



414 Nicollet Mall  
Minneapolis, MN 55401

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August 2, 2022

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, MN 55101

**—Via Electronic Filing—**

RE: PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF A  
PUBLIC CHARGING NETWORK, AN ELECTRIC SCHOOL BUS PILOT, AND  
PROGRAM MODIFICATIONS  
DOCKET NO. E002/M-22-\_\_\_\_\_

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits the attached Petition for approval of a public charging network, electric school bus pilot, and program modifications.

We are pleased to present these offerings for approval as a part of Xcel Energy's efforts to lead the way in electrifying transportation in Minnesota and positioning Minnesota as an electric vehicle leader. Our portfolio of EV initiatives is designed to benefit all drivers, customers, and the state by helping reduce greenhouse gas emissions and air pollution while keeping electric bills low for all customers and benefiting the electric grid.

Pursuant to Minn. Stat. § 216.17, Subd. 3, we have electronically filed this document with the Minnesota Public Utilities Commission, and a copy of the Summary of Filing has been served on the parties on the attached service lists. Please contact Carl Cronin at [carl.cronin@xcelenergy.com](mailto:carl.cronin@xcelenergy.com) or 612-215-4669 if you have any questions regarding this filing.

Sincerely,

/s/

AMY LIBERKOWSKI  
REGIONAL VP, REGULATORY AND PRICING

Enclosure  
cc: Service List

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STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie Sieben	Chair
Joseph K. Sullivan	Vice-Chair
Valerie Means	Commissioner
Matt Schuerger	Commissioner
John Tuma	Commissioner

IN THE MATTER OF THE PETITION OF  
NORTHERN STATES POWER COMPANY  
FOR APPROVAL OF A PUBLIC CHARGING  
NETWORK, AN ELECTRIC SCHOOL BUS  
PILOT, AND PROGRAM MODIFICATIONS

DOCKET NO. E002/M-22-\_\_\_\_

**PETITION**

**INTRODUCTION**

Northern States Power Company, doing business as Xcel Energy, is pleased to submit to the Minnesota Public Utilities Commission (Commission) this request for approval of programs and program modifications designed to advance the state’s goals related to transportation electrification, and specifically to encourage Electric Vehicle (EV) adoption. We request approval of a proposed expansion of our public charging initiative. We propose to partner with school districts and bus operators to pilot the potential benefits of electric school buses. We also request approval to modify and streamline our existing EV program portfolios for both commercial and residential customers based on the learnings from our current programs and pilots. Finally, we propose expanding our advisory support for both residential and commercial customers.

**Background**

Minnesota has a north star when it comes to transportation electrification - by 2030, the state targets 20 percent of all light duty vehicles to be electric.<sup>1</sup> Rooted in reducing greenhouse gas emissions (GHGs) from the transportation sector, the largest

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<sup>1</sup> The Minnesota Department of Transportation and the Minnesota Pollution Control Agency outlined a statewide vision for increasing EV use in 2019. The document targets a 20 percent by 2030 target for light duty (“LD”) EVs. See: [Accelerating Electric Vehicle Adoption: A Vision for Minnesota \(state.mn.us\)](https://www.state.mn.us/accelerating-electric-vehicle-adoption)

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source of emissions in Minnesota and America, the target aims to power more vehicles with affordable, increasingly carbon-free electricity.<sup>2</sup> This only occurs via increased electric vehicle (EV) adoption.

With this 20 percent target, the state has identified the need to electrify transportation to deliver benefits to all Minnesotans. Over the last several years, major automakers have made transformative investments in an electric future, with some committing to halting production of internal combustion engines by as early as 2025 and with other automakers making pledges that extend through the 2030s.<sup>3</sup> The country has also witnessed historic federal legislation to support infrastructure and jobs, including in the EV space with a focus on supporting more public charging, a portion of which will be directed to Minnesota.

Even with the gains made to date, the state is not on track to meet its 2030 goal. By the end of 2022, there is expected to be approximately 34,000 light-duty electric vehicles in Minnesota, accounting for only about 0.7 percent of the total light-duty population.<sup>4</sup> To reach 20 percent by 2030, annual registrations must grow 24 percent year-over-year. Without convenient public charging infrastructure, range anxiety will remain a top barrier to EV adoption. Unfortunately, we have not seen the market fill in key gaps regarding necessary public charging.<sup>5</sup> We project a need for approximately 8,300 public fast charging ports statewide by 2030 to meet the state's goal, and there are only 92 non-proprietary public fast charging ports at 56 locations today.

This means that a tremendous amount of additional investment, execution and effort is needed for the state to achieve its EV target and deliver the benefits to Minnesotans. The status quo will not put the state on track to meet its objectives. Utilities are uniquely situated to help our state meet its important target.

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<sup>2</sup> According to the U.S. Energy Information Administration, in Minnesota, in 2019 the transportation sector accounted for 33.7 million metric tons of carbon dioxide emissions, or 37 percent of total statewide emissions, more than the electric power (25 percent), industrial (19 percent) and residential sectors (11 percent). Moreover, transportation emissions have increased 2.4 percent year-over-year since 2016. <https://www.eia.gov/environment/emissions/state/>

<sup>3</sup> Jaguar has announced a target of 2025, Mini for 2030, Volvo for 2030, and GM by 2035, among other announcements. See Atlas Public Policy's "Automaker Zero Emissions Sales Pledges Side by Side," [https://www.atlasevhub.com/weekly\\_digest/automaker-zero-emissions-sales-pledges-side-by-side/](https://www.atlasevhub.com/weekly_digest/automaker-zero-emissions-sales-pledges-side-by-side/).

<sup>4</sup> Based on Guidehouse estimates.

<sup>5</sup> Recent news coverage further highlights the gaps in the nation's public charging network. "[I Rented an Electric Car for a Four-Day Road Trip. I Spent More Time Charging It Than I did Sleeping.](#)" The Wall Street Journal, June 3, 2022. Last accessed June 15, 2022.

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The Company is proud of its history of helping the state achieve important policy goals. One recent example involved statewide emissions reductions; The Next Generation Energy Act, adopted in 2007, established state goals to reduce greenhouse gas (GHG) emissions by 15 percent from 2005 levels by 2015, 30 percent by 2025, and 80 percent by 2050. The electric sector, and particularly Xcel Energy, has been aggressively decarbonizing since this time. The Company's Integrated Resource Plan (IRP) sets forth plans to achieve 85 percent carbon reduction from 2005 levels by 2030.<sup>6</sup> While the progress in the electric sector is clear, the transportation sector is not on a similar path to achieve carbon reductions.

To address this troubling reality, the Commission has directed utilities to act. Specifically, the Commission ordered utilities to develop plans to support transportation electrification and made a series of findings to shape the innovative plans utilities produce.<sup>7</sup> Under this guidance, the Company brought forward its successful residential Subscription Service pilot, which helped customers better understand the economics of electric charging. The Commission also recently approved the Company's proposal to bring forward 21 public charging sites.

Further, at the Commission's hearings on March 24 and 31, 2022, Commissioners encouraged the Company to bring forward new program proposals – citing specific interest in proposals to expand public charging, boost electric school bus adoption and increase off-peak managed charging<sup>8</sup> participation. The Commission directed the Company to provide its anticipated schedule for proposing several new EV initiatives of interest to the Commission and stakeholders.<sup>9</sup> We enthusiastically bring forward these programs as the next step in our Transportation Electrification Plan.<sup>10</sup>

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<sup>6</sup> Docket No. E002/RP-19-368

<sup>7</sup> See Attachment B for a brief overview of EV Dockets and Procedural History.

<sup>8</sup> The Company has considered a variety of strategies to increase participation in managed charging and has looked at other utility programs for lessons learned and examples. Based on this review, the Company believes that providing a strong incentive to participate in managed charging may lead to increased participation. For instance, see Dakota Electric offers electric customers a rebate of up to \$500 to cover the cost of installing a charging circuit at home in exchange for their enrollment in one of two controlled, off-peak charging programs.

<sup>9</sup> See Docket No. E999/CI-17-879. ORDER ACCEPTING 2021 TRANSPORTATION ELECTRIFICATION PLANS AND ADOPTING ADDITIONAL INFORMATIONAL REQUIREMENTS (May 17, 2022) at Order Point 2.

<sup>10</sup> Considering the Commission's specific interest in new public charging and electric school bus programs, we make this proposal ahead of the Commission's alternate-year schedule for utility Transportation Electrification Plans. In doing so, we acknowledge that this proposal is made outside of Commission's staff's efforts to establish new procedural efficiencies for utility proposals. We wish to support an orderly and efficient regulatory process and we welcome a procedural schedule that best supports this goal.

## **Proposed Plan**

In brief, this proposal includes the following features:

1. **Expanded Accessible, Affordable High Speed Public Charging Designed to Minimize Grid Impacts and Help Fill Market Gaps:** The Company proposes a significant and rapid expansion of our existing public charging initiative to help address a market gap. We will build, own, and operate (with support from vendors) approximately 730 new high-speed public charging stations (equal to about 1,470 ports and 194 MW of charging capacity) and supporting infrastructure, by 2026. We worked with Guidehouse to evaluate the public charging market need in Minnesota and in our service territory, as discussed further below, and this proposal will address about 45 percent of the total forecasted public charging port need by 2026 and about 18 percent of the forecasted need for public charging ports by 2030 statewide.<sup>11</sup> We will partner with site hosts throughout our service territory to dramatically increase fast charging opportunities for EV drivers. We also will implement rates that encourage off-peak charging while on the road, and we will encourage our customers driving EVs to sign up for managed charging rates and programs at home.
2. **Support Partnerships, Research, and Innovation, With An Innovative School Bus Pilot:** Finally, the Company proposes to provide 32 electric school buses, including supply, charging and related infrastructure, to school districts at no cost. The Company will own and support the operation of the buses (via third-party operators), while demonstrating bus vehicle-to-grid (V2G) capabilities, among other key research topics. This pilot, offered as part of the Partnerships, Research, and Innovation (PRI) program, seeks to eliminate barriers to electric school bus adoption and to study electric bus benefits, including as grid-supporting resources when not being driven. The pilot is designed to give priority to bus operators and school districts that serve low-income communities, BIPOC<sup>12</sup> communities, and rural communities.
3. **Enhance Commercial EV Pilot Programs, While Advancing Managed Charging to Benefit the Grid and Customers:** We propose to extend and enhance our commercial EV charging pilots that provide make-ready infrastructure to customers, including the third-party public charging pilot, the

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<sup>11</sup> Based on forecasted needs for DCFC public charging ports under the Target 2030 scenario.

<sup>12</sup> BIPOC stands for Black, Indigenous, and people of color.

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fleet pilot, and the Multi Dwelling Unit pilot. Our proposal includes a set of improvements to our current pilot programs and to increase access to charging infrastructure and managed charging rates for commercial customers.

4. **Streamline Residential EV Programs, Including Managed Charging:** For residential customers, we propose to streamline and enhance charging opportunities, including managed charging. Our plan features a bring-your-own-charger option and makes a monthly pricing option like the EV Subscription Service pilot available on a permanent basis under the successful EV Accelerate At Home program.
5. **Strengthen Critical Customer Advisory Services:** In direct response to customer feedback, the Company proposes to strengthen the Advisory Services offered to residential and commercial customers. This includes expanding educational tools for customers considering electric vehicles, auto dealer partnerships, rate optimization services, and providing community and fleet planning assessments.

### **Utilities Play a Critical Role and the Commission Has Tools to Advance the State's Target**

As the Commission has found<sup>13</sup>, utilities play a critical role in clearing barriers to EV adoption, making infrastructure accessible, supporting equitable access to the benefits of transportation electrification, and encouraging efficient use of the grid. This plan is designed to speed the transition to electric vehicles by directly and rapidly confronting barriers—specifically by supplying needed public charging infrastructure to address range anxiety; providing supportive residential, commercial, and school bus programs to reduce up-front cost barriers; and offering robust residential and commercial advisory support to address information gaps. The plan represents an important upfront investment, not only of dollars but also of time and energy to support the electric transportation needs of our customers.

Achieving the state's goal requires us to act urgently, but we must also act thoughtfully. To develop the plan, the Company engaged experts to provide deep supporting analysis. In addition to direct customer and community feedback as well as surveys and industry research, the plan has been shaped by several third-party studies, including (1) an EV adoption forecast analysis (Forecast Analysis), (2) a public

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<sup>13</sup> See February 1, 2019 ORDER MAKING FINDINGS AND REQUIRING FILINGS, Docket No. E-999/CI-17-879, *In the Matter of a Commission Inquiry Into Electric Vehicle Charging and Infrastructure*.

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charging siting analysis (Siting Analysis), and (3) an extensive cost-benefit analysis (CBA). Leveraging this information, as well as our experience with EV pilots and programs, will help ensure these programs—and the EV adoption they will support—are beneficial not only for EV drivers, but for all our customers.

The time is right to build on the strong foundation of our early programs, to leverage the learnings from pilots and seize opportunities to improve the customer experience, and to achieve the benefits of higher EV penetration in a manner that supports all of our customers. The pace of change in this sector is accelerating, and utilities need to respond accordingly. We believe the proposed plan will help Minnesota prepare for rapid change and meet state targets as well as provide the flexibility needed to respond to evolving customer needs and technology advancements.

We respectfully request that the Commission approve:

- our proposal for expanding the public charging program,
- our proposal for an electric school bus pilot program,
- our proposal for streamlining and enhancing our commercial and residential EV portfolios, including extending pilot programs,
- our proposed advisory services,
- our proposed tariffs and agreements,
- our proposed cost recovery and accounting treatment, and
- our request to waive certain Rules and tariff provisions.

The Company includes the following attachments in support of this petition:

Attachment A	Miscellaneous Filing Required Information
Attachment B	EV Dockets and Procedural History
Attachment C	Public Charging Budget Detail
Attachment D	Cost Benefit Analysis - E3 Report
Attachment E	Public Charging Program Pricing Workpapers
Attachment F	Public Charging Service Tariff
Attachment G	Public Charging Service Guidehouse Siting & Forecast Analysis
Attachment H	Public Charging Site Design & Planning
Attachment I	REV Midwest MOU
Attachment J	PlugIn America EV Consumer Survey Report
Attachment K	Public Charging Perceptions Research

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Attachment L	Consumer Reports: BEV and Low Carbon Fuel
Attachment M	School Bus Pilot Compliance Matrix
Attachment N	School Bus Pilot: Case Studies
Attachment O	School Bus Pilot Customer Agreement
Attachment P	Commercial Programs Pricing Workpapers
Attachment Q	Commercial Programs Tariffs
Attachment R	Commercial Electric Vehicle (EV) Infrastructure Pilot Program Terms and Conditions
Attachment S	Multifamily EV Assigned Parking Customer Agreement for Residents
Attachment T	Commercial Pilot Insights
Attachment U	Commercial EV Pilot Svc Component & Billing
Attachment V	Residential Pricing Workpapers
Attachment W	Residential Program Tariffs
Attachment X	Residential Customer Service Agreement
Attachment Y	Residential Program Evaluation & Customer Insights
Attachment Z	Subscription Service Pilot Learnings and Final Report
Attachment AA1	Letter of Support: Clean 'n Press
Attachment AA2	Letter of Support: Lunds & Byerly's
Attachment AA3	Letter of Support: Dollar Tree
Attachment AA4	Letter of Support: Native Sun
Attachment AA5	Letter of Support: Pepsi Frito Lay
Attachment AA6	Letter of Support: Room & Board
Attachment AA7	Letter of Support: City of Monticello
Attachment AA8	Letter of Support: Southwest Transit
Attachment AA9	Letter of Support: Hy-Vee
Attachment AA10	Letter of Support: Cub Foods
Attachment AA11	Letter of Support: Life Time

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**I. COST RECOVERY AND COST/BENEFITS SUMMARY**

The Company presents an estimated budget for this plan. The plan arises at a time where our pending multiyear electric rate case<sup>14</sup>, prepared prior to the Commission's decision in Docket E002/M-20-745<sup>15</sup>, contains proposals that reflect programs planned at that time. The Company intends to reformulate its budget request in the pending rate case docket in compliance with the Order in E002/M-20-745<sup>16</sup> and to account for the now-proposed portfolio described here. This will result in an overall reduction to the pending MYRP budget. In this section we also discuss the results of the CBA for this portfolio

**A. Financial Overview**

In developing our new programs, and modifying and expanding our existing programs and pilots, we have refreshed previous budget estimates and identified new budgetary needs. Table 1 below summarizes the capital and operations and maintenance (O&M) budgets for the EV Program overall as well as participation and budget summaries for public charging, Commercial EV Charging, Multi-dwelling Unit (MDU) pilot, and School Bus Charging pilot. More detailed budget breakdowns for the individual programs are included in the sections below.

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<sup>14</sup> IN THE MATTER OF THE APPLICATION OF NORTHERN STATES POWER COMPANY FOR AUTHORITY TO INCREASE RATES FOR ELECTRIC SERVICE. Docket No. E002/GR-21-630.

<sup>15</sup> In the Matter of Xcel Energy's Petition for Approval of Electric Vehicle Programs as part of its COVID-19 Pandemic Economic Recovery Investments

<sup>16</sup> April 27, 2022 ORDER APPROVING PUBLIC CHARGING STATION PROPOSAL, In the Matter of Xcel Energy's Petition for Approval of Electric Vehicle Programs as part of its COVID-19 Pandemic Economic Recovery Investments, Docket Nos. E-002/M-20-745 and E, G-999/M-20-492.

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**Table 1  
Total EV Program Annual Budgets  
(\$ in Millions)**

	2022	2023	2024	2025	2026
<b><u>EV Program Totals</u></b>					
Total Capital Costs	\$5.9	\$10.4	\$39.7	\$85.2	\$181.3
Total O&M Costs	\$3.2	\$6.1	\$12.4	\$18.2	\$29.2
Total Revenue Requirement	\$4.0	\$8.4	\$18.8	\$35.4	\$69.5
<b><u>Public Charging</u></b>					
Annual Company-owned Charging Capacity (MW) Added	1.5	1.6	15.9	53.0	125.5
Cumulative Company-owned Charging Capacity (MW) Added	1.5	3.1	19.0	72.0	197.2
Annual Company-owned Hubs Installed	0	0	9	30	71
Cumulative Company-owned Hubs Installed	0	0	9	39	110
Annual Company-owned Chargers Added	2	22	55	200	480
Cumulative Company-owned Chargers Added	2	24	79	279	759
Annual Company-owned Ports Added	20	22	110	400	960
Cumulative Company-owned Ports added	20	42	152	552	1,512
Capital Costs	\$2.2	\$2.3	\$15.3	\$44.7	\$105.8
O&M Costs	\$0.5	\$0.9	\$3.2	\$7.1	\$15.7
Annual Revenue Requirement	\$0.6	\$1.3	\$4.9	\$13.9	\$35.5
<b><u>School Bus Pilot and Other PRI Projects</u></b>					
Buses	0	0	0	6	26
Capital Costs	\$0.0	\$0.5	\$4.5	\$7.5	\$20.2
O&M Costs	\$0.0	\$1.0	\$1.7	\$1.7	\$1.7
Annual Revenue Requirement	\$0.0	\$1.0	\$2.1	\$3.2	\$5.6

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	2022	2023	2024	2025	2026
<b><u>Commercial EV Charging (Fleet, Workplace, and Public Charging)</u></b>					
Chargers	0	89	92	271	633
EVSI Participants	261	276	285	861	1,657
Capital Costs	\$2.8	\$2.9	\$5.6	\$10.8	\$20.5
O&M Costs	\$0.3	\$0.3	\$0.4	\$0.5	\$0.6
Annual Revenue Requirement	\$0.7	\$1.4	\$2.2	\$3.7	\$6.6
<b><u>Multi-Dwelling Unit Pilot</u></b>					
Chargers	0	253	1,037	1,822	2,184
EVSI Participants	0	253	1,037	1,776	2,766
Capital Costs	\$0.4	\$2.5	\$10.3	\$18.2	\$28.6
O&M Costs	\$0.0	\$0.3	\$0.7	\$0.8	\$0.9
Annual Revenue Requirement	\$0.1	\$0.7	\$2.2	\$4.8	\$9.0
<b><u>Residential</u></b>					
Participants	1,068	1,581	1,725	2,693	4,910
Capital Costs	\$0.5	\$2.2	\$4.1	\$4.0	\$6.3
O&M Costs	\$0.7	\$0.7	\$1.9	\$2.1	\$2.5
Annual Revenue Requirement	\$0.8	\$1.1	\$2.8	\$3.8	\$5.1
<b><u>Advisory</u></b>					
Capital Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
O&M Costs	\$1.8	\$3.0	\$4.6	\$6.1	\$7.7
Annual Revenue Requirement	\$1.8	\$3.0	\$4.6	\$6.1	\$7.7

As noted above, the program modifications and new programs in this proposal differ from what was planned at the time the Company filed our pending electric rate case. A comparison of the proposed EV program budgets to the EV budgets reflected in the rate case at this time, which include the budget for the denied electric vehicle purchase rebate proposal, is shown in Table 2. The Company plans to provide updated information in the rate case proceeding to remove the budgets for the rebate programs, as required, and reflect the EV program budgets contained in this proposal.

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**Table 2  
Current EV Budgets Compared to EV Budget in MYRP<sup>17</sup>  
(\$ in Millions)**

	2022	2023	2024
<b><u>EV Rate Base</u></b>			
This Filing	\$5.5	\$13.1	\$36.4
Rate Case MYRP (Includes Disallowed EV Rebate Proposal)	\$53.0	\$125.0	\$173.0
<b>Rate Base Change</b>	<b>-\$47.5</b>	<b>-\$111.9</b>	<b>-\$136.6</b>
<b><u>EV Revenue Requirement</u></b>			
This Filing	\$4.0	\$8.4	\$18.8
Rate Case MYRP (Includes Disallowed EV Rebate Proposal)	\$13.1	\$29.0	\$40.9
<b>Revenue Requirement Change</b>	<b>-\$9.1</b>	<b>-\$20.6</b>	<b>-\$22.2</b>

The Company notes that labor and other O&M costs associated with the Company’s clean transportation programs and those included in this petition are now higher than the original estimates included in the rate case, by roughly \$2.5-\$3 million per year over the 2023-2026 period. This stems in part from the fact that the Company now brings forward an expansion of programs that either did not exist or were not fully developed at the time the rate case was assembled, including the public charging proposal and commercial pilot expansions, in addition to differences between program administration costs for rebate proposals compared to a focus on infrastructure projects and advisory services.

**B. Accounting and Regulatory Treatment**

Capital and O&M expenses for the plan will be included in the Company’s pending MN Electric MYRP with the Company’s Rebuttal filing. Expenses will be allocated to class in the Class Cost of Service Study based on cost type. Plan capital will be recorded in the appropriate FERC accounts with EV Supply Infrastructure (EVSI) (i.e., make-ready) and EV Supply Equipment (EVSE) (i.e., chargers and associated equipment) being included in FERC 371 and distribution extension costs placed in the appropriate distribution FERC accounts. O&M expense from the plan will be placed in the appropriate FERC accounts. Actual revenues will be tracked by customer type and will be recorded in their respective rate classes under which they

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<sup>17</sup> Revenue requirements shown include program costs relating to assets that are paid for over time by program participants (e.g. charging infrastructure).

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take service. As described in the cost benefit analysis, the Company's revenue requirement in future rate cases will also contain revenues associated with broad EV adoption where public charging sales and revenues will be forecast by class.

**C. Combined CBA Results**

The Company contracted with Energy and Environmental Economics, Inc. (E3), a consulting firm, to assess the costs and benefits that stem from transportation electrification in its service area, and how those costs and benefits would change under the Company's proposed investments in public charging and commercial charging.

Vehicle electrification offers net benefits to all electric customers and to society at large. Furthermore, with the exception of our electric school bus pilot, the Company's proposed public and commercial charging programs increase the net benefits for drivers and for society. Importantly, E3 finds that the Company's proposed public charging and commercial pilot expansions would increase EV adoption significantly, helping to spur adoption of an additional 150,000 light-duty EVs on the road by 2030 compared to a scenario without the Company's programs. In total, personal light-duty vehicle electrification, which comprise the majority of net benefits produced over the study period, offers more than \$121 million in net benefits to the Company's electric customers and about \$1,081 million in net benefits to the state of Minnesota under managed charging scenarios, even when incorporating the costs of the public charging and commercial proposals in the plan.

The Company notes that the costs of advisory services programs, residential EV programs, and other internal O&M costs related to operating these programs are not included in the E3 study. This stems from how these elements of the Company's proposals are either foundational to spreading awareness of EVs and their benefits and thus not appropriate for a cost-benefit study, represent programs whereby participants pay the full costs, and/or are ongoing O&M costs supporting the Company's programs. The costs and benefits from vehicle electrification are discussed in more detail in subsequent sections and in Attachment D, which provides the full E3 study.

## **II. PUBLIC CHARGING**

This Section covers the following topics:

- A. Public Charging Need and Program Overview
- B. Program Budget
- C. Vehicle and Charging Infrastructure Forecast Analysis
- D. Siting Analysis
- E. Cost Benefit Analysis
- F. OAG Three-Part Assessment
- G. Federal IIJA, VW Settlement, and Other Sources of Funds
- H. Pricing at Xcel Energy Fast Charging Stations
- I. Operating Plans
- J. Reporting

Overall, this section confirms the need for additional Company fast charging to advance and support the state's targets as well as address market failures. The plan increases access to affordable charging that benefits the grid in a manner that delivers net benefits.

### **A. Public Charging Need and Program Overview**

Transportation is on the cusp of a sea change. For both personal transportation and the movement of people and goods, the world is increasingly relying on battery powered EVs, powered by cleaner energy, rather than internal combustion engines that rely on fossil fuels. Historic investment and commitments from automakers and policies supporting and/or requiring components of the transition have charted the path forward – but infrastructure is lagging behind and significant additional investment and execution is needed to fill market gaps.

While this transition will undoubtedly require a supportive ecosystem across the public, private, and non-profit sectors, a key pillar of that ecosystem has not yet been built to accommodate and expedite the transition. In particular, Minnesota, like many other midwestern states, does not yet have the public charging infrastructure necessary to power a rapid adoption of EVs for both personal and commercial uses. As discussed below, thousands of public fast charging ports within the State of Minnesota, including the Company's service area, must be added over the coming decade to both keep up with and help induce rapid EV adoption. Waiting for third party charging providers to fill these gaps is not sufficient, as it would require rapid expansions of charging where there has been little investment to date, and longer

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timelines that could fail to produce the public charging infrastructure that is needed, *even with* the increased federal support for charging.

If this foundational gap persists, Minnesota’s goals risk falling out of reach. As noted previously, the state has recognized the opportunities that EVs offer – Minnesota’s north star target is 20 percent of all light-duty vehicles (LDVs) on its roads being electric by 2030. The Governor also signed an inter-state memorandum of understanding (MOU) with other midwestern states to accelerate medium-duty vehicle (MDV) and heavy-duty vehicle (HDV) electrification, and to do so in ways that enhance equity and boost regional economic growth.<sup>18</sup> The Commission has recognized that utilities play a vital role in this transition and that it can assist the state to meet its objectives.

**Our analysis with Guidehouse shows that achieving the state’s EV adoption goal will require about 8,300 public fast charging ports by 2030 in Minnesota.<sup>19</sup> Today, we only have 92 non-proprietary ports. The Company proposes a plan to close that DCFC gap by about 18 percent and accelerate the EV market.**

The Company proposes a significant expansion in the ability of drivers in our service area to access public fast charging stations. Specifically, the Company proposes to install, own, and operate approximately 1,470 new public charging ports by 2026, working closely with external charging providers, equipment installers, site hosts, and other partners to ensure a successful program. The Company will work with site hosts to install these public fast charging ports in both urban and rural areas, particularly along interstates, state highways, and other traffic corridors. Two primary types of charging hubs will be deployed – rural connector hubs and destination charging hubs – with some charging hubs designed to specifically accommodate charging for larger vehicles, including vehicles with towing capabilities as well as medium and heavy-duty trucks.<sup>20</sup> Furthermore, the proposal seeks to leverage and complement existing state investments and future investments in public charging infrastructure whenever

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<sup>18</sup> See Attachment I, “Regional Electric Vehicle Midwest Coalition Memorandum of Understanding Between Illinois, Indiana, Michigan, Minnesota, and Wisconsin.”

<sup>19</sup> Fast charging ports are often referenced as Direct Current Fast Charging (DCFC) and differ from charging ports typically used in a residential or small commercial setting, referred to as “Level 2” ports. DCFC technology provides the vehicle directly with direct current rather than alternating current, resulting in greatly increased charging speed which is critical to addressing range anxiety. While results depend on charger and vehicle specifications, DCFC technology may provide to a residential vehicle 200 miles of range in 20 minutes, while a Level 2 Charger may need 6 hours to provide the same 200 miles, or 18 times slower. This is based on a 2021 Tesla Model 3LR AWD equipped with a 82kWh pack from 10 percent battery “State of Charger” (SOC) to 60 percent SOC with a 180kW DCFC charger or a 7.2kW Level 2 charger.

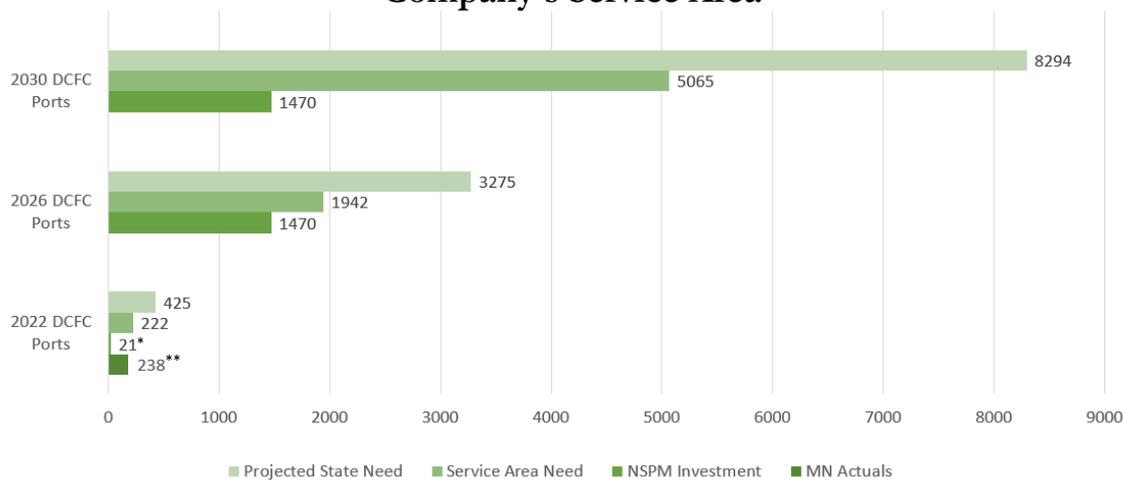
<sup>20</sup> See Attachment H, Site Design and Planning, for detailed information on hub design.

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possible, such as new funding being provided by the federal Infrastructure, Investment, and Jobs Act (IIJA).

At the end of 2021, there were about 82 public (non-proprietary) fast charging ports in Minnesota, with an additional 146 fast charging ports offered by Tesla.<sup>21</sup> Today, roughly six months later, there has only been a small increase in public fast charging ports – an additional 10 public (non-proprietary network) fast charging ports in Minnesota, totaling 92, and no additional Tesla ports.<sup>22</sup> In the Company’s electric service area, there are even fewer publicly available fast charging ports – an estimated 31 ports as of the end of 2021.<sup>23</sup> Over time, the need for public charging will increase exponentially, and the Company’s proposal would address a portion of this need. Figure 1 below shows the Company’s proposal in relation to the charging needs in our service area and across Minnesota.

**Figure 1:  
Public DCFC Charging Ports and Projected Needs in Minnesota and in the  
Company’s Service Area**



Source: Alternative Fuels Data Center; Guidehouse.

<sup>21</sup> The Company notes that the White House announced on June 28, 2022 that “Later this year, Tesla will begin production of new Supercharger equipment that will enable non-Tesla EV drivers in North America to use Tesla Superchargers,” which could provide additional public fast charging access moving forward. The Company will continue to monitor this and any other market developments. *See* <https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/28/fact-sheet-biden-harris-administration-catalyzes-more-than-700-million-in-private-sector-commitments-to-make-ev-charging-more-affordable-and-accessible/>. To the Company’s knowledge, Tesla has not disclosed a timeframe or plan for opening its stations to non-Tesla drivers.

<sup>22</sup> Data from the Alternative Fuels Data Center, U.S. Department of Energy, accessed June 28, 2022. [https://afdc.energy.gov/fuels/electricity\\_stations.html](https://afdc.energy.gov/fuels/electricity_stations.html). (Accessed June 28, 2022)

<sup>23</sup> Guidehouse estimate.

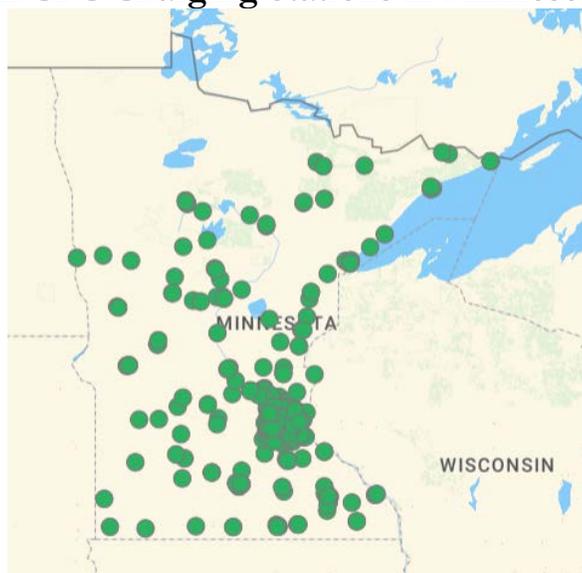
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\* Stations approved in Relief & Recovery docket.

\*\* Of the total, only about 92 are non-proprietary ports.

This dearth of available DCFC charging stations means that large portions of the state do not have access to public charging options or, if they do, their options are limited to level 2 chargers or Tesla's proprietary network. Figure 2 below shows all public level 2 and DCFC charging stations (a total of about 1,270 ports, including roughly 1,035 level 2 ports) in the state via the Alternative Fuels Data Center.<sup>24</sup>

**Figure 2:  
Public Level 2 and DCFC Charging Stations in Minnesota (Including Tesla)**

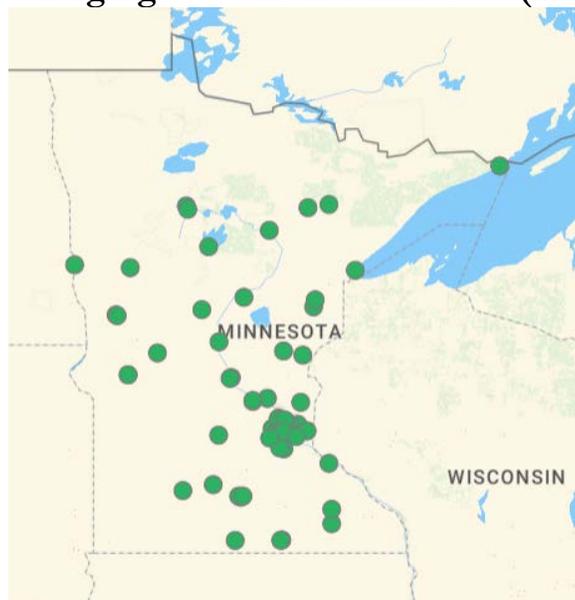


This number of available chargers and sites is not sufficient to adequately support Minnesota's current EV market, let alone stimulate further growth. And Figure 2 depicts the most optimistic view of Minnesota's public charging landscape. When level 2 ports—which are not fast enough to conveniently serve the needs for long-distance trips—and Tesla's proprietary stations are removed, the public charging landscape in Minnesota is quite sparse. The 92 available ports at 56 locations leaves many portions of the state unserved. And the areas that are “served” have only a handful of ports at most. Furthermore, not all of these stations are networked, which can make it more difficult for operators to detect problems and can impede drivers' experience finding and using the stations. This is not a sufficient network to meet the charging needs of today, let alone of 2026 or 2030.

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<sup>24</sup> Data from the Alternative Fuels Data Center, U.S. Department of Energy, accessed July 5, 2022. [https://afdc.energy.gov/fuels/electricity\\_stations.html](https://afdc.energy.gov/fuels/electricity_stations.html). (Accessed July 5, 2022)

**Figure 3:  
Public DCFC Charging Stations in Minnesota (Excluding Tesla)**



To better understand the public charging infrastructure necessary to support the state’s 2030 goal and provide needed context for the Company’s plan, the Company sponsored an analysis with Guidehouse. That analysis concluded that Minnesota needs approximately 8,300 public fast charging ports statewide and about 5,100 in the Company’s service area by 2030 to support the state targets. *This means today we have only about 1 percent of the needed public ports and less than eight years to fill the gap.*<sup>25</sup> *On average, it takes between 6-18 months to site and build a public DCFC station and with supply chain interruptions it could take longer.*<sup>26</sup> Unfortunately, current numbers and rates of installation are far below what is needed to meet the driving and charging demands of EVs if the state is going to achieve its target.

A further CBA analysis by E3 demonstrates that EVs adopted over the coming decade offer significant and persistent net benefits for drivers, for electric customers in general, and for the State of Minnesota. Managed charging, in particular, helps to maximize the benefits and minimize the costs from EV adoption for EV drivers and society by encouraging charging during low-cost times. Even with the costs of

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<sup>25</sup> On a MW-capacity basis, Guidehouse concluded that roughly 2,020 MW of public charging capacity is needed to support the State’s goal for LDVs and for an increase in MDV/HDVs as contemplated in the REV Midwest agreement, including the roughly 30 MW of public charging capacity that exists today across Minnesota. When looking more narrowly at the Company’s service area, Guidehouse found that roughly 1,234 MW of public charging capacity is needed in 2030.

<sup>26</sup> Based on Xcel Energy’s experience supporting public charging installations across several states.

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significant investments in public charging infrastructure as proposed in the plan, the net benefits of transportation electrification continue to remain positive. Furthermore, there are benefits to society from investments that expand access to public charging options where none exist. Increasing access to public fast charging services can boost EV adoption for all Minnesotans, including those without dedicated home charging.

Our plan is designed to accelerate EV adoption by addressing market barriers to capture the broad benefits from EVs and help achieve the state's goals. When drivers can depend on a convenient network of charging stations it reduces their "range anxiety." Countless surveys have documented the market barrier of range anxiety as a top concern of car shoppers when considering an EV purchase.<sup>27</sup> Fortunately, research has demonstrated that access to public EV charging can not only increase EV adoption but is one of the more effective ways of doing so, in addition to policies and programs that reduce the upfront cost of EVs and help increase awareness of the benefits of EVs.<sup>28</sup>

## **B. Program Budget**

Table 3 below shows the budget for the plan's public charging network. Descriptions of the items included in this budget are listed below. The budget and charger estimates included in this filing are based on the site design concepts noted above, and the expected site type installations across the service territory. Actual charger installations and site layouts will vary. They will be based on customer demand and space availability, meaning the site type, charger mix and the ratio of site make ready to hardware costs are expected to vary from the assumptions used to establish this budget.

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<sup>27</sup> See attachments J, K and L for Public Charging Perception Research conducted by the Company as well as surveys from PlugIn America and Consumer Reports.

<sup>28</sup> See Li et al, "The Market for Electric Vehicles: Indirect Network Effects and Policy Design," Journal of the Association of Environmental and Resource Economists, March 2017; Clinton, Bentley C and Daniel C. Steinberg, "Providing the Spark: Impact of financial incentives on battery electric vehicle adoption." Journal of Environmental Economics and Management, November 2019; Scott et al, "The effectiveness of financial purchase incentives for battery electric vehicles – A review of the evidence," Renewable and Sustainable Energy Reviews, 2017.

**Table 3**  
**Public Charging Network Budget**  
**(\$ in Millions)<sup>29</sup>**

	2023	2024	2025	2026
<b><u>O&amp;M</u></b>				
Education and Awareness	\$0.0	\$0.2	\$0.2	\$0.2
Infrastructure Maintenance	\$0.0	\$1.2	\$4.4	\$10.8
Program Administration	\$0.9	\$1.3	\$1.3	\$1.4
Other, Insurance, Property Tax	\$0.0	\$0.3	\$1.1	\$3.2
Information Technology (IT)	\$0.0	\$0.3	\$0.2	\$0.2
<b>Total Annual O&amp;M Expense</b>	<b>\$0.9</b>	<b>\$3.2</b>	<b>\$7.1</b>	<b>\$15.7</b>
<b><u>Capital</u></b>				
EVSE	\$1.2	\$9.1	\$30.7	\$73.8
EVSI	\$1.0	\$3.6	\$12.5	\$30.4
IT	\$0.1	\$2.6	\$1.5	\$1.6
<b>Total Annual Capital</b>	<b>\$2.3</b>	<b>\$15.3</b>	<b>\$44.7</b>	<b>\$105.8</b>

1. **Capital**

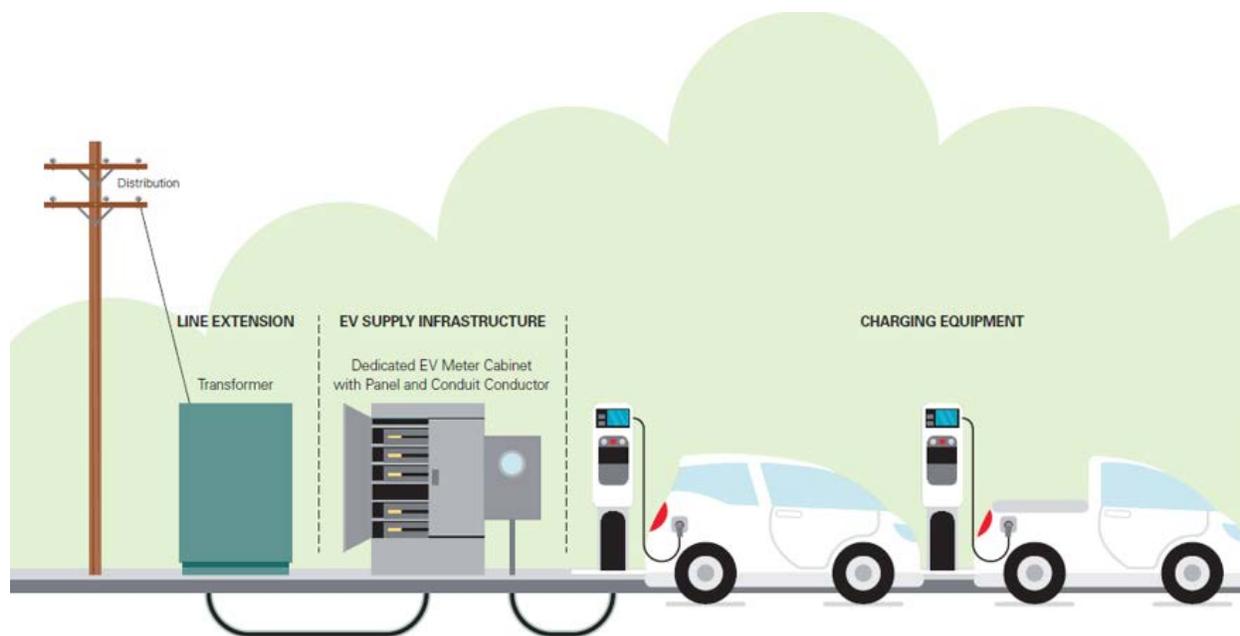
**Site Make Ready and EV Supply Infrastructure (EVSI):** Through this program, the Company will be building, owning and operating all elements of the fast-charging hubs including all EVSI equipment and other site make ready costs. The EVSI equipment installed through this program will follow the same guidelines and specifications outlined in the Commercial section of this document below. All costs included in this budget are for equipment installed beyond the traditional point of connection. Any upgrades that are required to the Company’s system, such as transformer upgrades, pads, poles, new service conductors and metering will be executed by the Company under existing service policies. Additional site design and make-ready costs will include any civil design work necessary to install the stations, easement payments paid to the site hosts and other construction related expenses. Figure 4 below shows EVSI in relation to other equipment for an EV charging installation.

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<sup>29</sup> Table may not sum to totals due to rounding

Figure 4.

Illustrative EV Charging Installation Components



**Charging Equipment, also known as EV Supply Equipment (EVSE):** All charging equipment, including associated equipment, will be procured through the applicable equipment provider selected through an RFP process. This program will focus on delivering DC fast chargers at or exceeding 150kW in charging capacity, in the form of charging hubs. The Company will also have the ability to procure and deploy lower capacity chargers through the plan, including level 2 charging, to accommodate customer needs as necessary. The vast majority of charger investment will be made in fast chargers (anticipated to range between 150kW and 350kW) to accommodate the Company’s preferred site designs. The Company anticipates focusing level 2 charging on sites and site hosts that support specific equity objectives.<sup>30</sup>

**IT:** IT spending will fall both within capital and O&M categories. Capital IT budgets will include the buildout of customer enrollment portals, charger management

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<sup>30</sup> Examples of projects that may include Company-owned Level 2 charging infrastructure as part of the Company owned public charging network include projects associated with the Twin Cities Spot Network, projects associated with the Inter-Tribal EV Charging Network, and other projects that achieve specific equity objectives.

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software, customer facing tools, billing integrations and other software tools necessary to implement the program as filed.

**2. O&M**

**Education and Awareness:** The Company will work with communities and commercial customers to identify site hosts for Company-owned charging hubs. Ideal site hosts will be public or private entities or other landowners, including local governments, with multiple locations across the Company's service territories and communities in areas with an identified charging need. All chargers installed will be branded with Xcel Energy materials and signage to clearly identify them as Company owned. Through partnership with a charging network provider, all Company-owned fast charging stations will be identifiable through the network provider's mobile application.

**Infrastructure Maintenance:** For the public charging offering, the Company will install, operate, and maintain (via a vendor partner) the fast-charging equipment as well as all EVSI equipment. All equipment will be maintained by the Company's vendor partners.

Charging station downtime is a significant issue with public charging currently. To combat this, the Company will sign a service level agreement (SLA) with a charging station network and O&M provider to guarantee system uptime meets Company and customer expectations. The charging network provider's mobile application will allow drivers to locate charging stations and pay for charging sessions.

**Program Administration:** Program administration includes program labor costs, supplemental marketing materials, IT costs and other analysis associated with siting and land acquisition. Siting and installing fast charging hubs with capacities exceeding 1MW generally requires extensive planning and coordination between program staff, the Company's distribution planning and design team, land rights, account, and area management among other groups.

A vendor will be selected to provide siting analysis, including identifying ideal locations for public charging based on expected EV traffic and existing infrastructure. This will inform site host outreach planning, system planning and potential partnership opportunities.

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**Insurance:** The Company will be responsible for insurance payments associated with the hubs. These payments will vary by site depending on the contractual agreement put in place with the site host and the actual equipment installed.

**C. Vehicle and Charging Infrastructure Forecast Analysis**

To determine the number of EVs on the road that would be necessary for Minnesota to achieve its stated 2030 LDV electrification goal and to make headway into electrifying the MDV/HDV sector as well, the Company worked with Guidehouse. This analysis showed that increasing the number of electric LDVs on the road to 20 percent of the market statewide requires a significant and persistent increase in EV adoption each year leading up to 2030 along with all the associated infrastructure to support and further expedite that adoption. For Minnesota to achieve its goal of 20 percent electric LDV market share by 2030, Guidehouse forecasts a need for even higher EV adoption among the Company's customers than the rest of the state on average, due to the more urban and densely populated nature of the Company's electric service area compared to other parts of the state.

For MDVs and HDVs, Guidehouse's 2030 target scenario forecasts increasing adoption for MDVs and HDVs, but at lower levels of market share compared to LDVs. This lower adoption is due primarily to projected limitations on vehicle availability, even through 2030. Even with this assumed limited vehicle availability, it is important to plan for the increase in vehicle availability that will occur, for two primary reasons. First, material lead times are required to properly build the charging infrastructure to support larger vehicles - the state should work toward a plan for this critical infrastructure. Second, building the infrastructure can help incent faster adoption of EVs. Moreover, Minnesota and other Midwestern states have committed to increasing MDV and HDV adoption through the REV Midwest MOU. The Company's proposal supports this goal by planning for a portion of its public charging installations to support MDV and HDV charging needs.

Table 4 below shows the breakdown of LDVs, MDV, and HDVs in the Company's service area by year that are expected if Minnesota is to achieve its 2030 target. Table 4 also includes an EV forecast developed internally by the Company. This Midcase forecast (or status quo scenario without new Company programs and aggressive actions industry wide) for LDVs differs significantly from Guidehouse's Minnesota

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2030 Target Scenario<sup>31</sup>, as it assumes EV adoption continues to grow at a slower pace without additional support, policies, and programs that advance progress toward the state targets.<sup>32</sup> For medium- and heavy-duty vehicles, both forecasts represent more of a business-as-usual case and any differences stem from differences in the modeling approaches.

**Table 4  
Electric Vehicle Forecasts for the Company’s Service Area**

Scenario/Vehicles	2022	2026	2030
<b>MN 2030 Target Scenario</b>			
Electric LDVs	24,039	274,017	794,126
%	1%	10%	25%
Electric MDVs	26	519	1,845
%	0%	1%	2%
Electric HDVs	3	223	1,214
%	0%	0%	2%
<b>Status Quo (2021 Forecast)</b>			
Electric LDVs	24,110	62,146	141,775
%	1%	2%	5%
Electric MDVs	0	535	2,036
%	0%	0%	1%
Electric HDVs	18	370	1,714
%	0%	0%	1%

The gap between the two scenarios is evident and it suggests that the Company’s service area will be more than 650,000 electric LDVs short of its share of the State’s adoption goal by 2030 under a business-as-usual case. This underscores both the challenge of the task at hand and also the opportunities to realize the benefits from EVs by achieving the state’s goal.

After establishing these vehicle forecasts, the Company and Guidehouse worked to develop charging infrastructure forecasts to have a better understanding of the home, workplace, fleet, and public charging infrastructure required to support the forecasted number of EVs. Similar to the EV forecasts, Guidehouse forecasts that to achieve the state’s goals, the charging infrastructure necessary to serve an increasing number of EVs will exponentially increase over the coming decade. Table 5 below provides a

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<sup>31</sup> Guidehouse’s model uses a variety of inputs including forecasted fuel prices (for both gasoline powered and electricity), battery pack prices, EV availability, consumer awareness and customer preference. Details regarding Guidehouse’s modeling and siting methodology can be found at Attachment G.

<sup>32</sup> The Midcase noted in this filing is the Midcase from the Company’s 2021 EV forecast, which is the same as what was included in the IDP in November 2021.

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summary of the public charging infrastructure needs stemming from Guidehouse’s MN 2030 Target scenario. Importantly, the power capacities of public charging stations are also expected to increase over the coming decade in addition to the number of ports – both factors which will stimulate rapid growth in the total charging infrastructure capacity (in MWs) needed to support the State’s EV goal.

**Table 5  
Public Charging Infrastructure Need Forecasts for the Company’s Service Area**

Scenario/Market Segment	2022	2026	2030
<b>MN 2030 Target Scenario</b>			
Level 2 Charging (MW Capacity)	10	120	419
Level 2 Charging (Ports)	1,326	9,677	25,554
DCFC Charging (MW Capacity)	16	324	1,234
DCFC Charging (Ports)	222	1,942	5,065
<b>Status Quo Scenario<sup>33</sup></b>			
Level 2 Charging (MW Capacity)	10	27	75
Level 2 Charging (Ports)	1,329	2,195	4,562
DCFC Charging (MW Capacity)	16	74	225
DCFC Charging (Ports)	223	446	925

It is critical to underscore the vital role that access to public fast charging will play in unlocking EV adoption beyond those who live in single-family households with access to charging in their garages or driveways. Guidehouse’s adoption forecasts, and the infrastructure investments needed to support the charging of EVs in those forecasts, include an expectation that EV adoption increases with drivers who live in multi-dwelling buildings, those who rely on parking on public streets, and into the second and third cars when households have more than one vehicle.

In conclusion, relying on EVs to fulfill an increasing amount of consumer driving needs will require markedly larger investments in public charging on a per vehicle basis than what the market has seen to date. However, the market has shown that this will not simply happen on its own– it will require concerted effort and coordination among policymakers, electric service providers, vehicle and charging equipment manufacturers, site hosts, and other stakeholders to make a robust public charging network a reality. The plan provides a cost effective and accessible way of significantly helping to significantly address this gap. The investment and expected build out proposed in this plan of about 1,470 ports of public charging will address about 45 percent of the total forecasted public fast charging port need within Minnesota in

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<sup>33</sup> Estimated by the Company based on Guidehouse forecasts for the Company’s service area under the MN 2030 Target Scenario, adjusted down to the Midcase scenario based on the relative forecasts of EVs.

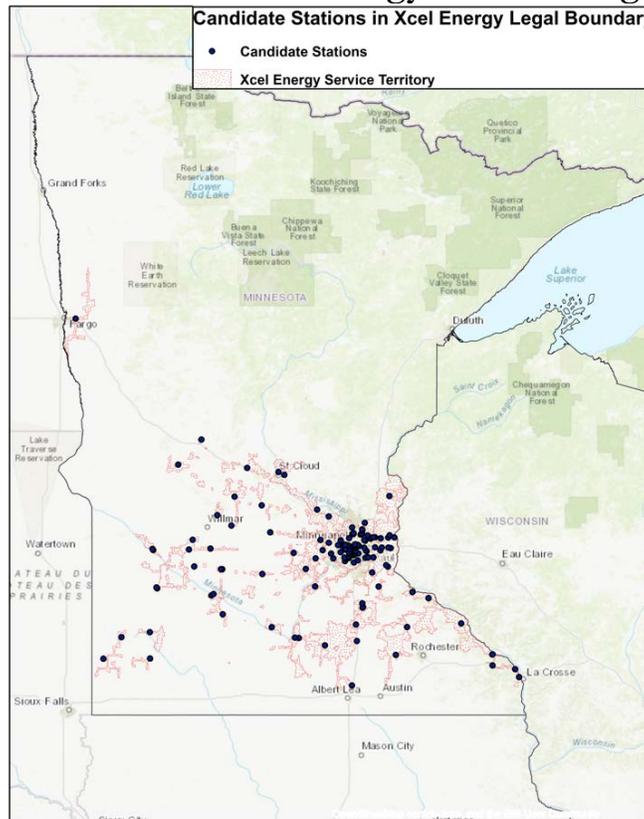
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2026 and about 18 percent of the forecasted need for public fast charging ports in 2030.<sup>34</sup>

**D. Siting Analysis**

As Figure 5 below shows, the Company’s proposal would provide a robust charging network throughout the Twin Cities region and southern Minnesota, as well as along the I-94 corridor. The map shows the distribution of potential charging hubs across the Company’s service area, including a more notable concentration within the Twin Cities metro area. We believe that this plan, in coordination with the state’s efforts to develop a charging network utilizing federal and other sources of funding, can provide a catalyst for EV growth, which can then spur further charging market growth. Research has found that a 10 percent increase in the number of public charging stations can increase the rate of EV adoption by a similar percentage. The E3 cost-benefit analysis, discussed in the subsection below, quantified this effect.

**Figure 5  
Suitable Locations for Xcel Energy Public Charging Hubs**



<sup>34</sup> Based on forecasted needs for DCFC public charging ports under the Target 2030 scenario.

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To identify locations within the electric service area that are well suited to support public fast charging, the Company sponsored a siting analysis with Guidehouse. The siting analysis is the third step in Guidehouse's process. The analysis relies on the vehicle and charger forecasts as well as federal data regarding traffic volumes for roads, highways, and interstates, existing charger locations, and vehicle miles traveled to determine where charging hubs spread across the service area could best support public fast charging. This includes rural areas to create sufficient geographic coverage to enable intercommunity travel as well as more urban areas to ensure there is sufficient access for those who may not have access to home or workplace charging.

Ultimately, the exact hub sites the Company would develop will depend on a variety of factors (e.g., land availability, site host interest in the program, etc.) Thus, the final sites that the Company would develop will likely differ from the specific site locations shown here, though the Company expects the general distribution to remain similar – with broad geographic coverage, a focus on major corridors, and a concentration of sites in the metro area. While the Company's previous public charging proposal, approved by the Commission in Docket No. E002/M-20-745, was designed as a small first step and focused only on rural areas, this more comprehensive approach is needed to foster a more rapid adoption of EVs and ensure the Company's charging hubs are adequately meeting the public charging needs in our service territory by 2030. The Company has begun conducting targeted outreach to potential site hosts and communities to discuss how to achieve these goals.

### **E. Cost Benefit Analysis**

As stated previously, the Company worked with E3 to refresh its past analysis<sup>35</sup> on the benefits that transportation electrification in the Company's service area offers to EV drivers, electric customers in general, and to Minnesota. In doing so, E3 also analyzed how the net benefits of EV adoption could change in light of the investments the Company is proposing in this petition to expand access to public fast charging.

*E3's analysis showed that the Company's public charging proposal would lead to positive net benefits – for EV drivers, electricity customers, and state residents.* While the net benefits for the public charging program under the ratepayer test is below those estimated in the reference case for transportation electrification, the Company's investments would provide widespread access to public charging, help significantly increase EV adoption,

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<sup>35</sup> The Company provided a cost benefit analysis on transportation electrification from E3 as part of its EV proposals within the Relief and Recovery petition, Docket No. E002/M-20-745. Initial version filed January 11, 2021 with an update submitted on August 6, 2021.

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and importantly help the state establish the infrastructure necessary to support electrifying 20 percent of vehicles on the road by 2030. In fact, E3 estimates that the Company’s public charging proposal could increase personal and commercial LDV sales by nearly 30 percent annually by 2027 following the investments made in 2024-2026. That corresponds to roughly 50,000 additional LDVs on Minnesota roads. By 2030, these investments could lead to more than 110,000 LDVs on the road. This stems from the fact that research has shown that increased access to public charging stations is associated with faster EV adoption<sup>36</sup>, which likely stems from the reduction in range anxiety and making EV adoption more feasible for more people. Table 6 below provides an overview of the net benefits in the analysis as they pertain to public fast charging.

**Table 6  
Public Charging Program Cost-Benefit Analysis Results from E3<sup>37</sup>  
(\$ in Millions, Lifetime Benefits of All EVs Adopted over 2022-2030 Period)**

<b>Managed Charging in All Scenarios</b>	<b>Participant Cost Test (PCT)</b>	<b>Ratepayer Impact Test (RIM)</b>	<b>Societal Cost Test (SCT)</b>
Personal LDVs (Reference Case <sup>38</sup> )	\$1,033	\$342	\$1,002
Incremental Impact of Public Charging Proposal (Personal LDVs <sup>39</sup> )	\$270	\$-193	\$36
<b>Net Result (Public Charging Proposal, Personal LDVs)</b>	<b>\$1,303</b>	<b>\$149</b>	<b>\$1,038</b>
Commercial LDVs (Reference Case)	\$184	\$8	\$742
Incremental Impact of Public Charging Proposal (Commercial LDVs)	\$82	\$7	\$124
<b>Net Result (Public Charging Proposal, Commercial LDVs)</b>	<b>\$266</b>	<b>\$15</b>	<b>\$866</b>

<sup>36</sup> See Attachment D for E3 results and full cost-benefit report, including a discussion of induced EV adoption effects.

<sup>37</sup> See Attachment D for E3 results and full cost-benefit report.

<sup>38</sup> The reference case analyzes the net benefits of transportation electrification without the effects of the programs included in this petition, including the effects on EV adoption. The managed charging case assumes all vehicles in the Company’s service area are on a time-varying electric rate.

<sup>39</sup> The public charging scenario incorporates the impacts of the Company’s proposal to expand the public charging network in its service area, which will provide access to charging for both personal and commercial vehicles.

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Some of the key finding from E3’s analysis regarding the public charging proposal include:

- The proposed public charging program results in higher net benefits under two out of the three cost tests for personal LDVs (i.e., for EV drivers and for society as a whole) and higher net benefits under all three cost tests for commercial LDVs. For personal and commercial EV drivers, net benefits arise from the proposal as a result of increased access to affordable public fast charging. This, in turn, helps unlock higher EV adoption and thus fuel and maintenance savings to drivers. From a societal perspective, net benefits rise not only from the fuel and maintenance savings but also from larger emissions savings. An increase of about 15 percent in the number of personal and commercial electric LDVs on the road as a result of the public charging investments helps produce this increase in net benefits for drivers and for society.
- For electricity customers, increased access to public charging helps increase the efficiency of the grid but also creates additional electricity supply costs. When combined with the costs of the program, net benefits decline for personal LDVs but are still very positive.

**F. OAG Three-Part Assessment**

In its February 1, 2019 Order, the Commission found that a three-step process for evaluating utility investments in public charging infrastructure, originally proposed by the Minnesota Office of the Attorney General (OAG), should be incorporated when seeking approval of investments. In compliance with that Commission guidance, the Company here presents information that follows the OAG’s three-step process.

**1. Step One – Expected Number of EVs in state of Minnesota**

As discussed previously in the subsection titled “Vehicle and Charging Infrastructure Forecasts and Targets,” the Company provides an overview of Guidehouse and Xcel Energy vehicle forecasts underpinning this filing, specific to the Company’s service area. Similar trends also apply for the State of Minnesota as a whole. Table 7 below presents LDV adoption forecasts statewide. Note that this differs from Table 4 presented in the subsection “Vehicle and Charging Infrastructure Forecasts and Targets” as that represents adoption forecasts only within the Company’s service territory.

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**Table 7  
EV Adoption Forecasts for the State of Minnesota  
(# of Vehicles)**

	2022	2026	2030
<b>MN 2030 Target Scenario</b>			
LDV	34,380	422,985	1,276,755
MDV	64	1,274	4,536
HDV	40	720	3,439
<b>Status Quo Scenario (2021 Forecast)</b>			
LDV	28,551	84,318	228,652
MDV	1	707	2,696
HDV	24	520	2,420

**2. Step Two – Level of Charging Infrastructure Needed to Support Expected EVs**

As discussed previously, the Company provides an overview of vehicle forecasts underpinning this filing, specific to the Company’s service area. Table 8 below shows the statewide charging infrastructure needs.

**Table 8  
Public Charging Infrastructure Forecasts for the State of Minnesota**

Scenario/Market Segment	2022	2026	2030
<b>MN 2030 Target Scenario</b>			
Level 2 Charging (MW Capacity)	13	184	839
Level 2 Charging (Ports)	1,794	14,863	41,422
DCFC Charging (MW Capacity)	31	547	2,020
DCFC Charging (Ports)	425	3,275	8,294
<b>Status Quo Scenario (2021 Forecast)<sup>40</sup></b>			
Level 2 Charging (MW Capacity)	11	37	122
Level 2 Charging (# of Ports)	1,490	2,963	7,418
DCFC Charging (MW Capacity)	25	109	362
DCFC Charging (# of Ports)	353	653	1,485

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<sup>40</sup> Based on adjustment to the Guidehouse charging infrastructure forecast that is proportional to the number of EVs in each forecast.

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**3. Step Three – Assessment of the Competitive Market for Charging Infrastructure**

Currently, public fast charging is significantly behind where it needs to be *today – with ports in Minnesota lagging between roughly 60 to 80 percent of what is needed.*<sup>41</sup> As discussed previously and shown graphically in the introduction, this challenge grows exponentially as EV adoption accelerates. At the end of 2021 there were approximately 228 fast charging ports available in Minnesota, including 146 ports in Tesla’s proprietary network, and those ports counts have not meaningfully grown in 2022. According to Guidehouse’s estimates, the roughly 34,000 EVs on Minnesota roads in 2022 require approximately 425 public fast charging ports to support their charging needs. And it is not just Guidehouse’s estimates that show Minnesota falling behind. According to the Department of Energy’s Electric Vehicle Infrastructure Projection (EVI-Pro) Lite tool, the roughly 34,000 EVs anticipated to be on the road in Minnesota this year should have more than 380 public fast charging ports available throughout the state.

To further underscore the extent of the infrastructure challenge and state of the market today, the largest national charging companies have been largely absent from the state. One such company, EVgo, currently has no fast charging stations in Minnesota, while Electrify America operates just two fast charging sites in the state that host about 12 total charging ports.<sup>42</sup> In short, the market for public, non-proprietary fast charging in Minnesota has failed to keep up.

Coordinated utility and government support in the near term can stimulate the public charging market in Minnesota to grow at the rate necessary to meet the expected charging demand needed to achieve Minnesota’s vehicle electrification goals. Further, the nature of public charging means that some locations will likely see material increases in utilization over time while others are likely to be utilized less frequently due to their proximity to less densely populated areas and lower utilized transportation corridors. These lower utilization locations, however, are essential to a complete, convenient, reliable charging network that can meet the needs of EV drivers today and into the future. Current market trends suggest the competitive

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<sup>41</sup> Based on the Department of Energy’s EVI-Pro Lite tool, using the assumptions that partial charging support is provided to PHEVs and 75 percent of drivers have access to home charging. *See* <https://afdc.energy.gov/evi-pro-lite> (Accessed June 30, 2022); and Guidehouse estimates.

<sup>42</sup> EVgo, “Find a Charger,” <https://www.evgo.com/find-a-charger/> (Accessed June 17, 2022); Electrify America, “Locate a Charger,” <https://www.electrifyamerica.com/locate-charger/> (Accessed July 25, 2022).

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market for private charging infrastructure will not address these public charging gaps.<sup>43</sup>

EV adoption is both a catalyst and a result of an increase in public charging infrastructure. Prospective EV drivers often cite the lack of availability of public charging as a barrier to purchasing an EV.<sup>44</sup> Research has shown that an increase in public charging availability in a given location increases the rate of EV adoption.<sup>45</sup> Estimates on this impact vary, but it is a widely accepted phenomena that investments in public charging infrastructure – and the resulting driver familiarity with this infrastructure, the reduction in range anxiety, and the enablement of EV adoption for those without home charging – can lead to an increase in EV adoption. Based on this correlation and the current state of public charging availability, significant early investment is necessary to drive adoption and meet Minnesota’s vehicle electrification goals. To electrify 20 percent of LDVs by 2030 and to support increasing MDV and HDV electrification, public charging investment must take place *before* profitable levels of public charging utilization exist.

The Company’s proposed investment will fill gaps in the public charging landscape to help accelerate EV adoption in the short, medium, and long term. By meeting the short-term public charging needs of the State’s EV adoption goals, the Company’s public charging investment will catalyze a more robust competitive market in the future by helping to increase EV adoption and accelerating public charging utilization rates.

**G. Federal Infrastructure, Investment, and Jobs Act (IIJA), VW Settlement, and Other Sources of Funds**

While this is an encouraging time for infrastructure development, with new funding opportunities spurring state planning, these opportunities will facilitate some but not all the growth needed to achieve public goals. The EV forecasts underlying the state’s electric LDV goal require significant increases in EV adoption year over year and substantial infrastructure investments to charge these cars – as noted below, it could

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<sup>43</sup> For instance, GM, Pilot Company, and EVgo recently announced an effort to build 2,000 charging stalls at up to 500 travel centers across the country (see <https://news.gm.com/newsroom.detail.html/Pages/news/us/en/2022/jul/0714-gmpilot.html>). While these and other efforts appear focused on high-travel highway corridors, the state of Minnesota alone will see a need for similar investments and there is a need for fast charging beyond highway corridors.

<sup>44</sup> See attachments J, K, and L for internal customer research conducted by the Company as well as surveys from PlugIn America and Consumer Reports

<sup>45</sup> See attachment D for E3 cost-benefit study

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be upwards of \$1.6 billion required in Minnesota by 2030. Our plan, representing only a portion of this need, is designed to complement the state's plans and to foster continued partnership with the state and others to create an efficient and rapid build out of charging infrastructure.

A coordinated approach is essential among electric utilities, state and federal agencies administering IIJA funds, VW Settlement funds, or other new or existing sources of public funding to support charging infrastructure development; private companies offering charging hardware and software solutions; non-profits helping to raise awareness and advocate for charging infrastructure; and other interested consumer and industry groups. Strong coordination helps ensure that there is widespread and equitable access to public fast charging – which is a key component to enabling widespread EV adoption for the benefit of all.

The Company has been coordinating with the Minnesota Department of Transportation (MNDOT) on MNDOT's development of the state's IIJA National Electric Vehicle Infrastructure (NEVI) formula grant program plan, due to be submitted on or before August 1, 2022, as well as considering the placement of the Company's 21 public fast charging stations that the Commission recently approved.<sup>46</sup>

Critically important, however, is the fact that although currently announced public funding for charging infrastructure will stimulate the buildout of a partial public charging network, it is not sufficient to put the State on a path toward creating a network to meet its vehicle electrification goals. The State is slated to receive about \$68 million over a five-year period as a result of the IIJA NEVI program (anticipated to be administered by MNDOT) and has received about \$45 million from the VW Settlement funds (administered by the Minnesota Pollution Control Agency), although not all of that funding has or will be directed toward public fast charging infrastructure. In contrast, the Company projects a market need of about 547 MW in total public fast charging capacity in 2026 and 2,020 MW in 2030 in the state of Minnesota. Making reasonable assumptions regarding the capacity of charging stations and number of ports per site<sup>47</sup>, the Company estimates that this could require upwards of \$425 million in incremental investment statewide by 2026 and \$1.6 billion by 2030, on top of the investments to date that have installed roughly 34 MW of public fast charging capacity in Minnesota. These values are included in Table 9 below. While the Company's service area does not represent the entire State's public charging need, our electric service area comprises some of the most populated areas

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<sup>46</sup> See Docket No. E002/M-20-745.

<sup>47</sup> Assumed \$825,000 per installed MW of charging based on market research and site design assumptions.

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of the state where early EV adoption and the equity considerations associated with EV adoption will be pronounced.

**Table 9  
Minnesota Public Fast Charging and Investment Needs**

	<b>2026</b>	<b>2030</b>
Statewide Public Fast Charging Need (Ports)	3,275	8,294
Statewide Public Fast Charging Need (MW Capacity) <sup>48</sup>	547 MW	2,020 MW
Statewide Incremental Public Fast Charging Investment Need	~\$425 million	~\$1.6 billion

The primary source of federal transportation funding for public charging infrastructure is the IIJA NEVI program, which provides funding to be deployed almost entirely through allocations to individual states. The NEVI program establishes minimum requirements for the buildout of public EV fast charging along designated Alternative Fuel Corridors (AFCs). States are required to submit plans by August 1, 2022 regarding how they will use their allocation under the NEVI program and are required to use that funding to first satisfy the minimum requirements for AFCs before using their NEVI funding to support public EV charging along roads other than AFCs. Minnesota currently has two designated AFCs – highways I-94 and I-35, both of which are located in part in the Company’s service territory. MN DOT has been conducting significant stakeholder engagement leading up to submission of its IIJA NEVI plan to the federal government, including identification of additional major travel corridors that could, in combination with AFCs, establish a minimum viable fast charger network throughout the state of Minnesota. We commend MN DOT for its leadership and are excited to support the buildout of this baseline public charging corridor network in the years to come.

The second source of federal transportation funding meant to complement the NEVI funds is a \$2.5 billion nationally competitive grant program that can support the adoption and use of alternative fuels, including but not limited to electricity. This competitive funding has the potential to fund EV charging in communities and along

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<sup>48</sup> Based on Guidehouse estimates for the state under the Minnesota 2030 Target Scenario.

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corridors other than AFCs, however, the details about the administration of these funds are not yet known.

We will pursue this funding when it aligns with project needs, where we are an eligible applicant and where we see an opportunity to submit a compelling, competitive proposal. We will also look for opportunities to support our customers' efforts to develop projects that will be competitive to receive federal funding.<sup>49</sup> Our proposal in this Petition is designed to complement the efforts of many others, including MN DOT, to support public EV charging in Minnesota.

### **H. Pricing at Xcel Energy Public Charging Stations**

Similar to the pricing that the Commission recently approved for our 21 DCFC pilot, the Company proposes to again use a three-period, time-varying rate structure for an expanded network of public fast charging stations. However, the Company proposes to update the specific pricing levels to reflect more current information about market pricing for fast charging in Minnesota.<sup>50</sup> We also propose to offer lower time-varying prices for public charging users who are our residential and business customers and who apply for these optional rates through an online/digital application.

This two-tiered pricing structure accomplishes various objectives. First, it recognizes that our electric customers are paying for these infrastructure investments. Second, it will incentivize our customers to adopt EVs. Third, the time-of-use (TOU) pricing structure at the sites promotes efficient use of the grid. Specifically, customers who enroll through the online or mobile application and are verified as our customers would pay a rate for DCFC charging that is equivalent to our rate for residential EV home service. We will use this enrollment process to inform customers about our residential and business charging programs. In this way, the lower prices available to our customers provides an opportunity for the Company to educate customers about the managed charging programs and rates we offer, and an incentive for them to "self identify" as EV drivers, making it easier for the Company to increase the percentage of EV customers who participate in our managed-charging programs. We believe this approach will:

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<sup>49</sup> We encourage our customers to use Xcel Energy programs to the greatest extent possible to maximize the impact of federal funding for EV infrastructure. Further, we look forward to working closely with other industry partners including EVSE providers, automotive original equipment manufacturers (OEMs), and research partners to implement and test out solutions that will address our customers' public charging needs.

<sup>50</sup> See Docket No. E002/M-20-745. Order Approving Public Charging Station Proposal (April 27, 2022) at Page 10.

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- incentivize our customers to adopt EVs by providing convenient, affordable charging options throughout our service area;
- recognize that roughly 80 percent of charging still occurs at home<sup>51</sup>, the cost of using public charging plays an important role in a customer's decision to adopt an EV and more charging will occur outside of the home in the future;
- provide more equitable access to affordable charging for those that do not have access to home charging, such as multi-dwelling units that do not have parking, do not have sufficient parking, and/or have not yet participated in the Company's MDU charging pilot program, which will in turn support adoption; and
- align the rate structures available to our customers for charging an EV at home or their business with those available to our customers at Company public charging stations, which creates a standard, streamlined experience and avoids customer confusion around when charging is most beneficial for the grid.

This approach also responds to input from the Commission and the Department of Commerce asking the Company to find ways to increase adoption of TOU programs and rates for EVs. We share this desire and see our DCFC network as a powerful tool to leverage greater adoption of these programs and provide greater benefits.

Availability of the optional, lower charging rates would be limited to the Company's electric customers that enroll with the Company. As part of the enrollment process, we will promote our TOU rate options for home charging as well as our EV charging and optimization programs for those not already enrolled. We intend to offer these pricing options at all of our DCFC stations, including those previously approved by the Commission.<sup>52</sup>

Table 10 below shows the updated standard rates for our DCFC charging network.

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<sup>51</sup> National Renewable Energy Laboratory, [Incorporating Residential Smart Electric Vehicle Charging in Home Energy Management Systems](#) (April 2021).

<sup>52</sup> The Company proposes to also make this pricing effective in the Electric Station Public Charging Station Pilot, and has included redlines to the relevant tariff in this petition at Attachment F. The Company has served Docket No. E002/M-20-745, In the Matter of the Petition for Approval of Electric Vehicle Programs as Part of its COVID-19 Pandemic Economic Recovery Investments.

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**Table 10  
Proposed Standard DCFC Customer Charging Rates  
(per kWh and per electric gallon equivalent (egal))<sup>53</sup>**

	<b>June – September</b>	<b>Other Months</b>
On-Peak Period <sup>54</sup>	\$0.47827 / kWh	\$0.44517 / kWh
	\$4.05 / egal	\$3.75 / egal
Mid-Peak Period <sup>55</sup>	\$0.34264 / kWh	\$0.32766 / kWh
	\$2.90/ egal	\$2.75 / egal
Off-Peak Period <sup>56</sup>	\$0.28035 / kWh	
	\$2.35 / egal	

This three-period rate structure follows the design approved by the Commission for our 21 DCFC pilot. In that case, the Company’s DCFC rate applied a \$0.30 per kWh adder to our Residential Time of Use Pilot program.<sup>57</sup> We originally proposed this adder to ensure that our DCFC rates are comparable to those charged by other private station operators, and to encourage customers to maximize EV charging at their homes and businesses. The Company’s proposed standard DCFC rate roughly equates to an average price of \$3.05 per electric gallon equivalent.

We propose reducing the kWh adder from \$0.30 per kWh to \$0.25251 to better reflect market pricing in Minnesota. Our current market data indicates that pricing at third-party chargers averages about 36 cents per kWh, though most other station operators do not charge EV drivers rates that vary across times of the day.<sup>58</sup> While the use of a time varying approach to rates charged to drivers is not the norm for third-party providers, we recognize that as one of the foundational methods of managed charging, this aspect of our pricing approach continues to be of high interest to the Commission. The change to our adder is intended to reflect this market average so that our chargers remain comparably priced to the broader market for public fast charging in Minnesota.

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<sup>53</sup> Electric gallon calculations rounded to the nearest \$0.05, based on about 25 miles per gallon average fuel efficiency for internal combustion vehicles (per DOE data) and about 0.34 kWh per mile in average EV efficiency (per E3 data).

<sup>54</sup> 3:00 p.m. and 8:00 p.m. Monday through Friday, except for certain holidays.

<sup>55</sup> All hours not defined as on-peak or off-peak.

<sup>56</sup> Midnight (12:00 a.m.) until 6:00 a.m. every day.

<sup>57</sup> Rate Codes, A72, A74. The same rate applies to our Electric Vehicle Home Service tariff (Rate Codes A80 and A81).

<sup>58</sup> See Jamie Dunkley, David Trinko, and Emily Porter, “Public EV Charging Prices in the U.S.,” Electric Power Research Institute, September 15, 2021,

<https://www.epri.com/research/products/000000003002025260>.

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In proposing our initial DCFC pilot rate structure, we indicated we wanted to provide a strong price signal for EV owners to charge at their homes and businesses. In evaluating the options available to the Company to support large scale EV adoption, we have concluded that while it is important to send customers price signals to encourage the efficient use of the grid, supporting the transportation needs of our customers means also recognizing that it is not always possible for them to charge at their home or business. This disadvantages customers living in multi- dwelling units that do not have access to a charger at home. We believe that all of our residential customers (whether in a single family home or multi-dwelling unit) should receive the same price signals that our residential TOU rate structure provides, which strongly incentivizes charging overnight and provides a cost-based rate design appropriate for the Company’s customers. Under this rate structure, our customers will still be encouraged to do most charging at their homes and businesses, since the lowest charging cost is available at night, when a substantial portion of vehicles are most likely parked at home or in a fleet depot. Workpapers are provided in support of our proposed pricing at Attachment E.

Table 11 below shows the proposed optional rates for our DCFC charging network:

**Table 11  
Proposed Optional DCFC Customer Charging Rates  
(per kWh and per egal)**

	<b>June – September</b>	<b>Other Months</b>
On-Peak Period	\$0.22576 / kWh	\$0.19266 / kWh
	\$1.90 / egal	\$1.65 / egal
Mid-Peak Period	\$0.09013 / kWh	\$0.07515 / kWh
	\$0.75 / egal	\$0.65 / egal
Off-Peak Period	\$0.02784 / kWh	
	\$0.25 / egal	

The Company’s proposed optional DCFC rate roughly equates to a price of \$1.15 per electric gallon equivalent. These rates are equivalent to those offered under our Residential Time of Use Pilot and EV Home Service programs. These rates would be available to all of the Company’s Minnesota residential and commercial customers, who would need to enroll in this rate option. As part of the enrollment process, we will promote our TOU rate options for home charging as well as our EV charging and optimization programs.

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Since the cost of our DCFCs will be included in our rate base, our customers will contribute to the construction and maintenance of these facilities through their base rates, and we believe the optional pricing proposed here appropriately acknowledges that contribution. This two-tiered pricing structure allows us to offer pricing to our customers that maximizes the benefits of *all* EV charging on our system—i.e., home, business, and public.

The Company recognizes that the specific prices reflected here may need to change, since the DCFCs proposed will enter service from 2024 through 2026. The Company, therefore, asks for the opportunity to submit an updated tariff with refined pricing six months before our first DCFCs are placed into service. This is similar to the proposal recently made by Minnesota Power to address pricing at its DCFCs, which have been delayed due to industry-wide supply chain challenges.<sup>59</sup>

## **I. Operating Plans**

The Company will oversee all aspects of the operation of the charging stations from site host recruitment, site design, charging equipment and software vendor selection, associated infrastructure and equipment in front of and behind a new and dedicated meter, customer experience and billing at the charging station as well as operation and maintenance of the stations. Operating a reliable network of public fast charging stations will benefit from the Company's long experience and core expertise of building and managing large infrastructure projects to serve our customers. The below section outlines the Company's end-to-end operations plan for providing fast charging services.

### **1. Site Host Engagement and Recruitment**

The Company has defined three types of charging locations that it will prioritize in its charging network to serve a wide range of charging needs. The three site designs will include Destination Charging Hubs for fast charging at destinations such as retail or restaurants; Connector Charging Hubs to enable long distance travel for personal vehicles; and, Pull-Through Charging Hubs which will be designed to accommodate MDV and HDV charging along with LDV. Detailed descriptions of these charging location types are provided in Attachment H. With these site designs in mind, we will identify locations that are both capable of hosting the desired charging site types and meet a public charging need.

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<sup>59</sup> See Docket No. E015/M-21-257. Letter from Minnesota Power (June 29, 2022).

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The Company will approach potential site hosts whose facilities may align based on location, amenities, capacity availability and space availability among other factors. Site hosts will be expected to provide land access for construction and maintenance of the charging and EVSI equipment as well as ensure that the chargers are accessible 24 hours a day and seven days a week, the spaces are maintained and cleared of snow and debris and are used exclusively for EV charging and not general parking. In exchange, the site host will receive EV charging and supply infrastructure onsite at no cost to them.<sup>60</sup> Site hosts will not be billed for electricity use at the public charging stations and will not be responsible for routine maintenance or repairs.

Potential site hosts will apply for consideration of their sites. Site hosts will sign an agreement granting the Company rights to install, own and maintain the charging equipment and necessary supply infrastructure on their property.<sup>61</sup> These agreements and associated rights will typically last ten years to align with the anticipated useful life of a charging station with options for extensions and equipment replacement at the end of the contract. While we will attempt to standardize site design as much as possible, a flexible approach will be required. The Company will work with each site host to build out their locations, taking into account their preferences and any site-specific needs. Additional contracting and land acquisition strategies will be considered and utilized as needed to ensure that program goals are met and that charging stations are sited in locations beneficial to EV drivers.

## **2. Site Operations and Billing**

Each charging hub will receive its own dedicated meter to track demand and usage. The site host will not be responsible for electricity costs. EV drivers that use the charging stations will be charged a per kWh rate for the energy they consume, as outlined above. These revenues will be collected by the Company to offset program costs. Charger utilization and payment processing will be conducted through a platform provided by the EVSE software services provider.

The Company and its vendors will be responsible for maintenance and repairs of the EVSE and EVSI equipment, while the host will be responsible for ensuring that the EV charging parking spaces/areas are kept clear and used exclusively for EV

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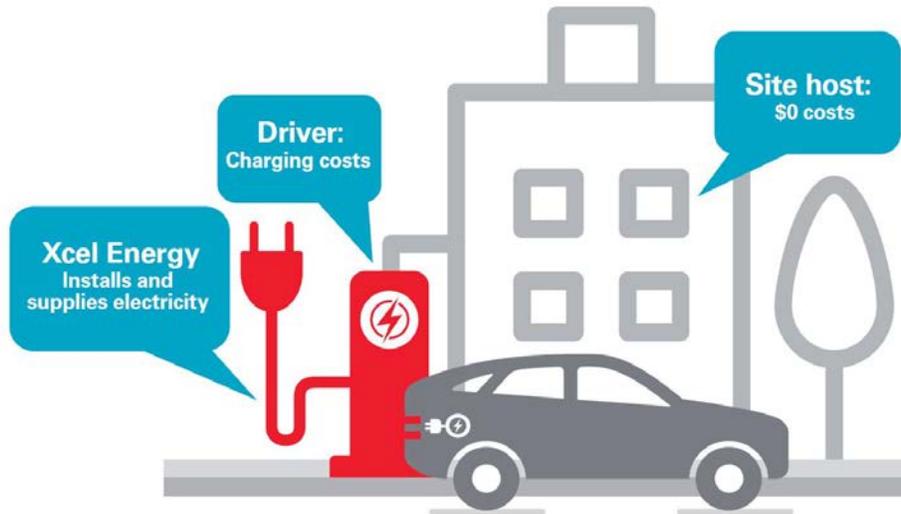
<sup>60</sup> The Company anticipates utilizing minimum requirements to qualify sites for hosting public charging, that may include features such as safety lighting and other locational features that may require investment on the part of the site host if the site does not already possess these characteristics.

<sup>61</sup> An easement is the currently anticipated form of land right, however, it is possible that other mechanisms may also be utilized. Our standard site host agreement was submitted as a compliance filing with the Commission on July 15, 2022 in Docket No. E002/M-20-745.

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charging. Preventative maintenance will take place according to a schedule agreed upon between the Company and its EVSE O&M provider.

**Figure 6  
Public Charging Billing**



### 3. Driver Experience

EV drivers will be able to locate fast charging sites through the EVSE software services provider's mobile application. Mobile application architecture and associated roaming agreements between the mobile application provider and other network providers will be determined based on the results of the RFP referenced above. The Company will build its platform to ensure that all EV drivers in its service territory will have efficient access to its charging network, regardless of whether this is through a vendor's platform and/or through a platform operated by the Company. All Company owned charging stations will be branded as such through charger wraps or other means that clearly identify them as Company owned stations. Highway signage and additional on-site signage will be implemented as appropriate, in conjunction with site hosts, and in accordance with state and local requirements in addition to those published by the Federal Highway Administration. It is critical that EV drivers are seamlessly directed to the Company's charging stations, both through digital and physical means, but also that these efforts are right-sized.

Once at the EV charging station, customers will have the option to pay via credit or debit card or through the mobile application. The Company conducted customer research to understand payment preferences among both EV drivers and prospective EV drivers in its service territory. Ease of payment and speed of charging were

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referenced by customers as the most important factors considered when making public charging decisions. Customers indicated that they strongly prefer to pay by the kilowatt-hour versus other options currently offered such as a monthly subscription fee or by the time spent at the charging station. The Company will structure its driver experience and associated vendor strategy based on this feedback and continued discussions with both drivers and site hosts. See Attachment K for the full survey results referenced.

The Company's electric retail customers will be eligible for lower rates for charging based on residential time-of-use rates at all Company stations as outlined in the Pricing section. The Company will validate an EV driver's eligibility for the optional charging rates through an internal customer validation process and then provide its EVSE software services provider with a list of eligible drivers. Once their eligibility is confirmed, drivers can access the optional charging rate by scanning a QR code or other validation method depending on the EVSE software provider's available payment methods. All drivers who are not residential or commercial electric retail customers of the Company will pay standard rates.

## **J. Reporting**

The Company will provide reporting on a variety of metrics for stations across its charging network, primarily around utilization, charging revenues and charger uptime. The Company's EVSE software services provider will provide the Company with monitoring software that will allow program staff to track these metrics in real time. A dedicated meter at each charging hub will be installed to track billable demand and usage. Usage will also be tracked at the charger level to charge drivers based on the energy consumed.

Charger level usage will support the Company's efforts to analyze and understand EV driver charging behaviors. The Company's monitoring software will track unique charging sessions, charging session time, kWh used for each charging session and the amount paid by the driver for the energy used. Using these data points, the Company will be able to analyze the effects of pricing on driver behavior, specifically TOU pricing. This data will also provide insight into the effects of location on charging behavior. By analyzing charger utilization across various site types, the Company hopes to understand what differentiates certain station types from others to EV drivers as well as where, both locationally and in terms of use case, there is a greater need for public charging within its service territory. These findings can be used by

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both the Company and other public charging providers to optimize future siting efforts.

A pain point often cited by EV drivers is the high level of down time experienced by public chargers.<sup>62</sup> Providing a reliable charging network is key to overcoming range anxiety and meeting the needs of EV drivers. The reliability of the Company's EV charging network is a top priority. The Company and its EVSE software and O&M providers will work together to ensure charger availability with charger uptime Service Level Agreements (SLA's) included in the vendor agreements. Charging station availability will be monitored through the EVSE software provider's platform with the O&M provider conducting maintenance and repairs as outlined in the Operating Plans section above. The Company and its O&M provider will periodically audit its charging stations to ensure the accuracy of the uptime values reflected in the charging station management platform. Charger uptime data will be tracked and reported along with program repair needs and costs. Uptime analysis will be conducted across location and charger types to understand the effects of these variables on charger uptime and maintenance needs. This analysis can inform both the utility and other charging providers to understand potential reliability issues posed by certain location types or charging station models to optimize future siting efforts.

These reporting metrics will offer the Company, the Commission, and all interested stakeholders, information on the use and performance of the fast charging stations. With this information in hand across many of the Company's stations by 2026 and beyond, the Company anticipates that a conversation about the future course of its support for public fast charging access across the service area—topics including expansion, continuance, and divestment—would be appropriate at that time. Such a conversation with the Commission and stakeholders could review information on the Company's own stations in tandem with a review of the pace of EV adoption and the extent to which the market for public fast charging was sufficiently developing.

### **III. ELECTRIC SCHOOL BUS PILOT PROJECT**

#### **A. Partnerships, Research and Innovation Portfolio Overview**

The Company last fall proposed a Partnerships, Research, and Innovation (PRI) portfolio in the pending multi-year rate proposal. PRI projects are intended to target new technologies and approaches to facilitate EV adoption across various, and often

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<sup>62</sup> See Attachment J, PlugIn America EV Consumer Survey Report

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overlooked spaces in the industry, including promoting equitable access to EV benefits. Technology in this space is evolving rapidly and PRI is a vehicle to support enhanced customer experiences, operational efficiencies, and grid benefits. Such projects could include demonstrations on behind-the-meter solar, battery storage, and/or other distributed energy resource solutions that have the potential to reduce costs or increase the benefits of EV charging. PRI can serve as a unique platform for stimulating innovation and cultivating partnerships with communities and businesses in our service territory.

The first PRI project that we are proposing is our Electric School Bus Pilot, described below. We bring this proposal forward in compliance with the Commission's Order from the recent TEP approval<sup>63</sup> which required the Company to file a proposal within 180 days modifying the V2G program approved as part of our Load Flexibility Plan<sup>64</sup>, or to propose a new program to support a V2G school bus demonstration. We discuss our school bus proposal below, as well as next steps for bringing forward additional PRI proposals.

**B. Electric School Bus Pilot Project**

We propose a full-service pilot to address the barriers of school bus electrification and to better understand the costs and benefits of this approach. Through this pilot, the Company will own an estimated 32 electric school buses and partner with one or more third-party school bus operators to deploy the buses to school districts. The comprehensive package to the school bus operator will include EV education, advisory assessments, electric buses, charging infrastructure and associated equipment as well as installation, maintenance, and training support. The Company will cover the upfront costs and own the electric school buses and associated charging infrastructure and equipment. Operations and maintenance on the electric school buses will be fulfilled by the bus operator.

The Company will provide bus operators a commercial vehicle lease agreement, under which we will cover all costs and retain ownership of the electric school bus and lease the bus to the operator for operation of the bus for school districts. The third-party operator will be responsible for insuring the vehicle, conducting the maintenance and operation of the electric school buses, carrying all required permits, complying with all

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<sup>63</sup> See Docket No. E999/CI-17-879. ORDER ACCEPTING 2021 TRANSPORTATION ELECTRIFICATION PLANS AND ADOPTING ADDITIONAL INFORMATIONAL REQUIREMENTS (May 17, 2022) at Order Point 3.

<sup>64</sup> See Docket Nos. E002/M-21-101 and E002/M-17-401. Order Approving Modified Load-Flexibility Pilots and Demonstration Projects, Authorizing Deferred Accounting, and Taking Other Action (March 15, 2022) at Order Point 12.

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laws, and using and operating the electric school buses strictly for purposes of transporting passengers for a public school and as allowed under applicable law.

**Pilot Objectives.** The pilot's primary objectives are:

- **Facilitate electric school bus V2G demonstrations approved in the Load Flexibility docket** to mitigate and alleviate system peaks.
- **Reduce upfront costs for school districts** to adopt and utilize electric school buses and associated charging infrastructure, which reduces carbon emissions benefiting not only the students but all state residents with cleaner air.
- **Accelerate the adoption of electric school buses to help meet the State's carbon reduction goals** while addressing a market segment that needs help overcoming the barriers to EV adoption.
- **Address the disparity between low-income and BIPOC students who are disproportionately impacted by diesel emissions and air pollution** by ensuring the pilot project serves school districts in low-income and BIPOC communities.<sup>65</sup>
- **Increase awareness and education** around electric school bus technology and capabilities.
- **Enhance the school district customer experience** by removing the hassle around planning, procurement, implementation, and operations, for adopting electric school buses.
- **Evaluate opportunities for second-life battery deployments.**

The Company also has the following Pilot learning goals:<sup>66</sup>

- How does the pilot affect the school districts' perception of EVs and their fleet procurement decisions?
- How does the pilot affect student and family perceptions of EVs and their decisions for procuring personal vehicles?

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<sup>65</sup> 70 percent of low-income versus 50 percent of non, low-income students take the bus and particulate matter exposure from on-road sources is 75 percent higher for Latinos, 73 percent higher for Asian Americans and 61 percent higher for African Americans than other students not in these categories. Native Americans are disproportionately impacted by air pollution and have childhood asthma rates 50 percent above the national average. See <https://www.electrificationcoalition.org/wp-content/uploads/2021/10/0-NJ-ESB-Roundtable-ALL-SLIDES-DRAFTv1-.pdf>

<sup>66</sup> In compliance with Order Point 6b of the Commission's February 1, 2019 ORDER MAKING FINDINGS AND REQUIRING FILINGS in Docket No. E999/CI-17-879.

