consumer preference and affordability.

## Charging Station Infrastructure

A key role of utilities in the charging space is to support the development of more equitable infrastructure, such as the installation of public charging stations, which can be tied to larger infrastructure investments and streetscaping. Infrastructure investments like charging stations in public space should provide positive externalities to those occupying the same space. For instance, charging stations could provide needed lighting to a business district to enhance public safety. As the movement toward electrification is tied to climate change, installation of charging stations can accompany other climate-conscious improvements, such as tree planting and stormwater management projects. Engaging with e-mobility also must be inviting to achieve equity and educate the public. Public art can also accompany public-sphere e-mobility upgrades.



## PowerReady Incentives

Con Edison is offering incentives in New York State that will offset some or most of the electric infrastructure costs associated with installing light-duty charging stations for EVs. Con Edison's PowerReady program began offering financial support to developers installing EV charging stations in 2020. Installations grew modestly at first but have multiplied in 2022 as the market has developed further.

## LMI/Equity Considerations

The PowerReady Disadvantaged Community Areas program identifies areas where “eligible applicants can get incentives that cover up to 100% of the energy company and customer costs of installing Level 2 or direct current fast-charging stations (DCFC stations) in designated ‘Disadvantaged Community’ areas in New York City and Westchester.” Disadvantaged communities are identified on a map on the program website.

This program also seeks to collaborate with private developers to create more comprehensive coverage: “Con Edison seeks to encourage a dynamic, competitive and diverse market for EV chargers, with a mixture of publicly accessible ports and those located at residential buildings and businesses.” To help meet demand as the number of EVs on New York’s roads grows, Con Edison intends to support approximately nineteen thousand EV charging ports by 2025 and four hundred thousand by 2035.

## Florida Power and Light EVolution Program

Florida Power and Light launched the FPL EVolution program in 2019 with the intention of installing more than a thousand charging ports at more than a hundred locations throughout Florida, especially along major roadways and at major employers and tourist destinations. The FPL EVolution program will drive EV education, infrastructure, and adoption by installing charging stations at a hundred locations across Florida.



### LMI/Equity Considerations

Locations for charging stations were chosen with equity in mind, by selecting places that are accessible and used by diverse audiences, including public parks, shopping malls, and large companies that employ thousands of Florida residents—such as Jupiter Medical Center, which will install charging stations for both public and employee use, and Office Depot, Inc., which will install stations for their employees. Popular visitor-friendly locations will offer charging points for public use. There is also a residential installation option available through the program.

### Public Charging Station Installation and Rebate

Boston's local utility company Eversource has begun undertaking all the excavation, infrastructure, and electrical work needed to bring public charging stations to publicly owned parcels within the City of Boston. After a slow start, city transportation officials and Eversource are pushing ahead with plans to install 198 Level 2 charging ports by 2025 in municipal parking lots and other locations in Boston neighborhoods beyond the downtown.

In addition to municipal lots, the program is open to workplaces, shopping centers, fleets, and multifamily dwellings.

## LMI/Equity Considerations

The program includes additional incentives and assistance for those in environmental justice communities. Additionally, part of the program is having commercial customers apply for federal and state resources, streamlining the process.

Sector/ Property Typs	Environmental Justice Community (EJC) Criteria	Make Ready Rebate	Make Ready Eligibility	EVSE Rebate (Level 2)	EVSE Rebate (DCFC)	EVSE Eligibility	Make Ready Rebate Incentive Caps Level 2 (customer side of meter)	
<b>Public/ Workspace</b> Public parking lot, commercial office building, shopping center, etc.	EJC- Income	<b>Utility-Side:</b> up to 100%, not to exceed actual costs	Must apply for available State/ Federal funding if eligible	100% ports 1-10	\$40k per port (50-150 kW), \$80k per port (>150 kW) <sup>1</sup>	Must be Publicly Accessible <sup>2</sup>	Retrofit	New Construction
	EJC- Other			75% ports 1-10			\$40k per port (>50 kW) <sup>1</sup>	<b>New Service</b>
	Non-EJC			50% ports 5-10	N/A			\$13,358 per port
	Non EJC- Municipal			50% ports 3-10			Public fleets only <sup>4</sup>	<b>No New Service</b>
<b>Fleets</b> Company/ municipality owning fleet of light-duty vehicles <sup>3</sup>	EJC- Income	<b>Customer- side:</b> see incentive caps in the table to the right	MUDs: Must be non-deeded parking, unless >20% parking spaces have EVSE installed	100% ports 1-10	\$40k per port (50-150 kW), \$80k per port (>150 kW) <sup>1</sup>	Public fleets only <sup>4</sup>	\$13,358 per port	\$5,700 per port
	EJC- Other			75% ports 1-10			N/A	N/A
	Non-EJC			50% ports 5-10	\$40k per port (>50 kW) <sup>1</sup>			
<b>Multi-Unit Dwellings (MUDs)</b> Multi-unit (5+ units) residential dwelling	EJC- Income			100% ports 1-10	N/A	N/A	<b>Make Ready Rebate Incentive Caps DCFC (customer side of meter)</b>	
	EJC- Other			75% ports 1-10			100%	
	Non-EJC			50% ports 1-10				

Source: [Eversource](#)

The program is also coordinating with private market investment in order to target geographic gaps and avoid duplication. The installation of another, roughly two hundred EV ports will be left to the private sector, a system that has worked so far in downtown Boston.

## Residential Charging Stations

**Green Mountain Power** residential customers are eligible for a free Level 2 charging station when they purchase a new all-electric vehicle. Residential customers that already own an EV may rent a Level 2 charging station at a low monthly fee. In addition, customers may enroll in Green Mountain Power's EV Unlimited Plan for unlimited EV charging during off-peak hours at a flat monthly fee.

Avista, a northwestern utility provider, offers rebates to residential and workplace customers for the installation of a Level 2 charging station of up to \$1,000 and \$2,000, respectively.

**Sacramento Municipal Utility District (SMUD)** offers residential customers a \$599 rebate or a free Level 2 (240 volt) charging station. Rebates or ports are available to SMUD residential customers with the purchase or lease of a new EV. To be eligible for the rebate or charging station, completed applications must be postmarked within 180 days of the date of purchase or lease of the EV. Additional terms and conditions apply. For more

information, including the rebate application, please see [SMUD's Drive Electric Incentive website](#).

### LMI/Equity Considerations

Residential charging station programs address a top barrier to e-mobility: cost. Green Mountain Power and SMUD use the equity practices of [targeted universalism](#) to achieve the goal of greater adoption of e-mobility across all customers, with special attention to barriers and historic disinvestment. Given positive public benefits, such as reduced transportation emissions, targeted universalism provides an opportunity to create more holistic change.

### EV Rebates

In partnership with Xcel Energy, GRID Alternatives CO is offering a rebate for EV purchases for income-qualified customers that can be combined with federal incentives. That can mean up to \$5,500 back from Xcel for the purchase of a new EV and \$3,000 for a used vehicle. Those enrolled in LEAP, CARE, SNAP, and TANF automatically qualify. By the end of 2023, the program aims to assist 120 income-qualified individuals in purchasing an EV, and assist at least 100 individuals with the installation of a Level 2 charging station at their place of residence.

### LMI/Equity Considerations

To meet the income-qualified requirement, households must have an income below:

- 60 percent of the State of Colorado's median income *or*
- 200 percent of the relevant federal poverty level *or*
- 80 percent of area median income

Data gathered from rebates is being used to track progress in [Denver's EV Action Plan](#):

"Denver will need 10 times the current number of charging ports over the next 10 years," the action plan concluded, including nearly 750 DCFC ports and 3,300 Level 2 charging ports.

## **Shared E-mobility**

Shared e-mobility consists of car shares and public bikes and scooters. There is existing evidence of how shared e-mobility fills transit gaps in the region. For instance, [Spin scooters](#) demonstrated equitable usage during their recent two-year pilot program in the City of Pittsburgh. During the pilot program, which ended on July 10, 2023, half of Spin users earned below the Allegheny County median income and one-third did not have access to a car. Black/African American scooter users were [33 percent](#) more likely to ride scooters daily and use scooters to connect to transit compared to white scooter users. Shared e-mobility also serves as a first- and last-mile tool, connecting commuters to other forms of transit. The use of scooters for first- and last-mile connectivity nearly doubled from [15 percent in 2021 to 29 percent in 2022](#). Utilities are in a position to help facilitate expansion of such programs beyond the city.

## E-bike and E-scooter Charging Stations

Con Edison is working with the New York City Housing Authority (NYCHA) to install e-bike and e-scooter charging stations and storage within NYCHA properties. The installation of charging stations in four locations will serve as a pilot, allowing Con Edison to gather information on whether the presence of charging stations encourages further use of micromobility options. Con Edison will use these stations to gather further information on the number of unique users, length of charge, and time of charge. The utility will use this information to estimate how much carbon would have been emitted if users had opted for a conventional vehicle instead. Con Edison is installing the charging stations, but the stations will be maintained by contractors.



### LMI/Equity Considerations

Partnering with the NYCHA presents the opportunity to expand e-mobility infrastructure to disadvantaged communities. Also, given the setting, installations will occur in multifamily dwellings, providing a model for other utilities. Con Edison seeks to create charging stations that will accommodate all e-bikes and e-scooters, regardless of the manufacturer.

## Connecting Bike Share to the Grid

Citi Bike, the New York City bike-share system owned by Lyft, is partnering with Con Edison and New York City's Department of Transportation so that e-bike charging stations connect to the electrical grid. The connection will allow for expanded access, as previously workers would have to manually swap out batteries in order to keep bikes charged. Con Edison acknowledges that methods may vary per location, with some charging stations connecting to streetlights while others may require trenches. A similar model exists with POGO in Pittsburgh.

### LMI/Equity Considerations

With the electrical upgrade comes an opportunity to expand services. Mayor Eric Adams pledged to “expand Citi Bike beyond more affluent communities by committing City funding.” Presently, Citi Bikes are not available in many New York City neighborhoods, including the entire borough of Staten Island. According to Lyft in the Gothamist, “City support will allow us to add more electrified stations and to do so faster than our existing operating budget can support.”

## Bike Share outside the Big City

The Aspen model follows bike-share models popular in larger cities: “Aspen, CO, was the first small town in the United States to try a bikeshare program in 2013. Called We-Cycle, this program allows riders to rent a bike from a docking station for up to 30 minutes for

free. The program was funded through the We-Cycle non-profit and ‘adopt-a-bike’ donations. Only \$250,000 was needed to start the program with 10 docking stations and 100 bikes. In the first year, the bikeshare had over 9,000 rides. In the years since, the system has grown to include 51 docking stations, 232 manual bikes and 52 e-bikes across the municipalities of Aspen, Basalt and the Middle Valley. The city of Aspen alone saw more than 37,000 bikeshare trips in 2021, indicating that bikeshare programs like theirs are scalable and effective.”

In Montevallo, Alabama, a bike-share program more closely resembles a library or car-share membership model: “Montevallo, AL, create the first city-wide bikeshare program in the state. The ValloCycle program includes traditional bikes, mountain bikes and hand operated bikes for those with disabilities. A bike trailer can be rented for the day, as can panniers for transporting goods around on a rented cycle. Anyone who is 18 years or older and is a resident of the Montevallo community can rent a bike of their choice from city hall after completing a form and paying a \$20 per term fee.”

### LMI/Equity Considerations

Compared to EVs, micromobility is open to a wider audience of users, including youth and those without a driver’s license. A study of the Hamilton, Ontario, bike-share system found that population density is not correlated to bike-share ridership.

### E-bike Rebate

The Redding, California, income-qualified e-bike program assists in lowering up-front costs of acquiring an e-bike. The program provides a point-of-purchase voucher toward an e-bike, helmet, and lock from pattern retailers. Recipients must be enrolled in the utility’s Residential Energy Discount program, which reduces energy bill costs. Qualified customers receive a voucher of up to \$1,150 toward an e-bike and accessories.

The Redding Electric Utility (REU) also offers a point-of-purchase incentive for income-qualified customers to help reduce monthly vehicle payments on a qualifying EV. With REU’s residential rate, customers pay an average of \$1.10 per gallon equivalent to fuel an EV. REU consolidated federal, state, and local incentives to inform EV customers. Recipients must be in the Residential Energy Discount program and have incomes under the guidelines.

**MAXIMUM INCOME GUIDELINES**  
(60% of Shasta County median family income)

FAMILY SIZE	MONTHLY INCOME	YEARLY INCOME*
1	\$2,780	\$33,360
2	\$3,180	\$38,160
3	\$3,575	\$42,900
4	\$3,970	\$47,640
5	\$4,540	\$54,480
6	\$4,610	\$55,320
7	\$4,925	\$59,100
8	\$5,245	\$62,940

\* Add \$4,230 per year for each additional person in the household.

Source: [REU](#)

### LMI/Equity Considerations

Recipients must be a part of the Residential Energy Discount program and have incomes under the 2023 guidelines shown below.

## Fleet Electrification

Utilities can also use fleet transitions in order to engage local business owners in the transition to electric mobility. According to the [EPA](#), medium- and heavy-duty trucks contribute more than one quarter of transportation emissions. And the burden of [air pollution is not evenly distributed](#), with residents in lower-income, racially diverse, and historically disinvested areas experiencing poorer air quality than other communities. Utilities are fleet owners themselves, meaning they can exemplify program administrator by transitioning their [own fleets](#) as well. [Many utilities](#) have set goals to electrify all light-duty vehicles and some of their medium-duty vehicles by 2030.

The Pennsylvania Department of Transportation identifies electrification as a fitting match for fleets because of predictable routes and charging, greater return on investment (given life cycle costs), raising awareness, and emissions impacts.

### Fleet Electrification

Duke Energy estimates EVs may compose 10 to 15 percent of commercial and passenger fleets by 2030. Electric fleets reduce operating costs, maintenance, and support sustainability goals. Duke Energy recognizes that fleet replacements are often planned years in advance. For that reason, their advice for customers interested in fleet conversion begins with relationship establishment and goes through cost and charging planning:

- 1) Let's communicate
- 2) We'll help with math
- 3) What's the plan for charging?
- 4) Get ready to work closely together
- 5) Prepare to think about fuel availability in new ways
- 6) Ask about options to manage costs

### LMI/Equity Considerations

By offering financial planning as well as cost calculators on their site, Duke Energy recognizes that capacity varies across businesses.

### Electric School Buses

In 2019, Dominion announced that they would partner with Virginia school districts as they began replacing diesel buses in their fleets with electric models.

All school districts in Dominion Energy Virginia's service territory awarded rebates and grants from the EPA's Clean School Bus Program are eligible. Duke Energy provides guidance on purchasing and charging, as well as answers questions about the process.

### LMI/Equity Considerations

Replacing one diesel bus can reduce greenhouse gas emissions by fifty-four thousand pounds each year. The air quality inside a diesel bus is five times worse than outside the bus. This makes rural students with the longest bus rides additionally vulnerable to air

pollution exposure. Replacing a diesel bus with an electric bus significantly improves air quality for students.

## Fleet Charging Station Installation

Portland General Electric (PGE) submitted its proposed EV charging pilot program in 2019. PGE plans to install more than 3,600 Level 2 residential charging stations and 600 Level 2 or DCFC charging stations at workplaces, public locations, for fleets, multifamily dwellings, or mass transit applications. The electric utility proposed to install, own, and operate a majority of the charging stations. The program is estimated to have a total net cost of \$5.4 million.