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- How does helping lower the electric bus investment barrier faced by operators and school districts affect procurement?
- Are the Company’s current TOU rate schedules sufficient to encourage off-peak charging for electric school buses?
- What are the actual costs associated with providing this full-service?
- What are the energy and demand needs of electric bus charging?
- How much estimated carbon dioxide and NOx emissions are reduced through this pilot project?

**C. Electric School Bus Pilot Budget & Participation**

The following table shows the estimated participation for the School Bus Pilot.

**Table 12  
Electric School Bus Pilot Participation**

	2023	2024	2025	2026	Total
Operators	0	0	1	1	2
Electric Buses	0	0	6	26	32
Chargers	0	0	6	32	38

The following table shows the budget for the Electric School Bus Pilot, which is a part of the PRI Portfolio. The proposed budget does not presume the Pilot will receive support from any external funding sources such as federal or state grants; however, it is possible that receipt of such funding could be used to reduce the Company’s financial contribution to the Pilot.

**Table 13**  
**School Bus Pilot Budget**  
**(\$ in Millions)<sup>67</sup>**

	2023	2024	2025	2026	Total
<b><u>O&amp;M</u></b>					
Education and Awareness	\$0.0	\$0.03	\$0.03	\$0.03	\$0.08
Infrastructure Maintenance	\$0.0	\$0.0	\$0.02	\$0.08	\$0.09
Program Administration	\$0.0	\$0.08	\$0.08	\$0.09	\$0.2
IT	\$0.0	\$0.1	\$0.06	\$0.05	\$0.2
<b>Total Annual O&amp;M Expense</b>	<b>\$0.0</b>	<b>\$0.2</b>	<b>\$0.2</b>	<b>\$0.2</b>	<b>\$0.6</b>
<b><u>Capital</u></b>					
EVSE	\$0.0	\$0.0	\$0.3	\$1.5	\$1.8
EVSI	\$0.0	\$0.0	\$0.09	\$0.4	\$0.5
IT	\$0.0	\$1.0	\$0.6	\$0.5	\$2.1
Vehicles	\$0.0	\$0.0	\$3.1	\$14.2	\$17.3
<b>Total Annual Capital</b>	<b>\$0.0</b>	<b>\$1.0</b>	<b>\$4.0</b>	<b>\$16.7</b>	<b>\$21.7</b>

## 1. Capital

The Electric School Bus Pilot budget includes the following capital expenses.

**Vehicle:** The Company plans to own and operate (via school bus operator(s)) approximately 32 school buses as part of this pilot.

**EV Supply Infrastructure (EVSI):** For the new service the Company will install, own, and maintain new panels, conduit, wiring, and associated equipment up to the charger as well as any necessary civil construction work in compliance with state and local codes. This work, which is generally beyond the traditional point of connection, will be completed by third-party contractors overseen by the Company and under contract as described for the Commercial EV Infrastructure Program. The Company will also install and maintain all equipment on the utility’s traditional side of the point of connection. This work will be done by the Company.

**Charging Equipment (EVSE):** The Company will own and operate approximately 38 bidirectional chargers and associated equipment to test vehicle to grid capabilities during the pilot. There are more 6 more chargers than buses planned for this pilot in

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<sup>67</sup> Table may not sum to totals due to rounding

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order to ensure the Company has the ability to replace chargers if needed to maintain continuous operation of the electric school buses.

**IT:** IT spending will fall both within capital and O&M categories. Capital IT budgets will include the buildout of customer enrollment portals, charger management software, customer facing tools, billing integrations and other software tools necessary to implement the program as filed.

## **2. O&M**

The Electric School Bus Pilot budget includes the following O&M expenses.

**Education and Awareness.** The Company recognizes that education and awareness concerning the Company's PRI demonstration projects is important. This ensures that stakeholders are actively engaged in learning about, receiving updates on, and participating in the outcomes of the projects that advance through pilots. Funds spent on education and awareness for the pilot may include brochures, informational sheets, white papers, technical papers, direct mail, communications, marketing and advertising campaigns, costs to produce informational videos, in person and digital events, web content, and other mediums that help to best share the information outcomes of the program and its projects. We have also included the cross-functional labor needed to support the marketing of our programs.

**Program Administration.** The Company will support the pilot project using a combination of full-time employees, contractors, and consultants. The program management team will support the development and execution of the pilot.

**Infrastructure Maintenance.** For the pilot, the Company will install, operate, and maintain bidirectional charging equipment as well as all EVSI equipment. All equipment will be maintained by third party vendors in the same manner as the charging equipment and EVSI is maintained under the Commercial EV Infrastructure Program.

## **D. Cost Benefit Analysis**

The Company brings forward the electric school bus proposal as a demonstration project and not yet a permanent offering. Still, the Company thought it would be valuable to include an assessment of electric school bus costs and benefits in the E3

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study, even though such an analysis is not required.<sup>68</sup> Unlike the Company's proposed public charging and commercial EV pilot investments that would create positive net benefits for EV drivers and state residents, the electrification of school buses presents higher financial hurdles given the relatively high cost of electric school buses compared to traditional buses. The Company notes, however, that cost-benefit studies for pilots and demonstration projects can often produce negative results given the goal of testing the future viability of a product, and this case is no different.

Under the reference case, E3's analysis found that school bus electrification would produce net costs from the perspective of the drivers or school districts that operate them and from the societal perspective. This stems from the high upfront costs for electric school buses that is not fully offset by their ongoing fuel and maintenance savings.

With the Company's school bus electrification program layered in, E3 found that the net benefits of school bus electrification increases from the participant perspective as a result of financial support for school bus acquisition and associated charging infrastructure but decreases from the electric customer and societal perspectives. However, the proposed pilot would lead to more electric school buses, equal to the number of buses supported by the pilot being adopted in the Company's service area. The two reductions in net benefits stem from program costs being incorporated, from the electric customer perspective, and higher upfront vehicle costs due to more electric school buses on the road. The addition of a V2G component slightly increases the net benefits from the participant perspective, given the added revenue stream, but slightly increases the electric customer net costs and leaves the societal results largely unchanged. Nonetheless, the Company brings forward this demonstration product given the potential for large unquantified benefits to improving the air that children breathe on a regular basis, to better understand the operational needs of electric school buses, and to best serve our customers' needs in this space.

Table 14 below provides an overview of the net benefits in the analysis as they pertain to the school bus electrification program.

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<sup>68</sup> See 6(b). "An extensive cost-benefit analysis may not be needed for a pilot, depending on the scope and cost of the pilot." *Order Making Findings and Requiring Filings*, February 1, 2019. Docket No. E-999/CI-17-879.

**Table 14**  
**School Bus Electrification Program Cost-Benefit Analysis Results from E3**  
**(\$ in Millions, Lifetime Benefits of All EVs Adopted over 2022-2030 Period)<sup>69</sup>**

<b>Managed Charging in All Scenarios</b>	<b>Participant Cost Test (PCT)</b>	<b>Ratepayer Impact Test (RIM)</b>	<b>Societal Cost Test (SCT)</b>
Electric School Bus (Reference Case)	\$-15	\$2	\$-13
Impact of Electric School Bus Program Proposal	\$8	\$-12	\$-4
Impact of V2G Proposal	\$1	\$-1	\$0
<b>Net Result (Electric School Bus Program with V2G)</b>	<b>\$-7</b>	<b>\$-11</b>	<b>\$-17</b>

### **E. Relationship to IIJA and Clean School Bus Program**

The Environmental Protection Agency (EPA) received \$5 billion of funding to be used during the 2022-2026 timeframe through IIJA to replace existing school buses with zero-emission and low-emission models. This new program termed the Clean School Bus Program has a goal of replacing 500,000 buses nationwide resulting in improved air quality through reduced carbon and other noxious emissions.<sup>70</sup>

The first funding round announced by the EPA is a grant program for eligible entities to apply to replace up to 25 school buses with zero or low emissions buses. Eligible entities include state and local governments, tribes, nonprofit school transportation associations, bus dealers and bus manufacturers.<sup>71</sup> Private entities such as the Company or school bus fleet owners are not directly eligible for funding but can apply in support of a school district to whom they provide transportation services. As part of the Electric School Bus Pilot, we plan to work with the participating school districts and bus operators to apply and seek funding to help offset our upfront investment costs for electric school buses procurement and infrastructure installation.

### **F. Relationship to V2G Demonstrations in Load Flexibility Plan**

The Commission approved our electric school bus V2G demonstrations as a part of the Load Flexibility proceeding.<sup>72</sup> The details and scope for these demonstrations are

<sup>69</sup> See Attachment D for E3 results and full cost-benefit report.

<sup>70</sup> See [Clean School Bus Program | US EPA](#)

<sup>71</sup> See [School Bus Rebates: Clean School Bus Program | US EPA](#)

<sup>72</sup> See Docket Nos. E002/M-21-101 and E002/M-17-401. Order Approving Modified Load-Flexibility Pilots and Demonstration Projects, Authorizing Deferred Accounting, and Taking Other Action (March 15, 2022) at Order Point 12.

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described below. The PRI Electric School Bus Pilot project intends to address all V2G commitments in that proceeding and expands the scope to include an anticipated higher number of participating buses and as a result, potential for increased number of V2G events.

Per the record in the Load Flexibility Plan, V2G demonstration projects should dispatch bus batteries during summer system peaks (peak events). The Company will rely on bus batteries during critical times or when a strain on the power grid is expected. This pilot will also present opportunities to test renewables integration by charging batteries during periods of excess wind or excess solar generation on the grid.

To ensure battery availability, we will require operators in this Electric School Bus Pilot to park their buses and plug them into the charging station at their facility at pre-determined times specified by the Company.

### **G. Pricing**

School bus operators will be required to take service and EV charging infrastructure support under the tariff and terms of the proposed modifications to the Fleet EV Service and Public Charging Pilots.

### **H. Operating Plans**

Below are the key components to the operations of our Electric School Bus Pilot project.

Partner Selection – Third-Party School Bus Operator. There are a total of 164 school districts in the Company’s service territory, with fleet sizes ranging from less than 10 buses to over 400 buses for some of the largest districts.<sup>73</sup> Districts with small fleets typically own their buses while larger fleets engage full-service school bus operators. The following considerations will be used to identify the right operator-partner for the project. One or more operator may be selected for the pilot.

The Company will consider the number of buses and school districts the bus operator serves today, and the number of sites used as depots for bus parking, and their

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<sup>73</sup> Internal analysis completed using service territory overlay with kml files of school districts from [Statewide map of Minnesota school districts](#) for current and earlier years from the Minnesota Legislative Coordinating Commission's GIS office.

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readiness for EV make-ready and charging infrastructure installation. Further, we will review anticipated weekly bus utilization to estimate number of trips, charging events, miles traveled, and overall total impact. We will also determine if the bus operator serves a diverse set of school districts and communities within our service territory to ensure that the pilot achieves its objective to address the disparity between low-income and BIPOC students who are disproportionately impacted by diesel emissions and air pollution. A potential measure to use to help evaluate bus operator and school district selection is the portion of students receiving free or reduced lunch plans<sup>74</sup> in addition to the MPCA’s environmental justice interactive map<sup>75</sup>. We will review and seek feedback on the equity and environmental justice measures for the Pilot with stakeholders and community members as similarly proposed and outlined for the extension of our commercial pilots. We will also review anticipated weekly bus utilization to estimate number of trips, charging events, miles traveled, and overall total impact.

The Company will consider bus operator interest and readiness, including willingness and plans to secure and commit external funding to the project, along with internal and organizational stakeholder buy-in. The Company will coordinate with the operator and external partner organizations that are awarding or helping the operator apply for and secure external funding to ensure compatibility and make the most efficient use of utility investments with grant opportunities through local and Federal programs. After external funding is applied to the upfront costs, we will cover the remaining amount of costs for the vehicle and charging infrastructure. This may result in covering the full amount of upfront costs for the project, dependent on the award and availability of external funding.

Bus Procurement & School Bus Operator Agreement. In consultation with the Company, the school bus operator will select which electric school bus model and charging stations they prefer and will meet their needs from a list of eligible vehicle manufacturers. The Company will purchase and procure the electric school buses from the manufacturer and coordinate a timeline and plan for delivery. As described earlier, the agreement between the Company and the school bus operator will be in

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<sup>74</sup> U.S. Environmental Protection Agency, [2022 Clean School Bus \(CSB\) Rebates Program Guide](#).

<sup>75</sup> The MPCA “considers tribal areas and census tracts with higher concentrations of low-income residents and people of color as areas of increased concern for environmental justice.” The MPCA environmental justice screening tool identifies census tracts to evaluate disproportionate impact of pollution on particular populations, using the following criteria: 1) At least 40 percent of people reported income less than 185 percent of the federal poverty level; 2) 50 percent or more people of color; and 3) Federally recognized Indian Tribes. This screening tool can be accessed at the following hyperlink:

<https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00>

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the form of a commercial vehicle lease agreement. The details of the lease, such as terms, termination, permitted use, payments (if any), end of lease provisions, and other pilot provisions (e.g., parameters around charging of the bus, collection, and submission of any required data, V2G requirements, etc.) will also be included.

The proposed lease agreement can be reviewed in Attachment O. Some of the key terms and conditions set forth in the lease agreement include:

- Insurance: The operator will assume all risk of loss or damage to the bus plus carry necessary insurance at the operator's cost.
- Utility Costs: The operator must cover, or pass-through utility costs, such as fuel and charging, and associated infrastructure programs costs to the school districts within their existing arrangements with school districts.
- Communication: School districts, within their existing arrangements with the school bus operator, will agree to contact and communication from the Company (including any of its contractors). The operator must help facilitate coordination and communication between the school district and the Company, to collect information and feedback regarding the performance of the pilot.
- Duration: The operator must keep the bus for the entire economic life of the bus.
- Charging: The operator must commit to charge the school bus more than 50 percent of the time at the designated charging locations that are V2G capable.
- Use Restrictions: The operator must allow the Company to use the buses for V2G demonstrations as a grid resource and allow the Company control of the buses during summer months and any other periods of time agreed upon by the Company and the operator.

Relationship with School Districts. As we are proposing to work directly with a school bus operator or operators who already provides full-service school bus operations to school districts today, we will not have a direct arrangement with school districts. Rather, school districts will continue to pay the school bus operator for their services through their existing, or new contracts. The operator, per their normal course of business, will continue to provide school districts with services that provide the buses, drivers, fueling (in this case charging), route planning and utilization optimization. Within our agreement with the school bus operator, the operator shall pass through their fuel, charging, and operations and maintenance costs to the school districts.

## **I. Measurement, Evaluation, and Reporting**

The Company proposes to track and report annually on the following metrics for the pilot<sup>76</sup>:

- Program costs to provide the service.
- Vehicle miles traveled.
- Average energy consumption (kWh) resulting from electric bus charging at the Company owned chargers provided through the pilot.
- Average energy demand (kW) resulting from electric bus charging at the Company owned chargers provided through the pilot.
- Total amount of energy sold to program participants during on-peak and off-peak time periods at the Company owned chargers provided through the pilot.
- Geographic distribution of pilot participants and communities served.
- Estimated GHG / carbon emissions reduction resulting from electrification of school buses.
- Overall school district and bus operator satisfaction with the project.
- Number of grid response events each summer and amount of energy benefitting the grid as a result.

The Company will work with a third-party program evaluator to help gather and track reporting requirements, and to assess the performance of the program. Similar to our previous commercial pilots, the evaluator will conduct research over a two-year period from 2025-2026, when buses are expected to be delivered, deployed, and charging infrastructure is in-serviced with buses in operation.<sup>77</sup>

## **J. Legal Authority for V2G School Bus Programs**

Our proposed investments in a V2G school bus infrastructure program are well within the Commission’s authority to approve. Under Minn. Stat. §216B.03, the Commission’s primary responsibility with respect to electric rates is to determine that all rates are “just and reasonable.” The Commission also retains authority to

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<sup>76</sup> In compliance with Order Point 6b of the Commission’s February 1, 2019 ORDER MAKING FINDINGS AND REQUIRING FILINGS in Docket No. E999/CI-17-879.

<sup>77</sup> Contractually, the School Bus Pilot Program is set as a 10-year program. After the initial pilot period, the Company can decide to keep the program going or terminate pursuant to the terms outlined in the agreement, see Attachment O.

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“ascertain and fix just and reasonable standards, classifications, rules, or practices to be observed and followed by any or all public utilities with respect to the service to be furnished.” Minn. Stat. §216B.09, Subd. 1 (2020). Utility “service” is defined as “natural, manufactured, or mixed gas and electricity; the installation, removal or repair of equipment or facilities for delivering or measuring such gas and electricity.” Minn. Stat. §216B.02, Subd. 6 (2020).

The Company’s proposed investments would add equipment and facilities to increase and optimize electricity delivery for the benefit of all customers. This Commission previously determined that electrifying Minnesota’s transportation sector “can further the public interest.”<sup>78</sup> In particular, the Commission found that transportation electrification can lead to more “[a]ffordable, economic utility service by improving utility system utilization/efficiency and placing downward pressure on utility rates through increased utility revenues and better grid utilization.”<sup>79</sup> It can also lead to greater renewable energy use by “increasing energy demand during hours when renewable energy is most prevalent on the system”; and it can help to “reduc[e] statewide greenhouse gas and other environmentally harmful emissions.”<sup>80</sup>

Our proposed investments in V2G school buses would add equipment to further the benefits of transportation electrification that the Commission identified. The Company proposes these investments in direct response to the Commission’s order that it “propose a program modification to its Vehicle-to-Grid School Bus demonstration project or propose a new program to support the V2G school bus demonstration.”<sup>81</sup> The Company’s proposal would add a regulatory asset in the form of buses at no cost to bus operators and physical utility plant in the form of charging infrastructure to facilitate the Company’s V2G demonstration project. The Commission approved this demonstration project after finding that it would provide substantial utility benefits: “. . . it is reasonably designed to test the potential for electric school buses to serve as a valuable flexible load that could be used to reduce system costs for the benefit of all Xcel customers while also reducing the net cost of electrifying school-bus fleets.”<sup>82</sup>

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<sup>78</sup> See Docket No. E999/CI-17-879. ORDER MAKING FINDINGS AND REQUIRING FILINGS (Feb. 1, 2019) at Order Point 1.

<sup>79</sup> *Ibid.*

<sup>80</sup> *Ibid.*

<sup>81</sup> See Docket No. E999/CI-17-879. ORDER ACCEPTING 2021 TRANSPORTATION ELECTRIFICATION PLANS AND ADOPTING ADDITIONAL INFORMATIONAL REQUIREMENTS (May 17, 2022) at Order Point 3.

<sup>82</sup> Order Approving Modified Load-Flexibility Pilots and Demonstration Projects, Authorizing Deferred Accounting, and Taking Other Action, IN THE MATTER XCEL ENERGY’S PETITION FOR LOAD FLEXIBILITY

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For these reasons, the Commission has clear authority to approve our proposed investments in V2G school bus infrastructure.

**K. PRI Portfolio Budget**

In addition to the School Bus pilot described above, the Company intends to pursue other pilot projects that will further the PRI Portfolio objectives. Table 15 below shows the budget for the remainder of the PRI Portfolio through 2026, excluding the School Bus Pilot.

**Table 15  
PRI Portfolio Budget, Excluding School Bus Pilot  
(\$ in Millions)<sup>83</sup>**

	2023	2024	2025	2026	Total
<b><u>O&amp;M</u></b>					
Education and Awareness	\$0.1	\$0.2	\$0.2	\$0.2	\$0.6
Program Administration	\$0.9	\$1.4	\$1.4	\$1.4	\$5.0
<b>Total Annual O&amp;M Expense</b>	<b>\$1.0</b>	<b>\$1.5</b>	<b>\$1.5</b>	<b>\$1.5</b>	<b>\$5.5</b>
<b>Total Annual Capital</b>	<b>\$0.5</b>	<b>\$3.5</b>	<b>\$3.5</b>	<b>\$3.5</b>	<b>\$11.0</b>

**1. Incremental to Existing Budget**

A preliminary estimate of the revenue requirement impact of the PRI portfolio budget, excluding the School Bus Pilot compared to the revenue requirement included in the MYRP of our pending rate case proceeding, is shown in Table 16 below.

**Table 16  
Current PRI Portfolio and School Bus Pilot Budget Revenue Requirement  
Compared to MYRP  
(\$ in Millions)**

	2022	2023	2024
Current Budget Revenue Requirement	\$0.0	\$1.5	\$6.2
MYRP Revenue Requirement	\$2.3	\$5.3	\$5.3
<b>Revenue Requirement Change</b>	<b>\$-2.3</b>	<b>\$-3.8</b>	<b>\$0.9</b>

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PILOT PROGRAMS AND FINANCIAL INCENTIVE, ET. AL, Dkt. Nos. E-002/M-21-101; E-002/M-17-401 (March 15, 2022) at 21.

<sup>83</sup> Table may not sum to totals due to rounding

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**2. Bringing Forward Additional PRI Projects**

With the PRI budget, the Company will bring forward additional PRI projects in the future to test new approaches and solutions in transportation electrification. Such projects could include demonstrations on behind-the-meter solar, battery storage, and/or other distributed energy resource solutions that have the potential to reduce costs or increase the benefits of an EV charging project.

**IV. COMMERCIAL EV PILOT MODIFICATIONS**

The Company proposes to modify our commercial EV pilots by extending their time horizon, increasing the budget, and making changes to the offers in response to learnings to date. The enhancements and increased runway for these important pilots will enable us to generate more and improved learnings as customer participation increases.

**A. Reasons for Modification**

As noted in our annual reports, customer participation and project initiation in our EV Service (Fleet Pilot) and Public Charging Pilots was initially slow due to limitations on customer eligibility and long contracting timelines with partner entities. Challenges such as the lack of suitable vehicle availability for fleets, the ability of potential participants to secure external funding for DCFC equipment, and the circumstance of launching both pilots near the outset of the global pandemic in 2020 have all contributed to this slow uptake in pilot participation. More recently in late 2021, the Company launched its third EV pilot impacting commercial customers, our Multi-Dwelling Unit (MDU) pilot, which has seen extremely significant customer interest in its short time in market, receiving 52 applications for the pilot's first tranche of funding representing over 1,100 charging ports.

Though participation in the Fleet and Public Charging pilots has been slow to start, and the rate of adoption varies across the three pilots, all three pilots have demonstrated initial success toward addressing their objectives and we are now beginning to observe greater customer adoption. Along with the overwhelming customer demand for our MDU EV Service Pilot, both the Fleet and Public Charging Pilots have experienced an increase in customer applications and have already or are expecting to in-service several projects this year.

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Initial customer feedback and pilot evaluations conducted by our third-party pilot evaluator, TRC, for both the Fleet and Public Charging Pilots have demonstrated positive results in bringing cost-effective EV service options to address upfront cost barriers, charging accessibility, and customer perceptions of EVs and adoption. The evaluations underscore that the Fleet and Public Charging pilots have thus far consistently provided strong value propositions for interested customers and participants while also providing clear lessons on aspects of the pilots that could be improved. Participants signaled high satisfaction with their experience, noting our pilots were key to the implementation of their EV procurement and charging infrastructure projects by assisting with upfront project costs and streamlining education and execution through our advisory and consultative infrastructure design services. Further, the majority of customers who elected not to participate in the pilots still described high satisfaction with their interactions throughout the pilot experience and determined they were not able to move forward due to incremental upfront costs, largely for non-infrastructure costs for the vehicles themselves and/or charging equipment, beyond what the pilot would cover.

As for our MDU EV Service Pilot, in our last Annual Report we were delighted to share an update on the significant customer interest that our Pilot experienced, where we received 52 applications for the pilot's first tranche of funding representing over 1,100 charging ports.<sup>84</sup> We have begun working through the design and construction process with 10 applicants who were selected for full funding under Tranche 1 of the pilot. Further, through this same pilot we have extended our collaboration with HOURCAR beyond the EV Spot Network. The EV Spot Network is a partnership between the Twin Cities, HOURCAR, and the Company to offer public charging for personal vehicles and electric car share vehicles. The Company has already installed and energized more than a third of the charging locations as of this filing. This expanded collaboration with HOURCAR will provide equitable access to EV charging in six income-qualified car share sites at MDU facilities. We have begun to offer the remaining MDU applicants the next tranche of funding under the pilot, however, to date customers have not expressed an interest in pursuing the option with shared cost responsibility offered under the second Tranche of the pilot. We believe

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<sup>84</sup> See our June 1, 2022 Annual Report submitted in Docket No. E002/M-15-111 at Pages 35-36. Applicant sites were located across 15 different cities, with the bulk in the Minneapolis/St. Paul metro area. Installations of EVSI, at first glance were estimated at around \$13 million for the 52 applications and more than 1,100 ports. The pilot's currently approved total budget is \$4.4M, with \$2.7 initially planned for capital expenditures. The pilot established three tiers of funding support, with Tranche 1 providing full funding for the line extension and EV Supply Infrastructure, the same level of funding provided under the Fleet and Public Charging pilots.

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this is an indication that the pilot's two remaining funding tranches will be inadequate to support successful charging infrastructure projects for MDU customers.<sup>85</sup>

Although we have some key learnings to-date for the pilots, we have had low participation rates in the early portion of the pilots. We will see more operational learnings from projects as we have more projects mature to being in-service for more than one year.<sup>86</sup> Both the Fleet and Public Charging Pilots are nearing their approved operating term of 2023.<sup>87</sup> As we evaluate their project pipelines the Public Charging Pilot may come close to exhausting its remaining approved budget of \$9.2 million this year, which would limit any further customer participation and operational learnings in a growing market segment that has demonstrated a need for advisory and financial support in order to spur greater EV adoption and meet state goals.

Given all these factors, we propose to extend all three pilots through the end of 2026, including a bridge proposal to cover continued pilot operations throughout 2023 while the Commission considers the full scope of this proposal. We propose to support these pilot extensions with expanded pilot budgets and other modifications that address our learnings thus far, enable continued provision and consistency of a needed EV charging infrastructure solution, and allow for more time to develop pilot learnings.

## **B. Modification Detail**

The Company proposes to 1) increase budgets for all three pilots, introduce budget flexibility, and extend operations through 2026; 2) introduce a uniform pilot-wide application review and scoring approach with a strong equity focus; 3) expand Fleet EV Service Pilot eligibility to certain private fleets; 4) reduce minimum port count and eliminate kW threshold requirements for projects; 5) add a fourth pricing tier to the Optional Charger Service, establish it as an independent service level option, and extend it to the Public Charging and Multi Dwelling Unit Pilots; 6) close the prepay option in the Optional Charger Service; and 7) introduce a combined commercial EV

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<sup>85</sup> Tranche 2 covers 50 percent of the EVSI project cost and thus provides materially less support to address the upfront cost barriers compared to Tranche 1 terms. 2022 Annual Report (June 1, 2022) at 36.

<sup>86</sup> We have obtained service and infrastructure cost information, and revenue and charging consumption data from only one customer for more than one year across all pilots. The remaining participating and forecasted projects and their associated results have yet to materialize.

<sup>87</sup> Pilots were approved for a three year term. *See* Docket No. E002/M-18-643. ORDER APPROVING PILOTS WITH MODIFICATIONS, AUTHORIZING DEFERRED ACCOUNTING, AND SETTING REPORTING REQUIREMENTS (July 17, 2022)

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charging Customer Service Agreement to be included in Section 7 of the Company's electric rate book.

**1. Increase pilot budgets with flexibility and extend pilot operations**

In order to extend pilot operations through 2026, obtain the necessary learnings, and continue to support greater commercial EV adoption and deployment of charging infrastructure, we propose to increase pilot budgets for the Fleet Pilot, Public Charging Pilot, and MDU EV Service Pilot. Specifically, we propose adding \$24.3 million to the approved \$11.3 million capital budget for the Fleet EV Service Pilot, \$9.8 million to the approved \$7.8 million capital budget for the Public Charging Pilot, and nearly \$60 million to the approved \$2.7 million capital budget for the MDU EV Service Pilot. Overall, we are recommending a combined \$94 million increase to these approved budgets in the capital budget for the three pilots. This capital budget covers pilot project infrastructure costs of the EV service connection, EV supply infrastructure (EVSI) and the charging equipment. With the significant increase in funding for our MDU EV Service Pilot, we also outline a proposal in Section X to maintain all three funding tranches with clear trigger points that initiate the opening and closing of each tranche.

Last, we propose introducing budget flexibility between our three commercial EV pilots to address the growing and changing pace of the market and the specific needs of our customers. This flexibility allows the Company to stay within the total proposed budget of our commercial EV pilots portfolio while allowing reallocation of dollars between the three pilots if and when there may be significant customer interest in certain pilot(s) over the others. Our pilots have already exhibited the need for budget flexibility, with the Public Charging Pilot nearing its approved budget and the MDU EV Service Pilot fully subscribing nearly all of the pilot budget for Tranche 1 level funding based on overwhelming customer demand,<sup>88</sup> while the Fleet EV Service Pilot has ample budget remaining due to slower uptake and other factors.<sup>89</sup> With budget flexibility, the Company can maximize the impact of the approved budget and be more nimble in responding to the market and customer interest for commercial

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<sup>88</sup> In our initial proposal for the MDU Pilot we anticipated total capital expenditures of about \$2.8 million. Due to overwhelming demand for the pilot, we utilized more of the total \$4.4 million budget to facilitate more projects. Similarly, we anticipate utilizing a portion of the O&M budget from the Public Charging Pilot towards capital expenditures.

<sup>89</sup> The Fleet EV Service Pilot has an approved budget of \$14.4 million and is expected to use around \$1.5 million through 2022. More customers are beginning to electrify their fleets and use the pilot to help deploy their charging infrastructure. We expect this trend to continue as more fleets seek EVs and auto makers introduce more models that are suited for fleet performance.

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EV charging. If we anticipate hitting any individual pilot's budget cap, we propose to submit a compliance filing as a notification to the Commission of a budget reallocation to be subject to a negative check-off process for approval as described in Section VIII.

A further breakdown and discussion of the pilot budgets can be found below.

**2. Introduce a project application review and scoring process applicable to all three pilots, with a focus on equity**

To accompany our proposal to extend pilot operations and increase budgets, we believe introducing a standard and clear framework to reviewing and scoring pilot project applications is necessary in order to make the most efficient use of the approved funds and enhance the customer experience. Importantly, we also will incorporate a strong focus on equity considerations. We heard from a small number of customers who attempted to participate in our Fleet EV Service and Public Charging Pilots that they were left confused as to why their projects did not qualify for participation. We believe this new and refined application evaluation process will not only provide a consistent and equitable approach to accepting projects, but also deliver clarity to customers regarding pilot eligibility and scoring parameters. We introduce this application evaluation process as a straw proposal in greater detail in below.

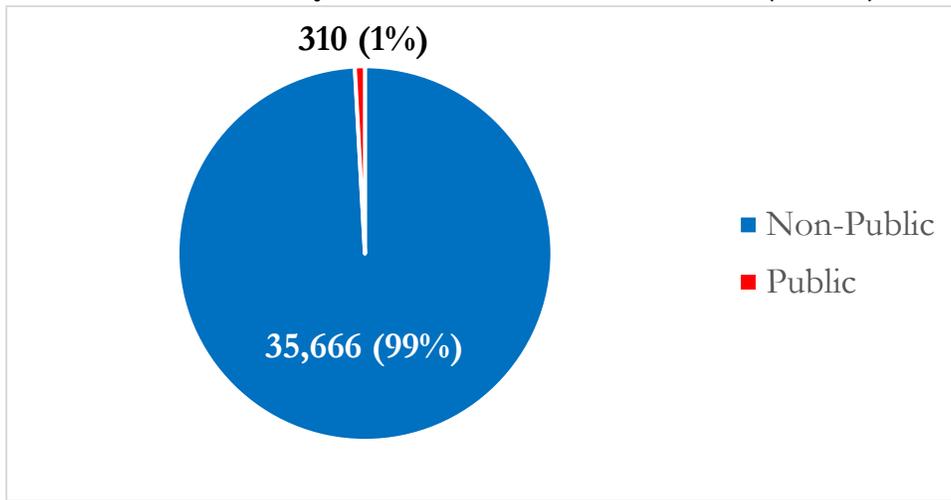
**3. Expand Fleet Pilot eligibility to private fleets with certain limitations**

Based on publicly available fleet registration data, we estimate that non-governmental fleet entities make up 99 percent of our fleet customer base, and 88 percent of fleet vehicles on the road in our service territory.<sup>90</sup> These fleets make up a similar percentage of fleet emissions in our service territory, or approximately 80 to 90 percent.

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<sup>90</sup> Based on United States Department of Transportation, Federal Motor Carrier Safety Administration, Motor Carrier Census Information (<https://ai.fmcsa.dot.gov/SMS/Tools/Downloads.aspx>) August 2020. Company has filtered fleet operators by territory zip codes, removed select potentially inaccurate entries, and classified fleets as Public when principal business was identified as mass transit, school, state, municipal, utility, or telecom.

Figure 7  
NSPM Territory Count of DOT NUMBER (Fleets)<sup>91</sup>



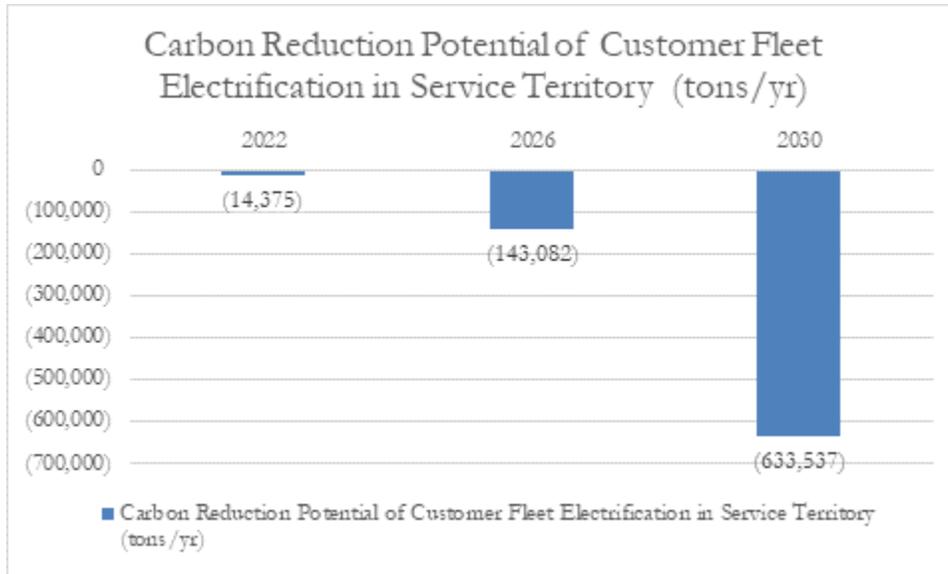
As referenced, our Fleet Pilot budget is currently underspent, and the pilot overall has seen slow customer participation. A primary contributor is the fact that the vast majority of the fleet market segment in our service territory is unable to participate.<sup>92</sup> The Company acknowledges and appreciates the Commission’s concerns expressed in prior proceedings regarding the prospect of participation in our Fleet EV Service Pilot by entities that operate a for-profit business. Given the volume of fleets in our service territory that we are unable to reach under current pilot rules, the Company believes continued exclusion of all for-profit business customers from its Fleet Pilot will be detrimental to achieving the state’s emission reduction and EV adoption targets. In fact, there is great emissions reduction potential for all fleets in our service area, as indicated in Figure 8 below. By 2030, if the state is on track to meet its 2030 EV target, fleet electrification would result in an annual net reduction of over 630 thousand tons of carbon dioxide in our service territory. This estimate takes into consideration the reduction from CO2 tail pipe emissions, as well as the increase in CO2 from incremental electricity generation to charge the electrified vehicles. Additional net reductions in particulate matters, SOx and NOx emissions, as well as driver fuel costs, present substantial additional benefits of supporting fleet electrification.

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<sup>91</sup> *Id.*

<sup>92</sup> The Commission has previously ordered as part of our original pilot and previous pilot modification proposal, that the Company limit participation to no more than one private fleet entity. *See* Docket No. E002/M-18-643. ORDER APPROVING PILOTS WITH MODIFICATIONS, AUTHORIZING DEFERRED ACCOUNTING, AND SETTING REPORTING REQUIREMENTS (July 17, 2019) at Order Point 9.

**Figure 8**  
**Carbon Reduction Potential of Customer Fleet Electrification in Service Territory**



We have received requests for support from various private fleet customers, including about a dozen who have completed our pilot intake form. These customers represent a diverse range of private businesses, hailing from the industry sectors of manufacturing, transportation services and car rental, healthcare, trades/contractors, local delivery, and other small business, with a wide range of fleet sizes.<sup>93</sup> Fleet customers typically face complex internal decision-making environments involving six to 10 decision-makers who must weigh in on future electrification plans in a constantly evolving market of products<sup>94</sup>. Converting a fleet is a costly, complex endeavor that is often viewed as inessential to many organizations' core business, with few exceptions. As auto makers are continuing to introduce more suitable options for electric fleet vehicles, private fleets are ripe for pilot participation, are in need of our advisory services to make the case to these decisionmakers, and present a significant emissions reduction opportunity for transportation in the state of Minnesota.

In an effort to maximize our pilot learnings, serve a market segment in need, and achieve the emissions reduction opportunity for the transportation sector, we propose expanding pilot eligibility to include private fleets, subject to several limitations. When

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<sup>93</sup> Our assessment is based on reviewing the fleet and customer types and their intake forms that were submitted to the Company expressing their interest in participating in the pilot.

<sup>94</sup> Gartner Group, "The B2B Buying Journey," 2019, available at <https://www.gartner.com/en/sales/insights/b2b-buying-journey>

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evaluating the entire fleet market segment in our service territory, we found the average fleet size to be around 50 vehicles. Using a 1:1 vehicle to port ratio, we propose a cap of 50 ports on a per project and site basis for projects supporting for-profit business.<sup>95</sup> This limitation will help to ensure that participating private fleets are small- to medium-sized fleets and diverse in nature such as those that had expressed initial interest to the company and may be unable to electrify their transportation operations without the pilot's assistance.

Private fleet projects would also utilize our newly proposed Application Review and Scoring process noted above.<sup>96</sup> We believe these parameters altogether represent a reasonable framework for supporting private fleets that is consistent with the Commission's prior direction and takes into consideration Pilot learnings to date. The details and operations of this proposal can be reviewed below . We have also included letters of support for this proposal from private fleet customers in Attachments AA1-AA11.

**4. Optional Charger Service: Add a fourth pricing tier, extend the service as an independent option, and also make it available to participants in the Public Charging Pilot**

As technology in the electric transportation space advances, new charging equipment makes and models with new capabilities regularly enter the market presenting additional customer options. The Company is proposing to standardize the optional charger service across all the commercial tariffs, including for the MDU's shared parking option, public, and fleet. To ensure that our programs maintain sufficient customer choice in regard to service level options and charging equipment, we propose adding a fourth pricing tier to our Fleet Pilot Optional Charger Service, denoted as Group D in our tariff and workpapers. This fourth tier serves to group special charging equipment that otherwise does not fit into the existing tiers, A through C, and is intended to be flexible to accommodate other types of charging equipment<sup>97</sup> by leveraging a formula-based customer charge approach that will calculate a different monthly customer charge amount dependent on the upfront cost

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<sup>95</sup> Typically, fleet managers plan for a vehicle to port ratio of less than 1 for redundancy in the amount of charging available for fleet vehicles in order to avoid interruptions in daily operations due to charger outages or maintenance.

<sup>96</sup> See also the discussion of an exemption to the 50 port cap for private fleet projects that advance equity objectives.

<sup>97</sup> This would include, but not be limited to, low-output (i.e., 25 kw) DCFC chargers as well as L2 chargers that fall outside of the three established pricing tiers, given that pricing may evolve and change in the future with new technologies and capabilities.

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of the charger. Our updated Optional Charger Service workpaper includes Group D, and is found in Attachment P.

Further, we propose to extend the Optional Charger Service so that customers can take Company-provided charging equipment without dedicated EV Supply Infrastructure support – in other words, they could opt for chargers and associated equipment only from the Company but not Company-owned EVSI. Establishing this independent option is in direct response to customer feedback. Some customers who are installing only one or two chargers and would like to take charging equipment from the Company, but either do not need or would prefer to not engage the Company for dedicated EVSI. We propose this independent Optional Charger Service be made available to any commercial customer qualifying for the Fleet EV Service Pilot. The available service and billing options are illustrated below in the Customer Experience and Pilot Operations section.

Finally, we propose to extend our Optional Charger Service to the Public Charging and Multi Dwelling Unit Pilots to support customers in installing publicly available charging stations. We have heard from customers who dropped out of our Public Charging Pilot that high upfront costs for purchasing DCFCs remained a barrier to participating. With this modification, customers will still have the option to procure their own DCFC and Level 2 charging equipment or utilize the pilot's Optional Charger Service and take Company-provided charging equipment.

**5. Close and discontinue the prepay option in the Optional Charger Service**

The Company received approval of the prepay option for the Optional Charger Service in our original Fleet EV Service Pilot proposal.<sup>98</sup> If our proposed modification of extending the Optional Charger Service to the Public Charging Pilot is approved, all of our pilots will offer customers the choice to either take Company-provided charging equipment or bring their own by procuring and paying for it themselves. As such, we believe the prepay option does not provide value to the customer if they are able to bring the same or different equipment to the pilots.<sup>99</sup> Further, no customers

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<sup>98</sup> See Docket No. E002/M-18-643. ORDER APPROVING PILOTS WITH MODIFICATIONS, AUTHORIZING DEFERRED ACCOUNTING, AND SETTING REPORTING REQUIREMENTS (July 17, 2019)

<sup>99</sup> The company will make a list available on its website, of charging equipment that is approved to be procured and brought to the program by customers. Equipment on this list will include those of which the Company provides through the Optional Charger Service and other equipment that meets a standard level of compatibility and specifications. The list will be managed by the Company and updated to introduce new equipment options as identified and needed.

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have elected the prepay option under the Optional Charger Service to date. The Company does not anticipate receiving customer interest in the prepay option prior to the Commission's action on this proposal, and any customers seeking this service until this proposed modification is reviewed will be encouraged to consider the bundled option or to bring their own equipment.

**6. Reduce Minimum Port Count, Remove kW Floor and Vehicle Count Requirements**

In order to make the pilot more flexible for customers to participate that prefer to install fast charging stations with less than 50 kW capacity, we recently received Commission approval of a modification to the Public Charging Pilot that amends the definition of DCFC Charging Equipment to no longer include a kW floor.<sup>100</sup>

Similarly, in response to additional customer feedback regarding project and equipment preferences for the Fleet Pilot and to maintain consistency across all pilots, we propose to remove the 50 kW floor requirement for the Fleet Pilot and to reduce the minimum port counts for both the Fleet and MDU Pilot to provide uniform requirements for all three pilots. With these modifications, the minimum charging equipment requirement for participating in any of the three pilots would be to install at least two Level 2 charging ports or one DCFC charger (with no kW requirement). We also propose to eliminate the vehicle count requirement in our Fleet EV Service Pilot.

**7. Introduce a universal commercial EV charging customer service agreement**

Lastly, we propose to combine all three pilot customer service agreements (CSA) into one universal commercial EV charging customer service agreement, and to include it in Section 7 of the Company's electric rate book. We have heard feedback from customers that it is hard to understand and determine which pilot and service option is right for them and reviewing multiple different service agreements can be challenging. This new customer service agreement can be reviewed in Attachment R. We also include as Attachment S a separate agreement that is needed for customers who participate in our MDU Assigned Parking option. Upon Commission approval of our program changes, we will submit these attachments in a compliance filing as new tariffed contracts under Section 7 of our rate book.

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<sup>100</sup> See Docket No. E002/M-18-643. NOTICE OF MODIFICATION APPROVAL (March 29, 2022)

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**C. Commercial EV Pilot Budgets and Participation**

Our three Commercial EV pilots as well as our Commercial EV Advisory services rely on a variety of both internal and external resources and vendor contracts.

Table 17 below shows the anticipated program participation forecasts. Table 18 below shows the budget, including capital and O&M expenses, for the Commercial program Portfolio.

**Table 17  
Commercial EV Program Participation Forecast  
(Number of Participants)**

	2023	2024	2025	2026
<b>EVSI Participation</b>				
MDU Pilot	253	1,037	1,776	2,766
Fleet Service Pilot	209	215	723	1,237
Workplace & Public Charging	67	69	139	419
<b>Total</b>	<b>342</b>	<b>1,321</b>	<b>2,638</b>	<b>4,422</b>
<b>EVSE Participation</b>				
MDU Pilot	253	1,037	1,822	2,184
Fleet Service Pilot	22	23	132	215
Workplace & Public Charging	67	69	139	419
<b>Total</b>	<b>529</b>	<b>1,129</b>	<b>2,093</b>	<b>2,818</b>

**Table 18  
Commercial EV Program Budget  
(\$ in Millions)<sup>101</sup>**

	2023	2024	2025	2026	Total
<b>O&amp;M</b>					
Infrastructure Maintenance	\$0.1	\$0.1	\$0.3	\$0.4	\$0.9
Program Administration	\$0.5	\$0.6	\$0.8	\$1.0	\$2.9
IT	\$0.0	\$0.3	\$0.2	\$0.2	\$0.6
<b>Total Annual O&amp;M Expense</b>	<b>\$0.6</b>	<b>\$1.1</b>	<b>\$1.2</b>	<b>\$1.5</b>	<b>\$4.4</b>
<b>Capital</b>					
Workplace & Public Charging	\$0.9	\$0.9	\$1.9	\$6.0	\$9.8
Fleet Service Pilot	\$2.0	\$2.1	\$7.3	\$12.9	\$24.3
MDU Pilot	\$2.5	\$10.3	\$18.2	\$28.6	\$59.6
IT	\$0.0	\$2.6	\$1.5	\$1.6	\$5.7
<b>Total Annual Capital</b>	<b>\$5.4</b>	<b>\$15.9</b>	<b>\$28.9</b>	<b>\$49.0</b>	<b>\$99.3</b>

<sup>101</sup> Table may not sum to totals due to rounding

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**1. Capital**

Based on anticipated customer interest and forecasted program adoption rates, the budget reflects approximately 60 percent of the portfolio capital focused on multi-dwelling units, 24 percent on fleets, and 16 percent on public charging including workplace and retail use cases. In paragraphs 3 and 4 below, we outline proposed parameters for the use of the capital budgets applicable to two of the pilots, the Fleet EV Service Pilot and the MDU Pilot. For all three pilots, the Company proposes to continue installing and maintaining infrastructure for a new, dedicated EV service. This infrastructure consists of two components:

*a. EV Supply Infrastructure (EVSI)*

For the new service, the Company will install, own, and maintain new panels, conduit, wiring, and associated equipment beyond the traditional distribution system up to the charger as well as any necessary civil construction work in compliance with state and local codes. This work, which is generally beyond the traditional point of connection, will be completed by third-party contractors overseen by the Company.

*b. Charging Equipment*

Customers receiving EVSI must use charging and associated equipment that meets applicable technical and safety standards, demonstrates interoperability, cyber security, and smart charging capabilities that enable customers to participate in managed charging rates or programs. The Company will maintain a prequalified list of choices for customers to choose from. Customers may procure pre-qualified equipment on their own or may also choose to receive such equipment from the Company. The Company will solicit competitive bids from vendors on the pre-qualified list to identify a select number of turnkey options customers may choose from. Consistent with the pilot and as described above in the Modification Detail section, the Company intends to aggregate charging equipment options into several price points. This will enable customers to choose from a variety of price points and value propositions.

*c. IT*

IT budgets will include the buildout of customer enrollment portals, charger management software, customer facing tools, billing integrations and other software tools necessary to implement the program as filed.

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**2. O&M**

*a. IT*

Data services costs include the costs incurred by charging equipment vendors to collect customer energy usage data through each customer's Wi-Fi network and for the Company to work with these vendors to transmit and monitor data submitted to the Company, including through vendor-provided portals. Maintenance costs also include proactive efforts to contact customers in the event of an issue with charging load data.

*b. Infrastructure Maintenance*

The Company also covers EVSI maintenance costs and charger maintenance for customers participating in the Optional Charger Service of our pilots. Material and labor costs are incurred by our third-party contractors as they perform maintenance services.

**3. Budget Ceiling for Private Fleets**

As part of our request to expand the Fleet EV Service Pilot eligibility to private fleets, we propose imposing a budget ceiling of \$15M for all fleet projects for for-profit businesses through 2024. This ceiling represents 70 percent of the total available fleet budget we have initially proposed for the Fleet EV Service Pilot, and would be lifted at the end of 2024 if it has not been reached. We believe this ceiling will help ensure that the pilot's expansion to include private fleets will promote equitable access to pilot funding for all eligible commercial customers.

**4. MDU Pilot Tranche Framework**

We believe an increased budget with a longer operational term will help address the immediate MDU customer need and also allow us to more thoroughly assess the appropriate level of utility funding customers require to move forward with charging infrastructure at MDU buildings. We propose to maintain the pilot structure utilizing three funding levels as approved in our initial filing.<sup>102</sup> However, in this petition we

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<sup>102</sup> The tranches were finalized July 2, 2021 in the final order in Docket No. E002/M-20-711 and were outlined as follows: The pilot will have three tranches with utility financial support for market-rate MDUs declining over each tranche. The first tranche will receive 100% utility support, the second tranche will receive \$1,000 per port for the EV service connection and 50% utility support for EV supply infrastructure

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propose to more clearly define the triggers that initiate and close each tranche. The enhanced definition around the process of managing the tranches will help set expectations with customers and alleviate the potential for customers to act with an irrational sense of urgency in an effort to pursue Tranche 1 level funding.

The Company proposes that the tranche levels be triggered by the number of sites served per tranche based on an assumed average of 20 ports installed per site in Tranche 1, and an estimated 10 ports per site in Tranche 2.<sup>103</sup> With this assumption, we propose that Tranche 1 be made available to serve 225 sites, which we anticipate would represent approximately 73 percent of the proposed capital budget using the 20 port average. We propose that Tranche 2 be made available to serve 240 sites, which we anticipate would represent 20 percent of the proposed capital budget using the 10 port average. By design, Tranche 3, will use a minimal amount of capital dollars. Using this tranche transition framework, when we have served 225 sites, Tranche 1 will end and Tranche 2 begins, and when we have served 240 sites, Tranche 2 will end, and Tranche 3 begins. Finally, we propose to continue offering Tranche 1 funding (100 percent support) to all projects fulfilling equity objectives per the application review and scoring process no matter what Tranche is currently available to other projects. Table 19 below illustrates our proposal and the estimated scope.

**Table 19  
MDU EV Service Pilot Tranche Framework<sup>104</sup>**

	<b>Tranche Start Benchmark</b>	<b>Tranche Ending Benchmark</b>	<b>Estimated Capital EVSI Budget for Tranche</b>	<b>Estimated % of MDU Budget</b>
Tranche 1	Reopen upon Commission approval	225 sites completed in Tranche 1	\$40 million	73%
Tranche 2	225 sites completed in Tranche 1	240 sites completed in Tranche 2	\$11 million	20%
Tranche 3	240 sites completed in Tranche 2	Capital budget depleted	\$4 million	7%

costs, and the third tranche will receive \$1,000 per port for the EV service connection and no utility support for the EV supply infrastructure. Xcel explained that this approach will help the Company and stakeholders evaluate the amount of utility support, if any, that is needed to incent MDUs to install EV chargers. Xcel will cover the full cost of the service connection and site supply infrastructure for affordable-housing MDUs throughout the pilot.

<sup>103</sup> In our 2022 Annual Report, we calculated an average of 23 ports per project based on the total number of projects and their scope through the first application round. We believe that 20 ports per site is a fair proxy to use for Tranche 1, and 10 ports per site is a fair proxy to use for Tranche 2, as we expect future applications over time to comprise lower port counts as the initial wave of demand for the pilot subsides.

<sup>104</sup> The budgets shown are in addition to the already approved budget for the MDU Pilot.

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This approach, along with our proposed Application Review and Scoring process, will allow us to equitably, effectively, and flexibly manage the pilot and market each of the tranches independently of one another over a longer period of time to ensure sufficient pilot learnings are obtained to inform any future offerings.

**5. Revenue Requirements Impact**

A preliminary estimate of the revenue requirement impact of the EV commercial pilot portfolio budget is included in Table 20 below.

**Table 20  
Annual Revenue Requirement Impact - EV Commercial Pilot Portfolio  
(\$ in Millions)<sup>105</sup>**

Program	2022	2023	2024	2025	2026
MDU Pilot	\$0.0	\$0.2	\$1.3	\$3.8	\$7.9
Workplace and Public Charging	\$0.0	\$0.0	\$0.1	\$0.4	\$1.0
Fleet Service Pilot	\$0.3	\$0.7	\$1.1	\$1.9	\$3.7
O&M	\$0.3	\$0.6	\$1.1	\$1.2	\$1.5
Other	\$0.2	\$0.5	\$0.8	\$1.2	\$1.5
<b>Total</b>	<b>\$0.8</b>	<b>\$2.0</b>	<b>\$4.4</b>	<b>\$8.5</b>	<b>\$15.6</b>

**D. Cost Benefit Analysis**

Similar to the public charging proposal, the Company’s proposal for expanded commercial EV pilots would lead to positive net benefits for LDVs adopted in the Company’s service area – for EV drivers, electricity customers, and state residents. The net benefits resulting from the commercial pilots would increase in some cases and decrease in others, as compared to the reference cases. Notably, the commercial pilots would increase net benefits for EV drivers across the board. Net benefits for electric customers and for society as a whole would decrease in some contexts but would increase from an expansion in workplace and public level 2 charging. In total, the net benefits across the entire commercial infrastructure pilot portfolio would remain positive for personal and commercial LDVs across all of the three cost tests.

The Company notes that its proposed investments in charging infrastructure for commercial customers helps support the growth of the nascent charging market in the commercial sector, would better support customer charging needs, and would help

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<sup>105</sup> Table may not sum to totals due to rounding

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increase EV adoption to support reaching the state’s 2030 goal. In fact, E3 estimates that the commercial pilot and public charging proposals would lead to a 35-40 percent increase in both personal and commercial LDV sales in the Company’s service area by 2027. This corresponds to roughly 20,000 additional personal and commercial EVs on the road by 2027 and more than 40,000 on the road by 2030 compared to a scenario without the Company’s programs.

Table 21 below provides an overview of the net benefits analysis for the commercial infrastructure program. The table is split between the pilot programs’ impacts on personal LDVs (via the increase in charging availability at MDUs, workplaces, and in public places) and on commercial LDVs (via the increase in charging availability for fleets, workplaces, and in public places).

**Table 21  
Commercial Infrastructure Pilots Cost-Benefit Analysis Results from E3  
(\$ in Millions, Lifetime Benefits of All EVs Adopted over 2022-2030 Period)<sup>106</sup>**

<b>Managed Charging in All Scenarios</b>	<b>Participant Cost Test (PCT)</b>	<b>Ratepayer Impact Test (RIM)</b>	<b>Societal Cost Test (SCT)</b>
Personal LDVs (Reference Case)	\$1,033	\$342	\$1,002
Incremental Impact of Commercial Charging Pilot Proposals (MDU Chargers, Personal LDVs)	\$21	\$-40	\$-26
Impact of Commercial Charging Pilot Proposals (Workplace and Public L2 Chargers, Personal LDVs)	\$65	\$14	\$69
<b>Net Result (Personal LDVs with Commercial Pilots)</b>	<b>\$1,120</b>	<b>\$316</b>	<b>\$1,045</b>
Commercial LDVs (Reference Case)	\$184	\$8	\$742
Impact of Commercial Charging Pilot Proposals (Fleet Chargers, Commercial LDVs)	\$2	\$-22	\$-13
Impact of Commercial Charging Pilot Proposals (Workplace and Public L2 Chargers, Commercial LDVs)	\$10	\$3	\$18
<b>Net Result (Commercial LDVs with Commercial Charging Pilots)</b>	<b>\$197</b>	<b>\$-11</b>	<b>\$747</b>

<sup>106</sup> See Attachment D for E3 results and full cost-benefit report. The Company notes that the E3 study did not assess the extent to which advisory services and other O&M costs for program administration would impact the results given their foundational nature to spreading awareness and education on EVs.

## **E. Customer Experience and Pilot Operations**

Implementing a clear framework for application review and scoring will enhance the customer experience and ensure efficient use of approved funds. We are proposing a new process that will apply a standardized review framework across all three commercial pilots that incorporates the following considerations: 1) Total project scope; 2) Customer and project readiness; and 3) Priority based on equity objectives. As an additional consideration for the Fleet EV Service Pilot, we are proposing a cap for private fleets to moderate the scope and costs of fleet projects for for-profit businesses to further ensure equitable access to pilot funding.

Customers will submit a project application to a formal evaluation process. We propose migrating from the open-ended first-come, first-serve, rolling application and project acceptance process to a more robust and equitable framework for intaking, reviewing, scoring, and accepting projects.<sup>107</sup> Our plan is to provide a strawman proposal in this petition and seek feedback from stakeholders to help inform this process. Specifically, we seek input on this straw proposal, including potential scoring criteria and weighting, and will supplement the record after stakeholder input is received.

We propose to accept pilot applications on an ongoing basis so that the most viable projects are served after they are reviewed, met a minimum acceptable overall score and have signed the customer service agreement prior to moving on to the design and engineering phase. The proposed framework will be applied across all three commercial pilots. The framework will be based on a project's ability to maximize overall program benefits, and it currently incorporates the following considerations.

- **Total project scope:** This includes number of vehicles, charging ports, anticipated load and utilization, vehicle types, overall estimated project costs, and site readiness for infrastructure based on proposed in-service dates and whether the site is undeveloped, under construction, undergoing restoration work, or completely ready. We will also examine total expected emissions reductions from projects, based on anticipated load and utilization. In general,

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<sup>107</sup> Our sample scoring template is modeled from the work that has been conducted and implemented as part of our Colorado Transportation Electrification Plan. For the development of this process and framework in our Public Service of Colorado jurisdiction, we worked with stakeholders to help shape the initial proposal. See "Report on Electric Vehicle Supply Infrastructure Application and Scoring Criteria", Proceeding 20A-0204E, August 2021.

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projects demonstrating a larger potential impact involving a high quantity of vehicles, ports, utilization, emissions reductions potential and site construction feasibility will be awarded more points.

- **Customer and project readiness:** This evaluates the certainty of securing external funding (as needed/desired by the customer) and internal buy-in and alignment of the customer's stakeholders. In general, projects that demonstrate their ability to secure and leverage alternative funding mechanisms to be coupled with our pilots and have signed the customer agreement upon application submission will be awarded more points for these considerations.<sup>108</sup>
- **Priority based on equity objectives:** The Company believes that equity should be a key focus for project acceptance so that our pilots support an equitable transition to electric transportation, including increasing access to its technologies and the benefits from cost savings and air quality improvements. There are a variety of ways in which projects can be evaluated on equity objectives, and as such, we offer the following concepts for stakeholder consideration:
  - Opportunity to self-identify when a site will serve disproportionately impacted or underserved communities with charging infrastructure. This will be a significantly weighted criteria in scoring. The Company will continue to work with partners such as HOURCAR to identify and prioritize income-qualified MDU sites as we have done in the MDU EV Service pilot.
  - Public organizations seeking to provide accessible and affordable services for income-qualified customers or communities will be prioritized in scoring.
  - Demonstrate support of income-qualified customers or communities through confirmation of having participated in Affordable Housing Weatherization, Multifamily Weatherization, or Affordable Housing Rebate Programs within the last 5 years or that they currently meet income qualification criteria for those programs.
  - Customers will be asked if they, or those the charging infrastructure will serve, are disproportionately impacted by pollution. For additional evidence, the Company will look to state definitions and tools for

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<sup>108</sup> Our Commercial EV Advisors will coordinate with the customer and external organizations that are awarding or providing the customer with external funding to ensure suitability, timelines, and readiness for the pilots.

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identifying a disproportionately impacted community such as that used by the Minnesota Pollution Control Agency (MPCA).<sup>109</sup>

- **Cap for private fleets in the Fleet EV Service Pilot:** As described in the Modification Detail section above, we are proposing to moderate the scope and costs of fleet projects for for-profit businesses to further ensure equitable access to pilot funding by imposing a port cap of 50 ports on a per project and site basis. We also propose to exempt private fleets from this per project port cap if their project obtains a threshold number of points available for fulfilling equity objectives (as finalized through the stakeholder process). For example, an application for support from the Fleet EV Service Pilot from a privately operated fleet could score a maximum level of points on the basis of equity criteria because it is facilitating transportation electrification in areas that have been historically disadvantaged due to high levels of pollution. We recognize the value of providing Company support for these types of projects; as such, we are proposing that this type of project be exempt from the port cap. We believe that our application review and scoring process will deliver a fair and equitable approach to vetting and accepting projects, and if a private fleet's project scores high on all equity considerations, we do not wish to minimize the potential transportation electrification benefits that can materialize through their project just because it is associated with a for-profit business. We intend to continue the Fleet EV Service Pilot's support for all public and non-profit fleets, subject to application reviews, without applying any port or project size caps.

Complete applications will be evaluated, and all qualified projects will be supported by the pilots until pilot budgets are depleted consistent with their terms, the pilot term is reached, or the Company proposes further modifications or a permanent program offering. The Company reserves the right to reject any application at any time. Unsuccessful applicants will be provided with a notification and justification for their project being declined. Customers will be able to reapply at any point in time after this notification by submitting a new application, and our Pre-Electrification Consultant and Commercial EV Advisor teams will be available to help the customer

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<sup>109</sup> The MPCA “considers tribal areas and census tracts with higher concentrations of low-income residents and people of color as areas of increased concern for environmental justice.” The MPCA environmental justice screening tool identifies census tracts to evaluate disproportionate impact of pollution on particular populations, using the following criteria: 1) At least 40 percent of people reported income less than 185 percent of the federal poverty level; 2) 50 percent or more people of color; and 3) Federally recognized Indian Tribes. This screening tool can be accessed at the following hyperlink:

<https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00>

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complete and improve their application. Successful applicants and projects will move into the design and engineering phase of the program.

See Commercial Pilot Service Components and Billing Options at Attachment U for additional information on the operational plans for commercial pilots.

## **F. Annual Reporting**

We propose to continue reporting key metrics and operational learnings of the pilots in the Annual EV Report that is submitted on June 1<sup>st</sup> every year. We have added metrics to inform learnings of new pilot design elements being proposed herein. For the Fleet EV Service Pilot, we will also track the number of for-profit, non-profit and public fleet operators, as well as the overall equitable deployment of all three pilots' electrification services. The following information will be reported on and broken down by all three pilots.

Costs to deploy charging infrastructure on a per port basis, including:

- Program implementation;
- Installation costs by EV Service Connection, EV Supply Infrastructure, and EV Charging Equipment; and
- Customer service and technical assistance needs.

Utilization of charging infrastructure, including:

- Electricity sales on a per port basis;
- Number of vehicles, reported by the customer, utilizing infrastructure;
- Total load and non-coincident peak load of combine charging stations; and
- Proportion of charging that occurs off-peak, including coincident peak demand, summer, and winter, of combined charging stations.

Other topics including:

- Number of participants and general location of sites in each pilot;
- The number of fleet projects supporting for-profit businesses that exceeded the 50 port cap by way of fulfilling equity objectives;
- Achievement of equity objectives, using a metric defined later upon consultation with stakeholders;
- Estimated avoided carbon emissions and for metered consumption compared against equivalent gas alternative emissions;
- Dollars of public and/or private funds leveraged by customers; and
- Description of customer experience and operational learnings.

### **G. Pilot Transition to Commercial EV Infrastructure Program**

The pilot programs have both a specific budget and estimated time period for which they are approved to operate. We will continue operating all three pilots as approved until an Order is issued in this proceeding. We recognize, however, that the Commission and stakeholders may need more time to consider the proposals we make in this filing, and that our current pilots may expire before the Commission can issue its order. To address this issue, the Company intends to bridge this gap in the coming months by requesting the following modifications to our commercial pilots under the Commission's streamlined approval process, which is discussed below:

- Extend the term of the Public Charging Pilot beyond its initial 3 year term, which ends in January 2023, to continue to support customers until the Commission issues an Order in this proceeding; and
- Allow the Company to reallocate some or all the remaining Fleet EV Service Pilot dollars to the Public Charging Pilot if Fleet Pilot funding is available and not in demand by eligible fleet customers, in order to keep both pilots available to customers as a bridge solution, as the Public Charging pilot is nearing budget depletion.

### **V. RESIDENTIAL EV PROGRAM MODIFICATIONS**

The Company is dedicated to enhancing the EV customer experience and optimizing our Residential program portfolio. We propose to do this by streamlining our Residential program offerings, supported by the details outlined in this section.

#### **A. Strong Track Record and Reasons for Modification**

The Company has demonstrated our ability to address residential EV driver needs by simplifying the home charging customer experience through lowering upfront costs, enhancing the customer experience, and encouraging charging to occur off-peak. Our EV Accelerate At Home program, which began as the EV Service Pilot, continues to showcase success in lowering upfront customer costs by an average of \$2,000 from not having to install a second meter or service, and enhancing the customer experience by removing the hassle factor. Customer satisfaction scores are at 96 percent, and our programs are encouraging charging off-peak, with nearly 84 percent of all charging taking place during that time.<sup>110</sup>

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<sup>110</sup> See our June 1, 2022 Annual Report submitted in Docket No. E002/M-15-111 at Pages 10 and 24.

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We have taken steps over the years to update our program enrollment processes and provide upfront tools that deliver tailored advice to customers. Our online Home Charging Advisor tool<sup>111</sup> is an example of these efforts where customers can customize their home charging needs and installation scenarios to get a better understanding of their all-in and ongoing costs and decide what program might be right for them.

We have heard feedback from customers and stakeholders, however, that it may be confusing for individuals to determine what solutions might be best to enroll in based on their specific charging needs and home installation scenarios. Indeed, we offer many options for customers who want to charge their EVs at home and indicated in our most recent TEP that we intend to streamline the residential charging portfolio to address this feedback.

We are proposing modifications to our EV Accelerate At Home program and EV Subscription Service Pilot, to consolidate our programs into a more streamlined product offering that continues to reduce barriers to charging at home and off-peak while also maintaining affordability, safety, and customer choice.

## **B. Modification Detail**

We propose to 1) expand and merge the EV Subscription Pilot into EV Accelerate At Home; 2) replace “prepay” with a “bring-your-own-charger” option; 3) update program pricing, and 4) update the customer service agreement terms. Each of these proposals is described in more detail below.

### **1. Expanding the EV Subscription Service Pilot as a permanent rate offering under EV Accelerate At Home**

We propose to expand and merge the EV Subscription Pilot (Subscription Pilot) into EV Accelerate At Home, so there is only one program offering called EV Accelerate At Home, but with different options to pay for energy. For customers, the two options would be referred to as either “Pay-As-You-Go” where customers take service under the existing three-period residential TOU rate, or “Subscription” where customers take service under an updated flat monthly rate for off-peak charging. To align the two options, Subscription pricing was modified to also leverage the 3-period residential TOU rates.

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<sup>111</sup> Available at <https://ev.xcelenergy.com/home-charging-advisor>

**2. Provide Customers with a Bring You Own Charger Option for EV Accelerate At Home**

The Commission has requested that the Company offer a Bring Your Own Charger (BYOC) option for our customers. While the Company initially had concerns with integration and technology, we have identified a solution to enable BYOC on the same EV-specific TOU rates that customers receive when choosing Company-provided equipment. As a result, we are proposing to introduce this BYOC solution to customers, replacing the Prepay option and the current associated monthly customer charges under EV Accelerate At Home. The Company believes the prepay option would no longer be of value if customers are able to procure the same equipment themselves directly. The proposal scales up and enhances the current Installation-Only option that is available to limited charging stations in our program today. The Company believes this offer is directly responsive to the Commission's direction regarding a BYOC option in Docket Nos. E002/M-19-559 and E002/M-21-101.

**3. Modify the EV Accelerate At Home Customer Program Pricing**

We recently completed a Request for Proposal (RFP) for charging equipment supporting EV programs in several Xcel Energy jurisdictions. Vendors submitted bids for the Company to purchase Level 2 (L2) charging stations for our residential programs. As a result, we have updated pricing that has impacted the price for EV Accelerate At Home. Included in the RFP, vendors also submitted bids for the Company to purchase services and functionality that provides us with 15-minute interval energy data to support implementation of our managed charging programs such as TOU rates and Optimize Your Charge (OYC).<sup>112</sup> As a result, we have updated data services pricing that has also impacted the price for the program.

Currently, if a customer elects to move to a different home within the Company's service territory, the customer must pay our contracted electricians' time and materials out-of-pocket to relocate the charger and maintain program participation. Additionally, if a customer elects to terminate from the program in advance of the 10-year contract term, they must pay the Company a \$200 removal fee that covers our contracted electricians' time and materials for removing the charger and bringing it back into inventory. We are proposing to include these minor operational costs into the price of the program based on customer feedback. As explained below, we have

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<sup>112</sup> See Docket No. E002/M-21-101 for details of the OYC program.

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experienced difficulties when customers attempt to avoid these fees, and we think that including these small costs in the price will be easier to manage and provide greater flexibility to customers. As a result, the inclusion of these costs has impacted the price for the program.

The impact of these pricing updates is included in the updated tariff sheets included as Attachment W. Workpapers are provided in support of our pricing proposal at Attachment V.

**4. Clarify the need for customers to show possession of an EV before having a charger installed.**

We also propose to clarify the requirement that customers show possession of an EV before being allowed to participate in EV Accelerate At Home. Many EVs are sold online, with customers ordering their vehicles for delivery at a later date. Eliminating the need for customers to demonstrate possession of an EV allows them to install a charger before their EV is delivered. Moreover, since our customer charge is set to recover the fixed costs of installing and maintaining the charger, there is no risk of non-participating customers contributing to the costs of chargers that are not being used. In addition, clarifying the requirement that customers show possession of an EV allows for expanded use cases, such as two-wheel (e.g., motorcycles and mopeds), and off-road vehicles such as ATVs, side-by-sides and boats. These expanded use cases are reflected in our updated EV Accelerate at Home contract. This change will also allow our programs to respond to the pace at which vehicle manufacturers are transitioning to electric motors as well as customer and manufacturer inquiries about our programs. It is also consistent with the State and Commission's broad policy goals of electrifying other end uses and encouraging greater use of TOU rate structures that support off-peak charging.

**C. Residential Portfolio Budget**

Table 22 below shows the anticipated program participation forecasts for the residential EV portfolio. Table 23 below summarizes the capital and O&M budgets for the Residential program Portfolio.

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**Table 22  
Residential EV Program Forecast**

	2023	2024	2025	2026	Total
Participants	1,581	1,725	2,693	4,910	10,909

**Table 23  
Residential Program Portfolio Budget  
(\$ in Millions)<sup>113</sup>**

	2023	2024	2025	2026	Total
Infrastructure Maintenance <sup>114</sup>	\$0.1	\$0.3	\$0.4	\$0.7	\$1.4
Program Administration	\$0.6	\$1.4	\$1.6	\$1.7	\$5.3
IT	\$0.0	\$0.3	\$0.2	\$0.2	\$0.6
<b>Total Annual O&amp;M Expense</b>	<b>\$0.7</b>	<b>\$1.9</b>	<b>\$2.1</b>	<b>\$2.5</b>	<b>\$7.3</b>
<hr/>					
Single Family	\$1.2	\$1.6	\$2.5	\$4.7	\$10.0
IT	\$1.0	\$2.6	\$1.5	\$1.6	\$6.7
<b>Total Annual Capital</b>	<b>\$2.2</b>	<b>\$4.1</b>	<b>\$4.0</b>	<b>\$6.3</b>	<b>\$16.7</b>

**1. Capital – Charging Equipment and Installation**

The Residential EV portfolio’s capital costs include the charging equipment, scheduling, and installation of all charging equipment installed in the program, with support from contractors selected through a competitive process. The program budget does not include premises wiring and associated permitting.

IT spending will fall both within capital and O&M categories. Capital IT budgets will include the buildout of customer enrollment portals, charger management software, customer facing tools, billing integrations and other software tools necessary to implement the program as filed.

**2. O&M**

*EV Charging Equipment Maintenance:* This category includes costs incurred by charging equipment vendors to collect customer energy usage data through each customer’s home Wi-Fi network and for the Company to work with these vendors to transmit and monitor data submitted to the Company, including through vendor-provided portals. Maintenance costs also include proactive efforts to contact customers in the

<sup>113</sup> Table may not sum to totals due to rounding

<sup>114</sup> Infrastructure Maintenance expense includes approximately 7 percent for estimated customer participation in BYOC.

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event of an issue with charging load data, as well as charger maintenance for those customers participating in EV Accelerate At Home with a charger provided by the Company. For the BYOC option, maintenance will not be assessed to the customer; however, the cost of the initial electrician visit for necessary hardwiring and programming will be included in the O&M portion of the monthly charge.

*Program Administration:* This category of costs include the costs associated with employee and contract labor to manage the EV Accelerate At Home. The program management team supports the development and execution of promotional materials such as brochures, direct mail, advertising and emails, and web content. Finally, the Program Administration budget includes a portion of the costs associated with a team of dedicated customer care agents who support interaction with participants in Residential EV programs across multiple Xcel Energy service territories to address questions and will ensure the programs are implemented as approved by the Commission.

**3. Incremental to Existing Budget**

A preliminary estimate of the revenue requirement impact of the residential EV program portfolio budgets, compared to the revenue requirement included in the MYRP of our pending rate case proceeding is included in Table 24 below.

**Table 24  
Current Residential EV Program Portfolio Compared to MYRP Revenue Requirement  
(\$ in Millions)**

	<b>2022</b>	<b>2023</b>	<b>2024</b>
Current Budget Revenue Requirement	\$0.5	\$3.0	\$6.1
MYRP Revenue Requirement	\$2.2	\$3.0	\$3.4
<b>Revenue Requirement Change</b>	<b>\$-1.7</b>	<b>\$-0.02</b>	<b>\$2.7</b>

**D. Cost Benefit Results**

Given that the Company’s residential programs offer several options to customers that are all designed to recoup the costs directly from participants, the E3 analysis did not include separate scenarios for the residential programs. However, given the net benefits that personal electric LDVs offer to drivers, electric customers, and Minnesota residents as a whole – as evidenced in the base case results – the Company is focused on maximizing participation in its residential programs so that the modeled net benefits from EVs can become a reality. Especially in light of the increase in net

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benefits that managed charging offers personal LDV drivers and society as a whole, the Company’s residential program enhancements in this Petition are focused on increasing participation in managed charging programs – be it EV TOD rates (Pay As You Go option for EV Accelerate At Home), the Optimize Your Charge program, and/or the Subscription option for the EV Accelerate At Home program. Specifically, E3 estimates that personal electric LDVs, under managed charging, can create over \$1 billion in benefits for EV drivers from fuel and maintenance savings, about \$340 million in net benefits for electric customers from the more efficient use of the grid, and more than \$1 billion in net benefits for society through fuel savings and emissions reductions over the study period.

**Table 25  
Reference Case Cost-Benefit Analysis Results for Light-Duty EVs from E3  
(\$ in Millions, Lifetime Benefits of All EVs Adopted over 2022-2030 Period)<sup>115</sup>**

	<b>Participant Cost Test (PCT)</b>	<b>Ratepayer Impact Test (RIM)</b>	<b>Societal Cost Test (SCT)</b>
Personal LDVs (Unmanaged)	\$545	\$680	\$853
Personal LDVs (Managed)	\$1,033	\$342	\$1,002
Commercial LDVs (Managed)	\$184	\$8	\$742

**E. Customer Experience and Program Operations**

**1. Updates to EV Accelerate At Home**

During enrollment in EV Accelerate At Home, customers will be prompted to select how they wish to participate—by choosing to take a charger from Xcel Energy or bringing their own. Customers will also select how they want to pay for their energy, by selecting either to pay on a per kWh basis (Pay-As-You-Go) or on an off-peak subscription basis (Subscription). If customers are already on a whole-home TOU rate or have onsite solar panels, they will be directed to the Voluntary EV Accelerate At Home option and directed to the applicable rate page on our website, and/or to the page that hosts Xcel Energy’s solar programs and net metering options.

The EV Accelerate At Home tariff, customer service agreement, program website and enrollment experience will be updated to reflect the new options, pricing, and terms. IT development work will be needed to modify the enrollment experience and

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<sup>115</sup> See Attachment D for E3 results and full cost-benefit report.

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automation capabilities within our Salesforce and billing systems. Finally, Customer Care and other teams will be trained on new program options, terms, and processes.

## 2. **Sunseting Prepay**

With the introduction of a Bring Your Own Charger option, we propose to sunset the existing prepay option for a charger on a predetermined date after Commission approval of the modification request and close the tariff to any further customer enrollment. We will continue to support participating prepay option customers pursuant to the terms of the tariff and applicable customer service agreement. When a prepay customer chooses to withdraw or if their equipment breaks, the terms laid out within the existing customer service agreement will apply.

## **F. Reporting**

As part of these residential program modifications, we propose to maintain and add the following reporting requirements, to be discussed and provided annually through the Annual EV Reporting process.

### *Residential EV Charging Service Tariff*

- Customer Participation and Usage
- Development and Promotional Activities
- Renewable Program Participation
- EV Cost Tracker Balance

### *Residential EV Accelerate At Home*

- Customer Participation and Usage: Pay as You Go and Subscription
- EV Cost Tracker Balance
- Customer Cost Savings
- Customer Experience and Lessons Learned
- Bundled Option Statistics
- Prepay Option Statistics
- Bring Your Own Charger Statistics
- Voluntary Charger Service Option Statistics
- Costs and Revenues
- Evaluation of Monthly Customer Charges

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- Requests for Proposals
- Evaluation of EV Chargers

**VI. ADVISORY SERVICES**

As noted above, we plan to expand and improve our EV Advisory Services to enhance the customer experience in response to the feedback we have received. Our advisory services aim to create an easy customer experience and deliver the upfront education, outreach, and consultation via tailored, real-time support and tools that customers need to identify transportation electrification opportunities and to make informed decisions about their plans as they consider installing EV charging infrastructure.

**A. Budgets**

**Table 26  
Advisory Services Budget  
(\$ in Millions)<sup>116</sup>**

	2023	2024	2025	2026	Total
<b><u>Residential O&amp;M Expense</u></b>					
Education and Awareness	\$1.6	\$1.6	\$1.8	\$1.7	\$6.6
EV Advisor Online Tool	\$0.1	\$0.2	\$0.2	\$0.2	\$0.7
Trade Allies	\$0.6	\$0.8	\$0.8	\$0.9	\$3.1
<b>Total Residential O&amp;M Expense</b>	<b>\$2.3</b>	<b>\$2.5</b>	<b>\$2.8</b>	<b>\$2.8</b>	<b>\$10.4</b>
<b><u>Commercial O&amp;M Expense</u></b>					
Advisory	\$0.3	\$1.4	\$2.5	\$4.1	\$8.3
Education and Awareness	\$0.08	\$0.1	\$0.1	\$0.2	\$0.5
EV Advisory Online Tool	\$0.0	\$0.3	\$0.3	\$0.3	\$0.8
Trade Allies	\$0.3	\$0.3	\$0.3	\$0.4	\$1.2
<b>Total Commercial O&amp;M Expense</b>	<b>\$0.6</b>	<b>\$2.1</b>	<b>\$3.3</b>	<b>\$4.9</b>	<b>\$10.9</b>
<b>Total O&amp;M Expense</b>	<b>\$3.0</b>	<b>\$4.6</b>	<b>\$6.1</b>	<b>\$7.7</b>	<b>\$21.3</b>

**B. Residential Advisory and Program Administration**

Our Residential Advisory Services support general outreach and education relating to EVs that help drive adoption to meet Minnesota’s 2030 target. In 2021 and early 2022, the Company’s EV-related educational efforts spanned multiple communication

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<sup>116</sup> Table may not sum to totals due to rounding

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channels including sponsorship of public events, digital media, and dynamic communications. The Company also conducted at least 15 individual training sessions at dealerships with their staff to educate sales people and management about EVs and how to make our shared customers aware of our managed charging programs.<sup>117</sup>

*Education and Awareness.* A focus of the Company’s efforts to educate and inform customers about the benefits of EVs and our programs is to connect with them by providing relevant information where they are engaging with digital platforms and content. Advertising channels include search engine marketing, social-media, digital media, and traditional media such as TV. Calls to action will drive traffic to our online website and resources for EV information and programs.

The Company will continue to participate in and sponsor public events to engage relevant audiences, aligning with partners who also support increased adoption of electric vehicles and access to the benefits of transportation electrification. Our educational assets include our interactive “EV garage” that offers customers a simulated home charging set up and hands-on experiences with EVs and home charging equipment. We also provide various EV models at events for display and ride & drive experiences.

*EV Advisor Online Tool.* The EV Advisor Online Tool provides personalized information on EVs and programs to help customers find the right option for their lifestyle and charging needs, and the Company has included funding to improve the online tools. Online tools currently provide the following customer resources:

- New and pre-owned EVs available in the market and options to compare models;
- Environmental impacts of EVs;
- Costs and benefits of EVs, including fuel and maintenance costs;
- Auto Dealers who are knowledgeable about EVs and current inventory at select dealer locations;
- Rate and managed charging program recommendations, including information encouraging customers to charge during off-peak periods

The Company will seek to improve the online and mobile experience by providing more self-service capabilities that provide customers with information needed to

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<sup>117</sup> See our June 1, 2022 Annual Report submitted in Docket No. E002/M-15-111 at Pages 4 and 5.

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compare new charging program options, such as the BYOC and Subscription options under EV Accelerate At Home.

*Trade Ally Support for Auto Dealers and Electricians.* “Trade Allies” are experienced businesses offering EV industry goods and services that we partner with to help make our customers’ EV journey easier. For example, we partner with important trade allies like electricians with experience installing Level 2 chargers and auto dealers who sell EVs. The budget for “Trade Allies” includes non-labor costs associated with managing a network of local auto dealer partners to help provide a positive customer experience from point of sale to charging at home. We currently provide 26 local MN dealer partners with services that directly address barriers they face selling EVs, including EV training for personnel, information, resources, and tools to be shared with mutual customers, and plan to proactively grow this network over time. We are also planning to implement an incentive for sales managers and Finance & Insurance (F&I) managers at dealer network partners who support managed charging program enrollments right at the dealership during the purchase/lease process.

Electricians are important trade allies and sources for referrals to our managed charging programs. The Company will continue to build its trade network for electricians who are interested in installing charging infrastructure and associated components. The budgets include the costs for conducting trainings, which will include specific information about the EV market, Company electric rates, managed charging programs, renewable programs, and specific metering and distribution standards and considerations. The Company believes that continued collaboration with electricians will help enable an improved customer experience and lead to increased enrollment in managed charging programs.

### **C. Commercial Advisory**

Our current commercial pilots and evaluation efforts to date have demonstrated that customers, especially those engaging in fleet planning, value and need education and advice to aid their vehicle electrification and infrastructure planning. Our fleet advisory services have helped customers robustly inform their plans for new electric fleet vehicles and infrastructure. In some cases, customers shared that more early advice was needed to understand the terms of the pilot and their ability to participate, which further underscores the need for our services. As such, we see the need to expand our support for commercial customers. Further, as we establish more rigor to our Application Review and Scoring process for our Fleet, Public and MDU Pilots,

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more advisory and consultative services will be needed to help customers navigate the process of preparing for and completing a pilot application.

The Company is proposing to strengthen its Commercial EV Advisory Service in order to enhance the customer experience. The budget assumes that 8.75 percent of incremental electrified fleet customers will be provided with the Fleet Advisory and Assessments services from the Company. Reflecting an expected 20 percent attrition rate of customers deciding to postpone electrification following the assessment, the budget assumes a fleet program adoption rate of 7 percent over all fleet customers and over the time period 2024-2026.. The Community Planning portion of the Commercial EV Advisory Services budget includes support for more robust tools, data, and expertise to deliver electric vehicle planning for communities through multiple strategies to drive the growth of EVs as well as development of charging infrastructure, integrating other Xcel Energy offerings, as appropriate.

The remaining O&M costs are largely associated with resources that are made available to all commercial customers, and the majority of O&M costs anticipated to be incurred are not necessarily driven by the type of customer relying on the Company’s support. However, for budgeting purposes, for the costs other than fleet assessments and community advisory, 58 percent of the O&M is assumed to be focused on multi-dwelling unit customer on average.

Table 27 below summarizes all of the enhancements we plan to make to our Commercial EV Advisory Services based on current elements that are in place today.

**Table 27  
Commercial EV Advisory Service Elements**

<b>Advisory Service Element</b>	<b>Current State and Gap</b>	<b>Enhancements/Additions</b>
<b>Education, Outreach &amp; Consultation</b>	Informal education and outreach via marketing and traditional channels. Gap: customers need early stage support	Education and outreach targeted to commercial customers through more focused marketing and sponsorship tactics
<b>EV Advisor Online Tools</b>	Not currently offered	Self-service tools on website to help commercial customers with their transition
<b>Trade Allies</b>	None currently offered; Gap: help with getting vehicles once TCO done	Expansion of auto dealership network to medium and heavy duty dealerships to support vehicle procurement planning and delivery

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<b>Advisory Service Element</b>	<b>Current State and Gap</b>	<b>Enhancements/Additions</b>
<b>Fleet Assessments</b>	Telematics and total cost of ownership (TCO) planning tool	Support more customers with fleet assessments.
<b>Workforce Training</b>	Not currently offered. Gap: customers need help with this barrier	Create a Workforce Training Program geared toward educating and training customers on how to use their new vehicles and charging systems provided through our programs
<b>Community Advisory</b>	Community EV Tool Kit available via Xcel Energy's Partners in Energy (PiE) program. Gap: More communities need these tools to navigate transition	Establish more robust outreach, tools, data, and expertise to deliver EV planning services for communities by way of community facilitators offering planning and implementation support

**Education, Outreach, and Consultation.** In addition to EV education and pilot information available on our website or at Company-facilitated or attended public events and webinars, we plan to establish a dedicated staff of Pre-Electrification Consultants to help customers identify what transportation electrification opportunities may be available to them and how it can benefit their organization.

*a. Education and Awareness*

The Company will leverage some of the same tools as we do for our residential programs; however, these tools such as sponsorships and events, would be targeted to fleet and commercial customers. The Company's EV-related educational efforts for Commercial customers span multiple communication channels including advertising, sponsorship of public events, and dynamic communications. In general, digital outreach creates awareness about the benefits of EVs and Xcel Energy's managed charging programs, and public events enable education through an accessible format that addresses complex questions.

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*b. EV Advisor Online Tools*

In addition to the current website tools that are mentioned in the residential section of this petition, the Company plans to add online services that are relevant to commercial customers. The online tools include:

- Adding medium/heavy-duty vehicles available and options to compare models;
- Environmental impacts of EVs tailored to the commercial customer;
- Costs/benefits, including fuel and maintenance tailored to the commercial customer;
- Fleet auto dealers who are knowledgeable about EVs and current inventory at select dealer locations;
- Rate recommendations, including information encouraging customers to charge during off-peak periods; and
- Support around optimization to connect the customer's energy usage with responsible grid management. Optimizing the investments made will be done by providing in-depth rate reviews and charging recommendations. We are working to develop an advisory tool specifically for commercial customers, which will apply machine learning to estimate energy costs and carbon emissions for customers based on EV adoption estimates and rate and charging scenarios.

*c. Trade Allies*

The Commercial EV Portfolio budget includes costs associated with expanding our auto dealer network to include medium- and heavy-duty vehicle dealers and to connect our commercial pilots and customers to the existing dealership network. Through our network, we will help the customers develop their roadmap and get connected to their local dealers to procure EVs. Our internal Account Managers are also important trade allies and sources for referral to our pilots, and the Company plans to offer an incentive to Account Managers to help support electric vehicle transitions for our existing managed customers. This will help us to more efficiently and effectively drive our customers to the transition more quickly. The Company believes that collaboration between the Clean Transportation program team and Account Managers will help enable an improved customer experience.

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*d. Commercial EV Advisor and Pre-Electrification Advisor Teams*

The Commercial Portfolio budget includes costs associated with both current resources and planned resource additions. We currently have a Commercial EV Advisor team, which is a dedicated team of EV infrastructure specialists that help customers with individual site assessments and support them through commissioning of their project. These team members are part of the Xcel Energy Clean Transportation team that work as a commercial customer's guide throughout electrification. Customers have been very clear that they need this help, and this is needed not just for customers participating in our pilots, but for all commercial customers considering transportation electrification. The following customer stages show how our team's help supports throughout their journey:

- Consideration – involves Xcel Energy representatives meeting with the customers to understand their plans and guide them on the path to beginning electrification.
- Consulting - advise customers on their charging infrastructure needs, including providing information about our charging infrastructure pilots and sharing information on the choices for charging equipment.
- EV Supply Infrastructure – dedicated advisors work as advocates for the customer inside the Company and with other external parties, managing the process of the installation of their charging infrastructure and helping to coordinate site work.
- Rate Advisory – helps customers to understand how to manage their costs – and thereby encourage off-peak charging with education on rates, optimization, and best practices.

Additionally, the budget includes more advisory support for customers that are *even earlier* in their electrification journey, and not yet at the consideration stage. Based on operation of the current pilots, many customers need help developing a long-term roadmap that plans out vehicles and sites to electrify. Due to demand for advisory resources, our current Commercial EV Advisor team today is only able to support when a site is ready for development. This increased support for early-stage advisory will focus on vehicle, charging, and grid needs to help customers narrow the specifics of their installation – i.e., the where and when. The proposed Commercial EV Pilot budget includes the cost of an in-house Technical Project Manager, with support from the Pre-electrification Consulting Advisory resources. This project manager will have deep subject matter expertise in distribution and EVSI design to support early-stage customers with EV planning.

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**Fleet Assessments.** We will build upon our existing fleet assessment tool that leverages real-time telematics data to monitor key vehicle performance indicators. The current offering assesses EV suitability and total cost of ownership; we plan to add capabilities that will help fleet operators establish an EV procurement plan to jumpstart their transition. We have noticed that after our customers have completed their Fleet Assessments, a barrier still exists in determining next steps for vehicle procurement. Many questions remain for fleet operators regarding vehicle availability, vehicle specifications and suitability, and how to efficiently manage turnover cycles of existing fleet vehicles with the introduction of electric models. Our assistance for establishing procurement plans for fleets will include connecting them with our auto dealer and manufacturer partners, providing a roadmap for anticipated delivery dates of the vehicles for those that are available in inventory at dealers.

**Charging Infrastructure & Energy Assessments.** As demonstrated in our pilots, assessment support is key to moving forward with EV charging projects successfully. There is a need for preliminary charging infrastructure and energy planning support prior to a customer being ready to act on a specific infrastructure project, however. A Technical Project Manager and a team of Pre-Electrification Consultants, with expertise in distribution design and EVSI, will support customers by reviewing vehicle, charging, infrastructure, and energy costs and needs during the consultation and fleet assessment stages, thus streamlining the process and customer experience.

**Workforce Training.** Another key barrier to commercial EV adoption is ensuring proper training of customer employees that will be involved in the EV transition including drivers, mechanics, facility staff, site hosts, tenants, and office functions such as accounting/finance. We hear from customers that it is challenging to know what types of training and resources will be needed as they plan their transition to electric. Our Commercial EV Advisory Services will provide workforce training that can help customers become more educated on EVs, their benefits, functionality and operations of the vehicles and charging equipment, and how transitioning to electric transportation will overall impact their own individual and organizational operations. We will work with industry and community partners to establish a robust workforce training package that will be made available to customers who participate in our programs. This would include on-site training classes and webinars for our commercial customers.

**EV Commercial Customer Care.** Though our intention is to have all EV-related interactions with commercial customers be handled by our Pre-Electrification Consultants, Commercial EV Advisors, and Account Managers, we acknowledge that

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not every commercial customer will engage with us through those channels. Therefore, we plan to train a team of customer care agents to answer EV questions and triage customers to the appropriate Pre-Electrification Consultant, Commercial EV Advisor, or Account Manager. We already have a team of dedicated customer care agents for our residential EV programs that is very successful, and we plan to add handling calls from commercial customers to their training and scope.

**Community Advisory.** We are proposing to offer more robust tools, data, and expertise to deliver electric vehicle planning services for communities that encompass multiple strategies to drive the growth of EVs in the marketplace as well as development of charging infrastructure, while integrating other Xcel Energy offerings as appropriate. During the planning process, the Company and its program facilitators will seek to provide the guidance and framework to help develop a common vision and develop an organized plan to identify and achieve the communities' goals relating to EV's. Implementation services for these plans will be provided for up to 18 months to promote progress towards goals, provide necessary resources and remove barriers. The implementation support will leverage the Company's EV offerings and will identify and incorporate additional resources as appropriate. These services are offered at no cost to participating communities, and we will seek to partner with approximately sixty communities from 2022 to 2026.

## **VII. REQUEST FOR RULE VARIANCE AND WAIVER**

In order to successfully implement these programs, we request that the Commission grant variances to several rules and practices.

First, for our residential and commercial programs, we request that the Commission continue to vary meter-related rules—including Rules 7820.3700 and 7820.3800—for EV charging equipment, in addition to waiving relevant portions of Section 3 of the Company's Electric Rate Book Section 6 tariff (Metering and Billing). Continuing these variances for our charging programs would mean that our charging equipment would not be defined as "metering equipment" for purposes of these programs and tariffs. Rather, charging equipment would be governed by the specific provisions in our proposed tariff and customer Agreement. The Commission previously granted variances to these rules for our current and past residential and commercial

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programs.<sup>118</sup> Most recently, the Commission adopted a recommendation by the Department of Commerce to limit this waiver for residential customers to “billing errors that occur as a result of the failure of a customer to maintain adequate and reliable Wi-Fi connectivity.”<sup>119</sup> The Company accepts this limitation for the residential program modifications in this filing, and proposes to extend the limitation to hardware and software errors that may occur as a result of customer-owned charging equipment failure.

Second, we request that the Commission continue to vary Rules 7820.3200 and 7820.3400 for our Subscription option for the residential program. Without a variance to these rules, we could not offer the Subscription service because we could not set a price to reflect forecasted average usage, rather than measured energy usage. The Commission previously granted a variance to these rules for the Company’s EV Subscription Pilot after concluding that the benefits of learning about the risks and rewards outweighed some parties’ concerns.<sup>120</sup>

The learnings from our EV Subscription Pilot demonstrate that our proposed permanent offering will be valuable for our customers and the public interest. As discussed, we have observed that our Subscription customers show high levels of satisfaction in the program. In addition, the Subscription Pilot has incited even higher levels of off-peak charging than our EV TOU programs—providing greater system benefits. This demonstrates that both subscribers and non-subscribers benefit from this program.

We have also modified our Subscription proposal in this filing to limit potential negative impacts of the program. Specifically, we propose that the monthly price of the program be recalibrated to reflect the average kWh sales observed during our pilot. This will help the program better reflect actual costs going forward. We also propose implementing a monthly off-peak usage cap to prevent customers from exploiting the flat-rate program design. This modification has the additional benefit

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<sup>118</sup> See Docket No. E002/M-17-817. ORDER APPROVING PILOT PROGRAM, GRANTING VARIANCE, AND REQUIRING ANNUAL REPORTS (May 9, 2018); Docket No. E002/M-19-559. ORDER APPROVING ELECTRIC VEHICLE HOME SERVICE AND VOLUNTARY ELECTRIC VEHICLE CHARGER SERVICE PROGRAMS AS MODIFIED (Oct. 6, 2020); Docket No. E002/M-20-711. ORDER APPROVING PILOT PROGRAM WITH MODIFICATIONS (July 2, 2021).

<sup>119</sup> See Docket No. E002/M-19-559. ORDER APPROVING ELECTRIC VEHICLE HOME SERVICE AND VOLUNTARY ELECTRIC VEHICLE CHARGER SERVICE PROGRAMS AS MODIFIED (Oct. 6, 2020) at Order Point 1a.

<sup>120</sup> See Docket No. E002/M-19-186. ORDER APPROVING PILOT PROGRAM WITH MODIFICATIONS, AND SETTING REPORTING REQUIREMENTS (Oct. 7, 2019) at Page 13 and Order Point 4.

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of allowing the program to be open to households with more than one EV, something that was not available in the Subscription Pilot. For these reasons, we believe that the findings in our pilot, combined with our proposed modifications, justify our request to continue varying Rules 7820.3200 and 7820.3400 for our Subscription service.

Third, we request that the Commission waive our tariff provisions<sup>121</sup> governing customer Contributions In Aid of Construction (CIAC) for our Electric School Bus Pilot and extend its CIAC waiver for our three Commercial EV Infrastructure Pilots (Fleet Pilot, Public Charging Pilot, and MDU Pilot) through the term that we propose in this filing.<sup>122</sup> When the Commission approved our Fleet and Public Charging pilots, it explained that “to foster growth of EVs for the purpose of transportation electrification requires a forward-thinking approach.”<sup>123</sup> The Commission further explained that the pilots were intended to be instructive about the propriety of cost allocation and recovery, and that the pilot would provide data to aid in future evaluation of the cost and effectiveness of these programs.<sup>124</sup>

We believe this same reasoning applies to our Electric School Bus Pilot proposal as it leverages the Fleet Pilot and Public Charging Pilot structures to facilitate the installation of EV charging infrastructure. We offer this proposal as a forward-thinking approach to foster growth in electric school buses in a manner that can align the many interests of our various stakeholders. We have also limited the scale of the pilot to approximately 32 buses and associated infrastructure. This amount is large enough to provide our regulators and stakeholders with a robust dataset to evaluate the pilot, while ensuring that the overall costs are reasonable. We anticipate that the learnings of this pilot will provide helpful information to refine how costs are allocated and recovered in the event that the pilot demonstrates that we should move forward with a permanent school bus offering.

The learnings from our Fleet and Public Charging Pilots discussed in this Petition, in addition to the significant customer demand and interest in our MDU Pilot

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<sup>121</sup> These provisions are included in Section 6, Sheets 22 et. seq. of our Minnesota Electric Rate Book.

<sup>122</sup> See Docket Nos. E002/M-18-643. ORDER APPROVING PILOTS WITH MODIFICATIONS, AUTHORIZING DEFERRED ACCOUNTING, AND SETTING REPORTING REQUIREMENTS (July 17, 2019) (Fleet and Public Charging Pilots), and E002/M-20-711. ORDER APPROVING PILOT PROGRAM WITH MODIFICATIONS (July 2, 2021) (MDU Pilot).

<sup>123</sup> Docket No. E002/M-18-643. ORDER APPROVING PILOTS WITH MODIFICATIONS, AUTHORIZING DEFERRED ACCOUNTING, AND SETTING REPORTING REQUIREMENTS (July 17, 2019) at Page 11.

<sup>124</sup> Ibid, at Page 12.

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demonstrates that a continued waiver of CIAC is in the public interest for our Commercial EV pilots.

Finally, for our Company-owned public charging network proposal, we request that the Commission continue to waive a provision within our Service Policy. Specifically, we request that the Commission approve Company ownership of the EV service connection, EV supply infrastructure, and EV charging equipment assets installed as part of this program. The Commission previously waived this provision when it approved our proposal to construct and own 21 DCFCs.<sup>125</sup> The Company requests that the Commission continue to approve this waiver for all of our public charging network.

### **VIII. REQUEST TO CONTINUE STREAMLINED PROCESS FOR MINOR MODIFICATIONS**

Continuation of the Commission's streamlined process for approving and amending the customer service agreements (CSAs) in our commercial pilot programs is requested. We seek, also, to expand this process to include CSAs in our non-commercial EV programs and for minor modifications to our EV programs and pilots. Under this process, the Commission would delegate to the Executive Secretary authority to approve, via notice, minor modifications to our EV programs, pilots, and CSAs if no interested parties or Commission staff object or file an intent to object within 30 days of filing.

The Commission first adopted this streamlined process in Docket No. E-002/M-18-643 to approve CSAs for our fleet and public charging pilots.<sup>126</sup> The Company used this process successfully to remove a 50kW floor for charging equipment in its standard CSA.<sup>127</sup> This seemingly minor contractual change allowed the Company to be responsive to customer interests while maintaining the goals of the pilot. The Company has also sought approval of a modification to its Fleet CSA using this streamlined process in a letter dated May 27, 2022 in the same docket. That modification would add language to the CSA responding to a customer's concern about a potential breach of the CSA by the Company. The Commission also

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<sup>125</sup> See Docket No E002/M-745. ORDER APPROVING PUBLIC CHARGING STATION PROPOSAL (April 27, 2022) at Page 9.

<sup>126</sup> See Order Point 2 of the Commission's September 7, 2021 Order.

<sup>127</sup> See Docket No. E002/M-18-643. NOTICE OF MODIFICATION APPROVAL (March 29, 2022).

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expanded this streamlined process to govern modifications to the Company's pilot program to operate 21 DCFCs.<sup>128</sup>

The streamlined approval process has been beneficial by allowing the Company to quickly adapt to customer needs, operate a more successful program, and reduce our regulators' burden. As the EV market continues to grow and evolve, we anticipate that additional changes will be needed to our programs and CSAs. For instance, we foresee the need to continue working with customers on minor contract changes, or the potential need to reallocate our budget between programs to ensure the greatest success for our overall portfolio. We view the streamlined approval process as a vehicle for greater benefits by allowing the Company to adapt its portfolio to these and other potential future needs.

## **IX. OUTREACH AND PLANNED STAKEHOLDER ENGAGEMENT**

Prior to submitting this filing, the Company conducted both customer research and targeted outreach to inform the design of the proposals contained in this Petition. In addition to soliciting input from our existing EV Advisory stakeholder group, which was established to provide input on the Fleet and Public Charging pilots through semi-annual meetings, the Company also reached out to a number of customers that would be impacted by the proposed modifications of existing programs. We also conducted outreach to some potential site hosts for our proposed public charging network and to school districts and school bus operators to inform the design of our proposed school bus pilot. At the time of this filing, the Company has already received a number of supportive letters regarding both our public charging network and the proposed expansion of our Fleet Pilot, and those letters are included as Attachments AA1-AA11.

The Company intends to use our semi-annual EV Advisory stakeholder group meetings going forward to gather feedback and input from stakeholders on all EV programs and pilots in market, ensure transparency and share lessons learned, as well as to assess our customers' experiences and perceptions about EVs that could lead to increased adoption.

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<sup>128</sup> See Docket Nos. E002/M-20-745 and E,G999/M-20-492. ORDER APPROVING PUBLIC CHARGING STATION PROPOSAL (April 27, 2022) at Order Point 11.

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Pursuant to its semi-annual Advisory stakeholder group cadence, the Company has scheduled a two-day workshop for September 27<sup>th</sup> and 28<sup>th</sup> 2022 with the stakeholder group to gather feedback on the proposals contained in this petition.

**CONCLUSION**

The Company is pleased to submit this proposal for the Commission's consideration to help Minnesota achieve its 2030 EV target that will deliver cleaner air for all and net benefits to all customers. We respectfully request Commission approval of the following:

- our proposal for expanding the public charging program,
- our proposal for an electric school bus pilot program,
  
- our proposal for streamlining and modifying our commercial and residential EV portfolios, including extending pilot programs,
- our proposed advisory services,
- our proposed tariffs and agreements,
- our proposed cost recovery and accounting treatment, and
- our request to waive certain Rules and tariff provisions

We look forward to working with the Commission and stakeholders as this proceeding moves forward.

Dated: August 2, 2022

Northern States Power Company

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STATE OF MINNESOTA  
BEFORE THE  
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie Sieben	Chair
Joseph K. Sullivan	Vice-Chair
Valerie Means	Commissioner
Matt Schuerger	Commissioner
John Tuma	Commissioner

IN THE MATTER OF THE PETITION OF  
NORTHERN STATES POWER COMPANY FOR  
APPROVAL OF A PUBLIC CHARGING  
NETWORK, AN ELECTRIC SCHOOL BUS  
PILOT, AND PROGRAM MODIFICATIONS

DOCKET NO. E002/M-22-\_\_\_\_

**PETITION**

**SUMMARY OF FILING**

Please take notice that on August 2, 2022, Northern States Power Company, doing business as Xcel Energy, filed with the Minnesota Public Utilities Commission a petition for approval of a proposed expansion of public charging initiatives, a pilot exploring the potential benefits of electric school buses, and modifications to existing EV program portfolios for both commercial and residential customers.

## **I. SUMMARY OF FILING**

A one-paragraph summary is attached pursuant to Minn. R. 7829.1300, subp. 1.

## **II. SERVICE ON OTHER PARTIES**

Pursuant to Minn. R. 7829.1300, subp. 2 and Minn. Stat. § 216.17, subd. 3, Xcel Energy has electronically filed this document. A summary of the filing has been served on all parties on our miscellaneous electric service list and on the enclosed service lists for Docket Nos. E002/M-15-111, E002/M-17-817, E002/M-18-643, E002/M-19-186, E002/M-19-559, E,G999/M-20-492, E002/M-20-745, and E002/M-21-101.

## **III. GENERAL FILING INFORMATION**

Pursuant to Minn. R. 7829.1300, subp. 3, the Company provides the following information.

### **A. Name, Address, and Telephone Number of Utility**

Northern States Power Company doing business as:  
Xcel Energy  
414 Nicollet Mall  
Minneapolis, MN 55401  
(612) 330-5500

### **B. Name, Address, and Telephone Number of Utility Attorney**

Ian Dobson  
Assistant General Counsel  
Xcel Energy  
414 Nicollet Mall, 401 - 8<sup>th</sup> Floor  
Minneapolis, MN 55401  
(612) 370-3578

### **C. Date of Filing**

The date of this filing is August 2, 2022.

### **D. Statute Controlling Schedule for Processing the Filing**

Minn. Stat. § 216B.16, subd. 1, requires 60 days' notice to the Commission of a

proposed tariff change. Under the Commission's rules, the proposed tariff change discussed in this petition falls within the definition of a miscellaneous tariff filing under Minn. R. 7829.0100, subp. 11, because no determination of Xcel Energy's general revenue requirement is necessary. Minn. R. 7829.1400, subps. 1 and 4, permits comments in response to a miscellaneous filing to be filed within 30 days and reply comments to be filed no later than 10 days thereafter.

**E. Utility Employee Responsible for Filing**

Amy Liberkowski

Regional Vice President, Regulatory and Pricing

Xcel Energy

414 Nicollet Mall, 401 - 7<sup>th</sup> Floor

Minneapolis, MN 55401

(612) 330-6613

**IV. MISCELLANEOUS INFORMATION**

Pursuant to Minn. R. 7829.0700, the Company requests that the following persons be placed on the Commission's official service list for this proceeding:

Ian Dobson

Assistant General Counsel

Xcel Energy

414 Nicollet Mall, 401 - 8<sup>th</sup> Floor

Minneapolis, MN 55401

Ian.m.dobson@xcelenergy.com

Christine Schwartz

Regulatory Administrator

Xcel Energy

414 Nicollet Mall, 401 - 7<sup>th</sup> Floor

Minneapolis, MN 55401

regulatory.records@xcelenergy.com

Any information requests in this proceeding should be submitted to Christine Schwartz at the Regulatory Records email address above.

**V. EFFECT OF CHANGE UPON XCEL ENERGY REVENUE**

No significant revenue effect net of incremental costs is expected during the period addressed in this plan. As shown in the attached Cost Benefit Analysis report, electric vehicle charging revenues will increase over the life of these programs and will be reflected in future rate proceedings.

## **DESCRIPTION AND PURPOSE OF FILING**

The Company seeks approval of a proposed expansion of public charging initiatives, modifications to existing EV program portfolios for both commercial and residential customers, and a pilot exploring the potential benefits of electric school buses.

## **Procedural History of Xcel's Electric Vehicle Programs**

The following is a brief synopsis of Commission proceedings related to Xcel's portfolio of EV products and tariffs.

### **Transportation Electrification Plan History**

On December 28, 2017 the Commission issued a Notice of Commission Inquiry into Electric Vehicle Charging Infrastructure to gain a better understanding of the following<sup>1</sup>:

1. The possible impacts of electric vehicles (EVs) on the electric system, utilities, and utility customers, including the potential electric system benefits;
2. The degree to which utilities and utility regulatory policy can impact the extent and pace of EV penetration in Minnesota; and
3. Possible EV tariff options to facilitate wider availability of EV charging infrastructure.

After receiving comments from electric utilities and other stakeholders, the Commission issued its Order Making Findings and Requiring Filings on February 1, 2019. The Order required Xcel and other utilities to file "by June 30, 2019, a Transportation Electrification Plan identifying what EV-related initiatives the utility is contemplating over the next two years, including next steps as specific programs to scale up current or currently proposed EV pilots or tariffs."

On June 28, 2019, Xcel filed its first Transportation Electrification Plan (TEP). On December 12, 2019, the Commission issued its Order Accepting Filings and Establishing Requirements for Additional Filings. This order required utilities to file TEPs annually and to report on a series of specific categories related to the number of EVs in their service territories, the demand and energy impact of these EVs, information on EV charging capabilities and usage, forecasts of future EV adoption, and utility plans for programs and/or pilots to facilitate and optimize EV adoption. The

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<sup>1</sup> Docket No. E000/CI-17-879.

order further required that, within 9 months of issuance, Xcel file a pilot proposal to address EV charging at multi-dwelling units.

On June 2, 2020, Xcel filed its second TEP. On April 16, 2021, the Commission issued its Order Accepting 2020 Transportation Electrification Plans, Adopting Additional Informational Requirements, and Establishing Biennial Filing Requirement. This order generally required utilities to provide additional information on budgeting and cost-effectiveness of their EV programs and discuss the impact of more rapid electrification of light duty, fleet, and medium- and heavy-duty vehicles. The order required utilities to file their next TEP by June 1, 2021.

On June 1, 2021, Xcel filed its third TEP. On May 17, 2022, the Commission issued its Order Accepting 2021 Transportation Electrification Plans and Adopting Additional Information Requirements. This order made several procedural changes to the TEP process. It further required that Xcel provide by July 16, 2022 a schedule for developing the following electric vehicle programs<sup>2</sup>:

- 1) Opportunities to lower the initial cost of residential wiring.
- 2) Street-side charging.
- 3) Charging infrastructure for medium- and heavy-duty electric vehicles other than transit vehicles.
- 4) A successor for its Public Charging Pilot Program.
- 5) Community planning.
- 6) Segmentation and targeting/electric vehicle detection.

The Order further required Xcel to provide by November 13, 2022 a program modification to its V2G School Bus demonstration project, or to propose a new program to support the V2G school bus demonstration.

### **EV Tariffs and Programs**

**Residential EV Tariff:** In 2014, the Minnesota Legislature passed Minn. Stat. § 216B.1614, which directed each public utility selling electricity at retail to file a tariff enabling customers to purchase electricity solely for the purpose of recharging an electric vehicle (“EV”). On January 30,

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<sup>2</sup> The Company provided this Compliance Filing to the Commission on July 15, 2022.

2015, Xcel filed its Petition for approval of a residential EV charging tariff.<sup>3</sup> Xcel's proposal combined a time-varying rate for electricity with an additional customer charge to recover the costs of a separate meter for the EV. On June 22, 2015, the Commission issued its Order Approving Tariffs and Requiring Filings.

**EV Home Service:** On November 17, 2017, Xcel filed a Petition seeking approval of a two-year residential EV service pilot program.<sup>4</sup> The pilot would provide an alternative to the Company's residential EV tariff by reducing the up-front cost to meter EV usage separately from other electricity usage. On May 9, 2018, issued its Order Approving Pilot Program, Granting Variance, and Requiring Annual Reports.

On August 30, 2019, Xcel filed a Petition seeking approval to expand the residential EV service pilot into a full-time, permanent offering, called Electric Vehicle Home Service.<sup>5</sup> Xcel's Petition also requested approval of a Voluntary Electric Vehicle Charger Service, in which the Company would install and maintain company-owned charger equipment in customers' homes. On October 6, 2020, the Commission issued its Order Approving Electric Vehicle Home Service and Voluntary Electric Vehicle Charger Programs as Modified. Among other things, the Commission required Xcel to provide installation services for non-company-owned chargers, and to allow customers who leave the program an option to purchase chargers from Xcel at a tariffed rate.

**Fleet EV and Commercial Charging Pilot:** On October 12, 2018, Xcel filed a Petition seeking approval of a three-year Fleet EV Service Pilot and Public Charging Pilot.<sup>6</sup> On July 17, 2019, the Commission issued its Order Approving Pilots with Modifications, Authorizing Deferred Accounting, and Setting Reporting Requirements. Among other things, the Commission required site hosts in the Public Charging program to have a default time-varying rate. It also required Xcel to file a Commercial EV Pilot with a time-varying rate and to install chargers with smart charging capabilities.

On September 16, 2020, Xcel filed a petition in response to the Commission's request for programs that would assist the economic recovery from the COVID-19 pandemic.<sup>7</sup> Xcel's Petition requested a modification of the EV Fleet Program to expand it to all interested participants. On August 24, 2021, the Commission issued its Order Modifying Existing Program, which approved the Company's request.

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<sup>3</sup> Docket No. E002/M-15-111.

<sup>4</sup> Docket No. E002/M-17-817.

<sup>5</sup> Docket No. E002/M-19-559.

<sup>6</sup> Docket No. E002/M-18-643.

<sup>7</sup> Docket nos. E,G999/CI-20-492 and E,G002/M-20-716.

**EV Subscription Pilot:** On February 22, 2019, Xcel filed a Petition seeking approval of a three-year EV Subscription Service Pilot to test whether known monthly at-home charging costs could encourage EV adoption, and to assess customer behavior associated with this rate option.<sup>8</sup> On October 7, 2019, the Commission issued its Order Approving Pilot with Modifications, and Setting Reporting Requirements. On July 15, 2020, Xcel filed a request for two modifications to the pilot: (1) expand the number of customers who could participate in the pilot, and (2) extend the pilot for an additional 12 months. On September 28, 2020, the Commission approved these modifications.

**Multi-Dwelling Pilot:** On September 10, 2020, Xcel filed a Petition seeking approval of a multi-dwelling unit EV pilot.<sup>9</sup> Xcel's proposal was made in compliance with the Commission's December 19, 2020 order in docket E-99/CI-17-879. On July 2, 2021, the Commission issued its Order Approving Pilot Program with Modifications. Among other things, the Commission required that modifications to encourage use of time-varying rates, make the pilot more accessible to affordable-housing units, and update installation and equipment costs after conducting a Request for Proposal.

### **EV Portions of COVID Relief and Recovery**

On September 16, 2020, Xcel proposed the following EV investments as a portion of its broader COVID-19 Relief and Recovery proposals<sup>10</sup>:

- An EV Rebate Program;
- An Xcel Energy owned DC Fast Charging network;
- Acceleration of Xcel Energy's internal fleet electrification; and
- Modification of Xcel's existing Fleet EV Infrastructure Pilot in Docket 18-643.<sup>11</sup>

On September 25, 2020, the Commission issued a notice of comment on the completeness of Xcel's proposal and potential procedural paths in Docket E002/M-20-745.

Between October 16 and October 30, 2020, organizations filed comments and reply comments on the notice of completeness.

On January 11, 2021, Xcel filed a supplement with a cost-effectiveness analysis of electric vehicle adoption in Minnesota.

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<sup>8</sup> Docket No. E002/M-19-186.

<sup>9</sup> Docket No. E002/M-20-711.

<sup>10</sup> Docket nos. E,G999/CI-20-492 and E,G002/M-20-716.

<sup>11</sup> The Company's proposal to modify its Fleet EV Infrastructure was approved by the Commission in a separate docket. *See In the Matter of Xcel Energy's Petition for Approval of Electric Vehicle Pilot Programs*, Docket No. E-002/M-18-643, Order Modifying Existing Program (August 24, 2021).

Northern States Power Company

On February 10, 2021, the Commission issued a notice requesting additional information from Xcel based on the feedback from parties.

On March 8, 2021, Xcel submitted the requested additional information.

On March 17, 2021, the Commission filed a notice for comment on Xcel's COVID-19 Relief and Recovery EV Proposals.

By August, 26, 2021, a variety of stakeholders filed initial Comments. On September 9, 2021, Xcel filed reply comments. By September 20, 2021, a variety of stakeholders filed reply comments.

On October 1, 2021, Xcel filed supplemental information about income verification and outreach costs.

On April 27, 2022, the Commission issued its Order Approving the Public Charging Proposal, which allows the Company to install, own, and operate 21 DC Fast Chargers in its service territory. The Commission denied approval of the Company's proposed EV rebate programs. The Commission decided to address the Company's proposal to accelerate its fleet electrification in the Company's pending or a future rate case.

Northern States Power Company

	2023	2024	2025	2026	2023-2026	Legend	
<b>Program Cost Summary</b>							
<b>Capital Costs</b>							
Non-IT	\$ -	\$ 12,683,892	\$ 43,183,543	\$ 104,241,464	\$ 160,108,898	(a) = (kk)	
IT	-	2,567,827	1,528,662	1,588,986	5,685,475	(b)	
<b>Total Capital Costs</b>	-	<b>15,251,718</b>	<b>44,712,205</b>	<b>105,830,449</b>	<b>165,794,373</b>	(c) = (a) + (b)	
<b>O&amp;M Costs</b>							
Education and Awareness	\$ -	\$ 150,000	\$ 150,000	\$ 150,000	\$ 450,000	(d) = (vv)	
EV Charging Equipment Maintenance	-	1,168,750	4,387,500	10,837,500	16,393,750	(e) = (xx) + (zz) + (ggg)	
Program Administration	890,458	1,291,890	1,334,355	1,378,361	4,895,064	(f) = (tt) + (uu) + (nnn)	
Other: Energy Supply, Insurance, Property taxes	-	251,141	1,106,175	3,170,156	4,527,472	(g) = (bbb) + (ddd)	
IT	-	288,626	169,838	175,889	634,353	(h)	
<b>Total O&amp;M</b>	<b>\$ 890,458</b>	<b>\$ 3,150,407</b>	<b>\$ 7,147,869</b>	<b>\$ 15,711,906</b>	<b>\$ 26,900,640</b>	(i) = (d) + (e) + (f) + (g) + (h)	
<b>Total Capital and O&amp;M Costs</b>	<b>\$ 890,458</b>	<b>\$ 18,402,126</b>	<b>\$ 51,860,074</b>	<b>\$ 121,542,355</b>	<b>\$ 192,695,013</b>	(j) = (c) + (i)	
<b>Capital Cost Non-IT Assumption Details</b>							
<b>Assumptions</b>							
Labor Cost per kW	\$ -	\$ 17.00	\$ 17.00	\$ 18.00		(k)	
Equipment (EVSI/EVSE) Cost per kW	\$ -	\$ 783.25	\$ 797.78	\$ 812.61		(l)	
Total Capital Cost per kW	\$ -	\$ 800.25	\$ 814.78	\$ 830.61		(m)	
<b>Connector Hub Locations</b>							
Number of sites	#	-	3	10	21	34	(n)
Number of DCFC 350s per site	#	-	5	5	5	15	(o)
Number of DCFC 350s	#	-	15	50	105	170	(p) = (n) * (o)
Charger Capacity (2 ports)	kW	-	350	350	350		(q)
Total Connector Hub Locations Capacity	MW	-	5.25	17.50	36.75	59.50	(r) = (p) * (q) / 1000
<b>Connector Hub Capital Costs Subtotal</b>	\$	\$ -	\$ 4,201,289	\$ 14,258,717	\$ 30,524,891	\$ 48,984,897	(s) = (m) * (r) * 1000
<b>Pull-through Connector Hub Locations</b>							
Number of sites	#	-	4	10	25	39	(t)
Number of DCFC 350s per site	#	-	5	5	5	15	(u)
Number of DCFC 350s	#	-	20	50	125	195	(v) = (t) * (u)
Charger Capacity (2 ports)	kW	-	350	350	350		(w)
Total Pull Through Connector Hub Locations Capacity	MW	-	7.00	17.50	43.75	68.25	(x) = (v) * (w) / 1000
<b>Pull-through Connector Hub Location Capital Costs Subtotal</b>	\$	\$ -	\$ 5,601,719	\$ 14,258,717	\$ 36,339,156	\$ 56,199,591	(y) = (m) * (x) * 1000
<b>Destination Charging Hub Locations</b>							
Number of sites	#	-	2	10	25	37	(z)
Number of DCFC 180s per site	#	-	10	10	10	30	(aa)
Number of DCFC 180s	#	-	20	100	250	370	(bb) = (z) * (aa)
Charger Capacity (2 ports)	kW	-	180	180	180		(cc)
Total Hub Location Capacity	MW	-	3.60	18.00	45.00	66.60	(dd) = (bb) * (cc) / 1000
<b>Destination Charging Hub Location Capital Costs Subtotal</b>	\$	\$ -	\$ 2,880,884	\$ 14,666,109	\$ 37,377,417	\$ 54,924,410	(ee) = (m) * (dd) * 1000
<b>Total All Locations</b>							
Number of sites	#	-	9	30	71	110	(ff) = (n) + (t) + (z)
Number of Chargers	#	-	55	200	480	735	(gg) = (p) + (v) + (bb)
Ports per charger	#	-	2	2	2	2	(hh)
Number of ports	#	-	110	400	960	1,470	(ii) = (gg) * (hh)
Capacity	MW	-	15.85	53.00	125.50	194.35	(jj) = (r) + (x) + (dd)
<b>Capital Total - All Locations</b>	\$	\$ -	\$ 12,683,892	\$ 43,183,543	\$ 104,241,464	\$ 160,108,898	(kk) = (s) + (y) + (ee)
Capital Costs (Excluding IT) per charger	\$/charger	\$ -	\$ 230,616	\$ 215,918	\$ 217,170	\$ 217,835	(ll) = (kk) / (gg)
Capital Costs (Excluding IT) per port	\$/port	\$ -	\$ 115,308	\$ 107,959	\$ 108,585	\$ 108,918	(mm) = (ll) / (hh)

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<b>O&amp;M Cost Assumption Details</b>							
<b>Assumptions</b>							
Chargers Beginning of Period	#	-	-	55	255	(nn)	
Chargers End of Period	#	-	55	255	735	(oo)	
Average Number of Chargers	#	-	28	155	495	(pp) = ((nn) + (oo)) / 2	
Sites Beginning of Period	#	-	-	9	39	(qq)	
Sites End of Period	#	-	9	39	110	(rr)	
Average Number of Sites	#	-	5	24	75	(ss) = ((qq) + (rr)) / 2	
<b>Recurring O&amp;M Expenses</b>							
NSP Recurring Labor Program Management - Total	\$	\$ -	\$ 517,391	\$ 536,948	\$ 557,245	\$ 1,611,584	(tt)
NSP Recurring Program Management - Travel and other	\$	\$ -	\$ 20,000	\$ 20,000	\$ 20,000	\$ 60,000	(uu)
Third Party Consulting and Marketing	\$	\$ -	\$ 150,000	\$ 150,000	\$ 150,000	\$ 450,000	(vv)
Third Party Contracted O&M (covered by Agreement)	\$	\$ -	\$ 1,100,000	\$ 4,000,000	\$ 9,600,000	\$ 14,700,000	(ww)
Third Party Contracted O&M (non- covered by Agreement)	\$	\$ -	\$ 55,000	\$ 310,000	\$ 990,000	\$ 1,355,000	(xx)
Property Taxes	\$	\$ -	\$ 181,380	\$ 798,904	\$ 2,289,557	\$ 3,269,841	(yy)
Insurance	\$	\$ -	\$ 69,761	\$ 307,271	\$ 880,599	\$ 1,257,631	(zz)
IT-Licensing and Communication	\$	\$ -	\$ 13,750	\$ 77,500	\$ 247,500	\$ 338,750	(aaa)
<b>Recurring O&amp;M Expenses Subtotal</b>	\$	\$ -	\$ 2,107,282	\$ 6,200,623	\$ 14,734,901	\$ 23,042,806	<b>(bbb)</b>
<b>Non-Recurring O&amp;M Expenses</b>							
Labor Program Design	\$	\$ 718,598	\$ 594,999	\$ 615,824	\$ 637,378	\$ 2,566,800	(ccc)
NSP Program Management - Travel and other	\$	\$ 71,860	\$ 59,500	\$ 61,582	\$ 63,738	\$ 256,680	(ddd)
Program Design Third party Consulting	\$	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 400,000	(eee)
<b>Non-Recurring O&amp;M Expenses Subtotal</b>	\$	\$ 890,458	\$ 754,499	\$ 777,407	\$ 801,116	\$ 3,223,480	<b>(fff) = (ccc) + (ddd) + (eee)</b>
<b>O&amp;M Total</b>	\$	\$ 890,458	\$ 2,861,781	\$ 6,978,030	\$ 15,536,017	\$ 26,266,286	<b>(ggg) = (bbb) + (fff)</b>
<i>O&amp;M as percentage of CAPEX</i>	%	<i>na</i>	22.56%	16.16%	14.90%	16.41%	(hhh) = (ggg) / (kk)

# Cost-Benefit Analysis of Transportation Electrification in the Xcel Energy Minnesota Service Territory

July 2022



Energy+Environmental Economics

Northern States Power Company

# Cost-Benefit Analysis of Transportation Electrification in the Xcel Energy Minnesota Service Territory

July 2022

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# Table of Contents

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<b>Table of Figures</b>	<b>i</b>
<b>Table of Tables</b>	<b>iii</b>
<b>Acronym Definitions</b>	<b>v</b>
<b>Executive Summary</b>	<b>1</b>
<b>Key Takeaways</b>	<b>1</b>
<b>Study Aims and Methodology</b>	<b>1</b>
<b>Vehicle Types and Scenarios</b>	<b>2</b>
<b>Results</b>	<b>2</b>
<b>1 Study Aims</b>	<b>7</b>
<b>2 Methodology</b>	<b>8</b>
<b>2.1 Cost-Benefit Overview</b>	<b>8</b>
<b>2.2 Modeling Methodology</b>	<b>10</b>
<b>2.3 Modeling Scenarios</b>	<b>11</b>
<b>3 Inputs and Assumptions</b>	<b>14</b>
<b>3.1 Driving and Charging Behavior</b>	<b>14</b>
<b>3.2 EV Adoption</b>	<b>16</b>
3.2.1 Charging Access	17
3.2.2 EV Types	17
<b>3.3 Vehicle Parameters</b>	<b>18</b>
3.3.1 Vehicle Efficiency	19
3.3.2 Incremental Vehicle Costs	19
3.3.3 Tax Credits	20
<b>3.4 Charger Parameters</b>	<b>20</b>
3.4.1 Charger Types	20
3.4.2 Charger Network Density	21
3.4.3 Charger Costs	21
3.4.4 Distribution Upgrade Costs	22
3.4.5 Avoided Fuel Costs	23
3.4.6 Avoided O&M Costs	24
<b>3.5 Rates and Utility Costs</b>	<b>24</b>
3.5.1 Utility Tariffs and Charging Costs	24
3.5.2 Electricity Supply Costs	25

<b>3.6</b>	<b>Avoided Emissions</b>	<b>26</b>
<b>3.7</b>	<b>Inputs and Assumptions Compared to Previous Xcel Minnesota Study</b>	<b>26</b>
<b>4</b>	<b>Results</b>	<b>27</b>
<b>4.1</b>	<b>Total Transportation Electrification Results</b>	<b>27</b>
<b>4.2</b>	<b>Personal LDVs</b>	<b>30</b>
4.2.1	Reference Scenario	30
4.2.2	Xcel Programs Scenario	32
4.2.3	Individual Xcel Programs	37
<b>4.3</b>	<b>Commercial LDVs</b>	<b>40</b>
4.3.1	Reference Scenario	41
4.3.2	Xcel Programs Scenario	41
4.3.3	Individual Xcel Programs	45
<b>4.4</b>	<b>MDVs</b>	<b>47</b>
4.4.1	Reference Scenario	47
<b>4.5</b>	<b>Commercial HDVs</b>	<b>48</b>
4.5.1	Reference Scenario	49
<b>4.6</b>	<b>School Buses</b>	<b>50</b>
4.6.1	Reference Scenario	50
4.6.2	Xcel Programs Scenario	50
4.6.3	Xcel Programs Scenario with V2G	53
<b>5</b>	<b>References</b>	<b>56</b>

## Table of Figures

---

Figure 3.1. Sample one-week driving profile for personal LDVs.....	15
Figure 3.2. Sample charging profile for one week for an unmanaged personal LDV .....	16
Figure 3.3. School Bus V2G Discharge Compensation Rate (nominal \$/kWh) .....	25
Figure 4.1. Average costs and benefits of unmanaged personal LDV electrification per vehicle adopted from 2022-2030 (Reference scenario).....	31
Figure 4.2. Per vehicle net benefit comparison of personal LDV unmanaged vs. managed charging (Reference scenario).....	31
Figure 4.3. Driver costs and benefits comparison of unmanaged personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	33
Figure 4.4. Electric personal LDV adoption forecast in Reference and Xcel programs scenarios .....	33
Figure 4.5. Driver costs and benefits comparison of managed personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 (\$M).....	34
Figure 4.6. Customer costs and benefits comparison of unmanaged personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	35
Figure 4.7. Societal costs and benefits comparison of unmanaged personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	36
Figure 4.8. Average costs and benefits of commercial LDV electrification per vehicle adopted from 2022-2030 (Reference scenario).....	41
Figure 4.9. Driver costs and benefits comparison of commercial LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	42
Figure 4.10. Electric commercial LDV adoption forecast in Reference and Xcel programs scenarios.....	43
Figure 4.11. Customer costs and benefits comparison of commercial LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	44
Figure 4.12. Societal costs and benefits comparison of commercial LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	44
Figure 4.13. Average costs and benefits of MDV electrification per electrified MDV adopted from 2022-2030 (Reference scenario).....	48
Figure 4.14. Average costs and benefits per electrified commercial HDV adopted from 2022-2030 (Reference scenario).....	49
Figure 4.15. Average costs and benefits of school bus electrification per vehicle adopted from 2022-2030 (Reference scenario).....	50

Figure 4.16. Driver costs and benefits comparison of school bus electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	51
Figure 4.17. Customer costs and benefits comparison of school bus electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	52
Figure 4.18. Societal costs and benefits comparison of school bus electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 .....	52
Figure 4.19. Driver costs and benefits comparison of school bus electrification in Xcel programs with and without V2G for all vehicles adopted 2022-2030 .....	53
Figure 4.20. Customer costs and benefits comparison of school bus electrification in Xcel programs with and without V2G for all vehicles adopted 2022-2030 .....	54
Figure 4.21. Societal costs and benefits comparison of school bus electrification in Xcel programs with and without V2G for all vehicles adopted 2022-2030 .....	54

## Table of Tables

---

Table ES.1. Summary of PCT net benefit results (\$M).....	4
Table ES.2. Summary of RIM net benefit results (\$M).....	5
Table ES.3. Summary of SCT net benefit results (\$M) .....	6
Table ES.4. Summary of school bus net benefit results (\$M) .....	6
Table 2.1. Cost and benefits associated with each cost test perspective.....	9
Table 2.2. Installation schedule for Xcel-owned public DCFC ports .....	11
Table 2.3. Installation schedule for Xcel-funded commercial, MFH, workplace, and public chargers.....	12
Table 2.4. Purchase schedule for Xcel-owned electric school buses.....	12
Table 2.5. Summary of vehicle types and charging management considered in Reference and Xcel Programs modeling scenarios.....	14
Table 3.1. Annual VMT for each vehicle class.....	15
Table 3.2. Cumulative EV adoption in 2022, 2025, and 2030 for each vehicle class and scenario .....	17
Table 3.3. Vehicle and charger parameters of personal LDVs .....	18
Table 3.4. Vehicle and charger parameters of MDVs and HDVs.....	18
Table 3.5. Incremental upfront vehicle costs (2022\$) .....	20
Table 3.6. Charger power level for each vehicle class and charger type .....	20
Table 3.7. Reference Scenario EV to EV charger ratios by vehicle class and charger type.....	21
Table 3.8. Xcel Programs Scenario EV to charger ratios by vehicle class and charger type .....	21
Table 3.9. Charger costs (2022\$) .....	22
Table 3.10. Distribution upgrade costs .....	23
Table 3.11. Fuel economy assumptions in miles per gallon (mpg).....	23
Table 3.12. Fuel price forecast (nominal \$) .....	24
Table 3.13. Illustrative Rate Used for School Bus V2G Discharge (nominal \$/kWh) .....	25
Table 4.1. Summary of PCT net benefit results (\$M).....	28
Table 4.2. Summary of RIM net benefit results (\$M) .....	29
Table 4.3. Summary of SCT net benefit results (\$M) .....	30

Table 4.4. Driver costs and benefits comparison between unmanaged and managed personal LDV electrification scenarios for all vehicles adopted 2022-2030 (\$M) .....	35
Table 4.5. Customer costs and benefits comparison between unmanaged and managed personal LDV electrification scenarios for all vehicles adopted 2022-2030 (\$M) .....	36
Table 4.6. Societal costs and benefits comparison between unmanaged and managed personal LDV electrification scenarios for all vehicles adopted 2022-2030 (\$M) .....	37
Table 4.7. Net benefits for personal LDV electrification programs with unmanaged charging for all vehicles adopted 2022-2030 (\$M).....	38
Table 4.8. Net benefits comparison between personal LDV electrification programs with unmanaged charging for all vehicles adopted 2022-2030 (\$M).....	38
Table 4.9. Net benefits comparison between personal LDV electrification programs with managed charging for all vehicles adopted 2022-2030 (\$M).....	39
Table 4.10. Net benefits comparison between personal LDV electrification programs with managed charging for all vehicles adopted 2022-2030 (\$M).....	40
Table 4.11. Net benefits for commercial LDV electrification programs for all vehicles adopted 2022-2030 (\$M).....	45
Table 4.12. Net benefits comparison for commercial LDV electrification programs for all vehicles adopted 2022-2030 (\$M) .....	46

## Acronym Definitions

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Acronym	Definition
BEV	Battery Electric Vehicle
CBA	Cost-Benefit Analysis
DCFC	Direct Current Fast Charger
DER	Distributed Energy Resource
EIA	Energy Information Administration
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
HDV	Heavy-Duty Vehicle
ICE	Internal Combustion Engine
LDV	Light-Duty Vehicle
MDV	Medium-Duty Vehicle
MFH	Multi-Family Housing
NPV	Net Present Value
O&M	Operations and Maintenance
PCT	Participant Cost Test
PEV	Plug-in Electric Vehicle
PHEV	Plug-in Hybrid Electric Vehicle
RIM	Ratepayer Impact Measure
SCT	Societal Cost Test
TOU	Time-of-Use
V2G	Vehicle-to-Grid
VMT	Vehicle Miles Traveled
WACC	Weighted Average Cost of Capital

## Executive Summary

### Key Takeaways

1. Vehicle electrification offers net benefits to all Xcel customers in Minnesota.
2. NSPM's proposed programs increase the benefits for drivers from electrifying vehicles in Xcel's Minnesota service territory from 2022 to 2030. NSPM's proposed programs also increase societal benefits from vehicle electrification, with the exception of the School Bus Purchase Program.
3. While benefits to Xcel customers decrease with the implementation of Xcel's programs, net benefits remain positive and NSPM's programs accelerate EV adoption. Vehicle electrification with Xcel's programs provides additional benefits not captured in the cost-benefit analysis such as improvements in air quality.
4. Personal LDVs are the largest contributor to vehicle electrification benefits in Xcel's Minnesota service territory because they make up 90% of the vehicles adopted over the modeling horizon.
5. Managed charging results in an increase in driver benefits from utility bill savings but results in a decrease in net benefits for Xcel customers since the reduction in driver utility bills is greater than the reduction in electric supply costs.

### Study Aims and Methodology

This study evaluates the costs and benefits of electric vehicle (EV) adoption in Xcel Energy's Minnesota service territory and examines the impact of proposed charging infrastructure and school bus purchase programs to accelerate EV adoption and support Minnesota's goal of powering 20% of light-duty vehicles (LDVs) with electricity by 2030. To achieve these aims, Energy and Environmental Economics, Inc. (E3) conducted cost-benefit modeling to evaluate the economic and electric grid impacts of EV adoption.

E3 employed its EVGrid model to capture key interactions between drivers, vehicles, chargers, utility costs, incentives, and gasoline costs. EVGrid includes a simulation of EV driving and charging behavior to capture the costs and benefits associated with hourly EV charging profiles.

In this study, we consider the impacts of EV adoption from 2022 to 2030. Costs and benefits are analyzed from driver, customer, and societal perspectives that are captured through three cost tests:

- + Participant Cost Test (PCT): the costs and benefits to the vehicle driver or fleet owner – is the total cost of EV ownership higher or lower than a similar Internal Combustion Engine (ICE) option?

- + Ratepayer Impact Measure (RIM): the costs and benefits to all utility customers<sup>1</sup> in Xcel Energy's Minnesota service territory – will average utility rates increase or decrease?
- + Societal Cost Test (SCT): the costs and benefits from a societal perspective for Minnesota – do EVs provide net benefits to society?

## Vehicle Types and Scenarios

The study explored how costs and benefits vary under different vehicle types, charge management, and utility program scenarios. Reference scenarios were developed for each vehicle type that have EV adoption forecasts that meet Minnesota's EV adoption goals. Reference scenarios are used to assess the impacts of Xcel's proposed programs on costs and benefits from the driver, customer, and societal perspectives. E3 modeled Reference scenarios for personal LDVs, commercial LDVs, MDVs, commercial HDVs, and school buses. Xcel is proposing programs for owning public DCFC and funding residential, commercial fleet, workplace, and public L2 chargers, which change the cost and benefit streams from electrifying personal and commercial LDVs that have access to these types of chargers. In addition, Xcel is proposing a school bus purchase program, which impacts the cost-benefit analysis of electrifying school buses.

There are three types of charging modeled: unmanaged, managed, and Vehicle-to-Grid (V2G) charging. In unmanaged charging scenarios, drivers charge at different locations (home, workplace, public L2, and public DCFC) based on their driving patterns and charging access. With unmanaged charging scenario, drivers are not exposed to time-varying charging rates and charge their EV immediately upon arriving at a charging location. In this study, only personal LDVs are modeled to have unmanaged charging based on expectations for all other vehicle types to have most charging managed over the modeling horizon.

In managed charging scenarios, drivers are exposed to time-varying charging rates and manage their charging at each location to minimize their cost of charging. This means that drivers may not charge as soon as they arrive at a charging location but may instead wait until lower-priced hours to charge. Under managed charging, drivers still charge the amount needed to satisfy driving patterns. Managed charging is modeled for all vehicle types in the study.

In V2G charging scenarios, in addition to charging from the grid, vehicles can sell energy stored in their vehicle battery back to the grid. These cases assume that vehicles charge at the same rate as in managed charging for charging the vehicle but receive a separate rate for selling energy back to the grid. Only school buses are modeled under V2G charging as a sensitivity.

## Results

Overall, this study finds that under the Reference scenario, vehicle electrification offers net benefits to drivers and Xcel customers in Minnesota as well as society as a whole. Drivers and fleet owners can receive net present value (NPV) benefits between \$688 million and \$1,176 million from electrifying their

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<sup>1</sup> Throughout this study, 'customers' refer to all Xcel customers in the Minnesota service territory, including both EV drivers and non-EV drivers.

vehicle over their vehicle's lifetime depending on if personal LDVs have unmanaged or managed charging.<sup>2</sup> Society as a whole can benefit between \$1,608 million and \$1,757 million from the electrification of personal and commercial LDVs, MDVs, commercial HDVs, and school buses in Xcel's Minnesota territory. Xcel customers can benefit between \$389 million and \$727 million from the net increase in utility revenues from EV charging.

Xcel's proposed programs increase the total benefits for drivers and society from electrifying vehicles in Xcel's Minnesota service territory from 2022 to 2030. The NPV of driver net benefits increase by between \$462 million and \$468 million with the implementation of Xcel's programs since programs cover the costs of EV chargers that drivers would have otherwise had to pay. Xcel's program also covers the upfront cost of 32 school buses, which reduces the total cost of ownership for the fleet of electric school buses in Xcel Minnesota's territory. An increase in net benefits to drivers indicate that the programs will improve the economic proposition for drivers and fleet owners to adopt an EV. By increasing benefits achieved by electrifying a vehicle, Xcel is helping to accelerate EV adoption in its Minnesota service territory and support Minnesota's EV adoption goals.

Societal net benefits increase by between \$167 million and \$204 million from Xcel's programs, which indicates that Minnesota as a whole will benefit from vehicle electrification in the state with the addition of Xcel's programs. Net benefits to society indicate that benefits from higher EV adoption assumed in the scenario with Xcel's programs are larger than the programs' costs.

Customer benefits decrease from Xcel's programs by between \$163 million and \$242 million but remain positive; customers still benefit between \$146 million and \$564 million from vehicle electrification in Xcel's Minnesota service territory. Therefore, Xcel's programs can offer additional incentives for drivers to electrify their vehicles and benefit the state as whole while still not incurring net costs for customers.

Table ES.1, Table ES.2, and Table ES.3 summarize the total NPV of benefits from each cost test perspective evaluated for a Reference scenario and scenario with Xcel's programs. The totals shown sum net benefits across all vehicle types modeled.

Table ES.1 shows the net benefits from the driver or fleet owner perspective. All scenarios have net benefits for drivers and fleet owners except commercial HDVs and school buses.

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<sup>2</sup> Participant benefits are \$1,176 million if personal LDVs have unmanaged charging and \$688 million if personal LDVs have managed charging. Ranges provided in subsequent results reflect the difference in benefits from each perspective (participant, customer, or societal) hinging on whether charging is managed for personal LDVs. Drivers and society see greater benefits from managed charging, meaning that managed personal LDV charging represents the higher value of the range of results, while non-participating customers have reduced benefits from managed charging, meaning that managed personal LDV charging represents the lower value of the range of results.

**Table ES.1. Summary of PCT net benefit results (\$M)**

Case	Reference Scenario		Xcel Programs	
<b>Personal LDV</b>	\$545.0 (all vehicles unmanaged)	\$1,033.3 (all vehicles managed)	\$908.2 (all vehicles unmanaged)	\$1,389.7 (all vehicles managed)
<b>Commercial LDV</b>	\$184.1		\$281.3	
<b>MDV</b>	\$20.2		\$20.2	
<b>Commercial HDV</b>	-\$46.0		-\$46.0	
<b>School Bus</b>	-\$15.4		-\$7.5	
<b>Total</b>	<b>\$687.9</b>	<b>\$1,176.1</b>	<b>\$1,156.2</b>	<b>\$1,637.7</b>

Personal and commercial LDVs and MDVs have net benefits that are largely driven by vehicle gasoline and O&M savings. These savings outweigh incremental upfront costs, utility bills for charging, and charger costs. For commercial HDV and school buses, however, the large incremental upfront costs of these vehicle types outweigh the savings from avoided diesel and O&M, resulting in net costs for vehicles adopted between 2022 and 2030.

As can be seen in Table ES.1, moving from unmanaged to managed charging offers drivers opportunities to further increase their net benefits due to reductions in utility bills from managing charging. Xcel programs scenarios are applied separately to scenarios that assume all vehicles are unmanaged and that assume all vehicles are managed.

Xcel's proposed programs increase the net benefits for personal and commercial LDVs due to the reductions in charging infrastructure costs that drivers must pay when adopting an EV. The school bus purchase program reduces the magnitude of net costs for school buses through reductions in the upfront costs of an electric school bus and also increases net benefits for fleet owners.

From the customer perspective, all Reference scenarios have net benefits, but the addition of Xcel's programs reduces the net benefits for all vehicle types modeled, as shown in Table ES.2. Although there is a reduction in customer net benefits from the implementation of Xcel's programs, net benefits remain positive, and customers still benefit between \$146 million and \$564 million from the electrification of vehicles in Xcel's Minnesota service territory over the modeling horizon.

**Table ES.2. Summary of RIM net benefit results (\$M)**

Case	Reference Scenario		Xcel Programs	
<b>Personal LDV</b>	\$680.1 (all vehicles unmanaged)	\$342.0 (all vehicles managed)	\$539.6 (all vehicles unmanaged)	\$121.2 (all vehicles managed)
<b>Commercial LDV</b>		\$7.6		-\$2.6
<b>MDV</b>		\$5.7		\$5.7
<b>Commercial HDV</b>		\$31.6		\$31.6
<b>School Bus</b>		\$1.7		-\$10.2
<b>Total</b>	<b>\$726.7</b>	<b>\$388.5</b>	<b>\$564.1</b>	<b>\$145.7</b>

When viewed in isolation, commercial LDVs and school buses have net costs for the customers, since the increase in utility bills earned from the additional EVs adopted, particularly for managed vehicles, do not outweigh the program costs for charging infrastructure that are added in program scenarios. When electrification across all vehicle types is considered in aggregation, including the MDV, commercial HDV, and school buses that do not have program costs, customers see net benefits.

Moving from unmanaged to managed charging for personal LDVs reduces customer benefits since reductions in utility bills are larger than reductions in electricity supply costs. This indicates that Xcel's current TOU rates offered to drivers in Minnesota may provide greater incentives that are reflective of the reductions in electricity supply costs that can be achieved through managed charging.

Table ES.3 shows the net benefits from a societal perspective. EV adoption for personal and commercial LDVs and MDVs has net benefits to society. Commercial HDVs and school bus electrification have net costs to society, primarily due to high incremental upfront costs of these vehicle types. When viewed in aggregation across all vehicle types, electrification has positive net benefits for society.

**Table ES.3. Summary of SCT net benefit results (\$M)**

Case	Reference Scenario		Xcel Programs	
<b>Personal LDV</b>	\$853.1 (all vehicles unmanaged)	\$1,001.5 (all vehicles managed)	\$895.0 (all vehicles unmanaged)	\$1,080.9 (all vehicles managed)
<b>Commercial LDV</b>		\$741.9		\$870.6
<b>MDV</b>		\$29.6		\$29.6
<b>Commercial HDV</b>		-\$3.1		-\$3.1
<b>School Bus</b>		-\$13.4		-\$17.2
<b>Total</b>	<b>\$1,608.1</b>	<b>\$1,756.5</b>	<b>\$1,775.0</b>	<b>\$1,960.9</b>

Xcel’s proposed programs increase societal net benefits for personal and commercial LDVs since the increase in benefits from having more EVs on the road in the scenario with Xcel’s programs is larger than the additional charging infrastructure costs that are part of the program.

In addition to sensitivities that include Xcel’s proposed programs, the study also modeled a sensitivity for school buses that included V2G charging in addition to the proposed Xcel programs. V2G charging offers buses opportunities to reduce their utility bills by selling energy back to the grid. V2G charging reduces net costs to drivers and society, as shown in Table ES.4. V2G charging also increases net benefits to customers from reduced electricity supply costs from buses providing electricity to the grid during high-cost hours.

**Table ES.4. Summary of school bus net benefit results (\$M)**

Case	Reference Scenario	Xcel Programs	Xcel Programs with V2G
<b>PCT</b>	-\$15.4	-\$7.5	-\$6.7
<b>RIM</b>	\$1.7	-\$10.2	-\$10.8
<b>SCT</b>	-\$13.4	-\$17.2	-\$17.0

In addition to providing direct economic benefits, vehicle electrification in Xcel’s Minnesota service territory reduces emissions. In the Reference scenario, vehicle electrification across all vehicle types reduces emissions by 12.5 million metric tons CO<sub>2</sub> over the lifetime of all vehicles adopted between 2022 and 2030. Vehicle electrification also reduces NO<sub>x</sub> by 4,600 metric tons and PM<sub>10</sub> by 1,000 metric tons.

Xcel’s proposed programs can help increase this number by facilitating the adoption of more EVs due to Xcel ownership and funding of charging infrastructure and school bus costs. The emissions savings in the scenario with Xcel’s programs increases to 15.3 million metric tons CO<sub>2</sub>, 5,600 metric tons NO<sub>x</sub>, and 1,200 metric tons PM<sub>10</sub> over the vehicles’ lifetimes.

## 1 Study Aims

This study evaluates the costs and benefits of electric vehicle (EV)<sup>3</sup> adoption in Xcel Energy's Minnesota service territory and examines the impact of proposed charging infrastructure programs and school bus purchase programs to meet Xcel's EV adoption goals. This study aims to support Xcel Energy, policymakers, and other stakeholders in understanding:

- + the costs and benefits of EV adoption, from a driver, non-participating customer, and broader societal perspective,
- + the cost and benefits of Xcel's proposed EV programs,
- + potential greenhouse gas and pollutant emissions impacts of electrified transportation, and
- + potential impacts of electric vehicles on utility planning, specifically electricity consumption and planning loads.

The cost-benefit methodology seeks to evaluate direct impacts of transportation electrification through the lens of regulatory cost test frameworks.

Xcel is proposing several programs to accelerate EV adoption in its territory and support Minnesota's EV adoption goals. Proposed programs include ownership of public DCFC, funding for residential, commercial, workplace, and public L2 chargers, and purchases of electric school buses. The purpose of this study is to evaluate the impacts of the proposed programs for each of the perspectives evaluated in the regulatory cost test framework. An analysis of costs and benefits from the driver perspective will evaluate if the programs will improve the economic proposition for drivers to electrify their vehicle. A cost-benefit analysis from a societal perspective will demonstrate if programs improve the overall benefits achieved by society from vehicle electrification. Lastly, an analysis of costs and benefits from a customer perspective will evaluate if Xcel's revenues from vehicle electrification are larger than costs to supply electricity for EV charging and program costs; a net cost from the customer perspective would indicate that Xcel would need to raise electric rates at some point in the future to collect sufficient revenue to cover the costs of the proposed programs.

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<sup>3</sup> The terms "electric vehicle" (EV) and "plug-in electric vehicle" (PEV) are used interchangeably in this report and encompass both plug-in hybrid electric vehicles (PHEVs) and battery electric vehicles (BEVs).

## 2 Methodology

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### 2.1 Cost-Benefit Overview

To perform a Cost-Benefit Analysis (CBA) of transportation electrification in Xcel Energy's Minnesota service territory, E3 compared the costs and benefits accrued over the lifetime of each EV adopted against an equivalent Internal Combustion Engine (ICE) vehicle. Defining a particular value stream as a cost or benefit depends on the perspective taken. E3 performed CBA from the perspective of EV owners and drivers, other utility customers (i.e., non-participating customers), and Minnesota state. Each perspective offers distinct insights that help describe the overall impact of EV adoption in Xcel Energy's Minnesota service territory and inform the development of policies and programs. The three perspectives are as follows:

- + Participant Cost Test (PCT): the costs and benefits to the vehicle driver or fleet owner – is the total cost of EV ownership higher or lower than a similar ICE option?
- + Ratepayer Impact Measure (RIM): the costs and benefits to all utility customers in Xcel Energy's Minnesota service territory – will average utility rates increase or decrease?
- + Societal Cost Test (SCT): the costs and benefits from a societal perspective for Minnesota – do EVs provide net benefits to society?

The cost and benefit components that constitute each perspective were originally defined in the standard practices of cost-effectiveness for California (CALMAC, 2002). These methods are well established and used to evaluate other nationwide distributed energy resource (DER) programs (EPA, 2008), with input data and calculations of cost and benefits updated based on the context of the program.

The PCT measures benefits and costs to participating customers, which are customers who own and drive EVs. Benefits include reduced gasoline or diesel costs, operations and maintenance (O&M) savings, and upfront incentives, while costs include the incremental upfront cost of an EV compared to an ICE vehicle, costs of charging an EV, and charging infrastructure costs paid by drivers.

The RIM compares utility electricity supply costs and transmission and distribution upgrades with revenues associated with EV charging loads. In scenarios that include utility programs, costs also include investments in charging stations and vehicle costs paid by the utility.

The SCT measures the net costs of a program to customers, the utility, and the broader society, including the effects of environmental externalities, within a defined region, in this case the state of Minnesota. Environmental externalities in this study refer to the avoided CO<sub>2</sub> emissions, which receive a monetary value based on an average societal cost of carbon of \$33.52/metric ton. Transfers of costs and benefits within Minnesota, such as electricity bills which are a cost to participants and a benefit to the utility, cancel out from a societal perspective. This study assumes that total energy supply costs, incremental EV costs, and infrastructure costs associated with charging are all societal costs, while avoided vehicle gasoline or diesel costs, O&M savings, and emissions reductions are societal benefits.

Table 2.1 provides an overview of the various costs and benefits analyzed under each perspective.<sup>4</sup>

**Table 2.1. Cost and benefits associated with each cost test perspective**

Cost/Benefit Component	PCT	RIM	SCT
<b>Incremental EV cost</b>	Cost	Cost*	Cost
<b>Federal EV tax credit</b>	Benefit		
<b>EV O&amp;M savings</b>	Benefit		Benefit
<b>Avoided gasoline/diesel costs</b>	Benefit		Benefit
<b>Electricity supply costs for EV charging</b>		Cost	Cost
<b>Charging infrastructure cost</b>	Cost	Cost*	Cost
<b>Electricity bill for EV charging</b>	Cost	Benefit	
<b>Emissions savings</b>			Benefit

\* Costs and benefits apply only to scenarios with utility programs

The costs tests consider the Net Present Value (NPV) of costs and benefits over the lifetime of the vehicle. For this analysis, Xcel Energy’s Weighted Average Cost of Capital (WACC) for their Minnesota service territory is used to discount cost and benefit streams for all three cost tests.<sup>5</sup>

The study performs a cost-benefit analysis for five different vehicle types:

- + **Personal LDVs:** Personal LDVs are used for personal (non-commercial) purposes and have access to a combination of residential, workplace, and public charging (see Modeling Methodology section for additional details on how a representative personal LDV is constructed).
- + **Commercial LDVs:** Commercial LDVs are used for commercial purposes, including commercial fleet vehicles and personally-owned vehicles used for ride-sharing services. Commercial vehicles include those owned by companies and used for commercial operations as well as personal vehicles used for ridesharing services. All commercial fleet vehicles are assumed to have access to depot charging and a portion of vehicles used for ridesharing are assumed to have access to residential charging. All commercial LDVs are assumed to have access to public charging.
- + **MDVs:** MDVs are Class 3 vehicles such as parcel trucks that are used for commercial purposes. MDVs are assumed to only charge at fleet depots.

<sup>4</sup> For more information on how cost and benefit components are assigned, please refer to the Environmental Protection Agency (EPA) best practice manual for cost effectiveness (EPA, 2008).

<sup>5</sup> Some cost-benefit studies assume a higher discount rate for the PCT (e.g., 9%) and a lower discount rate for the SCT (e.g., 3%). Since transportation electrification net-benefits tend to grow over time, using these distinct discount rates would result in lower participant net-benefits and higher societal net-benefits.

- + **Commercial HDVs:** Commercial HDVs are Class 4-8 vehicles used for commercial purposes. Load profiles are based on transit bus driving patterns and are scaled to represent total expected heavy-duty EV adoption. HDVs are also assumed to only charge at fleet depots.
- + **School Buses:** School buses are modeled separately from commercial HDVs given their unique driving patterns characterized by limited use on weekends and lower total miles travelled per year. School buses are assumed to only charge at depots.

## 2.2 Modeling Methodology

E3's EVGrid model uses various input streams, described in detail in the Inputs and Assumptions section, and performs a CBA from each of the perspectives described above. The model calculates the NPV of EV adoption relative to ICE vehicles in Xcel's Minnesota service territory. Accurate forecasting of electricity supply costs and electricity bills depends strongly on the hourly load shape from EV charging. Charging load shapes vary substantially across the driver population and depend on several factors such as vehicle type, charging access, cost of charging, and many others.

To model charging behavior, E3 has developed a bottom-up modeling approach that simulates the driving and charging behavior of thousands of EV drivers. Driving behavior is captured using travel survey data and converted to 15-minute driving patterns through a Markov-Chain Monte Carlo method. The driving population is characterized by drivers' access to charging, spanning a combination of residential, workplace, and public charging access. The driving population is also characterized by EV type, which includes short- and long-range battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) for LDVs. For personal LDV cases, there are four EV types and six combinations of workplace, home, and public charging access, resulting in 24 combinations of customer types (see details in Sections 3.2.1 and 3.2.2). Normalized load shapes for each customer type are generated through linear optimization subject to various constraints. Load shapes are then scaled by the portion of drivers representing that customer type. The final load shape therefore captures the diversity of driving behavior, charging access, and EV adoption across the driving population.

There are three types of charging that can be simulated: unmanaged, managed, and Vehicle-to-Grid (V2G). In unmanaged charging scenarios, drivers charge at different locations (home, workplace, public L2, and public DCFC) based on their driving patterns and charging access. If possible given driving requirements, drivers can also select charging locations based on the cost of charging at each location. For example, public charging is typically more expensive than home or workplace charging, and this price comparison is incorporated into unmanaged drivers' decisions on where to charge if given the choice based on their driving patterns. Under an unmanaged charging scenario, drivers are not exposed to time-varying charging rates and charge immediately upon arrival at a charging location. In this study, only personal LDVs are modeled to have unmanaged charging based on expectations for all other vehicle types to have most charging managed over the modeling horizon.

In managed charging scenarios, in addition to charging based on driving patterns, charging access, and relative prices across charging locations, drivers are exposed to time-varying charging rates and manage their charging at each location to minimize their cost of charging. This means that drivers may not charge

as soon as they arrive at a charging location but may instead wait until lower-priced hours to charge. Under managed charging, drivers still charge the amount needed to satisfy driving patterns. Managed charging is modeled for all vehicle types in the study.

In V2G charging scenarios, in addition to charging from the grid, vehicles can sell energy stored in their vehicle battery back to the grid. These cases assume that vehicles charge at the same rate as in managed charging for charging the vehicle but receive a separate rate for selling energy back to the grid. Only school buses are modeled under V2G charging as a sensitivity.

### 2.3 Modeling Scenarios

The study calculates the costs and benefits of personal and commercial LDVs, MDVs, HDVs, and school buses adopted between 2022-2030. A Reference scenario is modeled for each vehicle type which assumes that Minnesota reaches its EV adoption goals and that Xcel does not implement any new EV programs. Xcel is proposing several EV programs for its Minnesota service territory to support EV adoption goals, which are modeled as sensitivities and compared to Reference scenarios. The programs proposed by Xcel include funding, and for some charger types, ownership and operation of charging infrastructure in Xcel’s Minnesota service territory to be utilized by personal and commercial LDVs. A proposed school bus program includes Xcel purchases of electric school buses for use by school districts in Xcel’s Minnesota service territory. Comparisons of scenarios with the proposed Xcel programs to the Reference scenarios allows for assessments of how the proposed programs impact EV lifetime costs and benefits from a driver, customer, and societal perspective. The Xcel proposed programs are described below:

- + **Public DCFC Program:** Xcel will install and own new public DCFC stations in its Minnesota service territory. Chargers are available for use by all personal and commercial LDVs, with preferential charging rates given to Xcel customers. Fifty percent of public DCFC stations installed as part of the program are considered incremental to the Reference forecast of DCFC stations in Xcel’s Minnesota service territory. The number of DCFC stations installed as part of the Public DCFC Program is shown in Table 2.2.

**Table 2.2. Installation schedule for Xcel-owned public DCFC ports**

	2024	2025	2026
<b>Number of DCFC ports installed</b>	110	400	950

- + **L2 Charging Program:** Xcel will provide funding for the installation of Level 2 make-ready charging infrastructure at commercial fleet, multi-family housing (MFH), workplace, and public locations. The number of each charger type installed as part of the L2 Charging Program is shown in Table 2.3. For the purposes of the proposed program, workplace and public chargers are grouped together. This study assumes that 25% of the combined workplace and public chargers would be in workplace locations with the remaining 75% being in public locations.

**Table 2.3. Installation schedule for Xcel-funded commercial, MFH, workplace, and public chargers**

	2024	2025	2026
<b>Number of commercial fleet ports installed</b>	24	142	263
<b>Number of MFH ports installed</b>	2,762	4,562	7,822
<b>Number of workplace ports installed</b>	17	35	105
<b>Number of public ports installed</b>	52	104	314

- + **School Bus Purchase Program:** Xcel will purchase electric school buses and lease the buses to schools in Xcel’s Minnesota service territory. All school buses purchased as part of the Xcel program are assumed to be incremental to Reference school bus adoption. The number of school buses purchased as part of the School Bus Purchase Program is given in Table 2.4.

**Table 2.4. Purchase schedule for Xcel-owned electric school buses**

	2024	2025	2026
<b>Number of school buses purchased</b>	0	6	26

The scenarios modeled are described below:

- + **Personal LDV – Unmanaged Charging:** Personal LDVs are modeled to have unmanaged charging with a flat Xcel rate at residential and workplace locations.
  - o **Reference scenario**
  - o **Public DCFC + L2 Charging Programs scenario:** Personal LDVs have access to Xcel-owned public DCFC and Xcel-funded public L2 chargers. A portion of personal LDVs also have access to Xcel-funded MFH chargers. The induced effect of the increased number of chargers available to personal LDVs is represented in the personal LDV adoption forecast used for this scenario.
- + **Personal LDV – Managed Charging:** Personal LDVs are modeled to have managed charging against Xcel’s time-of-use rates for residential and workplace charging.
  - o **Reference scenario**
  - o **Public DCFC + L2 Charging Programs scenario:** similar to the Personal LDV Unmanaged Charging scenario
- + **Commercial LDV – Managed Charging:** Commercial LDVs are modeled with managed charging against Xcel’s time-of-use rates for all charging locations.
  - o **Reference scenario**

- **Public DCFC + L2 Charging Programs:** Commercial LDVs have access to Xcel-owned public DCFC and Xcel-funded commercial fleet and public L2 chargers. The induced effect of the increased number of chargers available to commercial LDVs is represented in the commercial LDV adoption forecast used for this scenario.
- + **MDV – Managed Charging:** MDVs are modeled to have managed charging against Xcel’s time-of-use rates for charging at depots.
  - **Reference scenario**
- + **Commercial HDV – Managed Charging:** Commercial HDVs are modeled to have managed charging against Xcel’s time-of-use rates for charging at depots
  - **Reference scenario**
- + **School Buses – Managed Charging:** School buses are modeled to have managed charging against Xcel’s time-of-use rates for charging at depots
  - **Reference scenario**
  - **School Bus Purchase Program:** School bus adoption increases based on the number of buses purchased by Xcel in the program and the upfront costs of these Xcel-owned buses are shifted from the driver to Xcel.
  - **V2G Charging with School Bus Purchase Program:** School bus adoption and upfront cost allocation follows that of the scenario described above but charging of all school buses is V2G.

An overview of all modeled scenarios is shown in Table 2.5.

**Table 2.5. Summary of vehicle types and charging management considered in Reference and Xcel Programs modeling scenarios**

Vehicle Type	Reference Scenario	Xcel Programs Scenario
Personal LDV	Unmanaged	Unmanaged <i>Public DCFC + L2 Charging</i>
	Managed	Managed <i>Public DCFC + L2 Charging</i>
Commercial LDV	Managed	Managed <i>Public DCFC + L2 Charging</i>
MDV	Managed	n/a
HDV	Managed	n/a
School Bus	Managed	Managed <i>School Bus Purchase</i>
		V2G <i>School Bus Purchase</i>

### 3 Inputs and Assumptions

#### 3.1 Driving and Charging Behavior

The first step in conducting the CBA is developing EV driving and charging load profiles for each vehicle type. To model charging load profiles, E3 has developed a bottoms-up approach that simulates driving and charging of thousands of EV drivers to reflect a population-level load profile. Driving behavior is captured using thousands of vehicle trips from detailed trip datasets. For personal LDVs, trip data was extracted from the 2017 National Household Travel Survey (NHTS) (Federal Highway Administration, 2017). For commercial LDVs, the City of Chicago’s survey of Transportation Network Company trip data was used (City of Chicago, 2022). For MDVs, commercial HDVs, and school buses, the NREL Fleet DNA database (NREL, 2019) and the national transit database (Federal Transit Administration, 2019) are used. Each dataset was cleaned, filtered for the specific vehicle type of interest, and where possible, filtered for Minnesota trips only. Values for MDVs are aligned with data on parcel trucks, and values for commercial HDVs are aligned with data on transit buses. The origin and destination locations are categorized, and the

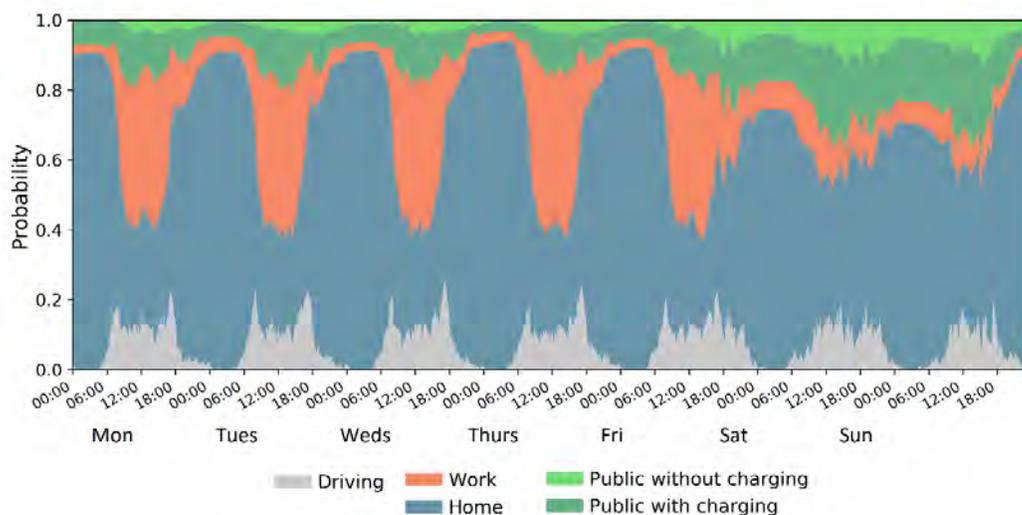
mileage is adjusted slightly to align with Minnesota-specific annual vehicle miles traveled (VMT) sources as shown in Table 3.1.

**Table 3.1. Annual VMT for each vehicle class**

Vehicle Type	Annual VMT
Personal LDV	12,021
Commercial LDV	40,545
MDV	14,175
Commercial HDV	42,500
School Bus	12,792

A statistical process using a Markov-Chain Monte Carlo algorithm is used to simulate driving profiles from vehicle trip data. This process simulates the probability that a driver is parked at possible destinations (home, work, public location) or is driving between two of the locations based on the vehicle trip data. The Markov-Chain Monte Carlo algorithm selects 500 sample drivers to balance computational time and sample diversity. Driving datasets collected over the past several years are assumed to be representative of driving profiles over the modeling horizon. An example weekly driving pattern for a group of drivers is shown in Figure 3.1.

**Figure 3.1. Sample one-week driving profile for personal LDVs**

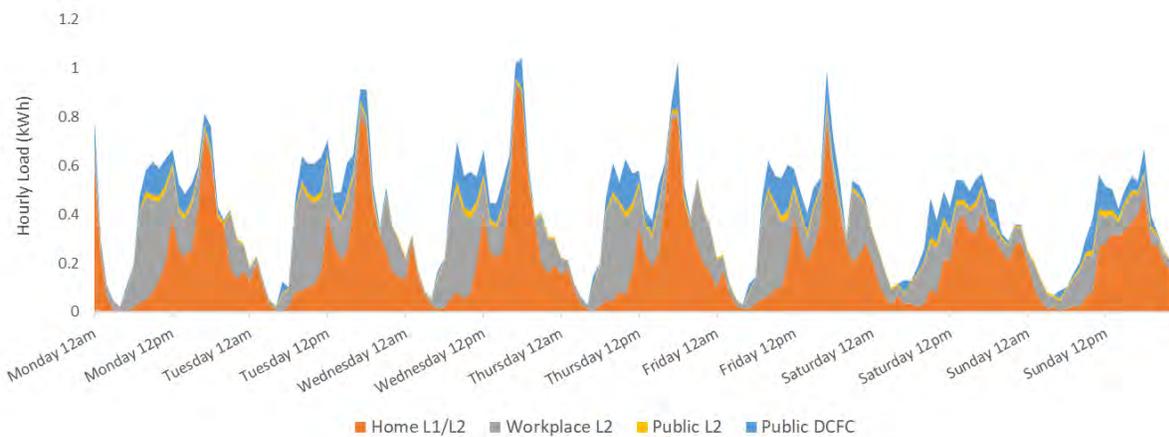


Drivers who had travel days that could not be completed using the EV and charging access options assigned to them are deemed to have “unserved driving energy” and are dropped from the sample to generate the final aggregated charging loads. This implies that drivers with driving patterns where they cannot complete their travel day with the EV and charging access options assigned to them would not purchase this EV type and would not therefore contribute to the final load. A minimum dwell time of 15

minutes was set for charging; if the driver was parked at a destination for less time than this time, no charging was assumed to occur.

Due to the computational intensity of simulating driving and charging behavior, only a representative winter and summer week in 2025 was simulated. The resulting load shapes are scaled based on EV adoption forecasts between 2022 and 2030. A sample week of unmanaged personal LDV charging is shown in Figure 3.2 below. The charging profile shown reflects a per vehicle average across the entire personal LDV population and is used with the EV adoption forecast to create a population-level charging profile.

**Figure 3.2. Sample charging profile for one week for an unmanaged personal LDV**



### 3.2 EV Adoption

In a separate study, Xcel engaged Guidehouse to forecast EV adoption in its Minnesota service territory under a scenario that reflects the state of Minnesota’s goal of having 20% of all light-duty vehicles on the road be electric by 2030. Reference scenario EV adoption is determined based on the assumption that Xcel programs are responsible for a share of EVs adopted in the Guidehouse adoption forecast through the induced effects of increased charger availability. Based on a Cornell University Study, every 10% increase in L2 or DCFC ports on average resulted in an 8.4% increase in EV adoption (Li, Tong, Xing, & Zhou, 2016). Therefore, the Guidehouse adoption forecasts are adjusted downward to produce a base Reference EV adoption forecast that has removed the induced effects of the chargers added in the Xcel programs. The cumulative EV adoption in 2022, 2025, and 2030 for each vehicle class and scenario is shown in Table 3.2.

**Table 3.2. Cumulative EV adoption in 2022, 2025, and 2030 for each vehicle class and scenario**

Vehicle Class	Scenario	2022	2026	2030
<b>Personal LDVs</b>	Reference	22,537	227,909	589,900
<b>Personal LDVs</b>	Xcel Programs	22,537	255,095	736,759
<b>Commercial LDVs</b>	Reference	1,502	17,350	47,649
<b>Commercial LDVs</b>	Xcel Programs	1,502	18,922	57,367
<b>MDVs</b>	Reference	26	519	1,800
<b>Commercial HDVs</b>	Reference	3	223	1,181
<b>School Buses</b>	Reference	5	39	119
<b>School Buses</b>	Xcel Programs	5	58	151

### 3.2.1 Charging Access

To model charging behavior, the driving population is segmented by EV type and the locations that each vehicle type has access to charging. For personal LDVs, six charging access types are used based on a combination of access to home and/or workplace charging. All personal LDVs are assumed to have access to public charging. Information on population and housing type from the American Community Survey (ACS) is used to estimate the number of households by housing type (detached, house, attached house, apartment building), the percentage of each household type that owns a car, and the percentage of car owners that drive to work (U.S. Census Bureau, 2016). A report from University of California, Davis is used to estimate the availability of home charging at each type of housing and the percentage of vehicles that would charge at home, at work, and on public chargers (Nicholas & Tal, 2017).

Commercial LDVs are modeled as having access to depot charging and public chargers. MDVs, commercial HDVs, and school buses are assumed to have charging access limited to depots.

### 3.2.2 EV Types

The driving population was also segmented by the type of EV driven. Four EV types are modeled for personal LDVs: short- and long-range BEVs and PHEVs. The split between BEVs and PHEVs in the personal LDV population is based on the Bloomberg New Energy Finance EV outlook for 2025 (BNEF, 2019). The split between short- and long-range EV types is based on forecasts from NREL (Kontou, Melaina, & Brooker, 2018). The percentage of the vehicle population represented by each vehicle type in the model is shown in Table 3.3.

**Table 3.3. Vehicle and charger parameters of personal LDVs**

Vehicle Type	Electric Range (miles)	Battery Size (kWh)	Max AC Charging Power (kW)	Max DC Charging Power (kW)	Percent of Modeled Population - 2025
Long-range BEV	400	135	20	150	43%
Short-range BEV	150	51	20	50	32%
Long-range PHEV	60	20	3.6	0	6%
Commercial LDV	25	8	3.6	0	19%

The normalized charging profiles determined for 2025 are scaled using the relative proportion of each of the four personal LDV types in each year from 2022-2030 to give a representative charging profile based on the shift in BEV and PHEV ranges and populations over time.

Two types of commercial HDVs are modeled: a short- and long-range transit bus. MDVs and school buses only model one type of EV. Vehicle parameters for each MDV and HDV type modeled are shown in Table 3.4.

**Table 3.4. Vehicle and charger parameters of MDVs and HDVs**

Vehicle Type	Electric Range (miles)	Battery Size (kWh)	Max DC Charging Power (kW)	Max AC Charging Power (kW)	Percent of Modeled Population - 2025
MDV	149	100	20	50	100%
Short-range Transit Bus	289	500	100	100	75%
Long-range Transit Bus	578	1000	200	200	25%
School Bus	110	200	20	20	100%

### 3.3 Vehicle Parameters

LDV, MDV, and Commercial HDV are assumed to have a 12-year lifetime based on 2022 findings from S&P Global (S&P Global, 2022). School buses are assumed to have a 15-year lifetime (Next-Gen Transportation News, 2019).

Personal and commercial LDVs are modeled to have a minimum state of charge of 25% and a maximum state of charge of 95%. MDVs, commercial HDVs, and school buses are assumed to have a minimum state of charge of 0% and maximum state of charge of 100%. If school buses have V2G charging, then a minimum state of charge of 20% and maximum state of charge of 95% is assumed.

### **3.3.1 Vehicle Efficiency**

Short-range BEVs and short- and long-range PHEVs are expected to have a nameplate efficiency of 0.219 kWh/mile while long-range BEVs are expected to have a nameplate efficiency of 0.224 kWh/mile (U.S. Department of Energy, 2020; Auto Alliance, 2020). In reality, EV efficiency is dependent on ambient temperature. During the development of load shapes, temperature data for Minnesota is used to adjust vehicle efficiency. Empirical data is used to determine the relationship between temperature and vehicle efficiency (GeoTab). Once the effects of temperature are taken into effect, short-range BEVs and short- and long-range PHEVs have an average efficiency of 0.311 kWh/mile and long-range BEVs have an average efficiency of 0.318 kWh/mile.

MDVs are assumed to have a nameplate vehicle efficiency of 0.67 kWh/mile based on a study from Eudy & Jeffers (Eudy & Jeffers, 2018). With temperature effects, the MDV average efficiency is 0.95 kWh/mile. Commercial HDVs are modeled to have a nameplate of efficiency of 1.73 kWh/mile based on current nameplate transit bus efficiencies and E3 projections on technology improvements over time. With temperature effects, commercial HDV efficiency is an average of 2.45 kWh/mile. School buses are assumed to have a nameplate efficiency of 1.81 kWh/mile, which becomes 2.14 kWh/mile once temperature effects are incorporated (Eudy & Jeffers, 2018).

### **3.3.2 Incremental Vehicle Costs**

EVs currently have higher upfront purchase costs than similar ICE vehicles, primarily due to EV battery costs. The incremental upfront purchase price of EVs relative to similar ICE vehicles is expected to decline over time and get close to reaching cost parity with ICE vehicles by 2030. E3 used upfront cost projections from the ICCT for both EV and ICE personal LDVs in the U.S. to determine incremental upfront costs of both BEV and PHEVs for each year in the modeling horizon (ICCT, 2019). An average of each vehicle type's upfront costs weighted by the portion of each vehicle type in the personal LDV population was used in comparison with ICE vehicle costs.

MDV incremental upfront vehicle costs are derived from 2019 upfront costs for electric and ICE parcel trucks and forecasts of 2030 costs from Ricardo Strategic Consulting (Kuhn, 2013). For MDVs and HDVs including school buses, all electric vehicles are expected to be battery electric vehicles.

Electric commercial HDV upfront costs are derived from Bloomberg New Energy Finance (NEF) forecasts of electric transit bus costs and are adjusted for higher costs expected for HDVs with larger batteries than represented in the Bloomberg study. Battery cost adjustments come from ICCT estimates of \$/kWh battery costs (ICCT, 2019). Transit buses are also expected to need battery replacements because of high annual mileage. E3 estimated a frequency for battery replacements in transit buses of four years, compared to ICE vehicle replacements of 12 years.

Electric school bus costs are based on an analysis of manufacturing data of the Vermont Energy Investment Corporation (VEIC, 2020) and research by the University of Delaware (Noel & McCormack, 2014).

Incremental upfront vehicle costs for each vehicle type are given in Table 3.5.

**Table 3.5. Incremental upfront vehicle costs (2022\$)**

Vehicle Type	2022	2026	2030
<b>Personal and Commercial LDV (BEV)</b>	\$14,535	\$8,081	\$1,848
<b>Personal and Commercial LDV (PHEV)</b>	\$7,694	\$6,864	\$2,793
<b>MDV</b>	\$24,182	\$13,091	\$2,000
<b>Commercial HDV</b>	\$206,214	\$161,835	\$125,820
<b>School Bus</b>	\$214,750	\$217,023	\$219,295

### 3.3.3 Tax Credits

Personal LDV drivers in Minnesota are assumed to have access to a federal tax credit. A federal tax credit of \$7,500 is assumed for BEVs. PHEVs are eligible for a lower tax credit. Based on data of tax credits received by current PHEV models, an average tax credit of \$5,985 was assumed to be available to PHEVs. Tax credits phase out once over 200,000 vehicles have been sold by a given automaker. E3 assumes that tax credits will phase out on average by 2023 (Internal Revenue Services, 2020).

## 3.4 Charger Parameters

### 3.4.1 Charger Types

Load shape modeling uses assumptions on the power level and efficiency of chargers used by each vehicle class. For personal LDVs, residential chargers represented in load shapes are L2 chargers with 6.6 kW charger levels (i.e., no L1 chargers are represented in load shapes). Personal LDVs also have access to 6.6 kW chargers at workplace and public locations. In addition, personal LDVs have access to public DCFC with 150 kW charger levels. Some personal LDV types may be constrained by charging power limits based on the LDV type and may not be able to access the full charger power. For example, PHEVs can charge with AC chargers at a maximum of 3.6 kW, so cannot access the full charging power of home, workplace, and public L2 AC chargers. Table 3.6 summarizes the charger power assumed for each vehicle class and charger type.

**Table 3.6. Charger power level for each vehicle class and charger type (kW)**

Charger Type	Personal LDV	Commercial LDV	MDV	Commercial HDV	School Bus
<b>Residential L2</b>	6.6	6.6	n/a	n/a	n/a
<b>Workplace L2</b>	6.6	n/a	n/a	n/a	n/a
<b>Public L2</b>	6.6	6.6	n/a	n/a	n/a
<b>Public DCFC</b>	150	150	n/a	n/a	n/a
<b>Depot</b>	n/a	6.6	7.2	150	50

### 3.4.2 Charger Network Density

To capture EV access to each charger type given charger availability and congestion, EV to EV charger ratios are an input for the load shape modeling. For Reference scenario personal LDV access to home charging, a ratio of 1.34 EVs for every charger is assumed. For Reference scenario workplace, public L2, and public DCFC, E3 used the Xcel charger forecasts derived from NREL's EVI-Pro Lite model, which provides a state-specific estimation of the number of each type of charger required to support a given EV adoption forecast (NREL, 2018). EV to EV charger ratios for each vehicle class are summarized in Table 3.7.

**Table 3.7. Reference Scenario EV to EV charger ratios by vehicle class and charger type**

Charger Type	Personal LDV	Commercial LDV	MDV	Commercial HDV	School Bus
<b>Residential L2</b>	1.34	1	n/a	n/a	n/a
<b>Workplace L2</b>	22	n/a	n/a	n/a	n/a
<b>Public L2</b>	26	26	n/a	n/a	n/a
<b>Public DCFC</b>	132	132	n/a	n/a	n/a
<b>Depot</b>	n/a	1	2	2	5

The proposed Xcel programs add public DCFC, residential, workplace, commercial fleet, and public L2 chargers. As a result of the additional chargers and the induced effect of the additional EV chargers on EV adoption, there is a shift in the EV to charger ratios for the Xcel Programs scenarios. EV to charger ratios for each vehicle class in the Xcel Programs scenarios are summarized in Table 3.8.

**Table 3.8. Xcel Programs Scenario EV to charger ratios by vehicle class and charger type**

Charger Type	Personal LDV	Commercial LDV	MDV	Commercial HDV	School Bus
<b>Residential L2</b>	1.29	0.99	n/a	n/a	n/a
<b>Workplace L2</b>	21	n/a	n/a	n/a	n/a
<b>Public L2</b>	25	25	n/a	n/a	n/a
<b>Public DCFC</b>	113	113	n/a	n/a	n/a
<b>Depot</b>	n/a	1	2	2	5

The additional chargers outpace the increased adoption that is assumed in the Xcel Programs scenario, resulting in lower EV to charger ratios for Personal and Commercial LDVs.

### 3.4.3 Charger Costs

Charging infrastructure costs in this analysis are based on three components: Electric Vehicle Supply Equipment (EVSE) hardware costs, costs associated with the electrical infrastructure ("make-ready" costs), and the O&M costs for continued operation of the charger over its lifetime.

The costs of charging infrastructure are outlined in Table 3.9. These costs are based on Xcel data and assumptions. MFH residential chargers typically have higher electrical infrastructure costs than single-family home (SFH) costs. Residential L2 costs used in modeling represent an average of SFH and MFH charger costs weighted by the number of vehicles adopted in each home type. Residential L2 costs are weighted with Residential L1 charger costs based on the assumption that 50% of residential chargers will be L2 and 50% will be L1. Residential L1 chargers are assumed to incur negligible charging infrastructure costs.

**Table 3.9. Charger costs (2022\$)**

Charger Type	EVSE Cost (\$)	Make-ready Cost (\$)	O&M Cost (\$)
<b>Residential*</b>	\$625	\$603	\$31
<b>Workplace L2</b>	\$4,000	\$8,000	\$320
<b>Public L2</b>	\$4,000	\$8,000	\$320
<b>Public DCFC</b>	\$68,000	\$27,000	\$7,610
<b>Depot – Commercial LDV</b>	\$750	\$7,850	\$251
<b>Depot – MDV</b>	\$750	\$7,850	\$251
<b>Depot – Commercial HDV</b>	\$68,000	\$27,000	\$7,610
<b>Depot – School Bus</b>	\$45,000	\$12,500	\$4,875

\*Residential charger costs represent a weighted average between L1 and L2 charger costs and between SFH and MFH charger costs

#### 3.4.4 *Distribution Upgrade Costs*

Increased load from EV charging is assumed to incur distribution upgrade requirements. The costs of these distribution upgrades are calculated as a per vehicle cost based on the total cost of distribution upgrades and an assumption for the number of vehicles adopted per distribution upgrade required. Distribution upgrades are expected to be required for each vehicle type.

The distribution upgrade costs are paid for in Xcel's revenue requirement (i.e., not as one-time upfront costs but instead as annual payments over the lifetime of the distribution system). Distribution systems have longer lifetimes than those for the vehicles adopted in the modeling horizon; therefore, only revenue requirement payments made during the lifetime of vehicles in the modeling horizon are included in this study. A NPV of revenue requirement payments over the lifetime of vehicles in the modeling horizon is used to represent distribution upgrade costs for each charger type. Distribution upgrade costs are outlined in Table 3.10.

**Table 3.10. Distribution upgrade costs**

Charger Type	Charge Management	Distribution Upgrade Cost (2022\$/vehicle)
Residential L2	Unmanaged	\$861
	Managed	\$732
Workplace L2 (LDV)	Both	\$4,046
Public L2 (LDV)	Both	\$4,046
Public DCFC (LDV)	Both	\$37,406
Depot L2 – Commercial LDV	Managed	\$4,046
Depot L2 – MDV	Managed	\$4,046
Depot – Commercial HDV	Managed	\$37,406
Depot – School Bus	Managed	\$13,246

**3.4.5 Avoided Fuel Costs**

For avoided fuel costs, the amount of fuel an ICE vehicle would have used under the same circumstances over the lifetime of the vehicle is calculated. This fuel consumption is multiplied by the costs of fuel in each year to determine avoided fuel costs. The average annual fuel consumption avoided per EV per year is assumed to decrease over time according to the relative improvement in ICE vehicle fuel efficiency projected by NREL in their Light-Duty Vehicle Attribute Projections prepared for the California Energy Commission (Kontou, Melaina, & Brooker, 2018). Fuel economy data for other vehicle types was taken from the Transportation Energy Efficiency tables of EIA’s Annual Energy Outlook for 2020 (U.S. Energy Information Administration, 2020). The assumed fuel efficiencies per vehicle category are shown in Table 3.11.

**Table 3.11. Fuel economy assumptions in miles per gallon (mpg)**

Year	Personal and Commercial LDV	MDV	Commercial HDV and School Buses
2022	34.5	10.5	7.5
2025	36.5	11.0	7.8
2030	37.4	11.6	8.2

Gasoline and diesel forecasted prices are derived from the EIA Short-Term Energy Outlook and Annual Energy Outlook 2020 and include an inflation rate of 2% per year to convert them to nominal dollars. The EIA’s current Short-Term Energy Outlook considers price impacts of COVID-19 in 2022 and 2023 (U.S. Energy Information Administration, 2020). Table 3.12 shows the projected fuel costs for both gasoline and diesel for several modeled years (U.S. Energy Information Administration, 2020).

**Table 3.12. Fuel price forecast (nominal \$)**

Year	Gasoline (\$/gallon)	Diesel (\$/gallon)
2022	\$3.17	\$3.68
2025	\$2.53	\$3.03
2030	\$3.04	\$3.62
2035	\$3.56	\$4.15
2040	\$4.18	\$4.76

### 3.4.6 Avoided O&M Costs

To calculate avoided O&M costs, E3 multiplied the annual mileage for different vehicle types by an estimation of the per mile difference between maintenance costs for ICE and electric vehicles. To inform these estimates for LDVs, E3 used data provided by the International Council on Clean Transportation, estimating conventional vehicle maintenance costs for LDVs at \$0.074 per mile versus \$0.031 per mile for their electric counterparts (ICCT, 2019).