The utility facilitates two fleet-centric programs: an assessment and readiness program (Fleet Partner Plan) and a design and installation program (Fleet Partner Build). There's no cost or commitment to the assessment. The Fleet Partner Build program comes with PGE ownership and maintenance of equipment for ten years.

### LMI/Equity Considerations

The program integrates education, including an explanation of different charging port requirements and fleet conversion calculators. The landing page for charging station information presents clear information that addresses common concerns, such as charging time, available incentives and rebates, and benefits. Program requirements do not center around income or business characteristics, but the Fleet Partner Build does offer incentives of up to \$750,000.



## Recommendations

### Recommended action strategies to achieve DLC's electric mobility equity objectives:

At a high level, DLC should build off and expand its ongoing e-mobility programs, complementing them with additional equity considerations and means of assistance in order to meet its five electric mobility equity objectives:

#### **Objective 1: Strengthen community engagement on electric mobility in disadvantaged, underserved, underrepresented, and geographically diverse communities within DLC's service territory**

##### **Action Strategy: Increase EV Awareness, Education, and Technical Capacity**

Electric mobility education is foundational to all other equity-based electric mobility work. Utilities are naturally poised to serve as educators for a number of reasons because of their established expertise in energy and electricity and unique position to lead implementation of many e-mobility initiatives. Relatedly, utilities have a large audience in their current and potential customer base, as well as name recognition and existing reputation. Having utilities facilitate consumer education on electrification, rather than introducing new agencies or organizations, can decomplicate processes, build further trust, and ease transitions. Providing education to residents, businesses owners, and local governments can help address information gaps perpetuated by inequity and disinvestment as well as create a pathway to connect consumers to other electric mobility programs.

**Potential actions for DLC to consider** include providing educational resources, such as formal programs delivered as in-person or virtual workshops and seminars, as well as live demonstrations of electric mobility technologies at community events like farmers' markets and seasonal celebrations. Other resources, like FAQ website pages, live Q&A sessions, and physical brochures distributed at public gathering places like libraries and community centers, will help DLC target efforts to reach disadvantaged, underserved, underrepresented, and geographically diverse communities in their service territory, especially harder-to-reach audiences such as those without computer or internet access

and limited-mobility residents. DLC might partner with state or national agencies for larger campaigns, like the [Colorado Energy Office](#) did. DLC should also take care to communicate information about e-mobility in a digestible way. PGE's [website](#) offers an example—see the Case Study section of this report for more information.

### **Action Strategy: Use Community Engagement to Inform Investments in Traditionally Underserved, Low-Income, Minority and Otherwise Vulnerable Population Areas**

Compared to the population as a whole, marginalized and disadvantaged communities often experience greater levels of harm and fewer benefits from economic activities that create pollution and other environmental degradation. Infrastructure improvements, like investments in e-mobility, should provide positive public externalities for all, especially those who have been historically most negatively affected.

For reasons highlighted earlier in this report, electrification programs can and should reach beyond only car users and car-centric infrastructure. Programs with beneficiaries who do not already own personal EVs can serve as mechanisms to communicate and educate residents on the benefits of electric mobility, as well as generate broad public support. Electric mobility projects like the installation of charging stations and bike shares can be tied to larger infrastructure investments already being made to improve communities, like streetscaping, road paving, streetlight installation, and corridor improvements, and charging stations in public spaces should provide positive externalities to those occupying the same space—such as providing lighting or gathering spaces. DLC can partner with municipalities in their service territory (e.g., borough managers, planning commissions, etc.) to be kept abreast of these planned projects and engage in discussions about how to integrate e-mobility components as the projects are being planned.

**Potential actions for DLC to consider** include responding to priorities identified in equity-centered community engagement before implementing interventions like readiness campaigns, charging programs, and rebate assistance. Reference the Community Engagement Best Practices section of this report for guidance on the most effective ways to conduct equitable community engagement to advance electric mobility.

## **Objective 2: Increase availability of EV charging infrastructure in disadvantaged, underserved, underrepresented, and geographically diverse communities within DLC's service territory at public, multifamily, and workplace sites**

### **Action Strategy: Partner to Enable Affordable and Available EV Charging Access**

More affordable EV charging is an important step to making electric mobility for all a reality. DLC is already undertaking some specific actions in this domain through its Community Charging Pilot.

**Other specific actions DLC could take** include working with municipalities, nonprofits, and businesses to install new public charging stations and residential charging stations, and supporting site hosts to ensure charging hosts spots are ADA accessible. To encourage

the development of residential charging stations, DLC could consider working with housing authorities to develop charging at low-income multiunit properties, and enabling programs like automatic qualification for existing customers who receive assistance. As DLC considers installing charging stations or working with charging providers, targeted, careful investment should go to assuring access in disadvantaged, underserved, or underrepresented communities and areas without home-charging access.

To enable more residents to take advantage of additional EV charging infrastructure in their community, DLC could offer a rebate for vehicle purchases for income-qualified customers that can be combined with federal incentives, ensuring that those enrolled in federal programs including LEAP, CARE, SNAP, and TANF automatically qualify.



### **Objective 3: Enable commercial customers with fleets serving or operating in disadvantaged, underserved, underrepresented, and geographically diverse communities within DLC's service territory to transition to electric fleet vehicles, improving air quality in those communities**

#### **Action Strategy: Invest in Fleet Electrification**

Fleet electrification can serve to involve business owners and service providers within DLC's service territory in their transition from combustion to EVs. According to the [EPA](#), medium- and heavy-duty trucks contribute more than one quarter of greenhouse gas emissions. Meanwhile, the burden of air pollution is not evenly distributed, with lower-income, racially diverse, and historically disadvantaged places experiencing higher rates of poor air quality.

Through the neighborhood conversations conducted as a part of this project, residents and community leaders noted that fleet conversion may be contingent on depreciation schedules and business or municipal budgets. In order to achieve community-wide benefits, communities highlighted school buses and vans as priorities given their diesel dependence and the risk they impose on young lungs.

**Potential actions for DLC to consider** include boosting awareness of and participation in DLC's fleet charging program and electric fleet advisory service by developing additional education, marketing, and outreach materials to target more commercial customers and public transit providers with fleets that operate in disadvantaged, underserved, underrepresented, and geographically diverse communities within their service territory, in order to guide fleet conversions and encourage increased electric transition.

**Objective 4: Heighten awareness of electric public transportation and micromobility options and their benefits, especially for those unable to own a personal vehicle, within disadvantaged, underserved, underrepresented, and geographically diverse communities within DLC’s service territory**

**Action Strategy: Support Shared E-mobility Options**

Shared e-mobility consists of EV car shares and public e-bikes and e-scooters. Shared e-mobility can fill transit gaps in the region and provide first- and last-mile connectivity, especially for residents who do not own a personal vehicle. There is an opportunity to build a positive culture around e-mobility more widely by combining these initiatives with already planned public investments. Communities likely can benefit from watching demonstrations and seeing micromobility in practice, which can help answer questions about shared e-mobility as a strategy and dispel myths or concerns about the practice. Community engagement best practices should be used to solicit resident input regarding things like station placement and program rollout.

**Potential actions for DLC to consider** include serving as a convener—connecting communities to micromobility providers like POGO and Spin, facilitating conversations, and providing education and expertise in order to heighten awareness of these options and their benefits among communities in geographically diverse and disadvantaged, underserved, or underrepresented communities within DLC’s service territory. DLC might also consider offering income-qualified community members discounted access to electric car-share services and public e-bikes or e-scooters. Regarding electric public transportation, DLC might consider working with PRT and other transit providers within its service territory (e.g., Beaver County Transit Authority) to transition buses to EV, advertising those efforts on DLC’s website and promotion via other means, and offering income-qualified residents free or reduced bus fares for a limited time corresponding with the EV conversions.

**Objective 5: Assist disadvantaged, underserved, underrepresented, and geographically diverse communities within DLC’s service territory in identifying and applying for federal, state, and utility funding opportunities to offset up-front costs associated with EVs and charging infrastructure**

**Action Strategy: Assist Stakeholders with E-mobility Funding Opportunities**

Federal resources like EV tax credits, charging infrastructure credits, and e-bike rebates can assist DLC in assuring that e-mobility benefits the greatest number of people. There is a record amount of federal, state, local, and philanthropic funding available for electric mobility projects, but these opportunities can be hard to navigate and take effort to discover. In addition, many stakeholders lack capacity and need assistance

understanding the opportunities, developing projects, and completing applications. This is an area where DLC can lend its expertise.

**Potential actions for DLC to consider** include actively promoting awareness of and providing technical assistance (e.g., grant writing) for funding opportunities related to the transition to electrification. There may also be opportunities to partner with regional nonprofit organizations to provide technical assistance and information to potential applicants for the various programs. The US Department of Transportation is hosting a [resource page](#) that links to the various programs currently offered by the federal government.

DLC can help inform organizations and individuals in its service area about existing funding and technical assistance resources, as well as advocate at the state and federal levels for additional resources to assist disadvantaged, underserved, or underrepresented communities in pursuing electric mobility projects.

### **Action Strategy: Provide Administrative Support and Capacity Building**

The administrative requirements of proposed e-mobility investments, such as establishing charging station use policies, supporting the siting of charging stations, and providing project management for the construction of charging stations, vary widely, but there are clear paths to reducing these costs through cooperation with other programs and agencies. Reducing administrative costs enables more direct benefits to reach LMI communities, but it also simplifies messaging around qualification and has the potential to increase adoption. In addition, partnership is essential for all e-mobility investment, but it is particularly necessary for programs that fall outside a utility's direct domain of energy provision—such bike shares or e-bikes and transit.

Community capacity emerged as a theme in the planning stages of the neighborhood conversations. To organize these events, Fourth Economy did outreach to municipal representatives, as well as economic and community development organizations within these communities, many of which rely entirely on volunteers. Level of response from these entities influenced the team's ability to host meetings in the selected communities. For example, given that McKees Rocks is currently building up its community capacity, a community conversation was not held there; rather, the phone survey served as the primary engagement there. Given limited capacity in McKeesport, partners at the Mon Valley Initiative assisted with the Mon Valley conversation that occurred in Clairton but engaged residents from several Mon Valley communities including McKeesport.

**Potential actions for DLC to consider** include, for each type of action, DLC's evaluating if its role is more appropriate and effective as implementer, connector, funder, or strong partner. In the case of PRT, DLC is more likely a strong partner because of PRT's own capacity, administration, and established electrification plan. However, DLC could be a connector between communities outside the city and electric micromobility options like POGO. In most cases, when interacting with disadvantaged, underserved, or underrepresented communities in particular, DLC should offer stipends, grants, or other financial incentives to help reduce barriers and build capacity of groups and individuals to advocate for advocacy, implementation, and community dialogue around e-mobility.

## Conclusion

Electric mobility can and should be for all. Creating equitable electric transitions will require intentional effort and community-level relationship building. This report offers recommendations on advancing equitable e-mobility in DLC's territory as well as strategies on assisting communities. DLC should make EV charging more accessible in a way that positively benefits community members. DLC should prioritize traditionally underserved, low-income, and otherwise vulnerable population areas when making investments or offering assistance. Investment should span fleet electrification, shared e-mobility, and charging station infrastructure as well as education provision and grant application assistance for communities. DLC can further support its equitable objectives, such as its commitment to diversity, equity, and inclusion, which includes investing in community partners, through capacity building and administrative support to municipalities and nonprofits within its service territory. Achieving any advancements in equitable electric mobility will require community connection. While next steps vary per community, community leaders expressed interest in continued conversations with DLC, including Q&A sessions, panels, and demonstrations of different types of e-mobility. DLC should continue and expand neighborhood conversations using best practices of equitable public engagement to ensure electric mobility benefits all.



# Appendix

## Community Questions

Neighborhood conversations brought many questions to the surface around the transition to electric mobility. Questions centered around three large themes: technology, resource availability, and governance/logistics. The following includes a raw list of these questions by category. DLC can use these as a starting point to creating Q&A documents or educational materials.

### TECHNOLOGY

- How far does a standard charge go? Can it handle daily trips/errands?
- How long will EVs or e-bikes/e-scooters last?
- How can this tie into solar power?
- Can e-bikes/e-scooters make it up hills?
- Which type of chargers/ports would be used?

### RESOURCE AVAILABILITY

- Will charging/bikes be free?
- Who pays for charging? How much would it cost?
- How do stakeholders pay?
- What are the tax benefits?
- What grants are available?
- What will this cost the community?
- What are the benefits to business owners?
- Would this provide apprenticeships/workforce opportunities?

### GOVERNANCE/LOGISTICS

- Who will implement/install charging stations?
- How sustainable are these practices (e.g., savings, environmental benefits, etc.)?
- Where is the power coming from?
- Where will the stations be placed?
- Who will be responsible for maintenance and upkeep?
- What are the long-term costs of charging stations?
- What does liability look like (e.g., accident involving e-bike or e-scooter)?
- What happens when technology changes?
- How much space do stations take up?
- How can vandalism of public stations be curbed or avoided?
- How can these processes be decomplicated?
- What is the backup plan during power outages?
- Can usage be linked to connect card or follow a similar structure?

# Load Management Plan

Duquesne Light Co.

MARCH 2024





## ABOUT DUQUESNE LIGHT COMPANY

---

For more than 100 years, Duquesne Light Company has provided safe and reliable electric service to communities in southwestern Pennsylvania. Today, our core values of safety, integrity, dependability, equity and community enable us to serve more than 600,000 customers in two counties, including the city of Pittsburgh. We are committed to safely powering our customers' lives while playing a leading role in our region's clean energy transition. Our vision is to create a larger-than-light, clean energy future for all by delivering exceptional results today and boldly harnessing opportunities for tomorrow. In doing so, we can ensure a cleaner, healthier and more equitable community for generations to come. To learn more, visit [DuquesneLight.com](http://DuquesneLight.com).



## TABLE OF CONTENTS

Acronyms	i
Introduction and Report Overview	1
Stakeholder Engagement	1
Load Management Overview	2
State of the Grid	4
Grid Impacts of Beneficial Electrification	7
Load Management Roadmap and Offerings	18
Future Load Management Considerations	32

---

## ACRONYMS

---

AMI	Advanced Metering Infrastructure
DER	Distributed Energy Resources
DERMS	Distributed Energy Resources Management System
DMS	Distribution Management Systems
DSP	Default Service Plan
EE&C	Energy Efficiency and Conservation
EGS	Electric Generation Supplier
EV	Electric Vehicle
FPFR	Fixed Price, Full Requirements
GIS	Geographic Information System
IRA	Inflation Reduction Act
LTIIIP	Long-Term Infrastructure Improvement Plan
NWS	Non-Wire Solutions
ODMS	Operational Data Management System
OEM	Original Equipment Manufacturer
OMS	Outage Management System
PV	Photovoltaic Panels (solar)
SCADA	Supervisory Control and Data Acquisition
TE	Transportation Electrification
TOU	Time of Use
TRC	Total Resource Cost
VMT	Vehicle Miles Traveled



## INTRODUCTION AND REPORT OVERVIEW

---

Duquesne Light Company (the “Company” or “DLC”) hereby submits this Load Management Plan (“Plan”) pursuant to the Joint Petition for Approval of Settlement Stipulation (“Settlement”), approved in relevant part by the Pennsylvania Public Utility Commission by Order entered December 16, 2021, at Docket No. R-2021-3024750.