For Commercial HDVs, using electric transit buses as a focus, maintenance costs are considered significantly less expensive due to the relatively simple drive system compared to diesel buses. E3 assumed maintenance costs of \$0.47 per mile for battery buses and \$0.72 per mile for diesel buses, averaged from multiple sources of data. Electric bus maintenance costs are derived from an NREL study finding a maintenance cost of \$0.39 per mile (NREL, 2018b) and from a recent study on 16 electric buses assuming \$0.55 per mile (Frontier Group, US Pirc Education Fund, 2019). For diesel buses, NREL estimated \$0.44 per mile (NREL, 2018b), while the Bus Lifecycle Cost Model developed by the US Department of Transportation estimated the maintenance costs of conventional diesel transit buses at a relatively conservative estimate of \$1.00 per mile (US DOT Volpe Center, 2019).

## 3.5 Rates and Utility Costs

### 3.5.1 Utility Tariffs and Charging Costs

Different rates are used for unmanaged versus managed charging scenarios. For the unmanaged charging scenarios, residential charging locations are assigned Xcel Energy’s standard residential A01 rate. Workplace and public charging locations are assigned the general service time-of-day (TOD) rate A15. For the managed charging scenario, the residential time-of-use (TOU) rate A72 is applied to charging at residential locations. The A15 rate is again applied at workplace locations and the proposed commercial rate A25 is applied to charging at public and depot locations (Northern State Power Company, 2020). 25% of Personal LDV drivers are assumed to have access to free charging at workplaces, meaning that the workplace rather than the driver pays the A15 rate to the utility.

All EV chargers are assumed to be separately metered and therefore building loads are not included when calculating demand charges for the commercial rate since the intention is to measure the impact of EV

charging on utility bills versus a counterfactual where an ICE vehicle is owned. Energy and demand charges are assumed to grow at the inflation rate of 2% per year.

For personal vehicles, the rates paid by the drivers are distinguished from the electricity bills paid by charging station site hosts for public locations. Charging prices for public L2 chargers and DCFCs were assigned to drivers based on Electrify America rates provided by Xcel, reflecting the charging costs EV drivers pay at public locations. These rates are often much higher than the commercial rate paid by charging station site hosts or owners. This difference is reflected in the cost of charging to drivers in the PCT and the utility revenue for the customer in the RIM.

For school buses with V2G charging, buses are assumed to charge at the same rates as used in the scenario with one-directional charging, or V1G. Under the V2G scenario, school buses are also able to discharge energy stored in the vehicle battery back to the grid and receive compensation for the energy discharged. There is not currently a rate that exists for vehicles that discharge energy to the grid. Therefore, a proxy was used that combines Xcel’s A-25 rate used for imports and the marginal costs of capacity. The illustrative rate used for V2G discharging is shown in Table 3.13.

**Table 3.13. Illustrative Rate Used for School Bus V2G Discharge (nominal \$/kWh)**

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
2	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
3	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
4	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
5	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
6	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.02	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.02	\$ 0.00	\$ 0.00
7	\$ 0.03	\$ 0.03	\$ 0.05	\$ 0.11	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.05	\$ 0.11	\$ 0.03	\$ 0.03
8	\$ 0.03	\$ 0.03	\$ 0.06	\$ 0.18	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.06	\$ 0.18	\$ 0.03	\$ 0.03
9	\$ 0.03	\$ 0.03	\$ 0.06	\$ 0.21	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.07	\$ 0.20	\$ 0.03	\$ 0.03
10	\$ 0.03	\$ 0.03	\$ 0.05	\$ 0.15	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.05	\$ 0.14	\$ 0.03	\$ 0.03
11	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.07	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.07	\$ 0.03	\$ 0.03
12	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03
13	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03
14	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.05	\$ 0.04	\$ 0.03	\$ 0.03	\$ 0.03
15	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.05	\$ 0.04	\$ 0.03	\$ 0.03	\$ 0.03
16	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.10	\$ 0.10	\$ 0.08	\$ 0.07	\$ 0.07
17	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.10	\$ 0.10	\$ 0.08	\$ 0.07	\$ 0.07
18	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.10	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.10	\$ 0.10	\$ 0.08	\$ 0.10	\$ 0.07
19	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.16	\$ 0.07	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.08	\$ 0.08	\$ 0.16	\$ 0.07
20	\$ 0.07	\$ 0.07	\$ 0.09	\$ 0.23	\$ 0.08	\$ 0.07	\$ 0.07	\$ 0.08	\$ 0.08	\$ 0.09	\$ 0.23	\$ 0.08
21	\$ 0.03	\$ 0.03	\$ 0.06	\$ 0.21	\$ 0.04	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.06	\$ 0.21	\$ 0.04	\$ 0.03
22	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.15	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.15	\$ 0.03	\$ 0.03
23	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.07	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.07	\$ 0.03	\$ 0.03
24	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03	\$ 0.03

**3.5.2 Electricity Supply Costs**

Utility electricity supply costs are calculated by multiplying the hourly marginal electricity supply costs with hourly electric EV charging load. Recall that this study focuses only on adoption between 2022 and 2030, but to account for costs and benefits over each EV’s lifetime, electric supply costs are calculated for charging load out to 2042 for vehicle types with a 12-year lifetime and 2045 for vehicles with a 15-year lifetime, when it is assumed that all EVs adopted by 2030 will have been retired.

The marginal electricity supply cost used in this analysis is comprised of four components. Xcel Energy provided marginal energy costs (\$/MWh), marginal capacity costs (\$/MWh), avoided distribution costs (\$/kW-year), and avoided transmission costs (\$/kW-year) from 2022 to 2045.

To allocate the kW-year generation and transmission capacity costs to hourly values in \$/kWh, the PCAF (Peak Capacity Allocation Factor) methodology was used.<sup>6</sup> Using the hourly net system load from 2022 to 2045, a threshold (MW) corresponding to the top 250 net load hours was selected. In hours where the net load exceeds the threshold, the exceeded load is divided by the total exceeded load for the 250 hours to create an hourly PCAF allocation factor that sums to one over the year. For years beyond 2035, the team used the 2035 PCAF shape.

$$\text{Exceeded load}_t = \min(0, \text{load}_t - \text{the 250}^{\text{th}} \text{ top load in a year})$$

$$\text{PCAF}_t (\%) = \text{Exceeded load}_t / \text{total exceeded load in a year}$$

$$\text{Capacity value}_t (\$/kWh) = \text{PCAF}_t (\%) * \text{capacity value} (\$/kW\text{-year})$$

This same methodology is applied to allocate the distribution capacity value using a typical 2019 residential distribution load provided by Xcel Energy.

### 3.6 Avoided Emissions

Avoided carbon emissions are calculated based on the difference between electric vehicle emissions from charging load and gasoline or diesel combustion. E3 calculated avoided carbon emissions for ICE vehicles based on 0.0085 metric tons/gallon of gasoline and 0.01098 metric tons/gallon of diesel emissions intensities. Emissions from electric vehicles are calculated based on hourly emissions provided by Xcel and hourly charging load shapes. EV emissions are expected to decrease over time following the growth of renewables in Xcel Energy's generation mix. For this study, E3 looked at average hourly electricity emissions provided by Xcel Energy between 2019 and 2042 which decline by more than 70% over this period.

To convert avoided emissions to costs, E3 calculated an average societal cost of carbon of \$33.52/metric ton CO<sub>2</sub>. The societal cost of carbon was a weighted average of vehicle population and the Minnesota Public Utility Commission's adopted CO<sub>2</sub> environmental and regulatory cost values for each year.

### 3.7 Inputs and Assumptions Compared to Previous Xcel Minnesota Study

Inputs and assumptions have been updated since the previous Xcel Minnesota EV cost-benefit study conducted in 2021. Several of the most impactful changes are detailed below:

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<sup>6</sup> The methodology was first developed by PG&E in 1993 (California Public Utilities Commission, 2016) and has since been used in various regulatory reports

- + Distribution upgrade costs: the previous study assumed that only DCFC would incur distribution upgrade requirements. Based on recent data and revised forecasts, Xcel now anticipates each charger type to incur distribution upgrade requirements at various levels of adoption.
- + O&M costs for charging infrastructure: this study includes O&M costs for charging infrastructure that are annual costs that range from 2 to 10% of upfront EVSE and EVSI costs. The previous study did not include any O&M charging infrastructure costs.
- + Depot charging rates: rates that MDVs and commercial HDVs use for charging at depots are higher than rates used for depot charging in the previous study
- + O&M savings for MDVs: \$/mile O&M savings based on the most recent data are lower than what had been used for the previous study

## 4 Results

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The first results section describes the total impacts for all EVs adopted in Xcel Energy's Minnesota service territory between 2022 and 2030 for Reference and Xcel program scenarios. Program impacts are evaluated through the net benefits resulting from the lifetime costs and benefits of EVs adopted over the modeling horizon. Each scenario and its contributing costs and benefits are explored in greater detail in subsequent sections. Cost-benefit results are shown on both a total NPV and an average per vehicle adopted basis. The total value results show the magnitude of costs and benefits from all EVs adopted in Xcel's Minnesota service territory. The average value per vehicle results depict the costs and benefits that an average individual driver will face.

### 4.1 Total Transportation Electrification Results

The total results for all EVs adopted in Xcel's Minnesota service territory show that transportation electrification can generate significant benefits to drivers, non-participating customers, and society. The study finds that in the Reference scenario, society, which for the purposes of this study is the state of Minnesota, could receive net benefits between \$1,608 million and \$1,757 million for electrifying personal and commercial LDVs, MDVs, commercial HDVs, and school buses depending on if personal LDVs have unmanaged or managed charging.<sup>7</sup>

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<sup>7</sup> Societal benefits are \$1,608 million if personal LDVs have unmanaged charging and \$1,757 million if personal LDVs have managed charging. Ranges provided in subsequent results reflect the difference in benefits from each perspective (societal, customer, or participant) hinging on whether charging is managed for personal LDVs. Drivers and society see greater benefits from managed charging, meaning that managed personal LDV charging represents the higher value of the range of results, while customers have reduced benefits from managed charging, meaning that managed personal LDV charging represents the lower value of the range of results.

Drivers and fleet owners would benefit between \$688 million and \$1,176 million from total cost of ownership savings and Xcel customers in Minnesota would benefit between \$389 million and \$727 million from the net increase in utility revenues from EV charging.

Xcel's proposed programs increase the total benefits for all EVs adopted in Xcel's Minnesota service territory for drivers and society. Driver net benefits increase by between \$462 million and \$468 million with the implementation of Xcel's programs. Societal net benefits increase by between \$167 million and \$204 million from Xcel's programs. Customer benefits decrease with the addition of Xcel's programs by between \$163 million and \$242 million but remain positive, thereby continuing to offer customers net benefits from vehicle electrification in Xcel's Minnesota service territory.

Table 4.1, Table 4.2, and Table 4.3 summarize the total NPV of benefits from each cost test perspective evaluated for all scenarios. The totals shown sum net benefits across all vehicle types modeled, representing the total costs and benefits of these transportation electrification scenarios across Xcel's MN service territory.

Table 4.1 shows the net benefits from the driver or fleet owner perspective. All scenarios have net benefits for drivers and fleet owners except commercial HDVs and school buses. The net costs for commercial HDVs and school buses are largely driven by high incremental upfront costs relative to ICE counterparts, as shown in Sections 4.5 and 4.6. Results also show that a personal LDV driver can increase their net benefits by moving from unmanaged to managed charging. This is largely due to the bill savings from shifting charging to off-peak rate periods under managed charging. Xcel programs increase the net benefits for personal and commercial LDVs due to the reductions in charging infrastructure costs that drivers must pay when adopting an EV. The school bus purchase program reduces the magnitude of net costs for school buses through reductions in the upfront costs of an electric school bus.

**Table 4.1. Summary of PCT net benefit results (\$M)**

Case	Reference Scenario		Xcel Programs	
	(unmanaged)	(managed)	(unmanaged)	(managed)
Personal LDV	\$545.0	\$1,033.3	\$908.2	\$1,389.7
Commercial LDV	\$184.1		\$281.3	
MDV	\$20.2		\$20.2	
Commercial HDV	-\$46.0		-\$46.0	
School Bus	-\$15.4		-\$7.5	
<b>Total</b>	<b>\$687.9</b>	<b>\$1,176.1</b>	<b>\$1,156.2</b>	<b>\$1,637.7</b>

Table 4.2 shows the net benefits from the customer perspective. All Reference scenarios from this perspective have net benefits. Managed charging reduces the net benefits for personal LDVs since the utility bill reductions that drivers can unlock from TOU rates and shifting their charging is greater than the utility savings in energy supply costs.

The Xcel programs reduce customer net benefits for personal and commercial LDVs and school buses. Net benefits decrease from \$727 million in the Reference scenario to \$564 million in the Xcel programs scenario for unmanaged personal LDVs. Net benefits for commercial LDVs decrease from \$7.6 million in the Reference scenario to -\$2.6 million in the Xcel programs scenario, which indicates that with the programs, customers have net costs for commercial LDV electrification. This reduction in net benefits for cases with the Xcel programs occurs because charging infrastructure costs incurred as part of the program are greater than the customer benefits that result from increased EV adoption.

For school buses, the programs result in customer net costs of \$10.2 million. Net benefits for school bus electrification decrease with the Xcel program since the program introduces school bus upfront costs for 32 school buses over the modeling horizon, which outweigh the customer benefits that result from increased electric school bus adoption.

**Table 4.2. Summary of RIM net benefit results (\$M)**

Case	Reference Scenario		Xcel Programs	
<b>Personal LDV</b>	\$680.1 (unmanaged)	\$342.0 (managed)	\$539.6 (unmanaged)	\$121.2 (managed)
<b>Commercial LDV</b>	\$7.6		-\$2.6	
<b>MDV</b>	\$5.7		\$5.7	
<b>Commercial HDV</b>	\$31.6		\$31.6	
<b>School Bus</b>	\$1.7		-\$10.2	
<b>Total</b>	<b>\$726.7</b>	<b>\$388.5</b>	<b>\$564.1</b>	<b>\$145.7</b>

Table 4.3 shows the net benefits from a societal perspective. Apart from school buses, EV adoption for all vehicle types and scenarios has net benefits for society. Managed charging achieves higher societal net benefits for both Reference and programs scenarios since the benefits for each EV adopted, such as avoided vehicle gasoline and O&M savings, outweigh costs for each EV, including charging infrastructure and energy supply costs. A breakdown of the benefits and costs that contribute to societal net benefits is shown in greater detail for each vehicle type in the following sections.

School buses have net costs primarily due to high incremental upfront costs as well as low gasoline avoided costs resulting from low annual vehicle miles travelled (VMT). While both commercial HDV and school buses have net costs from the driver perspective, commercial HDVs have net benefits in the societal perspective. Commercial HDV avoided gasoline and O&M savings do not outweigh the utility bills in the driver perspective but exceed the energy supply costs that are included in the societal perspective.

**Table 4.3. Summary of SCT net benefit results (\$M)**

Case	Reference Scenario		Xcel Programs	
<b>Personal LDV</b>	\$853.1 (unmanaged)	\$1,001.5 (managed)	\$895.0 (unmanaged)	\$1,080.9 (managed)
<b>Commercial LDV</b>	\$741.9		\$870.6	
<b>MDV</b>	\$29.6		\$29.6	
<b>Commercial HDV</b>	-\$3.1		-\$3.1	
<b>School Bus</b>	-\$13.4		-\$17.2	
<b>Total</b>	<b>\$1,608.1</b>	<b>\$1,756.5</b>	<b>\$1,775.0</b>	<b>\$1,960.9</b>

In addition to providing direct economic benefits, vehicle electrification in Xcel's Minnesota service territory reduces emissions. In the Reference scenario, vehicle electrification across all vehicle types reduces emissions by 12.5 million metric tons CO<sub>2</sub> over the lifetime of all vehicles adopted between 2022 and 2030. Vehicle electrification also reduces NO<sub>x</sub> by 4,600 metric tons and PM<sub>10</sub> by 1,000 metric tons.

Xcel's proposed programs can help increase this number by facilitating the adoption of more EVs due to Xcel ownership and funding of charging infrastructure and school bus costs. The emissions savings in the scenario with Xcel's programs increases to 15.3 million metric tons CO<sub>2</sub>, 5,600 metric tons NO<sub>x</sub>, and 1,200 metric tons PM<sub>10</sub> over the vehicles' lifetimes.

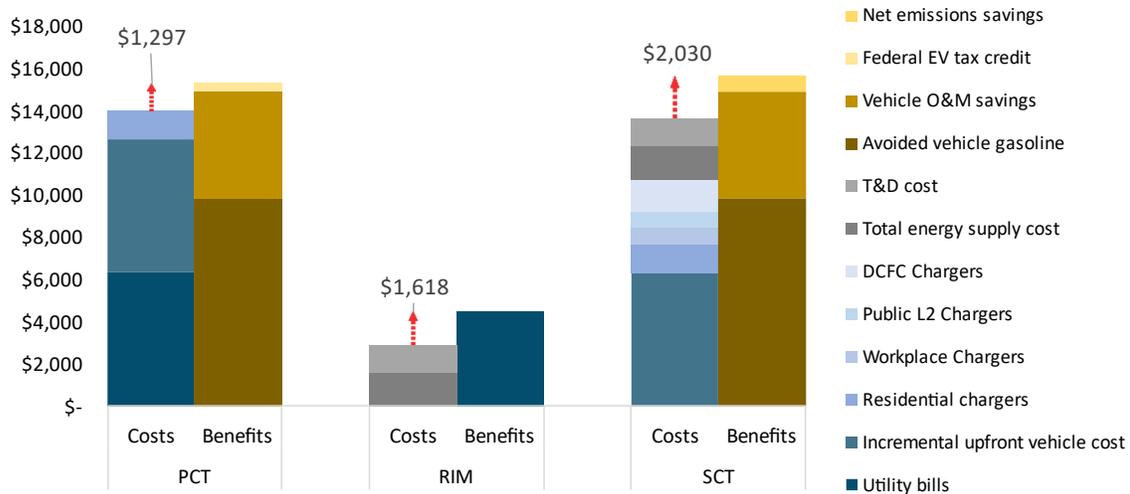
## 4.2 Personal LDVs

Personal LDVs are the largest contributor to vehicle electrification benefits in Xcel's Minnesota service territory because they make up 93% of the vehicles adopted over the modeling horizon. Personal LDVs are modeled under a Reference scenario and a scenario with the Public DCFC and L2 Charging programs for both unmanaged and managed charging. The managed and unmanaged cases represent two extreme scenarios, where in reality, the population of personal LDVs in Xcel's Minnesota service territory is likely to have a split of unmanaged and managed charging; therefore, the observed net benefits will likely be between the 100% unmanaged charging and 100% managed charging scenarios.

### 4.2.1 Reference Scenario

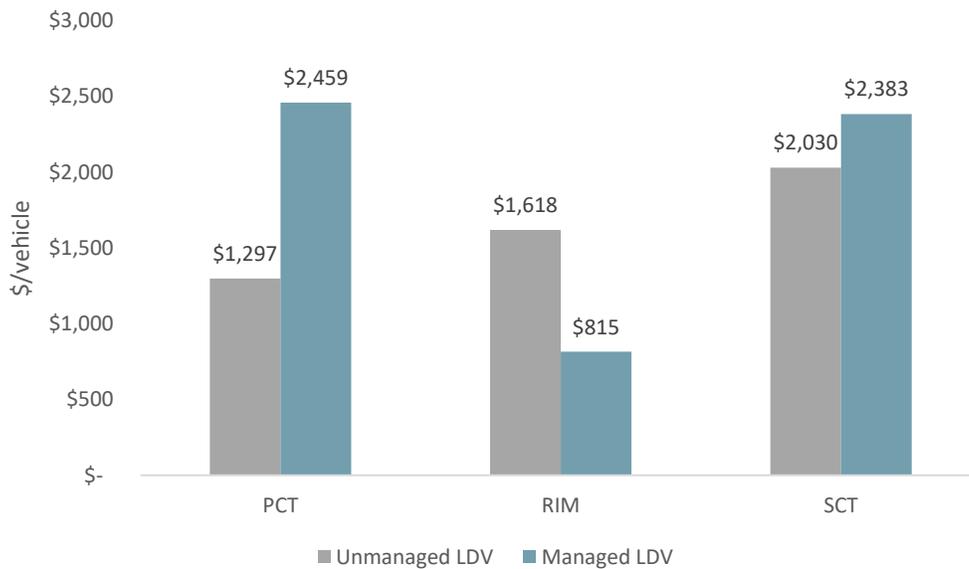
Personal LDV drivers with unmanaged charging achieve NPV benefits of \$1,297 per vehicle over the vehicle lifetime. As shown in Figure 4.1, net benefits are driven largely by avoided gasoline costs and vehicle O&M savings; these benefits are larger than the costs of utility bills for EV charging, incremental upfront vehicle costs, and charging infrastructure costs. Xcel customers have net benefits of \$1,618 per vehicle over a vehicle lifetime. The societal net benefit is \$2,030 per vehicle, which includes a social cost of carbon on the net avoided CO<sub>2</sub> of 23 metric tons over the vehicle lifetime. Costs and benefits for each cost test perspective are shown in Figure 4.1.

**Figure 4.1. Average costs and benefits of unmanaged personal LDV electrification per vehicle adopted from 2022-2030 (Reference scenario)**



Comparing the unmanaged and managed charging scenarios, managed charging increases driver net benefits from electrifying a personal LDV by 90% over the vehicle lifetime, as seen in Figure 4.2. Managed charging also increases societal benefits by 17% but decreases customer benefits by 50% over an average vehicle’s lifetime.

**Figure 4.2. Per vehicle net benefit comparison of personal LDV unmanaged vs. managed charging (Reference scenario)**



Moving from unmanaged to managed charging alters the hourly charging load shape, which primarily affects utility bills and electric supply costs. With managed charging, drivers save on utility bills by shifting

their charging to off-peak TOU periods, which offers savings relative to charging on flat rates in the unmanaged charging scenario. An average personal LDV driver reduces their utility bill by 18%, or a net present value of \$1,162 over the vehicle lifetime, by moving from unmanaged to managed charging.

Managed charging also increases societal net benefits relative to unmanaged charging due to lower electricity supply costs and lower distribution upgrade costs. Electricity supply costs decrease by 15%, or \$237 over the vehicle lifetime, when a driver moves from unmanaged to managed charging, reflecting that TOU rates incentive drivers to charge when electricity supply costs are cheaper. In addition, Xcel assumes that fewer distribution upgrades are required for personal LDVs with managed charging based on existing and forecasted trends in contribution to peak load; Xcel assumes that a distribution upgrade will be required for every 17 unmanaged LDVs adopted and every 20 managed LDVs adopted. Personal LDV total per vehicle transmission and distribution costs decrease by 8%, or \$117, under managed charging relative to unmanaged charging.

Managed charging results in a decrease in customer net benefits since the reduction in driver utility bills is greater than the reduction in electric supply costs. The relationship between volumetric rates and avoided utility costs, as well as the timing of charging, will affect whether customers see an increase or decrease in net benefits charging managed by TOU rates. It is important to note, however, that the modeling of TOU rates used in this analysis has limitations; this analysis uses the current peak and off-peak periods and rates, which are designed to align with today's loads and electric supply costs. The loads, including additional loads from EVs, and electric supply costs of the future may not be as well-aligned with today's TOU rates. Finally, there are more sophisticated methods to manage charging which are not modeled in this analysis, such as direct charging management by aggregators or utilities and other demand response techniques. The managed charging results discussed here reflect only a single, relatively simple, strategy for charging management.

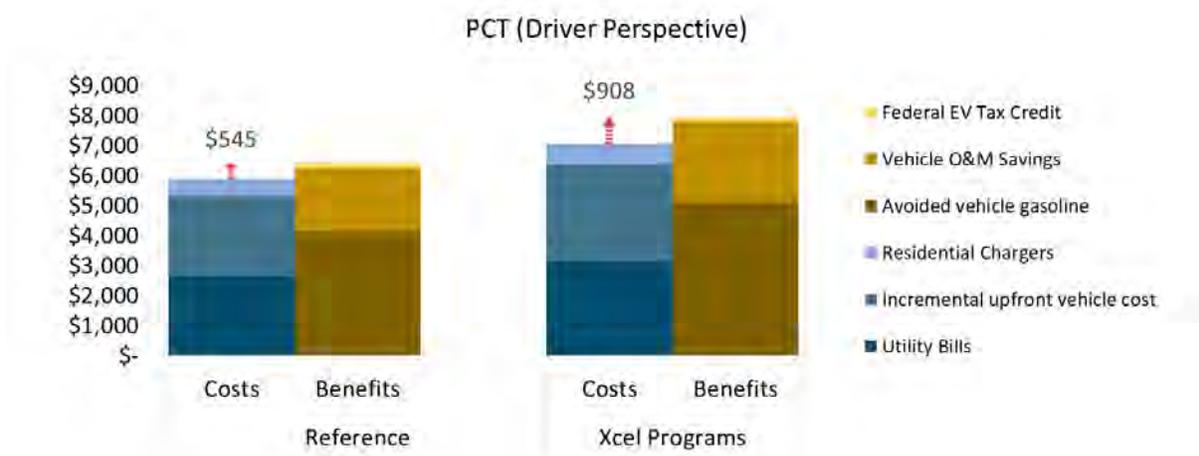
Personal LDVs with managed charging have nearly identical lifetime emissions reductions as those with unmanaged charging.

#### **4.2.2 Xcel Programs Scenario**

In the Xcel programs scenario, personal LDVs have access to Xcel-owned public DCFC and Xcel-funded MFH, workplace, and public L2 chargers. The total Xcel program costs for public DCFC and public L2 chargers are split between personal and commercial LDVs based on the number of each vehicle type; 93% of electric LDVs adopted over the modeling horizon are personal LDVs and therefore 93% of the public DCFC and public L2 program costs are allocated to the personal LDV Xcel programs scenario.

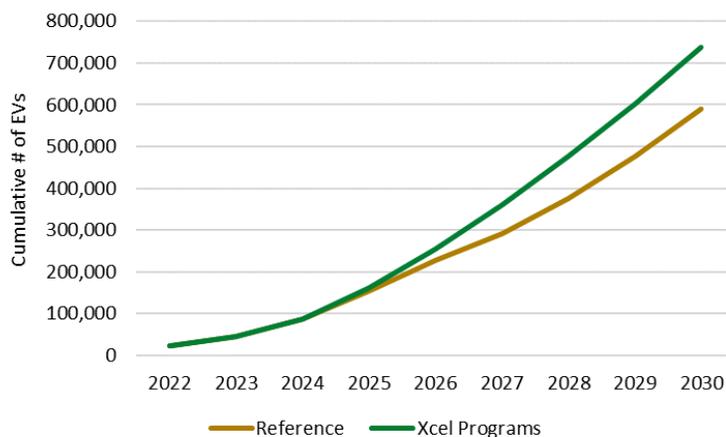
Unmanaged personal LDV drivers' net benefits increase from \$545 million in the Reference scenario to \$908 million in the Xcel programs scenario, a \$363 million increase in net benefits, as shown in Figure 4.3.

**Figure 4.3. Driver costs and benefits comparison of unmanaged personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



Drivers receive higher net benefits in the Xcel programs scenario since some residential charger costs are shifted from the driver to the utility from the Xcel programs. This stems from the make-ready support for customers provided through the multi-dwelling unit program. Therefore, drivers have lower charging infrastructure costs in the scenario with the Xcel programs. In addition, in the Xcel programs scenario, a greater portion of vehicles are adopted towards the end of the modeling horizon due to the induced effect of the additional EV chargers installed from the programs, as shown in Figure 4.4.

**Figure 4.4. Electric personal LDV adoption forecast in Reference and Xcel programs scenarios**

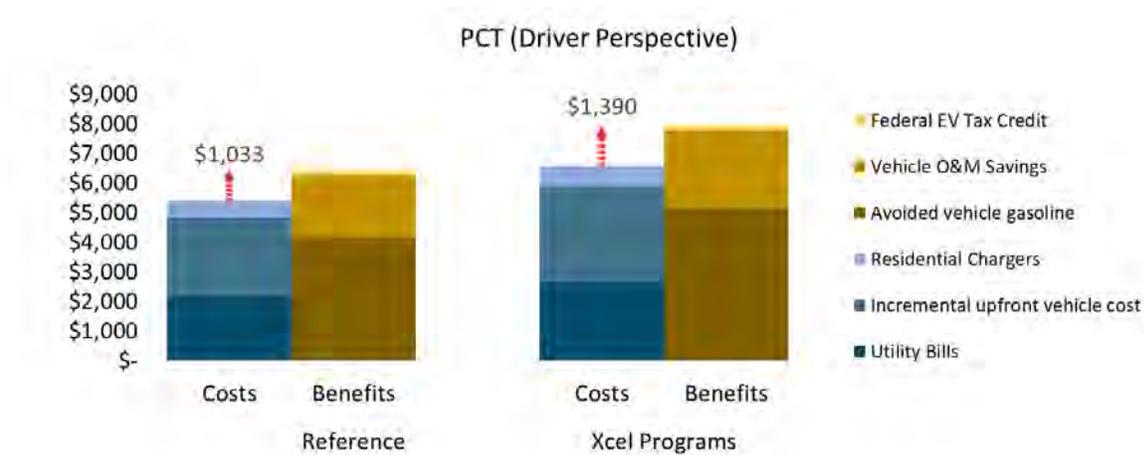


Higher adoption in later years in the Xcel programs scenario results in several shifts in costs and benefits streams. Incremental upfront costs decline over time and therefore an adoption forecast with a higher portion of EVs adopted in later years results in a lower average incremental upfront cost in the Xcel programs scenario. Similarly, gasoline costs are higher in later years, so later EV adoption in the Xcel programs scenario results in greater average avoided gasoline benefits. Discounting benefits that occur in

later years results in a lower NPV compared to discounting benefits that occur in earlier years, so this dampens the effect of greater average benefits captured from later adoption.

When compared to unmanaged charging, personal LDVs with managed charging follow a similar trend between the Reference and Xcel programs scenarios. Personal LDVs with managed charging have an increase in net benefits from \$1,033 million in the Reference scenario to \$1,390 million in the Xcel programs scenario, or a \$357 million increase in net benefits, as shown in Figure 4.5. Like unmanaged charging, managed charging has an increase in net benefits in moving from the Reference scenario to Xcel programs scenario because of the reduction in residential charger costs, which stems from make-ready support for multi-unit dwelling units added as part of the Xcel programs.

**Figure 4.5. Driver costs and benefits comparison of managed personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030 (\$M)**



As shown in Table 4.4, the net benefits in both the Reference and Xcel programs scenarios are higher for personal LDVs with managed charging. Benefits such as avoided gasoline and O&M savings remain constant between unmanaged and managed charging scenarios since vehicles travel the same number of miles per year regardless of their charge management. Reductions in utility bills lead to lower costs in the managed charging scenarios.

**Table 4.4. Driver costs and benefits comparison between unmanaged and managed personal LDV electrification scenarios for all vehicles adopted 2022-2030 (\$M)**

Charge Management	Result	Reference Scenario	Xcel Programs Scenario
Unmanaged	Costs	\$5,887	\$7,044
	Benefits	\$6,432	\$7,953
	<b>Net Benefits</b>	<b>\$545</b>	<b>\$908</b>
Managed	Costs	\$5,399	\$6,563
	Benefits	\$6,432	\$7,953
	<b>Net Benefits</b>	<b>\$1,033</b>	<b>\$1,390</b>

Customers see a decrease in net benefits from \$680 million in the Reference scenario to \$540 million in the Xcel programs scenario for unmanaged personal LDVs, as shown in Figure 4.6. In the Xcel programs scenario, customers have additional costs from the increased utility spending on charging infrastructure. Net benefits remain positive in the Xcel programs scenario, which indicates that customers still benefit from the EV adoption that will occur in Xcel’s Minnesota service territory, even with the increased charging infrastructure costs.

**Figure 4.6. Customer costs and benefits comparison of unmanaged personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



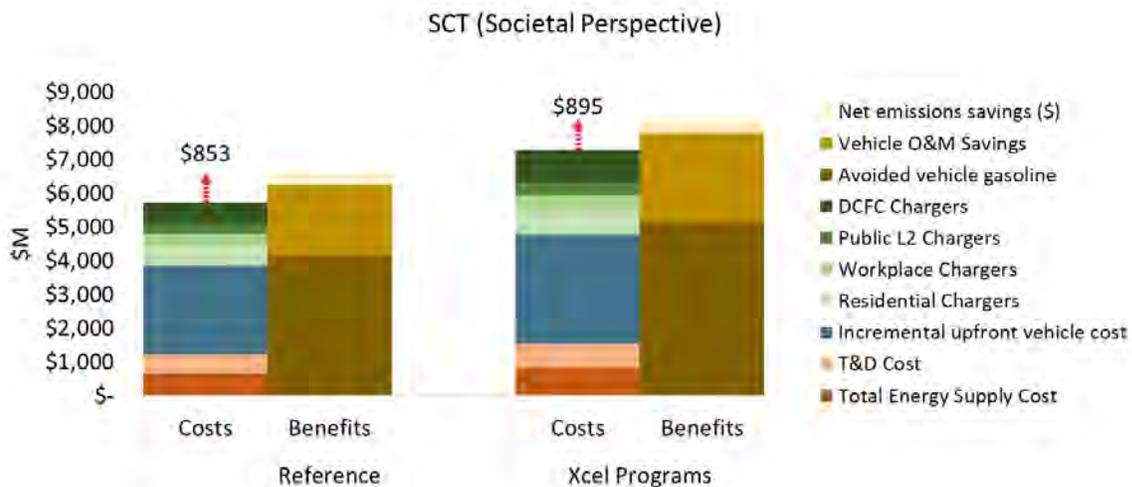
For personal LDVs with managed charging, customers have a decrease in net benefits from \$342 million in the Reference scenario to \$121 million in the Xcel programs scenario. Results for unmanaged and managed personal LDVs are shown in Table 4.5. As discussed previously, moving from unmanaged to managed charging decreases the net benefits for customers since the utility bill reductions from managing charging are greater than the decrease in electric supply costs to serve EV charging.

**Table 4.5. Customer costs and benefits comparison between unmanaged and managed personal LDV electrification scenarios for all vehicles adopted 2022-2030 (\$M)**

Charge Management	Result	Reference Scenario	Xcel Programs Scenario
Unmanaged	Costs	\$1,209	\$1,895
	Benefits	\$1,889	\$2,434
	<b>Net Benefits</b>	<b>\$680</b>	<b>\$540</b>
Managed	Costs	\$1,060	\$1,708
	Benefits	\$1,402	\$1,829
	<b>Net Benefits</b>	<b>\$342</b>	<b>\$121</b>

For unmanaged personal LDVs, there is an increase in net benefits from the societal perspective in moving from the Reference scenario to the Xcel programs scenario. Net benefits increase from \$853 million in the Reference scenario to \$895 million in the Xcel programs scenario, as shown in Figure 4.7. Societal benefits are driven by avoided gasoline and O&M savings. Even with more residential, workplace, and public DCFC and L2 chargers built in the Xcel programs scenario relative to the Reference scenario and therefore higher charging infrastructure costs, the increase in avoided gasoline and O&M savings from additional EV adoption leads to higher net benefits.

**Figure 4.7. Societal costs and benefits comparison of unmanaged personal LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



For personal LDVs with managed charging, the societal net benefit increases from \$1,002 million in the Reference scenario to \$1,081 million in the Xcel programs scenario. Results for unmanaged and managed personal LDVs are shown in Table 4.6. As discussed previously, the increase in societal net benefits from

the unmanaged to managed charging scenarios is driven by reductions in electric supply costs to serve EV charging loads as well as reductions in distribution upgrade costs. Like unmanaged personal LDVs, managed personal LDVs have an increase in net benefits in the Xcel programs scenario because avoided gasoline and O&M savings for the additional EVs adopted outweighs the costs of additional charging infrastructure built in the programs.

**Table 4.6. Societal costs and benefits comparison between unmanaged and managed personal LDV electrification scenarios for all vehicles adopted 2022-2030 (\$M)**

Charge Management	Result	Reference Scenario	Xcel Programs Scenario
Unmanaged	Costs	\$5,727	\$7,282
	Benefits	\$6,580	\$8,177
	<b>Net Benefits</b>	<b>\$853</b>	<b>\$895</b>
Managed	Costs	\$5,578	\$7,096
	Benefits	\$6,580	\$8,177
	<b>Net Benefits</b>	<b>\$1,002</b>	<b>\$1,081</b>

In summary, the results for personal LDVs indicate that the Xcel proposed programs will lead to positive net benefits from the driver, customer, and societal perspectives. The Xcel programs increase the net benefits relative to the Reference scenario from the driver and societal perspective. Therefore, the Xcel programs will increase the economic proposition for drivers in Xcel’s Minnesota service territory to adopt an EV, therefore supporting Minnesota’s EV adoption goals. The increase in net benefits from the societal perspective indicates that Minnesota as a whole will benefit from the Xcel programs. Although there is a decrease in customer net benefits under the scenario with the Xcel programs, the net benefits remain positive, and customers will still benefit from electric personal LDV adoption in Xcel’s Minnesota service territory. In most scenarios, managed charging offers opportunities to further increase net benefits through reductions in utility bills and electric supply costs.

#### 4.2.3 Individual Xcel Programs

Net benefit results for the Public DCFC Charging Program and L2 Charging Program can be broken out and assessed separately, shown in Table 4.7. L2 Charging Program results are further broken out into subprograms for each charger type: residential, commercial, and workplace/public chargers. The L2 Charging Program – Residential subprogram refers to make-ready support for L2 chargers at multi-unit dwellings.

These scenarios include only the costs for that specific program or subprogram. The induced EV adoption effect from the increase in EV chargers was allocated to each individual program or subprogram based on the portion of chargers added in that program or subprogram since the induced EV effect assumes an 8.4% increase in EV adoption for every 10% increase in EV chargers (Li, Tong, Xing, & Zhou, 2016).

**Table 4.7. Net benefits for personal LDV electrification programs with unmanaged charging for all vehicles adopted 2022-2030 (\$M)**

Program Scenario	PCT (Participant)	RIM (Customer)	SCT (Societal)
Reference Case	\$545	\$680	\$853
Public DCFC Program	\$820	\$544	\$863
L2 Charging Program – Residential	\$567	\$649	\$823
L2 Charging Program – Commercial	N/A	N/A	N/A
L2 Charging Program – Workplace/Public	\$612	\$708	\$916
All Programs	\$908	\$540	\$895

Results in Table 4.7 indicate that each individual program or subprogram for unmanaged personal LDVs has net benefits for participants, customers, and society. Table 4.8 shows net benefits for all programs and each individual program/subprogram compared to the net benefits in the Reference scenario for each cost test perspective.

**Table 4.8. Net benefits comparison between personal LDV electrification programs with unmanaged charging for all vehicles adopted 2022-2030 (\$M)**

Program Scenario	PCT (Participant)	RIM (Customer)	SCT (Societal)
Reference Case	\$545	\$680	\$853
Public DCFC Program	↑\$275	↓\$136	↑\$10
L2 Charging Program – Residential	↑\$22	↓\$31	↓\$30
L2 Charging Program – Commercial	N/A	N/A	N/A
L2 Charging Program – Workplace/Public	↑\$67	↑\$28	↑\$63
All Programs	↑\$363	↓\$140	↑\$42

Results in Table 4.8 show that each individual program or subprogram increases net benefits relative to the Reference scenario for personal LDV drivers with unmanaged charging. Increases in net benefits in the L2 Charging Program – Residential subprogram from the driver perspective are driven by Xcel funding

of residential charging infrastructure costs. Personal LDV drivers do not pay for DCFC, workplace L2, or public L2 chargers in the Reference scenario but drivers still see increases in net benefits in the Public DCFC Program and L2 Charging Program – Workplace/Public subprogram due to the increased EV Adoption from the induced effect of the chargers added in each program. The increase in EV adoption amplifies the net benefits that are observed with the Reference scenario EV adoption forecast.

Table 4.8 also shows that most programs increase net benefits for society, which indicates that the benefits of increased EV adoption that occur from each program or subprogram individually outweigh the costs of that program. The exception is the L2 Charging Program – Residential subprogram, which refers to the program that provides make-ready support for multi-unit dwellings. These residential chargers that receive make-ready support are a relatively small portion of the chargers added across all programs, 12% of chargers added, and therefore have lower induced EV adoption as a result of the subprogram. With lower induced EV adoption, the program costs of the residential chargers are offset by fewer added benefits from vehicles’ avoided gasoline and O&M savings, leading to a reduction in net benefits.

Customer net benefits decrease for the Public DCFC Program since DCFC have high charging infrastructure costs that get incurred by society, both from the program costs and from the need for additional DCFC from increased EV adoption. Net benefits increase when considering each of the L2 Charging subprograms for unmanaged personal LDVs since the added costs of charging infrastructure for residential, workplace, and public L2 chargers is lower than the benefit of higher utility bills from the additional EVs.

Table 4.9 and Table 4.10 show a similar set of results but for managed personal LDVs.

**Table 4.9. Net benefits comparison between personal LDV electrification programs with managed charging for all vehicles adopted 2022-2030 (\$M)**

Program Scenario	PCT (Participant)	RIM (Customer)	SCT (Societal)
Reference Case	\$1,033	\$342	\$1,002
Public DCFC Program	\$1,303	\$149	\$1,038
L2 Charging Program - Residential	\$1,054	\$302	\$976
L2 Charging Program - Commercial	N/A	N/A	N/A
L2 Charging Program - Workplace/Public	\$1,099	\$356	\$1,071
All Programs	\$1,390	\$121	\$1,081

**Table 4.10. Net benefits comparison between personal LDV electrification programs with managed charging for all vehicles adopted 2022-2030 (\$M)**

Program Scenario	PCT (Participant)	RIM (Customer)	SCT (Societal)
Reference Case	\$1,033	\$342	\$1,002
Public DCFC Program	↑\$270	↓\$193	↑\$36
L2 Charging Program – Residential	↑\$21	↓\$40	↓\$26
L2 Charging Program – Commercial	N/A	N/A	N/A
L2 Charging Program – Workplace/Public	↑\$66	↑\$14	↑\$69
All Programs	↑\$357	↓\$221	↑\$79

Most trends in net benefits for each program or subprogram relative to the Reference scenario shown in Table 4.10 are the same for managed personal LDVs as seen for unmanaged vehicles in Table 4.8. One exception is that the L2 Charging Program – Residential subprogram goes from increasing net benefits for unmanaged personal LDVs to decreasing net benefits for managed personal LDVs since the management results in lower utility bill earnings that can no longer outweigh the added program costs for residential charging infrastructure.

Assessing each program or subprogram individually offers insights into how each component of the package of Xcel proposed programs contributes to the change in costs and benefits from the programs. As can be seen from the results for unmanaged and managed personal LDVs, each individual program or subprogram increases net benefits for drivers. Therefore, each program or subprogram would help improve the economic proposition for EV adoption and support EV adoption goals in Minnesota. Almost all individual programs also increase societal benefits. As seen with all programs considered in aggregation, most individual programs reduce customer net benefits due to program costs outweighing additional utility bills. All individual programs maintain a positive net benefit for customers, however, which indicates that customers will not be adversely affected by vehicle electrification and the added programs in Xcel’s Minnesota territory.

### 4.3 Commercial LDVs

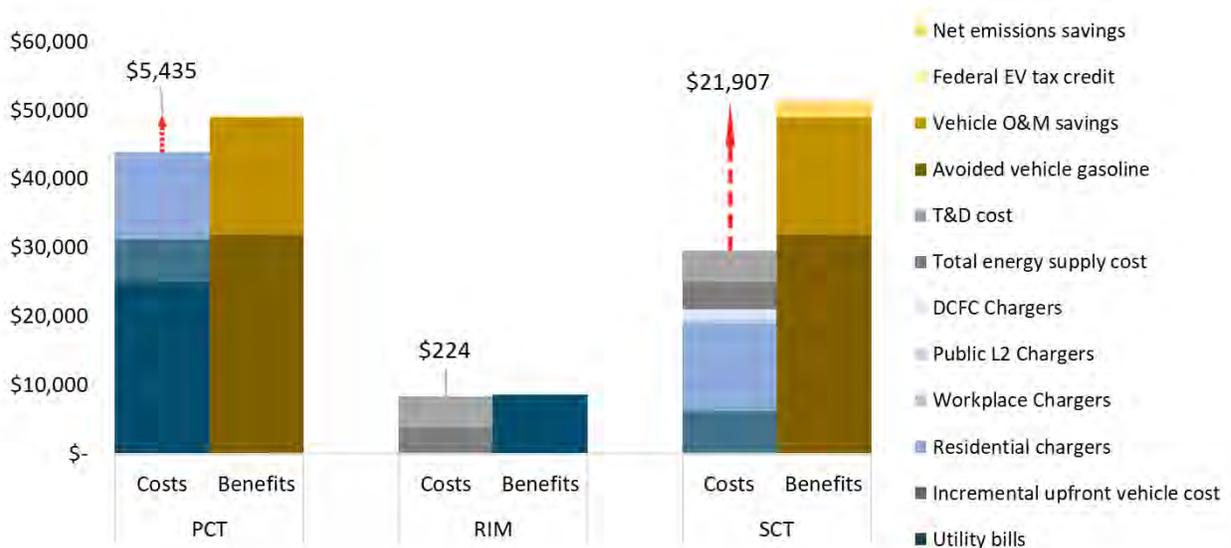
Commercial LDVs represent LDVs that are driven primarily for commercial purposes, such as in commercial fleets or for ridesharing. All commercial LDVs modeled are assumed to have access to depot charging and a portion are assumed to have access to residential charging to represent personal vehicles used for ridesharing services. Commercial LDVs are a smaller portion of the total EV population in Xcel’s Minnesota service territory relative to personal LDVs and make up 7.2% of the forecasted EV adoption over the modeling horizon. However, due to a higher average VMT, they account for 20% of the estimated

load. Commercial LDVs are assumed to have fully managed charging against Xcel’s A15 rate based on the anticipated fleet management for these vehicle types.

### 4.3.1 Reference Scenario

Commercial LDVs have net benefits for all cost test perspectives, as shown in Figure 4.8. Commercial LDV drivers have an average net benefit of \$5,435 over the lifetime of their vehicle. Society benefits on average by \$21,907 per vehicle adopted over the modeling horizon. Customers have a much smaller net benefit of \$224 per vehicle due to low utility bills relative to the electric supply costs to serve commercial LDV charging. Low utility bills result from lower rates that many commercial LDVs are assumed to have access to at depot charging locations.

**Figure 4.8. Average costs and benefits of commercial LDV electrification per vehicle adopted from 2022-2030 (Reference scenario)**



Like personal LDVs, net benefits for commercial LDVs are driven primarily by avoided gasoline costs and vehicle O&M savings. These benefits scale with the number of miles driven and therefore are even larger for commercial LDVs compared to personal LDVs due to higher vehicle mileage (40,545 miles driven per year for commercial LDVs compared to 12,021 miles driven per year for personal LDVs). Commercial LDVs avoid 74 metric tons of CO<sub>2</sub> over the vehicle lifetime.

Commercial LDVs have not previously been modeled for Xcel’s Minnesota service territory.

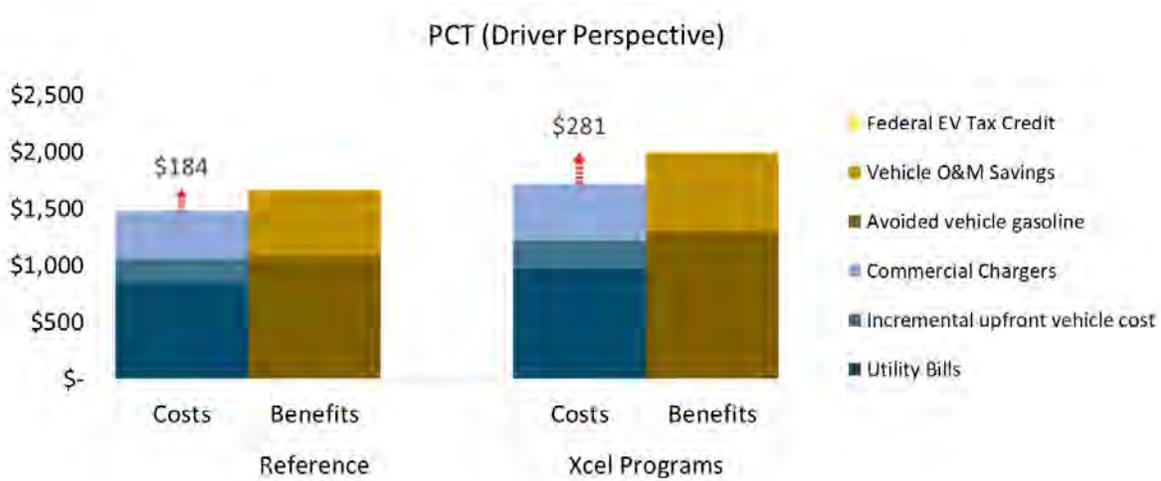
### 4.3.2 Xcel Programs Scenario

In the Xcel programs scenario, commercial LDVs have access to Xcel-owned public DCFC and Xcel-funded commercial fleet and public L2 chargers. The total Xcel program costs for public DCFC and public L2

chargers are split between personal and commercial LDVs based on the number of each vehicle type; 7% of each program’s costs are allocated to commercial LDVs.

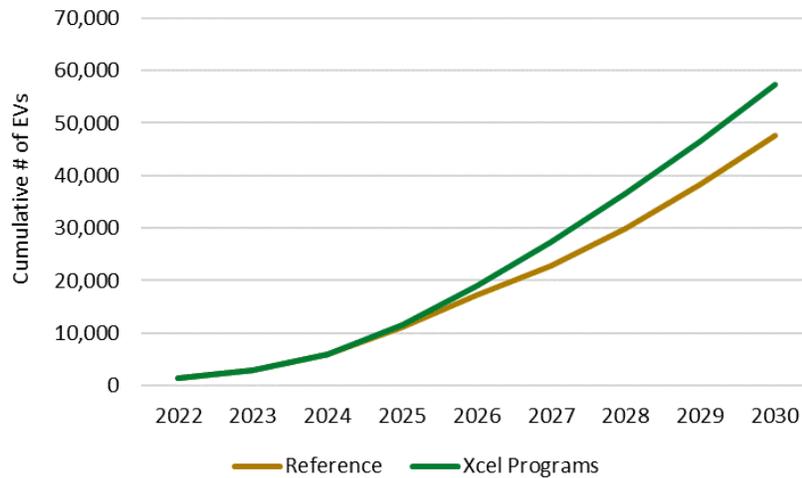
Commercial LDV drivers’ net benefits increase from \$184 million in the Reference scenario to \$281 million in the Xcel programs scenario, a \$97 million increase in net benefits, as shown in Figure 4.9.

**Figure 4.9. Driver costs and benefits comparison of commercial LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



Commercial LDV drivers have higher net benefits in the Xcel programs scenario since the programs cover some of the charging infrastructure costs that would have otherwise been paid for by commercial LDV drivers. In the Xcel programs scenario, a greater portion of vehicles are adopted towards the end of the modeling horizon due to the induced effect of the additional EV chargers installed from the programs, as shown in Figure 4.10.

**Figure 4.10. Electric commercial LDV adoption forecast in Reference and Xcel programs scenarios**



Like the effects seen for personal LDVs, higher commercial LDV adoption in later years in the Xcel programs scenario shifts the portion of vehicles with lower incremental upfront costs and higher avoided gasoline costs to later years, resulting in greater average benefits for vehicles adopted over the modeling horizon. Additionally, the discounting of benefits that occur in later years dampens the impacts of higher average benefits from later adoption.

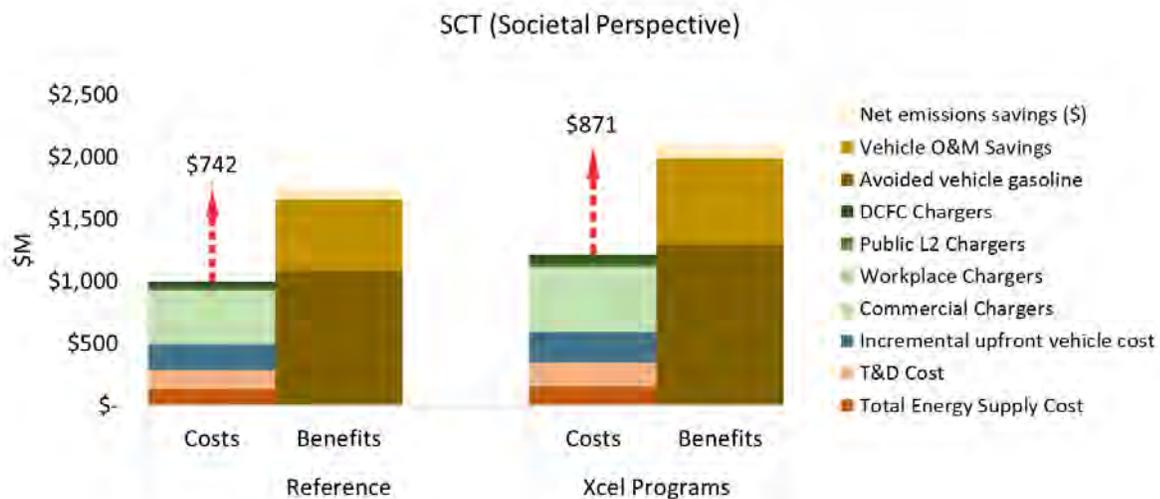
Customers have a net benefit of \$8 million in the Reference scenario. This becomes a net cost of \$3 million in the Xcel programs scenario due to the increased charging infrastructure costs from program chargers, as shown in Figure 4.11. When viewed in isolation, commercial LDVs pose a net cost of \$3 million to customers in the Xcel programs scenario. However, customers will pay the costs and benefits across all vehicle types. As shown in Table 4.2, customer net benefits across all vehicle types in the Xcel programs scenario is \$146 million.

**Figure 4.11. Customer costs and benefits comparison of commercial LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



From a societal perspective, commercial LDVs have an increase in net benefits in the Xcel programs scenario relative to the Reference scenario. Net benefits increase from \$742 million in the Reference scenario to \$871 million in the Xcel programs scenario, as shown in Figure 4.12. Societal net benefits increase since the higher charging infrastructure costs from the Xcel program are lower than the savings from avoided gasoline and O&M resulting from higher EV adoption.

**Figure 4.12. Societal costs and benefits comparison of commercial LDV electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



In summary, the results for commercial LDVs indicate that the Xcel proposed programs will increase net benefits from the driver and societal perspectives relative to the Reference scenario. However, the Xcel proposed programs lead to net costs for customers. Despite the net costs of commercial LDVs, the Xcel programs across all vehicle types still lead to a positive net benefit for customers of \$146 million. Positive net benefits for drivers and society indicate that the Xcel programs would be beneficial for supporting EV adoption and Minnesota’s EV goals.

**4.3.3 Individual Xcel Programs**

As with the personal LDVs, the net benefits of the Public DCFC Charging program and L2 Charging Program subprograms can be assessed individually for commercial LDVs. Table 4.11 displays the net benefits of each scenario.

**Table 4.11. Net benefits for commercial LDV electrification programs for all vehicles adopted 2022-2030 (\$M)**

Program Scenario	PCT (Participant)	RIM (Customer)	SCT (Societal)
Reference Case	\$184	\$7.6	\$742
Public DCFC Program	\$266	\$14.5	\$866
L2 Charging Program - Residential	N/A	N/A	N/A
L2 Charging Program - Commercial	\$186	-\$14.1	\$729
L2 Charging Program - Workplace/Public	\$195	\$11.0	\$760
All Programs	\$281	-\$2.6	\$871

Results in Table 4.11 indicate that almost all individual program or subprogram for commercial LDVs have net benefits for participants, customers, and society. The only exception is the L2 Charging Program – Commercial subprogram; customers incur net costs of \$14.1 million when considering this subprogram in isolation. The added costs of commercial chargers are higher than the added utility bills that the utility receives from induced EV adoption; because induced EV adoption is higher for the Public DCFC Program and L2 Charging Program – Workplace/Public, the benefits from added utility bills are larger than the program costs for charging infrastructure.

Table 4.12 shows net benefits for all programs and each individual program/subprogram compared to the net benefits in the Reference scenario for each cost test perspective.

**Table 4.12. Net benefits comparison for commercial LDV electrification programs for all vehicles adopted 2022-2030 (\$M)**

Program Scenario	PCT (Participant)	RIM (Customer)	SCT (Societal)
Reference Case	\$184	\$7.6	\$742
Public DCFC Program	↑\$81.6	↑\$6.9	↑\$124
L2 Charging Program – Residential	N/A	N/A	N/A
L2 Charging Program – Commercial	↑\$2.2	↓\$21.7	↓\$13.3
L2 Charging Program – Workplace/Public	↑\$10.5	↑\$3.4	↑\$18.4
All Programs	↑\$97.2	↓\$10.2	↑\$129

Results in Table 4.12 indicate that commercial LDV drivers receive increased net benefits for all individual programs or subprograms relative to the Reference scenario. In the Reference scenario, drivers are responsible for commercial charger costs but not DCFC or workplace/public charger costs. The L2 Charging Program – Commercial subprogram reduces some of the commercial charger costs paid for by drivers. The increase in net benefits for the L2 Charging Program – Commercial is small though, with an increase of only \$2 million in net benefits, because the number of commercial chargers funded by the program is small relative to the total number of chargers that support commercial LDVs. The small number in increased chargers in the commercial subprogram also leads to a smaller portion of the induced EV adoption assumed from the Xcel programs and therefore less significant increases in benefits. There is a large increase in net benefits for drivers from the Public DCFC Program even though the program costs do not translate to charging infrastructure cost savings for drivers (since drivers do not pay for DCFC charging infrastructure) since the largest portion of the induced EV adoption effect from adding the Xcel programs, 84% of the induced EV effect, is attributed to the Public DCFC Program.

Societal net benefits increase for the Public DCFC Program and L2 Charging Program – Workplace/Public relative to the Reference scenario. This result indicates that the charging infrastructure costs incurred as part of the programs are lower than the net benefits that result from increased EV adoption. The L2 Charging Program – Commercial subprogram incurs net costs for society since the cost of the charging infrastructure added as part of the subprogram do not outpace the increased benefits from the limited EV adoption increases that result from the added commercial chargers. Because commercial LDVs share the public DCFC chargers added in the Public DCFC Program with personal LDVs, the program charging infrastructure costs get spread among many more vehicles and fewer costs are allocated to commercial LDVs. On the contrary, for commercial chargers in the L2 Charging Program – Commercial subprogram, all program costs are allocated to commercial LDVs since personal LDVs do not have access to these types of chargers.

There is a similar result for the customer net benefits as societal net benefits; net benefits increase for the Public DCFC Program and the L2 Charging Program – Workplace/Public subprogram but decrease and become net costs for the L2 Charging Program – Commercial subprogram. The increase in utility bills from the induced EV adoption in the Public DCFC Program and the L2 Charging Program – Workplace/Public subprogram are enough to outweigh the program costs for charging infrastructure, but the utility bill increase is not high enough to cover the program costs for commercial chargers in the L2 Charging Program – Commercial subprogram.

These results indicate that drivers benefit from each of Xcel’s proposed programs and in most scenarios, programs also increase benefits for society and customers. The one exception is the L2 Charging Program – Commercial since charging infrastructure costs are not shared with personal LDVs and are entirely reflected in the costs paid by customers and society for commercial LDVs. Societal net benefits do remain positive for the L2 Charging Program – Commercial subprogram, which indicates that the program will still benefit society. A shift from customer net benefits to net costs for this subprogram is reflective of the large program costs. The net cost of the L2 Charging Program – Commercial subprogram is the driver of net costs for customers when all programs are considered in aggregate. Net costs for this subprogram and all programs in aggregate suggest that additional funds would need to be collected.

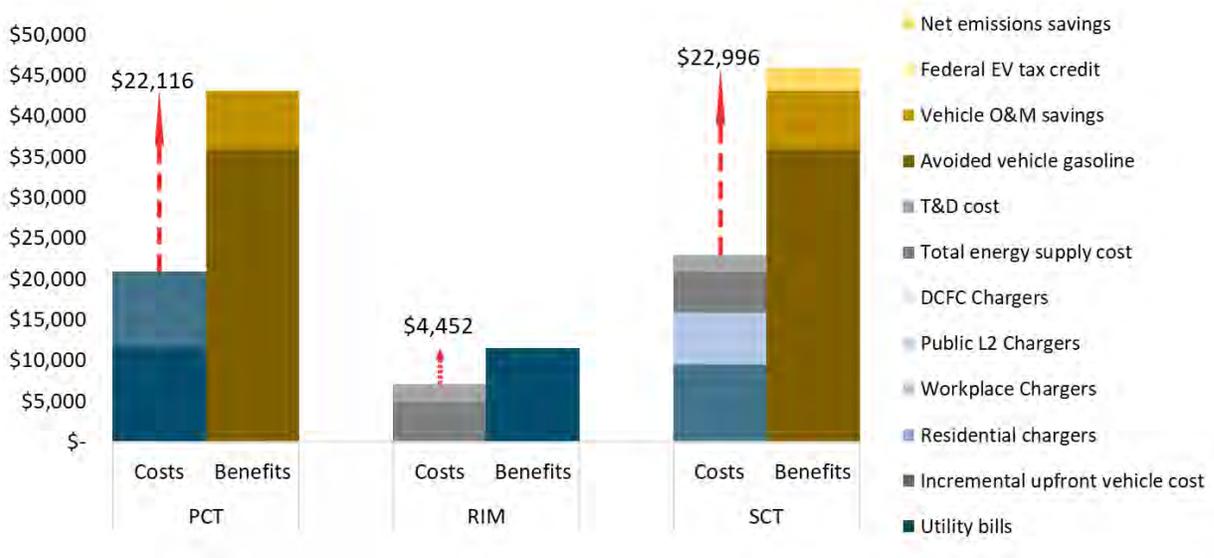
## 4.4 MDVs

For this study, MDVs are represented through the charging load shape and cost characteristics of parcel trucks. MDVs make up 0.26% of the forecasted EV adoption in Xcel’s Minnesota service territory from 2022 to 2030 and 0.5% of the total charging load. MDVs are assumed to have fully managed charging against Xcel’s A25 rate based on anticipated fleet owner management of MDV charging.

### 4.4.1 Reference Scenario

MDVs have net benefits for all cost test perspectives, as shown in Figure 4.13. MDV drivers have an average net benefit of \$22,116 over the lifetime of their vehicle and society benefits by an average of \$22,996 per MDV. Customers benefit by an average of \$4,452 per MDV for MDVs adopted from 2022 to 2030.

**Figure 4.13. Average costs and benefits of MDV electrification per electrified MDV adopted from 2022-2030 (Reference scenario)**



MDV net benefits are driven by avoided vehicle gasoline and O&M savings. Although annual VMT for MDVs are similar to personal LDVs (14,175 miles per year for MDVs compared to 12,021 miles per year for personal LDVs), the net benefits for MDVs are much higher than for personal LDVs primarily due to lower utility bills resulting from lower electric rates for EV charging. The lower utility bills still provide enough utility revenue relative to the electric supply costs to result in net benefits for customers. MDVs avoid 84 metric tons of CO<sub>2</sub> over the vehicle lifetime.

The previous E3 study on EV adoption in Xcel’s Minnesota service territory found that MDVs had net benefits for all cost test perspectives. Net benefits in the PCT and SCT have decreased relative to the previous study due to a decrease in estimated MDV O&M savings per mile based on the newest available data. The rates used for calculating utility bills are also higher in the current study compared to the previous study, which further contributes to lower net benefits in this study.

Although it is possible that MDVs have access to some of the public DCFC and L2 chargers installed as part of Xcel’s programs, this study assumed that MDV benefits and costs will not change significantly as a result of Xcel’s proposed programs. A separate scenario for MDVs with the Xcel programs is not modeled in this study.

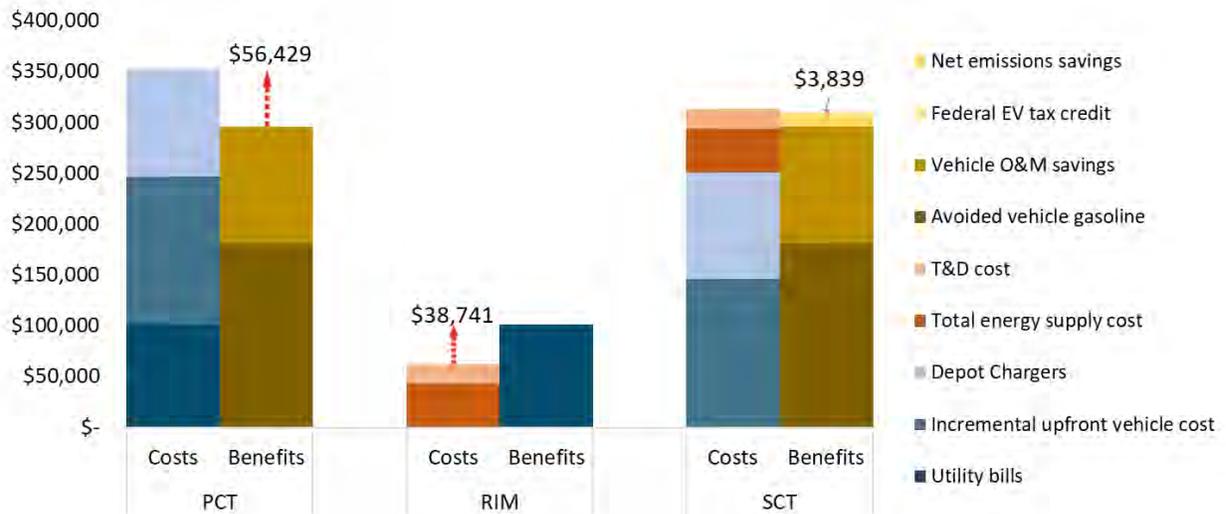
### 4.5 Commercial HDVs

Commercial HDVs are represented by the charging load shapes and vehicle and cost characteristics of transit buses. Commercial LDVs make up 0.14% of forecasted EV adoption in Xcel’s Minnesota service territory from 2022 to 2030 and 2.1% of the total charging load. Commercial HDVs are assumed to be fully managed against Xcel’s A25 rate.

#### 4.5.1 Reference Scenario

Commercial HDVs have net costs for drivers and society and net benefits for customers, as shown in Figure 4.14. Drivers and society have average net costs of \$56,429 per vehicle and \$3,839 per vehicle, respectively, for Commercial HDVs adopted from 2022 to 2030. Customers have net benefits of \$38,741 per vehicle.

**Figure 4.14. Average costs and benefits per electrified commercial HDV adopted from 2022-2030 (Reference scenario)**



Commercial HDV net costs for drivers and society are largely driven by high incremental upfront costs forecasted for commercial HDVs over the modeling horizon. Commercial HDVs are also assumed to use high-powered chargers (150 kW), which have higher charger and O&M costs. The avoided vehicle gasoline and O&M savings, which scale up per mile, are large for commercial HDVs given the high average mileage of 42,500 miles per year but are still lower than the costs of utility bills, high-level chargers, and incremental upfront purchase costs. Commercial HDVs avoid on average 413 metric tons of CO<sub>2</sub> over the vehicle lifetime. Emissions savings are much higher than seen for other vehicle types because electric Commercial HDVs replace diesel HDVs and diesel has a higher emissions intensity than gasoline. In addition, commercial HDVs have high mileage, which increases opportunity to reduce fossil fuel miles.

The previous E3 study found net benefits for all three cost test perspectives. Like MDVs, the rates used for calculating utility bills are higher in the current study than the previous study. The higher rates are further exacerbated by higher charging loads from higher mileage for commercial HDVs. Charger infrastructure costs have also been updated for this study and are higher due to the inclusion of O&M costs in this study's charging infrastructure costs; commercial HDV chargers are assumed to have an annual O&M cost that is 10% of the EVSE cost and 3% of the electrical infrastructure cost.

Similar to MDVs, it is assumed that commercial HDVs will not significantly benefit from the proposed Xcel programs and therefore separate scenarios are not modeled for this study.

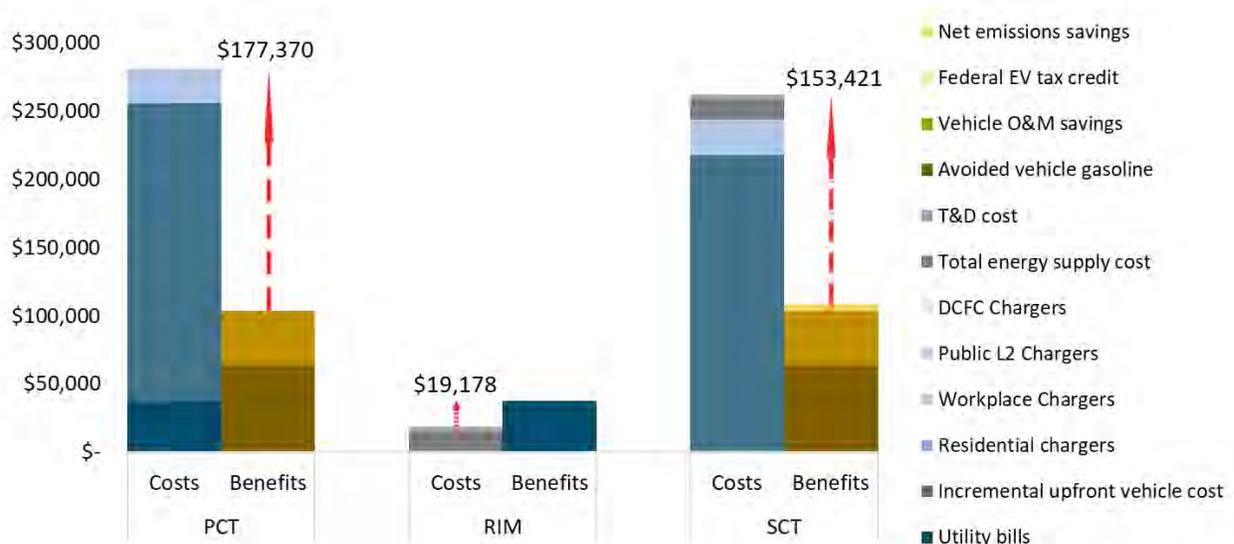
## 4.6 School Buses

School buses are broken out separately from commercial HDVs and have their own load shape and vehicle and cost characteristics represented in the modeling.

### 4.6.1 Reference Scenario

School buses have net costs for drivers and society but net benefits for customers, as shown in Figure 4.15. School bus drivers on average have net costs of \$177,370 per vehicle and society on average has net costs of \$153,421 per vehicle. Customers have on average net benefits of \$19,178 per vehicle.

**Figure 4.15. Average costs and benefits of school bus electrification per vehicle adopted from 2022-2030 (Reference scenario)**



School bus net costs in the PCT and SCT are driven largely by high incremental upfront costs for electric school buses. Savings from avoided vehicle gasoline and O&M are not as large as seen for commercial HDVs since the average mileage for school buses is much lower (12,792 miles per year for school buses compared to 42,500 miles per year for commercial HDVs); this results in significantly lower benefits for school buses. There are net benefits from the customer perspective since the utility bills from school bus charging are higher than the electric supply cost to serve the school bus charging load.

Electric school buses avoid 142 metric tons of CO<sub>2</sub> over the vehicle lifetime.

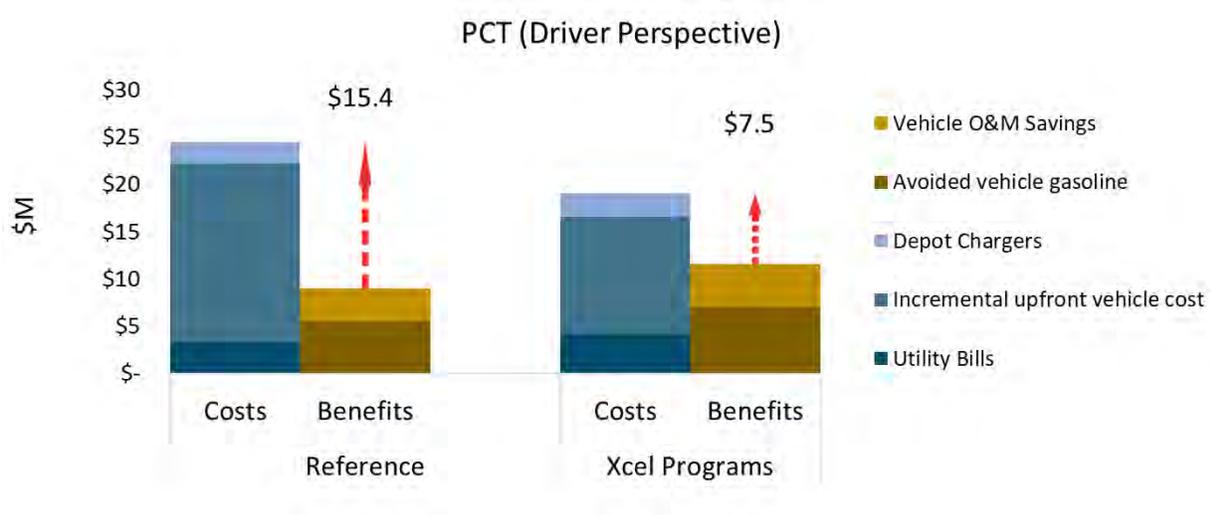
School buses have not previously been modeled for Xcel’s Minnesota service territory.

### 4.6.2 Xcel Programs Scenario

In the Xcel programs scenario, Xcel pays for the upfront cost of 32 of the 151 school buses adopted in Xcel’s Minnesota service territory over the modeling horizon.

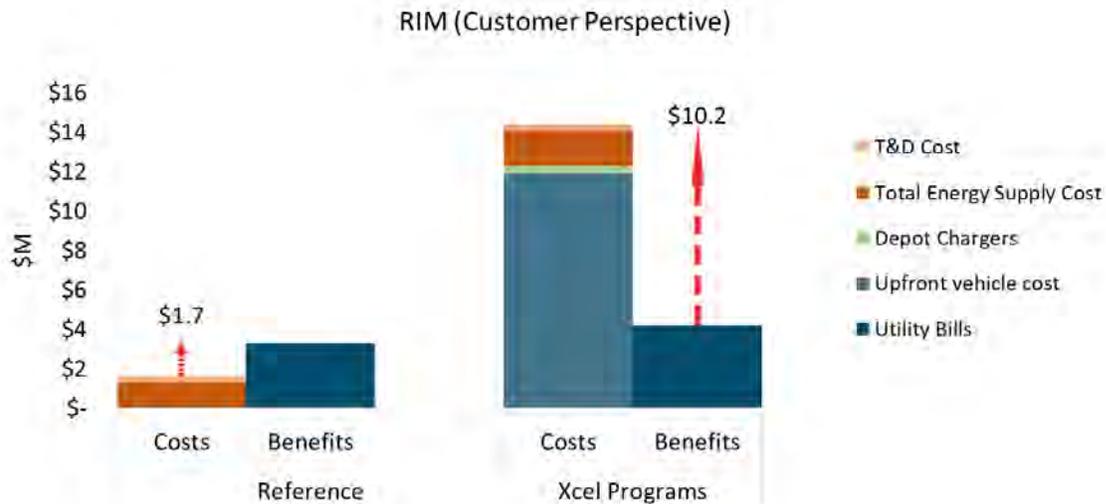
In the Reference scenario, school bus drivers have a net cost of \$15.4 million. This net cost is reduced to \$7.5 million in the Xcel programs scenario, as shown in Figure 4.16. School bus drivers have lower net costs in the Xcel programs scenario primarily because the program covers some of the incremental upfront costs of electric school buses that would have otherwise been paid for by drivers.

**Figure 4.16. Driver costs and benefits comparison of school bus electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



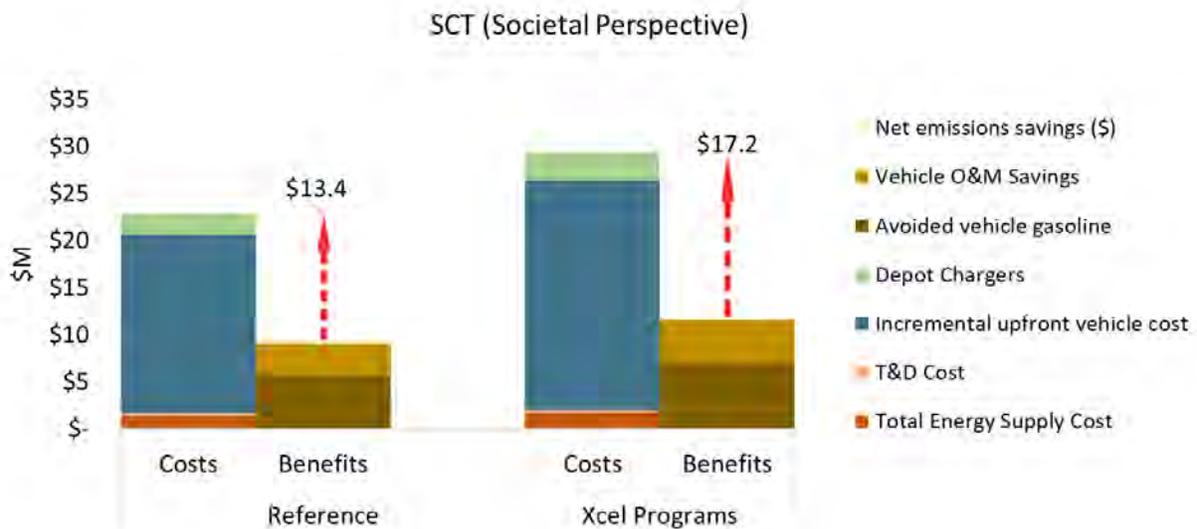
Customers go from having a net benefit of \$1.7 million in the Reference scenario to net costs of \$10.2 million in the Xcel programs scenario, as shown in Figure 4.17. The Xcel programs add the total upfront purchase costs of 32 electric school buses, which significantly outweighs the additional benefits from the utility bills of the 32 additional buses.

**Figure 4.17. Customer costs and benefits comparison of school bus electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



From a societal perspective, net costs increase from \$13.4 million in the Reference scenario to \$17.2 million in the Xcel programs scenario, as shown in Figure 4.18.

**Figure 4.18. Societal costs and benefits comparison of school bus electrification in Reference and Xcel programs scenarios for all vehicles adopted 2022-2030**



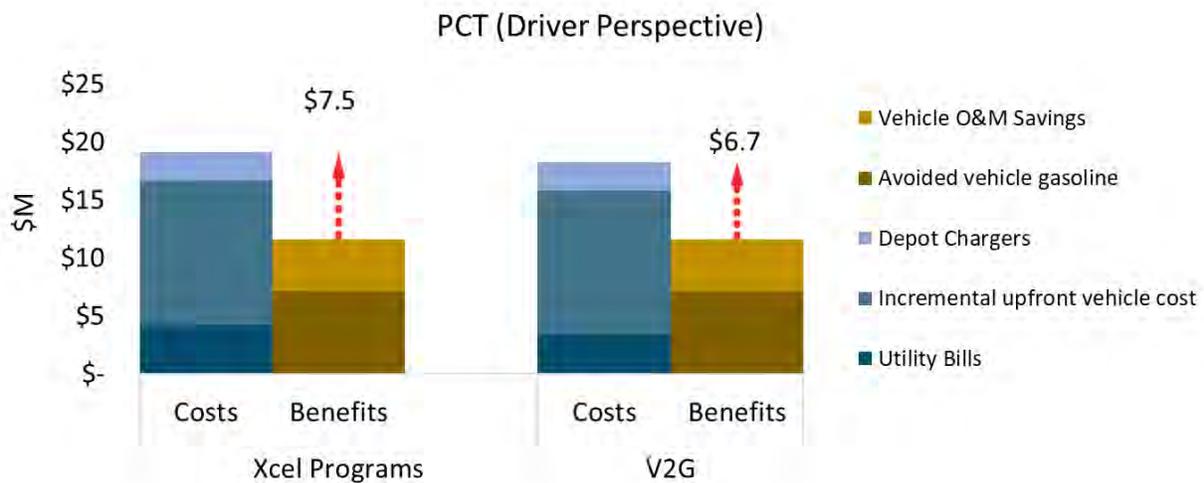
Societal net costs increase with the Xcel programs since the entire upfront costs of the 32 additional school buses added in the Xcel programs scenario are included as costs. The upfront costs of these additional buses outweigh the additional avoided gasoline and O&M savings.

#### 4.6.3 Xcel Programs Scenario with V2G

An additional sensitivity for the Xcel programs scenario models all school buses adopted over the modeling horizon as having V2G charging. With V2G charging, school buses must still meet charging requirements to satisfy the same driving patterns. If school buses have sufficient time in their driving schedules, the buses can charge, discharge energy stored in their battery back to the grid, and charge again to meet driving requirements. Charging is managed against the Xcel A25 rate and discharging is managed against a rate based on Xcel Minnesota’s generational marginal costs and the Xcel A25 rate. These rates also determine the amount the school bus pays and receives for charging and discharging, respectively. In the Xcel programs with V2G scenario, Xcel still pays for the upfront costs of 32 electric school buses.

In the Xcel programs scenario, school buses have a net cost of \$7.5 million. This net cost is reduced to \$6.7 million for the Xcel programs with V2G scenario, as shown in Figure 4.19.

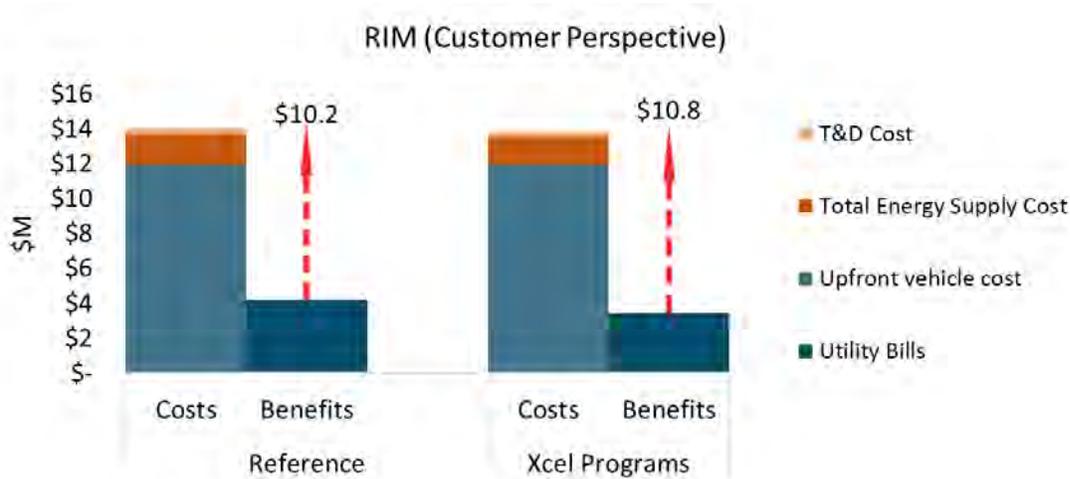
**Figure 4.19. Driver costs and benefits comparison of school bus electrification in Xcel programs with and without V2G for all vehicles adopted 2022-2030**



Net costs are reduced in the scenario with V2G because V2G charging offers opportunities for reductions in utility bills. Although vehicles must still charge the same amount with V2G charging, discharging back to the grid offers opportunities to earn money and reduce the net utility bill.

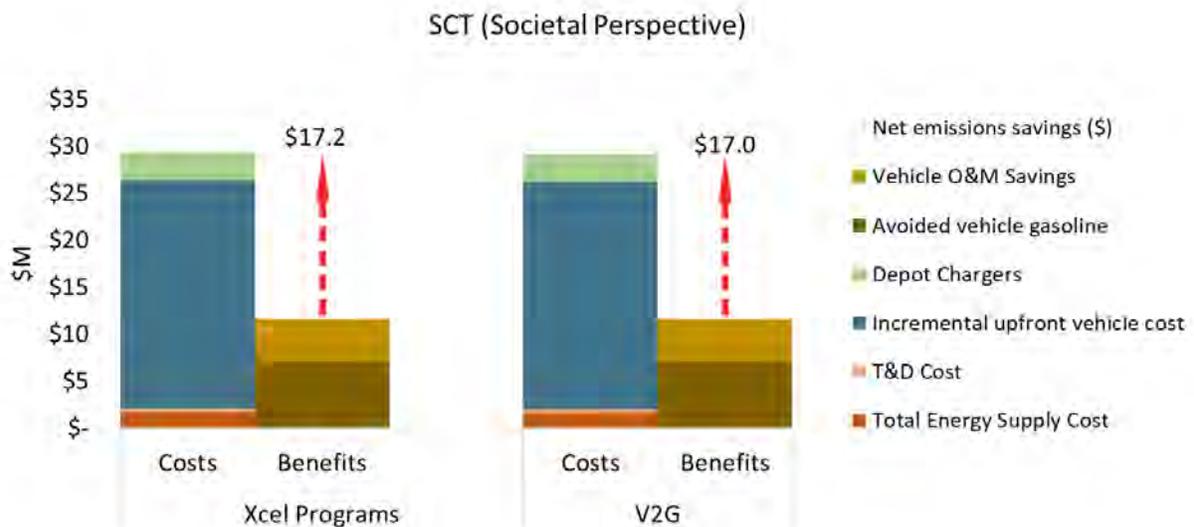
Customer net costs increase from \$10.2 million in the Xcel programs scenario to \$10.8 million in the Xcel programs with V2G scenario, as shown in Figure 4.20. This increase in net costs is due to utility bill reductions from V2G charging that are larger than reductions in electric supply costs from V2G charging.

**Figure 4.20. Customer costs and benefits comparison of school bus electrification in Xcel programs with and without V2G for all vehicles adopted 2022-2030**



From a societal perspective, net costs decrease slightly from \$17.2 million in the Xcel programs scenario to \$17.0 million in the Xcel programs with V2G scenario, as shown in Figure 4.21.

**Figure 4.21. Societal costs and benefits comparison of school bus electrification in Xcel programs with and without V2G for all vehicles adopted 2022-2030**



Societal net costs decrease with V2G charging due to slight reductions in electric supply costs.

In summary, the results for school buses indicate that the Xcel proposed programs would increase benefits for drivers but introduce higher net costs for customers and society. Increased net costs are due to the

upfront costs of school buses that are incurred by Xcel in the program; given the structure of the proposed program and the primary difference between the Reference scenario and the scenario with the program being utility payments of electric school bus upfront costs, it would be difficult for the program to not increase net costs for customers and society. The increase in net benefits for school bus drivers, however, indicates that the program would improve the economic proposition for school bus electrification and support Minnesota's EV goals.

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Northern States Power Company

**Xcel Energy Owned Public Charging Facility Pricing Workpaper***(in Cents per kWh)*

<b>Base Rate Energy Charge</b>	<b>Public Charging Usage Profile</b>	<b>Current 3-Period Residential Rates (Per kWh)</b>	<b>Weighted Average 3-Period Residential Rate (Per kWh)</b>	<b>Notes</b>
Summer On-Peak	9%	\$0.22576	0.02019	
Summer Mid-Peak	25%	\$0.09013	0.02247	
Summer Off-Peak	2%	\$0.02784	0.00046	
Winter On-Peak	15%	\$0.19266	0.02829	
Winter Mid-Peak	47%	\$0.07515	0.03529	
Winter Off-Peak	3%	\$0.02784	0.00078	
Weighted Average Rate			0.10749	(A)
Market Rate			\$0.36000	(B)
Market Rate Adder			\$0.25251	(C) = (B) - (A)
<b>Xcel Energy Program Participant Public Charging Pricing</b>				
Summer On-Peak			\$0.22576	(D)
Summer Mid-Peak			\$0.09013	(E)
Summer Off-Peak			\$0.02784	(F)
Winter On-Peak			\$0.19266	(G)
Winter Mid-Peak			\$0.07515	(H)
Winter Off-Peak			\$0.02784	(I)
<b>Xcel Energy Standard Public Charging Pricing</b>				
Summer On-Peak			\$0.47827	(C) + (D)
Summer Mid-Peak			\$0.34264	(C) + (E)
Summer Off-Peak			\$0.28035	(C) + (F)
Winter On-Peak			\$0.44517	(C) + (G)
Winter Mid-Peak			\$0.32766	(C) + (H)
Winter Off-Peak			\$0.28035	(C) + (I)

**Redline**

**ELECTRIC SERVICE PUBLIC CHARGING STATION**  
**PILOT RATE**  
**RATE CODE A94**

Section No. 5  
~~1st Revised~~Original Sheet No. 52.7

**AVAILABILITY**

Available while this ~~Public Charging~~Pilot Service is in effect to customers purchasing electricity used to recharge a battery that powers an electric vehicle from a Company-owned and operated public charging stations.

**CHARACTER OF SERVICE**

The Company ~~is proposing to will~~ install, own, and operate Direct Current Fast Charging (DCFC) stations in our service territory.

**DETERMINATION OF CUSTOMER'S CHARGES**

Customers who elect to use Company-owned and operated public charging stations will be charged for electricity provided by the charging stations. Customer's charges shall reflect energy charges (if applicable) based on customer's kWh usage. Energy charges also include applicable riders, adjustments, surcharges, voltage discounts, energy credits, and other applicable charges. ~~Two rate tiers will be available to customers utilizing Company-owned and operated public charging stations. The Standard Rate will be made available at all times to all customers who use the DCFC stations. The Optional Rate will be made available to all customers that are ratepayers in the Company's Minnesota service territory with a residential or commercial account and that complete the enrollment process specified by the Company to validate their ratepayer status. Detailed instructions and the method for validated customers to access the Optional Rate at all Company-owned public charging stations will be provided following completion of the validation process. Details regarding the specific charges applicable to this service are listed below.~~

**STANDARD RATE**

Energy Charge per kWh

June-September

On-Peak Period	\$0. <del>525764</del> <u>7827</u>
Mid-Peak Period	\$0. <del>390133</del> <u>4264</u>
Off-Peak Period	\$0. <del>327842</del> <u>8035</u>

Other Months

On-Peak Period	\$0. <del>492664</del> <u>4517</u>
Mid-Peak Period	\$0. <del>375453</del> <u>2766</u>
Off-Peak Period	\$0. <del>327842</del> <u>8035</u>

**OPTIONAL RATE**

Energy Charge per kWh

June-September

<u>On-Peak Period</u>	<u>\$0.22576</u>
<u>Mid-Peak Period</u>	<u>\$0.09013</u>
<u>Off-Peak Period</u>	<u>\$0.02784</u>

Other Months

<u>On-Peak Period</u>	<u>\$0.19266</u>
<u>Mid-Peak Period</u>	<u>\$0.07515</u>
<u>Off-Peak Period</u>	<u>\$0.02784</u>

(Continued on Sheet No. 5-52.8)

Date Filed: ~~03-08-21~~08-02-22 By: Christopher B. Clark Effective Date: ~~06-01-22~~  
President, Northern States Power Company, a Minnesota corporation  
Docket No.: E002/M-~~20-74522-~~ Order Date: ~~04-27-22~~

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**ELECTRIC SERVICE PUBLIC CHARGING STATION**  
**PILOT RATE**  
**RATE CODE A94**

Section No. 5  
~~1st Revised~~Original Sheet No. 52.7

**FUEL CLAUSE**

~~Customer charges are subject to the adjustments provided for in the Fuel Clause Rider.~~

**RESOURCE ADJUSTMENT**

~~Customer charges are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.~~

**ENVIRONMENTAL IMPROVEMENT RIDER**

~~Customer charges are subject to the adjustments provided for in the Environmental Improvement Rider.~~

**SURCHARGE**

~~In certain communities, customer charges are subject to surcharges provided for in a Surcharge Rider.~~

**DEFINITION OF PEAK PERIODS**

~~The On-Peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day.~~

(Continued on Sheet No. 5-52.8)

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**ELECTRIC SERVICE PUBLIC CHARGING STATION**  
**PILOT RATE (Continued)**  
**RATE CODE A94**

Section No. 5  
~~1st Revised~~ Original Sheet No. 52.8

**FUEL CLAUSE**

Customer charges are subject to the adjustments provided for in the Fuel Clause Rider.

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**TERMS AND CONDITIONS OF SERVICE**

1. This schedule is also subject to provisions contained in the General Rules and Regulations.
2. Customers must adhere to all Company instructions regarding the safe and efficient use of the public charging stations displayed on or near the station and must follow all recommendations, guidelines, and requirements published by the manufacturer of customer's electric vehicle regarding the charging of the electric vehicle, including the compatibility of the public charging station with the customer's electric vehicle.
3. Customer's use of the public charging station will be unsupervised, and customer's use of the public charging station is at Customer's own risk.
4. The Company has the right to control the use of the public charging station and may suspend or refuse access to public charging station at any time, for any reason.
5. The Company will use reasonable efforts to maintain the operability of the public charging stations and keep the public charging stations in working order, but the Company does not guarantee, and is under no obligation to ensure the availability, compatibility with customer's electric vehicle or performance of any public charging station.
6. Customer data may be collected by the Company in connection with Customer's use of a public charging station, and the Company will maintain any such information in accordance with and subject to the Company's then current Privacy Policy.

Date Filed: ~~03-08-24~~08-02-22 By: Christopher B. Clark Effective Date: ~~06-01-22~~  
President, Northern States Power Company, a Minnesota corporation  
Docket No.: E002/M-~~20-74522-~~ Order Date: ~~04-27-22~~

**Clean**

**ELECTRIC SERVICE PUBLIC CHARGING STATION  
 RATE  
 RATE CODE A94**

Section No. 5  
 1st Revised Sheet No. 52.7

**AVAILABILITY**

Available while this Public Charging Service is in effect to customers purchasing electricity used to recharge a battery that powers an electric vehicle from a Company-owned and operated public charging stations.

ND

**CHARACTER OF SERVICE**

The Company will install, own, and operate Direct Current Fast Charging (DCFC) stations in our service territory.

ND

**DETERMINATION OF CUSTOMER'S CHARGES**

Customers who elect to use Company-owned and operated public charging stations will be charged for electricity provided by the charging stations. Customer's charges shall reflect energy charges (if applicable) based on customer's kWh usage. Energy charges also include applicable riders, adjustments, surcharges, voltage discounts, energy credits, and other applicable charges. Two rate tiers will be available to customers utilizing Company-owned and operated public charging stations. The Standard Rate will be made available at all times to all customers who use the DCFC stations. The Optional Rate will be made available to all customers that are ratepayers in the Company's Minnesota service territory with a residential or commercial account and that complete the enrollment process specified by the Company to validate their ratepayer status. Detailed instructions and the method for validated customers to access the Optional Rate at all Company-owned public charging stations will be provided following completion of the validation process.

N

N

ND

**STANDARD RATE**

Energy Charge per kWh

N

June-September

On-Peak Period	\$0.47827
Mid-Peak Period	\$0.34264
Off-Peak Period	\$0.28035

R

Other Months

On-Peak Period	\$0.44517
Mid-Peak Period	\$0.32766
Off-Peak Period	\$0.28035

R

**OPTIONAL RATE**

Energy Charge per kWh

N

June-September

On-Peak Period	\$0.22576
Mid-Peak Period	\$0.09013
Off-Peak Period	\$0.02784

Other Months

On-Peak Period	\$0.19266
Mid-Peak Period	\$0.07515
Off-Peak Period	\$0.02784

N

L

(Continued on Sheet No. 5-52.8)

Date Filed: 08-02-22 By: Christopher B. Clark Effective Date:  
 President, Northern States Power Company, a Minnesota corporation  
 Docket No.: E002/M-22- Order Date:

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**ELECTRIC SERVICE PUBLIC CHARGING STATION  
RATE (Continued)  
RATE CODE A94**

Section No. 5  
1st Revised Sheet No. 52.8

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**FUEL CLAUSE**

Customer charges are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Customer charges are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**ENVIRONMENTAL IMPROVEMENT RIDER**

Customer charges are subject to the adjustments provided for in the Environmental Improvement Rider.

**SURCHARGE**

In certain communities, customer charges are subject to surcharges provided for in a Surcharge Rider.

**DEFINITION OF PEAK PERIODS**

The On-Peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day.

**TERMS AND CONDITIONS OF SERVICE**

1. This schedule is also subject to provisions contained in the General Rules and Regulations.
2. Customers must adhere to all Company instructions regarding the safe and efficient use of the public charging stations displayed on or near the station and must follow all recommendations, guidelines, and requirements published by the manufacturer of customer's electric vehicle regarding the charging of the electric vehicle, including the compatibility of the public charging station with the customer's electric vehicle.
3. Customer's use of the public charging station will be unsupervised, and customer's use of the public charging station is at Customer's own risk.
4. The Company has the right to control the use of the public charging station and may suspend or refuse access to public charging station at any time, for any reason.
5. The Company will use reasonable efforts to maintain the operability of the public charging stations and keep the public charging stations in working order, but the Company does not guarantee, and is under no obligation to ensure the availability, compatibility with customer's electric vehicle or performance of any public charging station.
6. Customer data may be collected by the Company in connection with Customer's use of a public charging station, and the Company will maintain any such information in accordance with and subject to the Company's then current Privacy Policy.

---

Date Filed: 08-02-22

By: Christopher B. Clark

Effective Date:

President, Northern States Power Company, a Minnesota corporation

Docket No.: E002/M-22-

Order Date:



## Memorandum

**To:** Deborah Erwin, Jean Baptiste Jouve, Jason Peuquet, Benjamin Crist, Xcel Energy  
**From:** Derek Jones, Alex Metz, Adam Green, Gavin Aiello, Guidehouse  
**Date:** July 19, 2022  
**Re:** Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota

## Introduction

Xcel Energy (“Company”) engaged Guidehouse, Inc. (“Guidehouse”) to assist in the preparation of its transportation electrification filings in Colorado, Minnesota, Wisconsin, and New Mexico. As part of this support, Guidehouse conducted a series of plug-in electric vehicle<sup>1</sup> (“PEV”) modeling analyses leveraging its Vehicle Analytics & Simulation Tool (“VAST”). VAST is a systems dynamics model with three distinct modules that are modeled in sequential order:

- **Vehicle Adoption:** Forecast adoption of various powertrain, fuel, and vehicle class configurations in each census tract in each jurisdiction. By modeling vehicle adoption based on inputs specific to a particular jurisdiction, the forecast closely reflects local market conditions and have a stronger empirical basis when compared to similar national, state, or regional forecasts.
- **Charging Needs:** Forecast charging infrastructure required to support the above electric vehicle adoption, calculated through a dynamic market equilibrium model (the number of charging station ports required to supply a given number of vehicles).
- **Charging Station Siting:** Determines the latitude and longitude of public charging sites to inform distribution planning, electric vehicle supply equipment (“EVSE”) siting, and other locationally sensitive analyses; uses a GIS network model to optimally site EV charging stations based on local vehicle populations and vehicle miles traveled for a specified street network.

Further details on VAST methodology are available in the “Vehicle Analytics & Simulation Tool Overview” document available from Guidehouse by request.

This memo presents an overview of Guidehouse’s modeling methodology and associated results for:

1. **Vehicle Adoption** in the state of Minnesota, and Xcel service territory.
2. **Charging Needs** in the state of Minnesota, and Xcel Service territory.

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<sup>1</sup> Includes battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV)



Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 2 of 17

3. **Charging Station Siting** in the state of Minnesota and Xcel Service territory, including siting factors available for inclusion in an analysis, comparisons with previous results, and recommendations for use of the outputs.

### Vehicle Adoption Modeling

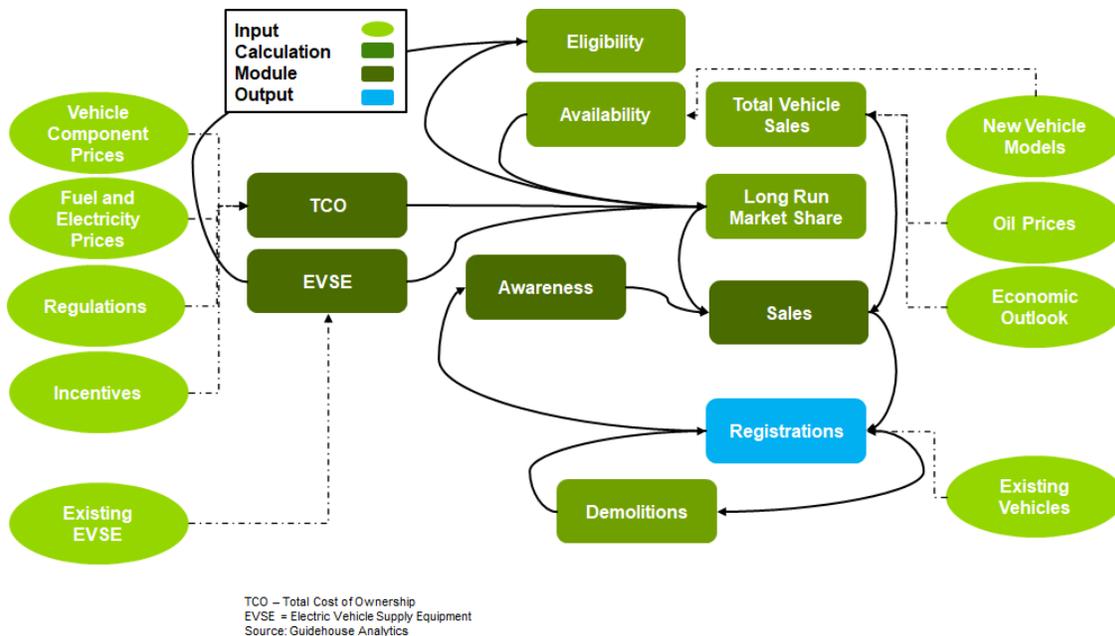
Guidehouse’s Vehicle Analytics & Simulation Tool (VAST) uses a systems dynamics model<sup>2</sup> driven by enhanced Bass diffusion<sup>3</sup>, conditioned on vehicle availability, customer ownership economics, and eligibility constraints. This means that the fundamental cause and effect relationships in the system are defined and calibrated.

### Vehicle Adoption Methodology Summary

The VAST Adoption module explicitly accounts for supply-side dynamics driving vehicle production and availability as new models are rolled out preferentially to specific geographies in response to specific markets or policy drivers. If a vehicle is available, the economics of vehicle ownership, customer decision-making, and the impact of word-of-mouth effects and advertising all affect vehicle sales. This formulation is more accurate than strict autoregressive time-series forecast models like GARCH or ARIMA models and outperforms econometric models because the system is fundamentally bounded by stocks and flows and can account for non-linear dynamics that arise from positive and negative feedback, balancing effects, and reinforcing trends.

Figure 1 depicts a high-level diagram explaining the relationships between the major model routines.

**Figure 1. VAST Vehicle Adoption Methodology**



Source: Guidehouse

<sup>2</sup> Sterman, John D. Business Dynamics: Systems Thinking and Modeling for a Complex World. Irwin McGraw-Hill. 2000.

<sup>3</sup> Bass, Frank (1969). “A new product growth model for consumer durables.” Management Science 15 (5): p 215-227

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 3 of 17

## Vehicle Adoption Results

In Minnesota, Guidehouse modeled vehicle adoption based on a MN Target 2030 scenario, based on a state target of 20% light-duty electric vehicle adoption by 2030. This scenario models lower market share for medium- and heavy-duty vehicles, primarily due to limitations in model availability. The forecasted electric vehicle adoption results in the Northern States Power Company, Minnesota (“NSPM”) service territory are shown in Table 1. For the state to reach its goal of 20% light-duty adoption by 2030, Guidehouse projects even greater adoption is required within NSPM territory, with vehicle adoption reaching 25%.

**Table 1. NSPM Vehicle Adoption Results**

Scenario / Vehicles	2022	2026	2030
<b>Electric LDVs (#)</b>	24,039	274,017	794,126
<b>Electric MDVs (#)</b>	26	519	1,845
<b>Electric HDVs (#)</b>	3	223	1,214
<b>Electric LDVs (% of All LDVs)</b>	1%	10%	25%
<b>Electric MDVs (% of All MDVs)</b>	0%	1%	2%
<b>Electric HDVs (% of All HDVs)</b>	0%	0%	2%

Source: Guidehouse

## Charging Needs Modeling

### Charging Needs Methodology Summary

The VAST Charging Needs module assumes changes in the vehicle population associated with a specific fuel drive infrastructure build-out. For example, as EVSE rollouts continue, the portion of the market that can consider purchasing a PEV increases and the economic disadvantage of PEV ownership decreases because PEVs can meet more consumer transportation needs. Economic disadvantage is formulated to reflect the vehicle’s ability to satisfy all the driving requirements of its owner and is consequently modeled as a cost added to the total cost of ownership (TCO)<sup>4</sup>. Guidehouse refers to this cost as the consumer sacrifice penalty.

<sup>4</sup> There is no assumed infrastructure penalty associated with PHEVs, due to PHEVs ability to use gas and avoid the need for rental cars on long trips.

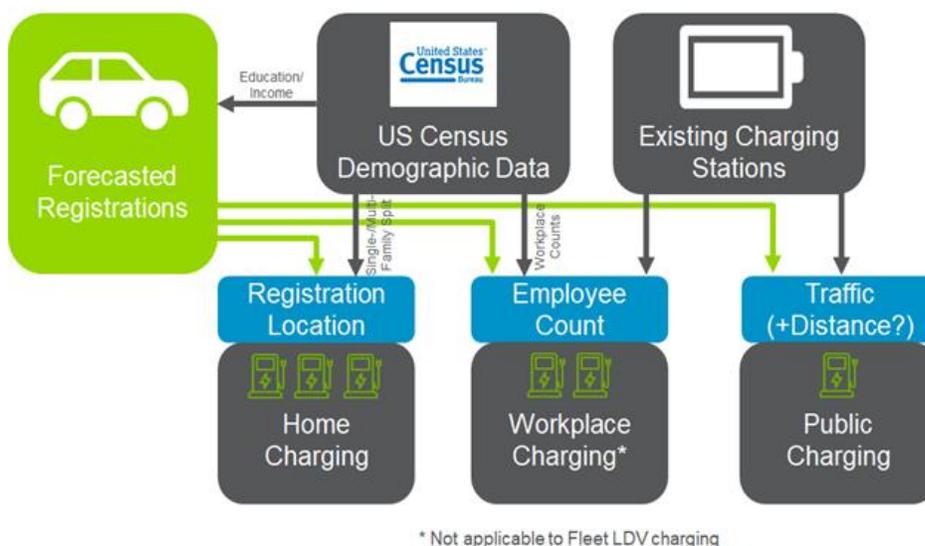
Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 4 of 17

Fueling infrastructure and vehicle populations evolve together in VAST. More vehicles on the road with specific fuel requirements dictated by the powertrain stimulate infrastructure development for the relevant fuel. This is accomplished through the estimation of dynamic regional charger-per-vehicle ratios. They are regional, reflecting local traffic and driving patterns, and dynamic, reflecting changing technology, range, and use case preferences among drivers. Charging levels (rated capacity) evolve over time in the model in response to vehicle range, penetration, and use case requirements.

The public charging requirements included in Guidehouse's charging needs assessment includes publicly accessible charging stations (e.g. accessible to all EV drivers) and existing semi-private, or proprietary charging stations (e.g. charging stations available only to certain EV drivers, such as Tesla or Rivian networks). Guidehouse's model discounts the port counts of these proprietary networks to account for the lack of accessibility to all drivers.

Figure 2 illustrates the VAST methodology for connecting charging stations with vehicle registrations.

**Figure 2. VAST Charging Needs Methodology**



Source: Guidehouse

**Charging Needs Results**

For the NSPM service territory, Guidehouse developed an infrastructure forecast, also developed as part of the MN Target 2030 Scenario. Guidehouse's projections for infrastructure requirements show that by 2030, over 25,000 Level 2 ports and 5,000 DCFC ports will be required for public usage in NSPM territory. Full results for infrastructure projections can be found in Table 2, which is inclusive of existing charging infrastructure available today.

**Table 2. NSPM Charging Needs Results**

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 5 of 17

	2022	2026	2030
<b>Public Level 2 Charging (MW)</b>	10	120	419
<b>Public Level 2 Charging (Ports)</b>	1,326	9,677	25,554
<b>Public DCFC Charging (MW)</b>	16	324	1,234
<b>Public DCFC Charging (Ports)</b>	222	1,942	5,065

Source: Guidehouse

### Adoption & Charging Needs Modeling Insights

Future vehicle adoption and charging needs are driven by many market factors. Consideration of these factors is essential in developing robust and reliable forecasts. Table 3 lists key factors incorporated in Guidehouse's 2022 vehicle adoption and charging needs forecast.

**Table 3. VAST Adoption and Charging Needs Factors**

Adoption and Charging Needs Factor	Description
<b>Regulatory Targets</b>	Future PEV penetration targets established by regulatory bodies or government agencies
<b>Awareness</b>	Consumer's knowledge of the PEV market
<b>Availability</b>	Ability for the PEV market to meet the specific demand of a consumer, e.g., if a consumer wants an electric minivan, can they purchase this vehicle
<b>Customer Preference</b>	Inherent non-economic drivers of customer powertrain purchase behavior such as perceived vehicle performance, style, and attractiveness.
<b>Total Cost of Ownership (TCO)</b>	The total cost to a consumer who purchases a PEV, incorporating capital expenses, operating expenses and existing incentives
<b>Charger to Vehicle Ratio</b>	The measurement of how charging infrastructure is required to meet the charging demand generated by PEV adoption

Source: Guidehouse

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
July 2022  
Page 6 of 17

In a 2019 sustainability report from the Minnesota Department of Transportation<sup>5</sup>, a target for electrification of 20% of all light duty (“LD”) vehicles on the road in Minnesota was established in order to meet greenhouse gas (“GHG”) emissions reduction goals.

In Guidehouse’s view, achieving this LD vehicle target in Minnesota requires market conditions that aggressively favor PEV adoption. Key market conditions include:

- Federal- and state-level market interventions will be needed to maximize awareness, such as those contemplated in the recent Build Back Better Agenda tax incentives for PEV purchase
- Availability of PEVs will need to develop significantly with no supply chain constraints
- Production of internal combustion engine (“ICE”) vehicles will need to be commensurately reduced or banned, an approach applied in California where ICE vehicles will be banned by 2035<sup>6</sup>
- Customer preferences of PEV performance must consistently be viewed a favorable over ICEV

Understanding the charging needs associated with increased PEV adoption is essential to inform effective and efficient charging site deployments to support and unlock PEV market demand. Charger-to-vehicle ratios must take into consideration developing charging behavior in EV owners, such as shifts from home charging to public market charging as public chargers become more available and as EV adoption increases beyond detached households with dedicated charging solutions. The evolution of technology, such as availability and affordability of DC fast chargers (“DCFC”) and improved rated capacity on Level 2 (“L2”) and DCFC chargers, will further define the capacity required to support the PEV market.

As the PEV market is still nascent, the inclusion of many factors is essential to support robust, reliable modeling. These factors will continue to develop in parallel with the PEV market and it is important to revisit and refresh underlying assumptions as increasingly reliable and relevant information becomes available.

## Charging Station Siting

Fundamentally, while the volume of charging station ports is calculated through a dynamic market equilibrium model (the number of ports required to supply a given number of vehicles) the locations of these charging ports can be difficult to determine through the vehicle counts alone. The VAST Charging Station Siting module calculates the latitude and longitude of likely public charging sites to inform distribution planning, EVSE siting, and other locationally sensitive analyses.

### Siting Methodology Summary

Guidehouse calculates the number of charging station ports required within the census tract to serve the forecasted charging load (Charging Needs module), based on the anticipated adoption of electric vehicles (Vehicle Adoption module). Guidehouse’s siting analysis (Charging Station Siting module) then leverages prioritization criteria—or objective functions—along with various siting factors to determine the potential locations for charging station sites based on a hybrid approach using two objective functions as depicted in Figure 3.

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<sup>5</sup> Minnesota Department of Transportation, 2019 Sustainability Report Progress and Headwinds: <http://www.dot.state.mn.us/sustainability/docs/2019-sustainability-report.pdf>

<sup>6</sup> Executive Department State of California, Executive Order N-79-20: <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.23.20-EO-N-79-20-Climate.pdf>

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 7 of 17

**Figure 3. A Hybrid Approach of Two Objective Functions**

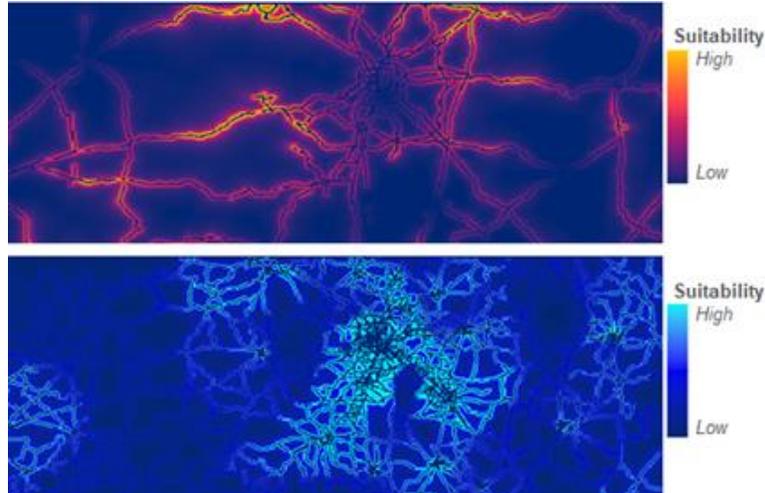


Source: Guidehouse

As Figure 3 depicts, Guidehouse's model is designed to site:

- **Connector Stations** – Stations needed to connect major cities and provide intra-city commerce and tourism; and
- **Market Stations** – Stations needed to meet local market demand generated by inter-city traffic.

**Figure 4. Illustrative Connector (Top) and Market (Bottom) Station Suitability**



Source: Guidehouse

Key core features of the methodology include:

- Roads modeled as a network with explicit size, speed limits, navigation rules, travel times and traffic volume
- Stations sited on nodes in the modeled network
- Station locations determined discretely by network optimization to meet maximum demand for charging, subject to vehicle range and network constraints

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 8 of 17

- Stations assigned to an electric distribution service territory defined by a drive-time isochrone
- Station assignment based on total forecasted demand at a given location

Additional optional analysis considerations include:

- Electric distribution system costs
- Electric distribution system support
- Equity considerations to support disadvantaged communities

Notably, the analysis represents an approximate location of the charging station. The VAST Charging Station Siting module does not consider station installation considerations such as technical feasibility, make-ready costs, land costs, landowner willingness to participate, attraction colocation, visibility, accessibility, etc. For example, an analysis may identify an optimal location for placing the charging station, but the site may not have sufficient goods and services to attract drivers to the location. For this reason, the actual location of the installed charging station may differ from the modeled siting results.

### Siting Factors Summary

The VAST Charging Station Siting module analyzes various factors to determine the optimal location for charging stations at the census tract-level. The sited charging station location varies depending on the factors selected for analysis. The overarching goals of the analysis guide factor selection. For example, in Minnesota the Company aimed to target rural areas, which are not served by the existing charging market, to expand access to the electric vehicles for consumers. Other jurisdictions may have different objectives, or face different hurdles for electrification, which guide refinement of the VAST Charging Siting methodology and siting factor selection ahead of executing the analysis. Table 4 details the various factors available in the VAST Charging Station Siting methodology and whether they were used in the Minnesota analysis.

**Table 4. VAST Charging Station Siting Factors List**

Siting Factor	Description	Included in Analysis	Data Point & Source
<b>Site Buffer, Connector</b>	Proposed Connector sites cannot be sited within a certain distance from a built station	<b>No</b>	Distance (miles) from an existing charging station (Alternative Fuels Data Center)
<b>Site Buffer, Market</b>	Proposed Market sites cannot be sited within a certain distance from a built station	<b>No</b>	Distance (miles) from an existing charging station (Alternative Fuels Data Center)
<b>Site Buffer, Proposed</b>	Two proposed stations cannot be within a certain distance from one another	<b>Yes</b>	Two (2) miles from a proposed (connector or market) charging station (VAST Charging Station Siting module)
<b>Utilization, High</b>	Maximize utilization based on anticipated driver traffic	<b>No</b>	Average annual daily traffic (Federal Highway Administration)

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 9 of 17

Siting Factor	Description	Included in Analysis	Data Point & Source
<b>Utilization, Low</b>	Prioritize areas with lower utilization (underserved regions)	<b>Yes</b>	Average annual daily traffic (Federal Highway Administration) Existing charging stations (Alternative Fuels Data Center)
<b>Low-Income<sup>7</sup></b>	Prioritize disadvantaged communities	<b>No</b>	Median household income (American Community Survey, 5-year Estimates) Federal Poverty Guidelines (Department of Health and Human Services)
<b>Development Cost</b>	Prioritize areas with excess grid capacity, reduce installation cost	<b>No</b>	Distribution Grid Capacity Study (Electric Distribution Network Operator)
<b>Grid Support</b>	Prioritize sites with least headroom based on capacity and demand forecast	<b>No</b>	Distribution Grid Capacity Study (Electric Distribution Network Operator)

Source: Guidehouse

## Siting Results

Table 5 depicts the 2026 siting results from Guidehouse's 2022 analysis of Xcel Energy service territories in NSPM.

**Table 5. Public Direct Current Fast Charging Forecast Results (2026)**

Entity	Scenario	Adopted EVs (2026 by duty) <sup>8</sup>	Charging Capacity Demand (MW) <sup>9</sup>	Sited Capacity (MW) <sup>10</sup>	NSP Planned Capacity (MW)
<b>NSPM</b>	Target 2030	LD: 274,017	324	174	194
		MHD: 741			

Source: Guidehouse

<sup>7</sup> Low-income populations as defined by Minnesota Department of Transportation are households making up to 150% of the poverty level.

<sup>8</sup> Adoption values for NSPW are provided in the file titled "FINAL\_EV\_Adoption\_Results\_Xcel\_WI\_Scenario\_2\_500ft\_Buffer.csv" under the field named "Population".

<sup>9</sup> Charging capacity demand for NSPW is provided in the file titled "FINAL\_EVSE\_Needs\_Results\_Xcel\_WI\_Scenario\_2\_500ft\_Buffer.csv" under the field named "Charger Capacity (kW)".

<sup>10</sup> Sited capacity for NSPW is provided in the file titled "FINAL\_WI\_Scenario\_2\_500ft\_Sites\_2026\_2030.xlsx" under the field named "Site Capacity (kW)".

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
July 2022  
Page 10 of 17

Table 6 depicts the 2030 siting results from Guidehouse’s 2022 analysis of Xcel Energy service territories in NSPM.

**Table 6. Public Direct Current Fast Charging Forecast Results (2030)**

Entity	Scenario	Adopted EVs (2030 by duty) <sup>8</sup>	Charging Capacity Demand (MW) <sup>9</sup>	Sited Capacity (MW) <sup>10</sup>
NSPM	Target 2030	LD: 794,126	1,234	682
		MHD: 3,059		

Source: Guidehouse

Table 7 provides definitions for the terms used in Tables 5 and 6 as well as relevant concepts that are critical to interpreting the results. Additional terms and definitions are available in the Data Dictionary that accompanies the results workbook.

**Table 7. Siting Results Definitions**

Term	Definition
<b>Entity</b>	Xcel Energy operating company service territory
<b>Scenario</b>	Set of assumptions specific to an Entity siting analysis
<b>Siting Analysis</b>	Given a calculated charging need (MWh) to serve forecasted EV adoption, approximate latitudinal / longitudinal location of individual charging stations determined through analysis of factors such as modeled road network, electric vehicle adoption, traffic patterns, existing charging stations, etc. as defined in the Methodology Overview section of this memo
<b>Public Direct Current Fast Charging</b>	Share of total charging needs in megawatts (MW) modeled for an Entity’s designated jurisdiction for public charging (unrestricted access) through direct current fast charging (DCFC) stations. Does not include public charging needs for Level 2 stations or any private charging (restricted access) by DCFC or Level 2 stations
<b>Target Percentage</b>	Siting analysis requires many criteria to avoid returning one new station for every point along a road network. Target percentage reflects real-world resource constraints, e.g., capital, goods, services. A target percentage of 25%* aligns with historic roll out of charging station locations in high adoption regions.
<b>Per Port Weighted Average Capacity (kW)</b>	Rated capacity (kW) of DC port at optimal charging station site. Average value of 160 kW was used in 2026 across all sites; average value of 240 kW was used in 2030 across all sites.
<b>Sited Capacity (kW)</b>	Sum of installed capacity (kW) at optimal charging station site (port count * per port weighted average capacity)

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 11 of 17

\* For a comparison of historical vs. simulated charging station installation density see Robinson, S. et al 2021 [here](#) and [here](#)

Source: Guidehouse

**Figure 5 Siting Results for NSPM Service Area Based on MN 2030 Target Adoption and Charging Needs Scenario (2026)**

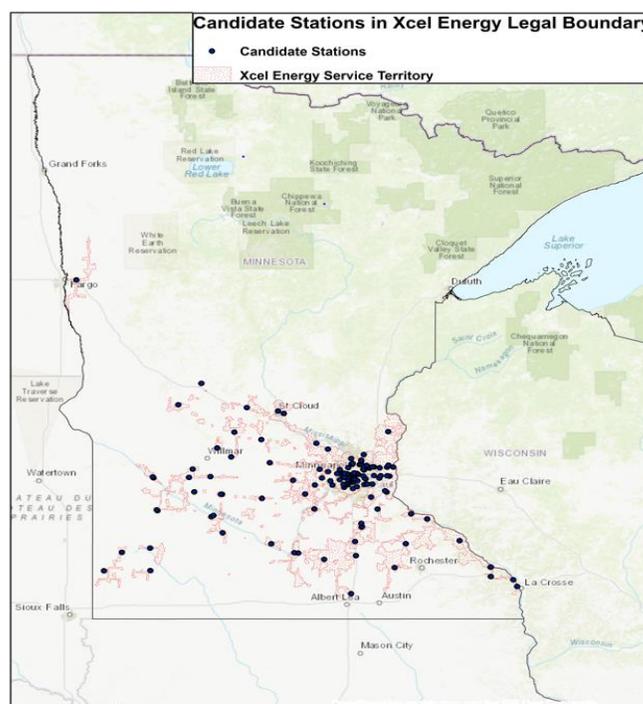


Figure 5 provides an overview of the siting results for the NSPM service area based on the Target 2030 scenario, in 2026. Each dot shown in the Figure indicates one siting location – the number of ports per site varies depending on the demand at the site. The siting results in Figure 5 include all candidate charging station locations. In other words, this figure includes all charging station sites that would be required to support the vehicle adoption and charging needs developed in the scenario, excluding stations that exist today. The density of charging stations is largely proportional to population, as demonstrated by the large clustering of sites in the St. Paul and Minneapolis regions. To capture larger quantities of driving traffic, the majority of sites are located along major highways, including the I-35 and I-94.

### Comparison of 2022 Minnesota Results with 2019 Results

This section provides a comparative analysis distinguishing similarities and differences in siting assumptions, factors and results used in Minnesota's 2019 and 2022 siting analysis.

In Northern States Power's 2020 COVID-19 Relief & Recovery filing (Docket Nos E,G999/CI-20-492 & E,G002/M-20-745), the Company proposed to develop, install, own, and operate a network of 21 public direct current fast charging stations in Minnesota. This section compares the results from the 2019

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 12 of 17

analysis with the new 2022 siting analysis to summarize the differences and provide transparency into the drivers behind the differences.

The siting of 21 stations in 2019 was supported by Guidehouse's VAST Charging Station Siting module. In this analysis, Guidehouse's primary siting objective was to place the DCFC stations in locations not served by the existing charging market ("underserved" areas). These locations would be targeted for more rural parts of the state (e.g., not contained in the Minneapolis-St. Paul area), as these locations were not being served by the existing charging market.

In 2022, Guidehouse revised the siting analysis for Minnesota. Although the underlying methodology is the same, specific siting assumptions were updated to reflect regulatory context and recent market developments. Table 8 below provides a comparative view of the objectives and siting factors used in 2019 and 2022 analysis.

**Table 8. Siting Assumptions & Factors Comparison**

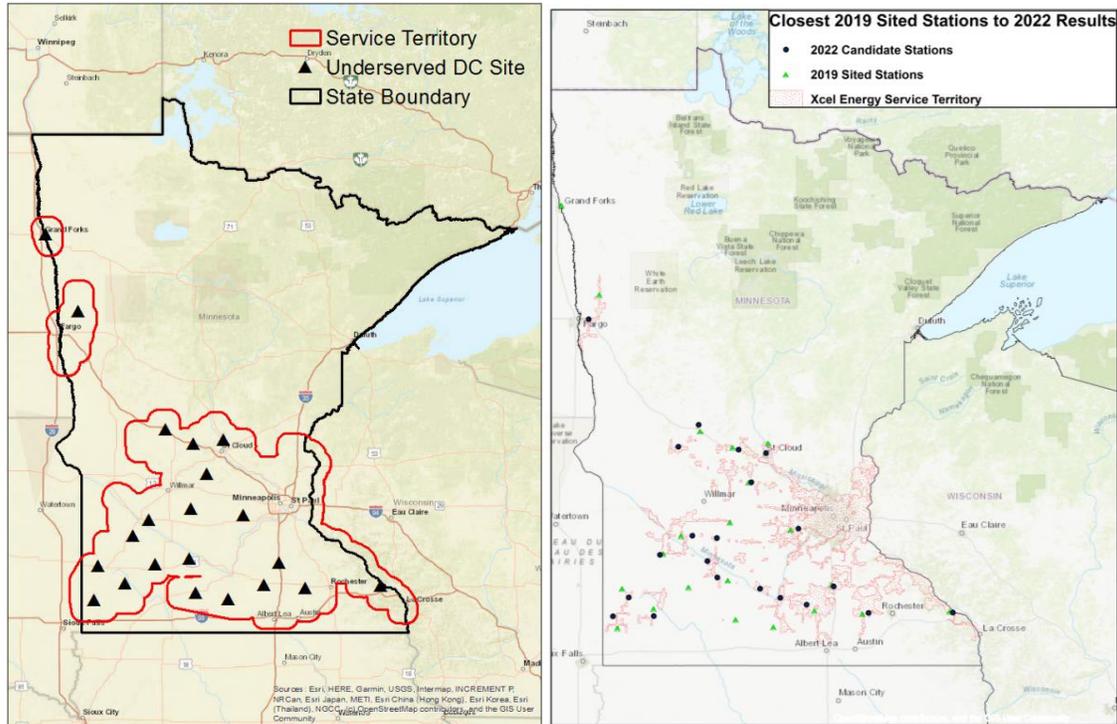
Siting Assumptions	2019 Siting Analysis	2022 Siting Analysis
Objective Functions	Full Coverage with Minimum Facilities – flagging optimal sites for increasing coverage in areas with low availability of charging infrastructure	
	Target Market Share – simulating the behavior of all agents in the market, best for forecasting future load	
Buffer around Service Territory	Guidehouse applied a 15-mile buffer around the Xcel's service territory to capture EV demand from surrounding regions	
Existing Sites	Built and proposed public DCFC stations as of 2019 (per the AFDC data)	Built and proposed public DCFC stations as of 2022 (per the AFDC data)
Siting Factors	2019 Siting Analysis	2022 Siting Analysis
Site Buffer, Proposed	10 miles for Connector stations	No minimum distance for Connector stations
	No minimum distance for Market stations	

Source: Guidehouse

As shown in Figure 6, the siting results are similar across the study periods; in most cases, the distance between previous sites (2019) and alternative sites (2022) is small. Changes in exact site location vary due to changes in the connector station consideration from 10 miles to no minimum distance, updates to the vehicle adoption and charging needs inputs as PEV adoption increases, and the build-out of existing stations in the market.

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
July 2022  
Page 13 of 17

**Figure 6. Siting Results from 2019 Minnesota Analysis (Left) and 2022 Analysis (Right)**



Source: Guidehouse

Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota

July 2022

Page 14 of 17

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Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology & Factors – Minnesota  
 July 2022  
 Page 16 of 17

## Appendix B: Detailed Charging Infrastructure Results

Minnesota (State Level)										
MN 2030 Target Scenario – PORTS										
<u>Public Infrastructure</u>	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Hub L2	0	0	0	0	0	0	0	0	0	
Hub L3	0	0	1	2	3	6	9	14	19	
Market L2	13	28	56	110	184	276	386	520	680	
Market L3	31	81	167	332	544	798	1,114	1,512	2,002	
Shared Single-Unit Dwelling L1	0	0	0	0	0	0	0	0	0	
Shared Single-Unit Dwelling L2	0	1	2	6	14	25	42	66	97	
Shared Single-Unit Dwelling L3	0	2	6	17	38	69	115	180	266	

NSPM (Territory Level)										
MN 2030 Target Scenario – PORTS										
<u>Public Infrastructure</u>	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Hub L2	0	0	0	0	0	0	0	0	0	
Hub L3	0	0	0	1	1	2	4	5	7	
Market L2	10	20	39	74	120	176	244	324	419	
Market L3	16	43	93	192	323	484	683	928	1,226	
Shared Single-Unit Dwelling L1	0	0	0	0	0	0	0	0	0	
Shared Single-Unit Dwelling L2	0	1	2	5	10	18	30	46	68	
Shared Single-Unit Dwelling L3	0	1	5	13	28	50	82	126	185	

Source: Guidehouse

## Xcel Energy Electric Vehicle and Infrastructure Forecasting Methodology &amp; Factors – Minnesota

July 2022

Page 17 of 17

Minnesota (State Level)										
MN 2030 Target Scenario – MW										
<u>Public Infrastructure</u>	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Hub L2	0	0	0	0	0	0	0	0	0	0
Hub L3	1	2	5	9	16	26	39	54	71	
Market L2	1,794	3,245	5,602	9,756	14,863	20,553	26,824	33,778	41,422	
Market L3	424	807	1,354	2,260	3,258	4,305	5,458	6,762	8,223	
Shared Single-Unit Dwelling L1	1	4	11	25	49	81	124	178	244	
Shared Single-Unit Dwelling L2	36	111	283	669	1,295	2,167	3,304	4,738	6,499	
Shared Single-Unit Dwelling L3	5	18	50	123	241	404	616	884	1,212	

NSPM (Territory Level)										
MN 2030 Target Scenario – MW										
<u>Public Infrastructure</u>	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Hub L2	0	0	0	0	0	0	0	0	0	0
Hub L3	0	1	2	4	7	10	15	21	28	
Market L2	1,326	2,313	3,860	6,509	9,677	13,137	16,904	21,043	25,554	
Market L3	222	433	753	1,302	1,936	2,611	3,344	4,153	5,037	
Shared Single-Unit Dwelling L1	1	3	8	19	36	59	88	125	170	
Shared Single-Unit Dwelling L2	29	87	218	501	952	1,567	2,357	3,338	4,527	
Shared Single-Unit Dwelling L3	4	14	38	92	177	292	439	622	844	

Source: Guidehouse

## Site Design and Planning

To expedite site buildout while addressing a range of charging needs, the Company has identified 3 standardized site designs that it will use as templates for its fast-charging sites. These site designs are described in Table 1 below.

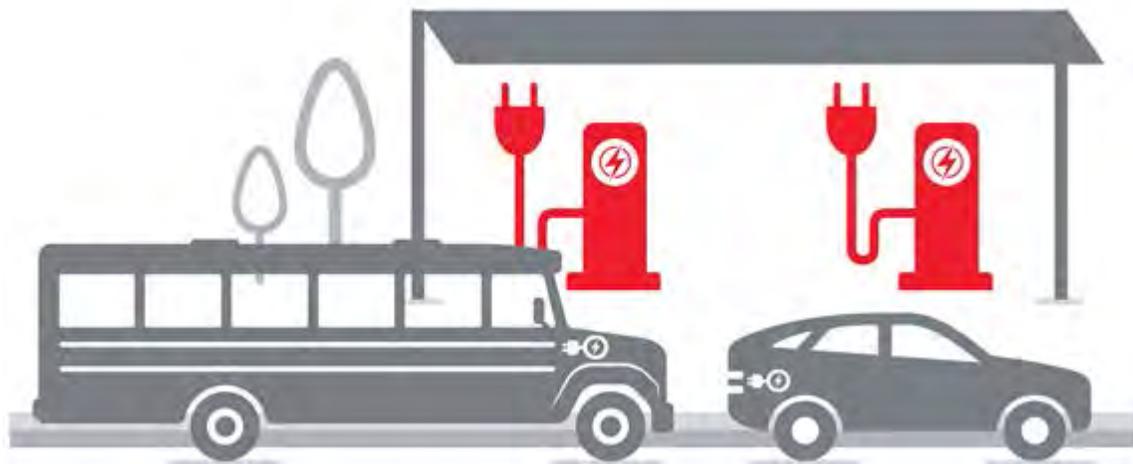
**Table 1**  
**DC Fast Charging Hub Designs**

Site Type	Site Description	Charging Needs Met	Planned Site Configuration
Connector Charging Hubs	<ul style="list-style-type: none"> <li>• High speed charging along major highways</li> <li>• Prioritizes charging speeds and convenience</li> </ul>	<ul style="list-style-type: none"> <li>• Enable long distance charging between major population centers and high speed charging within them</li> </ul>	5-8 350kW chargers designed for LDV
Destination Charging Hubs	<ul style="list-style-type: none"> <li>• High speed charging in urban areas</li> <li>• Located at retail, restaurant, and other similar amenities</li> <li>• Prioritizes space availability, charging experience and areas of need</li> </ul>	<ul style="list-style-type: none"> <li>• Provide charging in areas of need in urban centers</li> <li>• Provide charging services for drivers that may lack access to charging at home</li> </ul>	8–10 180kW chargers designed for LDV
Pull-Through Charging Hubs	<ul style="list-style-type: none"> <li>• High speed charging along major highways designed for use by MDV and HDV as well as LDV</li> </ul>	<ul style="list-style-type: none"> <li>• Enable long distance travel for all vehicle types</li> <li>• Drive electrification of MDV/HDV</li> <li>• Support LDV with towing capabilities</li> </ul>	5–6 350kW chargers designed to allow for pull through charging to accommodate both MDV and HDV along with LDV

While DC fast charging hubs are the focus of the Plan, the Company will also provide L2 solutions for site hosts that request them and have spaces with longer expected occupancy times such as park and ride locations and hotels. The majority of investment will be focused on DC fast charging solutions rather than Level 2 solutions to align with customer expectations both now and in the future. Charging speed is frequently referenced as the most important factor of a driver's charging experience. However, the Company recognizes that customers may benefit from Company owned Level 2 public charging stations, as well.

Additional design considerations, such as covered charging, will be implemented on an as needed basis according to site needs and budget availability. All hubs using the Pull-Through design (See Figure 1 below) will be designed to accommodate medium and heavy-duty pull-through charging, in contrast to the typical industry approach for fast charging today, which frequently uses standard parking spots for light duty charging. This will allow for larger vehicles and will be more convenient for vehicles that are towing. All sites will be ADA compliant and will be equipped with adequate lighting and safety amenities.<sup>1</sup>

**Figure 1 Pull Through Charging Hub**



Once a site has been identified as a potential host location, the Company will evaluate the site for charger readiness, and provide an initial cost estimate for needed distribution upgrades based on capacity availability at the site, access to three-phase

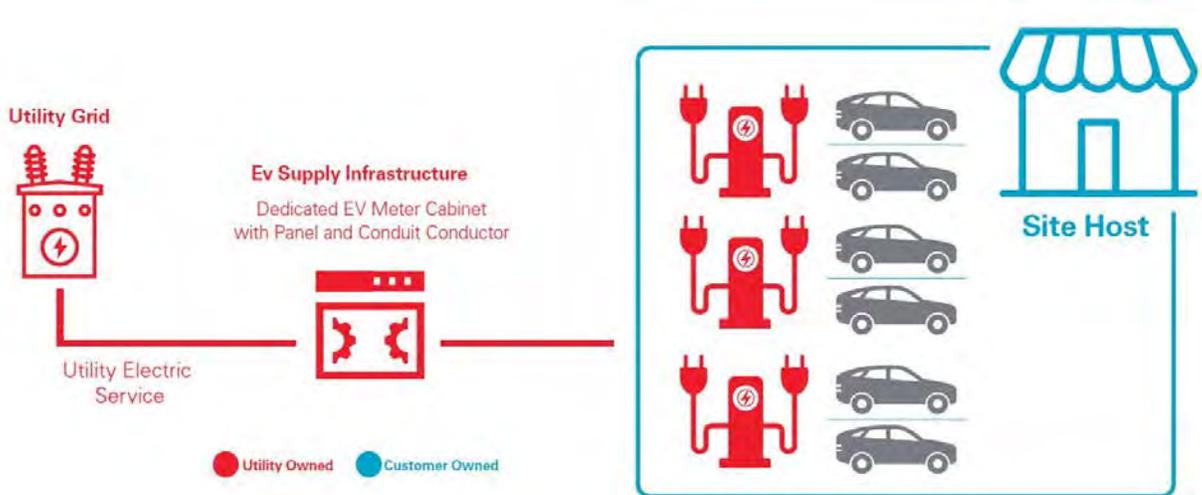
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<sup>1</sup> Site hosts will be responsible for costs associated with meeting minimum requirements, such as the costs of lighting and other minimum safety standards.

power and other considerations. Data will be collected during a site visit, a site design and final cost will be generated, and upgrade work and construction can begin.

Construction of the site will be conducted by the Company's EVSI vendor. They will install and commission all EVSI and EVSE equipment in conjunction with the Company's EVSE vendor (see section below for an overview of each vendor and their roles). The Company, site host and relevant vendors will then test all EVSE equipment, install signage, complete construction, and open the charging stations for public use. See Figure 2 below.

**Figure 2**  
**Public Charging Network Diagram**



### 1) Service and Equipment Vendors

The Company will use vendor partners to build and maintain its public charging network. The services to be provided by third party vendors are listed below.

- EVSI design, equipment, and construction and EVSE installation
- EVSE hardware and software supplier
- EVSE O&M provider
- Siting Analysis

The Company will utilize existing contractors where applicable. Third-party installation contractors will be competitively sourced through RFPs. This may include soliciting bids for this work in combination with other RFPs for third-party distribution system contractors and/or adjusting to account for rapidly changing technologies including needed contract amendments or appropriate additions

consistent with previously conducted RFPs. In addition, the Company is committed to using union labor when possible and to select the use of qualified woman, veteran, or minority-owned businesses as suppliers when available.

Third-party contracts are currently in place to support EVSI and site design work. The Company will evaluate contractors' ability to scale with the scope of this project and their ability to meet the design requirements for the anticipated site types. Additional vendors for civil design work beyond what is currently provided by existing contracts may be necessary depending on the capabilities of the contractors.

EVSE hardware, software, and O&M providers will be selected through a competitive solicitation process. Software and O&M services to support EV charging are often provided by charging station manufacturers, but are also available as individual services. The Company plans to release a single RFP for all of these services (hardware, software, and O&M) needed to support the charging equipment for its public fast charging network while giving vendors the option to bid on all or only a portion of the services. This will give the Company a broad view of pricing and service options and not restrict participation by vendors who may specialize in a specific area of the public charging value stream. A high-level definition of each of these services and vendor expectations is provided below:

- **EVSE Hardware Services** – This vendor will provide the charging stations themselves. This can be a charging OEM or a distributor.
- **EVSE Software Services** – Software services for public charging will include but not be limited to backend monitoring of the stations for utilization and fault detection, pricing plan deployment and payment processing, and frontend customer interface such as mobile application development and charging network services. These services could be performed by a single vendor or multiple.
- **EVSE O&M Services** – Operation and maintenance services will include preventative maintenance and repairs of the charging equipment. The O&M services provider will not be responsible for site maintenance such as snow removal and vegetation control as these will be the responsibility of the site host. The O&M services provider and the Company will coordinate with site hosts as needed to ensure site access for all necessary maintenance.

Northern States Power Company



**Regional Electric Vehicle Midwest Coalition  
Memorandum of Understanding  
Between  
Illinois, Indiana, Michigan, Minnesota, and Wisconsin**

THIS MEMORANDUM OF UNDERSTANDING (“MOU”) is made on this the 30<sup>th</sup> day of September 2021, by and between the States of Illinois, Indiana, Michigan, Minnesota, and Wisconsin (hereinafter referred to as the “Participating States”).

**BACKGROUND:**

**Imperative for Electrification:**

- Electric vehicle adoption will create jobs, expand economic opportunity, promote energy independence, improve public health and result in cleaner air and water.
- Electrification will improve public health and result in cleaner air and water throughout rural, suburban, and urban areas by reducing pollutants such as carbon dioxide.

**Economic Opportunity:**

- Participating States have demonstrated economic leadership in the transportation, manufacturing, logistics and distribution, mobility, and automotive sectors, and are positioned to facilitate an economically robust, equitable transition to electric vehicles.
- Facilitating economic growth through vehicle electrification, clean energy manufacturing, and advanced mobility solutions is instrumental to shared regional economic goals.
- Maintenance and fuel savings through electric vehicle adoption offer significant potential benefits for vehicle and fleet owners, particularly low-income households and small businesses.

**Promoting Equity:**

- Wide-scale electric vehicle adoption will further reduce vehicle costs, increase the availability of public charging infrastructure, reduce harmful emissions making all communities more sustainable, healthy and equitable places to live, work and play including historically disadvantaged communities.

**OBJECTIVES:**

The Regional Electric Vehicle Midwest Coalition (“REV Midwest”), established through this MOU, creates a regional framework to accelerate vehicle electrification in the Midwest. REV Midwest provides the foundation for cooperation on fleet electrification along key commercial corridors to safeguard economic security, reduce harmful emissions, improve public health, and advance innovation. REV Midwest will future proof the region’s manufacturing, logistics, and transportation leadership and position the region to realize additional economic opportunity in clean energy manufacturing and deployment.

Participating States will develop a coordinated approach to advance electrification that is informed by industry, academic, and community engagement. Participating States will work

together to enable an equitable transition to electric vehicles for all with specific consideration for communities that are historically disadvantaged. REV Midwest will position states in the Midwest region to leverage and collectively increase public and private investment in electric vehicles and electric vehicle infrastructure.

- **Accelerate Medium- and Heavy-Duty Fleet Electrification:** Through REV Midwest, Participating States will remove barriers to electric MHDV adoption through coordination on charging infrastructure optimization, cooperation on best practices to standardize regulatory schemes, communications, and charging experience.
- **Elevate Economic Growth and Industry Leadership:** Building on the advanced manufacturing, engineering, research and development, and technological expertise of the Midwest, REV Midwest will coordinate to advance clean energy and mobility manufacturing, safeguard industry electrification leadership, grow the region's share of electric vehicle production, and elevate access to tools required to equip the workforce of tomorrow. REV Midwest will work to create opportunity for all communities, with a focus on assisting those that are historically disadvantaged.
- **Advance Equity and Clean Environment:** REV Midwest will advance equity by providing the data and tools to drive an equitable, data-driven, transition to electric vehicles for all communities. To reduce emissions, REV Midwest will cooperate with energy providers to address the full emissions reduction potential and encourage community sustainability through grid advancement.

REV Midwest will engage with public and private sector stakeholders who are instrumental in the transition to a more sustainable future, and advocate for regional advancement on a federal level. REV Midwest will position the region for national and global leadership in applying advanced mobility solutions to improve public health, generate economic growth, and address greenhouse gas emissions through the accomplishment of the following activities.

#### **ACTIVITIES:**

1. ACCELERATE MEDIUM- AND HEAVY-DUTY FLEET ELECTRIFICATION
  - A. Participating States will coordinate on regional EV infrastructure siting optimization and deployment strategies with an initial focus on target routes of commercial significance.
  - B. Participating States will share best practices to inform the standardization of regulatory schemes and public communications, and to develop a common customer experience across state lines.
  - C. Participating States will coordinate on best practices for working with energy providers to ensure sustained electricity supply and grid resilience.
2. ELEVATE ECONOMIC GROWTH AND INDUSTRY LEADERSHIP
  - A. Participating States intend to evaluate strategic challenges and opportunities of manufacturing, logistics, transportation, energy, mobility, and automotive industry leaders to inform a timely, equitable, and economically robust future of electrification.

- B. Participating States, through industry coordination, will work to understand shifts in workforce demand and cooperate on workforce development programs to deliver accessible skilling programs to drive job growth and an equitable transition for the region's manufacturing, maintenance, energy, and transportation industries.
  - C. Participating States will coordinate on multi-state advanced technology deployments spanning mobility, connectivity, automation, energy, and electrification. Deployments will be considered in collaboration with technology, industry, university, and research partners.
3. ADVANCE EQUITY AND CLEAN ENVIRONMENT
- A. Participating States will work to identify and engage with historically disadvantaged communities to understand challenges and desired outcomes to inform engagement, education, and workforce development opportunities around electrification.
  - B. Participating States will seek to align incentives to support electric MHDV deployments, increase availability of charging infrastructure, and generate economic opportunity in all communities.
  - C. Participating States will cooperate with energy providers to reduce emissions and criteria pollutants from MHDVs through electrification and expanding renewable energy and energy efficiency.

## **PROCESS**

- A. Participating States will maintain a Taskforce of senior leadership from each state.
- B. The Taskforce will meet regularly to share updates and input on REV Midwest.
- C. The Taskforce will regularly maintain information describing REV Midwest activities.
- D. The Taskforce will identify barriers to private sector and publicly supported charging station development and work together on recommendations to remove these barriers.
- E. The Taskforce will complete progress reports at regular intervals summarizing progress made towards the goals of REV Midwest.
- F. The Participating States agree to support the Taskforce and its responsibilities.

## **VOLUNTARY INITIATIVE:**

This MOU is not legally binding. Any Participating State may withdraw at any time at its sole discretion through written statement submitted to the other Participating States.

## **ADDITIONAL PROVISIONS:**

This MOU may be modified, terminated, or expanded by unanimous agreement of the authorized representatives to the Taskforce from the Participating States.

**THE STATE OF ILLINOIS**

By: 

J.B. Pritzker  
Governor of Illinois

**THE STATE OF INDIANA**

By: 

Eric Holcomb  
Governor of Indiana

**THE STATE OF MICHIGAN**

By: 

Gretchen Whitmer  
Governor of Michigan

**THE STATE OF MINNESOTA**

By: 

Tim Walz  
Governor of Minnesota

**THE STATE OF WISCONSIN**

By: 

Tony Evers  
Governor of Wisconsin



# The Expanding EV Market

## Observations in a year of growth

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February 2022

**PUBLISHED BY:**  
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## TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
THE STATE OF EV OWNERSHIP	4
AN EXTRAORDINARY YEAR	4
MOTIVATION AND INFORMATION	4
THE CONSUMER EXPERIENCE - PURCHASING AND OWNERSHIP	11
The Public Charging Experience	14
Vehicle Characteristics	17
Ride-Sharing and Delivery	19
EV "INTENDERS" - THE NEXT WAVE OF OWNERSHIP	21
CONVERGENCE AND DIVERGENCE	21
CONCLUSIONS & FURTHER RESEARCH	25
AUTHORS AND ACKNOWLEDGMENTS	27
ABOUT PLUG IN AMERICA	27
REPORT CONTACT	27
AUTHORS	27
ACKNOWLEDGMENTS	27
SURVEY METHODOLOGY AND RESPONSE SUMMARY	28

## EXECUTIVE SUMMARY

Plug In America is the voice of the electric vehicle (EV) consumer; while several groups perform surveys of EV drivers, Plug In America's membership includes EV drivers with years or even decades of experience with the vehicles. In September–December 2021, Plug In America surveyed over 5,500 EV owners and more than 1,400 individuals interested in purchasing an EV.<sup>1</sup> This survey follows our prior survey<sup>2</sup> and will be an annual series. Similar to last year, the intent of this survey is to understand the current state of EV driving and consideration in the United States, in particular:

- What are the primary motivations for drivers and those considering EVs?
- What are the most valuable sources of information available to EV customers?
- What is the quality of the current EV buying experience for customers?
- Are EV owners content? Why and why not?
- What are the most significant concerns with existing fast-charging networks?
- Where do prospective EV owners converge and diverge from existing owners?

The year 2021 was extraordinary for electric vehicles, with the market nearly doubling year-over-year. Electric vehicles made up approximately 4% of new vehicle sales in 2021, compared to about 2% in 2020.<sup>3</sup> Future growth should be strong as new models become available, especially in the popular light truck segment. It will be essential to ensure that the buying, driving, and charging experiences continue to improve.

EV owners are generally satisfied with their purchases; 90% say that it is "likely" or "very likely" that their next vehicle purchase will be an EV. The primary motivation for EV owners to purchase the vehicle was the environment and air quality, with approximately 50% indicating this was their most important consideration, nearly three times the rate of the consideration next most frequently listed as the most important (cost savings, at 18%). A majority of respondents (59%) considered it "vital" or "very important" that EVs charge with renewable energy, which increases the environmental benefits even further.

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<sup>1</sup> See "Survey Methodology and Response Summary" for more detail.

<sup>2</sup> See <https://pluginamerica.org/about-us/electric-vehicle-survey/>.

<sup>3</sup> Argonne National Laboratory, "Light Duty Electric Drive Vehicles Monthly Sales Updates," <https://www.anl.gov/es/light-duty-electric-drive-vehicles-monthly-sales-updates>, accessed January 27, 2022.

The most important economic factor respondents cited was access to inexpensive home charging, even higher than the federal EV tax credit. Currently, most EV drivers live in single-family homes. As we work to get EV charging in more apartment and condo buildings, we will likely see an increase in apartment residents buying or leasing EVs. Consistent with that, we see that 92% of EV drivers prefer to charge at home, with a quarter of them using level-one charging, indicating that charging speed is not the primary factor for many drivers.

Over 80% of owners indicate satisfaction with finding the information they needed to buy or lease an EV; the most common detail lacking was cold-weather performance. EV-specific websites such as PlugStar.com were rated as the most valuable EV information source by EV owners and those considering buying an EV. However, owners were left wanting with the experience they received at dealerships, with only 15% considering the salesperson "very high" in knowledge. While EV owners intend to continue EV ownership, they voice frustration with public charging infrastructure, with the most common issues being "broken or nonfunctional chargers" or "too few charging locations." On both topics, 34% of respondents noted this as at least a "moderate concern." However, there was significant variation by charging network, with the Tesla Supercharger network scoring significantly better than its competitors on every metric. Public fast charging has room for improvement.

<p><b>90%</b></p> <p>90% of EV owners are "likely" or "very likely" to purchase an EV as their next vehicle.</p>	<p><b>83%</b></p> <p>83% of owners and prospective owners were satisfied with finding the information they needed to buy/lease an EV.</p>	<p><b>15%</b></p> <p>Only 15% of EV owners rated dealership salesperson knowledge as "very high." Only 35% rated as "high" or better.</p>	<p><b>34%</b></p> <p>34% of those who used DC fast charging noted that broken chargers were at least a "moderate concern;" the same percentage ranked "charging locations are too far apart" similarly.</p>
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Those who do not currently own an EV but are considering purchasing one within the next 12 months share some similarities with current owners, but there are some differences. Like current EV owners, these "intenders" are primarily motivated by environmental and clean air impacts to purchase the vehicle. Still, they are significantly more likely to name cost savings as their most crucial motivating factor (25% do so, versus 18% of EV drivers). They also find EV-specific websites the most valuable source of information on EVs but find less value in EV information resources overall, possibly because they have not yet completed their research. These intenders tended to be older and less likely to earn over \$75,000 per year.

Considerers were equally likely as owners to live in a single-family home, with about 85% of respondents falling into this category.

The following report explores these findings in more detail and provides insight into what can be done to encourage further growth in EV adoption.

As a significant motivating factor in EV adoption is air quality and environmental protection, we recommend that this benefit be kept in mind when developing state incentives. Incentives for EVs support a *public good* (cleaner air and a more liveable climate) and do not merely benefit the drivers or owners.

Improving the dealership experience is a key area of Plug In America's expertise, which the report shows is vital to continue expanding our work. We encourage regions and states to implement dealership engagement programs such as PlugStar, which supports, trains, and certifies dealers to sell EVs. This program has proven results in improving customer satisfaction and dealer success in regions where it is implemented.

The most significant problems noted for fast charging networks were broken or nonfunctional chargers (a "major difficulty" or "deal-breaker" for 14% of respondents) and too sparse charging locations (a "major difficulty" or "deal-breaker" for 11% of respondents). These concerns were far less severe among users of the Tesla Supercharger network. Only 3% of Tesla users found broken chargers to be in the two most serious classifications of problems, and only 2% found insufficient charging locations to be of such severity. Publicly-funded charging networks must strive to attain a similar level of driver satisfaction, especially with considerable additional funding for public EV charging in the Infrastructure Investment and Jobs Act.

Overall, the picture is encouraging, with EV drivers very satisfied with their vehicles. While some issues need attention, such as dealership knowledge and public charging reliability, policymakers and industry stakeholders have developed promising solutions to these concerns.

# THE STATE OF EV OWNERSHIP

## AN EXTRAORDINARY YEAR

The U.S. EV market, including battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs), doubled in 2022, increasing from around 306,000 vehicles in 2020<sup>4</sup> to about 607,000 vehicles in 2021.<sup>5</sup> Market share increased from about 2% of light-duty vehicles in 2020 to about 4% in 2021.

The new models most reported by survey respondents included the Volkswagen ID.4 (131 responses) and the Ford Mustang Mach-E (119 responses). Other new models represented in the survey responses included the Toyota RAV4 Prime, Rivian R1T, Jeep Wrangler 4xE, and Polestar 2.

Notably, EV market share is significantly higher in the car segment, with about 8.5% of new car sales being EVs. But because fewer EV options exist in the much larger light truck segment (minivans, pickup trucks, and SUVs), that segment saw only 3% EV sales. Plug In America expects to see an even broader selection of models in next year's survey, including the light truck segment. Automakers have made numerous commitments to electrification and unveiled plans to produce many new models of electric vehicles. While Plug In America welcomes commitments and plans, we look forward to seeing the actual vehicles on the road.

One of the most anticipated EVs of 2022 will be the Ford F150 Lightning, representing an electric version of the most popular light-duty vehicle in the U.S. market. Assuming Ford can scale up production as it intends, we look forward to seeing many driver perspectives on this vehicle and other new offerings in next year's survey.

## MOTIVATION AND INFORMATION

Understanding what motivates EV drivers and where they found value in their EV-buying experience can help refine new offerings and move the market forward.

The motivating factor for current EV owners in purchasing the vehicle is crystal clear—the environment and air quality. Over 50% indicated this was a "most

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<sup>4</sup> Gohlke, D., and Y. Zhou, "Assessment of Light-Duty Plug-in Electric Vehicles in the United States, 2010 – 2020," Argonne National Laboratory, Energy Systems Division, Document ANL/ESD-21/2. June 2021.

<sup>5</sup> Argonne National Laboratory, Energy Systems Division, "Light Duty Electric Drive Vehicles Monthly Sales Updates," <https://www.anl.gov/es/light-duty-electric-drive-vehicles-monthly-sales-updates>, accessed January 27, 2022.

important" consideration in buying an EV. Figure 1 displays the proportion of owners who indicated that a factor was "most important" to them when considering the purchase of an EV.

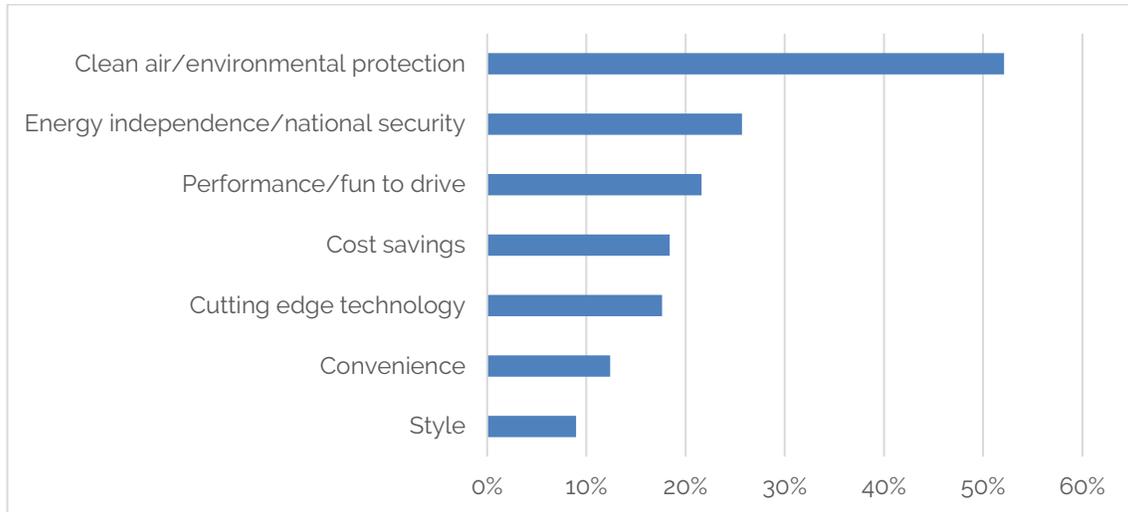


Figure 1: Percentage of EV owners indicating a factor is a "most important" purchase consideration

When asked to select the most important factor, clean air and environmental protection came in first, with cost savings a distant second, as shown in Figure 2.

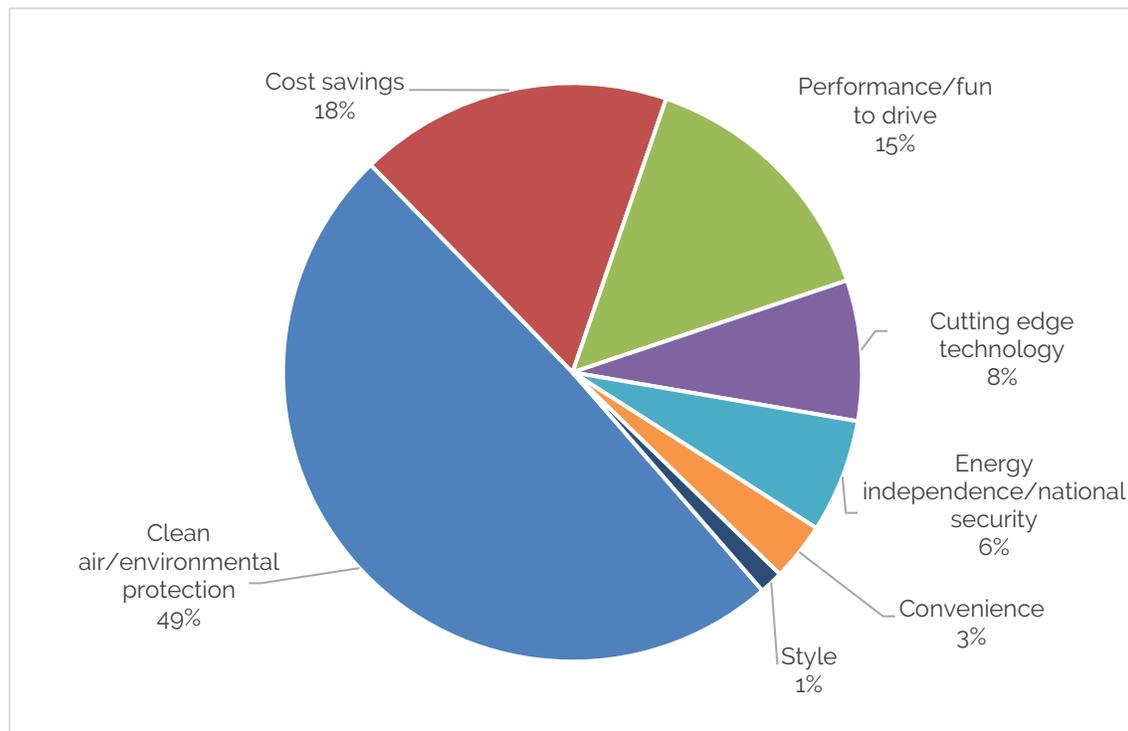


Figure 2: Single most important motivating factor for EV owners

The strong desire for environmental protection also manifests in a preference for charging EVs with renewable energy to achieve even greater emission reductions, as seen in Figure 3.<sup>6</sup>

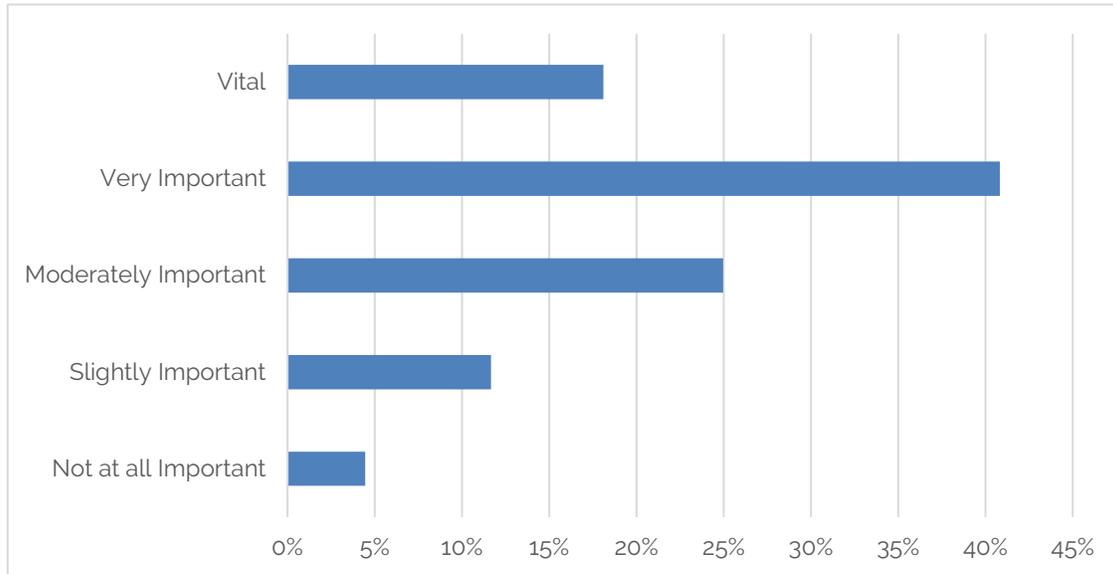


Figure 3: Responses to "How important is it that the electricity used in an EV comes from renewable energy?"

Economic factors were also significant considerations when deciding to purchase an EV; Figure 4 indicates the most influential.

<sup>6</sup> The vast majority of the country (92%) lives in regions where an EV provides at least a 50% greenhouse gas emission reduction compared to a gasoline vehicle (<https://blog.ucsusa.org/dave-reichmuth/are-electric-vehicles-really-better-for-the-climate-yes-heres-why>) even when charged with grid electricity; purchasing green power achieves even greater emission reductions.

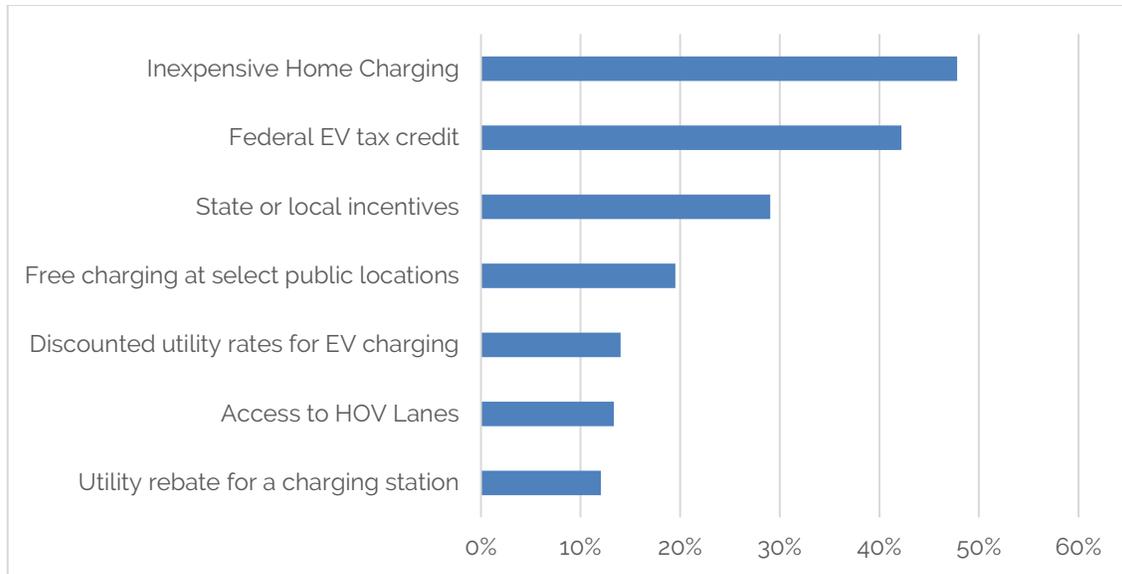


Figure 4: Percentage of EV owners indicating a factor is "critical" or "very influential" on their purchase decision

Access to low-cost home charging was the most significant economic factor in EV adoption. This is important information because, currently, most EV drivers live in single-family homes, where it is easier to charge a vehicle. If we make a concerted effort to install charging in more multi-unit dwellings, such as apartment and condo buildings, those residents will be more likely to switch to an EV.

The federal tax credit (for vehicles that are eligible for it) has slightly declined in importance since our prior survey since a smaller fraction of EVs qualified for it. EV drivers who bought Tesla or GM vehicles in 2021 would have designated the federal tax credit as "irrelevant" since they were not eligible. Plug In America is working to restore this tax credit and make it available to more drivers for a longer period of time.

In addition to motivations for purchasing the vehicle, owners were surveyed regarding the value of varying sources of EV information in making that purchase decision. A similar dominance exists regarding information sources deemed "essential" or "very valuable," with EV-specific websites receiving these ratings for 60% of owners. Online forums and video reviewers, not asked about in our previous survey, proved to be popular sources of information. Ride-and-drive events were also significant sources of information. Plug In America and its national and local partners conduct hundreds of ride-and-drive events across the country during Drive Electric Earth Day and National Drive Electric Week. Figure 5 displays the proportion of owners who indicated that an information source was "essential" or "very valuable" to them.

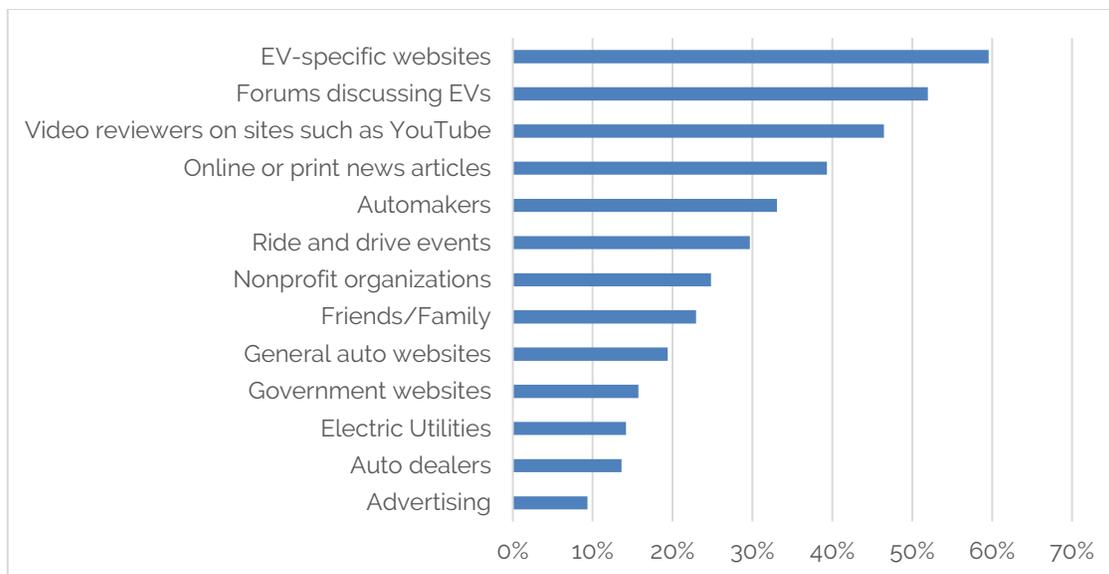


Figure 5: Percentage of EV owners indicating an information source is "essential" or "very valuable"

Continuing analysis of what motivates EV buyers and what they consider the most valuable and trusted information source will be critical to creating and maintaining further momentum in the retail space. Value systems will likely continue to evolve as electric vehicles become more mainstream, appealing to new demographics, and the nature of information access continues to change.

Electric utilities were not highly cited as sources of information on electric vehicles, likely because such entities are only now becoming involved in significant education and outreach efforts.<sup>7</sup> Many states allow or require electric utilities to provide their customers with information about energy-efficient technologies such as high-efficiency air conditioners or water heaters. It is less common for utilities to promote EVs, even though they are highly efficient and can reduce greenhouse gas emissions and place downward pressure on electricity rates. As EV-specific websites were recognized as a valuable source of information, we note that Plug In America has developed white-labeled utility-specific versions of its PlugStar site to assist utilities in EV education and outreach.

It is also notable that advertising for EVs continues to be virtually non-existent as a source of information, as it was in our previous survey. Only 7% of EV owners and 6% of intenders found advertising a "very valuable" source of information. It is also notable that automakers were trusted to a much greater degree than auto dealerships; 20% of EV owners considered the automaker a "very valuable" source of information, whereas only 9% felt the same about dealerships.

<sup>7</sup> For more information on utility education and outreach programs, see the Plug In America white paper, *The Missing Piece on Meeting Transportation Electrification Goals: Utility Education and Outreach Programs*, at <https://pluginamerica.org/wp-content/uploads/2020/12/EO-White-Paper.pdf>.

Over 80% of owners indicated that they were *generally* satisfied with finding the information they needed to buy or lease an EV, but only 40% reported that they could find *all* the information they needed without difficulty, as seen in Figure 5. Among the others, the most common information lacking was cold-weather performance, with 26% of respondents noting that information was difficult to find. Respondents generally found ample information on available vehicle models and characteristics; Plug In America offers that information through our PlugStar Shopping Assistant<sup>8</sup> and our printed Electric Vehicle Guide.<sup>9</sup> We provide general information on cold-weather EV driving<sup>10</sup> but do not have model-specific information for all EVs. Manufacturers should share information about expected range loss in cold temperatures, as this can vary significantly based on the battery and the vehicle heating system.

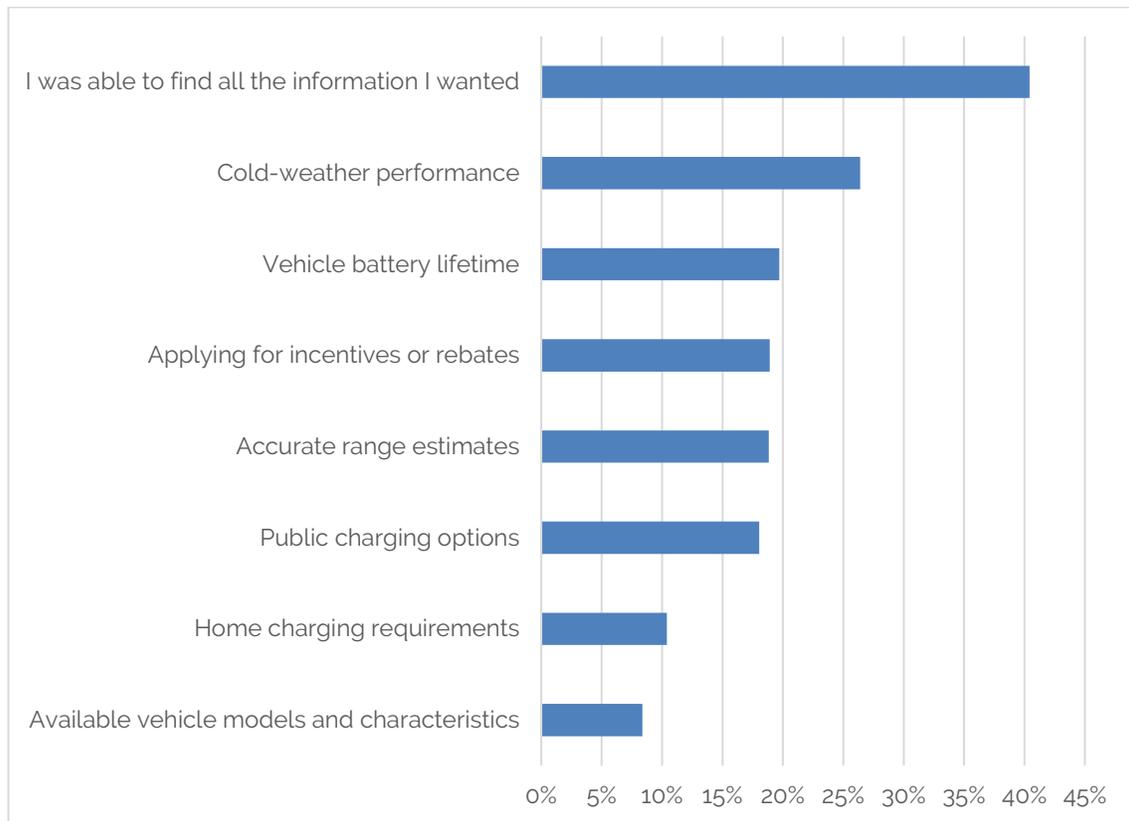


Figure 6: Responses to "What information, if any, did you have difficulty finding?"

<sup>8</sup> <https://plugstar.com/cars>.

<sup>9</sup> <https://pluginamerica.org/take-action-2/promotional-materials/>.

<sup>10</sup> See <https://pluginamerica.org/ev-tips-for-winter-weather/>.

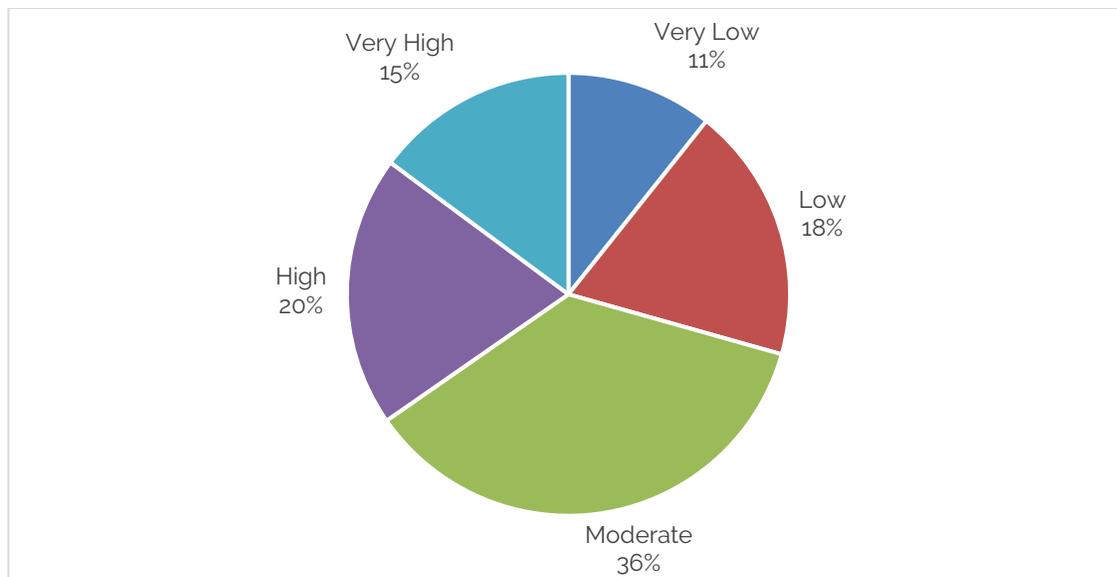
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We do note that our survey sample is not representative of a cross-section of the *entire* potential car-buying public; it still features a predominance of innovators and early adopters. Subsequent surveys will ask respondents how long they have been driving an EV to ascertain differences in motivating factors and information sources for more recent EV drivers.

## THE CONSUMER EXPERIENCE - PURCHASING AND OWNERSHIP

The EV market is full of satisfied owners, with 90% stating that they were "very likely" (77%) or "likely" (13%) to purchase an EV as their next vehicle. BEVs were more common in our survey; 85% of EV owners had at least one BEV, while 28% had at least one PHEV. A full 34% of EV owners did *not* have a conventional internal combustion engine vehicle in their household.

EV owners were somewhat satisfied with the purchasing experience. Only 15% of customers who shopped at a dealership rated the salesperson's knowledge about EVs as "very high." While manufacturers provide informative model-specific training to dealerships, Plug In America has found that dealers often need more tools to answer questions about the entire EV ecosystem, including charging infrastructure, rebates, and policies. Figure 7 displays the proportion of survey responses by the rating of salesperson EV knowledge.



*Figure 7: Ratings of salesperson EV knowledge for owners who shopped at dealerships or showrooms*

While overall satisfaction with EV ownership is displayed in the intent to remain an EV owner, the process is not without its frustrations. While over 90% of EV owners charge at home daily or weekly, as shown in Figure 8, the majority also charge in public at least occasionally.

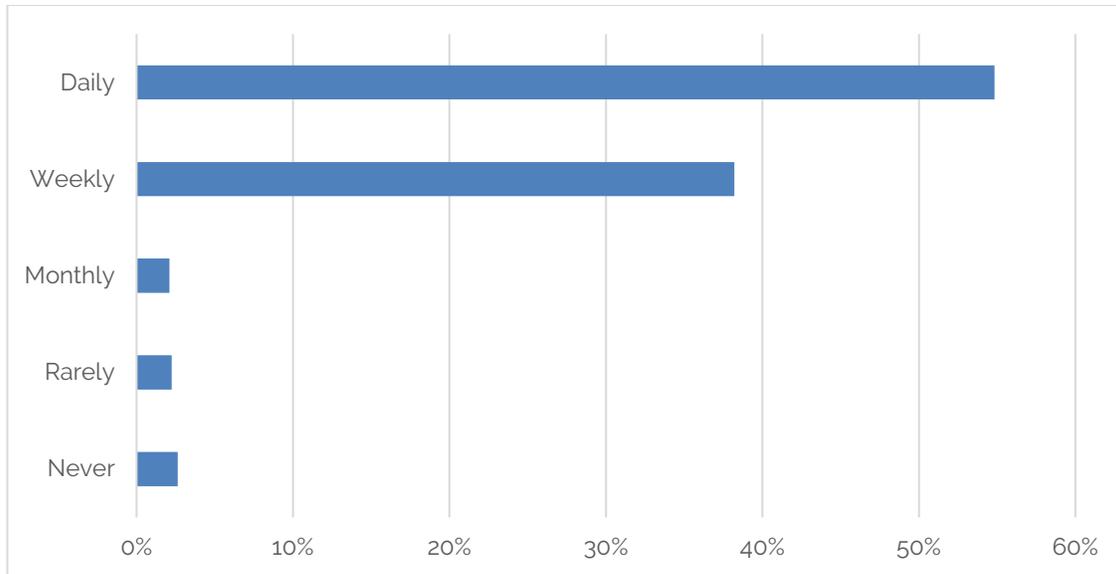
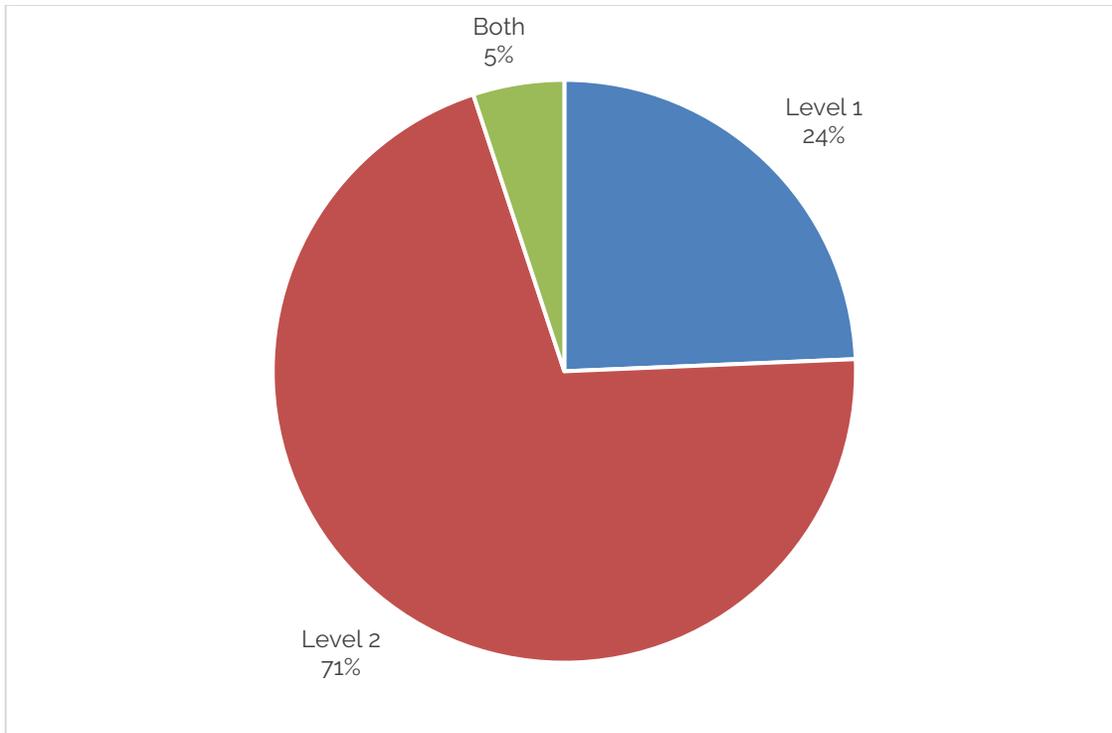


Figure 8: Frequency of home charging among EV owners

Of those respondents who utilized one type of charging location more than any other, home charging was that location for 92%. Another 3% most often used workplace charging, 2% primarily utilized public level 2 chargers, and 2% most often employed fast chargers. About 17% of respondents used multiple locations with equal frequency.

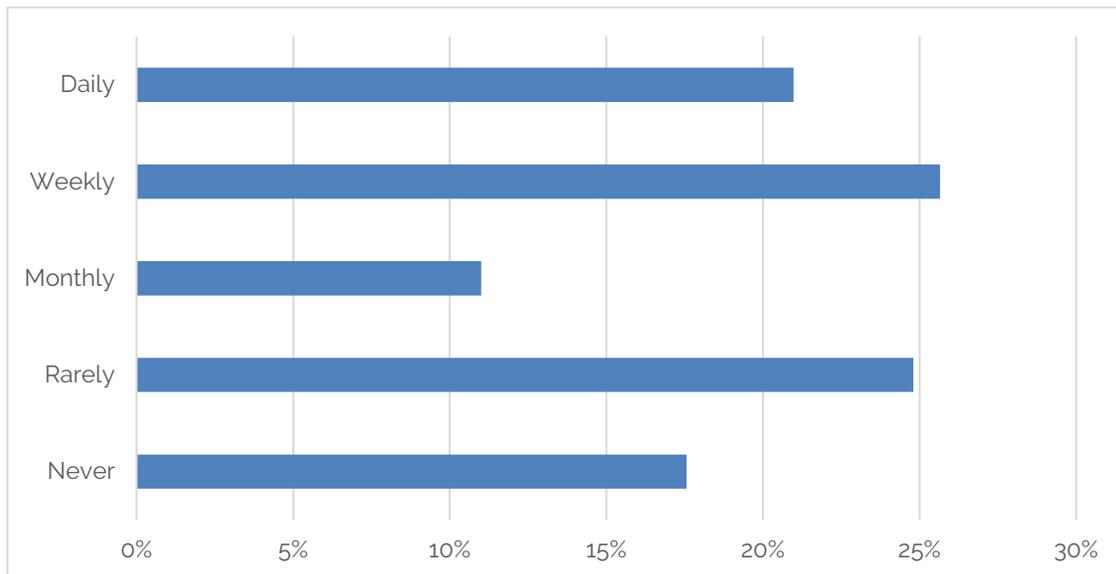
Some 2.6% of EV owners reported *never* charging at home. Of these, 32% reported using workplace charging daily or weekly; 47% reported using public level 2 charging daily or weekly; and 47% reported using DC fast charging daily or weekly.

Level 1 charging remained common for household charging, with about a quarter of EV owners using only 120-V outlets, as seen in Figure 9. These were not only drivers of PHEVs; the five most popular vehicles for drivers with only level 1 charging were the Nissan LEAF, the Chevy Bolt, the Chevy Volt, the Tesla Model 3, and the Toyota Prius Prime. About 30% of LEAF drivers reported using only level 1 charging, as did about 20% of Bolt drivers and 11% of Model 3 drivers.



*Figure 9: Home Charging Options*

Workplace charging was frequently utilized by EV owners who have such charging available to them. Over a quarter of such respondents reported using it weekly, and nearly another quarter reported using it daily, as seen in Figure 10.



*Figure 10: Frequency of workplace charging among EV owners with access to it*

### The Public Charging Experience

From our prior survey, we changed our question about difficulties with public charging networks to specifically address charging experiences within the past year. Going forward, this will allow us to assess the improvement in such networks. Drivers noted a range of difficulties. These are shown in Figure 11 and are aggregated across all networks.