The purpose of this report is to outline the Company’s vision and roadmap for load management as an element of its broader grid modernization efforts and to help achieve its vision of a clean energy future for all. This report will describe the Company’s assessment of the state of its grid, its plans for its grid modernization efforts, projected grid impacts from the effects of transportation and building electrification (together as “beneficial electrification”), and a roadmap for how the Company plans to advance its load management capabilities and offerings. Finally, this plan will address the Company’s load management efforts to date, along with its ideas for future load management program efforts and will highlight areas for future consideration.

Data presented in the report is current as of October 31, 2023.

## STAKEHOLDER ENGAGEMENT

---

Consistent with its Settlement provisions, DLC held a collaborative stakeholder meeting on October 31, 2023, where it presented its preliminary load management report. An invitation was emailed four weeks in advance to thirty-three individuals representing twenty-one organizations. The Company invited those who were party to the Settlement as well as others who have participated in other relevant DLC stakeholder meetings. Ten stakeholders attended the meeting representing seven organizations. The meeting materials were emailed to attendees afterwards and attendees were provided two weeks for additional written feedback or questions.

DLC received limited comments and feedback during and after the stakeholder meeting. During the meeting there was interest in how tax incentives were factored into the underlying analyses and whether DLC’s receipt of a Department of Energy matching grant for grid modernization is reflected in current rates. Other comments were supportive of price signals as an effective load management strategy, recommended exploring differences between individual electric vehicle and fleet owner load management interventions, and expressed curiosity about whether customer-owned battery storage or Vehicle-to-X<sup>1</sup> will become meaningful load management solutions.

---

<sup>1</sup> Vehicle-to-X refers to the capabilities of the various sensors, cameras, and wireless connectivity to allow an EV to communicate with other devices, including bi-directional flow of power between the EV’s battery and the grid.



## LOAD MANAGEMENT OVERVIEW

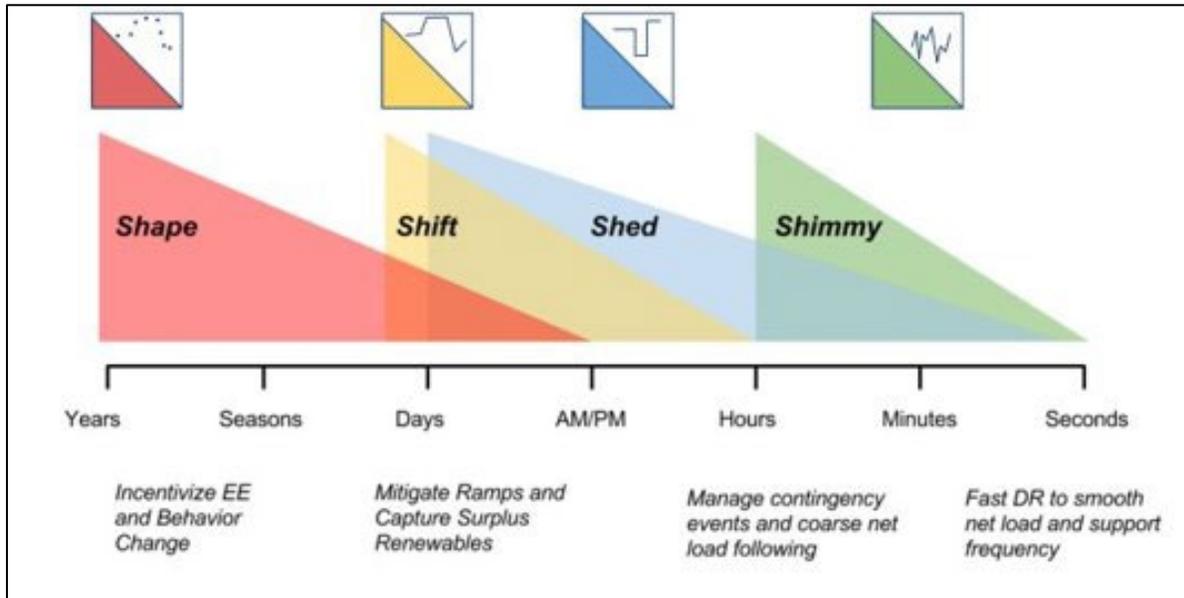
---

Load management, as described in this report, refers to balancing the supply of and demand for electricity through passive, active, or dynamic solutions. These solutions enable more efficient use of existing grid resources, including leveraging behind-the-meter technologies, such as electric vehicle charging, home batteries, heat pumps, water heaters, and/or other customer-owned products to help balance grid demand.

As Figure 1 indicates, load management solutions can be designed to meet different objectives. All load management services described in Figure 1 are likely to play a role in the Company's long-term load management efforts, with certain types such as load shape and shift playing a larger role in the near term.

In this report, the Company also distinguishes between dynamic, active, and passive load management solutions. Passive load management strategies rely on user-driven behavior that leads to changes to load shapes or shifts in load. Examples of passive load management solutions include time-of-use rates and peak event communications. Active load management relies on technology to directly alter customer usage. For example, active solutions rely on direct load control to reduce an electric vehicle ("EV") charging station's power or to adjust the temperature inside a residential building via a smart thermostat. Dynamic or automated load management solutions are technologies with accompanying platforms that can respond in real-time to grid conditions or market signals.

**Figure 1: Load Management Services by Timescale**



Source: 2025 California Demand Response Potential Study - Charting California’s Demand Response Future. Final Report on Phase 2 Results.<sup>2</sup>

DLC envisions that load management will be a valuable tool for the Company’s overall management of its grid, including being leveraged in the Company’s comprehensive system planning process as a non-wires solution (NWS) alternative and as a resource that can be used as an operational tool for grid management. In certain circumstances, load management has the potential to be a cost-effective solution that can help lower costs for customers and for the Company by reducing or delaying the need for more costly investments. The Company will continue to evaluate the best opportunities for deploying load management on its system and assessing the benefits its customers and the Company can derive from it.

<sup>2</sup> Alstone, Peter, Potter, Jennifer, Piette, Mary Ann, Schwartz, Peter, Berger, Michael A., Dunn, Laurel N., Smith, Sarah J., Sohn, Michael D., Aghajanzadeh, Aruab, Stensson, Sofia, Szinai, Julie, Walter, Travis, McKenzie, Lucy, Lavin, Luke, Schneiderman, Brendan, Mileva, Ana, Cutter, Eric, Olson, Arne, Bode, Josh, Ciccone, Adriana, & Jain, Ankit. *2025 California Demand Response Potential Study - Charting California’s Demand Response Future. Final Report on Phase 2 Results.* United States. <https://doi.org/10.2172/1421800>.



## STATE OF THE GRID

---

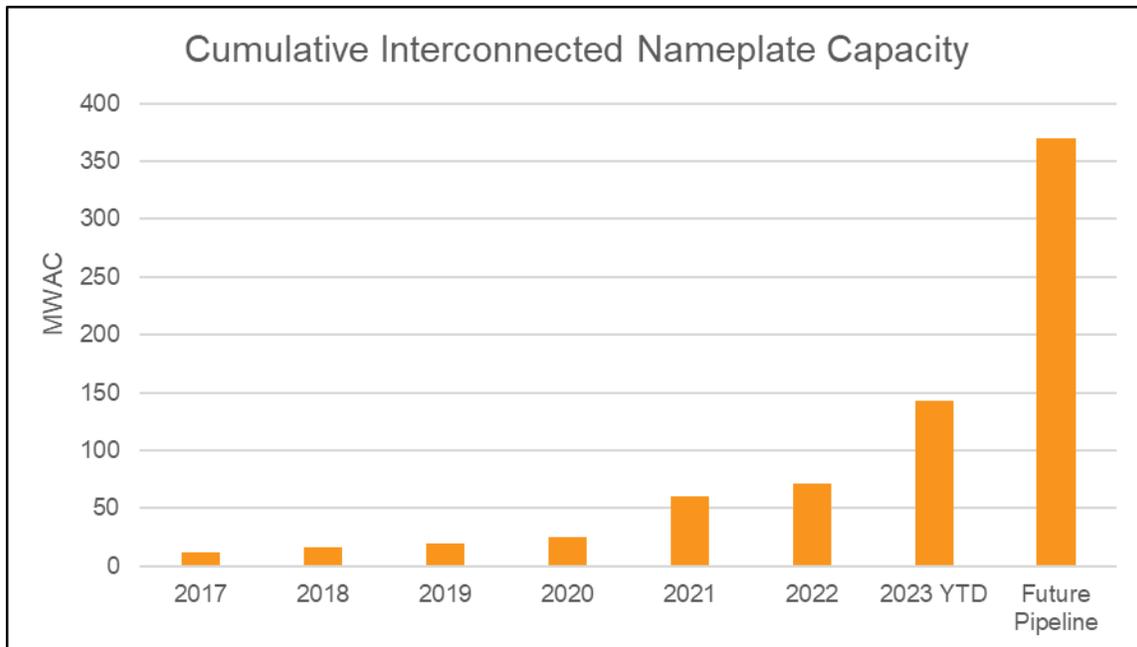
The current distribution grid is designed for one-way power flow. Historically, with known large generators and predictable load patterns, only major nodes needed to be tracked to ensure the grid was operating in safe conditions. That is changing today with the decentralization of energy technologies, both with supply and demand, creating uncertainty in the flow of power, particularly on the distribution grid. While the transmission grid, which handles long-distance power flow, has been extensively monitored and equipped with sensors and measurement devices to handle bidirectional power flow for some time, these technologies are now needed on the distribution grid to enable broad electrification and adoption of distributed energy resources ("DER").

While historically most DER interconnection requests have consisted of small residential solar applications, DLC has recently seen a significant increase in large commercial and utility scale solar applications that can have a major impact on local grid conditions. Figure 2 shows the MW-AC nameplate capacity of DER that exist in DLC's territory, as well as the nameplate capacity of the active projects in the Company's interconnection queue ("Future Pipeline"). While DERs can reduce congestion on lines by serving local demand during peak summer hours, in low-load conditions DERs have the potential to reverse the flow of power with excess generation. Combined with the uncertainty in electrification growth, electric utilities today require more precise information and intelligence at the edge of the grid to ensure safe and reliable electric service.

While DERs bring new challenges, they also present opportunities for new NWS. NWS can be physical infrastructure (e.g. grid batteries), or alternative solutions including demand response and virtual power plant programs. These solutions need to be considered alongside traditional transmission and distribution infrastructure to ensure that DLC continues to provide affordable electricity to our customers.

DLC is not alone in recognizing the need for grid modernization. According to Wood Mackenzie, in the U.S., 50 investor-owned utilities have filed with local utility commissions for a total of \$62.8 billion in grid modernization investments with the primary goals of adapting to severe weather events and accommodating the adoption of DERs.

**Figure 2: Cumulative Interconnected Nameplate Capacity in DLC’s Service Territory**



### **DLC’s Grid Modernization Efforts**

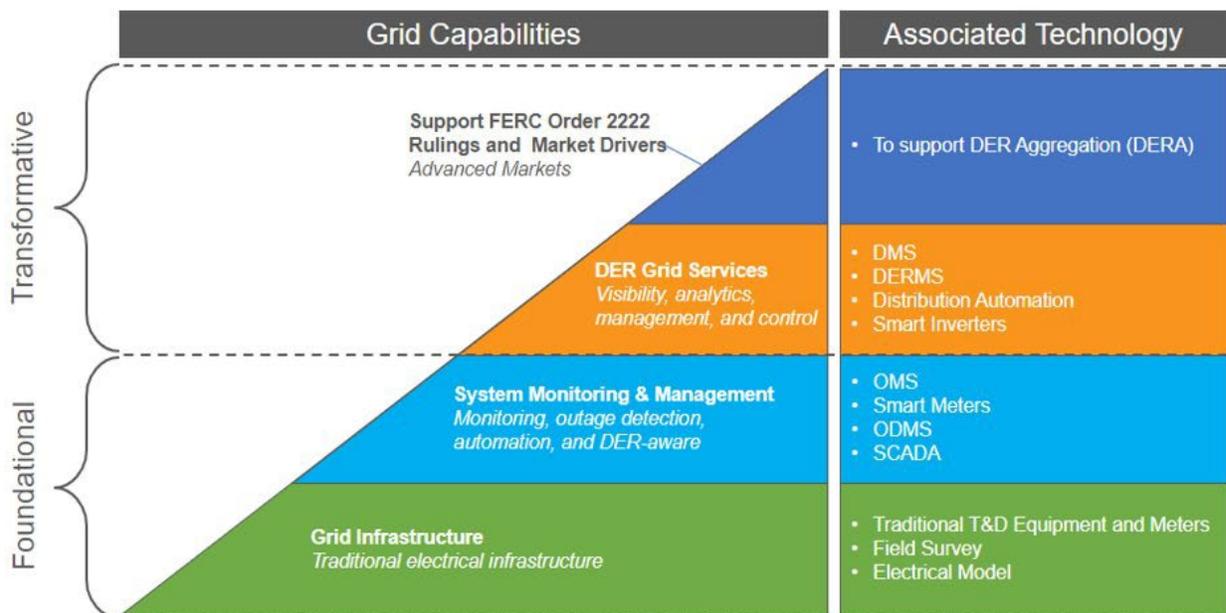
Consistent with the Company’s vision for a larger than light clean energy future for all, DLC is currently undertaking a significant effort to transform grid planning and operations to have full situational awareness at the grid edge to enhance the customer experience. Achieving full situational awareness at the grid edge is a multi-step process involving sensors to collect data, communications infrastructure to transfer data, computational infrastructure to analyze the data, and personnel to interpret and act upon the insights gained, all at a larger scale than ever before. Once access to more granular data at the edge is established, planning processes will need to adapt. Previous bulk-level forecasts and resource adequacy tests will no longer be sufficient. New methods such as robust hosting capacity analyses will enable DLC to have greater confidence, at a finer resolution, in how our system is performing today and the impacts of any changes in the future.

With the formalization of grid modernization efforts across the utility, DLC has been investing in foundational technology that will enable future modernization projects. These foundational projects ensure that the Company has the people, processes, and technology in place to meet future demand. A major milestone was the successful internal implementation of the Outage Management System (“OMS”) at the end of 2023. This system is designed to help reduce outage restoration times by automatically identifying outages and customers affected, enabling the appropriate crews to be

dispatched faster. A linchpin of this effort was creating a comprehensive Geographic Information System (“GIS”) database of all DLC’s grid-related assets and their relationships. This GIS database is foundational to other Grid Modernization use cases as it will be the basis for all power flow models, DER interconnection studies, and any future automated management systems.

To increase the locational resolution of grid models, the Company is transitioning from ‘top-down’ to ‘bottom-up’ data collection and modelling processes. As opposed to collecting bulk system data and making assumptions about the composition downstream, a bottom-up approach takes individual meter data to build up a full digital-twin of the distribution grid. DLC is actively developing an Operational Data Management System (“ODMS”) to have a centralized source to access operational data from the GIS, Advanced Metering Infrastructure (“AMI”), and Supervisory Control and Data Acquisition (SCADA”) systems to enable this new digital-twin grid model. Future efforts will focus on developing Distribution Management Systems (“DMS”), Distributed Energy Resources Management Systems (“DERMS”), and the underlying communications technology that will enable this order of magnitude shift in data processing. These technologies will enable more advanced, intelligent, and active load management programs in the future.

**Figure 3: Evolution of Grid Capabilities**





## GRID IMPACTS OF BENEFICIAL ELECTRIFICATION

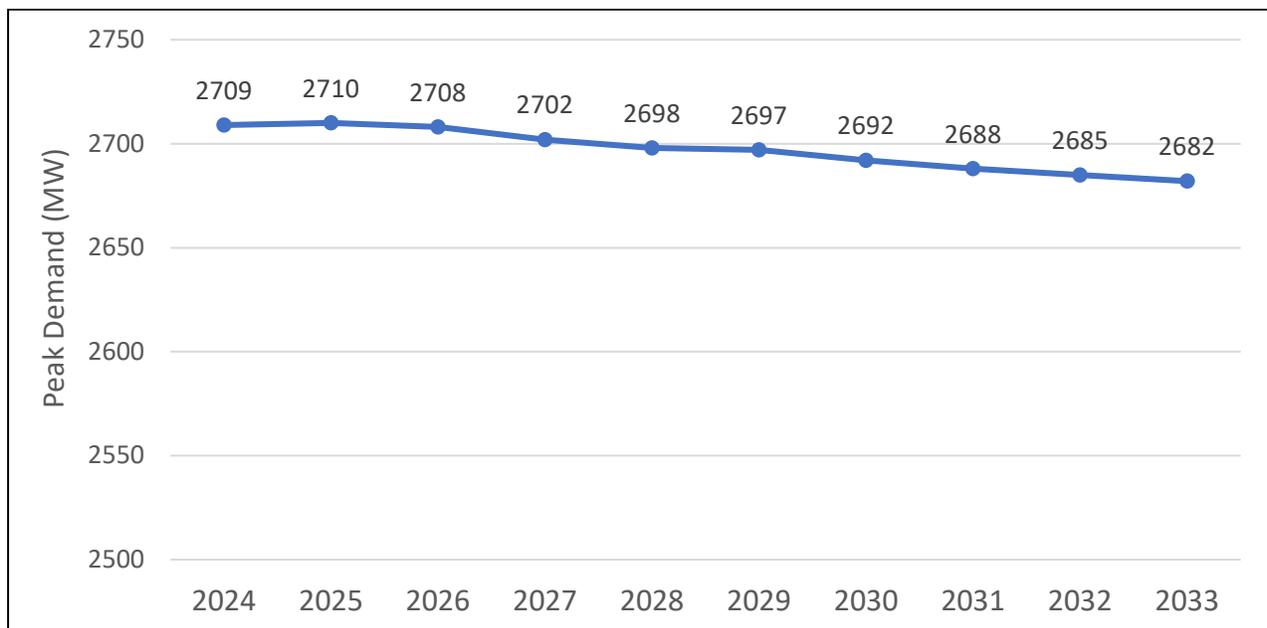
As the potential impacts and benefits from load management are assessed, it is important to understand the current operating conditions of the Company’s grid and the likely impacts from two emerging areas: transportation and building electrification.

### Current System Levels

The Company operates a sizable transmission and distribution network consisting of more than 360 substations and 7,700 miles of transmission, sub-transmission, and distribution lines serving approximately 610,000 customer accounts.

PJM forecasts that the Company’s peak system demand will remain relatively stable with a 1% decline between 2024 through 2033 excluding the effects of transportation electrification. Historically, the Company’s system has supported a higher peak demand; current system demand has declined approximately 10% from a recent high of over 3,000 MW in 2012.

**Figure 4: DLC System Peak Excluding Transportation Electrification**



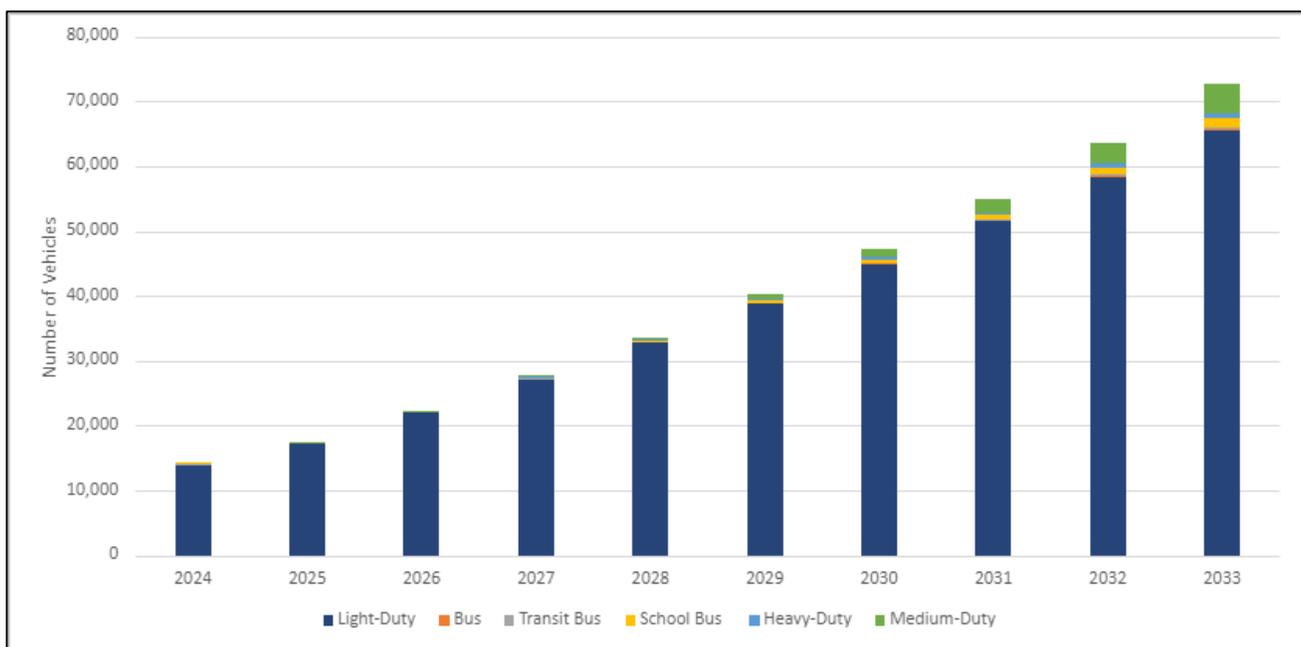
Source: PJM Load Forecast Report January 2023. PJM. <https://www.pjm.com/-/media/library/reports-notice/load-forecast/2023-load-report.ashx>. Derived from subtracting plug-in electric vehicle adjustment to summer peak load forecast from overall summer peak load forecast.

## Transportation Electrification Adoption and Grid Impacts

Aligned with its vision of a clean energy future for all, the Company wants to empower all its customers to experience the benefits of transportation electrification. The Company has invested in customer education and supported the build out of charging station infrastructure. In addition, to help it understand and plan for market growth, the Company has tracked EV adoption and receives EV adoption projections for its service territory from the Electric Power Research Institute (“EPRI”). Under a medium growth scenario, EPRI is currently projecting that light-duty vehicles in the Company’s service territory will grow from approximately 14,000 EVs in 2024 to over 65,000 EVs by 2033 – a 365% increase.

Accounting for a range of factors, including current fleet size, vehicle operating life, technology readiness, total cost of ownership equivalency, federal policy and funding availability, and knowledge of local fleet plans, the Company projects growth in the medium- and heavy-duty sector to increase from just over 50 EVs in 2024 to over 7,300 EVs by 2033. The Company is currently projecting that by 2033 approximately 9.6% of all registered medium- and heavy-duty vehicles will be electric. The medium- and heavy-duty market is a rapidly evolving space, so although the Company expects that more widespread adoption will not take off until after 2030, it will be closely monitoring this market.

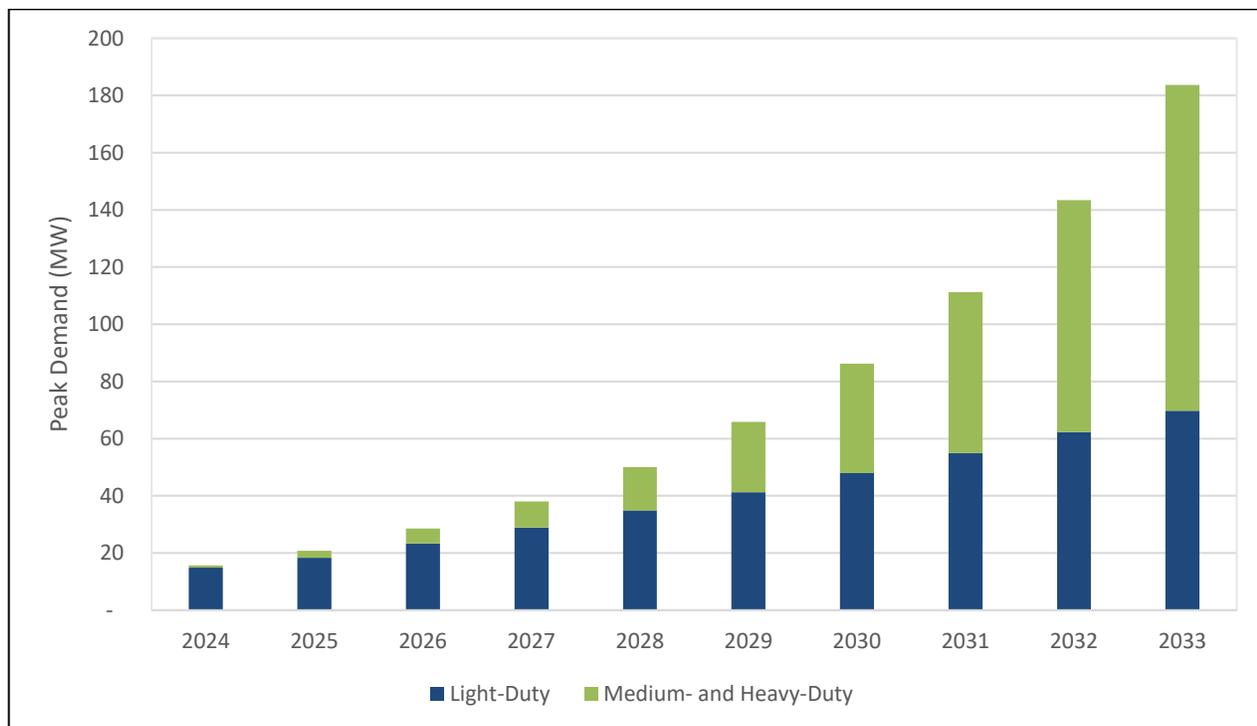
**Figure 5: Transportation Electrification Growth - Medium Scenario**



The Company projects that transportation electrification-related peak demand<sup>3</sup> will also greatly increase during this time from 16 MW in 2024 to 184 MW in 2033. Even though light-duty vehicles make up the majority of vehicles on the road, they are projected to make up a smaller share of peak demand impacts over time as medium- and heavy-duty vehicles have larger batteries and much higher annual vehicle miles traveled (“VMT”) creating larger charging demands. These system peak impacts also assume current charging behaviors are unchanged and do not account for the potential shifts that could occur by offering load management products and services.

Along with increases in peak demand, the Company projects transportation electrification-related throughput to grow from 10 GWh in 2024 to over 656 GWh in 2033.

**Figure 6: Transportation Electrification Peak Demand - Medium Scenario**



<sup>3</sup> The Company estimated peak demand impacts by using vehicle projections to calculate total Vehicle Miles Traveled (VMT), determining annual kWh through miles/kWh assumptions, and then converting that to daily kWh based on days in operation before converting to demand (kW) by determining the demand coincident to the system peak. Assumed charging patterns for light-duty vehicles comes from the NREL EVI-Pro Lite tool; medium- and heavy-duty vehicle charging assumed charging times inverse to commercial vehicle travel times from PennDOT “2021 Pennsylvania Traffic Data”.



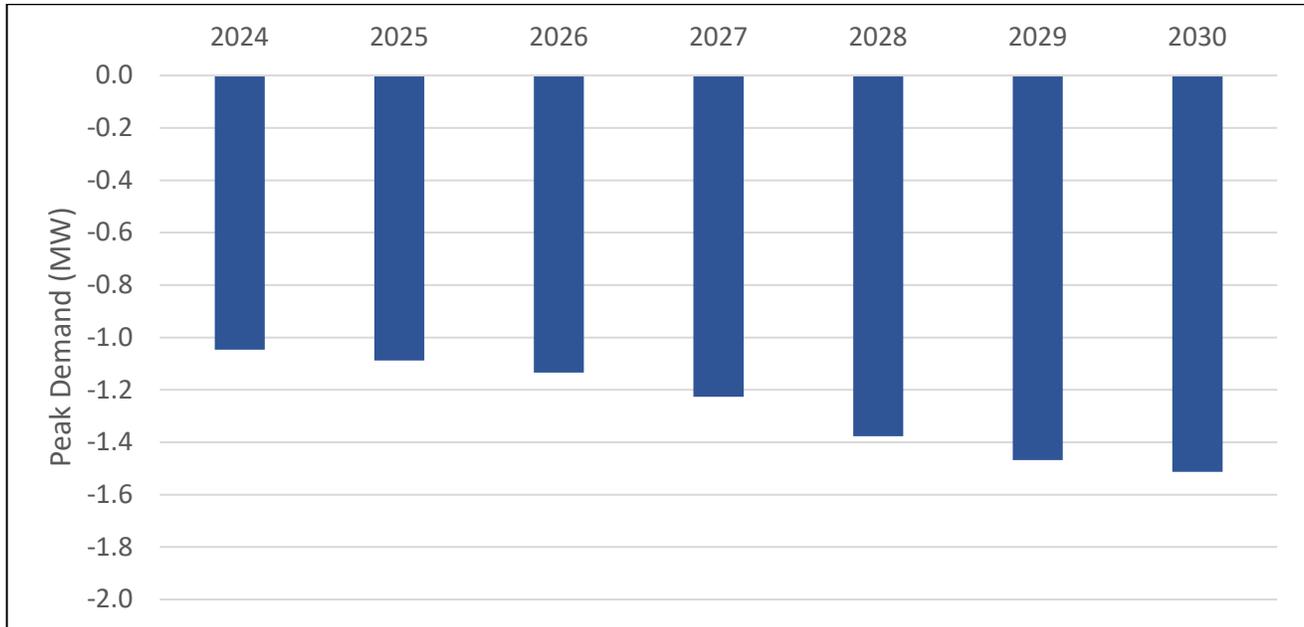
## **Building Electrification Adoption and Grid Impacts**

The Company has identified building electrification as another area of likely growth in the coming years. However, the Company forecasts that growth in residential heat pumps, the largest energy consumption category in the building electrification space, will remain more limited in our region because of the lower cost of natural gas and the higher upfront cost of a heat pump system, even after accounting for incentives offered through the Inflation Reduction Act ("IRA"). The Company anticipates that heat pump adoption will largely be concentrated among customers with electric resistance heating or with delivered fuels since converting to heat pumps, on average, is expected to be cost-effective for those groups of customers. The Company recognizes that there are likely to be other customers that may elect to install heat pumps for environmental, health, or other reasons and so will continue to monitor adoption and policy or technology changes that may alter the adoption forecast.

The Company expects heat pump water heaters will be more widely adopted, as that technology is expected to be cost-effective as a replacement for all technology types. The Company has largely focused its analysis on the residential space and will be examining the commercial market in the future.

Because the Company is forecasting replacement of air conditioning with more efficient heat pump technology, building electrification is expected to have very minimal impacts on peak demand, generating a small decline in peak demand through 2030. The Company is expected to continue to be a summer peaking system. This decrease represents 0.3% of overall peak system demand and 1/80<sup>th</sup> of the peak demand that transportation electrification will represent in 2030.