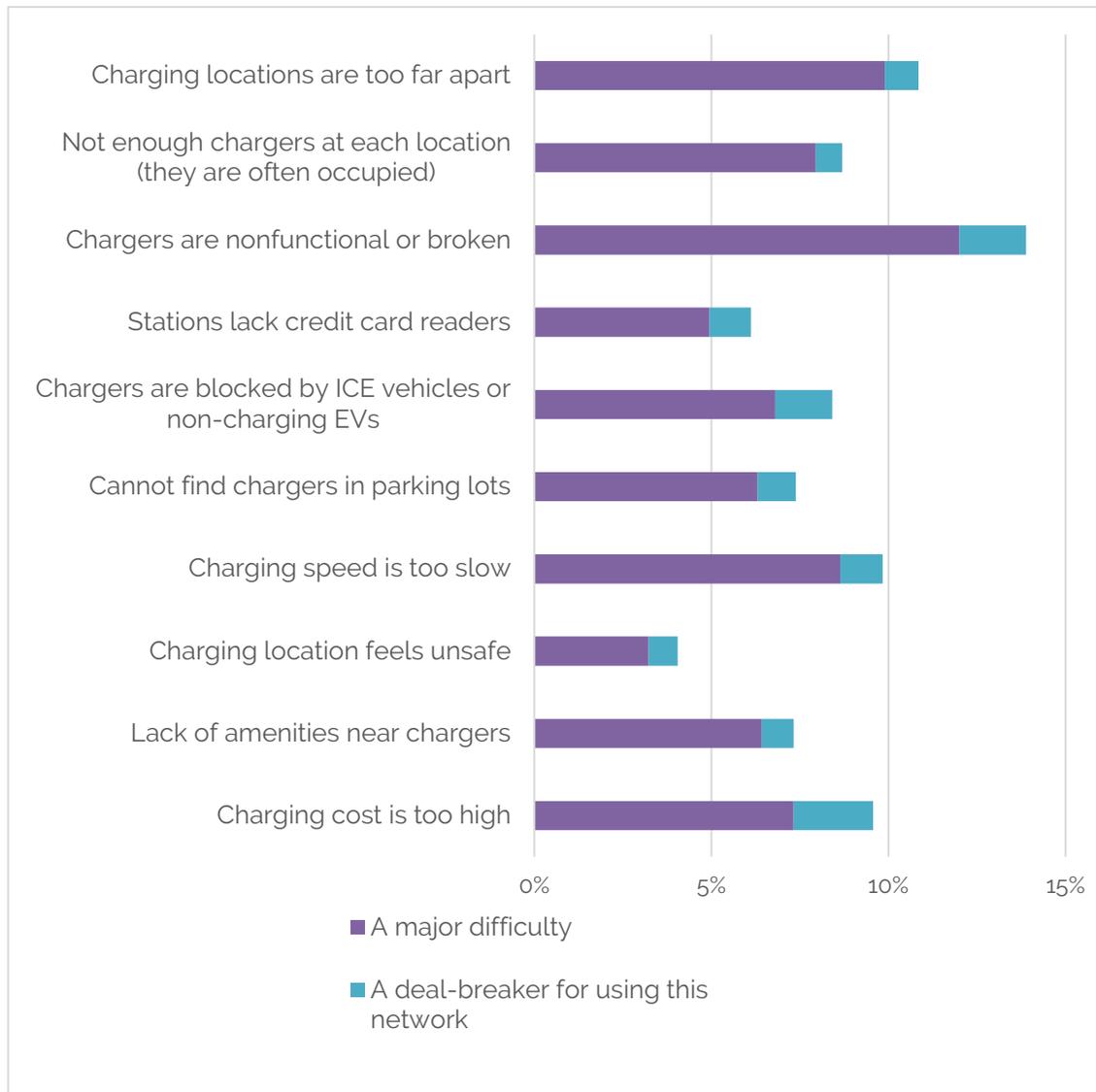


Figure 11: Challenges with DC fast charging

However, the charging experience varies considerably by network. Figure 12 and Figure 13 compare the Tesla Supercharger network to the other major U.S. fast-charging networks. Tesla drivers have access to a proprietary charging network

that differs in several key respects from other networks, and users of that network reported far fewer difficulties.

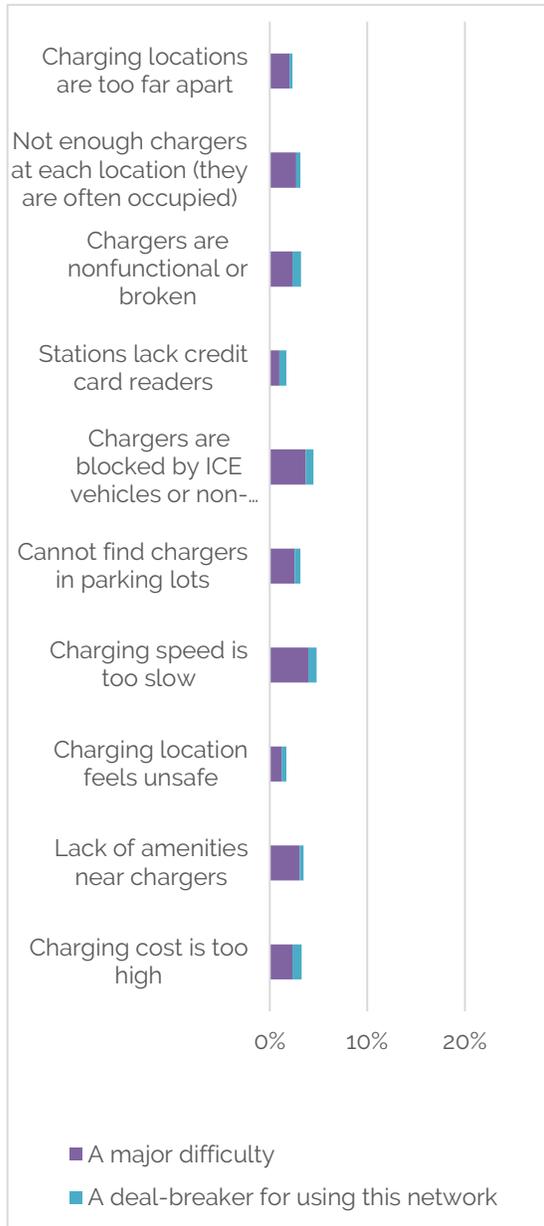


Figure 13: Tesla Supercharger network

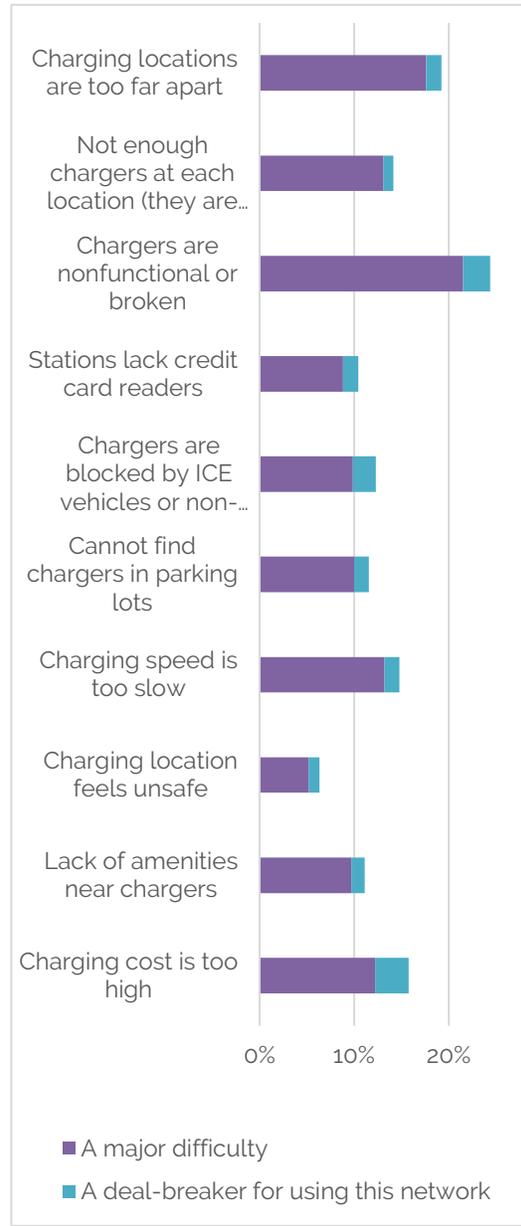


Figure 12: Other major DCFC networks

The problem most often ranked as "a major difficulty" or "a deal-breaker for using this network" was chargers being broken or nonfunctional. At best, this is a nuisance or inconvenience. At worst, an EV driver could be stranded. Negative

experiences caused by nonfunctional charging stations would adversely affect the EV market.

Table 1 shows the most common issues by fast charging network. As can be seen, the non-Tesla networks had similar prevalence of broken chargers, with around a quarter of respondents noting that it was at least a major difficulty.

<b>Network</b>	<b>Most Significant Issue</b>	<b>"A major difficulty" or "A deal-breaker for using this network"</b>
Blink	Chargers are nonfunctional or broken	24%
ChargePoint	Chargers are nonfunctional or broken	25%
Electrify America	Chargers are nonfunctional or broken	26%
EVgo	Chargers are nonfunctional or broken	21%
Tesla Supercharger	Chargers are blocked by ICE vehicles or non-charging EVs	4%

*Table 1: Most prevalent issues with fast charging networks*

Many public chargers are funded through grant programs. Such programs can impose reliability requirements on stations receiving funding; these may include:

- requirements for redundancy (multiple chargers at a given charging location),
- uptime (establishing a minimum percent of the hours in year that each charger must be functional), and
- maintenance and repair (stipulating a time to initiate repairs from the notification of a charger being nonfunctional).<sup>11</sup>

Additionally, some state programs offer grants for replacement of existing charging stations, which will be increasingly necessary as early generations of electric vehicle supply equipment (EVSE) reach the end of their service life.

The second most common concern was charging stations being too far apart. This should improve both as additional stations are built, and vehicle range improves.

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<sup>11</sup> The Northeast States for Coordinated Air Use Management (NESCAUM) recommends that charging supported with public funds be required to maintain a 99% uptime (for DCFC), that there should be multiple chargers at each site to provide redundancy (whether DCFC or level 2), and that any necessary repair efforts should be initiated within 24 hours of a notice of malfunction. See <http://www.nescaum.org/documents/model-contract-provisions-for-public-evse-5-24-19.pdf/download>.

A majority of respondents indicated that the charging speed of their usual network was either "not at all a problem" (44% of respondents) or only "a minor inconvenience" (27%). And when asked about their vehicles, 91% of respondents reported that charging speed was "satisfactory" (71%) or "exceptional" (20%).

### Vehicle Characteristics

Acknowledging that many respondents had multiple EVs, respondents were asked about the EV they drove most often. The Tesla Model 3 was the most frequently cited vehicle, accounting for 18% of responses. The next most common EVs were the Nissan LEAF and the Chevy Bolt. The responses are shown in Figure 14, noting all models with 100 responses or more.

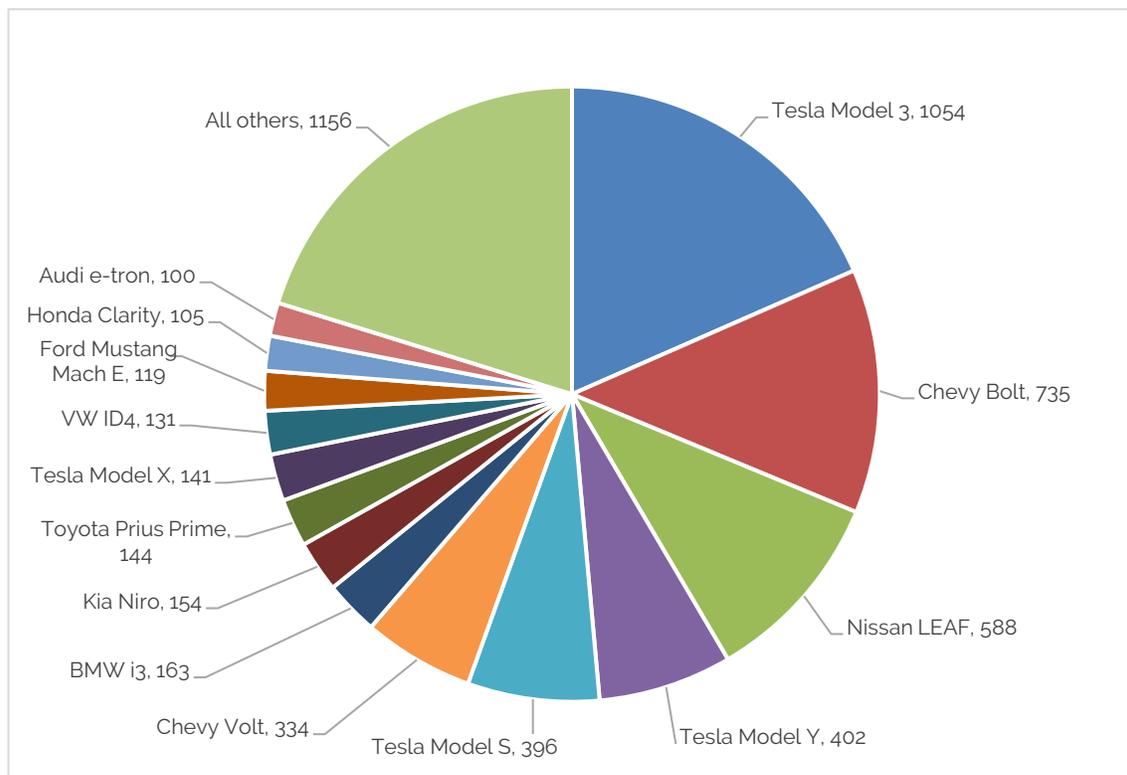


Figure 14: Primary EV of survey respondents

The Ford Mustang Mach-E and the Volkswagen ID.4 saw their first U.S. sales in 2022 and represented the survey's 11th-most and 12th-most common EVs.

A wide range of vehicles constituted the "All others" category, including electric motorcycles, conversions of internal combustion engine vehicles, and small-volume production EVs.

Of those who purchased their EVs (as opposed to building or converting), 80% reported purchasing them new, while 20% bought them used.

Overall, respondents were generally satisfied with their EVs' characteristics, as shown in Figure 15. Note that these are drivers' perceptions and not objective quantifications. For example, the Tesla Model X has more cargo space than the smaller Model Y, but Model Y drivers reported greater satisfaction with their vehicle's cargo space, perhaps due to different expectations.

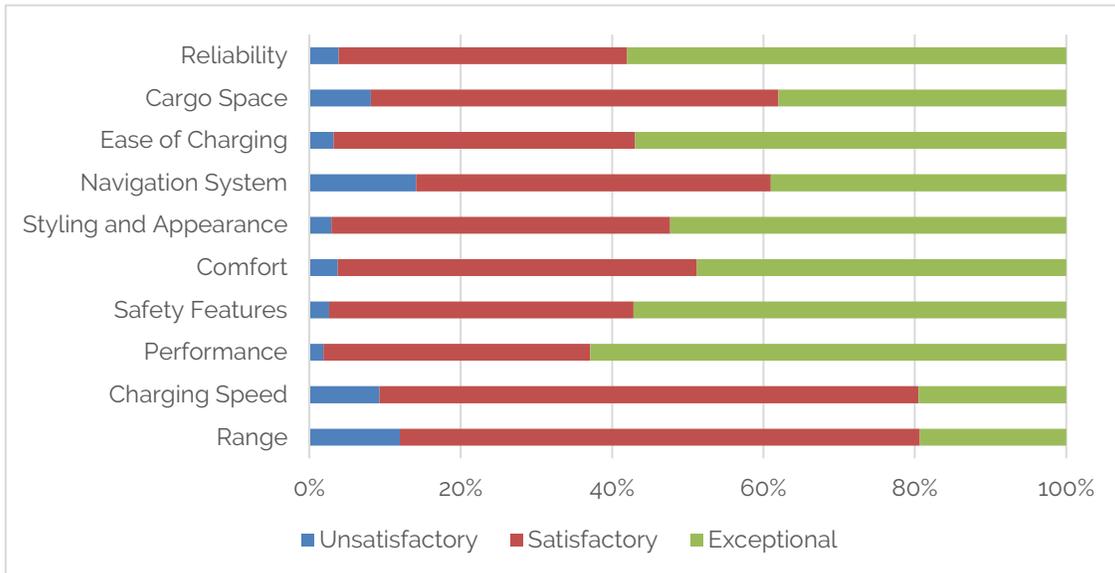


Figure 15: Overall driver satisfaction with EVs

The Tesla Model Y had no less than 40% of respondents rate it as "exceptional" in every category, and the Tesla Model 3 saw at least 39% of respondents rating it such. The Mustang Mach-E received the highest ratings of any EV for "styling and appearance," with 89% of its owners rating it as "exceptional". The Audi e-tron led in "comfort", with 86% calling it "exceptional." Table 2 shows what EV drivers liked most about each vehicle, considering which characteristics were most often rated "exceptional" for that model.

Vehicle	Most Exceptional
Tesla Model 3	Performance
Chevy Bolt	Performance
Nissan LEAF	Reliability
Tesla Model Y	Performance
Tesla Model S	Performance
Chevy Volt	Reliability
BMW i3	Performance
Kia Niro	Safety Features
Toyota Prius Prime	Reliability
Tesla Model X	Safety Features
VW ID.4	Comfort
Ford Mustang Mach-E	Styling and Appearance
Honda Clarity	Ease of Charging
Audi e-tron	Comfort

*Table 2: Most "Exceptional" features of each EV with more than 100 responses, as rated by drivers*

"Range" and "navigation system" had the most frequent ratings of "unsatisfactory," with the survey-wide frequency of that rating at 12% and 14% for the two categories. Some models had as few as 0.5% calling their range "unsatisfactory," while other models had as high as 29% assigning that rating. We specifically asked about navigation systems due to the key role these can play in helping EV drivers find compatible and available charging stations. Drivers of gasoline vehicles may find gas stations by visible signs towering over highways or marking exit ramps; on the other hand, EV drivers often rely on apps, whether on their phones or built into the vehicles. A well-designed navigation system can make an EV much more user-friendly.

Charging speed is sometimes portrayed as a barrier to EV adoption; however, only 9% of respondents felt that charging speed was "unsatisfactory" for their vehicle, while 20% found it "exceptional." In general, newer models were more likely to be rated "exceptional" and less likely to be rated "unsatisfactory," although "satisfactory" was the most common rating for all models.

### **Ride-Sharing and Delivery**

While only a small fraction of respondents reported using their EVs for ride-sharing or delivery services, this fraction still constituted 384 respondents. Those respondents were generally satisfied with the viability of the vehicle and of

charging networks for such applications, as seen in Figure 16 and Figure 17. However, there is room for improvement.

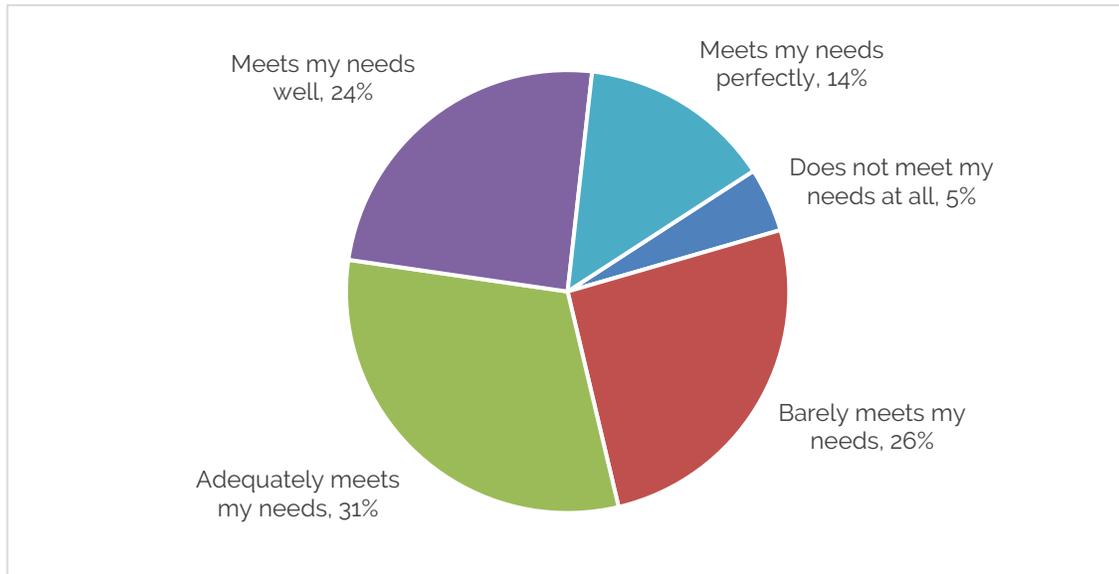


Figure 16: Responses to "How well does an EV meet your needs for ride-sharing and/or delivery services?"

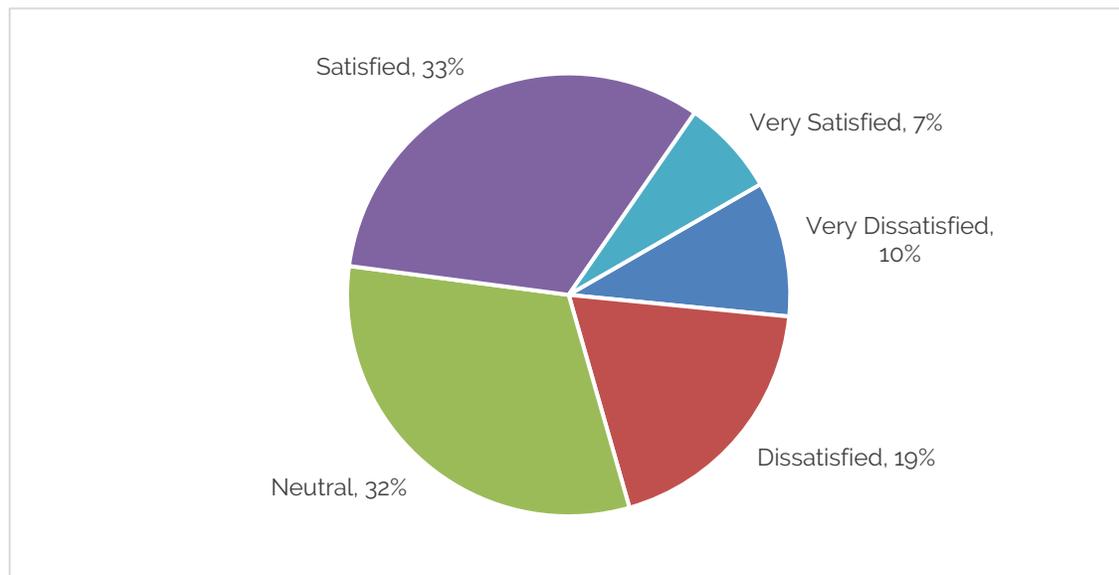


Figure 17: Responses to "How satisfied are you with public charging for ride-sharing or delivery services?"

# EV "INTENDERS" - THE NEXT WAVE OF OWNERSHIP

## CONVERGENCE AND DIVERGENCE

Those who do not currently own an EV but are considering purchasing one within the next 12 months share some similarities with current owners. Like current EV owners, these "intenders" are motivated by environmental and clean air impacts but are more interested in cost savings. The early adopters who are current EV owners have, in many cases, paid a premium that subsidized this developing technology and did not necessarily realize significant cost savings. Figure 18 compares the proportion of intenders who indicated that a factor was "most important" to them when considering the purchase of an EV to that of owners.

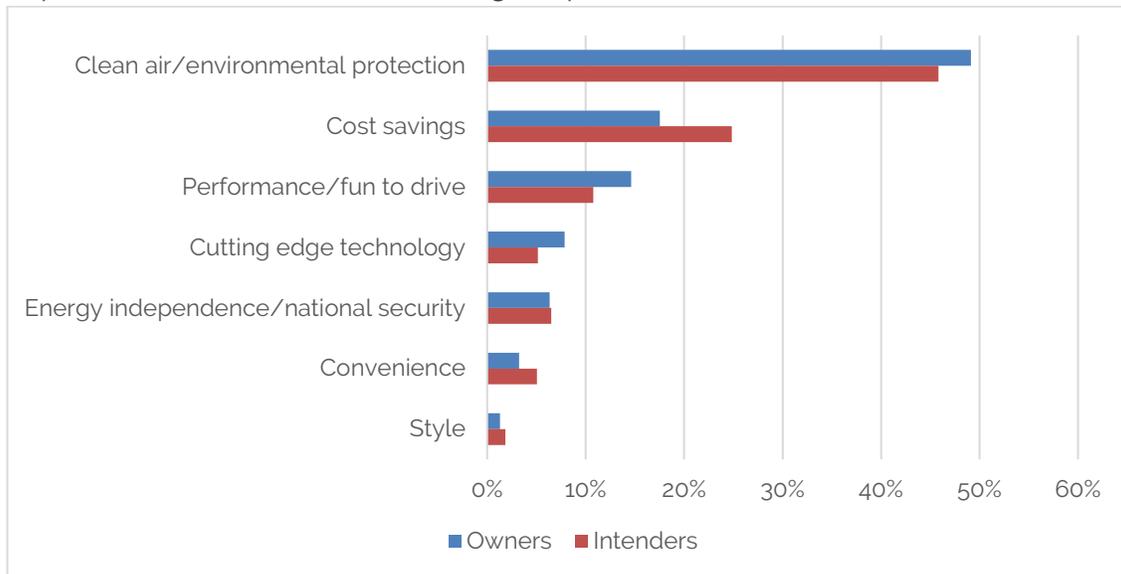


Figure 18: Percentage of respondents indicating a factor is the single most important purchase consideration

We considered that perhaps our membership (including those who do not yet have EVs) might skew more towards the environmental goals, so we compared our membership responses to those from social media advertising. Differences were minor, as seen in Figure 19. Across all categories, "clean air/environmental protection" was most frequently named the single most important motivating factor by a wide margin, followed by cost savings (which were more frequently cited by intenders than owners).

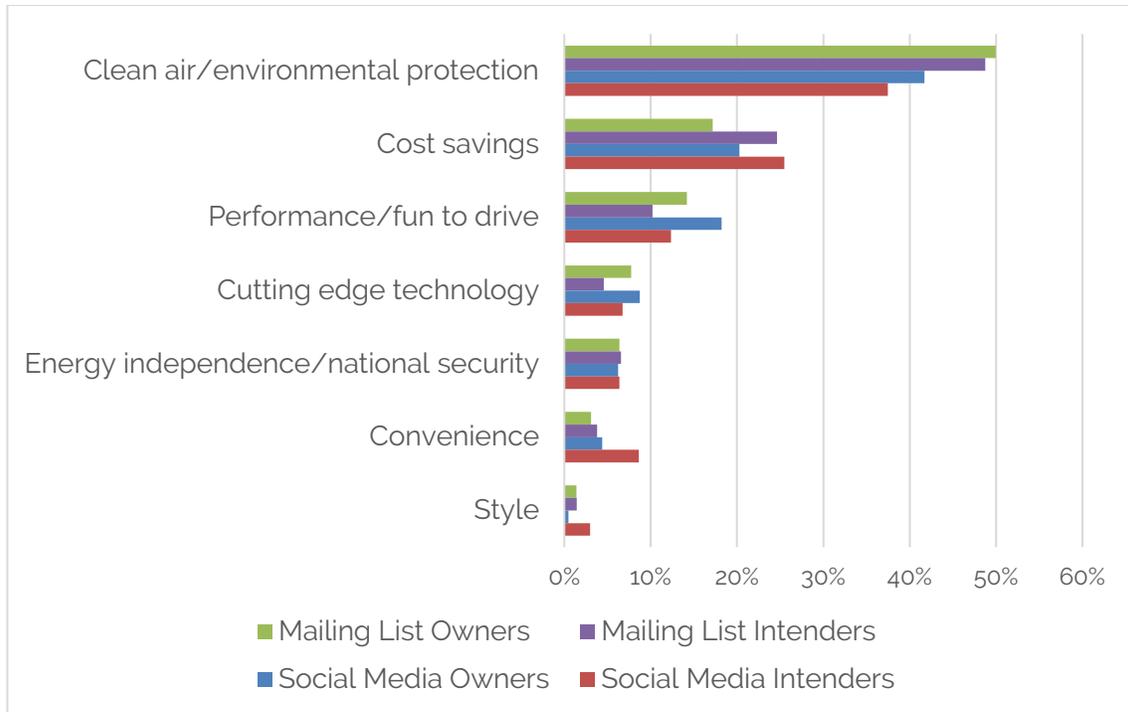


Figure 19: Most important motivating factor by source of response

Intenders also find EV-specific websites to be the most valuable source of information on EVs but have derived less value from information resources as a whole than current owners. This disparity is greater for more specialized resources such as EV-specific websites or forums and is not as great for more generalized resources. Figure 20 compares the proportion of owners and intenders who indicated that an information source was "very valuable" or "essential."

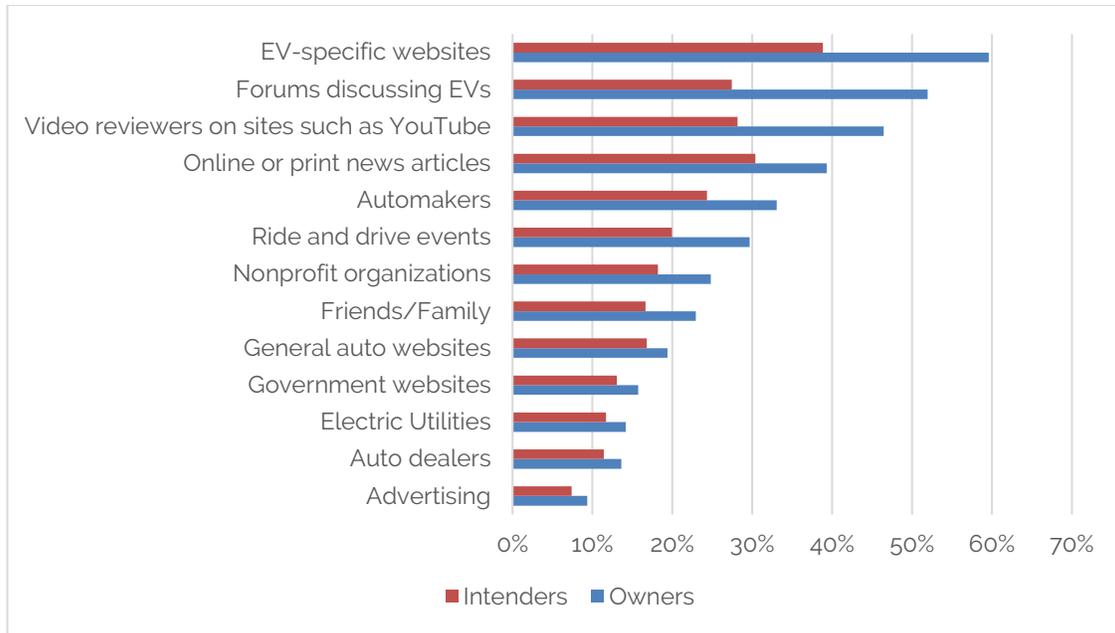


Figure 20: Percentage of respondents indicating an information source is "very valuable" or "essential"

The demographics of population groups also offer cases of similarity and divergence. Intenders are older; they were younger in our 2020 survey. They are less likely to earn over \$75,000 per year. Figure 21 and Figure 22 display the demographic makeups of the two response groups.

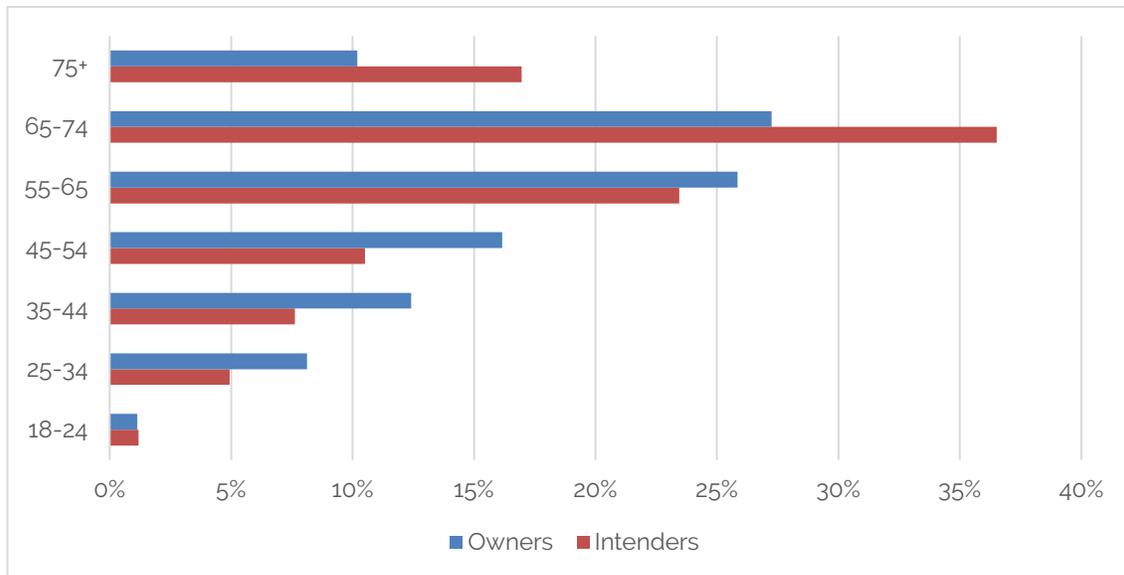


Figure 21: Age distribution of respondents

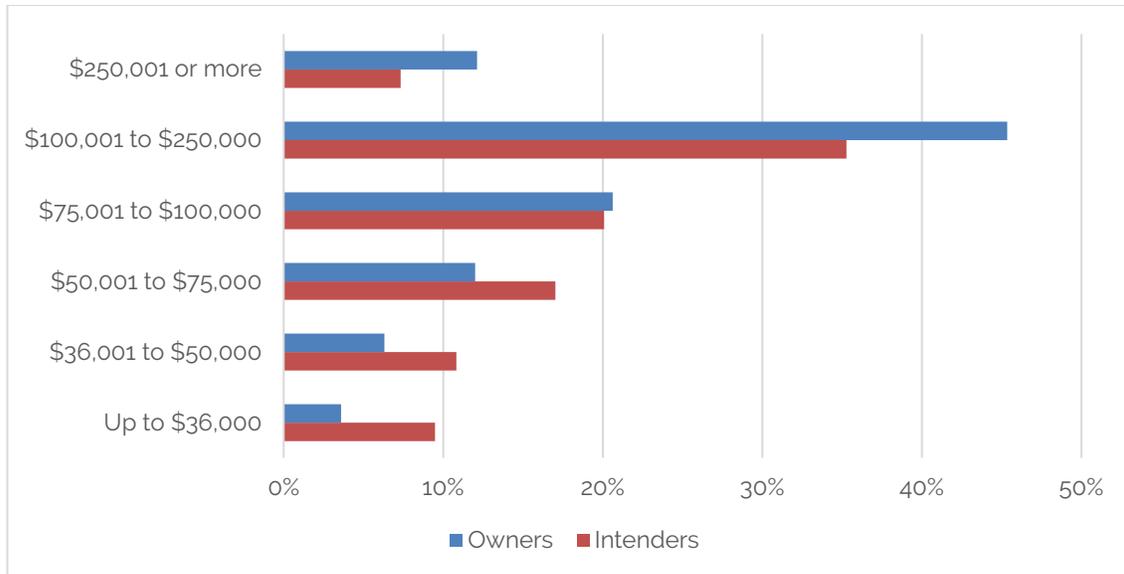


Figure 22: Income distribution of respondents

There are relatively few used EVs on the market, and EVs are still an emerging technology, so the profile of EV buyers does skew higher-income. About 20% of respondents reported buying their EV used, not an insignificant amount—however, in the U.S., about *two-thirds* of vehicle sales are used cars and trucks. This segment became very expensive in 2021 due to supply chain issues. The used EV proportion will increase as more used EVs come onto the market. As that occurs, buyers of used EVs should be supported with credible and reliable information on vehicle performance and battery condition.<sup>12</sup>

Single-family homes with garages offer a lower-cost charging solution than most multi-unit dwellings, and single-family home residents represented 85% of EV owners and 84% of EV intenders. Access to low-cost home charging was one of the most significant economic factors in EV adoption, so it is not surprising that single-family home residents dominate our demographics. Apartments and condominiums may have a garage or parking lot with dedicated parking spaces, or a parking lot with non-dedicated spaces, or may not have parking at all (requiring residents to rely on street parking). Installing charging infrastructure for such buildings does carry a higher capital cost, especially if done as a retrofit where trenching through concrete or asphalt is required. The cost of EV charging is much less if addressed during building construction. Building codes to require new construction to have a significant fraction of "EV-ready" parking spots will enable greater adoption of EVs by residents of multi-unit dwellings.

<sup>12</sup> Plug In America has developed a Used Electric Vehicle Buyer’s Guide, available online at <https://pluginamerica.org/why-go-plug-in/used-electric-vehicles/>

## CONCLUSIONS & FURTHER RESEARCH

EV owners are very positive about their experience, with 90% intending to purchase an EV as their next vehicle. EV owners recognize that the vehicles provide a public benefit in improving air quality and reducing greenhouse gas emissions, and this is an important motivating factor in EV adoption.

EV drivers were generally quite happy with the vehicles themselves, although there were some concerns about vehicle range and navigation systems. Navigation systems are crucial for helping EV drivers find compatible and available charging stations and represent a potential area of improvement. Range represents another potential area for improvement, although this concern is in part tied to the lack of charging stations. Not only are manufacturers generally shifting to longer-range vehicles as battery costs fall, but charging networks are installing additional stations.

Still, at present, lack of sufficient charging stations is the second-most prevalent concern about public fast-charging networks, with 34% of respondents noting that it was at least a moderate concern. It was essentially tied with broken or nonfunctional chargers as a problem, although broken chargers were more frequently cited as being a "major concern" or a "deal-breaker." Insufficient charging stations may deter an EV driver from taking a trip; broken charging stations may leave an EV driver stranded. Robust requirements for grant programs, including any developed under the new infrastructure bill, can ensure reliability (redundancy, uptime, and maintenance requirements). Additionally, chargers being blocked by non-charging vehicles remains a concern; implementing and enforcing laws to prohibit this behavior will be increasingly important as the EV market develops.

Most EV drivers charge at home, but workplace charging is also commonly used by those who have access to it. Plug In America supports workplace charging as a convenient solution for many EV drivers, including those without access to home charging. It is relatively low-cost for the workplace and allows the employer to advance sustainability significantly.

Drivers noted that dealership knowledge is lacking; Plug In America's PlugStar program can resolve this. In addition, customer-facing websites (also a component of PlugStar) were cited as the most valuable information sources. Drivers most commonly reported difficulty finding information about cold-weather EV performance, and we encourage automakers to make such information available.

The demographics of our respondents implicitly indicate a gap in multi-unit dwelling charging availability; building codes, grant programs, and focused work with multi-unit dwelling properties can help overcome this obstacle.

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Future surveys will include questions about the length of EV ownership to see if there are differences in perceptions or behavior between the earlier adopters and the more recent ones.

Plug In America looks forward to helping resolve the remaining barriers to EV adoption and looks forward to learning more about EV drivers with future surveys. In particular, we will look for signs of progress on the dealership experience, the public charging experience, and the availability of charging for multi-unit dwellings. We also look forward to seeing new EV models in our next survey and an increase in used EV sales as the used market develops. We stand ready to provide consumer education through PlugStar and our ride-and-drive events and look forward to working with utilities and other partners in these efforts.

## AUTHORS AND ACKNOWLEDGMENTS

### ABOUT PLUG IN AMERICA

Plug In America is a non-profit, supporter-driven advocacy group. Our mission is to drive change to accelerate the shift to plug-in vehicles powered by clean, affordable, domestic electricity to reduce our nation's dependence on petroleum, improve air quality and reduce greenhouse gas emissions. Plug In America helps consumers, policymakers, auto manufacturers, and others to understand the powerful benefits of driving electric by providing practical, objective EV information.

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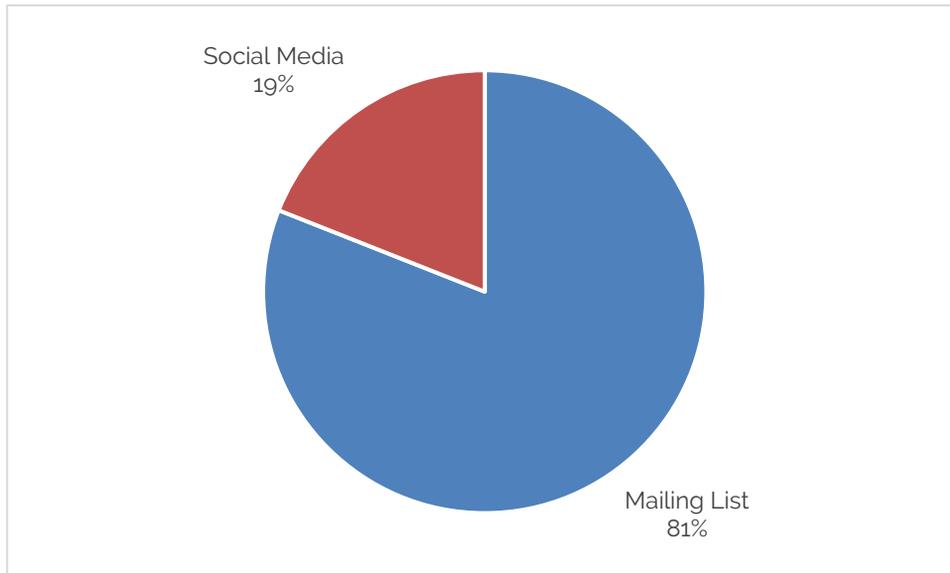
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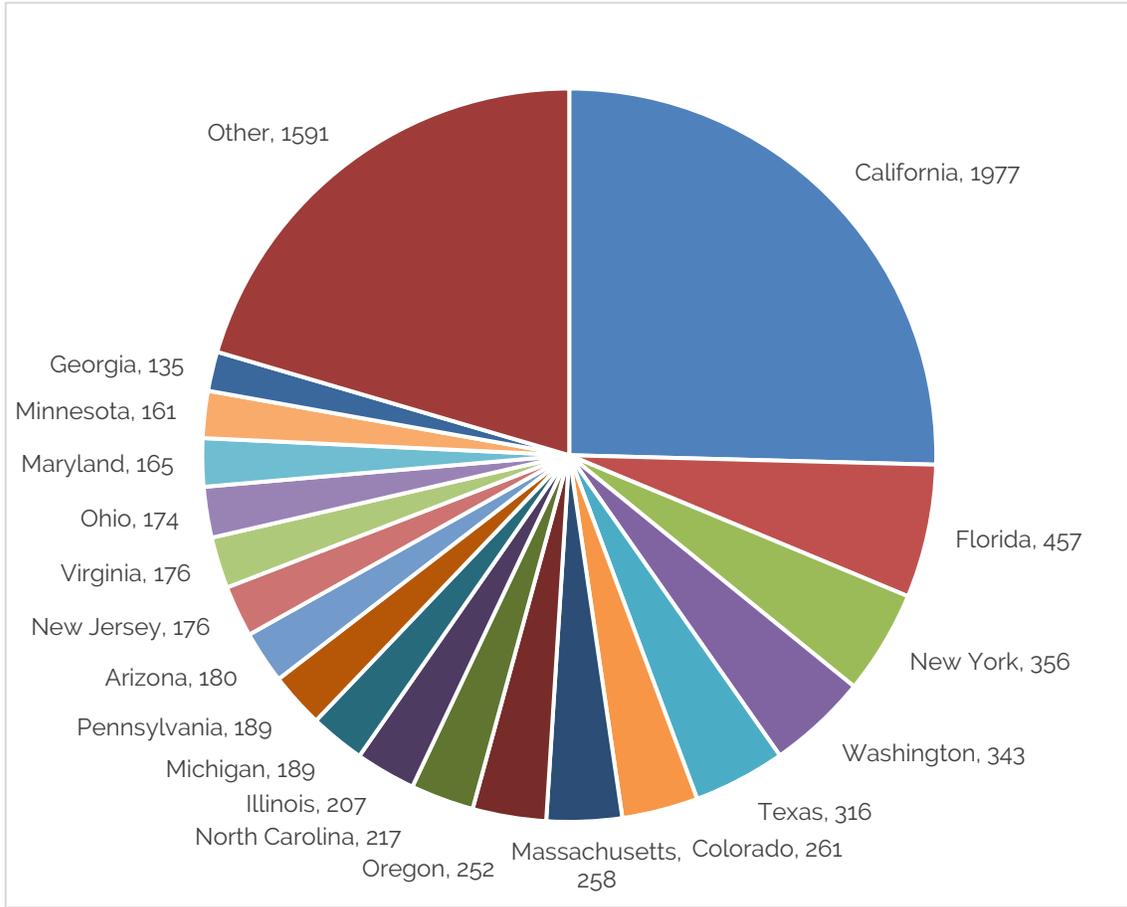
## **SURVEY METHODOLOGY AND RESPONSE SUMMARY**

Plug-In America surveyed over 8,000 EV owners and those considering purchasing EVs in December 2021. The survey was promoted in the Plug In America e-mail subscriber list three times between December 7 and December 30, 2021 and advertised on social media between December 7 and December 28, 2021. In both cases, respondents were offered an opportunity to win a \$250 gift card. Below is a summary of data by source, including sample sizes.

### **Responses By Data Source**



**Responses By State**





# EV PUBLIC CHARGING PERCEPTIONS SURVEY RESEARCH

Customer Insights

April 2022



## TABLE OF CONTENTS

1. Background
2. Executive Summary
3. Public Charging Perceptions
4. EV Driver Demographics
5. EV Consideration
6. Appendix

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**BACKGROUND**



# Background

## Research Questions

- What are EV public charging preferences in terms of payment models, willingness to pay, preferred charge time, preferred locations, brand affinity, etc.?
- What are the current perceptions of EV public charging options among people who own or lease a vehicle or people who are likely to own or lease?

## Survey Outline

- Driving & Automotive Behaviors
- EV Consideration & Familiarity
- Public Charging Stations Preferences
- Demographics

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# EXECUTIVE SUMMARY



## Key Takeaways

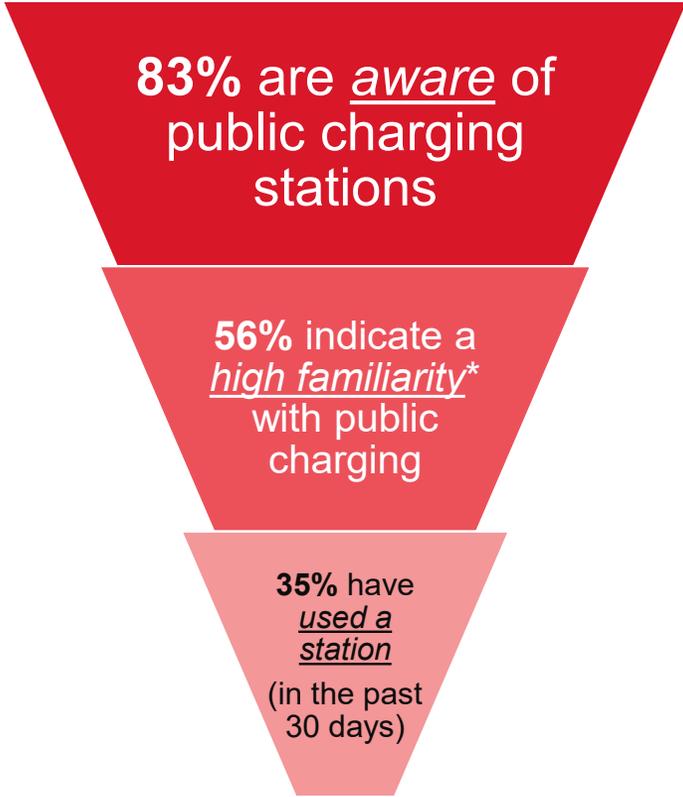
- **There is opportunity to further acquaint EV drivers with public charging.**
  - 83% of EV drivers are aware of stations in their community, but only about half indicate high familiarity. Just 1 out of 3 current EV drivers have used public charging within the past month.
  - Among current EV drivers the preferred payment methods for public charging are by credit/debit card, digital wallet and mobile app. The general preference is to pay by usage (kWh), rather than by time or flat-fee (including subscription).
  - Among EV drivers, there is a considerable gap between the *expected* price and time to charge versus the amount of time and price people may be *willing* to spend at a public charging station.
  - While both important features, charging speed appears to be more meaningful than cost when choosing a public charging station. Having a safe and convenient location are also very important to consumers, including those who would consider getting an EV in the future.

## Key Takeaways (cont.)

- **Familiarity with EVs and public charging is low among non-EV drivers.**
  - This is particularly reflected in their uncertainty in expected time and cost to charge an EV. They expect charging costs to be higher compared to EV drivers.
- **Current EV drivers are predominately homeowners who live in the suburbs.**
  - They are more commonly men, between 55 and 74 years old and have high income (>150k annually).
  - Most EV drivers have charged at home in the last 30 days and about half have a Level 2 home charger.
- **About 1 of 3 of non-EV drivers would consider getting an EV.**
  - People who would consider an EV the next time they buy an automobile are more likely to be between 25 and 44 years old, live in an urban and suburban area and have annual income over \$75k.
  - These EV considerers have a higher awareness of public charging stations in their community, but their familiarity is lower around public charging and EVs in general compared to current EV drivers.

# Key Metrics

## Current EV Drivers Public Charging Preferences



- Most EV drivers would like to be able to pay for public charging with a credit/debit card (72%) or by mobile app (46%).
- 79% prefer the price to be determined by the kWh/amount of electricity used.
- The most important public charging features include charging speed (80%), convenient location (77%), cost (64%), safe location (63%) and nearby amenities (61%).
- 77% are willing to charge at grocery stores, 74% at hotels, 73% at retail stores/malls, 71% at rest areas, 65% at restaurants and 62% at parks.
- **Over half** of EV drivers expect a typical "fill-up" charge to cost **less than \$9** and for it to take **45 minutes or less**.

\*High familiarity score = 8 or more out of 10

## Key Metrics (cont.)

- **55%** of EV drivers have a Level 2 charger at home.
- **1 out of 3** non-EV drivers say they would consider getting an EV for their next vehicle.

## EV Considerers Public Charging Perceptions

- **66%** of EV considerers are aware of public charging stations in their community.
- Only **14%** have high familiarity\* with public charging.
- **83%** want the ability to pay by credit/debit card and **40%** by mobile app.
- **54%** want price to be determined by the kWh/amount of electricity used while **28%** are unsure.
- The most important features for EV considerers include charging speed (**78%**), safe location (**76%**), convenient location (**74%**) and cost of charging (**70%**).
- **70%** are open to charging at grocery stores, **69%** at rest stops, **68%** at retail stores/malls, **62%** at hotels, **59%** at gas stations.

\*High familiarity score = 8 or more out of 10

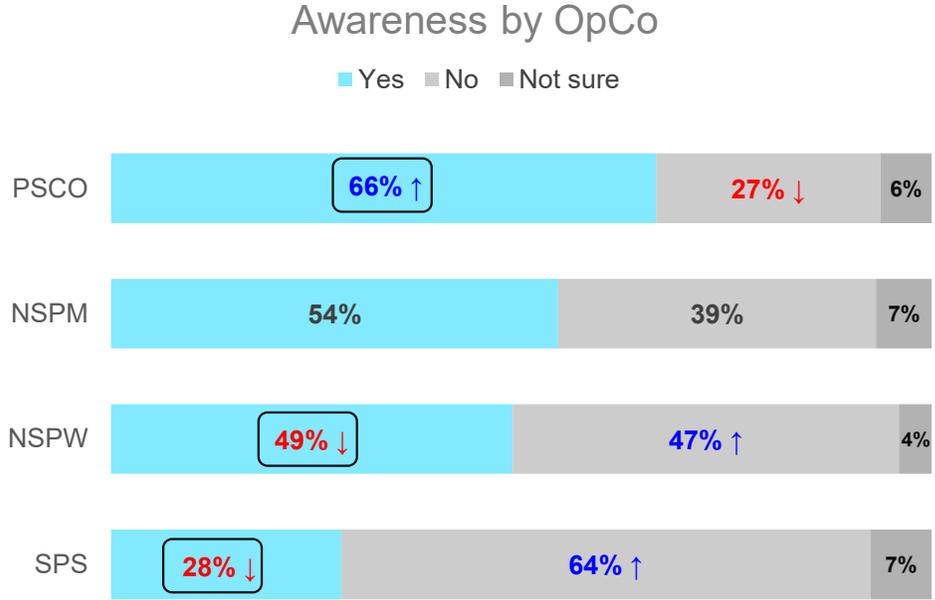
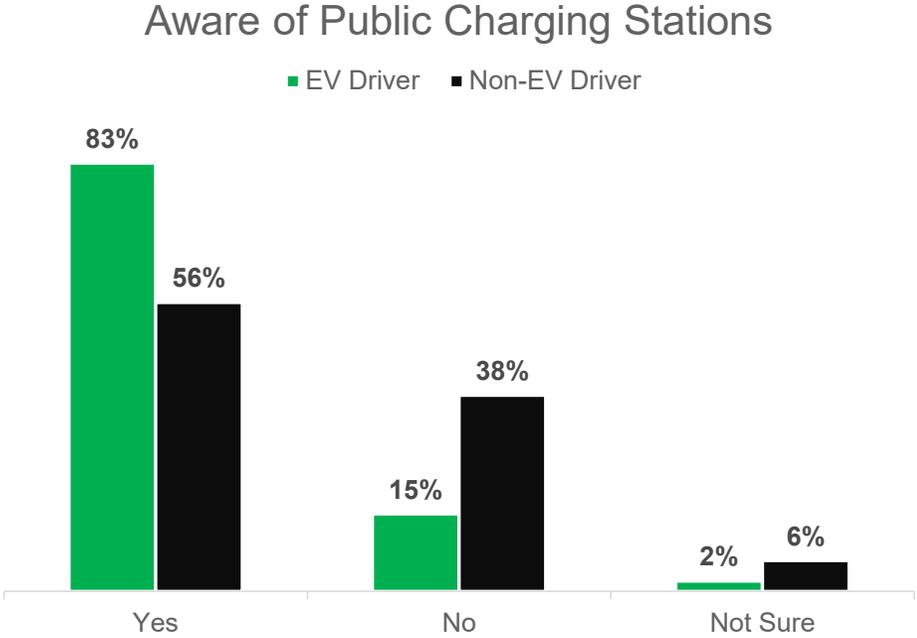
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# PUBLIC CHARGING PERCEPTIONS



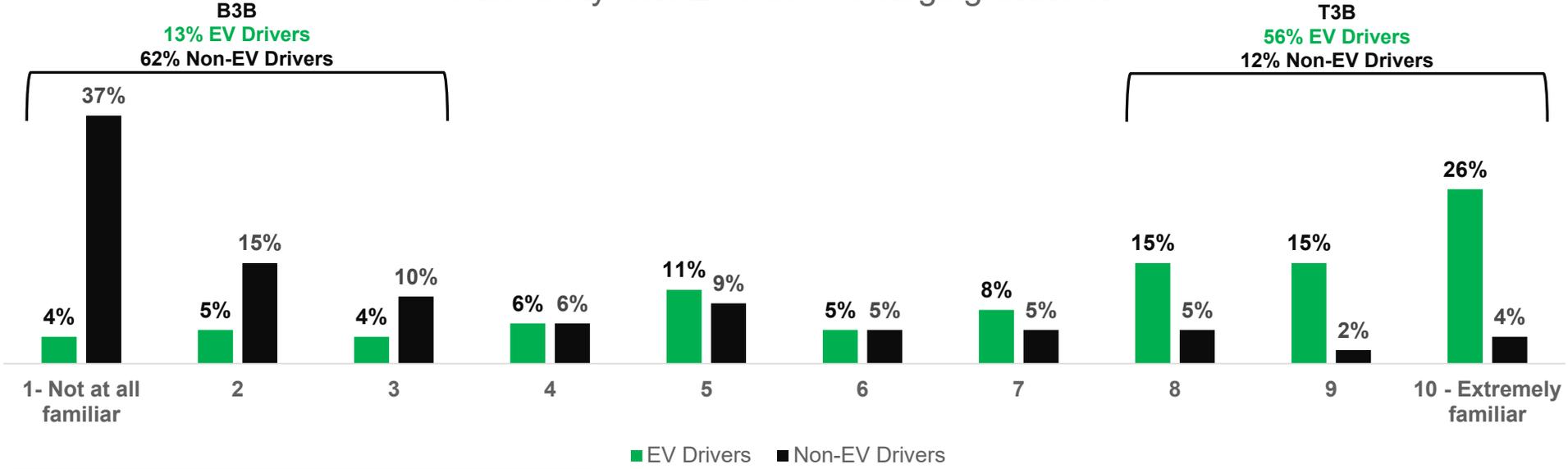
**Over half of drivers are aware of public charging stations in their community regardless of whether they drive an EV. Customers in PSCo are more likely to be aware of public charging stations while SPS and NSPW customers are less likely.**



Are you aware of, or have you seen, any EV public charging stations in your community? Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

# About half of EV Drivers indicate a very high familiarity with public charging stations.

Familiarity with EV Public Charging Stations

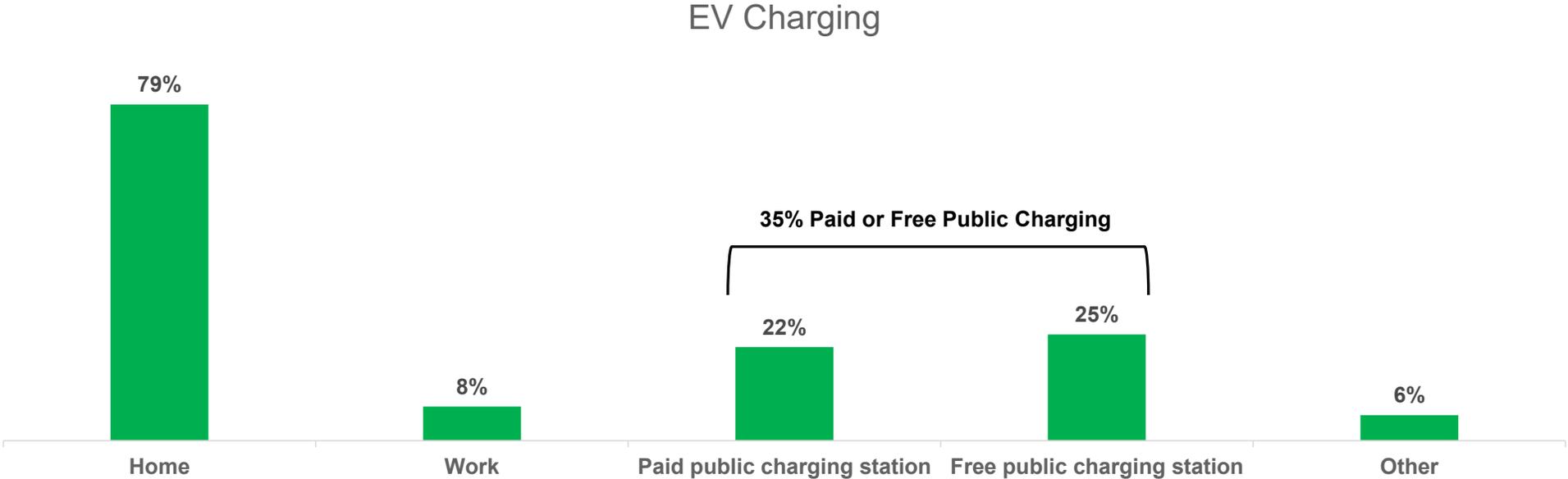


**People who have low familiarity (1-3) with public charging stations are more likely to be renters, apartment dwellers, rurally-based, women, over 74 years old, drive <5,000 miles a year, have household income <\$50k and live in NSPW and SPS.**

Average Familiarity: EV Drivers = 7.1, Non-EV Drivers = 3.4  
 How familiar are you with EV public charging stations? 1-10 scale (Not at all familiar-Extremely familiar) Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)  
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**4 of 5 EV drivers charged at home and about a third (35%) have used public charging within the past 30 days.**

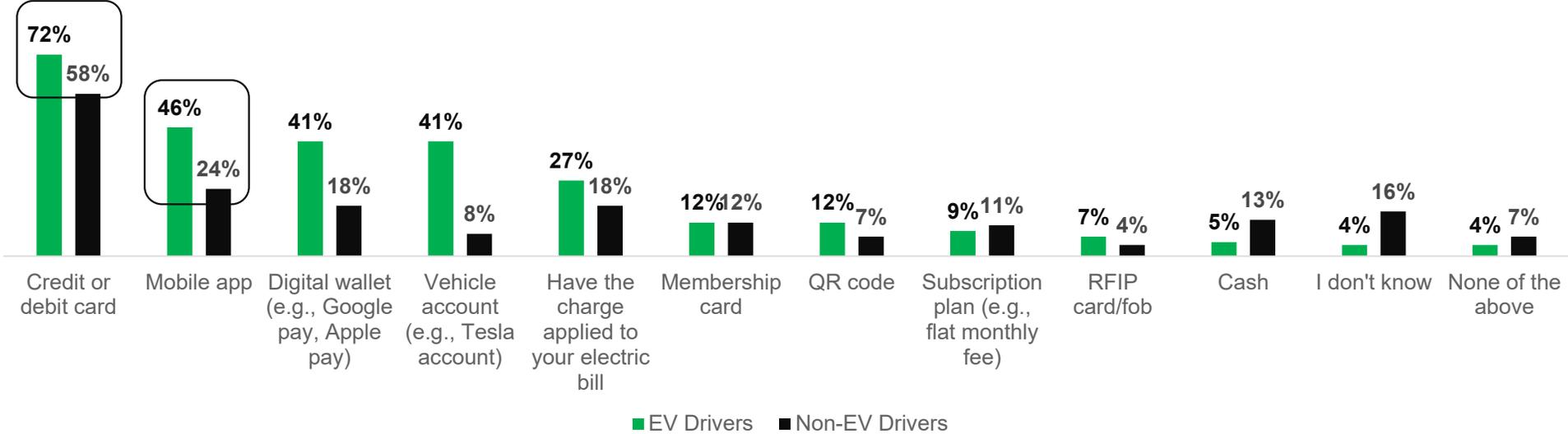
**About half indicated charging at home only and nowhere else.**



In the last 30 days, where have you charged your EV? (Select all that apply) Base: EV Drivers (n=110)

# People most commonly want to pay for public charging by credit/debit card. EV drivers have greater preference for digital methods as well.

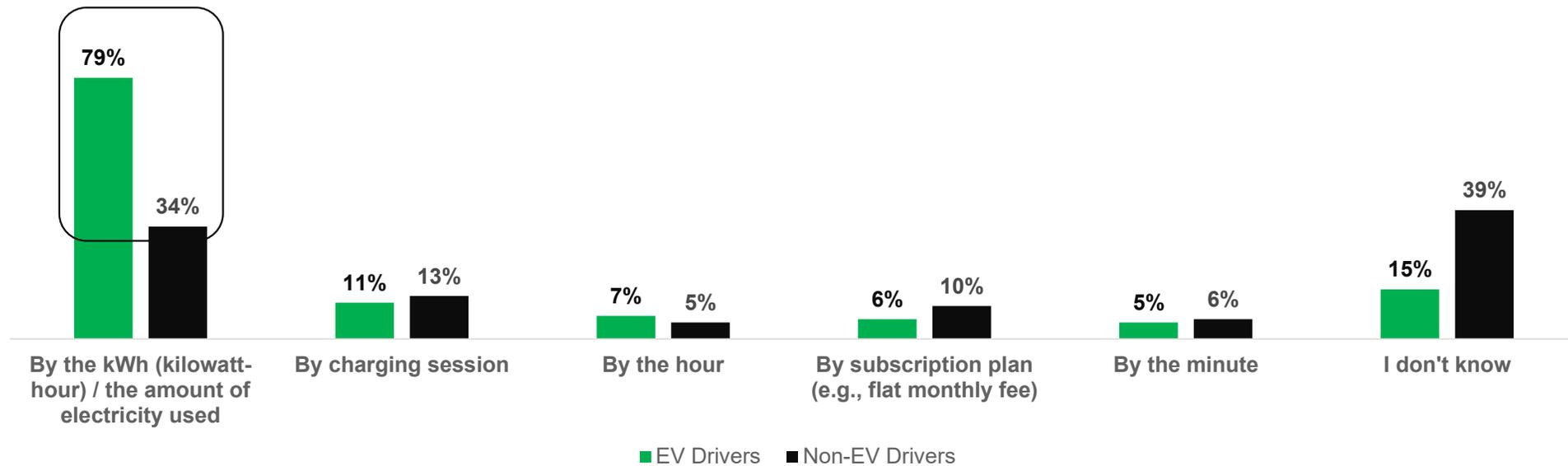
Preferred Payment Methods



When using a paid EV public charging station, what ways would you like to be able to pay? Please select all that apply. Base: EV Drivers (n=110); Non-EV Drivers (n=2,784 )

# People would prefer to pay for public charging by the kWh / the amount of electricity used.

Pricing Model Preference

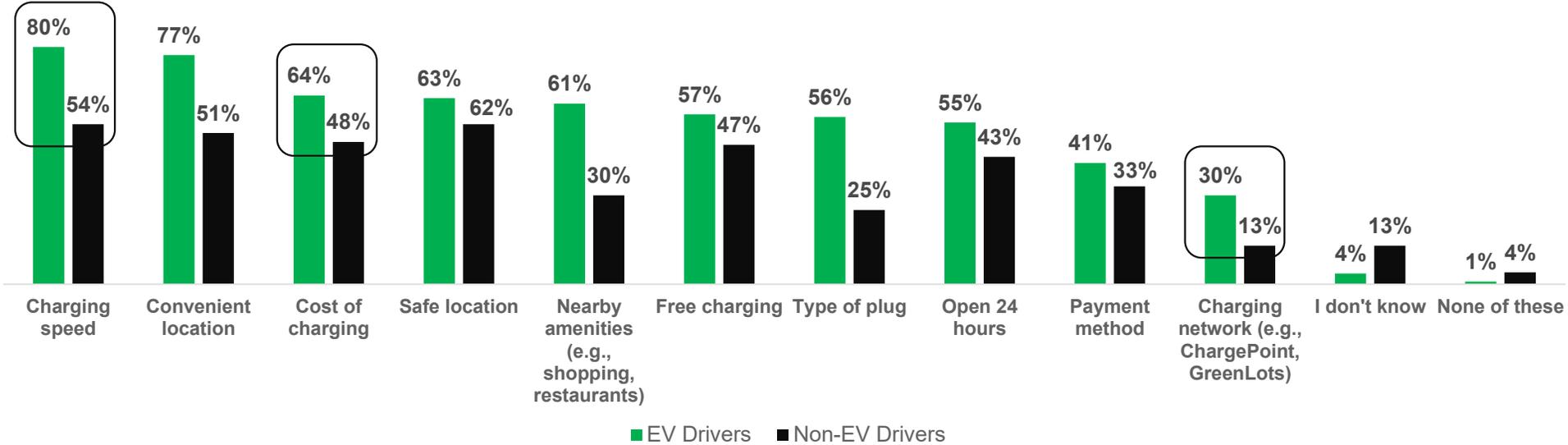


How would you prefer the price to be determined when using an EV public charging station? Please select all that apply. Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

# Charging speed appears to be more important than cost for choosing a public charging station.

Charging network is the least important feature for both types of drivers.

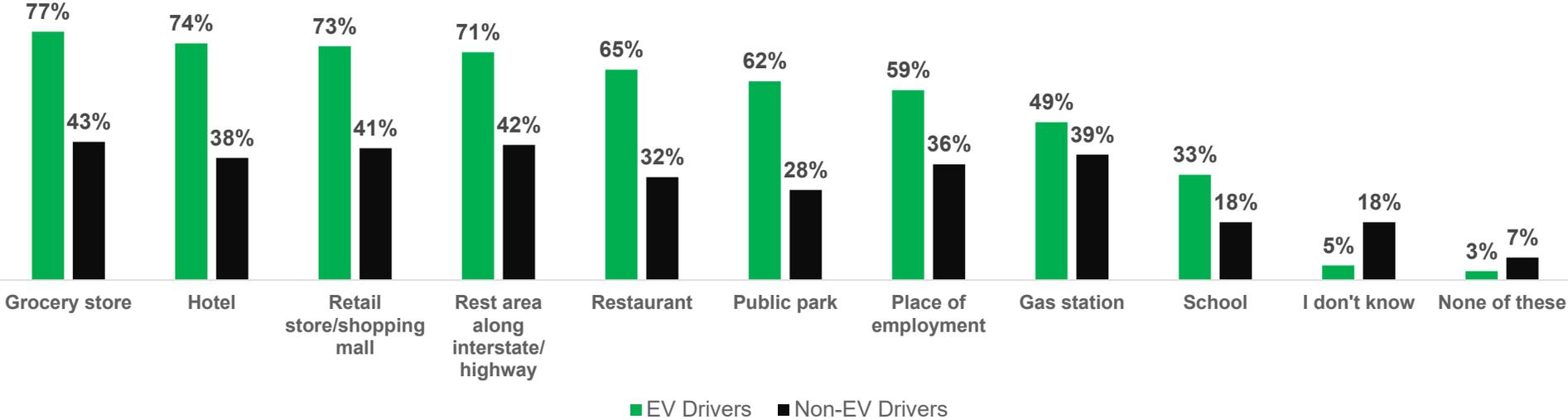
Important Public Charging Features



What features would be important to you when choosing an EV public charging station to use? (Select all that apply) Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

# Likely acknowledging the amount of time it takes to charge, EV drivers prefer locations that are practical and have amenities.

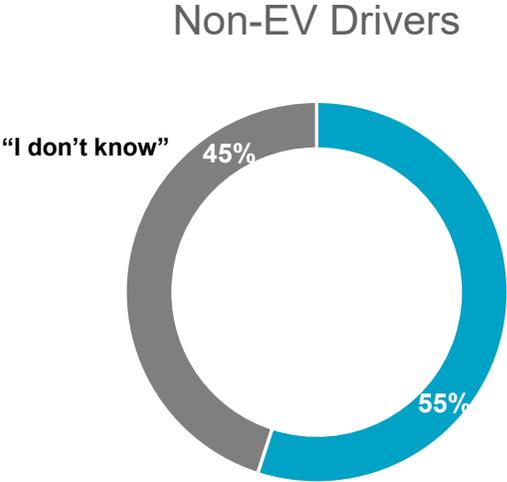
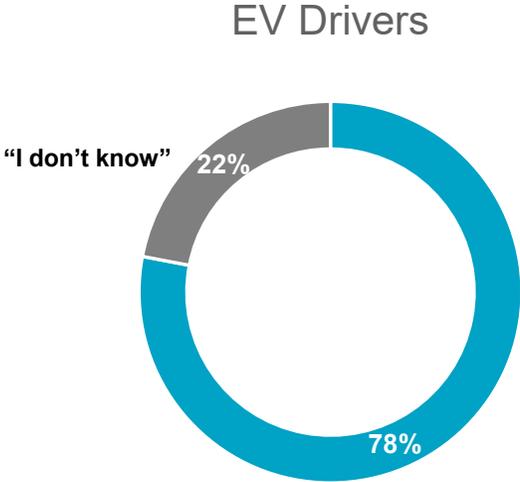
Public Charging Locations Willing to Use



Where would you be willing to use an EV public charging station? (Select all that apply) Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

# There is uncertainty around the cost of charging, especially among non-EV drivers.

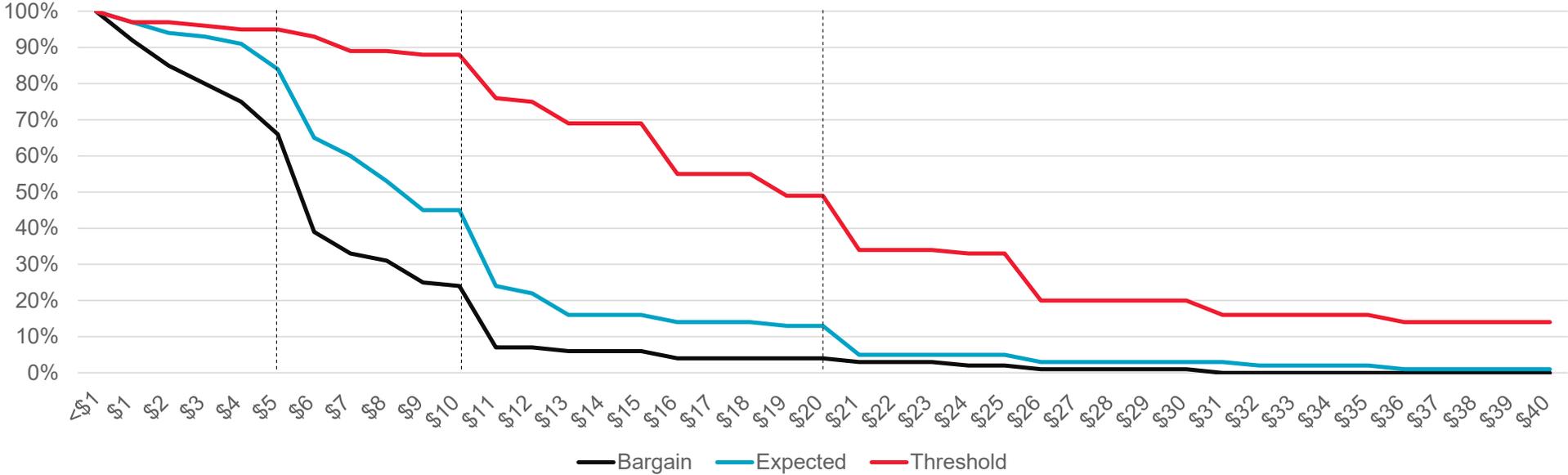
*You are away from home, driving an all-electric vehicle (EV) and your battery is running low. You use an EV public charging station with a DC fast charger to “fill-up” your battery to about 80%. How much would you expect this “fill-up” to cost?*



How much would you expect this “fill-up” to cost? Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

# Most EV drivers expect to pay <\$10 for public charging; any more and they'd consider it too expensive.

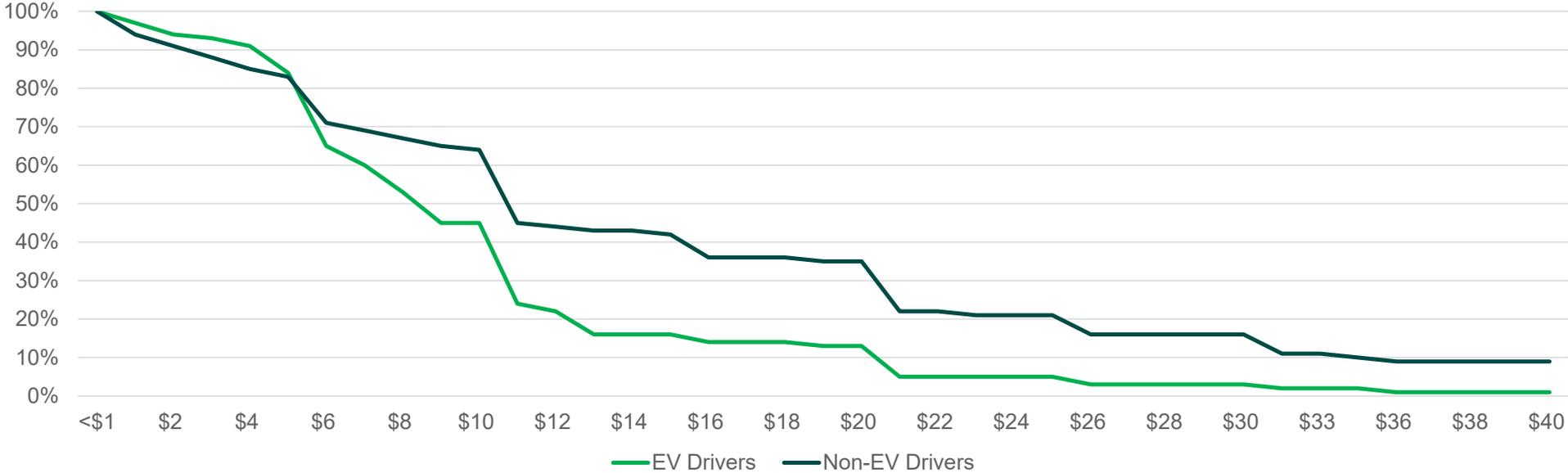
You are away from home, driving an all-electric vehicle (EV) and your battery is running low. You use an EV public charging station with a DC fast charger to "fill-up" your battery to about 80%.



How much would you expect this "fill-up" to cost? Base: EV Drivers (n=86)  
At what price would you consider it to be so expensive that you would not "fill-up" your battery to 80%? Base: EV Drivers (n=110)  
And at what price would you consider it to be a bargain, a great buy for the money, to "fill-up" your battery to 80%? Base: EV Drivers (n=110)

# Expected “fill-up” costs are generally higher among non-EV drivers probably due to lack of familiarity with charging cost.

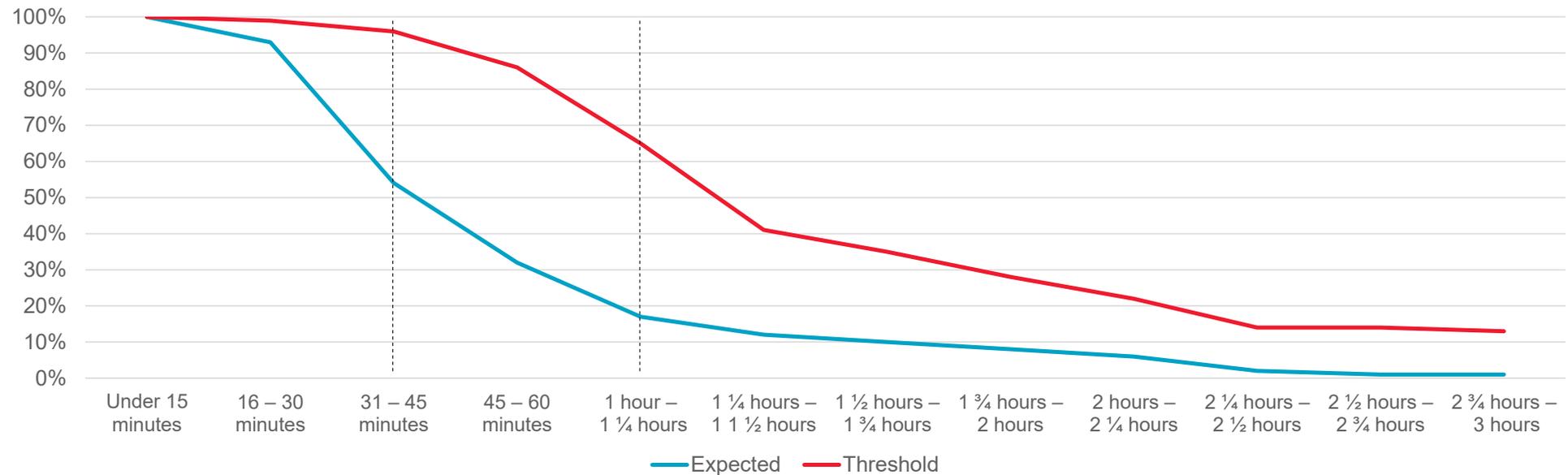
You are away from home, driving an all-electric vehicle (EV) and your battery is running low. You use an EV public charging station with a DC fast charger to “fill-up” your battery to about 80%. How much would you expect this “fill-up” to cost?



How much would you expect this “fill-up” to cost? Base: EV Drivers (n=86); Non-EV Drivers (n=1,524) EXCLUDES ‘DON’T KNOW’

# While EV drivers expect public charging to be fast (under 30 minutes), most are willing to spend an hour to charge.

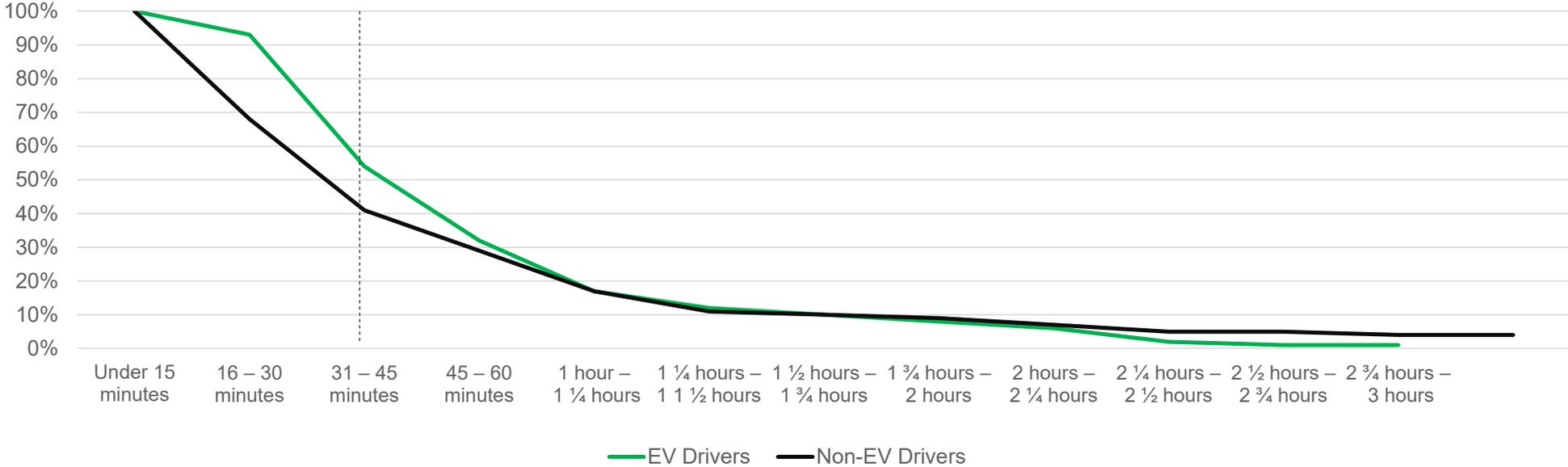
*You are away from home, driving an all-electric vehicle (EV) and your battery is running low. You use an EV public charging station with a DC fast charger to “fill-up” your battery to about 80%.*



How much time would you expect it to take to “fill-up” your battery to 80? Base: EV Drivers (n=103); EXCLUDES ‘DON’T KNOW’  
 How much time would be too long that you would not “fill-up” your battery to 80 at this station? Base: EV Drivers (n=110)

# Fewer than half of non-EV drivers expect charging to take more than 30 minutes.

You are away from home, driving an all-electric vehicle (EV) and your battery is running low. You use an EV public charging station with a DC fast charger to “fill-up” your battery to about 80%. How much time would you expect it to take to “fill-up” your battery to 80?



How much time would you expect it to take to “fill-up” your battery to 80? Base: EV Drivers (n=103); EXCLUDES ‘DON’T KNOW’

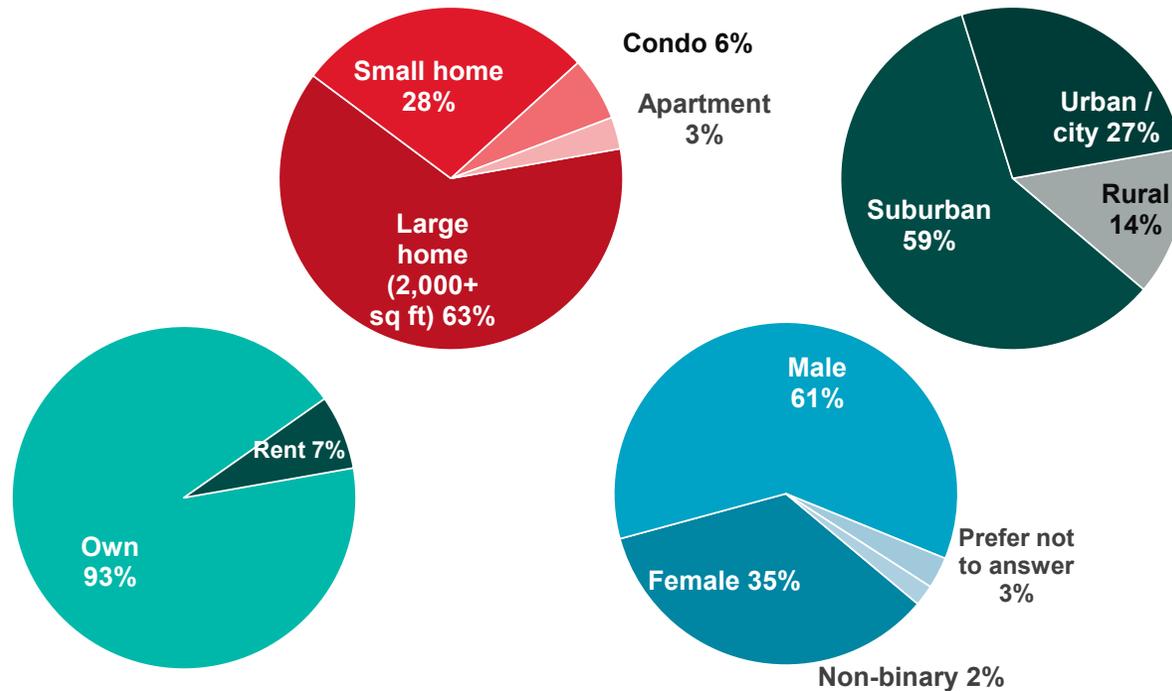
Northern States Power Company



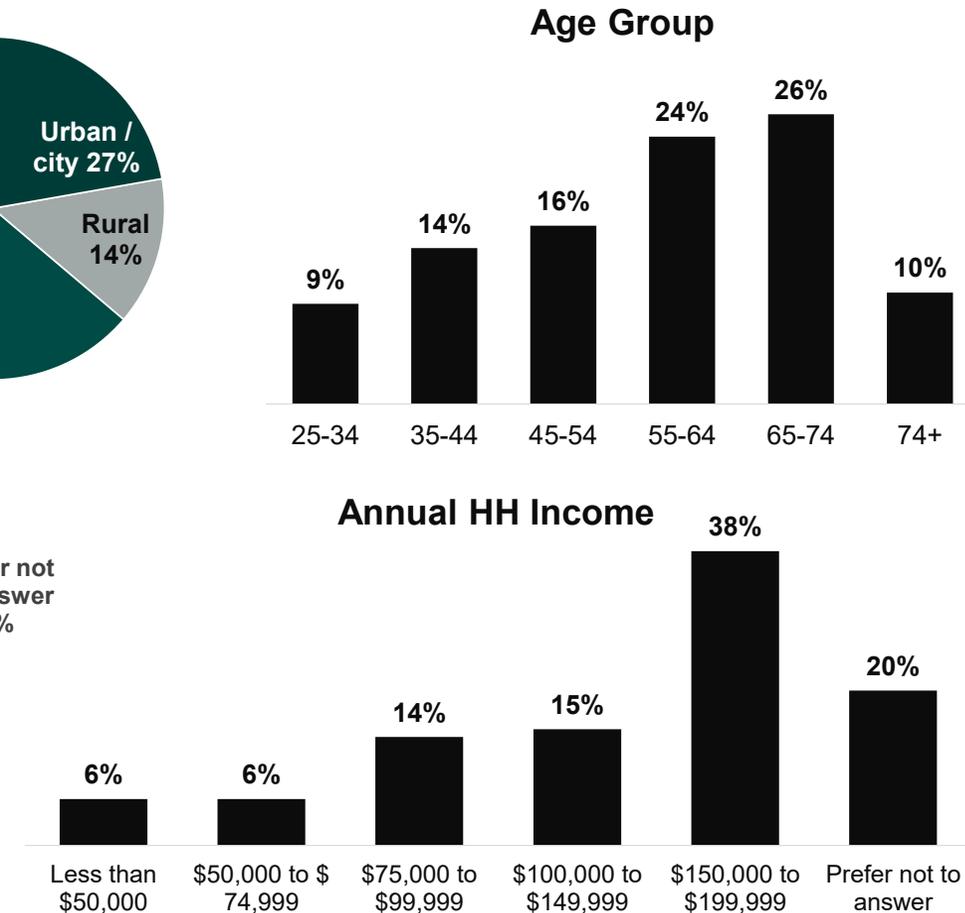
# EV DRIVER DEMOGRAPHICS



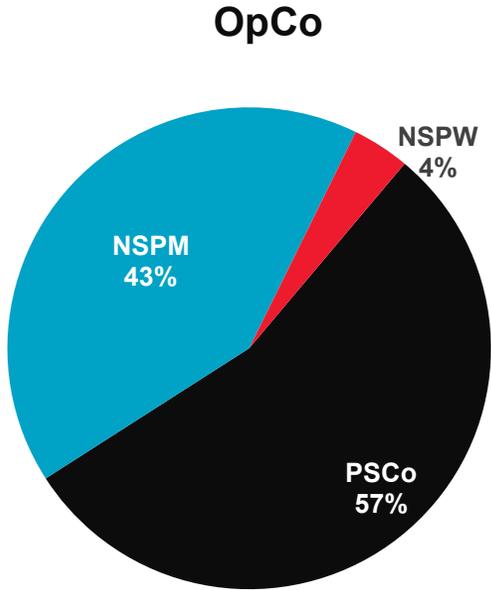
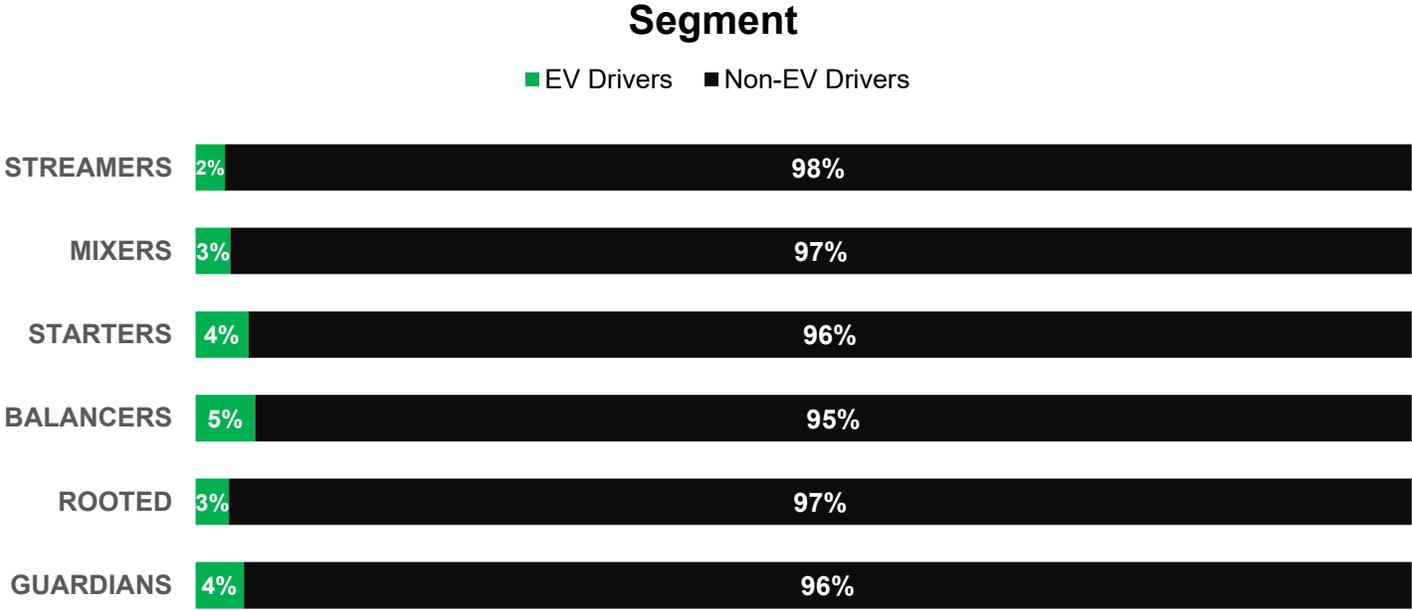
# Current EV Drivers predominately own vs. rent, live in the suburbs, have large homes, higher income, are men and between 55 and 74 years old.



Base: EV Drivers (n=110)  
 Do you currently own or rent your place of residence?  
 Which of the following best describes your place of residence?  
 Which of the following best describes you?  
 Which of the following best describes the area you live in?  
 What is your age group?  
 What is your total annual household income before taxes?



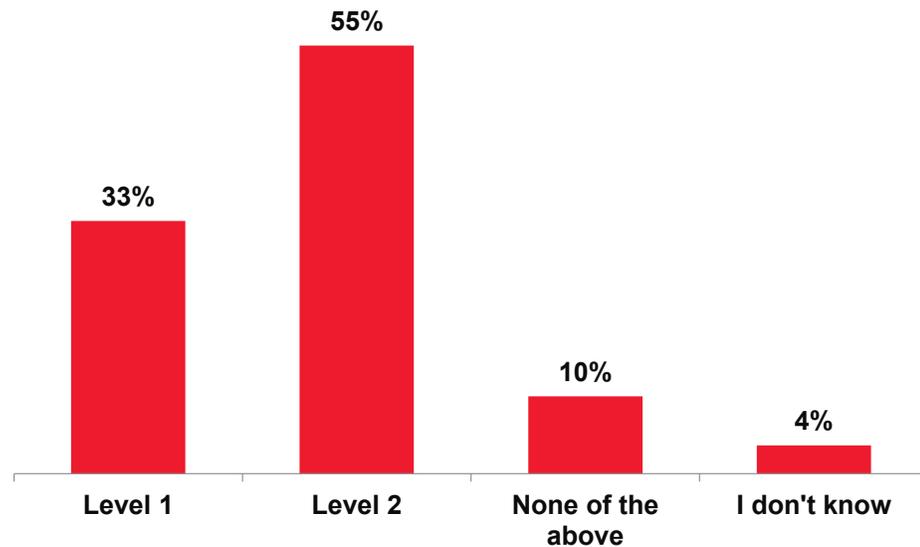
# EV Drivers account for a slightly larger share of Balancers than other segments.



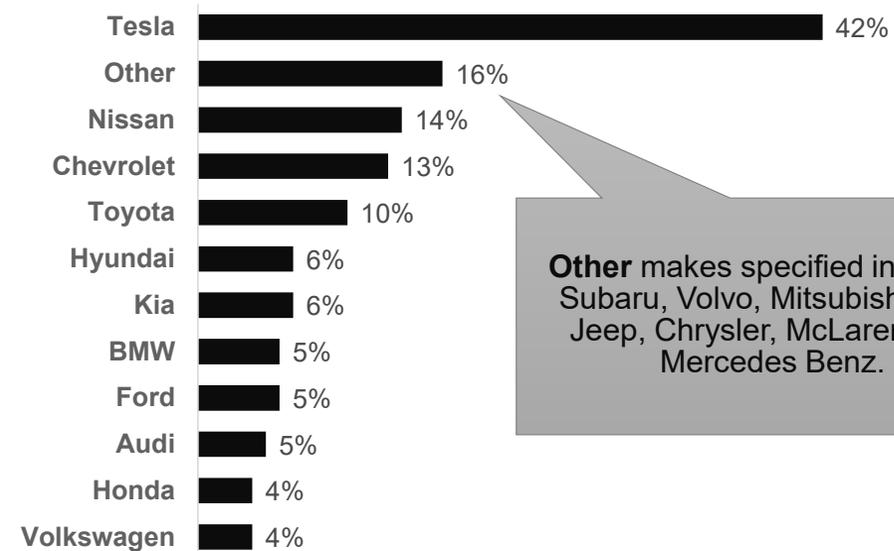
Customer data. Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)  
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# Over half of EV Drivers indicate having a level 2 charger at home.

**Type of Home Charger**



**EV Make**



**Other** makes specified included:  
 Subaru, Volvo, Mitsubishi, Fiat,  
 Jeep, Chrysler, McLaren, and  
 Mercedes Benz.

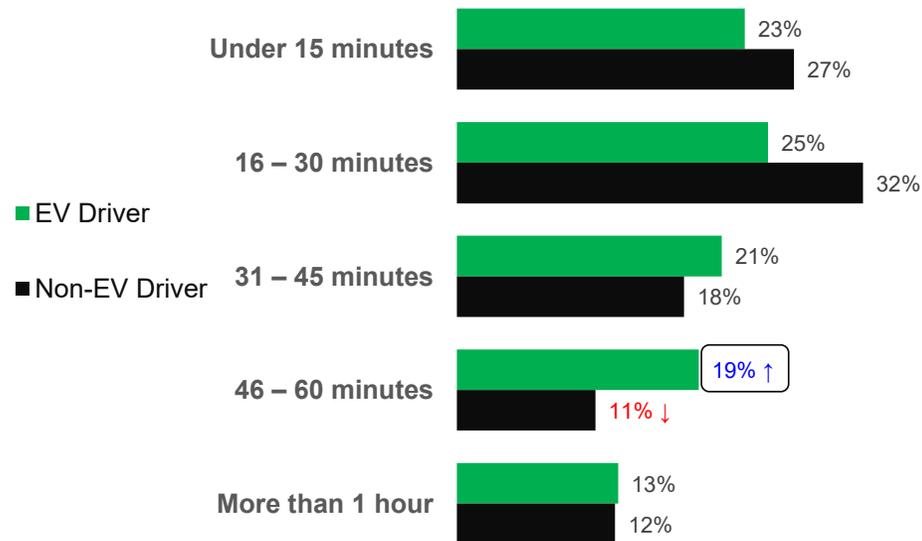
What kind of EV charging do you use at your home, if any? Please select all that apply. Base: EV Drivers (n=110)  
 What is the make/brand of your electric vehicle(s)? Base: EV Drivers (n=110)

# EV Drivers are more likely to drive 46-60 minutes a day and 10,000-20,000 miles per year.

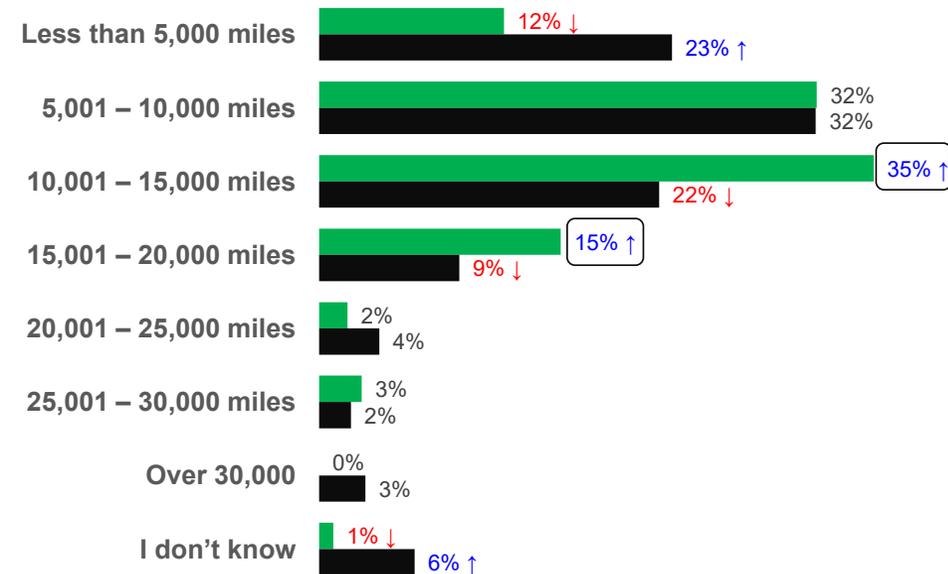
However, 69% of EV Drivers still drive less than 45 minutes each day.

The average person drove 14,263 miles per year in 2019, according to the U.S. Dept of Transportation.

Average Daily Drive Time



Miles Driven in a Year



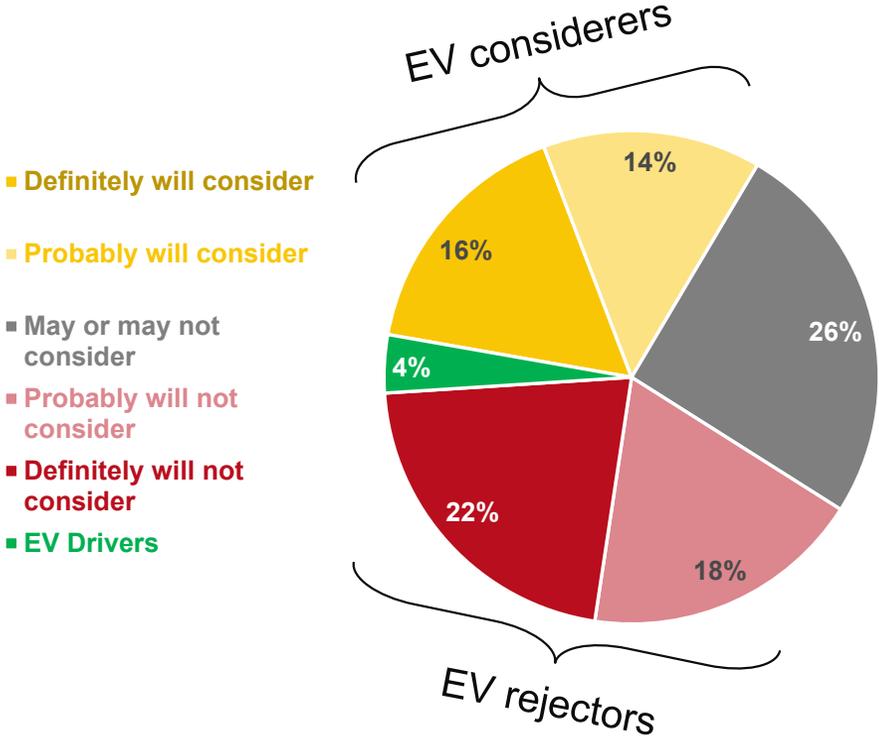
On average, how much time do you spend driving each day? Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

Approximately, how many miles do you drive in a year? Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)



## EV CONSIDERATION

# About 1 of 3 non-EV drivers say they would consider getting an EV while just over 40% indicate they will not.



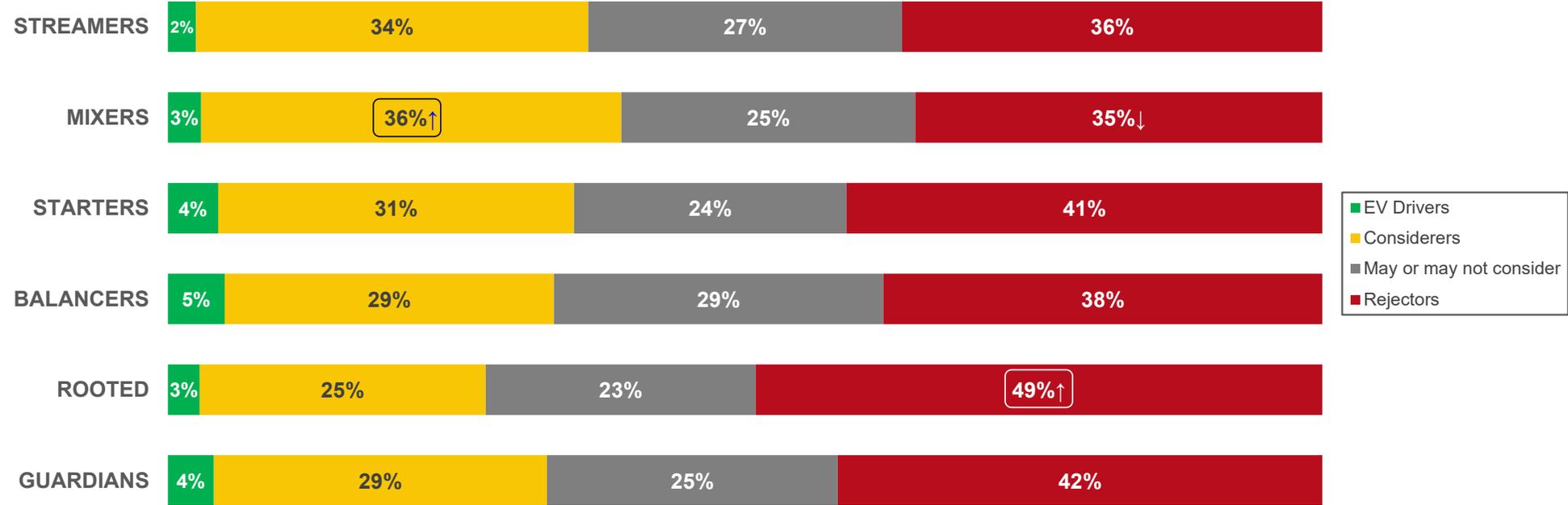
The following slides will look at the differences between these groups.

Side-by-side comparisons reveal what the next wave of EV drivers could look like.

The next time you are looking to buy or lease an automobile, would you consider getting an all-electric vehicle (EV)? (n=2,894)

# EV consideration is generally similar across our residential segments.

**Mixers are more likely to consider getting an EV while Rooted are more likely to be EV rejectors.**

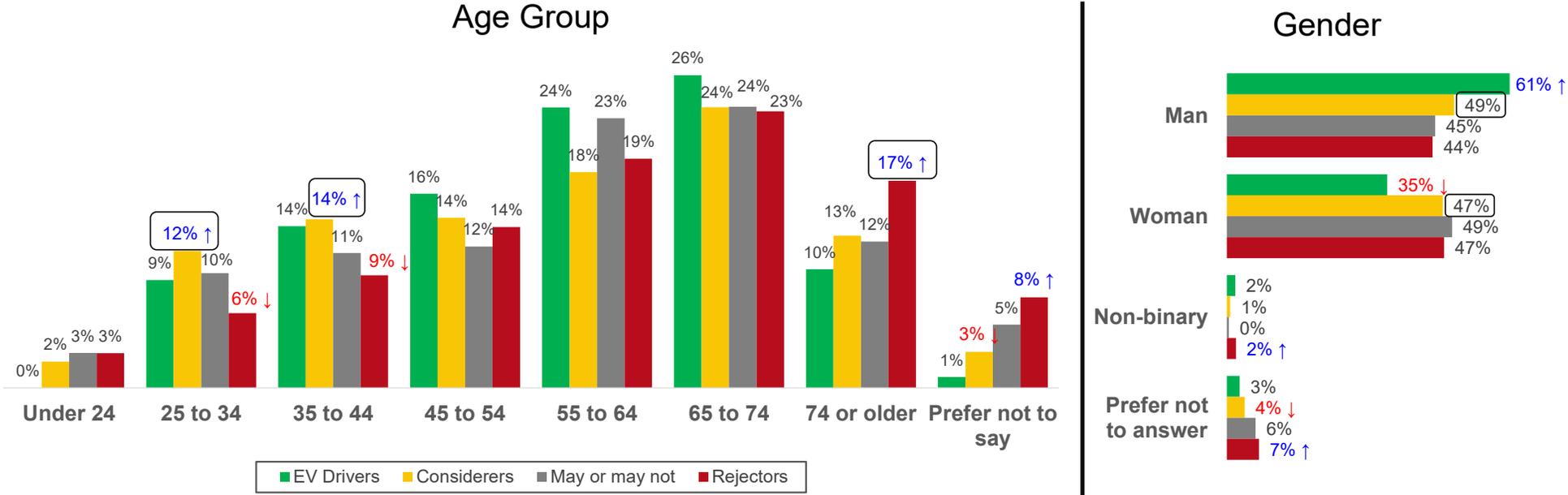


Customer data: Segment. Base: EV Drivers (n=104); Considerers (n=853); May or May Not Consider (n=702); Rejectors (n=1,118)

↑ = significantly higher ↓ = significantly lower at 95% confidence level

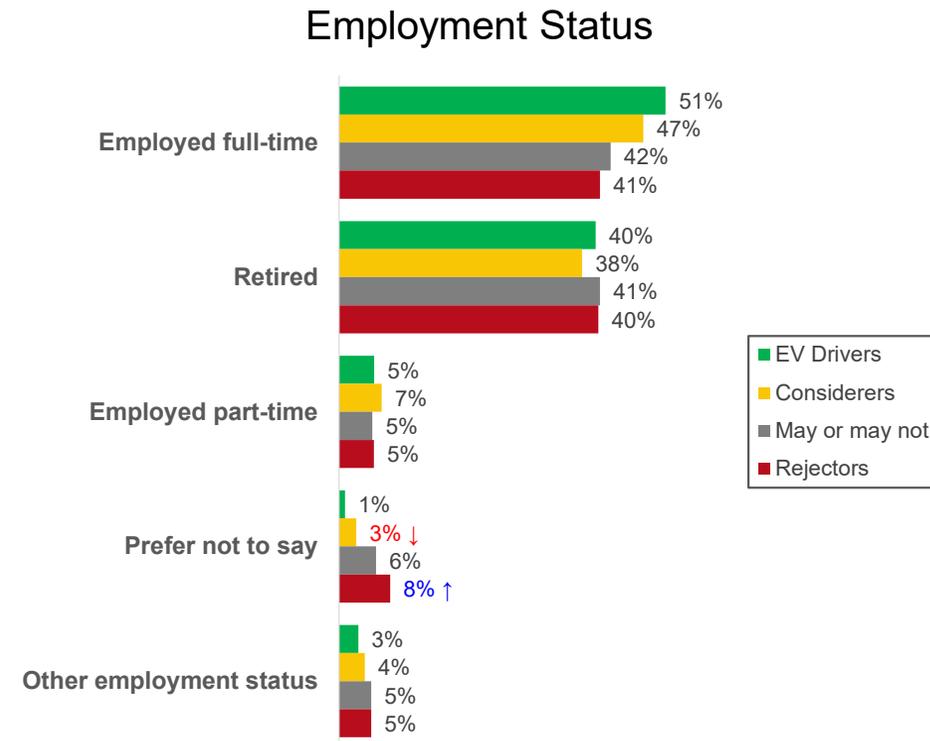
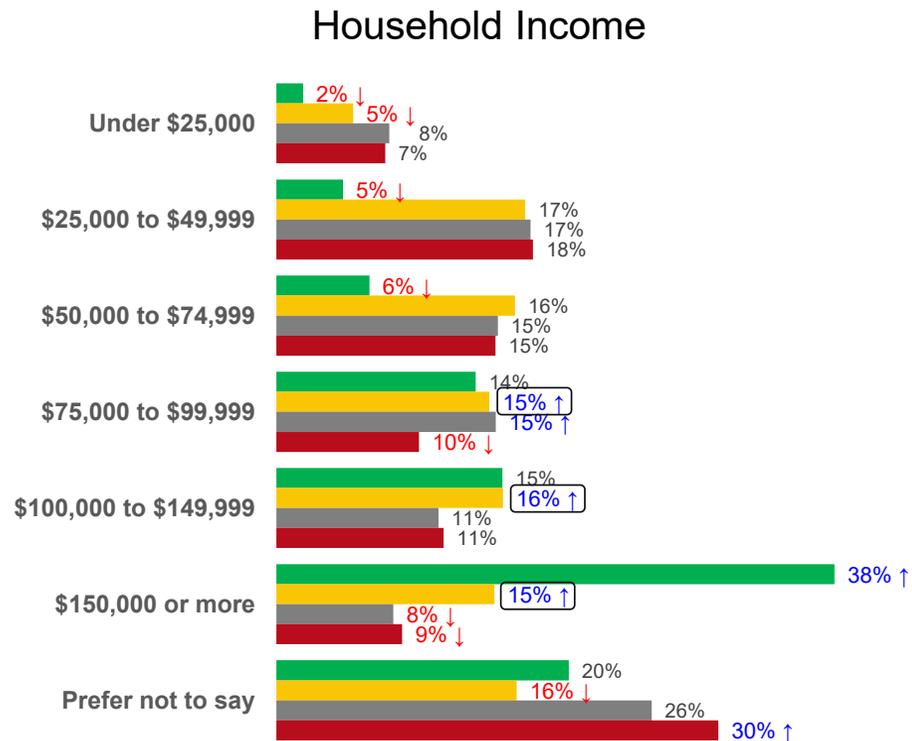
# People who would consider getting an EV are more likely to be between 25 and 44 years old while people 74 and older are less likely.

There is an even split of men and women open to EV consideration hinting there will be a larger portion of women EV drivers in the future.



What age group are you in? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
Which of the following best describes you? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

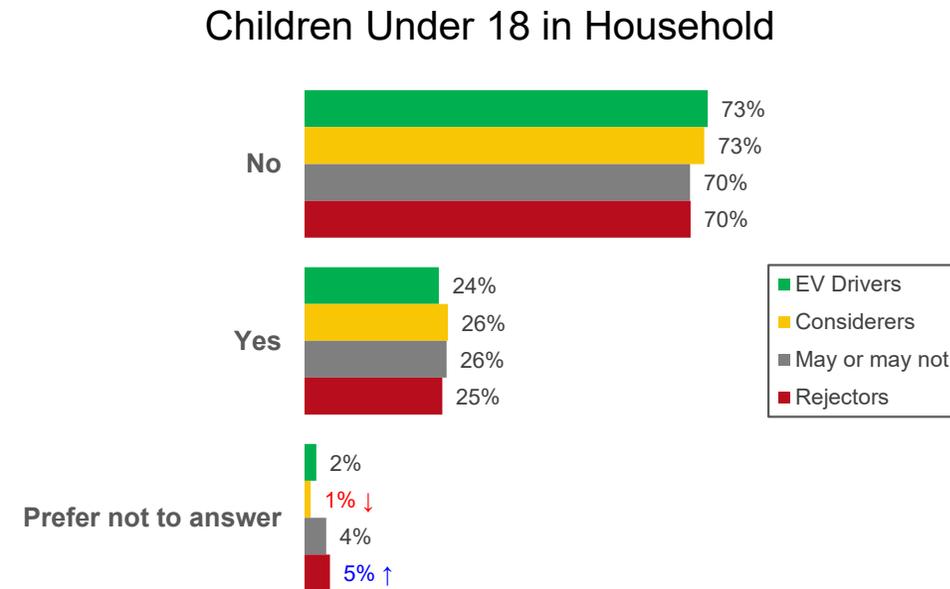
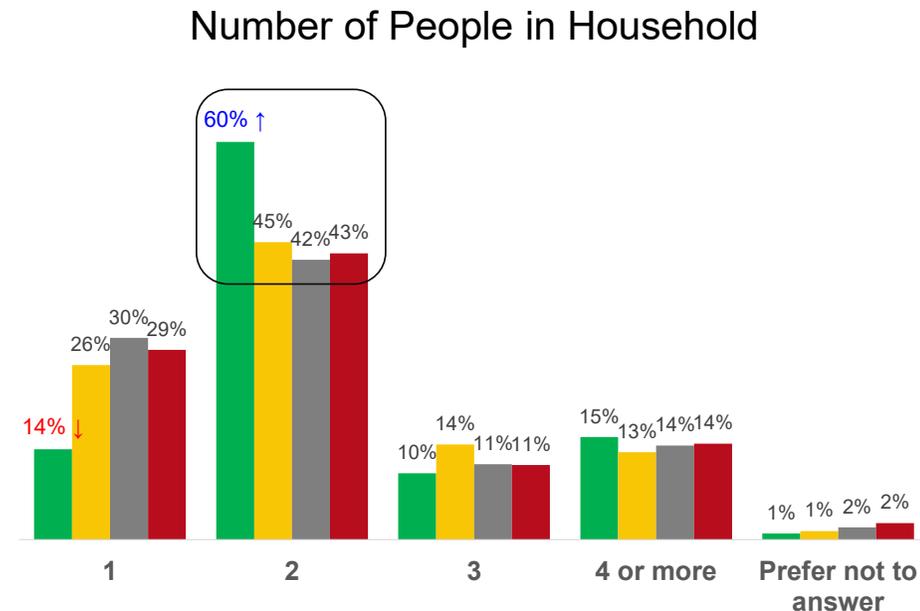
# The average annual income for EV considerers is lower than current EV drivers, but they are still more likely to have higher income (over \$75k).



What is your total annual household income before taxes? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
 Which of the following best describes your employment status? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

# While current EV drivers are more likely to have 2 people in their household, this is not reflective of potential future EV drivers.

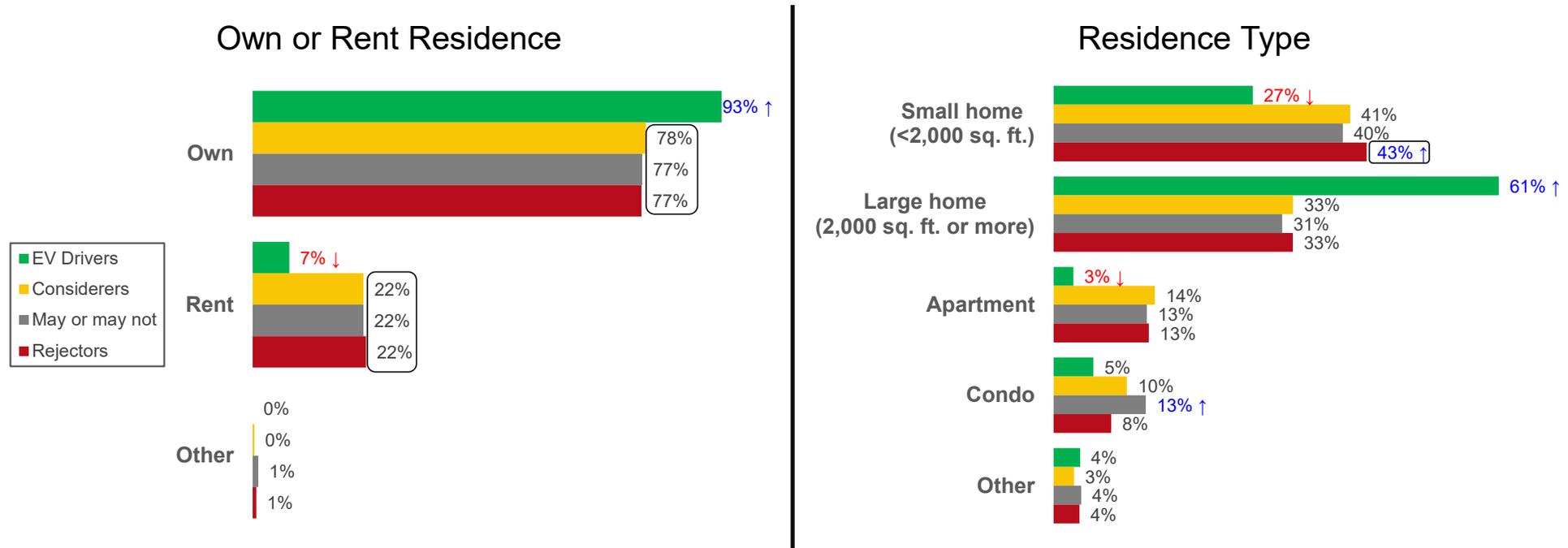
There is no statistical difference in EV consideration based on having children under the age of 18 in the household.



Including yourself, how many people currently live in your household? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
 Are there children under the age of 18 in your household? Base: EV Drivers (n=94); Considerers (n=621); May or May Not Consider (n=483); Rejectors (n=777)

# Among homeowners and renters there is not a significant difference in EV consideration.

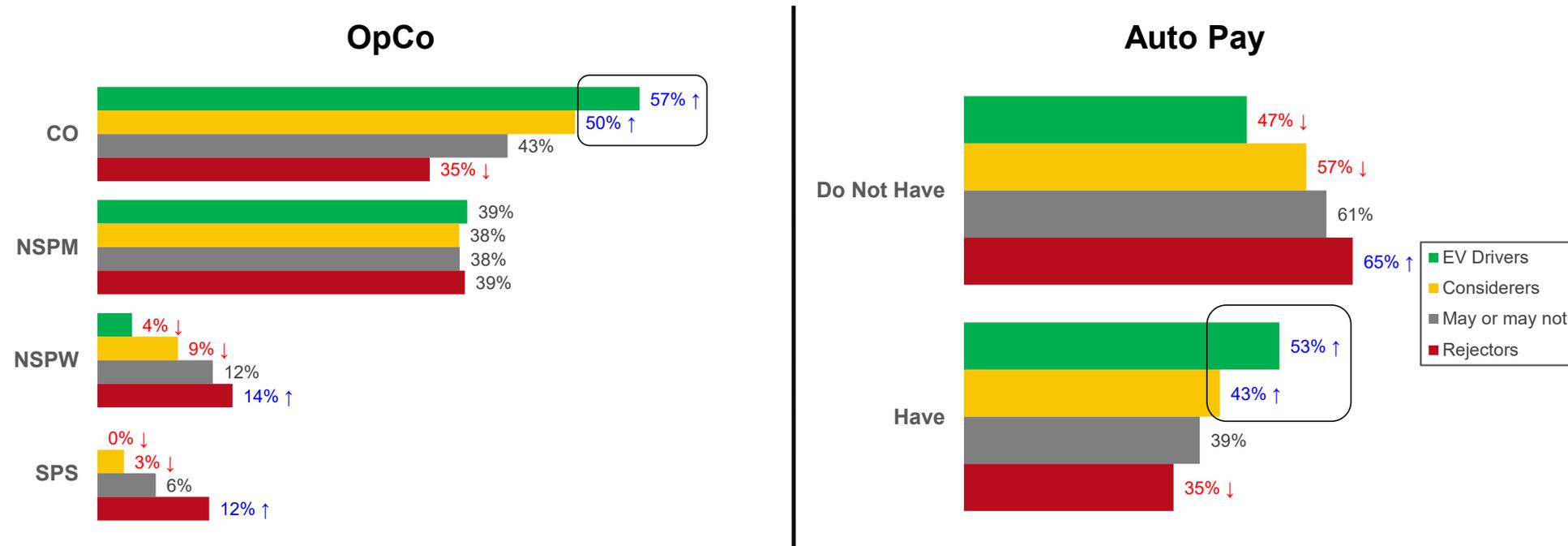
## EV rejectors are more likely to live in a small home.



Do you currently own or rent your place of residence Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
 Which of the following best describes your place of residence? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

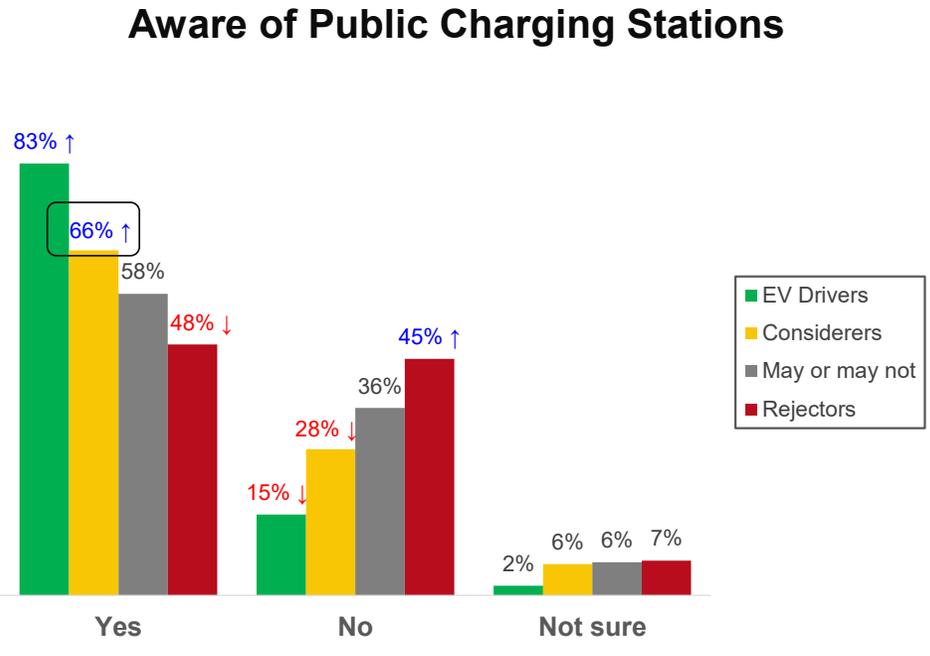
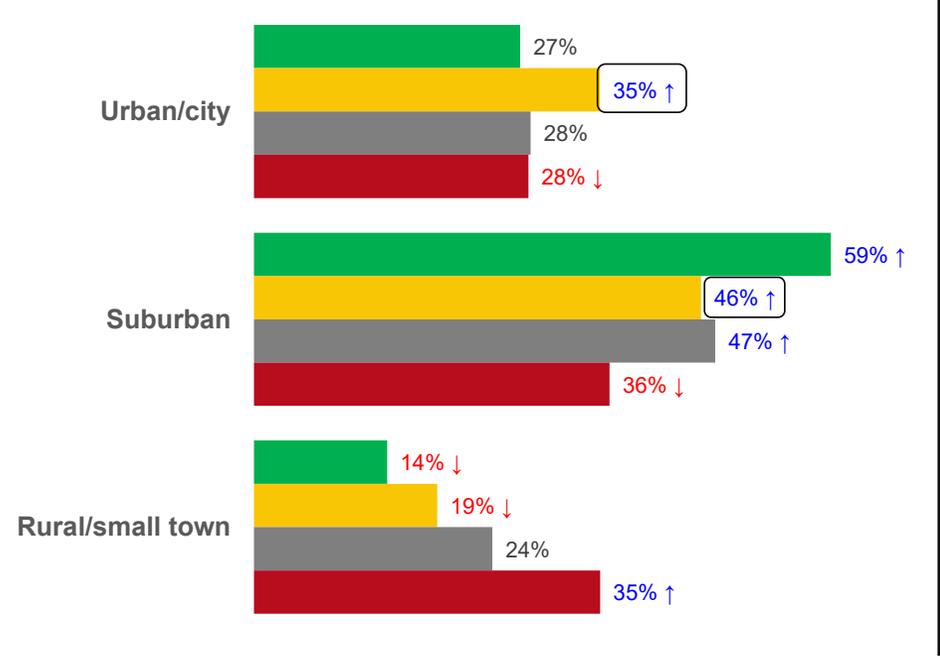
# Like current EV drivers, EV considerers are more likely to live in PSCo and have Auto Pay.

## EV resisters are more likely in NSPW & SPS.



Customer data: State & Auto Pay. Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

# EV considerers are more likely to live in urban and suburban areas and to be aware of public charging stations in their community.

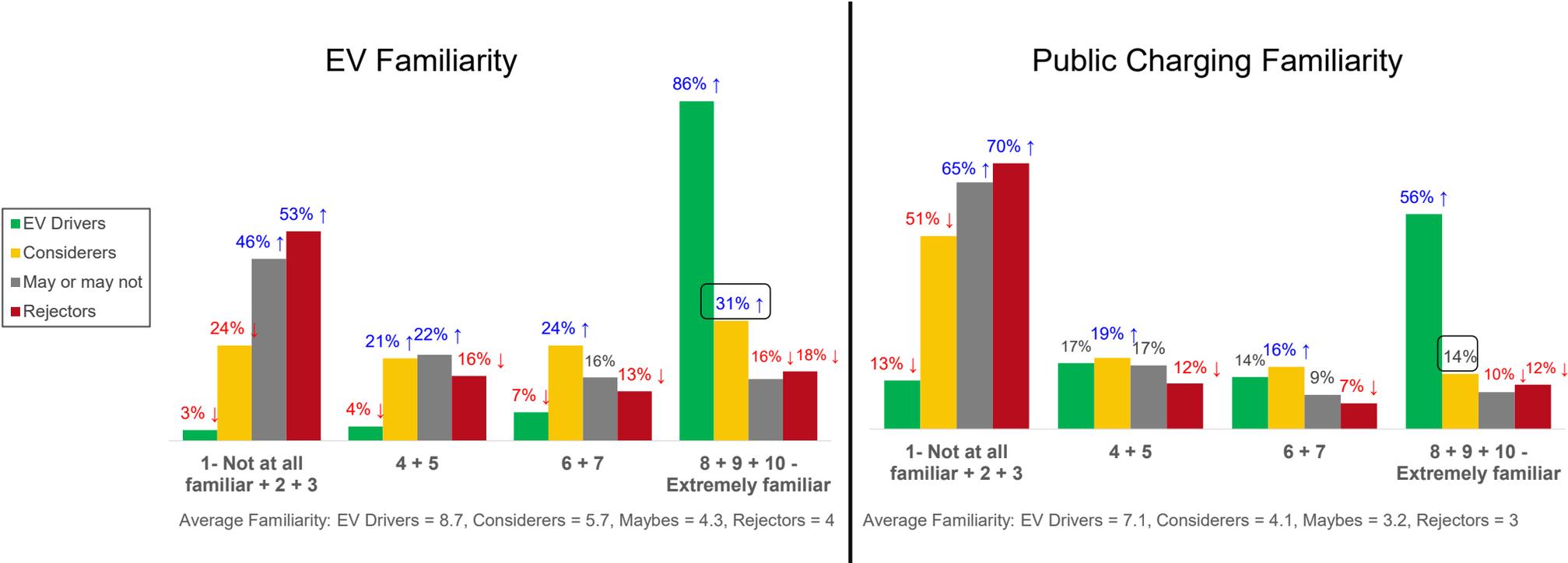


Which of the following best describes the area where you live? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
 Are you aware of, or have you seen, any EV public charging stations in your community? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

Blue = significantly higher Red = significantly lower at 95% confidence level

# About a third of EV considerers have high familiarity with EVs.

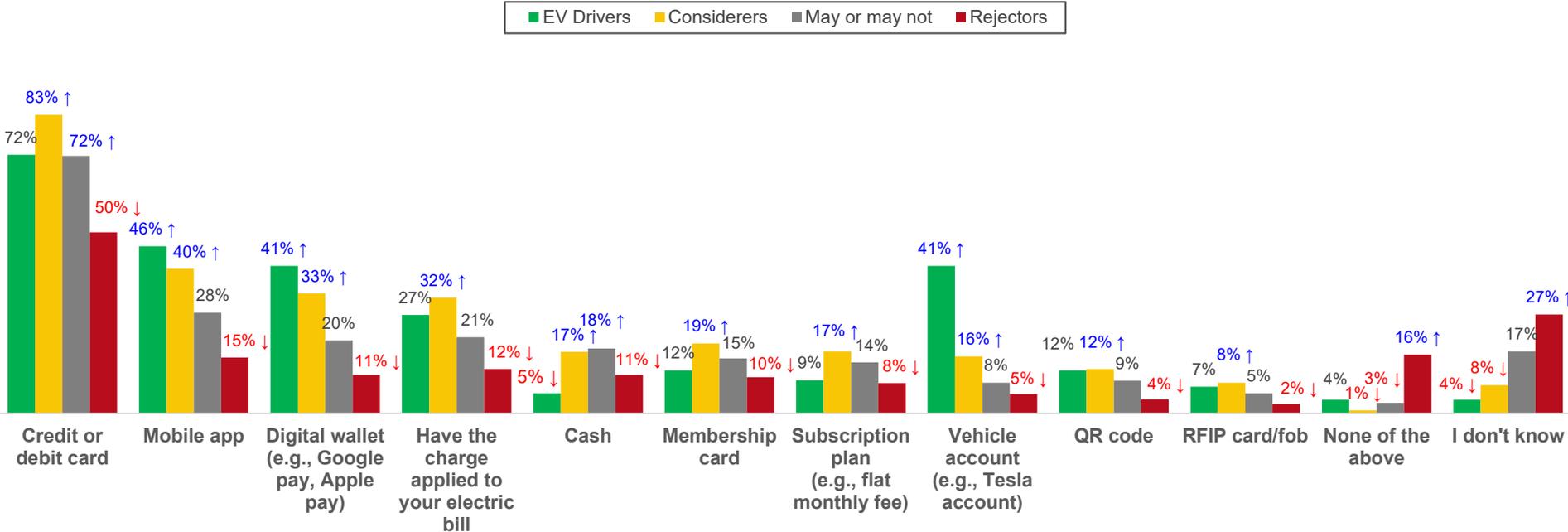
## However, there is less familiarity in general with public charging stations.



How familiar are you with electric vehicles (EVs)? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
How familiar are you with EV public charging stations? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

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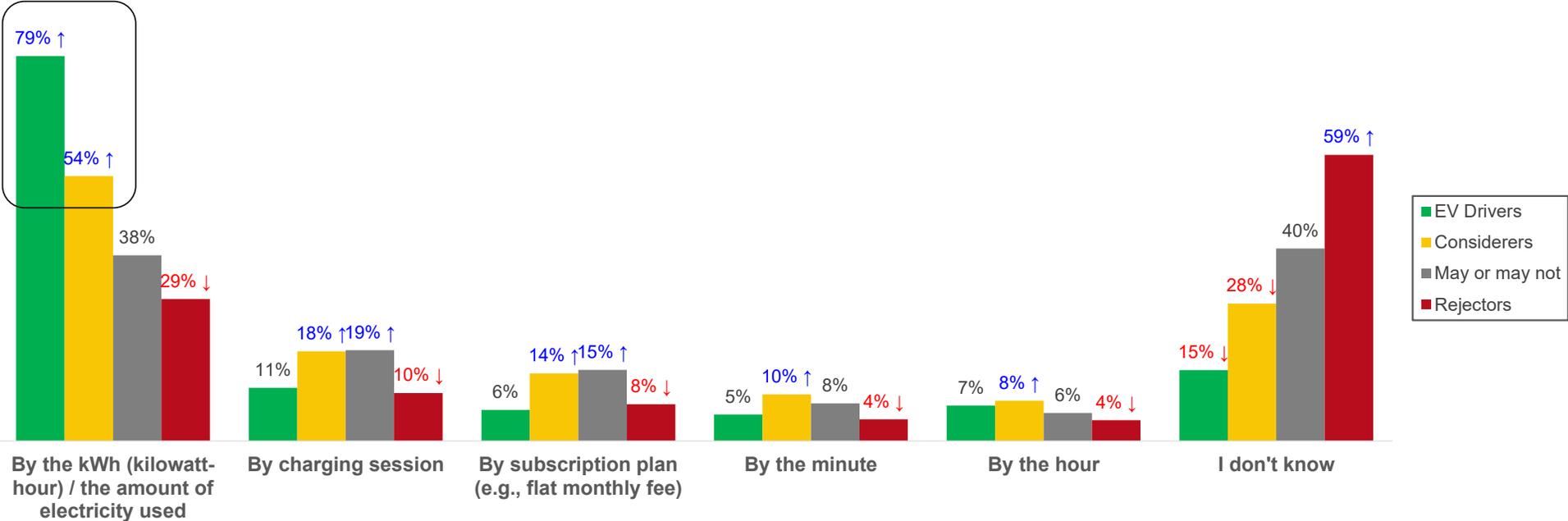
# Credit / debit card is the top preferred way that EV considerers want to pay at public charging stations followed by mobile app.



When using a paid EV public charging station, what way(s) would you like to pay? Please select all that apply. Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

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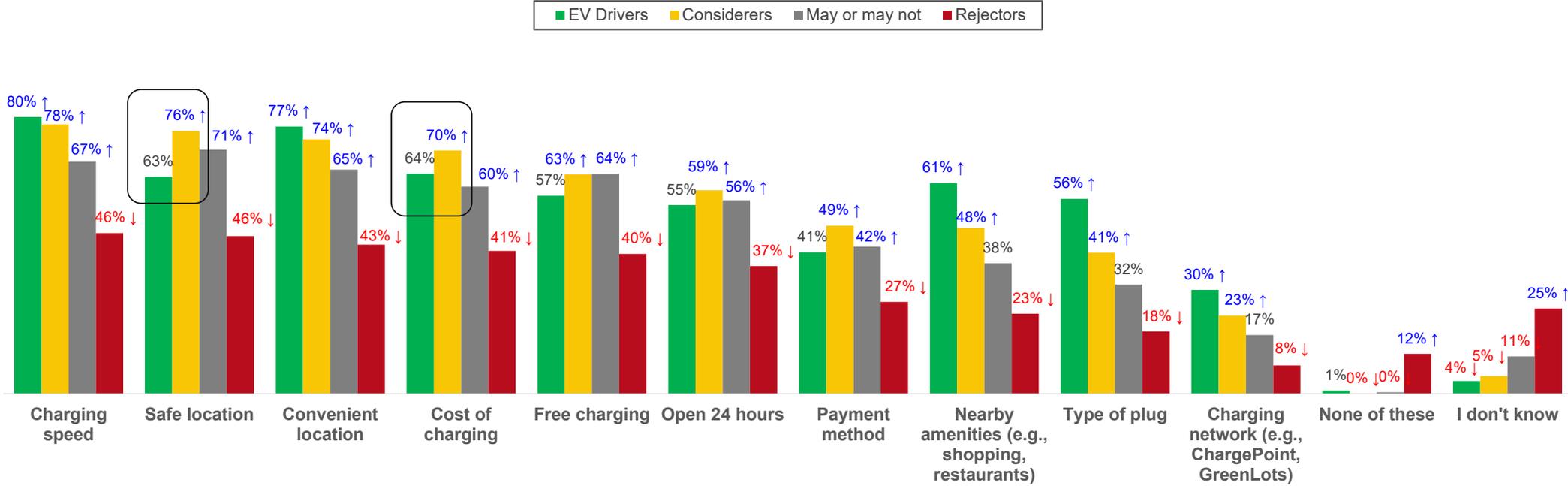
# Like EV drivers, EV considerers are more likely to want the price to be determined by kWh.



How would you like the price to be determined when using a paid EV public charging station? Please select all that apply. Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

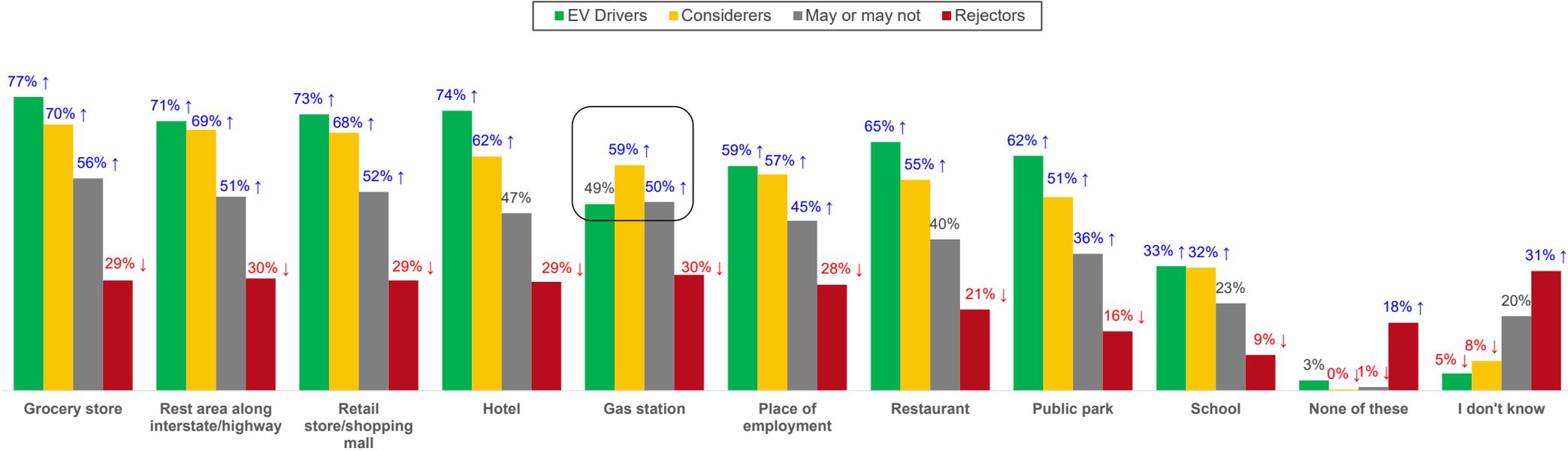
Blue = significantly higher Red = significantly lower at 95% confidence level

**Speed, safety, convenient location and cost are all important public charging features for people who would consider an EV. Notably, a safe location and cost may be more important to EV considerers than current EV drivers.**



What features would be important to you when choosing an EV public charging station to use? Please select all that apply. Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

**There is a higher willingness by EV considerers to use charging stations at different locations.**  
**People who would consider getting an EV indicate greater willingness to charge at a gas station compared to current EV drivers.**



Where would you be willing to use an EV public charging station? Please select all that apply. Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

Blue = significantly higher Red = significantly lower at 95% confidence level



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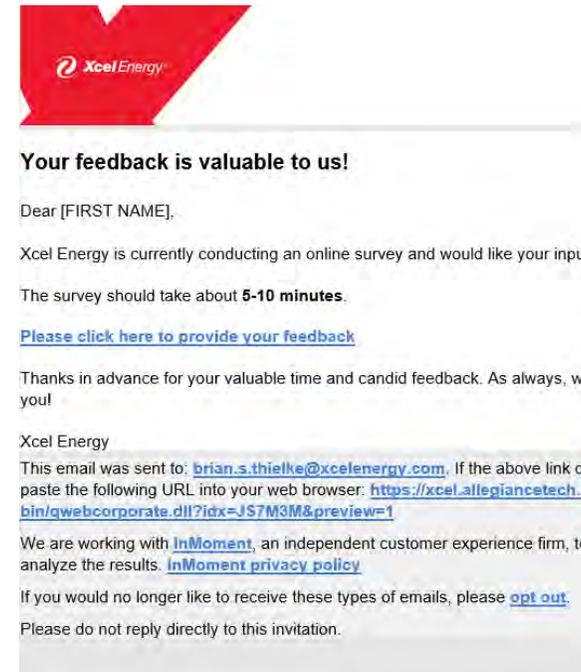


# APPENDIX



# Methodology

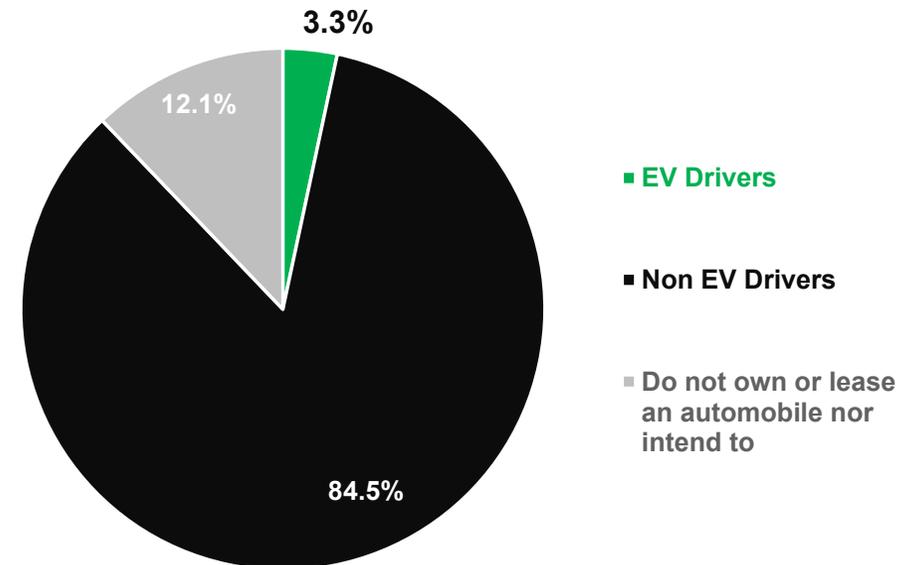
- Online survey
- Emails invitations & reminders sent to a random, representative sample of ~125,000 Xcel Energy residential customers
  - Have not participated in a survey in the last 12 months
- Conducted between **March 31<sup>st</sup> & April 10<sup>th</sup>, 2022**
- InMoment platform



## Respondents

### 3,293 completed surveys

- **2,894** own or lease automobile(s) or expect to in the next year
- **110** own or lease an EV
  - (3.3% of sample is comparable to national and state estimates for EV drivers)
- People who do not own or lease an automobile and do not intend to in the next year were discontinued from the survey

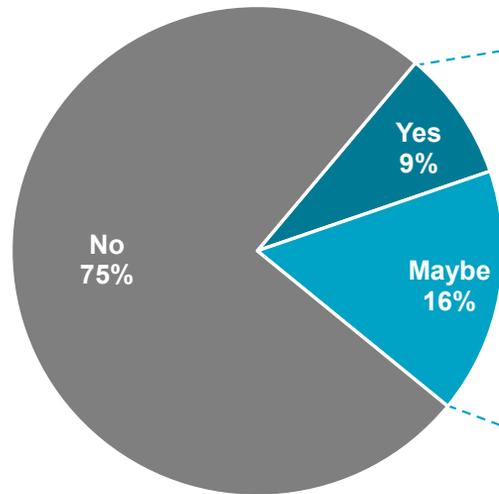


Do you currently own or lease an automobile (e.g., car, SUV, light truck)? (n= 3,293)  
Do you plan or expect to buy or lease an automobile in the next 12 months? (n=3,293)  
Which of the following types of automobiles do you own or lease? (n=2,866)

# Among those planning to buy or lease in the next year, the likelihood of getting an EV is lower than consideration.

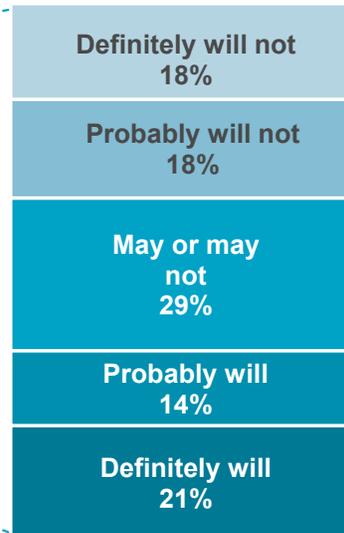
**9% of respondents indicate they plan to buy or lease an automobile in the next year while 16% said they might.**

Plan to buy or lease in the next year



**21% of people looking to buy/lease in the next year would definitely consider an EV.**

Consideration to get an EV  
(of those planning to buy or lease in next year)



**While only 6% of people looking to buy/lease in the next year are very likely to get an EV.**

Likelihood to get an EV  
(of those planning to buy or lease in next year)

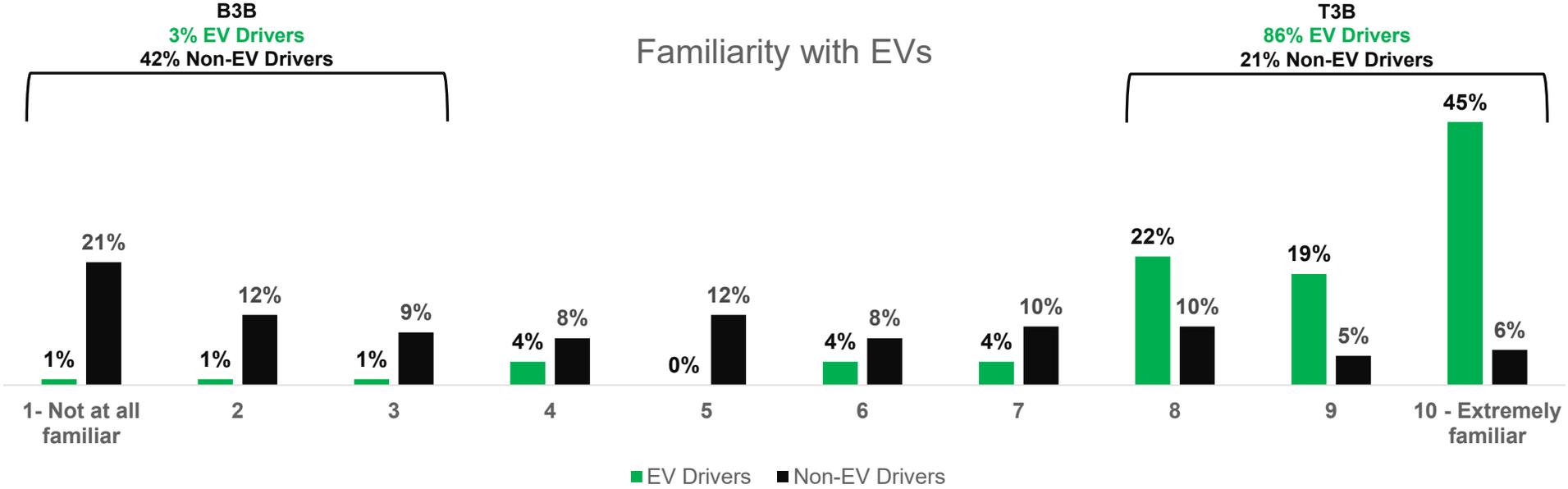


Do you plan or expect to buy or lease an automobile in the next 12 months? Base: (n=2,894)

The next time you are looking to buy or lease an automobile, would you consider getting an all-electric vehicle (EV)? Base: Yes/Maybe (n=817)

And how likely are you to buy or lease an all-electric vehicle (EV) in the next 12 months? Base: Yes/Maybe (n=817)

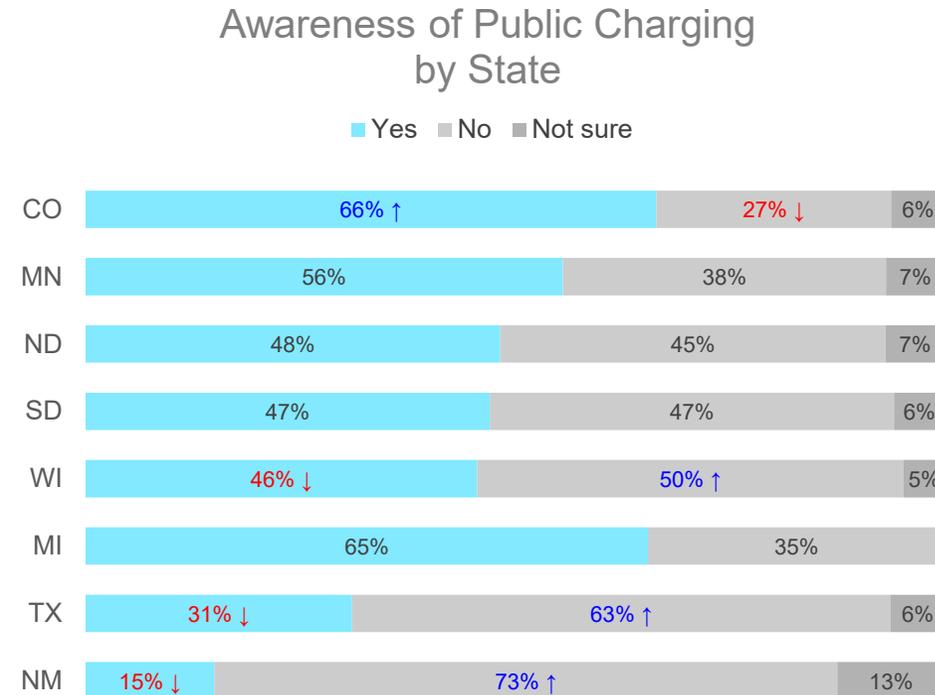
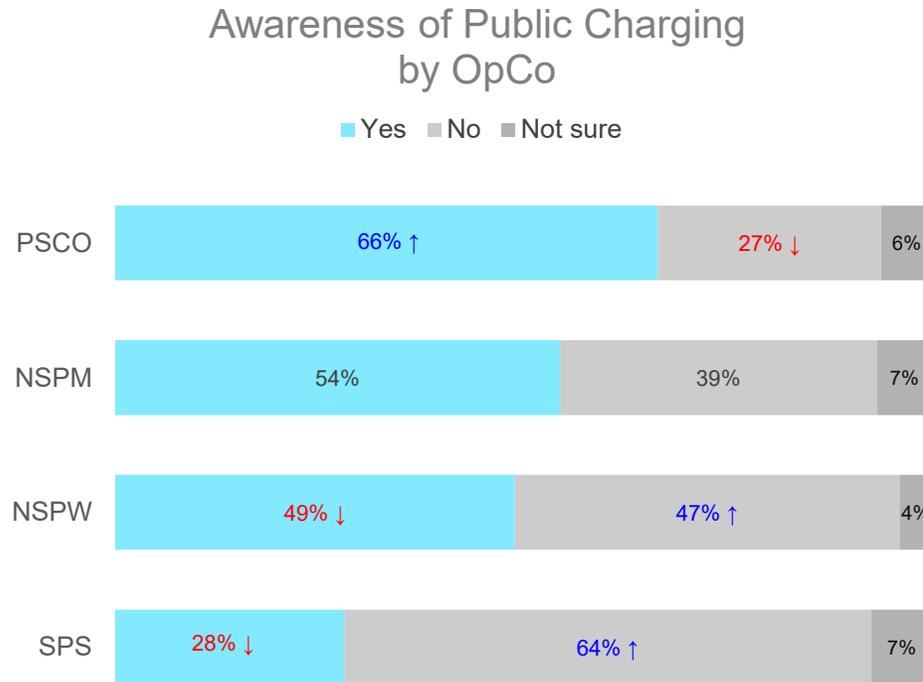
**Not surprisingly, EV ownership largely impacts high familiarity with EVs. Half of non-EV drivers indicate a familiarity score of 4 or less.**



**People with low familiarity (1-3) with EVs are more likely to be renters, apartment dwellers, urban or rurally-based, women, under the age of 24, drive <5,000 miles a year, have household income <\$75k and live in NSPW and SPS.**

Average Familiarity: EV Drivers = 8.7, Non-EV Drivers = 4.6  
 How familiar are you with EV public charging stations? 1-10 scale (Not at all familiar-Extremely familiar) Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

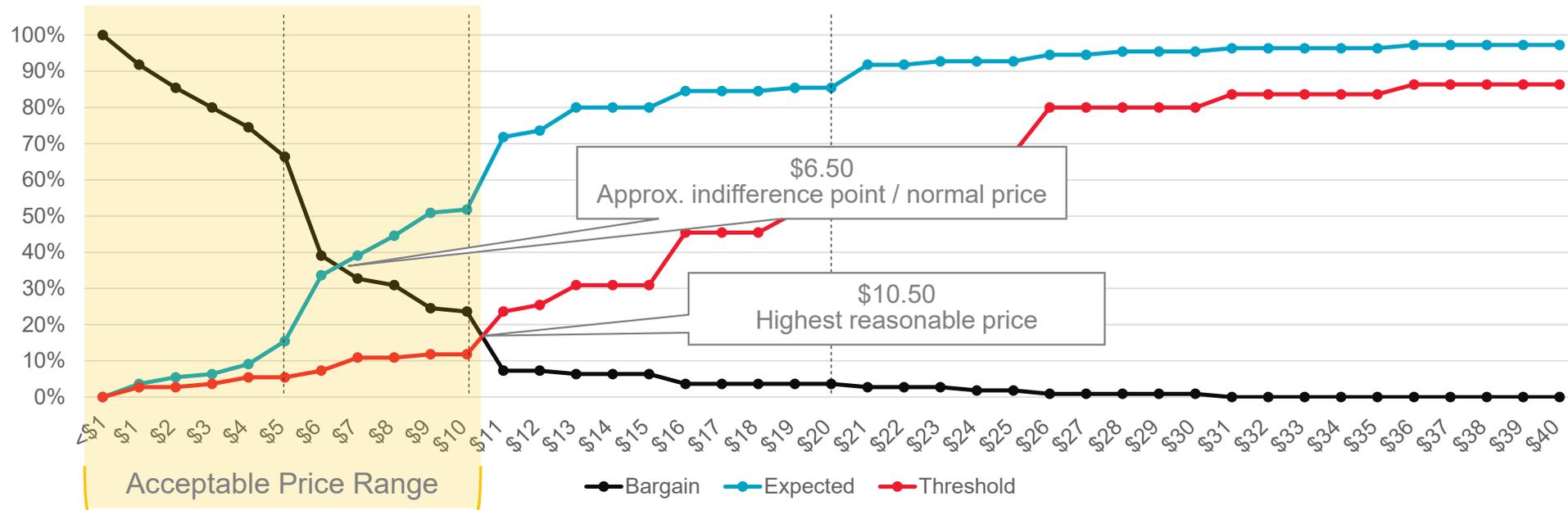
# Customers in Colorado are *more likely* to be aware of public charging stations while customers in Wisconsin, Texas and New Mexico are *less likely*.



Are you aware of, or have you seen, any EV public charging stations in your community? Base: EV Drivers (n=110); Non-EV Drivers (n=2,784)

# Approximated Van Westendorp Analysis

You are away from home, driving an all-electric vehicle (EV) and your battery is running low. You use an EV public charging station with a DC fast charger to “fill-up” your battery to about 80%.

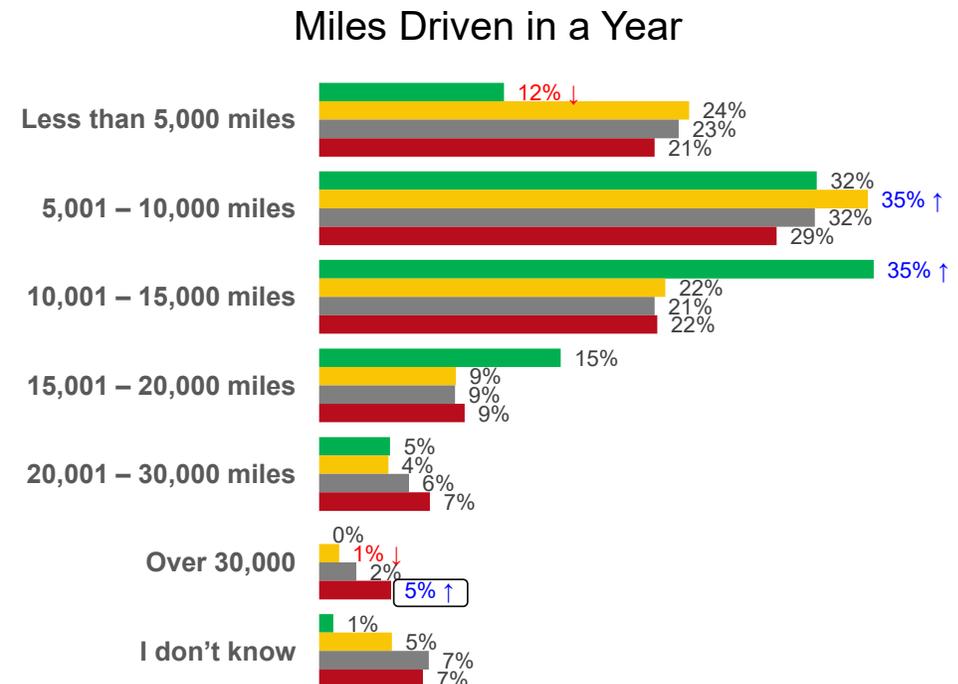
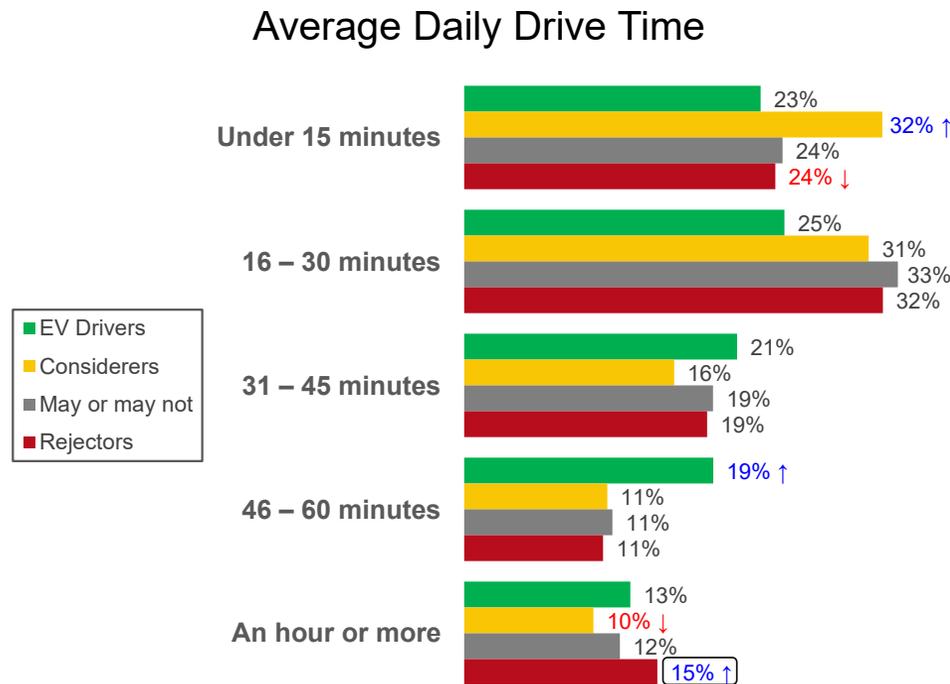


How much would you expect this “fill-up” to cost? Base: EV Drivers (n=86)  
 Even without being very sure, what is your best guess for how much it would cost to “fill-up” your battery to 80%? Base: EV Drivers (n=24)  
 At what price would you consider it to be so expensive that you would not “fill-up” your battery to 80%? Base: EV Drivers (n=110)  
 And at what price would you consider it to be a bargain, a great buy for the money, to “fill-up” your battery to 80%? Base: EV Drivers (n=110)

# People who would NOT consider getting an EV are more likely to drive greater amounts.

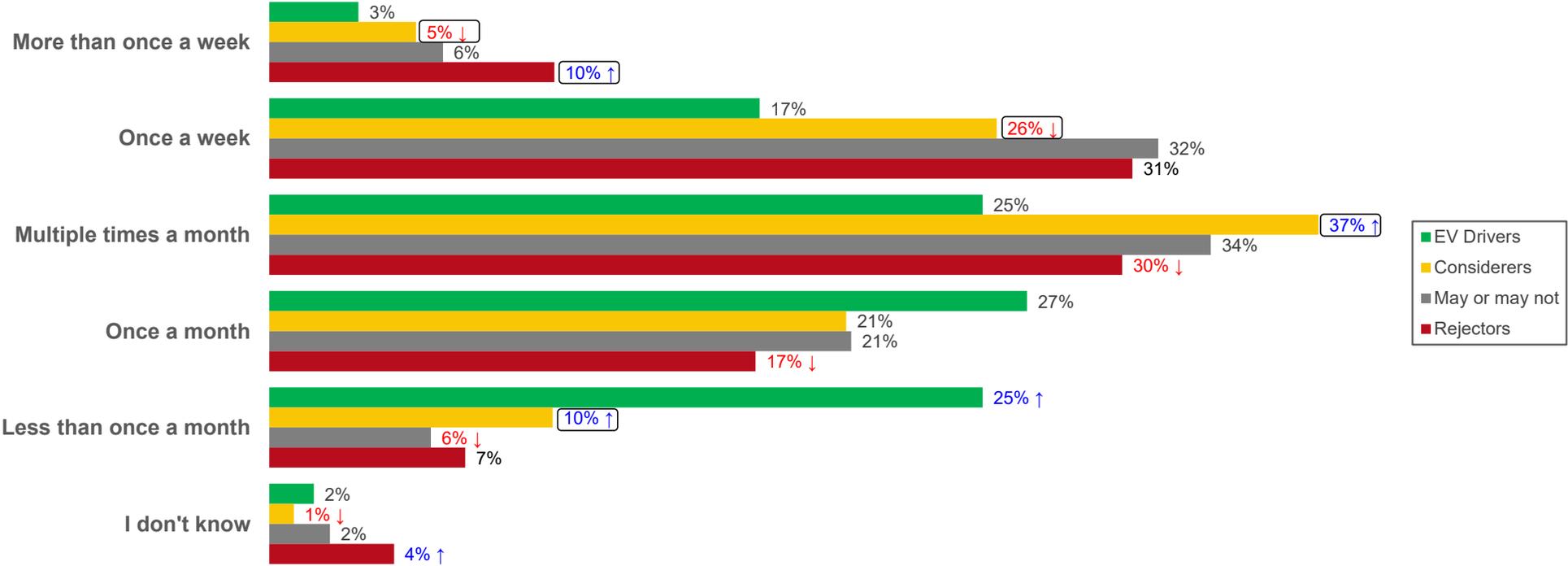
This includes people who drive more than an hour a day.

And those who drive over 30,000 miles a year.



On average, how much time do you spend driving each day? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)  
 Approximately how many miles do you drive in a year? Base: EV Drivers (n=110); Considerers (n=858); May or May Not Consider (n=713); Rejectors (n=1,128)

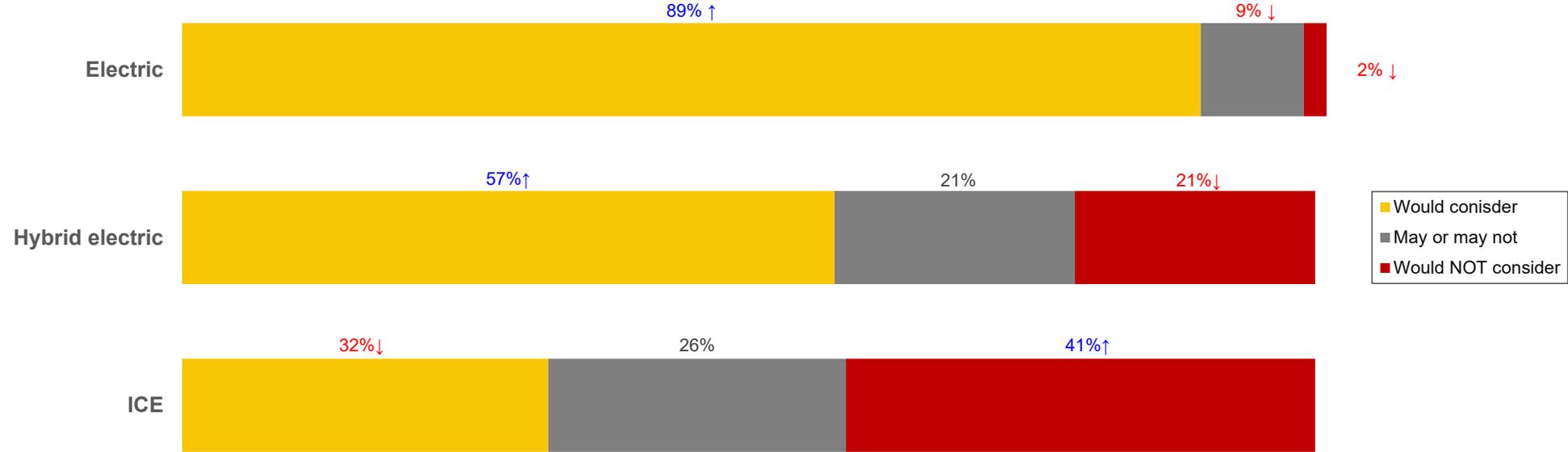
# EV rejectors are more likely to fill up their gas tank more frequently than EV considerers.



On average, how often do you go through a tank of gas? Base: EV Drivers (n=63); Considerers (n=803); May or May Not Consider (n=695); Rejectors (n=1,103)

# Current EV drivers have a high likelihood to continue driving EVs in the future.

**32% of ICE drivers would consider getting an EV while 89% of EV drivers would consider another EV as their next vehicle.**



The next time you are looking to buy or lease an automobile, would you consider getting an all-electric vehicle (EV)? Base: Electric (n=110); Hybrid electric (n=169); ICE (n=2,664)



## Battery Electric Vehicles and Low Carbon Fuel:

A Nationally Representative Multi-Mode Survey

### January/February 2022 Results

#### **Overview of Methodology**

Consumer Reports fielded a nationally representative multi-mode survey of Americans to gauge their perspectives and concerns regarding the transportation industry's impact on the environment and Americans' willingness to make environmentally-friendly transportation choices. The survey measured Americans' knowledge and experiences with electric-only vehicles, their likelihood of getting one, and their perceptions about barriers preventing and incentives that would encourage them to get a battery-only electric vehicle. The survey also assessed Americans' awareness about low carbon fuel usage in vehicles and aviation and their willingness to use low carbon fuels in their personal vehicle as well as choose flights that use low carbon fuels, when they become available. The results are based on interviews conducted from January 27, 2022 – February 18, 2022.

The survey was administered by NORC at the University of Chicago through its AmeriSpeak® Panel to a nationally representative sample of adult U.S. Interviews were conducted in English and in Spanish, and were administered both online and by phone. In total NORC collected 8,027 interviews, 7,795 by web mode and 232 by phone mode, 7,820 in English and 207 in Spanish. Final data are weighted by age, gender, race/Hispanic ethnicity, housing tenure, telephone status, education, and Census Division to be proportionally representative of the US adult population.

The margin of error for results based on the total sample is +/-1.59 percentage points at the 95% confidence level. Smaller subgroups will have larger error margins, and only those subgroups for which there are at least 100 unweighted cases are included.

## TOPLINE RESULTS

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The questions presented below were shown to respondents in this order unless otherwise noted. Where appropriate, question verbiage, response answer choices, or direction of scales were randomized or rotated and those instances are noted below.

Prepared by CR Survey Research Department, April 2022

[www.cr.org](http://www.cr.org)

Q1.

Do you currently have a valid driver's license or enhanced driver's license (an EDL allows entrance to Canada and Mexico by land or water?)	
	Total %
Yes	86
No	14
Base: All respondents	7,987

Q2.

How many vehicles, in total, does your household own or lease?	
	Total %
0	5
1	31
2	38
3	15
4	7
5 or more	4
Base: All respondents	8,022

Q3. [SHOW IF Q2 > 0. RESPONSES WERE SHOWN IN THE FOLLOWING ORDER: 'CAR/SEDAN', 'LARGE SUV', 'SMALL SUV', 'PICKUP TRUCK', 'VAN OR MINIVAN', 'SPORTS CAR', 'OTHER', AND 'I DON'T CURRENTLY OWN OR LEASE A VEHICLE.' 'I DON'T CURRENTLY OWN OR LEASE A VEHICLE' WAS EXCLUSIVE.]

What kind of vehicle(s) do you currently own or lease?	
	Total %
<b>Respondents selected ALL that apply.</b>	
Car/sedan	61
Small SUV or "crossover" with two rows of seats	38
Pickup truck	29
Large SUV with three rows of seats	17
Van or minivan	8
Sports car	6
Other, please specify	6
I don't currently own or lease a vehicle	1
Base: Respondents whose household owns or leases at least one vehicle	7,667

Q4. [RANDOMIZE RESPONSE OPTIONS, HOLDING 'NONE OF THESE ARE IMPORTANT TO ME' AT THE END. 'NONE OF THESE ARE IMPORTANT TO ME' WAS EXCLUSIVE.]

While we understand there are <u>many</u> factors to consider when buying or leasing a vehicle, for this question we are interested in understanding what social/emotional factors impact your vehicle purchasing decisions. After reading the list below, please tell us which, if any, would be <u>most</u> important to you if you were to buy or lease a vehicle today.	
	Total %
<b>Respondents selected UP TO THREE responses.</b>	
The vehicle's power and performance	57
Style/look of the vehicle	54
Reducing my impact on the environment (that is, my carbon footprint)	26
Emotion (how the car makes you feel when you drive)	21
Image (what the car says about you)	10
Being one of the first to adopt new/advanced technology	6
Social norms (desire to have a vehicle similar to friends, family, neighbors, co-workers, etc.)	4
None of these are important to me	17
Base: All respondents	8,027

Q33A/B. [THIS QUESTION WAS RANDOMLY ROTATED BETWEEN THIS POSITION ON THE SURVEY AND POSITION 33.]

How important or not important to you personally is the issue of climate change?	
	Total %
Very important	35
Somewhat important	35
Not too important	15
Not at all important	10
I don't know enough about it to decide	5
Base: All respondents	7,997

INFO1. [INTRO TEXT SHOWN TO RESPONDENTS.]

This next section is about battery electric vehicles (BEVs). This refers to vehicles like the Tesla and the Nissan Leaf that are electric ONLY and do not take gasoline or any fuel other than electricity.

Q5. [WORDING IN SUBSEQUENT QUESTIONS DEPENDED IN PART ON RESPONSES HERE. THIS WILL BE INDICATED IN SQUARE BRACKETS IN THOSE QUESTIONS. 'YES' WAS CODED AS '1', 'NO, BUT I HAVE IN THE PAST' WAS CODED '2'.]

Do you currently own or lease an <u>electric-only</u> vehicle?	
	%
Yes	2
No, but I have in the past	3
No, I have never owned or leased one	95
Base: All respondents	8,008

Q6. [RESPONDENTS WHO INITIALLY SKIPPED THIS QUESTION WERE PROMPTED TO ANSWER IT.]

Which statement below BEST describes your thoughts on buying or leasing [If Q5=1,2 "another"; ELSE "an"] <u>electric-only</u> vehicle if you were to buy or lease a vehicle today?	
	Total %
I would definitely buy or lease an electric-only vehicle.	14
I would seriously consider buying or leasing an electric-only vehicle.	22
I might consider getting an electric-only vehicle in the future, but not if I were to buy or lease a vehicle today.	35
I would not consider getting [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle.	28
Base: All respondents	8,014

INFO2. [INFO TEXT SHOWN TO RESPONDENTS.]

The experience of owning an electric-only vehicle is quite different than owning a gasoline-powered vehicle. Some differences include charging vs. fueling, the frequency of maintenance/repairs, costs involved with buying, owning, and maintaining the vehicle, etc. For this next question we would like to understand your level of familiarity with electric-only vehicles.

Q7. [SHOW Q7 AND INFO2 ON THE SAME SCREEN. ROTATE SCALE.]

How familiar would you say you are with the fundamentals of owning an <u>electric-only</u> vehicle?	
	Total %
Very familiar	9
Somewhat familiar	31
Not too familiar	31
Not at all familiar	29
Base: All respondents	8,013

INFO2A. [INFO TEXT SHOWN TO RESPONDENTS.]

As a reminder for this section of the survey, we are asking about electric-only vehicles that do not take gasoline or any fuel other than electricity.

Q8. [SHOW IF Q6 = 'I WOULD SERIOUSLY CONSIDER...'; 'I MIGHT CONSIDER...'; OR 'I WOULD NOT CONSIDER GETTING AN ELECTRIC-ONLY VEHICLE.' IF Q6 = 'I WOULD SERIOUSLY CONSIDER...', INCLUDE 'POTENTIALLY' IN THE QUESTION STEM '....WOULD 'POTENTIALLY' PREVENT YOU...'. RANDOMIZE RESPONSE OPTIONS, HOLDING 'OTHER'; 'NOTHING; I JUST DON'T FEEL LIKE I KNOW ENOUGH...'; 'NOTHING: I HAVE NO INTEREST...'. AT THE END IN THAT ORDER. 'NOTHING; I JUST DON'T FEEL LIKE I KNOW ENOUGH...'; AND 'NOTHING: I HAVE NO INTEREST...'. WERE EXCLUSIVE.]

Of the following attributes, which, if any, would prevent you from buying or leasing [If Q5=1,2 "another"; ELSE "an"] <u>electric-only</u> vehicle if you were to buy or lease a vehicle today?	
	Total %
<b>Respondents selected ALL that apply.</b>	
Charging logistics, such as where and when I'd be able to charge it	61
Number of miles the vehicle can go before it needs to be charged	55
Costs involved with buying, owning, and maintaining an electric-only vehicle	52
Not being able to fix the car myself or at my local mechanic	37
Concern about the performance of an electric-only vehicle in cold weather	30
I'd worry that it would not be as powerful as a gasoline-powered vehicle	18
They are not common where I live	15
Lack of models among electric-only vehicles currently on the market	15
I'm not sure where I'll be living in the next few years	10
I don't like the style/look of any of the models that are currently available	9
I'm afraid the technology would be hard to use	8
Other	4
Nothing; I just don't feel I know enough about electric-only vehicles to buy one	6
Nothing; I have no interest in getting [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle if I were to buy or lease a vehicle today.	12
Base: Respondents who said something <b>other than</b> they "definitely plan" to buy or lease an electric only vehicle if they were to buy or lease a vehicle today.	6,960

**Q8A.** [SHOW IF Q8 = 'COSTS INVOLVED WITH BUYING, OWNING, AND MAINTAINING AN ELECTRIC-ONLY VEHICLE.' IF Q6 = 'I WOULD SERIOUSLY CONSIDER...'; INCLUDE 'POTENTIALLY' IN THE QUESTION STEM '...WOULD 'POTENTIALLY' PREVENT YOU...'. RANDOMIZE RESPONSE OPTIONS, KEEPING 'CHARGING COSTS AT CHARGING STATIONS' AND 'INCREASE IN COST TO MY ELECTRIC BILL' TOGETHER, AND HOLDING 'OTHER COSTS' AT THE END.]

**You told us that cost-related factors would prevent you from buying or leasing [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle if you were to buy or lease a vehicle today. Specifically, which two of the following cost considerations would be most likely to hold you back?**

	Total %
<b>Respondents selected UP TO TWO responses.</b>	
Purchase price	58
Maintenance and repair costs	40
The cost to install a home charger	30
Battery replacement costs	29
Increase in cost to my electric bill	17
Charging costs at charging stations	15
Higher state registration fees for electric-only vehicles	3
Other costs	1
Base: Respondents who said cost-related factors would prevent them from buying or leasing an electric-only vehicle if they were to buy or lease a vehicle today.	3,872

**Q8B.** [SHOW IF Q8 = 'CHARGING LOGISTICS...' IF Q6 = 'I WOULD SERIOUSLY CONSIDER...'; INCLUDE 'POTENTIALLY' IN THE QUESTION STEM '...WOULD 'POTENTIALLY' PREVENT YOU...'. RANDOMIZE RESPONSE OPTIONS, HOLDING 'OTHER CHARGING CONSIDERATIONS' AT THE END.]

**You told us that things related to charging are preventing you from buying or leasing [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle if you were to buy or lease a vehicle today. Specifically, which two of the following charging considerations would be most likely to hold you back?**

	Total %
<b>Respondents selected UP TO TWO responses.</b>	
Not enough public charging stations	59
Nowhere to plug in my car to charge at home	44
Inconvenience of charging	42
Long charging times	37
Concern about my safety when I charge at public charging stations	8
Other charging considerations	2
Base: Respondents who said charging considerations would prevent them from buying or leasing an electric-only vehicle if they were to buy or lease a vehicle today.	4,459

Q9. [RANDOMIZE RESPONSE OPTIONS, HOLDING 'OTHER' AND 'NONE OF THESE WOULD ENCOURAGE ME...' AT THE END IN THAT ORDER. 'NONE OF THESE WOULD ENCOURAGE ME...' WAS EXCLUSIVE.]

**Below are attributes that an electric-only vehicle might have. Which, if any, of these would most encourage you to buy or lease [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle?**

	Total %
<b>Respondents selected UP TO THREE responses.</b>	
Costs less to charge than fueling a gasoline-powered vehicle	33
Lower overall costs over the lifetime of the vehicle compared to a gasoline-powered vehicle	31
Lower maintenance costs than gasoline-powered vehicles	28
Avoids using gasoline	27
No tailpipe emissions (exhaust fumes)	23
Similar purchase price to gasoline-powered vehicles in the same class	21
More reliable than gasoline-powered vehicles	16
Has all the latest technology	11
No engine noise	10
Better acceleration than gasoline-powered vehicles	8
Attractive styling or other aesthetic features	6
Other	1
None of these would encourage me to get [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle.	19
Base: All respondents	8,027

Q9A. [SHOW IF Q9 = 'AVOIDS USING GASOLINE.' RANDOMIZE RESPONSE OPTIONS, HOLDING 'OTHER' AT THE END.]

**Which, if any, of the following are reasons that avoiding using gasoline would encourage you to buy or lease [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle?**

	Total %
<b>Respondents selected ALL that apply.</b>	
I believe emissions from gasoline-powered vehicles pollute the environment	74
Gas is too expensive	70
I believe oil companies pollute land and contaminate water supplies	61
I don't like having to pump gas	23
Other	1
Base: Respondents who said that avoiding gasoline is a reason that would most encourage them to buy or lease an electric-only vehicle.	2,176

Q10. [RANDOMIZE RESPONSE OPTIONS, HOLDING 'OTHER' AND 'NONE OF THESE WOULD ENCOURAGE ME...' AT THE END IN THAT ORDER. 'NONE OF THESE WOULD ENCOURAGE ME...' WAS EXCLUSIVE.]

**Which, two, if any, of the following charging options would be most likely to encourage you to buy or lease a electric-only vehicle?**

	Total %
<b>Respondents selected UP TO TWO responses.</b>	
Free public charging stations	50
Ability to charge it where I live	47
Easy access to <u>fast-charging</u> public stations where I can fully recharge in 30 minutes or less	45
Access to workplace charging stations	10
Other	1
None of these would encourage me to get [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle.	18
Base: All respondents	8,027

Q11. [RANDOMIZE RESPONSE OPTIONS, KEEPING 'TAX REBATES/DISCOUNTS...' AND 'TAX CREDITS...' TOGETHER, AND HOLDING 'OTHER' AND 'I HAVE NOT HEARD OF ANY INCENTIVES...' AT THE END IN THAT ORDER. 'I HAVE NOT HEARD OF ANY INCENTIVES...' WAS EXCLUSIVE.]

The following incentives are currently available for <u>electric-only</u> vehicle owners. Which, if any, of the following have you heard about?	
	Total %
<b>Respondents selected ALL that apply.</b>	
Tax rebates/discounts <u>at the time</u> of purchase or lease	34
Tax credits applied <u>at a later time</u> (such as, when you file your income taxes)	28
Exemptions from vehicle emissions inspections	18
Discounts to install a home charger	18
Access to carpool lanes even when driving alone	15
Discounted charging rates	13
Other	0
I have not heard of any incentives available for electric-only vehicle owners	46
Base: All respondents	8,027

Q12. [RANDOMIZE RESPONSE OPTIONS, KEEPING 'TAX REBATES/DISCOUNTS...' AND 'TAX CREDITS...' TOGETHER, AND HOLDING 'OTHER' AND 'NONE OF THESE WOULD INFLUENCE MY DECISION...' AT THE END IN THAT ORDER. 'NONE OF THESE WOULD INFLUENCE MY DECISION...' WAS EXCLUSIVE.]

The following are incentives that are either already available for electric-only vehicle owners or are being considered by local or national government. Which, if any, do you believe would encourage you to buy or lease [If Q5=1,2 "another"; ELSE "an"] <u>electric-only</u> vehicle?	
	Total %
<b>Respondents selected ALL that apply.</b>	
Tax rebates/discounts <u>at the time</u> of purchase or lease	53
Discounts to install a home charger	49
Tax credits applied <u>at a later time</u> (such as, when you file your income taxes)	45
Discounted charging rates	41
Government incentives for used electric-only vehicles	41
Exemptions from vehicle emissions inspections	27
Access to carpool lanes even when driving alone	19
Other	1
None of these would influence my decision to get [If Q5=1,2 "another"; ELSE "an"] electric-only vehicle.	27
Base: All respondents	8,027

INFO3. [INFO TEXT SHOWN TO RESPONDENTS.]

As a reminder for this section of the survey, we are asking about electric-only vehicles that do not take gasoline or any fuel other than electricity.

Q13.

In the past month, have you seen an <u>electric-only</u> vehicle in your neighborhood?	
	Total %
Yes	44
No	41
Unsure	15
Base: All respondents	8,019

Q14.

Do you have a friend, relative, or co-worker who owns an <u>electric-only vehicle</u> ?	
	Total %
Yes	27
No	65
Unsure	8
Base: All respondents	7,968

Q15.

In the past 12 months, approximately how many times have you <u>been a passenger</u> in an <u>electric-only vehicle</u> ?	
	Total %
0 times	83
1 to 5 times	13
6 to 10 times	1
More than 10 times	2
Base: All respondents	8,017

Q16.

In the past 12 months, how many times have you <u>driven an electric-only vehicle</u> ?	
	Total %
0 times	93
1 to 5 times	4
6 to 10 times	1
More than 10 times	2
Base: All respondents	7,972

INFO4. [INTRO TEXT SHOWN TO RESPONDENTS.]

Alternative low carbon fuels are becoming more available in the US as an alternative to traditional petroleum-based fuels . The use of these fuels in vehicles can reduce the impact to the environment by at least 50% compared to traditional fuels.

For the purpose of this survey we are asking about "drop-in fuels." These are low carbon fuels that can be used with your current vehicle. While much is unknown at the moment, we'd like to understand your thoughts on using these low-carbon fuels in your personal gasoline-powered vehicle.

Q17. [SHOW Q17 AND INFO4 ON THE SAME SCREEN.]

Before taking this survey, had you heard about the use of low carbon fuels in vehicles?	
	Total %
Yes	25
No	60
Unsure	15
Base: All respondents	8,015

Q18. [RESPONDENTS ALSO SAW A 'NOT APPLICABLE' RESPONSE OPTION. THOSE WHO CHOSE IT WERE REMOVED FROM THE BASE DURING ANALYSIS AND ARE NOT SHOWN HERE.]

If the cost for a gallon of low carbon fuel (that is, fuels with lower carbon emissions compared to traditional fuel) was the same as the cost for a gallon of traditional fuel, how likely would you be to use low carbon fuel in your personal vehicle?	
	Total %
Very likely	34
Somewhat likely	33
Not too likely	8
Not at all likely	5
Unsure	20
Base: All respondents with the exception of those who said 'not applicable' which were removed from the base	7,850

Q20. [SHOW IF Q18 = 'NOT TOO OR NOT AT ALL LIKELY.' RANDOMIZE RESPONSES, HOLDING 'OTHER' AT THE END.]

You said you would be unlikely to use low carbon fuel instead of traditional gasoline (that is, petroleum-based fuel) in your personal vehicle. Which, if any, are the reasons why?	
	Total %
<b>Respondents selected ALL that apply.</b>	
Concern that low carbon fuels could negatively affect the performance of my vehicle	42
Concern that low carbon fuel could damage my vehicle	40
Concern that low carbon fuels would get fewer miles per gallon than traditional gasoline	32
I am happy with vehicles that use traditional fuel and wouldn't want to change	32
I'm not convinced that low carbon fuels would be better for the environment	29
Concern about the availability of the low carbon fuel	28
Wouldn't trust the reliability of a vehicle that runs on low carbon fuels	27
Concern that low carbon fuel would cost more	26
Concern about the safety of a vehicle that runs on low carbon fuels	22
I already reduce my carbon footprint in other ways	10
Other	2
Base: Respondents who said they would be unlikely to use low carbon fuel in their personal vehicle even if it was the same cost as traditional fuel.	1,104

INFO5. [INTRO TEXT SHOWN TO RESPONDENTS.]

Airlines are considering using more efficient fuel called sustainable aviation fuel (SAF). SAF is a renewable, low-carbon intensity substitute for conventional jet fuel. SAF is widely considered the best approach to rapidly reducing greenhouse gas emissions from commercial and business aviation. While this fuel is very new, we'd like to understand your thoughts on flying on airplanes that use these fuels.

Q21. [SHOW Q21 AND INFO5 ON THE SAME SCREEN.]

Before taking this survey, had you heard about the use of sustainable aviation fuel (SAF) in airplanes?	
	Total %
Yes	11
No	79
Unsure	10
Base: All respondents	8,005

Q22.

During a typical year, approximately how many times do you take a round trip flight for personal or business reasons?	
	Total %
0 - I never fly	44
1 to 2	39
3 to 4	10
5 to 6	4
7 to 8	1
9 to 10	0
More than 10	2
Base: All respondents	8,006

INFO6. [INFO TEXT SHOWN TO RESPONDENTS.]

For this next question, please answer based on what you know today. We understand that you may change your mind if more information were to come out.

Q23.

If you had a choice, how likely would you be to choose a flight on a plane that uses low carbon fuel if the <u>cost of a ticket was the same</u> as flying on a plane that uses traditional jet fuel?	
	Total %
Very likely	33
Somewhat likely	29
Not too likely	9
Not at all likely	8
Unsure	21
Base: All respondents	8,010

Q24. [SHOW IF Q23 = 'NOT TOO OR NOT AT ALL LIKELY.' RANDOMIZE RESPONSES, HOLDING 'OTHER' AT THE END.]

You said you would be unlikely to fly on a plane that uses low carbon fuel. Which, if any, are the reasons why?	
	Total %
<b>Respondents selected ALL that apply.</b>	
I am happy with my experience flying on planes that run on traditional jet fuel and wouldn't want to change	41
I wouldn't trust planes that fly on this new low carbon fuel will be as safe	40
I wouldn't trust the reliability of the service of planes that fly on low carbon fuel given the new technology	38
I don't believe in climate change	12
I already reduce my carbon footprint in other ways	9
Other	15
Base: Respondents who fly and said they would be unlikely to choose a flight on a plane that uses low carbon fuel even if it the cost of the ticket was the same as flying on a plane that uses traditional jet fuel.	649

INFO7. [INTRO TEXT SHOWN TO RESPONDENTS.]

Commercial truck manufacturers are increasing their electric-only truck fleets. Retailers and shipping companies have started using these electric-only vehicles.

Q25.

While many online retailers provide free shipping to their customers, would you be willing to forego free shipping, or pay more when shopping at retailers where free shipping is not an option, if a company uses an <u>electric-only</u> delivery truck?	
	Total %
Yes	17
No	45
Not applicable - I rarely use online retailers	10
Unsure	28
Base: All respondents	8,004

Q26.