**Figure 7: Building Electrification Peak Demand Impacts - Medium Scenario**



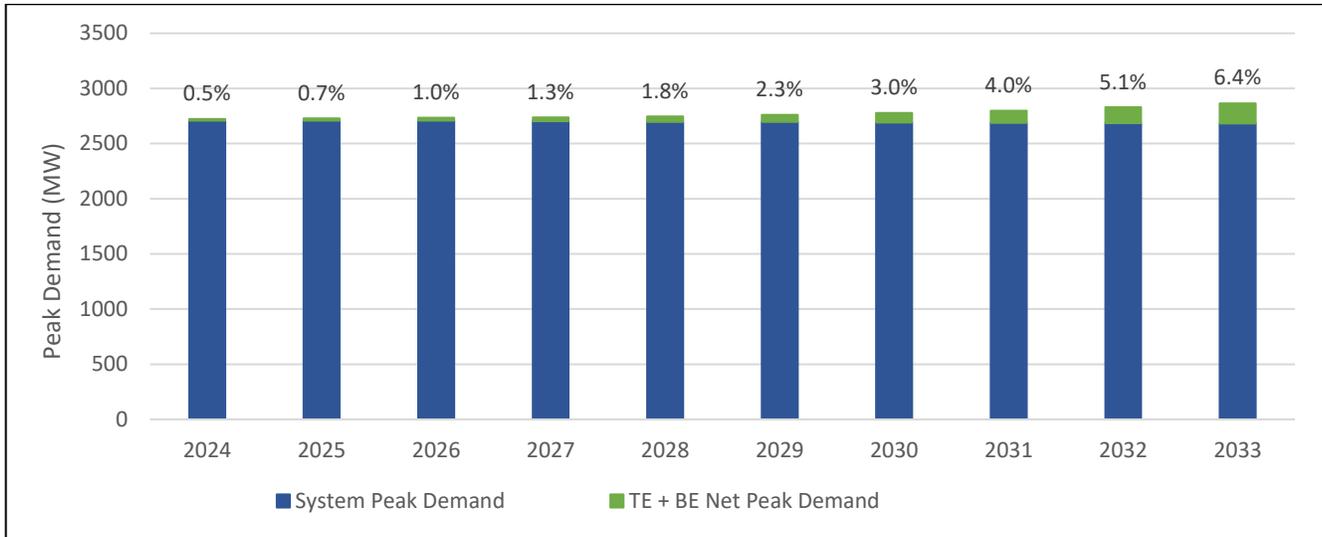
Similar to the transportation electrification market, the building electrification market is rapidly evolving and the Company will continue to track market trends and local adoption for planning purposes.

**Overall Impacts from Electrification**

Together, transportation and building electrification are expected to increase peak system demand by approximately 6% by 2033. This projected peak will remain below the historical peak of over 3,000 MW in 2012, but it is still notable since some of the Company’s assets will be 20 years closer to their expected useful life than they were at the time of the 2012 peak. As discussed in the next section, the Company will be able to support the increased demand at the system level, but challenges exist at the circuit level that require immediate action to resolve while also taking steps to prepare for the increased demand that will emerge over the next decade.

Adoption of electrification technologies is expected to keep the Company’s overall throughput relatively flat through 2030.

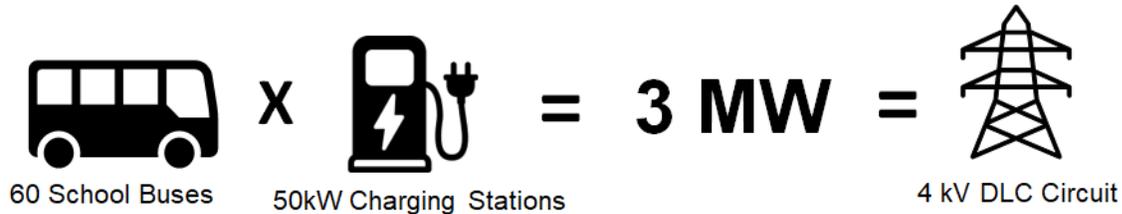
**Figure 8: Transportation and Building Electrification Net Impacts on Peak System Demand**



### Locational Grid Impacts

System-level impacts are instructive; however, it is important to recognize that the impacts of beneficial electrification will not be uniform across DLC’s grid. Some circuits will be more heavily impacted than others due to existing capacity and uneven customer electrification adoption. Today 26% of circuits on DLC’s grid are at or near capacity (>90%), which will be further exacerbated by the effects of beneficial electrification – an estimated 31% of circuits will be at or near capacity by 2030. DLC is incorporating locational beneficial electrification forecasts into its grid planning processes to more intelligently make decisions about infrastructure investment. Even so, forecasting local grid impacts is not without its challenges. For instance, an understanding of the locations of EV fleets will be very important. The example in Figure 9 demonstrates how a fleet of electric school buses could add the equivalent of an entire 4kV circuit, which would have an acute impact on its installation location. A typical 4kV circuit provides electricity to 500 to 1000 customers. This also illustrates why customer programs such as DLC’s Fleet Advisory Service and charging programs have been helpful to date and are critical to staying out in front of grid impacts.

**Figure 9: Example of how an electrified bus fleet could drive grid investment.**



As the system-wide forecasts show, medium- and heavy-duty transportation electrification is expected to increase in the latter part of this decade. Similar to the bus fleet example above, the charging infrastructure for medium- and heavy-duty transportation electrification will be considerably more demand-intensive than the infrastructure for passenger vehicles. Therefore, customer intelligence is crucial to forecasting adoption at a level of granularity that is useful for locational grid planning.

DLC’s initial circuit-level modeling of beneficial electrification, with effects driven by transportation electrification, indicates that impacts will be most pronounced on its 4kV circuits. While DLC has been upgrading infrastructure as part of its Long-Term Infrastructure Improvement Plan<sup>4</sup> (“LTIIP”), the EV load growth forecasts are being used to further prioritize investments within the plan. Those circuits with existing higher loading and that are expected to have strong EV growth are being tracked and assessed more closely.

### **Circuit-level Load Management Context**

Since DLC’s last rate case, the Company has piloted an opt-in WholeHome EV Time of Use (“TOU”) supply rate that offers higher electricity rates during designated peak hours and lower rates outside of peak hours. This passive load management program incentivizes customers to charge their vehicles outside of peak hours to save money on their energy bills and to reduce peak demand impacts on the grid. Initial analysis of the pricing pilot has shown that it is effective at reducing demand during system peak hours.

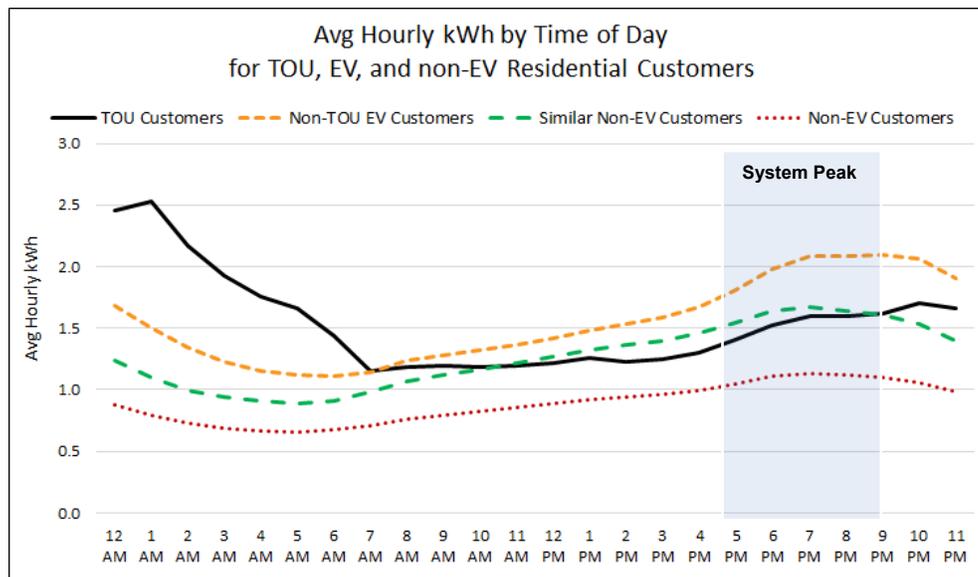
Figure 10 below shows the Company’s assessment of the average hourly demand impacts of four different customer types: TOU customers with an EV (black line), non-TOU customers with an EV (orange dashed line), similar customers<sup>5</sup> without an EV (green dashed line), and an average residential customer without an EV (red dotted line). The data indicates that customers with an EV use more

<sup>4</sup> See Docket P-2022-3032805.

<sup>5</sup> Similar customers were identified as customers who had similar levels and patterns of energy use as EV customers (TOU and non-TOU) prior to their EV purchase.

energy than non-EV owners; however, comparing the orange dashed line and the black line demonstrates that EV owners enrolled in this passive load management pricing program (black line) are using significantly less energy during peak periods (5-7pm) than EV owners not enrolled in the load management program (orange dashed line).

**Figure 10: Hourly Demand Impacts of WholeHome EV TOU Rate**



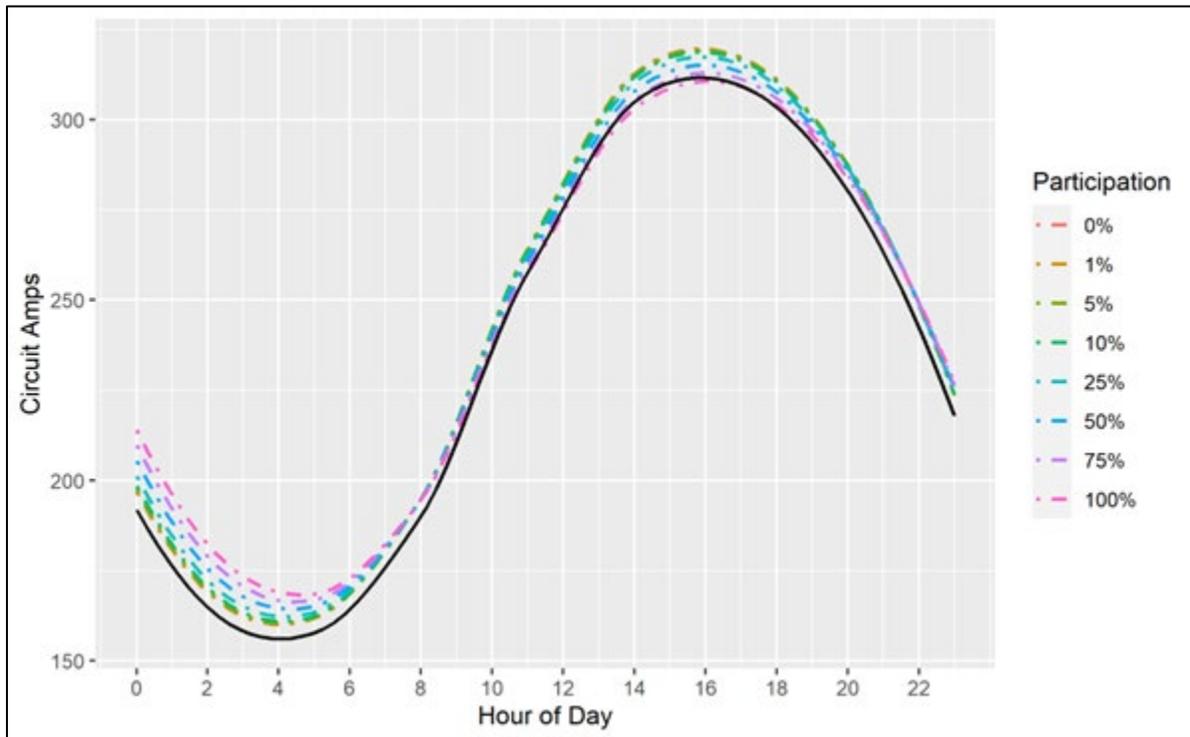
This data demonstrates that TOU pricing effectively reduces the peak demand of participants; however, it does not provide context about how EV TOU could contribute as a grid resource. The Company’s system-wide forecasts and initial circuit-level analyses indicate that, without further intervention, transportation electrification will increase the number of circuits that need to be upgraded to meet the increasing load demand. To provide context about how EV TOU could contribute as a grid resource, Figure 11 shows the level of EV TOU participation needed among EV drivers on an example circuit to offset the increased EV demand on the same circuit. In the figure, the solid black line shows the current circuit profile on a typical peak day while the dashed lines represent loading scenarios with projected EV adoption by 2030, with a range of 0-100% participation in the EV TOU rate.

Dashed lines that are above the solid black line during peak times (5-7pm) indicate future peak demand on the circuit that is higher than today as EV registrations increase. Approximately 80% of EV owners on the circuit in 2030 would need to participate in the EV TOU program to fully offset peak load impacts.<sup>6</sup>

<sup>6</sup> This statistic also assumes that the average peak demand reductions from TOU rate participants remains constant.

Reaching 80% EV TOU adoption on a circuit is far beyond the current system-wide adoption rate of 9% of registered EVs enrolled in the current EV TOU program.

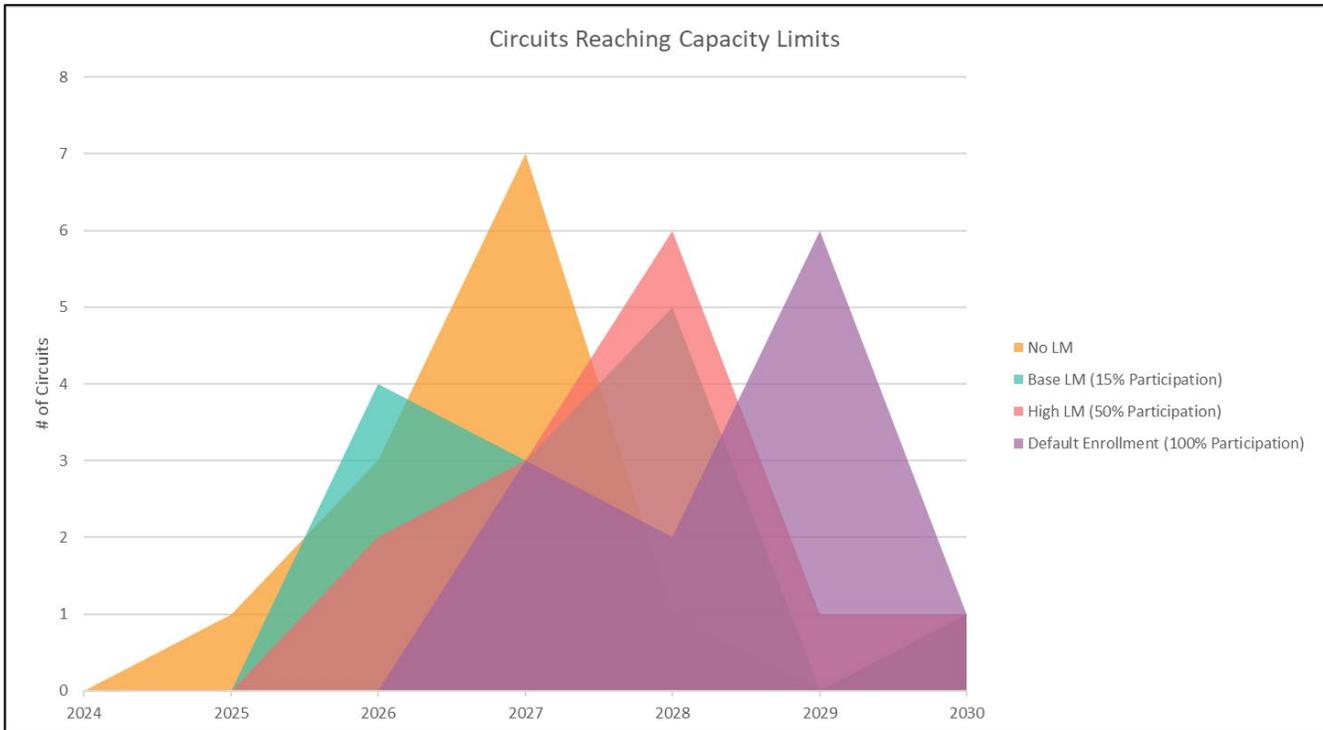
**Figure 11: Demand Impacts of Customer Participation in WholeHome EV TOU Rates by 2030**



This analysis illustrates that EV TOU can be effective at reducing peak demand and can help to manage grid impacts, depending on the circuit’s current loading and the level of customer participation in the TOU rate.

To better understand how load management options can serve as grid resources, four scenarios were analyzed to assess the effectiveness of TOU rates and EV managed charging at reducing load. Figure 12 shows the range of value of these two load management options based on four participation levels: zero (i.e., no load management), 15% enrollment on the circuit, 50% enrollment on the circuit, and full enrollment of 100% of electric vehicles on the circuit. Two observations are abundantly clear: load management effectively defers but does not eliminate grid investments, and higher enrollment on a circuit results in longer deferral of grid investment needs.

**Figure 12: Circuit Impacts of EV TOU Rate and Managed Charging Participation**



The analysis presented above highlights how load management can impact demand in valuable ways and provides the critical insight that locational deployment of load management will be an important capability to offset the peak impacts from the adoption of beneficial electrification. Further, as opposed to relying on unrealistically high participation in a few options, it is evident that a portfolio of customer offerings will be needed to achieve sufficiently high participation and resulting demand savings.

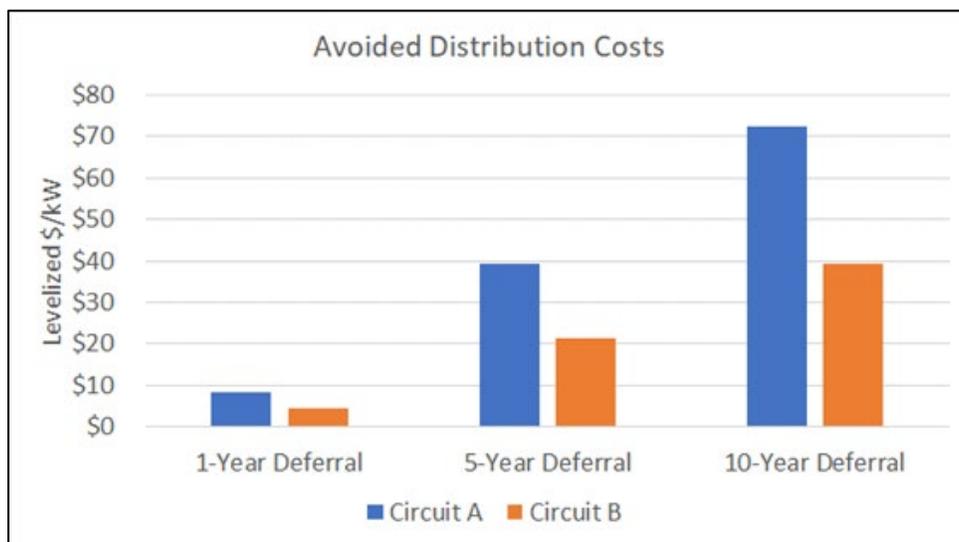
### Load Management Value Drivers

The consistent observation from DLC’s analyses is that the impacts of transportation electrification are expected to be highly specific and locational. The same is true for the associated grid investment because not all circuits are the same. DLC’s initial analysis of the grid impacts has highlighted two key drivers of value for load management: 1) the avoided cost to upgrade the circuit and 2) the amount of time the upgrade can be deferred.

To illustrate the degree to which these two factors drive economic value, consider the example of two 4kV circuits, each five miles long, that because of the increased demand of transportation electrification need to be reconductored to increase circuit capacity. In this example, Circuit A is 75% underground with an upgrade cost of \$4.25 million while Circuit B is 10% underground with an upgrade cost of \$2.3 million. Furthermore, assume there are different load management portfolios resulting in a one-year

deferral of upgrades, a five-year deferral of upgrades, and a ten-year deferral of upgrades. The avoided distribution costs for customers, on a levelized per-kW basis, are presented in the figure below. It is immediately clear that pushing out grid investments to a later deferral date results in significantly more customer value. For example, the blue bar with a one-year deferral from load management results in an avoided distribution cost of about \$9 per kW while a ten-year deferral results in an avoided distribution cost of about \$72 per kW. Regardless of the make-up of the circuit, the customer value increases at the same proportion as the investments are deferred for a longer time. The figure also demonstrates that delaying or avoiding more costly upgrades provides higher customer value. In this example, the blue bars represent the circuit that has a higher portion underground and therefore a higher cost to upgrade.

**Figure 13: Varying Value of Load Management**



This type of analysis provides context for where deploying load management is more likely to be cost effective. For instance, a portfolio of load management programs that could defer the investment of a costly upgrade for ten years would likely be a more cost-effective solution than achieving a one-year delay of a less costly short overhead circuit upgrade.

These observations raise clear factors to consider for both load management and system planning. For instance, customer-facing load management programs often include incentives to cover the up-front cost of equipment and/or ongoing incentives for participation. To provide the maximum customer value of avoided costs, load management programs would be aimed at incentivizing longer-lived equipment and program funding would need to be stable over longer periods of time where ongoing participation payments are provided. Furthermore, customer-facing load management programs are often available to the entire customer base, whereas, to drive the highest value in the context of offsetting localized



grid investments, load management programs would need to be deployed with precision and be able to scale within that precise targeting to achieve the desired cost savings.

From a grid planning perspective, circuits need to be fully characterized, complete from the substation down to the customer service point, to enable load analysis methods to advance to understand the current and projected loadings at a finer locational resolution than is currently considered. In addition, the upgrade options and costs for the circuits need to be modeled, taking into consideration that sub-portions of the circuit could require upgrades because of localized load growth. Connections between circuits and overlapping of circuits in dense urban areas also complicate the analysis and highlight the need to improve the granularity of grid modeling as part of grid planning. Developing this capability is a key part of DLC's grid modernization pipeline, specifically comprehensive system planning, and is integral to the Company's overall load management roadmap.

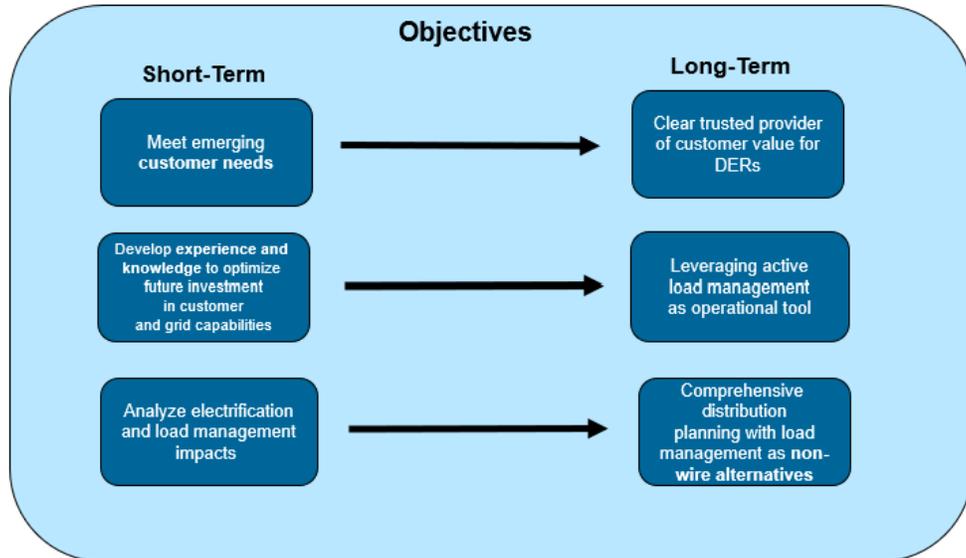
## LOAD MANAGEMENT ROADMAP AND OFFERINGS

---

### **Overview: Load Management Roadmap**

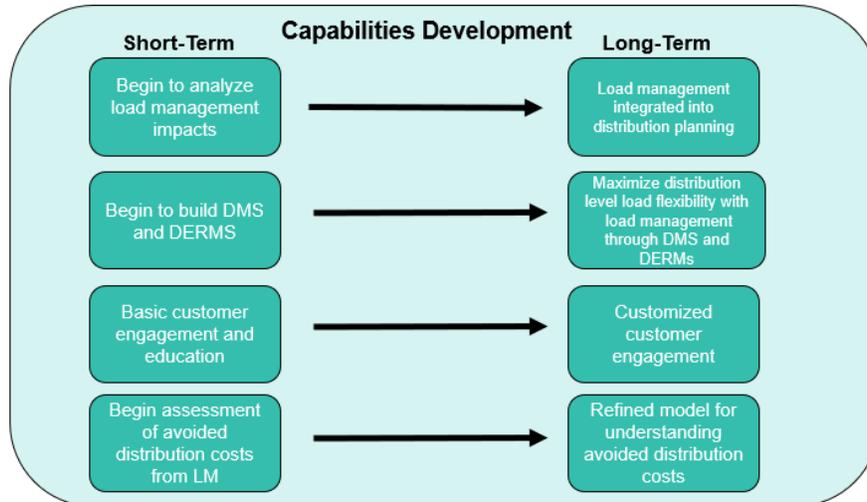
As part of a load management roadmap, DLC has laid out several short-term and long-term steps related to overall objectives, development of capabilities, and programs and offerings. Generally, the overall objectives in the short-term center around gaining experience with and knowledge of load management and electrification so DLC will be positioned to meet emerging customer needs and to deliver programs to achieve full scale needs in the future. In the long term, DLC will look to position itself as a trusted provider of customer value for DERs, leveraging load management as an operational tool and integrating it as a non-wires alternative within a comprehensive system planning process.

**Figure 14: Objectives Load Management Roadmap**



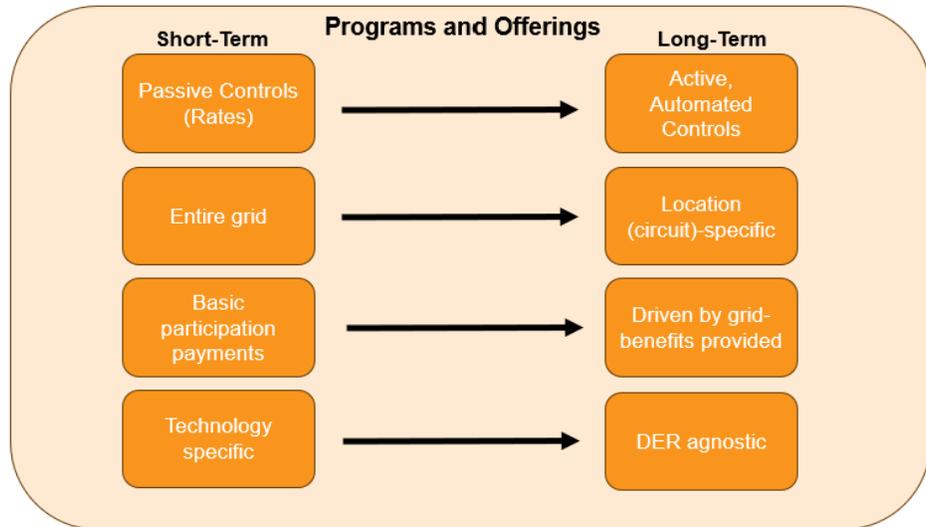
To make full use of load management as an asset, the Company will need to continue to develop its capabilities in this space. Short-term steps include beginning to build out DMS and DERMS, analyzing load management impacts and avoided distribution costs, and conducting basic customer engagement and education. In the long term, the Company will move toward maximizing distribution-level load flexibility through DMS and DERMS. It will create a more refined model for understanding avoided distribution costs and use that information combined with digital grid twin to help prioritize its investments across its systems, including assessing when deploying load management may be the most cost-effective option. Load management will be integrated into the distribution planning process and customer engagement will be customized towards specific customer needs.

**Figure 15: Capabilities Roadmap**



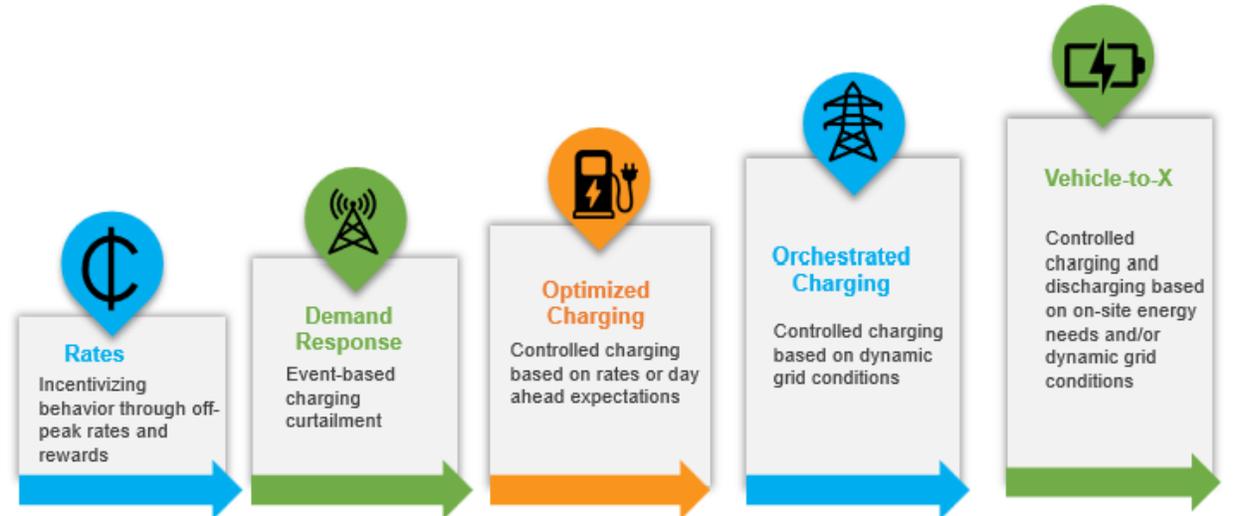
As DLC’s objectives and capabilities evolve over the short and long term, so too will the load management programs and offerings that will become available to customers. In the short term, efforts will focus on options that leverage passive controls such as rates, broad-base efforts across the entire grid, payments to customers for basic program participation, and options that rely on a specific technology. Over time, these offerings will develop into using active, automated controls affecting circuit-specific areas that are identified as most at risk for overloading, avoiding or deferring costly upgrades. Participation payments will be driven by the grid benefits provided by the customer’s load management activity, incentivizing activity at a meaningful scale, and options will be DER agnostic instead of tied to one technology to build out a complementary portfolio of DER resources that customers can tailor to their specific needs.

**Figure 16: Programs and Offerings Roadmap**



As an example already underway, within DLC’s Transportation Electrification Portfolio, its load management offerings are evolving along this trajectory. With its WholeHome EV TOU pilot, the Company has already begun using passive rate controls to effectively incentivize customer behavior toward off-peak EV charging and load shifting. Figure 17 below shows the progressively more active, automated methods of managed charging that are based on increasingly dynamic grid information, eventually leading to bidirectional charging triggered by grid conditions. This evolution requires increasing levels of customer trust – DLC will take a measured and foundational approach along this process to build customer trust and engagement as it develops offerings for EVs and as it adheres to this development process for other areas of load management.

**Figure 17: EV Load Management Offerings Projected Evolution**



**DLC’s Past and Current LM Efforts**

Beginning in 2009, DLC has offered several load management programs and pilots for commercial, industrial, and residential customers. These programs were mostly limited in their size, scope, and impact, and were implemented primarily as educational pilots or as part of larger energy efficiency programs. These programs are detailed below.

*Residential TOU Pilot*

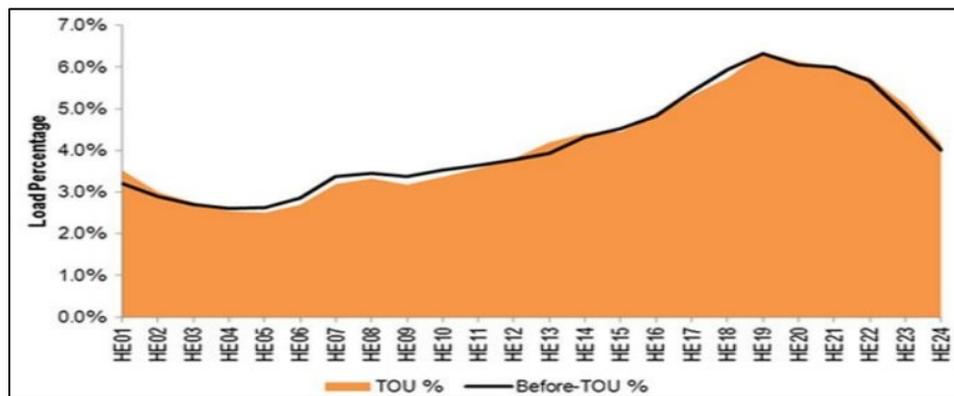
Over a 12-month period between June 2016 and May 2017, the Company offered a supply Residential TOU Pilot for residential customers with smart meters. The Company partnered with two electric generation suppliers (“EGS”) to execute the pilot who were selected after two separate RFPs in 2015 and 2016. Enrollment for the pilot took place from 6/1/2016 through 7/31/2016, and the TOU ‘summer timeframe’ during which customers’ supply rate varied through the day was defined as the period from 6/1/2016 through 9/30/2016. The two participating EGSs offered different peak windows and different prices for their energy supply, as shown in Figure 18 below.

**Figure 18: Residential TOU Pilot Peak Windows and Prices**

EGS	Direct Energy Services	WGL Energy Services
Type of Billing	Rate Ready	Bill Ready
Summer On-Peak Period	Weekdays 2 p.m. to 6 p.m.	Weekdays Noon to 7 p.m.
Summer Off-Peak Period	6 p.m. to 2 p.m. weekdays and all weekend hours and holidays	7 p.m. to Noon weekdays and all weekend hours and holidays
Summer On-Peak Rate	8.79 cents/kWh	9.700 cents/kWh
Summer Off-Peak Rate	5.79 cents/kWh	6.467 cents/kWh
Non-Summer Rate All Hours	7.69 cents/kWh	7.109 cents/kWh

During the one-year Residential TOU Pilot, 336 customers enrolled in the rate. Those customers averaged total savings across the four-month summer timeframe of \$54 (22.9% of their supply bill had they not been enrolled in TOU), though it was difficult to conclude the program’s impact based on participant load curves (Figure 19 below). Every participating customer saw cost savings, however, with the most common monthly savings amount being between \$10 and \$20 during the summer months. Based on the limited observed impacts from the rate, the Company decided to shift efforts away from the Residential TOU Pilot in favor of an EV-driver focused TOU rate.

**Figure 19: June 2016 Weekday Load Shape Aggregated for 100 Direct Energy Accounts**

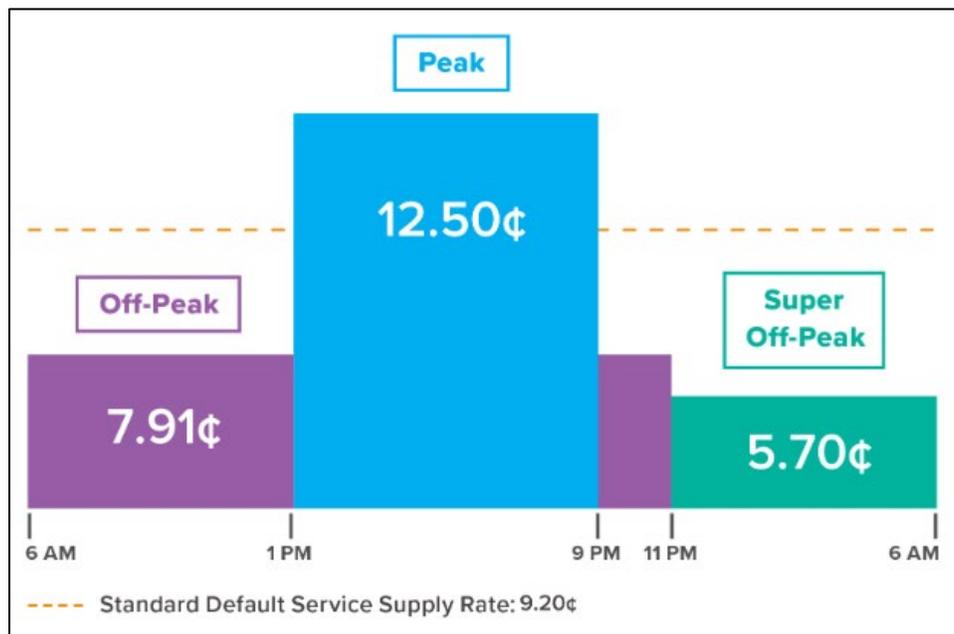


*WholeHome and Business EV Rate: Time-of-Use*

Since June 2021, the Company has offered a supply TOU pilot for residential and medium-sized commercial and industrial customers  $\leq 200\text{kW}$  who drive EVs or have EV charging stations on their property. While only customers with EVs or EV charging stations are eligible for the rate, the rate applies to the entire premise – not just the EV charging. The Company does not partner with any specific EGSs for this rate, but rather supplies customers through the same Fixed Price, Full Requirements (“FPFR”) products as other Default Service Plan (“DSP”) customers in that customer class and then applies factors to generate the price signal differences. The TOU periods apply seven days-a-week, year-round, and

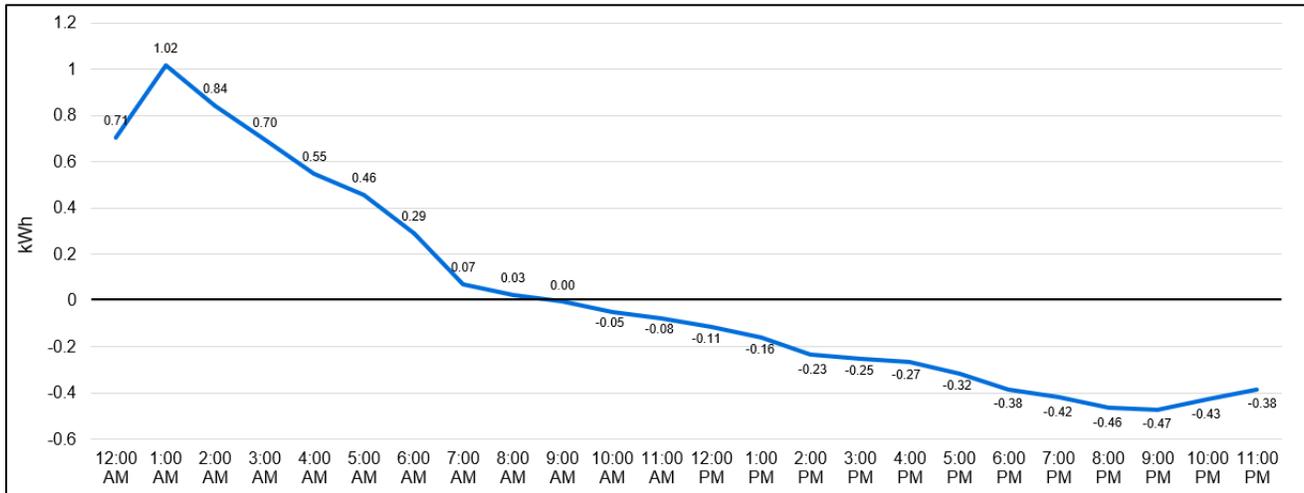
as such the rate does not have weekend, seasonal, or holiday rate differences. The rate includes three time periods: peak, off-peak, and super off-peak. Figure 20 below shows the time windows for each period as well as an example of the price differences during each period compared to the standard default service supply rate.

**Figure 20: EV TOU Time Periods and Rates**



As of November 28, 2023, the EV TOU pilot has had 951 enrollees, with 792 actively enrolled participants, which represents approximately 9% of total registered EVs in the Company’s service territory. On average, participants have saved \$6.22 per month while enrolled in the EV TOU rate, or approximately 7.9% of their supply bill had they not been enrolled in TOU. Additionally, DLC has analyzed EV TOU customers’ usage before purchasing an EV, after purchasing an EV but before enrolling in TOU, and after enrolling in TOU to assess the impact of the rate on customer consumption patterns. The analysis found that EV-driving customers shift a significant amount of their usage to off-peak and super off-peak times after enrolling in TOU, as shown below in Figure 21. When comparing customers’ usage across the three time periods referenced above, the Company’s analysis found that enrollment in the EV TOU rate offset almost all peak time utilization increases that occurred after purchasing an EV, as shown in Figure 22 below. This indicates that TOU rates are an effective way to mitigate EVs’ impacts on the electric grid for certain groups of customers.

**Figure 21: Average Hourly Utilization Shift by Time of Day after EV TOU Enrollment**



**Figure 22: Impact of EV Purchase and EV TOU Enrollment on Customers’ Electricity Usage**

	Avg. Hourly Change by Time of Use		
	After EV, Before TOU (kWh)	After TOU (kWh)	Total Difference from Pre-EV (kWh)
Super Off-Peak	+0.43	+0.65	<b>+1.08</b>
Off-Peak	+0.27	-0.12	<b>+0.15</b>
Peak	+0.34	-0.35	<b>-0.01</b>

*Act 129 Energy Efficiency and Conservation Plan: Load Management Programs*

As part of its activities to meet the goals of Pennsylvania’s Act 129 of 2008, which required large electric distribution companies such as DLC to develop Energy Efficiency and Conservation (“EE&C”) plans to reduce the amount of electricity used by their customers, the Company has implemented several load management programs for its residential, commercial, and industrial customers. In Phase I of its EE&C Program, the Company offered a residential direct load control program under the title Watt Choices Direct Load Control Program, which used digital control switches on enrolled customers’ qualified central air conditioners to shed peak load. Participants were offered \$32 per year per air conditioner to participate in the program, in which DLC toggled their air conditioners on and off in 15-minute



increments to reduce energy consumption during peak events. The program ran from June 2009 to May 2013, during which time 1,474 customers participated. The program achieved a peak load reduction of 0.465 MW, but was found to be not cost-effective with a Total Resource Cost ("TRC") ratio of less than 0.1.<sup>7</sup>

In Phase I and Phase III of its EE&C Program, the Company offered a commercial and industrial demand response program under the titles Watt Choices Curtailable Load Program and Large Curtailable Load Program, respectively. The Phase I program did not offer participants incentives for their participation and had 40 participants enroll during the program period of June 2009 to May 2013. Participants were asked to reduce their energy consumption during 'Act 129 events,' which were called when PJM's day-ahead load forecast exceeded 96% of PJM's summer peak demand forecast. The program achieved a peak load reduction of 2.6 MW and was found to be not cost-effective with a TRC ratio of 0.2.<sup>8</sup>

The Phase III iteration of the program offered participants a monetary incentive to participate and had 195 participants enroll during the program period of June 2016 to May 2021. Demand response events were determined based on the same criteria as before, and the program achieved a peak load reduction of 48.84 MW – achieving its goal of a 42 MW reduction. Additionally, the program was found to be cost-effective with a TRC ratio of 2.65.<sup>9</sup> Despite the evident success of the Phase III Large Curtailable Load Program, the program was not continued as the PUC chose not to allow dispatchable demand response programs in Phase IV of the Company's EE&C Program (which commenced in June 2021)<sup>10</sup>.

## **Utility Landscape Analysis and Potential Load Management Solutions**

In planning for the next steps on its load management path, DLC evaluated the activities of similar utilities in states with comparable characteristics to Pennsylvania to gain a better understanding of the types of programs currently being offered and the options that might be a good fit for DLC's customers. States were selected that are: deregulated, have statewide energy efficiency standards, Renewable Portfolio Standards, and carbon reduction policies, and in a primary climate zone like Pennsylvania's. From the resulting list of states, DLC examined 26 investor-owned utilities, three co-ops, one municipal utility, and one state-owned utility and categorized their existing load management activities into building electrification load management, transportation electrification load management, and general load management. The analysis included 100 programs that primarily used rate design, device control,

---

<sup>7</sup> [https://duquesnelight.com/docs/default-source/wattchoice/wattchoice-yearly-reports/dlc\\_phase\\_i\\_final\\_report\\_11-15-13\\_revised.pdf](https://duquesnelight.com/docs/default-source/wattchoice/wattchoice-yearly-reports/dlc_phase_i_final_report_11-15-13_revised.pdf)

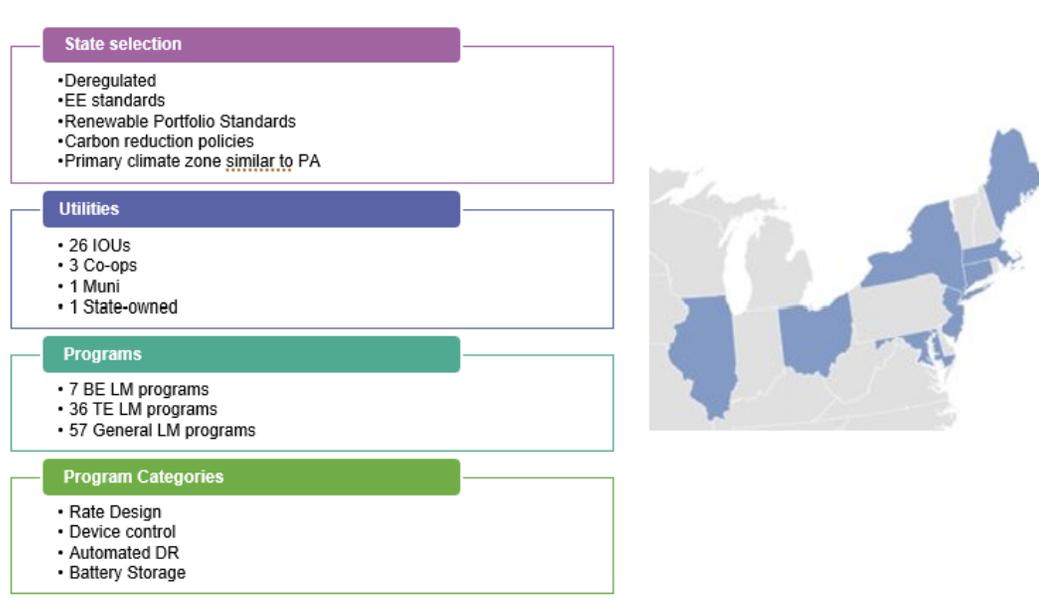
<sup>8</sup> [https://duquesnelight.com/docs/default-source/wattchoice/wattchoice-yearly-reports/dlc\\_phase\\_i\\_final\\_report\\_11-15-13\\_revised.pdf](https://duquesnelight.com/docs/default-source/wattchoice/wattchoice-yearly-reports/dlc_phase_i_final_report_11-15-13_revised.pdf)

<sup>9</sup> [https://duquesnelight.com/docs/default-source/wattchoice/act-129/dlc\\_final\\_annual\\_report\\_amended\\_march\\_24\\_2022.pdf](https://duquesnelight.com/docs/default-source/wattchoice/act-129/dlc_final_annual_report_amended_march_24_2022.pdf)

<sup>10</sup> <https://www.puc.pa.gov/filing-resources/issues-laws-regulations/act-129/energy-efficiency-and-conservation-ee-c-program/>

automated demand response, and battery storage as the load management strategies to influence customer behavior and shift grid impacts.

**Figure 23: Utility Landscape Analysis**



DLC considered the options within each of these program categories in the context of the Company’s current and previous efforts, technological capabilities, and customer needs. The following sections outline potential plans for load management pilots under consideration by DLC, including describing program concepts and the key questions the Company would be seeking to understand from undertaking these efforts to help inform its longer-term approach.

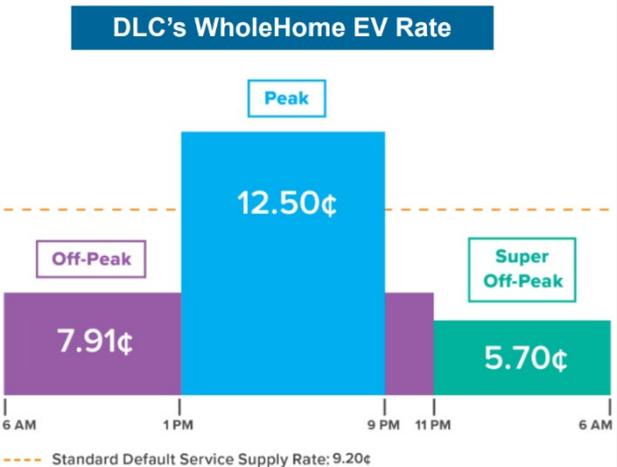
## Rates

Type: Passive  
 Goal: Load shape and shift  
 Eligibility: Residential and Commercial customers

**Description:**  
 Use rates to encourage behavioral change to shift load to off-peak or other times advantageous to grid operations or to serve other goals, such as making greater use of renewable generation.

**Rate Options:**

- Time-of-use
- Variable peak pricing
- Demand charge credit
- Peak savings credit
- Can apply to entire premises or technology-specific (EV charging only)



**DLC's WholeHome EV Rate**

Time Period	Rate (¢)
6 AM - 1 PM (Off-Peak)	7.91¢
1 PM - 9 PM (Peak)	12.50¢
9 PM - 11 PM (Super Off-Peak)	5.70¢
11 PM - 6 AM (Super Off-Peak)	5.70¢
Standard Default Service Supply Rate	9.20¢

**Pilot Concept:**

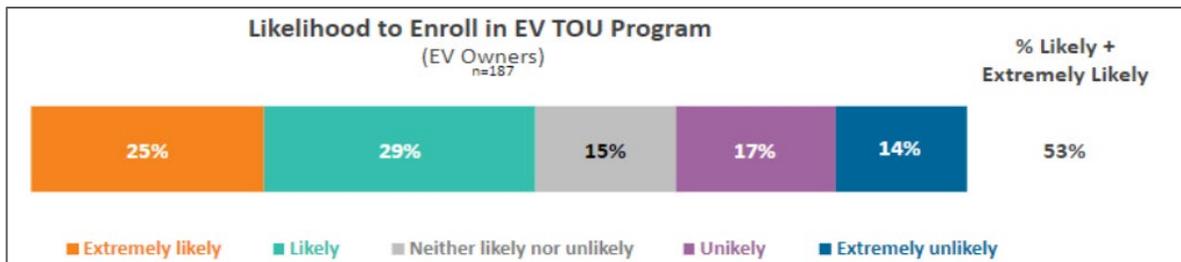
- Extension of the existing generation WholeHome EV TOU rate to the distribution rate.
- Participating customers would receive a lower electricity distribution rate during off-peak times and a higher electricity distribution rate during peak times, such as the afternoon.

**Key Questions:**

**Technical:** Understand the technical aspects of an EV-only TOU rate without deploying second meters, including interfacing with vehicle telematics, third party providers, etc.

**Customer:** Understand customer interest and participation rates across different rate designs.

**Operational:** Evaluate how different rate designs influence the load shed and shift. Use additional analytics to assess and understand grid impact at scale.



Source: DLC survey of EV drivers, 2023

## Behavioral Demand Response

Type: Passive  
 Goal: Load shed  
 Eligibility: Residential and small commercial customers

**Description:**

- Customers are encouraged to reduce their energy use during designated peak events.
- Customers determine what and how much load can be reduced.
- The program can encourage broader and more equitable participation since it does not rely on technology, but rather relies on customers to alter their behaviors.

**BGE's Energy Savings Days**

**How it works**

-  **1 You'll get an alert.**  
You'll receive a phone call, email, text, or mobile app alert before a BGE Energy Savings Day alerting you of the upcoming event.
-  **2 Reduce your use.**  
Simply use less electricity during the event which typically occurs between 2pm and 6pm on an Energy Savings Day and earn \$1.25 in bill credits for every kilowatt-hour saved compared to your normal use.
-  **3 Earn rewards.**  
Within a few days, we'll notify you by phone, email, text or mobile app to let you know how much you saved!

**Pilot Concept:**

- Customers receive text and/or emails asking them to reduce their energy use during specific hours on event days.
- The program would call 10-20 events per year based on expected peak demand condition.
- Customers would opt in and receive a monetary incentive for their reduction compared to a baseline.

**Key Questions:**

**Technical:** Assess ability to deploy messaging to customers and pay customers.

**Customer:** Understand customer interest and participation rates with different incentives levels and messaging.

**Operational:** Evaluate the predictability of customer behavior and load shed in response to calling peak events. Assess the dependability of load shed going forward, it's potential impacts at scale, and how behavioral DR could influence grid planning.

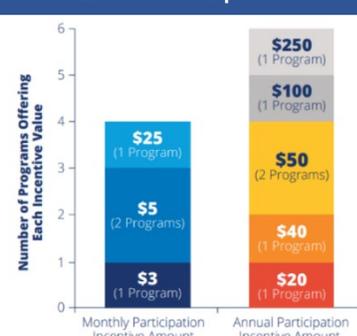
# Managed Charging

Type: Active EV Charging Load Control  
 Goal: Load shift and shed  
 Eligibility: Residential and Commercial (often fleets)

**Description:**

- Customers agree to participate in everything from demand response events (lowering charging from Level 2 to Level 1 or pause charging) to optimized charging.
- Customers receive an annual, monthly, per kWh and/or per event incentive for participating.
- Customers can select when they need to have their vehicle charged then the utility and its partners can streamline charging to meet consumer needs while also benefitting grid operations.

Utility Managed Charging Program  
Incentive Comparison



Category	Incentive Amount	Number of Programs
Monthly Participation Incentive Amount	\$25	1 Program
	\$5	2 Programs
	\$3	1 Program
Annual Participation Incentive Amount	\$250	1 Program
	\$100	1 Program
	\$50	2 Programs
	\$20	1 Program

\*All programs assessed offer participation incentives each month, with the exception of two programs that offer incentives every two months or at the end of a season.

Source: Managed Charging Incentive Design. SEPA. October 2021.

**Pilot Concept:**

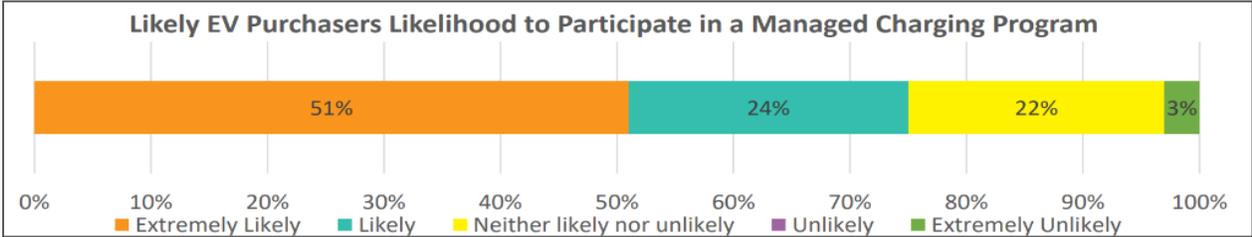
- Demand response-based pilot.
- ~10-15 DR events will be called during the summer months. Customers will have the option to opt in or opt out of the event.
- \$20 per month for participating in ≥50% of events.
- Leverage third-party platform to enroll customers, administer events, and provide event analytics and reporting.

**Key Questions:**

**Technical:** Understand the technical aspects of managed charging, including interfacing with vehicle telematics, third party providers, sending signals, etc.

**Customer:** Understand customer interest and participation rates.

**Operational:** Evaluate the predictability of customer behavior and load shed in response to calling peak events and use analytics to estimate grid impact at scale.



Source: DLC Customer Survey

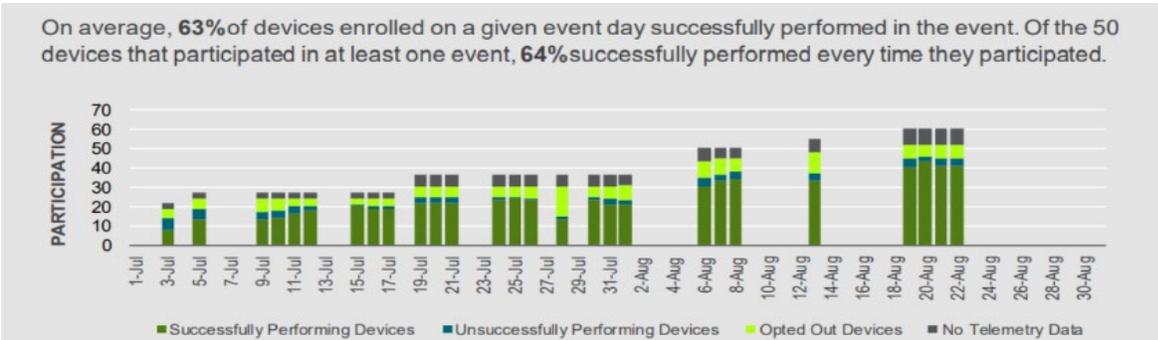
## Battery Pilot

Type: Battery  
 Goal: Load shift and shed  
 Eligibility: Residential and Commercial customers

### Description:

- Customers agree to participate in active dispatch (demand response events) or passive dispatch.
- Customer can receive a rebate for purchase and installation and a \$/kW per event or per season.

#### National Grid Energy Storage Demand Response Participation



Source: 2019 Residential Energy Storage Demand Response Demonstration Evaluation Summer Season. Prepared by Navigant. Prepared for National Grid and Unifit February 2020.

### Pilot Concept:

- Customers will be required to participate in active dispatch events, where DLC will draw upon enrolled battery storage during announced dispatch events.
- Active dispatch events may occur on any weekday during the summer season within the dispatch window of 12pm-9pm and are expected to last about 3 hours.
- Customers can expect approximately ten active events per season. Participation incentive will be available for 5 years.

### Key Questions:

**Technical:** Build knowledge of front-of-meter installations and benefits. Understand protocols for leveraging behind-the-meter battery assets.

**Customer:** Understand customer interest and response rates.

**Operational:** Evaluate the load changes and grid benefits and value from calling on these resources.



## FUTURE LOAD MANAGEMENT CONSIDERATIONS

---

As part of its commitment to a clean energy future for all, the Company is undertaking a comprehensive grid modernization effort, of which load management is a key part. This report reflects the Company's current analysis and approach to load management; however, DLC will continue to evaluate how best to incorporate load management into its comprehensive system planning and operations in the years ahead as it learns from implementing the activities described in this report and monitors market developments.

The speed and urgency with which the Company will need to act will be driven in part by market and technology developments. The Company will closely track key trends that will influence its direction on load management. These include:

- **Costs:** Cost trends across battery systems, EVs, building electrification technologies and fuel will affect technology adoption.
  - Costs of battery storage systems will determine whether these systems become more economic and therefore more realistic to incorporate as part of a load management portfolio.
  - Although many building electrification technologies have existed for a long time, their efficiency continues to improve, and the Company will continue to monitor equipment costs as they are deployed at greater scale.
  - Currently, the lower price of natural gas makes widespread adoption of heat pumps unlikely in the Company's service territory in the near future. The Company will continue to monitor long-term natural gas prices.
  
- **Adoption:** Grid transformation needs to anticipate the pace of technology adoption to meet customer needs.
  - Much of the urgency for load management is closely tied to EV adoption. As EV adoption accelerates and the resulting increase in load comes online, there is a greater need to mitigate that additional demand on the grid with load management strategies.
  - The continued increase in DER adoption has the potential to create system challenges that DLC will need to address and changes in long-term load profiles.



- Policy: Federal, regional, state, and local policies can positively or negatively impact technology adoption, markets, and grid modernization efforts.
  - PJM’s implementation of FERC Order No. 2222 will influence proliferation of battery storage, EVs, and other DERs. Importantly, PJM’s decisions around the implementation of Order 2222 will influence DLC’s ability to directly control load management and/or manage third-party DER aggregators.
  - Proposed EPA tail-pipe emission standards could cause significant increases in new EV sales to meet the standard.

In addition to market forces, the Company’s broader grid modernization efforts will dictate the ways load management can be leveraged. As it develops plans for its DERMS and DMS, the Company will assess how load management will fit into the deployment and on-going operations of those systems. The Company’s deployment of DERMS and end-point connectivity capability to directly interact with battery storage or other DERs will determine whether DLC will operate load management programs in-house or using third-party program administrators.

As it moves forward, the Company will be focused on:

- *Relationship Development:* DER Original Equipment Manufacturers (OEMs), especially battery storage OEMs, have their own connectivity protocols and willingness to work with utilities; therefore, DLC will need to begin developing relationships with OEMs and third-party aggregators to better understand what it takes to allow a broad set of DER entities to effectively participate in future customer programs.
- *Strong System Deployment:* DLC will also focus on its preparedness and capability to incorporate and manage DERs and DERMS within its systems. DLC’s ability to understand and take action with DERs based on localized grid load and capacity balances is a critical cornerstone of positioning DLC as the go-to entity to flow PJM market signals to customers and locations on the grid that are best situated to respond.
- *Piloting and Learning:* DLC will continue developing its capabilities to understand customer EV charging behaviors, the ability to forecast locational EV adoption, along with other DERs, and continuously improve its planning and processes to reflect the learnings of its beneficial electrification programs and pilots to inform its longer-term approach.

The Company is embarking on a significant effort to transform its grid, planning, and operations to meet stakeholder expectations and needs in the 21<sup>st</sup> century. The Company’s Load Management Plan will help guide the Company’s efforts as it moves forward; enabling it to gain



the experience and knowledge to optimize cost-effective investments in customer and grid capabilities, leverage load management as an operational tool, and be a trusted provider of customer value for DERs. As it undertakes this transformational process, the Company will periodically revisit the Load Management Plan and continue to assess the ways in which load management can be deployed as a mutually beneficial asset to the grid and for customers.