In general, how much longer would you be willing to wait to receive a package to ensure it's shipped by an <u>electric-only</u> delivery truck?	
	Total %
I am not willing to wait longer	35
1 day	15
2 days	18
3 days	10
4 days	3
5 days	4
6 days	1
7 days or more	5
Not applicable	9
Base: All respondents	7,995

Q27. [SHOW IF Q25 = 'YES.']

For this next question, suppose you ordered a book online and the shipping costs would typically have been FREE, how much would you be willing to <u>pay to ship</u> your book order via an <u>electric-only</u> delivery truck?	
	Total %
Less than \$1	20
\$1 to \$1.99	27
\$2 to \$2.99	19
\$3 to \$3.99	11
\$4 to \$4.99	10
\$5 to \$5.99	6
\$6 to \$6.99	1
\$7 to \$7.99	1
\$8 to \$8.99	0
\$9 to \$9.99	2
\$10 or more	3
Base: Respondents who said they are willing to pay more for shipping if a company uses an electric-only delivery truck.	1,339

Q28.

<b>Thinking about the last six months, about how often have you used public transportation (specifically, a public bus, train, or subway) for getting around?</b>	
	<b>Total %</b>
Every day	1
2 to 6 times a week	3
Once a week	2
2 to 3 times a month	2
Once a month	3
Every other month	1
Every few months	7
Never	80
Base: All respondents	7,986

Q29. [SHOW IF Q28 = AT LEAST 'EVERY FEW MONTHS.' RANDOMIZE RESPONSES, HOLDING 'OTHER' AT THE END.]

<b>Which, if any, of the following are reasons you use public transportation?</b>	
	<b>Total %</b>
<b>Respondents selected ALL that apply.</b>	
I don't have to worry about traffic	39
It's more convenient for me	35
It's cheaper than driving myself	32
I get more exercise walking to and from the station, stop, or transit center	23
It's better for the environment	22
I don't have a car	19
It frees up my time to do other things	16
It's safer than driving	14
I don't have a driver's license	10
Other	12
Base: Respondents who have used a public bus, train, or subway in the past six months.	1,562

Q30. [SHOW IF Q28 > 'ONCE A WEEK.' RANDOMIZE RESPONSES, KEEPING TOGETHER 'SAFETY CONCERNS OTHER THAN HEALTH REASONS' AND 'I'M CONCERNED ABOUT EXPOSURE TO COVID AND OTHER ILLNESSES' AND HOLDING 'OTHER' AND 'NOTHING PREVENTS ME FROM USING IT MORE...' AT THE END IN THAT ORDER. 'NOTHING PREVENTS ME FROM USING IT MORE...' WAS EXCLUSIVE.]

<b>Which, if any, of the following prevents you from using public transportation more than you currently do?</b>	
	<b>Total %</b>
<b>Respondents selected ALL that apply.</b>	
It's not available in my area	33
My home and/or destination is too far from the station, stop, or transit center	26
I'm concerned about exposure to COVID and other illnesses	24
It takes too long	24
Transit doesn't run frequently enough	16
Safety concerns other than health reasons	14
Inadequate connecting services/transfers	14
It's too crowded	13
My work/school schedule doesn't work well with the public transit schedule	13
It's not well maintained/clean	10
It's unreliable	9
High costs	6
No parking at station, stop, or transit center	5
Other	10
Nothing prevents me from using it more; I already use it as much as I need or want	14
Base: Respondents who have used a public bus, train, or subway less than weekly in the past six months.	7,531

Q31. [RANDOMIZE RESPONSES, HOLDING 'OTHER' AND 'NOT APPLICABLE...' AT THE END IN THAT ORDER. 'NOT APPLICABLE...' WAS EXCLUSIVE.]

<b>Which, if any, of the following would encourage you to use public transportation more than you currently do?</b>	
	<b>Total %</b>
<b>Respondents selected ALL that apply.</b>	
Transit routes that made it easier to get to my destination	33
Increased frequency of services (such as more routes and increased frequency )	27
Easy access to public transit information (such as fees, maps, schedules)	19
Universal access programs (such as one app/card for all public transportation in my area)	15
Enhanced bike paths and walkways so that I could safely bike or walk directly to the station, stop, or transit center	13
Adding premium services (such as faster and a more comfortable ride option) for additional charge	10
Easy access to information that shows the environmental impact of using public transportation (bus, rail, or subway) compared to using my vehicle	8
Other	11
Not applicable; I already use it as much as I need/want	32
Base: All respondents	8,027

Q32. [RESPONDENTS ALSO SAW A 'NOT APPLICABLE' RESPONSE OPTION. THOSE WHO CHOSE IT WERE REMOVED FROM THE BASE DURING ANALYSIS AND ARE NOT SHOWN HERE.]

<b>Overall, how important or not important is impact on the environment when making the following transportation decisions?</b>	
	<b>Total %</b>
<b>Buying or leasing a vehicle</b>	
Very important	18
Somewhat important	43
Not too important	25
Not at all important	14
Base: All respondents with the exception of those who said "not applicable" which were removed from the base	7,403
<b>Deciding about how to get to and from a destination (such as walking, cycling, driving a car, rail, air travel, public bus, subway, etc.)</b>	
Very important	23
Somewhat important	35
Not too important	26
Not at all important	16
Base: All respondents with the exception of those who said "not applicable" which were removed from the base	7,314

NOTE: [Q33 RANDOMLY SHOWN HERE OR EARLIER IN THE SURVEY. SEE PAGE 3 FOR RESULTS..]

Q34. [ROTATE SCALE.]

In your day-to-day life (shopping, transportation, household behaviors, food choices, etc.), how much control do you believe you have over your personal impact on the environment?	
	Total %
A lot of control	14
Some	48
Very little	31
No control	7
Base: All respondents	7,982

[Q35, Q36, Q37 SHOWN IN RANDOM ORDER.]

Q35.

How concerned or not concerned are you about vehicle tailpipe emissions contributing to <u>climate change</u> ?	
	Total %
Very concerned	23
Somewhat concerned	37
Not too concerned	20
Not at all concerned	10
I don't know enough about it to decide	9
Base: All respondents	7,961

Q36.

How concerned or not concerned are you about vehicle tailpipe emissions contributing to <u>health conditions related to air quality</u> ?	
	Total %
Very concerned	24
Somewhat concerned	41
Not too concerned	19
Not at all concerned	8
I don't know enough about it to decide	8
Base: All respondents	7,950

Q37.

How concerned or not concerned are you about vehicle tailpipe emissions contributing to <u>smog, haze, and other types of air pollution</u> ?	
	Total %
Very concerned	25
Somewhat concerned	41
Not too concerned	18
Not at all concerned	8
I don't know enough about it to decide	8
Base: All respondents	7,949

Q38A.

How concerned or not concerned are you about airplanes that use conventional jet fuel contributing to climate change?	
	Total %
Very concerned	22
Somewhat concerned	36
Not too concerned	20
Not at all concerned	10
I don't know enough about it to decide	12
Base: All respondents	7,949

Q38.

How much do you agree or disagree with the following statement: <i>"Human activities contribute to climate change"</i>	
	Total %
Strongly agree	45
Somewhat agree	30
Somewhat disagree	10
Strongly disagree	7
I don't know enough about it to decide	9
Base: All respondents	7,982

Q40.

Which statement best describes your current employment status?	
	Total %
Working full-time	47
Working part-time	14
Not working	39
Base: All respondents	7,981

Q41. [SHOW IF Q40 = 'WORKING FULL-TIME' OR 'WORKING PART-TIME.']

How many days a week do you currently commute to work?	
	Total %
0	20
1	3
2	5
3	9
4	10
5	44
6	6
7	4
Base: Respondents who are working at least part-time	4,938

Q42. [SHOW IF Q41 = CURRENTLY COMMUTE TO WORK AT LEAST ONE DAY A WEEK.]

Approximately how long is your round trip commute to work?	
	Total %
Less than 5 miles	21
5 to 10 miles	22
11 to 15 miles	15
16 to 20 miles	11
21 to 30 miles	12
31 to 40 miles	7
41 to 50 miles	5
More than 50 miles	7
Base: Respondents who commute to work at least one day a week	3,944

Q43. [SHOW IF Q2 = HOUSEHOLD OWNS AT LEAST ONE VEHICLE. RESPONDENTS WERE INSTRUCTED TO 'PLEASE INCLUDE ALL OF THE DRIVING YOU DO DURING THE WEEK AND ON WEEKENDS (SUCH AS COMMUTING, ERRANDS, APPOINTMENTS, RECREATIONAL OUTINGS, ETC.)']

In a typical week (7 days), what is the total amount of time you spend driving?	
	Total %
Less than an hour	16
1 hour but less than 2 hours	18
2 hours but less than 3 hours	17
3 hours but less than 4 hours	12
4 hours but less than 5 hours	9
5 hours but less than 6 hours	6
6 hours but less than 7 hours	5
7 hours but less than 8 hours	4
8 hours but less than 9 hours	3
9 hours but less than 10 hours	2
10 hours or more	8
Base: Respondents whose household owns or leases at least one vehicle	7,635

Q44.

Which best describes the building where you live?	
	Total %
A one-family house detached from any other house	67
A one-family house attached to one or more houses	8
A building with 2 or more units	20
A mobile home or trailer	5
Boat, RV, van, etc.	0
Base: All respondents	7,975

Q45.

Do you own or rent your home?	
	Total %
Own	67
Rent	29
Other	5
Base: All respondents	8,000

Q46. [SHOW IF Q3 IS ANYTHING OTHER THAN 'I DON'T CURRENTLY OWN OR LEASE A VEHICLE.']

How would you BEST describe your current parking situation at home? Would you say you park in...	
	Total %
Private, off-street parking such as a garage or dedicated spot <u>with access</u> to an electric outlet	48
Private, off-street parking such as a garage or dedicated spot <u>without access</u> to an electric outlet	34
Private, off-street parking such as a garage or dedicated spot but you <u>do not know</u> if there is access to an electric outlet	7
Public or on-street parking	9
Other	3
Base: Respondents who own or lease a vehicle	7,556

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**PRI Electric School Bus Pilot - Compliance Matrix**

<p><b>a. Environmental justice, with a focus on communities disproportionately disadvantaged by traditional fossil fuel use</b></p>	<p>The pilot is designed to address the disparity of low-income and BIPOC students who are disproportionately impacted by diesel emissions and air pollution. Research shows that 70% of low-income versus 50% of non, low-income students take the bus and particulate matter exposure from on road sources is 75% higher for Latinos, 73% higher for Asian Americans, and 61% higher for African Americans than other students not in these categories. Finally, Native Americans are disproportionately impacted by air pollution and have childhood asthma rates 50% above the national average.</p>
<p><b>b. Low-income access and equitable access to vehicles and charging infrastructure, which can include all-electric public transit and EV ride-sharing options</b></p>	<p>The pilot is designed to give priority to bus operators and school districts that serve low-income communities, BIPOC communities, and rural communities.</p>
<p><b>c. Environmental benefits, including, but not limited to carbon and other emission reductions</b></p>	<p>The purpose of this pilot is to help our communities accelerate the transition of their diesel school buses to electric fuel and deliver a solution that is healthy, supports decarbonization, and is reliable and safe. Electric school bus penetration in school bus fleets has been slow for a variety of reasons. When combined with the Company’s other EV offerings, the Company’s efforts are promoting the environmental benefits associated with increasing adoption of EVs across many vehicle and charging segments.</p>
<p><b>d. Potential economic development and employment benefits in Minnesota</b></p>	<p>The pilot is not designed to address this issue. However, the pilot will deliver economic benefits as the Company will use local contractors to complete all the EV supply infrastructure and charging equipment installations.</p>

<p><b>e. Interoperability and open charging standards</b></p>	<p>The Company will work with electric school bus and vehicle-to-grid (V2G) charging equipment manufacturers to ensure compatibility with the operator-selected school bus makes and models. During this coordinated process, the Company will assess the equipment’s compliance with standards such as Open Charge Point Protocol and OpenADR.</p>
<p><b>f. Load management capabilities, including the use of demand response in charging equipment or vehicles</b></p>	<p>All electric school buses and charging equipment procured and deployed in this pilot will be V2G capable to facilitate load management demonstrations. Further, all participants on the pilot will be billed for usage based on time-of-use rates in accordance to the tariff and terms for the Fleet Pilot.</p>
<p><b>g. Energy and capacity requirements</b></p>	<p>Energy and capacity information for the pilot will be reported in our applicable annual reports. We expect the requirement of participants to take service on time varying rates along with the facilitation of V2G demonstrations will push the capacity requirement outside of the Company’s system peak.</p>
<p><b>h. Pilot expansion and/or transition to permanent status at greater scale</b></p>	<p>The Company is using the pilot to assess the effectiveness of offering a full-service option for deploying electric school buses and associated charging infrastructure. The learnings gathered in this pilot will be used to assess the viability of a future permanent electric school bus program.</p>
<p><b>i. Education and outreach</b></p>	<p>The Company will utilize its Commercial EV Advisory Services and its partnership with the school bus operator to conduct education and outreach activities to school districts, students, and families. Our outreach efforts will target these audiences and help make them more aware of the benefits of electric school buses and consumer EV options.</p>

<p><b>j. Market competitiveness/ ownership structures</b></p>	<p>The pilot is designed to work in partnership with school bus operator to effectively deploy electric school buses through their traditional full-service operating model that exists today. The school bus operator will be provided with options for school bus and charging equipment makes and models. The electric school bus segment is in a nascent stage of development and overall adoption, and the pilot will bring the available bus and charging equipment options to this segment. Details of the pilot design and ownership structure for school buses and charging infrastructure are shown in the Pilot Overview and Operations section of the petition (Section III Subsections B &amp; H).</p>
<p><b>k. Distribution system impacts</b></p>	<p>We do not expect this pilot to have a significant impact on the distribution system. However, the pilot will measure distribution and grid system needs and constraints and quantify the effects of V2G on the distribution system from electric school bus charging events.</p>
<p><b>l. Costs and benefits of the proposal</b></p>	<p>As this is a proposal for a pilot, a major part of the information we will gather is the cost of providing this type of service to a new charging segment. We do provide a high-level discussion of benefits we see within the pilot in the Cost-Benefits section of the petition (Section III Subsection D).</p>
<p><b>m. Customer data privacy and security</b></p>	<p>The Company has designed its proposal to meet legal and regulatory requirements concerning data privacy and security.</p>
<p><b>n. Evaluation metrics and reporting schedule</b></p>	<p>We propose a list of evaluation metrics in the Annual Reporting section of the petition (Section III Subsection I). We intend to file the information we gather in our Annual EV Report, filed each year on June 1.</p>

### Electric School Bus Pilot: Case Studies

We reviewed peer utility school bus programs to assess trends across the industry. Overall, electric school bus pilots and programs offered by utilities seek to address the commonly known barriers to this transportation segment, being upfront costs of the vehicle, charging infrastructure, complex transitional planning surrounding procurement and operations, and potential grid impacts. Most utility programs partner with school districts, bus operators and bus manufacturers, and most also incorporate V2G demonstrations in their programs. Three approved programs that are most sizeable and comparable to our proposed pilot project are summarized in the table below. We note that these programs do not feature utility ownership of buses.

<b>State</b>	North Carolina	Virginia	Nevada
<b>Utility</b>	Duke Energy	Dominion Energy	NV Energy
<b>Pilot/Program</b>	Electric School Bus Program	Electric School Bus Program	Electric School Bus Incentives
<b>Budget (millions)</b>	\$13.50	\$10.75	\$18.00
<b>Number of Buses</b>	60	50	50
<b>Program Offerings</b>	Program covers incremental costs over diesel alternative. EVSI make-ready and charger service program is available for additional support.	Offers rebates up to \$215,000 per electric school bus.	Program covers incremental costs over diesel alternative. EVSI make-ready and charger service program is available for additional support.
<b>Includes V2G Capabilities</b>	Yes	Yes	Yes

## **E-SCHOOL BUS LEASE AND PILOT PROGRAM AGREEMENT**

This **E-SCHOOL BUS LEASE AND PILOT PROGRAM AGREEMENT** (this “**Bus Lease and Pilot Program Agreement**”), dated as of \_\_\_\_\_ (the “Effective Date”), is entered into by between **Northern States Power Company, a Minnesota corporation doing business as Xcel Energy** (“**Xcel Energy**” or “**Xcel Energy**”), whose address is 414 Nicollet Mall, Minneapolis, Minnesota 55401 and \_\_\_\_\_ (“**Lessee**” or “**Operator**”), a \_\_\_\_\_ corporation, with a principal address of \_\_\_\_\_.

**WHEREAS**, under a pilot program approved by the Minnesota Public Utility Commission (the “Commission”), Xcel Energy will acquire and own a limited number of electric school buses (“E-School Buses”) and, as part of such Commission approved pilot program, Xcel Energy will lease the E-School Buses to school bus operators within Xcel Energy’s services territory who are licensed and permitted under applicable Minnesota laws, rules and regulations to provide transportation services to Minnesota public schools (“Pilot Program”);

**WHEREAS**, under the Bus Pilot Program, participating school bus operators will use the leased E-School Buses in their transportation operations with local public school districts and in exchange for the lease will work and collaborate with Xcel Energy to collect information and study electric bus grid benefits and vehicle-to-grid (V2G) capabilities;

**WHEREAS**, Lessee is an Xcel Energy nonresidential electric customer who is licensed to operate and maintain school buses and provide school bus transit services for public school districts located within Xcel Energy’s service territory;

**WHEREAS**, Lessee desires to participate in the Pilot Program by selecting and leasing E-School Buses from Xcel Energy and undertaking other Pilot Program activities, and Xcel Energy desires to procure, lease and otherwise have Lessee participate in the Pilot Program, subject to and in accordance with the terms and conditions of this Bus Lease and Pilot Program Agreement

**NOW THEREFORE**, in consideration of the mutual covenants and agreements hereinafter set forth, the parties hereto agree as follows:

1. **Lease.** Except as otherwise set forth herein, Xcel Energy hereby leases to Lessee and Lessee hereby leases from Xcel Energy the E-School Bus or E-School Buses described on the Lease Schedule (each a “**Leased Bus**” or collectively the “**Leased Buses**”) attached hereto and incorporated herein as Schedule A for the Lease Term. All attachments and accessories itemized in this Bus Lease and Pilot Program Agreement and all replacements, parts and repairs to the Leased Buses shall form part of the Leased Buses. Licensee shall pay all fees required for registration, licensing, testing and any inspection of the Leased Buses which are requested or required by applicable law, a government body or other governmental authority.

2. **Ownership.** Xcel Energy is the owner of the Leased Buses and Lessee has the right to use the Leased Buses under the terms of this Bus Lease and Pilot Program Agreement. Lessee and Xcel Energy intend and agree that this Bus Lease and Pilot Program Agreement constitutes a true “lease” that is a “finance lease” as such terms are defined in Article 2A of the UCC and does not create a “security interest” as defined in the UCC. Xcel Energy is and shall remain the owner of the Leased Buses (unless sold by Xcel Energy pursuant to this Bus Lease and Pilot Program

Agreement) and Lessee shall not acquire any right, title, equity, or interest in or to such Leased Buses other than the right to possess and use the Leased Buses in accordance with Lessee's leasehold interest under this Bus Lease and Pilot Program Agreement. If, notwithstanding the intention of the parties and the economic realities of this Lease, this Lease is deemed to create a security interest, Lessee shall be deemed to have granted to Xcel Energy as security for Lessee's obligations hereunder, a first priority security interest in the Leased Buses and all proceeds thereof and Lessee authorize Xcel Energy to file financing statement naming Lessee as debtor. If requested by Xcel Energy or if required by applicable law, Lessee shall at Lessee's sole cost and expense permanently affix and maintain on any or all Lease Buses or as many items as required, as determined by Xcel Energy or as required by applicable law, a sign, legend, plate, plaque, tag or other identifying label in a prominent place that discloses Xcel Energy's ownership or that such Leased Bus is leased from Xcel Energy under this Bus Lease and Pilot Program Agreement.

3. **Term.** The "Lease Term" of this Bus Lease and Pilot Program Agreement will begin on the Effective Date and, unless terminated earlier in accordance with the terms of this Bus Lease and Pilot Program Agreement, end ten (10) years from the date the Leased Buses are put into Commercial Operation by the lessee (the "Pilot Start Date"). "Commercial Operation" shall mean the Leased Buses have been received by Lessee and are operating on bus routes for a Minnesota public school. Lessee shall notify Xcel Energy in writing the date the Leased Buses are in Commercial Operation.

4. **Lease Pilot Program Obligations.** In lieu of making lease payments and in consideration for the lease of the Leased Buses, during the Lease Term, Lessee shall participate in Xcel Energy's Pilot Program and agrees to the following during the Lease Term:

a. Lessee shall be, and continue to be during the Lease Term, a licensed school bus operator within the Company's Minnesota service territory and will receive electric service from the Company at the location where the Leased Buses will charge.

b. Upon Xcel Energy's request, Lessee shall make the Leased Buses available to Xcel Energy for Xcel Energy to use for publicity, outreach, public events and marketing.

c. Lessee shall participate in Xcel Energy's Electric Vehicle Fleet Pilot Program ("EVSI Program") under which Lessee will agree to have Xcel Energy install, own and maintain Electric Vehicle Supply Infrastructure at a designated location ("Customer Location") and Lessee will agree to use such infrastructure to charge the Leased Buses and other electric buses or vehicles for a period of 10 years from the in-service date of that infrastructure. Lessee agrees to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions (the "EVSI Agreement"). This Bus Lease and Pilot Program Agreement is expressly contingent upon Lessee's participation in the EVSI Program, and this Bus Lease and Pilot Program Agreement shall be null and void and Xcel Energy shall have no obligation to purchase or lease any E-School Buses to Lessee unless and until Lessee executes the EVSI Agreement with Xcel Energy.

d. Under the EVSI Program and EVSI Agreement, Lessee will select and have Xcel Energy install bidirectional Charging Equipment, selected by Xcel Energy that will connect

to the EVSI at the Customer Location and be used to charge the Leased Buses. For the purposes of the EVSI Agreement, the bidirectional Charging Equipment will be provided as “Optional Charging Equipment” under the EVSI Agreement. Notwithstanding anything to the contrary set forth in the EVSI Agreement, Lessee shall not be required to pay, and Xcel Energy hereby waives, any “Bundled” monthly service charge set forth in Xcel Energy’s applicable tariffs for the use of such Optional Charging Equipment which are on file with the Commission. The bidirectional Charging Equipment and Leased Buses will be used by Lessee and Xcel Energy to facilitate vehicle-to-grid (V2G) demonstrations during the Lease Term.

e. Lessee agrees to charge the Leased Buses more than fifty percent (50%) of the time at the Customer Location using the Optional Charging Equipment and EVSI provided by Xcel Energy under the EVSI Agreement.

f. Prior to Xcel Energy purchasing the Leased Buses, Xcel Energy and Lessee will mutually agree upon the usage, charging and route schedules for the Leased Buses that Lessee will adhere to during the Lease Term to ensure the Leased Buses are in regular use, and to ensure Xcel Energy obtains the necessary data to assess the value and effectiveness of the Pilot Program. Xcel Energy and Lessee may agree to alter the agreed use, charging and route schedule as necessary to facilitate the Pilot Program. In the event the Leased Buses are not being used as agreed, Xcel Energy and Lessee will work in good faith to remedy the failure and if the failure to utilize the Leased Buses as agreed is not remedied, Lessee will be in default of its obligations under this Bus Lease and Pilot Program Agreement.

g. Xcel Energy will assess the effectiveness of the Pilot Program three (3) years after the Pilot Start Date, and Xcel will have the right to terminate the Pilot Program early in accordance with Section 10 below. In the event Xcel Energy terminates the Bus Pilot Program early, Xcel Energy will determine, in its sole discretion, how the Leased Buses will be used or disposed.

h. Lessee agrees to allow Xcel Energy to use the Leased Buses for vehicle-to-grid (V2G) applications. V2G applications consist of dis-charging the Leased Buses battery back to the electric grid via bi-directional charging equipment. Leased Bus batteries may be discharged for V2G applications down to a minimum agreed to state of charge during mutually agreed to times and number of instances over the calendar year as set forth in Schedule B attached hereto and incorporated herein by this reference. Company and Lessee agree that use of the vehicle for V2G applications should not interfere with the Leased Buses primary purpose of transportation and therefore bus batteries will be recharged to State of Charge set forth in Schedule B for such operating purposes. In the event Xcel Energy discharges the batteries on each Leased Bus for V2G purposes, Xcel Energy will reimburse Lessee for the electricity consumed to re-charge the batteries back to the agreed state of charge of the batteries prior to the V2G event.

i. Lessee shall cooperate with Xcel Energy and its contractors to collect and provide Xcel Energy Pilot Program data, as may be specified by Xcel Energy from time to time

during the Lease Term. This data may include, but is not limited to, Leased Bus utilization, charging and safety information. When requested by Xcel Energy, Lessee will provide Xcel Energy with accurate and complete information to permit Xcel Energy to assess the effectiveness of the Pilot Program and report findings internally and externally, including to the Commission. Additionally, Customer consents to and permits Xcel Energy and its contractor(s), including any applicable Charging Equipment, manufacturers, vendors, and subcontractors, who provided services in connection with installing and maintaining the EV Supply Infrastructure and Optional Charging Equipment, as applicable, to have remote access in order to access to the Optional Charging Equipment to collect, and share data from the Optional Charging Equipment with respect to charging activity, vehicle usage, and technical performance (collectively the information and data provided by Licensee and the data collected from the Optional Charging Equipment shall be referred to herein as the "Data"). Xcel Energy shall not be prohibited or restricted from disclosure or use of any Data, information, or documents it receives from Customer, nor is Xcel Energy prohibited or restricted from disclosing documents or information Customer provides pursuant to this Bus Lease and Pilot Program Agreement. Xcel Energy shall not be prohibited or restricted from disclosure or use of any Data, information, or documents it receives from Customer, nor is Xcel Energy prohibited or restricted from disclosing Data in connection with any legal or regulatory proceeding.

5. **Leased Buses Maintenance, Operation and Use.** Lessee covenants and agrees: (a) EXCEPT FOR THOSE PILOT PROGRAM PURPOSES SET FORTH IN SECTION 4 ABOVE, TO USE THE LEASED BUSES ONLY TO PROVIDE TRANSPORTATION SERVICES TO MINNESOTA PUBLIC SCHOOLS AND NOT FOR OTHER COMMERCIAL OR PERSONAL PURPOSES; (b) to use the Leased Buses to support the Pilot Program, as set forth in Section 4 above; (c) at its sole cost and expense, to maintain the Leased Buses in good operating order, repair and condition and shall perform maintenance on the Leased Buses and other components of the Leased Buses at least as frequently as set forth in any applicable operator's guide, service manual and/or maintenance guide for the Leased Buses; (c) to use, operate, maintain or store the Leased Buses properly, carefully, safely or in accordance with: (i) all applicable laws or regulations of any governmental authority; (ii) all instructions, warranty provisions, operating manuals prepared or released by the manufacturer of the Leased Buses; (iii) all requirements of insurance maintained hereunder; and (iv) all permits; (d) to not (i) permit the Leased Buses to be used for any purpose other than as set forth in this Bus Lease and Pilot Program Agreement; (ii) abandon the Leased Buses; (iii) permit any Leased Buses to be removed from the State where the Leased Buses were originally delivered without the prior written consent of Xcel Energy; (iv) create, incur or allow to exist any lien on any of its rights hereunder or to the Leased Buses; (v) install or use any accessory or device on the Leased Buses which may damage or otherwise negatively affect the value, manufacturer warranty coverage, useful life or the originally intended function or use of the Leased Buses in any way (vi) permit the Leased Buses to be operated by persons other than persons who are properly licensed, well-trained, competent and have sufficient experience and training to operate the Leased Buses satisfactorily and correctly; (e) the ordinary maintenance and repairs performed by Lessee pursuant to any provisions of this Bus Lease and Pilot Program Agreement will not change the purpose or character of the Leased Buses; (f) to keep accurate records of (i) maintenance performed on the Leased Buses (ii) all inventory and supplies used in connection with the operation of the Leased Buses, and (iii) the operations of the Leased Buses; and (g) Lessee

shall be the sole operator of the Leased Buses and Xcel Energy shall not have any obligation or responsibility to operate the Leased Buses.

6. **Additional Obligations.** Lessee shall allow Xcel Energy and its agent(s) to: (a) inspect the Leased Buses and all of Lessee's records related to its use, maintenance and repair at any reasonable time; (b) affix and maintain, in a prominent place on the Leased Buses, any labels, plates or other markings Xcel Energy may provide to Lessee. At Xcel Energy's request, Lessee shall promptly execute or cause to be executed and delivered to Xcel Energy any and all documents, instruments and agreements reasonably deemed necessary by Xcel Energy to give effect to or carry out the terms or intent of this Bus Lease and Pilot Program Agreement.

7. **Loss or Damage.** Until the Leased Buses are returned to Xcel Energy in satisfactory condition, Lessee is responsible for, and shall bear, all risk of loss, damage, theft, destruction or seizure of the Leased Buses (an "**Event of Loss**"). Lessee must promptly notify Xcel Energy of any Event of Loss, other than Reasonable Wear (as defined below). If the Leased Buses can be repaired or replaced, Lessee agrees to promptly repair or replace the Leased Buses, at Lessee's cost, and the terms of this Bus Lease and Pilot Program Agreement will continue to apply, and in the event of a replacement, the replacement bus shall be a Leased Bus. If the Leased Bus cannot be repaired or replaced, Lessee agrees to pay Xcel Energy, within 10 days of the Event of Loss, its Termination Value as of the day before such Event of Loss occurred. Upon receipt of the Termination Value, Xcel Energy will transfer to Lessee (or the insurance company) all of Xcel Energy's rights, title and interest in such Leased Buses (each an "Item") AS-IS, WHEREIS, WITHOUT ANY WARRANTY AS TO CONDITION OR VALUE. All insurance proceeds must be paid directly to Xcel Energy, and Xcel Energy may apply any excess insurance proceeds to any other amounts Lessee owes Xcel Energy or any of Xcel Energy's affiliates. "Termination Value" for any Item shall be the net book value calculated of the Item as reasonably determined by Xcel Energy.

8. **Indemnity.** Lessee is responsible for all losses, damage, claims, demands, suits, legal proceedings, injuries to or the death of an individual, and attorneys' fees and costs ("Claims"), incurred or asserted by any person, in any manner arising out of or related to the Leased Buses, this Bus Lease and Pilot Program Agreement, the manufacture, use, operation, condition or possession, or maintenance of the Leased Buses. Lessee agrees to defend and indemnify Xcel Energy, its affiliates and their officers, directors, employees and agents (the "Indemnified Parties"), and hold the Indemnified Parties harmless, against all Claims, although Xcel Energy reserve the right to control the defense and to select or approve defense counsel. Lessee will promptly notify Xcel Energy of all Claims made. Lessee's liability under this Section is not limited to the amounts of insurance required under this Bus Lease and Pilot Program Agreement. This indemnity continues beyond the termination or expiration of this Bus Lease and Pilot Program Agreement for acts or omissions which occurred during the Lease Term.

9. **Termination.**

a. This Bus Lease and Pilot Program Agreement shall terminate upon the earlier of (a) the end of the Lease Term; (b) by Xcel Energy, within its sole discretion, at any time after or before three (3) years following the Bus Pilot Start Date; (c) the date required by any applicable law or Commission ruling or order; or (e) the date upon which Xcel Energy terminates the Bus Lease and Pilot Program Agreement pursuant to a Default Event. No termination (whether by default or the passage of time) shall affect or impair the rights, powers or privileges of Xcel Energy or the liabilities of Lessee relating to (i) any transaction or event occurring prior to the effective date of such termination or (ii) any of the undertakings, agreements, covenants, indemnifications, representations or warranties of Lessee contained in the Bus Lease and Pilot Program Agreement. All such undertakings, agreements, covenants, indemnities, representations, and warranties of Lessee shall survive such termination and Xcel Energy shall retain all of its rights and remedies under the Bus Lease and Pilot Program Agreement.

b. Provided Lessee is not in default under the terms of this Bus Lease and Pilot Program Agreement, Lessee may terminate this Bus Lease and Pilot Program Agreement at any time by providing written notice to Xcel Energy at least sixty (60) days prior to the effective date of the termination. In the event Lessee terminates this Bus Lease and Pilot Program Agreement under this Section 9(b), the following shall apply:

- i. If the termination occurs prior to the Bus Pilot Start Date or any other date which is three (3) years or less from the Bus Pilot Start Date, Lessee shall pay Xcel Energy an amount equal to the total amounts Xcel Energy paid for the Leased Buses, including but not limited to the purchase price and all taxes and fees, as well as all amounts Xcel Energy paid for the bi-directional Optional Charging Equipment.
- ii. If the termination occurs after a date which is more than three (3) years from the Bus Pilot Start Date, Lessee shall pay Xcel Energy an amount equal to the residual value of the Leased Buses and bidirectional Optional Charging Equipment, based on the total amounts paid for the Leased Buses and bi-directional Optional Charging Equipment, including the purchase price and all taxes and other fees, depreciated on a ten (10) year straight line basis from the Bus Pilot Start Date.
- iii. All amounts due under Section 9(b)(i) or 9(b)(ii) shall be paid by Lessee within thirty (30) calendar days after the effective date of the termination. Upon Xcel Energy's receipt of all required amounts, Xcel Energy will transfer to Lessee all of Xcel Energy's right, title and interest in such Leased Buses and bi-directional Optional Charging Equipment AS-IS, WHERE-IS, WITHOUT ANY WARRANTY AS TO CONDITION OR VALUE.

10. **Purchase Option.** In the event Lessee desires to purchase one or more of the Leased Buses or the bi-directional Charging Equipment at the end of the Lease Term and Lessee is not in default, without any additional payment by Lessee, Xcel Energy will transfer to Lessee all of Xcel Energy's

right, title and interest in such Leased Buses AS-IS, WHERE-IS, WITHOUT ANY WARRANTY AS TO CONDITION OR VALUE.

11. **Return of Leased Buses.** If this Bus Lease and Pilot Program Agreement is terminated for any reason and Lessee does not (a) return the Leased Buses to Xcel Energy, (b) pay Xcel Energy the required amounts under Section 9(b)(i) or Section 9(b)(ii) or, (c) exercise the Purchase Option under Section 10, Lessee agrees to remit to Xcel Energy, until such time as the Leased Buses are returned to Xcel Energy in accordance with the provisions of this Section, lease payments each month equal to the monthly fair market rental value of the Leased Buses, as determined by Xcel Energy is its sole discretion. Except as provided by Section 9 or Section 10, upon termination or expiration of the Lease Term, all Leased Buses must be returned to Xcel Energy at the location in Minnesota specified by Xcel Energy, at Lessee's expense and in satisfactory condition, along with all use, maintenance and repair records. Leased Buses are in satisfactory condition if it is in as good a condition as when the Leased Buses were delivered to Lessee, Reasonable Wear excepted. Reasonable Wear shall mean: (i) the results of normal use of the Leased Buses as originally intended assuming use and maintenance in accordance with the manufacturer's recommendations and the complete absence of any casualty, misuse, abuse, abandonment, improper care, accident, negligence or similar occurrence with respect to the Leased Buses, whether or not the Leased Buses are in use at the time of said occurrence; and (ii) use that does not, in any way, impair the function of the Leased Buses or prevent the Leased Buses from promptly being placed into use. Upon any return of the Leased Buses, Xcel Energy shall, in Xcel Energy's sole discretion, determine the existence of any wear and tear which is not Reasonable Wear ("Excessive Wear"). In the event any of the Leased Buses is returned to us with Excessive Wear, Lessee shall, at Xcel Energy's sole discretion, accept an invoice from Xcel Energy and remit to Xcel Energy the cost of repairing or replacing the affected component(s) of the Leased Buses which Xcel Energy determines necessary to return the Leased Buses to its required condition. Lessee's failure to remit the required payment to Xcel Energy within 10 days of demand shall constitute a default by Lessee under the terms of this Bus Lease and Pilot Program Agreement.

12. **Warranty Disclaimer; No Representations.** XCEL ENERGY DOES NOT MAKE ANY, AND HEREBY DISCLAIMS, EACH AND EVERY, WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, AS TO: (A) THE MERCHANTABILITY OR FITNESS OF THE LEASED BUSES OR ANY OTHER PART OF THE LEASED BUSES FOR ANY PARTICULAR PURPOSE; (B) THE QUALITY, THE CAPACITY OF THE LEASED BUSES OR THE WORKMANSHIP OF THE LEASED BUSES OR THE ABILITY OF THE LEASED BUSES, OR ANY PORTION THEREOF TO SATISFY THE REQUIREMENTS OF ANY LAW, RULE, SPECIFICATIONS OR CONTRACT THAT MAY BE APPLICABLE THERETO OR AS TO TITLE TO THE LEASED BUSES OR ANY COMPONENT OR ITEM THEREOF; AND (C) THE LEGAL, TAX OR ACCOUNTING TREATMENT OF THE TRANSACTIONS CONTEMPLATED HEREBY. IT IS AGREED THAT ALL SUCH RISKS, AS BETWEEN XCEL ENERGY, ON THE ONE HAND, AND LESSEE, ON THE OTHER HAND, ARE TO BE BORNE BY LESSEE AT ITS SOLE RISK AND EXPENSE.

13. **Leased Bus Selection; Additional Waivers**

(a) Xcel Energy shall have no responsibility or liability to Lessee or any other person with respect to any of the following, regardless of any active or passive negligence of Xcel Energy: (i) any liability, loss or damage caused or alleged to be caused directly or indirectly by any part of the Leased Buses or by any inadequacy thereof or caused or alleged to be caused directly or indirectly by any part of the Leased Buses or by any inadequacy thereof or deficiency or defect therein or by any other circumstance in connection therewith; (ii) the transportation, ownership, possession, use, construction, operation, performance, maintenance, storage, repair, reconstruction or return of any part of the Leased Buses or any risks relating thereto; (iii) any interruption of service, loss of business or anticipated profits or consequential damages.

(b) Lessee further acknowledges and agrees that (i) it has selected the Leased Buses and each and every part thereof and has not relied on any representation or warranty by Xcel Energy in connection with such selection; (ii) Xcel Energy is not the manufacturer of the Leased Buses or any component of the Leased Buses; (iii) the Leased Buses and all other components of the Leased Buses are, and will be upon execution by Lessee, of a size, design and make selected by Lessee, suitable for Lessee's purposes, containing all safety features deemed necessary by Lessee, (iv) Xcel Energy is not an agent of the supplier, manufacturer or dealer of any part of the Leased Buses or any services in connection therewith or any party representing or acting on behalf of any of the foregoing and no such parties are agents of Xcel Energy or otherwise authorized to bind Xcel Energy to any representation, warranty or agreement; and (v) **Xcel Energy disclaims, and Lessee hereby waives, any right to seek or recover from Xcel Energy any punitive, consequential or incidental damages which might be alleged to arise from a breach of this Bus Lease and Pilot Program Agreement, any assignment of this Bus Lease and Pilot Program Agreement, the delivery or use of the Leased Buses or any other claim which might be made by Lessee or its assigns against Xcel Energy.**

14. **Representations, Warranties and Covenants.**

(a) Lessee represents and warrants to Xcel Energy, as of the Effective Date, and covenants the following to Xcel Energy so long as the Bus Lease and Pilot Program Agreement is in effect that: (a) each document Lessee signs and delivers to Xcel Energy is duly authorized, executed and delivered by Lessee, and is Lessee's valid, legal and binding agreement, enforceable in accordance with its terms; (b) execution, delivery and performance by Lessee of this Bus Lease and Pilot Program Agreement does not and will not (i) violate any applicable law; or (ii) breach any order of court or other governmental agency, or of any undertaking Lessee is a party to or by which Lessee or any of Lessee's properties are bound; (c) Lessee will comply with all applicable laws, ordinances and regulations; (d) all information Lessee has given to Xcel Energy is true, accurate and complete; and (e) Lessee has all requisite power and authority, corporate or otherwise, and is duly authorized, licensed, permitted and empowered to: (i) enter into, execute, deliver and perform all of its obligations under this Bus Lease and Pilot Program Agreement; (ii)

conduct its business as presently conducted; and (iii) own and operate its property and to operate the Leased Buses in accordance with applicable laws.

(b) Lessee also represents and warrants to Xcel Energy that: (a) Lessee is and will remain duly organized, validly existing and in good standing under the laws of Lessee's jurisdiction of organization; (b) Lessee is qualified to do business under the laws of all other jurisdictions where qualification is required or advisable; (c) Lessee will not change its jurisdiction of organization or organization type; (d) the execution, delivery and performance by Lessee of this Bus Lease and Pilot Program Agreement will not breach any provision of Lessee's organizational documents; (e) Lessee, in the conduct of all of its business affairs, has complied and will continue to comply in all material respects with the requirements of all applicable laws and regulations, the noncompliance with which would have a material adverse effect on the business, property or financial condition of Lessee and the ability of Lessee to perform under this Bus Lease and Pilot Program agreement; (f) there have been no citations, notices, or orders of noncompliance (that have not been complied with or withdrawn) issued to Lessee under any applicable law which would have a material adverse effect on the business, property, or financial condition of Lessee and Lessee has, and is in good standing with respect to, all governmental consents, approvals, authorizations, permits, certificates, inspections and franchises necessary to continue and to conduct in all material respects such entity's business as heretofore conducted (or proposed to be conducted) by it and to own or lease and operate in all material respects its properties as now owned or leased by it.

15. **Assignment; Sublease.** WITHOUT XCEL ENERGY'S PRIOR WRITTEN CONSENT, LESSEE SHALL NOT (i) SELL, ASSIGN, SUBLEASE OR OTHERWISE TRANSFER ANY PART OF THE LEASED BUSES OR ANY OF ITS INTEREST IN OR RIGHTS UNDER THIS BUS LEASE OR PILOT PROGRAM AGREEMENT OR AS TO ANY PART OF THE LEASED BUSES (INCLUDING BY OPERATION OF LAW) OR (ii) ENCUMBER OR PERMIT ANY LIEN (OTHER THAN LIENS IN FAVOR OF XCEL ENERGY) TO EXIST AGAINST ANY PART OF THE LEASED BUSES OR LESSEE'S INTEREST IN THIS BUS LEASE AND PILOT PROGRAM AGREEMENT, IT BEING LESSEE'S UNDERSTANDING THAT ANY SUCH ACTION, EVENT OR OCCURRENCE SHALL CONSTITUTE AN IMMEDIATE EVENT OF DEFAULT HEREUNDER GIVING XCEL ENERGY THE RIGHT TO TERMINATE OR CANCEL THIS BUS LEASE AND PILOT PROGRAM AGREEMENT AND EXERCISE ITS REMEDIES HEREUNDER. Subject always to the foregoing, this Bus Lease and Pilot Program Agreement shall inure to the benefit of, and are binding upon, Lessee's permitted successors and assigns.

16. **Insurance.**

(a) Lessee shall purchase and maintain such insurance as shall protect Lessee and Xcel, including the Xcel Energy's affiliates, employees or agents, from claims which may in any way arise out of or be in any manner connected with the performance of the Bus Lease and Pilot Program Agreement, whether such claims arise out of the act or failure to act of Lessee, Xcel Energy, or of the direct or indirect delegate, appointee or employee of either. Lessee shall provide evidence of all such insurance at the request of Xcel Energy. Such

insurance shall be as specified below, and all insurance companies shall be rated A-7 or better by A.M. Best rating services in amounts not less than:

Worker's Compensation at statutory limits for the state of hire or operations including other state's insurance and voluntary compensation and provide waiver of subrogation.

i. Employer's Liability, as follows: Bodily Injury Limits by Accident at one million dollars (\$1,000,000) per accident; Bodily Injury Limits by Disease at one million dollars (\$1,000,000) policy limit and Bodily Injury by Disease at one million dollars (\$1,000,000) per employee. Other coverage may be required, as applicable.

ii. Commercial General Liability, including Products and Completed Operations and Property Damage Liability on the CG 20 10 (10/85) or equivalent on an occurrence form, with no explosion, collapse or underground (XCU) exclusions and providing products/completed operations (for a minimum of 3 years coverage), premises/operations, personal injury and a sudden and accidental pollution endorsement, with limits of not less than ten million dollars (\$10,000,000) which can be achieved with a combination of General Liability and Umbrella Limits.

iii. Automobile Liability, with a combined single limit of not less than five million dollars (\$5,000,000), including, but not limited to, coverage for: owned vehicles, non-owned vehicles, hired vehicles and MCS 90 coverage where hazardous material transportation is involved, using the broadened pollution coverage noted below. Include Xcel Energy as an additional insured on a primary/non-contributory basis and provide waiver of subrogation.

iv. Pollution Legal Liability Insurance, (including clean-up costs) with minimum limits of five million dollars (\$5,000,000) each claim and in the aggregate. Include Xcel Energy as an additional insured on a primary/non-contributory basis and provide waiver of subrogation.

v. Crime Insurance Liability endorsement to provide coverage on behalf of Xcel Energy for theft of Xcel Energy property by Lessee's employees or Sub-Contractors with a minimum limit of one million dollars (\$1,000,000) per claim.

vi. Excess or Umbrella Liability coverage with a minimum limit of five million dollars (\$5,000,000) coverage in excess of the coverages as set forth in this Article. Umbrella or Excess must be form following or name Xcel Energy as an additional insured on a primary/non-contributory basis and provide waiver of subrogation.

(b) All dollar amounts of coverage set forth above shall be per occurrence and in the aggregate. The policies described herein shall (i) be endorsed to show that the insurers waive subrogation against Xcel Energy, its affiliates, directors, officers, employees and insurers, (ii) be written so that the insurance is primary and non-contributory, (iii) not expire, terminate or otherwise be discontinued except upon not less than thirty (30) days prior written notice to Xcel Energy, (iv) contain Additional Insured Status for Xcel Energy, its employees and agents on Commercial General Liability and Automobile Liability and Pollution Liability and applicable Umbrella/Excess Liability (v) require notification by Lessee to Xcel Energy of any material change in coverage and (vi) notify Xcel Energy if 50% of aggregate is impaired.

(c) Certificates of insurance acceptable to Xcel Energy shall be filed with Xcel Energy prior to the Effective Date of the Bus Lease and Pilot Program Agreement. These certificates shall contain a provision that coverages afforded under the policies shall not be canceled or materially changed/alterd until 30 days prior written notice has been given to Xcel Energy. Notwithstanding the foregoing, Lessee has a continuing obligation to provide the insurance coverage described in this Article and none of the insurance required herein shall be canceled, changed or allowed to lapse until the period of Lessee's obligations under the Bus Lease and Pilot Program Agreement has been completed. Lessee shall submit proof of insurance coverages electronically to Xcel Energy utilizing the method communicated to Lessee by Xcel Energy.

(d) Insurance specified herein shall be minimum requirements and Lessee is responsible for providing any additional insurance deemed necessary to protect the interests of both Lessee and Xcel Energy from other hazards or claims in excess of the minimum coverage. The liability of Lessee is not limited to available insurance coverage.

17. **Default.** Lessee will be in default if: (a) Lessee breaches any provision of this Bus Lease and Pilot Program Agreement and fails to cure such breach within 10 days; (b) Lessee removes any Leased Buses from Xcel Energy's service territory; (c) Lessee ceases to do business, becomes insolvent, makes an assignment for the benefit of creditors or files any petition or action under any bankruptcy, reorganization, insolvency or moratorium law, or any other law or laws for the relief of, or relating to, debtors; (d) a filing of an involuntary petition under any bankruptcy statute is made against Lessee, or an appointment of a receiver, trustee, custodian or similar official to take possession of the properties of Lessee, unless the petition or appointment ceases to be in effect within thirty (30) days after filing or appointment; (e) Lessee is acquired by, merges with or consolidates into another entity, sells substantially all its assets, dissolves or terminates its existence; (f) Lessee fails to maintain the insurance required by the Bus Lease and Pilot Program Agreement. (g) Lessee, or any other party acting on Lessee's behalf, files, communicates or records, or attempts to file, communicate or record, a termination statement under Article 9 of the UCC without the prior written consent of Xcel Energy; (h) any representation of Lessee under the Lease is false in any material respect.

18. **Remedies.** If a default under Section 17 occurs, Xcel Energy shall have any and all remedies existing at law, or in equity, and shall have the right, at its sole option, at any time to exercise any or all of such remedies concurrently, successively or separately, without notice to Lessee (unless specifically stated herein). Without limiting its right to seek any and all remedies existing, upon the occurrence of a default, Xcel Energy, in its absolute and sole discretion, may: (a) proceed by court action to enforce performance by Lessee of the covenants and terms of this Lease; (b) require Lessee to return the Leased Buses in the manner set forth in this Bus Lease and Pilot Program Agreement; (c) immediately and without legal proceedings or notice or liability to Xcel Energy, enter the premises, take possession of or remove and retain the Leased Buses or any component thereof (any such taking shall not terminate this Lease), full and complete license to do so being hereby expressly granted by Lessee to Xcel Energy; (d) by written notice to Lessee, terminate this Lease, in which event all rights of Lessee to use the Leased Buses shall terminate; provided, however, that in such event Lessee shall remain liable for all damages as provided herein and provided; (e) recover, as damages for loss of the bargain and not as a penalty, the sum of (i) any accrued and unpaid amounts due hereunder, plus (ii) any other damages incurred by Xcel

Energy on account of, or otherwise relating to, the breach of any covenant, representation or warranty by Lessee herein, plus (iii) all fees, costs or expenses incurred by Xcel Energy in connection with any repossession, recovery, storage, repair, sale, re-lease or other disposition of the Leased Buses, including all attorneys' fees and costs incurred by Xcel Energy in connection therewith or otherwise resulting from Lessee's default or enforcement of this Bus Lease and Pilot Program Agreement (including any such fees or costs incurred at trial or in any other proceeding), or any other reasonable professional fees and costs. Xcel Energy shall have no liability by reason of any entry, repossession, or removal of all or any portion of the Leased Buses performed in accordance with applicable laws; or (f) terminate the Bus Lease and Pilot Program Agreement and require Lessee to pay, and if so required Lessee shall pay, the amounts payable under Section 9(b)(i), if the termination occurs before Bus Pilot Start Date or any other date which is three (3) years or less from the Bus Pilot Start Date, or the amounts payable under Section 9(b)(ii) if the termination occurs more than three (3) years from the Bus Pilot Start Date. In the event Xcel Energy elects the remedy set forth in 18(f), upon Xcel Energy's receipt of all required amounts, Xcel Energy will transfer to Lessee all of Xcel Energy's right, title and interest in such Leased Buses and bi-directional Optional Charging Equipment AS-IS, WHERE-IS, WITHOUT ANY WARRANTY AS TO CONDITION OR VALUE. remedies are cumulative, are in addition to any other remedies provided by law, and may be exercised concurrently or separately. Any failure or delay by us to exercise any right shall not operate as a waiver of any other right or future right.

19. **Miscellaneous**

(a) **Effect of Delay.** A delay or omission by Xcel Energy to exercise any right, power or remedy hereunder shall not impair the right, power or remedy and shall not be construed to be a waiver of any breach or default. Any waiver or consent by Xcel Energy of or to any breach or default must be in writing.

(b) **Severability and Survival.** If any provision of this Lease shall be invalid under any applicable law, it shall be inapplicable and deemed omitted but the remaining provisions shall be given effect in accordance with the intent of the Lease. All obligations of Lessee under this Lease shall survive the expiration or termination of this Lease to the extent required for their full observance and performance.

(c) **Amendment or Modification of Lease.** The terms of this Lease may not be amended, waived, modified, or terminated except by written instrument signed by the parties hereto.

(d) **No Third-Party Beneficiary.** This Bus Lease and Pilot Program Agreement is between the Parties and creates no third-party beneficiaries. Nothing in this Bus Lease and Pilot Program Agreement gives or shall be construed to give or provide any benefit, direct, indirect, or otherwise, to third parties unless third persons are expressly described as intended to be beneficiaries of its terms.

(e) **Notices.** All demands and notices shall be in writing and shall be deemed given when personally delivered or received by facsimile or overnight delivery service, addressed

to the other party at the address stated below or at any other address as may be furnished in writing by a party to the other:

If to Xcel Energy to:

With a copy to:

If to Lessee to:

(f) **Governing Law.** THE PARTIES HERETO HAVE EXPRESSLY AGREED THAT THIS LEASE SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF MINNESOTA, WITHOUT GIVING EFFECT TO THE PRINCIPLES OF CONFLICT OF LAWS THEREOF.

(g) **Jurisdiction.** Lessee irrevocably agrees that any legal action or proceeding arising out of or relating to this Lease may be instituted in the federal or state courts sitting in, Hennepin County, Minnesota, subject to Xcel Energy's sole discretion, and Lessee, in respect of itself and its properties and revenues, irrevocably submit to the jurisdiction of these courts in any such action or proceeding.

(h) **Complete Agreement.** This Agreement constitutes the complete and exclusive understanding of the Parties concerning its subject matter. This Agreement supersedes all prior agreements, representations, understandings, and communications, written or oral, between the Parties as to the subject matter of this Agreement.

**IN WITNESS WHEREOF**, the parties hereto have caused this Bus Lease and Pilot Program Agreement to be executed by their duly authorized officers as of the day and year first above written.

**Lessee**

By \_\_\_\_\_ Date: \_\_\_\_\_

Name:

Title:

**Northern States Power Company, d/b/a Xcel Energy**

By \_\_\_\_\_ Date: \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

Northern States Power Company

**Schedule A****LEASED BUSES**

<b>YEAR</b>	<b>MANUFACTURER</b>	<b>EQUIPMENT DISCRIPTION</b>	<b>VIN #</b>	<b>EQUIPMENT LOCATION</b>	<b>COUNTY</b>

Northern States Power Company

**Schedule B**

**V2G Program Requirements**

Dispatch Window:

Number of Dispatch Events:

Duration of Dispatch:

Notification period:

Minimum State of Charge:



**Redline**

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE FLEET PILOT SERVICE**  
**RATE CODE A87, A88, A89**

Section No. 5  
~~40th-11th~~ Revised Sheet No. 51

**AVAILABILITY**

Available while this Pilot Service is in effect to non-residential customers for service only to electric vehicle loads including battery charging and accessory usage. ~~Availability is subject to limitations based on Company scoring and available budget. The customer must complete Company approved documentation verifying ownership or lease of a minimum of five electric vehicles as defined in Section 169.011, subdivision 26a of Minnesota law.~~

~~N~~  
~~ND~~  
~~D~~

**CONTRACT**

Customers must contract for this service through ~~the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions an Electric Vehicle Fleet Pilot Service Agreement with the Company.~~ The contract period will be for 120 months.

~~N~~  
~~ND~~

**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsor Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Customer Charge per Month		\$29.64	
Service at Secondary Voltage	<u>Oct-May</u>		<u>Jun-Sep</u>
Demand Charge per Month per kW			
On-Peak Period Demand	\$10.49		\$14.79
Off-Peak Period Demand in Excess of On-Peak Period Demand	\$2.35		\$2.35
Energy Charge per kWh			
On-Peak Period Energy		\$0.04855	
Off-Peak Period Energy		\$0.02341	
Energy Charge Credit per Month per kWh			
All kWh in Excess of 400 Hours Times the On-Peak Period Billing Demand, Not to Exceed 50% of Total kWh		\$0.01518	
	<u>January - December</u>		
Voltage Discounts per Month	Per kW		Per kW
Primary Voltage	\$0.80		\$0.00105

**INTERIM RATE ADJUSTMENT**

A 13.52% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

~~N~~  
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~~N~~

(Continued on Sheet No. 5-51.1)

Date Filed:	<del>10-25-21</del> <u>08-02-22</u>	By: Christopher B. Clark	Effective Date:	<del>01-01-22</del>
		President, Northern States Power Company, a Minnesota corporation		
Docket No.	E002/ <del>GR-21-630M-22-</del>		Order Date:	<del>12-23-21</del>

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE FLEET PILOT SERVICE**  
**RATE CODE A87, A88, A89**

Section No. 5  
~~1st Revised~~Original Sheet No. 51.1

**OPTIONAL CHARGER SERVICE**

Charging equipment may be supplied and installed ~~either by customer or~~ by the Company through an optional charger service. Optional charger service by Company is available as a Bundled Option that includes a monthly charge for the installed cost of charging equipment ~~or as an independent option, where customer does not receive dedicated EV Supply Infrastructure. Pre-Pay Option is closed and not available to new customers. or as a Pre-Pay Option to customers electing to pay Company for the installed cost of charging equipment prior to beginning service with this tariff. Customers electing the Pre-Pay Option are separately invoiced at the time of installation and are subject to the Pre-Pay Option service charge in place of the Bundled Option service charge.~~

Service Charge per Month per Port	Group A	Group B	Group C
Bundled Option – Single Port (A88)	\$37.88	\$52.92	\$67.96
Bundled Option – Dual Port (A88)	\$32.85	\$45.80	\$54.94
<u>(Pre-Pay Options closed to new customers)</u>			
Pre-Pay Option – Single Port (A89)	\$11.73	\$25.31	\$33.37
Pre-Pay Option – Dual Port (A89)	\$10.86	\$20.80	\$29.85

Group D: For chargers solutions that do not fit into Group A, B, or C pricing bands, the company will apply a levelized revenue requirement percentage of 15.51% to the charger cost and divide by 12 to determine the monthly charger price.

~~Pricing for charging infrastructure for transit buses is determined on a per project basis.~~

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**ENVIRONMENTAL IMPROVEMENT RIDER**

Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

**MONTHLY MINIMUM CHARGE**

For the first two years after the original effective date establishing this tariff, the minimum charge shall be equal to the Customer Charge. Effective two years after the original effective date establishing this tariff, the minimum charge shall be the total of the Customer Charge and a Facilities Charge based on the number of installed charging ports.

Facilities Charge	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Number of Charging Ports	1-9	10-19	20-29	30-39	40+
Monthly Minimum Charge	\$75	\$150	\$300	\$450	\$600

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

(Continued on Sheet No. 5-51.2)

Date Filed: ~~10-12-18~~ 1808-02-22 By: Christopher B. Clark Effective Date: 07-17-19  
 President, Northern States Power Company, a Minnesota corporation  
 Docket No. E002/M-~~18-64322-~~ Order Date: 07-17-19

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Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**ELECTRIC VEHICLE FLEET PILOT SERVICE**  
**RATE CODE A87, A88, A89**

Section No. 5  
~~1st Revised~~Original Sheet No. 51.1

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**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 5-51.2)

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Date Filed: ~~10-12-18~~1808-02-22 By: Christopher B. Clark Effective Date: ~~07-17-19~~  
President, Northern States Power Company, a Minnesota corporation  
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**ELECTRIC VEHICLE FLEET PILOT SERVICE  
RATE CODE A87, A88, A89**

Section No. 5  
1st Revised Sheet No. 51.2

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**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off-peak period is defined as all other hours. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

**DETERMINATION OF ON-PEAK PERIOD DEMAND**

The actual on-peak period demand in kW shall be the greatest 15-minute load for the on-peak period during the month for which the bill is rendered. The adjusted demand in kW for billing purposes shall be determined by dividing the actual on-peak demand by the power factor expressed in percent but not more than 90%, multiplying the quotient so obtained by 90%, and rounding to the nearest whole kW. In no month shall the on-peak period demand to be billed be considered as less than the current month's adjusted on-peak period demand in kW, or 50% of the greatest monthly adjusted on peak period demand in kW during the preceding 11 months. In no month shall the on-peak billing demand be greater than the value in kW determined by dividing the kWh sales for the billing month by 100 hours per month.

The greatest monthly adjusted on-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

**DETERMINATION OF OFF-PEAK PERIOD DEMAND IN EXCESS OF ON-PEAK PERIOD DEMAND**

The actual off-peak period demand in kilowatts shall be the greatest 15-minute load for the off-peak period during the month for which the bill is rendered rounded to the nearest whole kW. In no month shall the off-peak period demand for billing purposes be considered as less than the current month's actual off-peak period demand in kW, or 50% of the greatest monthly actual off-peak period demand in kW during the preceding 11 months.

The greatest monthly adjusted off-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

The off-peak period demand in excess of on-peak period demand in kW to be billed shall be determined by subtracting the billing on-peak period demand from the actual off-peak period demand as defined above, but only if the off-peak period demand is greater than the on-peak period demand.

**POWER FACTOR**

For three phase customers with services above 200 amperes, or above 480 volts, the power factor for the month shall be determined by permanently installed metering equipment. For all single phase customers and three phase customers with services 200 amperes or less, a power factor of 90% will be assumed.

(Continued on Sheet No. 5-51.3)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE FLEET PILOT SERVICE  
RATE CODE A87, A88, A89**

Section No. 5  
~~1st Revised~~Original Sheet No. 51.3

**MINIMUM DEMAND TO BE BILLED**

The monthly minimum on-peak period billing demand shall not be less than provided above.

**TERMS AND CONDITIONS OF SERVICE**

1. Electric Vehicle Fleet Pilot Service shall be served through wiring connected to customer's dedicated-meter.
2. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
3. The rate contemplates that this service will require the installation of new facilities to provide electric service to the electric vehicle charger.
4. Customer must ~~execute an Electric Vehicle Fleet Pilot Service Agreement with the Company~~ agree to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions.
5. ~~Customer must retain a minimum four ports per site, or, in cases with less than four ports, a minimum of 50 kW of charging capacity. For-profit businesses are limited to a maximum of 50 ports per site. 50 port limitation may be removed if entity contributes to equity objectives as authorized by Company.~~
6. Company waives CIAC requirements for non-residential customers under the Standard Installation and Extension Rules under Section 5.1(A)(1)(b), Section 5.1 (A)(2) and (3) and Section 5.2 of the General Rules and Regulations on Tariff Sheets No. 6-23 through 6-27.
7. Alternating current service is provided at the following nominal voltages:
  - a. Secondary Voltage: Single or three phase from 208 volts up to but not including 2,400 volts.
  - b. Primary Voltage: Three phase from 2,400 volts up to but not including 69,000 volts.

Service voltage available in any given case is dependent upon voltage and capacity of Company lines in vicinity of customer's premises.

**RIGHT TO REFUSE SERVICE**

The Company reserves the right to refuse applicants for service under this Pilot service if it determines that excessive additional capital expenditures will be required to provide service to that applicant.

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		President, Northern States Power Company, a Minnesota corporation		
Docket No.	E002/M- <del>18-64322-</del>		Order Date:	<del>07-17-19</del>

**ELECTRIC VEHICLE PUBLIC CHARGING PILOT SERVICE**  
**RATE CODE A89, A90**

Section No. 5  
~~11th-10th~~ Revised Sheet No. 52

**AVAILABILITY**

Available while this Pilot Service is in effect to non-residential customers for service only to electric vehicle loads including battery charging and accessory usage for the express purpose of providing public charging service to electric vehicles. Availability is subject to limitations based on Company scoring and available budget.

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**CONTRACT**

Customers must contract for this service through the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions an Electric Vehicle Public Charging Pilot Service Agreement with the Company. The contract period will be for 120 months.

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**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Customer Charge per Month		\$29.64	
Service at Secondary Voltage			
	<u>Oct-May</u>		<u>Jun-Sep</u>
Demand Charge per Month per kW			
On-Peak Period Demand	\$10.49		\$14.79
Off-Peak Period Demand in Excess of On-Peak Period Demand	\$2.35		\$2.35
Energy Charge per kWh			
On-Peak Period Energy		\$0.04855	
Off-Peak Period Energy		\$0.02341	
Energy Charge Credit per Month per kWh			
All kWh in Excess of 400 Hours Times the On-Peak Period Billing Demand, Not to Exceed 50% of Total kWh		\$0.01518	
		<u>January - December</u>	
Voltage Discounts per Month		<u>Per kW</u>	<u>Per kWh</u>
Primary Voltage		\$0.80	\$0.00105

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**INTERIM RATE ADJUSTMENT**

A 13.52% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

(Continued on Sheet No. 5-52.1)

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		President, Northern States Power Company, a Minnesota corporation		
Docket No.	E002/ <del>GR-21-630M-22-</del>		Order Date:	<del>12-23-21</del>

Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
SERVICE  
RATE CODE A89, A90**

Section No. 5  
~~1st Revised Original~~ Sheet No. 52.1

**OPTIONAL CHARGER SERVICE**

Charging equipment may be supplied and installed by the Company through an optional charger service. Optional charger service by Company is available as a Bundled Option that includes a monthly charge for the installed cost of charging equipment or as an independent option, where customer does not receive dedicated EV Supply Infrastructure.

<u>Service Charge per Month per Port</u>	<u>Group A</u>	<u>Group B</u>	<u>Group C</u>
<u>Single Port (A89)</u>	<u>\$37.88</u>	<u>\$52.92</u>	<u>\$67.96</u>
<u>Dual Port (A89)</u>	<u>\$32.85</u>	<u>\$45.80</u>	<u>\$54.94</u>

Group D: For chargers solutions that do not fit into Group A, B, or C pricing bands, the company will apply a levelized revenue requirement percentage of 15.51% to the charger cost and divide by 12 to determine the monthly charger price.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**ENVIRONMENTAL IMPROVEMENT RIDER**

Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

**MONTHLY MINIMUM CHARGE**

For the first two years after the original effective date establishing this tariff, the minimum charge shall be equal to the Customer Charge. Effective two years after the original effective date establishing this tariff, the minimum charge shall be the total of the Customer Charge and a Facilities Charge based on the number of installed charging ports.

<u>Facilities Charge</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 4</u>	<u>Tier 5</u>
<u>Number of Charging Ports</u>	<u>1-9</u>	<u>10-19</u>	<u>20-29</u>	<u>30-39</u>	<u>40+</u>
<u>Monthly Minimum Charge</u>	<u>\$75</u>	<u>\$150</u>	<u>\$300</u>	<u>\$450</u>	<u>\$600</u>

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 5-52.2)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
SERVICE  
RATE CODE A89, A90**

Section No. 5  
1st Revised Sheet No. 52.2

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**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off-peak period is defined as all other hours. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

**DETERMINATION OF ON-PEAK PERIOD DEMAND**

The actual on-peak period demand in kW shall be the greatest 15-minute load for the on-peak period during the month for which the bill is rendered. The adjusted demand in kW for billing purposes shall be determined by dividing the actual on-peak demand by the power factor expressed in percent but not more than 90%, multiplying the quotient so obtained by 90%, and rounding to the nearest whole kW. In no month shall the on-peak period demand to be billed be considered as less than the current month's adjusted on-peak period demand in kW, or 50% of the greatest monthly adjusted on-peak period demand in kW during the preceding 11 months. In no month shall the on-peak billing demand be greater than the value in kW determined by dividing the kWh sales for the billing month by 100 hours per month.

The greatest monthly adjusted on-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

**DETERMINATION OF OFF-PEAK PERIOD DEMAND IN EXCESS OF ON-PEAK PERIOD DEMAND**

The actual off peak period demand in kilowatts shall be the greatest 15-minute load for the off peak period during the month for which the bill is rendered rounded to the nearest whole kW. In no month shall the off-peak period demand for billing purposes be considered as less than the current month's actual off-peak period demand in kW, or 50% of the greatest monthly actual off-peak period demand in kW during the preceding 11 months.

The greatest monthly adjusted off-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

The off-peak period demand in excess of on-peak period demand in kW to be billed shall be determined by subtracting the billing on-peak period demand from the actual off-peak period demand as defined above, but only if the off-peak period demand is greater than the on-peak period demand.

**POWER FACTOR**

For three phase customers with services above 200 amperes, or above 480 volts, the power factor for the month shall be determined by permanently installed metering equipment. For all single phase customers and three phase customers with services 200 amperes or less, a power factor of 90% will be assumed.

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(Continued on Sheet No. 5-52.3)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
SERVICE  
RATE CODE A89, A90**

Section No. 5  
~~1st Revised Original~~ Sheet No. 52.3

**MINIMUM DEMAND TO BE BILLED**

The monthly minimum on-peak period billing demand shall not be less than provided above.

**TERMS AND CONDITIONS OF SERVICE**

1. Electric Vehicle Fleet Pilot Service shall be served through wiring connected to customer's dedicated-meter.
2. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
3. The rate contemplates that this service will require the installation of new facilities to provide electric service to the electric vehicle charger.
4. Customer must agree to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions, execute an Electric Vehicle Public Charging Pilot Service Agreement with the Company.
- ~~5. Customer must retain a minimum four ports per site, or, in cases with less than four ports, a minimum of 50 kW of charging capacity.~~
- ~~6.5.~~ Company waives CIAC requirements for non-residential customers under the Standard Installation and Extension Rules under Section 5.1(A)(1)(b), Section 5.1 (A)(2) and (3) and Section 5.2 of the General Rules and Regulations on Tariff Sheets No. 6-23 through 6-27.
- ~~7.6.~~ Alternating current service is provided at the following nominal voltages:
  - a. Secondary Voltage: Single or three phase from 208 volts up to but not including 2,400 volts.
  - b. Primary Voltage: Three phase from 2,400 volts up to but not including 69,000 volts.

Service voltage available in any given case is dependent upon voltage and capacity of Company lines in vicinity of customer's premises.

**RIGHT TO REFUSE SERVICE**

The Company reserves the right to refuse applicants for service under this Pilot service if it determines that excessive additional capital expenditures will be required to provide service to that applicant.

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
 SERVICE PILOT  
 RATE CODE A91, A92, A93**

Section No. 5  
~~1st Revised~~Original Sheet No. 52.4

**AVAILABILITY**

Available while the Pilot is in effect to Multi-Dwelling Unit site hosts for service only to residential electric vehicle loads including battery charging and accessory usage for the express purpose of providing charging service to the residents of the site. Availability is subject to limitations based on Company scoring and available budget.

**CONTRACT**

Participants must contract for the service ~~through a Multi-Dwelling Unit Electric Vehicle Service Pilot Customer Service Agreement~~ with the Company. ~~For site~~Site hosts participating under both the Shared Parking and Assigned Parking options, ~~the will~~ contract for the service will be for 120 months under the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions. ~~For~~EV drivers participating under the Assigned Parking option, ~~the will~~ contract will be for the service on a month-to-month basis under the Multifamily Electric Vehicle Assigned Parking Customer Agreement for Residents.

**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Site host bills shall reflect the standard customer charge, energy charges (if applicable) based on metered kWh usage, plus an optional charger service charge (if applicable). Assigned parking participant bills shall reflect energy charges (if applicable) based on kWh usage measured by their charging equipment, plus the charger service charge. Bills may be subject to a minimum charge based on the monthly customer charge plus optional charger service charge (if applicable). Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Standard Customer Charge Per Month		\$4.95		
Optional Charger Service Charge Per Month Per Port				
Assigned Parking (A91)		\$16.99		
	<u>Group A</u>	<u>Group B</u>	<u>Group C</u>	
Shared Parking – <del>Full Service</del> Single Port (A93)	<del>\$30.59</del> <u>37.88</u>	<del>\$45.55</del> <u>52.92</u>	<del>\$60.54</del> <u>67.96</u>	
<del>Shared Parking – Dual Port (A93)</del>	<del>\$32.85</del>	<del>\$45.80</del>	<del>\$54.94</del>	
<u>Group D: For chargers solutions that do not fit into Group A, B, or C pricing bands, the company will apply a levelized revenue requirement percentage of 15.51% to the charger cost and divide by 12 to determine the monthly charger price.</u>				

Energy Charge per kWh

June-September

On-Peak Period	\$0.22576
Mid-Peak Period	\$0.09013
Off-Peak Period	\$0.02784

(Continued on Sheet No. 5-52.5)

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Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
SERVICE PILOT  
RATE CODE A91, A92, A93**

Section No. 5  
~~1st Revised~~Original Sheet No. 52.4

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(Continued on Sheet No. 5-52.5)

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Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
SERVICE PILOT (Continued)  
RATE CODE A91, A92, A93**

Section No. 5  
~~2nd~~<sup>4th</sup> Revised Sheet No. 52.5

**RATE (Continued)**

Energy Charge per kWh

Other Months

On-Peak Period	\$0.19266
Mid-Peak Period	\$0.07515
Off-Peak Period	\$0.02784

**INTERIM RATE ADJUSTMENT**

An 8.92% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**MONTHLY MINIMUM CHARGE**

Customer Charge plus Optional Charger Service (if applicable).

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

**DEFINITION OF PEAK PERIODS**

The On-Peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day.

**TERMS AND CONDITIONS OF SERVICE**

1. Multi-dwelling unit electric vehicle service shall be separately served and metered and must at no time be connected to facilities serving site host's other loads. Metering may be installed as a sub-meter behind the site host's main meter, in which case consumption under this rate schedule will be subtracted from the main meter for purposes of billing site host's non-electric vehicle electricity usage.

(Continued on Sheet No. 5-52.6)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
SERVICE PILOT (Continued)  
RATE CODE A91, A92, A93**

Section No. 5  
~~1st Revised~~Original Sheet No. 52.6

**TERMS AND CONDITIONS OF SERVICE (Continued)**

2. Consumption under the Assigned Parking option will be measured by charging equipment for each assigned parking spot and will be subtracted from the dedicated meter for charging equipment. Site hosts will be responsible for meter usage not accounted for from assigned parking spot usage.
3. The rate contemplates that the service will require the installation of new facilities to provide electric service to the electric vehicle chargers.
- ~~4. Site Host must retain a minimum of four ports per site (minimum of two ports per site for Affordable MDUs), or in cases with less than four ports, a minimum of 50kW of charging capacity.~~
- ~~4.5.~~ For participating affordable housing site hosts and market-rate site hosts in the first tranche of participants, the Company waives CIAC requirements for non-residential customers under the Standard Installation and Extension Rules under Section 5.1(A)(1)(b), Section 5.1 (A)(2) and (3) and Section 5.2 of the General Rules and Regulations on Tariff Sheets No. 6-23 through 6.27. The Company waives a portion of the CIAC requirements for market-rate site hosts in the second tranche of participants.
- ~~5.6.~~ Company will cover 100 percent of EV Service Connection Costs for affordable housing site hosts and market-rate site hosts in first tranche. Market-rate site hosts in second and third tranche of participants will receive a revenue-based allowance for EV Service Connection costs.
- ~~8.7.~~ The site host shall supply, at no expense to the Company, a suitable location for meters and associated equipment used for billing. Installations must conform to the Company's specifications.
- ~~9.8.~~ Company may require site host to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
- ~~10.9.~~ This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
- ~~11.10.~~ Participants must agree to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions. ~~execute a Multi-Dwelling Unit Electric Vehicle Service Customer Service Agreement with the Company~~

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE FLEET PILOT SERVICE  
 RATE CODE A87, A88, A89**

Section No. 5  
 1st Revised Sheet No. 51.1

**OPTIONAL CHARGER SERVICE**

Charging equipment may be supplied and installed by the Company through an optional charger service. Optional charger service by Company is available as a Bundled Option that includes a monthly charge for the installed cost of charging equipment or as an independent option, where customer does not receive dedicated EV Supply Infrastructure. Pre-Pay Option is closed and not available to new customers.

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Service Charge per Month per Port	Group A	Group B	Group C
Bundled Option – Single Port (A88)	\$37.88	\$52.92	\$67.96
Bundled Option – Dual Port (A88)	\$32.85	\$45.80	\$54.94
(Pre-Pay Options closed to new customers)			
Pre-Pay Option – Single Port (A89)	\$11.73	\$25.31	\$33.37
Pre-Pay Option – Dual Port (A89)	\$10.86	\$20.80	\$29.85

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Group D: For chargers solutions that do not fit into Group A, B, or C pricing bands, the company will apply a levelized revenue requirement percentage of 15.51% to the charger cost and divide by 12 to determine the monthly charger price.

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In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**ENVIRONMENTAL IMPROVEMENT RIDER**

Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

**MONTHLY MINIMUM CHARGE**

For the first two years after the original effective date establishing this tariff, the minimum charge shall be equal to the Customer Charge. Effective two years after the original effective date establishing this tariff, the minimum charge shall be the total of the Customer Charge and a Facilities Charge based on the number of installed charging ports.

Facilities Charge	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Number of Charging Ports	1-9	10-19	20-29	30-39	40+
Monthly Minimum Charge	\$75	\$150	\$300	\$450	\$600

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 5-51.2)

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**ELECTRIC VEHICLE FLEET PILOT SERVICE  
RATE CODE A87, A88, A89**

Section No. 5  
1st Revised Sheet No. 51.2

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**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off-peak period is defined as all other hours. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

**DETERMINATION OF ON-PEAK PERIOD DEMAND**

The actual on-peak period demand in kW shall be the greatest 15-minute load for the on-peak period during the month for which the bill is rendered. The adjusted demand in kW for billing purposes shall be determined by dividing the actual on-peak demand by the power factor expressed in percent but not more than 90%, multiplying the quotient so obtained by 90%, and rounding to the nearest whole kW. In no month shall the on-peak period demand to be billed be considered as less than the current month's adjusted on-peak period demand in kW, or 50% of the greatest monthly adjusted on peak period demand in kW during the preceding 11 months. In no month shall the on-peak billing demand be greater than the value in kW determined by dividing the kWh sales for the billing month by 100 hours per month.

The greatest monthly adjusted on-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

**DETERMINATION OF OFF-PEAK PERIOD DEMAND IN EXCESS OF ON-PEAK PERIOD DEMAND**

The actual off-peak period demand in kilowatts shall be the greatest 15-minute load for the off-peak period during the month for which the bill is rendered rounded to the nearest whole kW. In no month shall the off-peak period demand for billing purposes be considered as less than the current month's actual off-peak period demand in kW, or 50% of the greatest monthly actual off-peak period demand in kW during the preceding 11 months.

The greatest monthly adjusted off-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

The off-peak period demand in excess of on-peak period demand in kW to be billed shall be determined by subtracting the billing on-peak period demand from the actual off-peak period demand as defined above, but only if the off-peak period demand is greater than the on-peak period demand.

**POWER FACTOR**

For three phase customers with services above 200 amperes, or above 480 volts, the power factor for the month shall be determined by permanently installed metering equipment. For all single phase customers and three phase customers with services 200 amperes or less, a power factor of 90% will be assumed.

(Continued on Sheet No. 5-51.3)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**ELECTRIC VEHICLE FLEET PILOT SERVICE  
RATE CODE A87, A88, A89**

Section No. 5  
1st Revised Sheet No. 51.3

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**MINIMUM DEMAND TO BE BILLED**

The monthly minimum on-peak period billing demand shall not be less than provided above.

**TERMS AND CONDITIONS OF SERVICE**

1. Electric Vehicle Fleet Pilot Service shall be served through wiring connected to customer's dedicated-meter.
2. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
3. The rate contemplates that this service will require the installation of new facilities to provide electric service to the electric vehicle charger.
4. Customer must agree to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions.
5. For-profit businesses are limited to a maximum of 50 ports per site. 50 port limitation may be removed if entity contributes to equity objectives as authorized by Company.
6. Company waives CIAC requirements for non-residential customers under the Standard Installation and Extension Rules under Section 5.1(A)(1)(b), Section 5.1 (A)(2) and (3) and Section 5.2 of the General Rules and Regulations on Tariff Sheets No. 6-23 through 6-27.
7. Alternating current service is provided at the following nominal voltages:
  - a. Secondary Voltage: Single or three phase from 208 volts up to but not including 2,400 volts.
  - b. Primary Voltage: Three phase from 2,400 volts up to but not including 69,000 volts.

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Service voltage available in any given case is dependent upon voltage and capacity of Company lines in vicinity of customer's premises.

**RIGHT TO REFUSE SERVICE**

The Company reserves the right to refuse applicants for service under this Pilot service if it determines that excessive additional capital expenditures will be required to provide service to that applicant.

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**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
 SERVICE  
 RATE CODE A89, A90**

Section No. 5  
 11th Revised Sheet No. 52

**AVAILABILITY**

Available while this Pilot Service is in effect to non-residential customers for service only to electric vehicle loads including battery charging and accessory usage for the express purpose of providing public charging service to electric vehicles. Availability is subject to limitations based on Company scoring and available budget.

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**CONTRACT**

Customers must contract for this service through the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions. The contract period will be for 120 months.

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**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsourse Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Customer Charge per Month		\$29.64	
Service at Secondary Voltage	<u>Oct-May</u>		<u>Jun-Sep</u>
Demand Charge per Month per kW			
On-Peak Period Demand	\$10.49		\$14.79
Off-Peak Period Demand in Excess of On-Peak Period Demand	\$2.35		\$2.35
Energy Charge per kWh			
On-Peak Period Energy		\$0.04855	
Off-Peak Period Energy		\$0.02341	
Energy Charge Credit per Month per kWh			
All kWh in Excess of 400 Hours Times the On-Peak Period Billing Demand, Not to Exceed 50% of Total kWh		\$0.01518	
		<u>January - December</u>	
Voltage Discounts per Month	<u>Per kW</u>		<u>Per kWh</u>
Primary Voltage	\$0.80		\$0.00105

**INTERIM RATE ADJUSTMENT**

A 13.52% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

(Continued on Sheet No. 5-52.1)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
 SERVICE  
 RATE CODE A89, A90**

Section No. 5  
 1st Revised Sheet No. 52.1

**OPTIONAL CHARGER SERVICE**

Charging equipment may be supplied and installed by the Company through an optional charger service. Optional charger service by Company is available as a Bundled Option that includes a monthly charge for the installed cost of charging equipment or as an independent option, where customer does not receive dedicated EV Supply Infrastructure.

Service Charge per Month per Port	Group A	Group B	Group C
Single Port (A89)	\$37.88	\$52.92	\$67.96
Dual Port (A89)	\$32.85	\$45.80	\$54.94

Group D: For chargers solutions that do not fit into Group A, B, or C pricing bands, the company will apply a levelized revenue requirement percentage of 15.51% to the charger cost and divide by 12 to determine the monthly charger price.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**ENVIRONMENTAL IMPROVEMENT RIDER**

Bills are subject to the adjustments provided for in the Environmental Improvement Rider.

**MONTHLY MINIMUM CHARGE**

For the first two years after the original effective date establishing this tariff, the minimum charge shall be equal to the Customer Charge. Effective two years after the original effective date establishing this tariff, the minimum charge shall be the total of the Customer Charge and a Facilities Charge based on the number of installed charging ports.

Facilities Charge	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Number of Charging Ports	1-9	10-19	20-29	30-39	40+
Monthly Minimum Charge	\$75	\$150	\$300	\$450	\$600

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 5-52.2)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
SERVICE  
RATE CODE A89, A90**

Section No. 5  
1st Revised Sheet No. 52.2

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**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off-peak period is defined as all other hours. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

**DETERMINATION OF ON-PEAK PERIOD DEMAND**

The actual on-peak period demand in kW shall be the greatest 15-minute load for the on-peak period during the month for which the bill is rendered. The adjusted demand in kW for billing purposes shall be determined by dividing the actual on-peak demand by the power factor expressed in percent but not more than 90%, multiplying the quotient so obtained by 90%, and rounding to the nearest whole kW. In no month shall the on-peak period demand to be billed be considered as less than the current month's adjusted on-peak period demand in kW, or 50% of the greatest monthly adjusted on-peak period demand in kW during the preceding 11 months. In no month shall the on-peak billing demand be greater than the value in kW determined by dividing the kWh sales for the billing month by 100 hours per month.

The greatest monthly adjusted on-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

**DETERMINATION OF OFF-PEAK PERIOD DEMAND IN EXCESS OF ON-PEAK PERIOD DEMAND**

The actual off peak period demand in kilowatts shall be the greatest 15-minute load for the off peak period during the month for which the bill is rendered rounded to the nearest whole kW. In no month shall the off-peak period demand for billing purposes be considered as less than the current month's actual off-peak period demand in kW, or 50% of the greatest monthly actual off-peak period demand in kW during the preceding 11 months.

The greatest monthly adjusted off-peak period demand in kW during the preceding 11 months shall not include the additional demand which may result from customer's use of standby capacity contracted for under the Standby Service Rider.

The off-peak period demand in excess of on-peak period demand in kW to be billed shall be determined by subtracting the billing on-peak period demand from the actual off-peak period demand as defined above, but only if the off-peak period demand is greater than the on-peak period demand.

**POWER FACTOR**

For three phase customers with services above 200 amperes, or above 480 volts, the power factor for the month shall be determined by permanently installed metering equipment. For all single phase customers and three phase customers with services 200 amperes or less, a power factor of 90% will be assumed.

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(Continued on Sheet No. 5-52.3)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**ELECTRIC VEHICLE PUBLIC CHARGING PILOT  
SERVICE  
RATE CODE A89, A90**

Section No. 5  
1st Revised Sheet No. 52.3

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**MINIMUM DEMAND TO BE BILLED**

The monthly minimum on-peak period billing demand shall not be less than provided above.

**TERMS AND CONDITIONS OF SERVICE**

1. Electric Vehicle Fleet Pilot Service shall be served through wiring connected to customer's dedicated-meter.
2. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
3. The rate contemplates that this service will require the installation of new facilities to provide electric service to the electric vehicle charger.
4. Customer must agree to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions.
5. Company waives CIAC requirements for non-residential customers under the Standard Installation and Extension Rules under Section 5.1(A)(1)(b), Section 5.1 (A)(2) and (3) and Section 5.2 of the General Rules and Regulations on Tariff Sheets No. 6-23 through 6-27.
6. Alternating current service is provided at the following nominal voltages:
  - a. Secondary Voltage: Single or three phase from 208 volts up to but not including 2,400 volts.
  - b. Primary Voltage: Three phase from 2,400 volts up to but not including 69,000 volts.

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Service voltage available in any given case is dependent upon voltage and capacity of Company lines in vicinity of customer's premises.

**RIGHT TO REFUSE SERVICE**

The Company reserves the right to refuse applicants for service under this Pilot service if it determines that excessive additional capital expenditures will be required to provide service to that applicant.

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
 SERVICE PILOT  
 RATE CODE A91, A92, A93**

Section No. 5  
 1st Revised Sheet No. 52.4

**AVAILABILITY**

Available while the Pilot is in effect to Multi-Dwelling Unit site hosts for service only to residential electric vehicle loads including battery charging and accessory usage for the express purpose of providing charging service to the residents of the site. Availability is subject to limitations based on Company scoring and available budget.

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**CONTRACT**

Participants must contract for the service with the Company. Site hosts participating under both the Shared Parking and Assigned Parking options will contract for the service for 120 months under the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions. EV drivers participating under the Assigned Parking option will contract for the service on a month-to-month basis under the Multifamily Electric Vehicle Assigned Parking Customer Agreement for Residents.

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**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Site host bills shall reflect the standard customer charge, energy charges (if applicable) based on metered kWh usage, plus an optional charger service charge (if applicable). Assigned parking participant bills shall reflect energy charges (if applicable) based on kWh usage measured by their charging equipment, plus the charger service charge. Bills may be subject to a minimum charge based on the monthly customer charge plus optional charger service charge (if applicable). Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

**RATE**

Standard Customer Charge Per Month		\$4.95		
Optional Charger Service Charge Per Month Per Port				
Assigned Parking (A91)		\$16.99		
	<u>Group A</u>	<u>Group B</u>	<u>Group C</u>	
Shared Parking – Single Port (A93)	\$37.88	\$52.92	\$67.96	
Shared Parking – Dual Port (A93)	\$32.85	\$45.80	\$54.94	

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Group D: For chargers solutions that do not fit into Group A, B, or C pricing bands, the company will apply a levelized revenue requirement percentage of 15.51% to the charger cost and divide by 12 to determine the monthly charger price.

Energy Charge per kWh

June-September

On-Peak Period	\$0.22576
Mid-Peak Period	\$0.09013
Off-Peak Period	\$0.02784

(Continued on Sheet No. 5-52.5)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
SERVICE PILOT (Continued)  
RATE CODE A91, A92, A93**

Section No. 5  
2nd Revised Sheet No. 52.5

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**RATE (Continued)**

Energy Charge per kWh

Other Months

On-Peak Period	\$0.19266
Mid-Peak Period	\$0.07515
Off-Peak Period	\$0.02784

**INTERIM RATE ADJUSTMENT**

An 8.92% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**MONTHLY MINIMUM CHARGE**

Customer Charge plus Optional Charger Service (if applicable).

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

**DEFINITION OF PEAK PERIODS**

The On-Peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The Mid-Peak period is defined as all hours not defined as On-Peak or Off-Peak periods. The Off-Peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day.

**TERMS AND CONDITIONS OF SERVICE**

1. Multi-dwelling unit electric vehicle service shall be separately served and metered and must at no time be connected to facilities serving site host's other loads. Metering may be installed as a sub-meter behind the site host's main meter, in which case consumption under this rate schedule will be subtracted from the main meter for purposes of billing site host's non-electric vehicle electricity usage.

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(Continued on Sheet No. 5-52.6)

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**MULTI-DWELLING UNIT ELECTRIC VEHICLE  
SERVICE PILOT (Continued)  
RATE CODE A91, A92, A93**

Section No. 5  
1st Revised Sheet No. 52.6

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**TERMS AND CONDITIONS OF SERVICE (Continued)**

2. Consumption under the Assigned Parking option will be measured by charging equipment for each assigned parking spot and will be subtracted from the dedicated meter for charging equipment. Site hosts will be responsible for meter usage not accounted for from assigned parking spot usage.
3. The rate contemplates that the service will require the installation of new facilities to provide electric service to the electric vehicle chargers.
4. For participating affordable housing site hosts and market-rate site hosts in the first tranche of participants, the Company waives CIAC requirements for non-residential customers under the Standard Installation and Extension Rules under Section 5.1(A)(1)(b), Section 5.1 (A)(2) and (3) and Section 5.2 of the General Rules and Regulations on Tariff Sheets No. 6-23 through 6.27. The Company waives a portion of the CIAC requirements for market-rate site hosts in the second tranche of participants.
5. Company will cover 100 percent of EV Service Connection Costs for affordable housing site hosts and market-rate site hosts in first tranche. Market-rate site hosts in second and third tranche of participants will receive a revenue-based allowance for EV Service Connection costs.
8. The site host shall supply, at no expense to the Company, a suitable location for meters and associated equipment used for billing. Installations must conform to the Company's specifications.
9. Company may require site host to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
10. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
11. Participants must agree to the Commercial Electric Vehicle Infrastructure Pilot Program Terms and Conditions.

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COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

Minnesota



## COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PILOT PROGRAM TERMS AND CONDITIONS

**1. GENERAL.** These Commercial Electric Vehicle (EV) Infrastructure Pilot Program Terms and Conditions (“Program Terms and Conditions”) are incorporated into and form part of the Program Application signed by Customer and submitted to Xcel Energy for the purpose of enrolling in an Xcel Energy EV Program. Collectively, the Program Application and these Program Terms and Conditions shall be referred to herein the “Agreement.” By signing and submitting the Program Application, Customer agrees to these Program Terms and Conditions, and agrees that if Customer’s Program Application is accepted by Xcel Energy pursuant to Section 2 below, Customer’s participation in the applicable EV Program is subject to and governed by this Agreement. Capitalized terms used in these Program Terms shall have the meaning set forth in Section 10 below or as otherwise defined herein and if not defined in these Program Terms and Conditions shall have the meaning provided in the applicable Program Application.

**2. EV PROGRAM ENROLLEMENT.** Customer may apply to the Xcel Energy EV Program by completing and submitting a Program Application via Xcel Energy’s EV Program enrollment process set forth on Xcel Energy’s website. Upon Xcel Energy’s receipt of a Program Application, Xcel Energy will evaluate Customer’s Program Application in accordance with Xcel Energy’s established review and scoring framework and, provided the Customer Program Application achieves a minimum acceptable score based on this framework and subject to other EV Program limitations, including but not limited to available EV Program funding, expiration or termination of the EV Program, or modification of the EV Program offerings, Xcel Energy may accept Customer’s Program Application and approve Customer’s enrollment into the EV Program by providing Customer written notice that its Program Application has been accepted (“**Acceptance**”). If Customer’s Program Application is not accepted, and Customer will not be enrolled in a EV Program, Xcel Energy will provide Customer notice of the rejection along with the rationale for the rejection. Customer will be able to reapply at any point in time after this notification by submitting a new Program Application. The review and scoring of Customer’s Program Application in accordance with Xcel Energy’s established scoring framework will be within Xcel Energy’s sole discretion. Xcel Energy reserves the right to reject any Program Application at any time, for any reason. Xcel Energy may require additional information and assistance from Customer to allow Xcel Energy to process Customer’s Program Application. Customer’s failure to provide such additional information and/or assistance may require Xcel Energy to reject Customer’s Program Application. Upon Acceptance, and provided Customer has met the applicable Customer Requirements set forth in Section 3 of these Program Terms and Conditions and the Customer Location Requirements set

forth in Section 4 of these Program Terms and Conditions, Xcel Energy will provide the EV Supply Infrastructure, Xcel Energy-Supplied Charging Equipment, if applicable, and/or related services as set forth in Section 6 of these Program Terms and Conditions in accordance with the terms of this Agreement.

**3. CUSTOMER REQUIREMENTS.** To be eligible to participate in an EV Program and prior to Xcel Energy undertaking any Xcel Energy responsibility set forth in Section 6 of these Program Terms and Conditions, Customer must provide documentation reasonably acceptable to Xcel Energy evidencing that Customer meets all the following requirements, as well as any additional requirements which may be set forth in Section 11 which are applicable solely to the specific Use Case for the EV Program selected by Customer on the Program Application (the “**Customer Requirements**”):

3.1 Customer must, and throughout the Term will, qualify as a non-residential electric customer of Xcel Energy in Minnesota;

3.2 own or lease the Customer Location or Site Host Location, or be Xcel Energy’s customer of record associated with the electric service meter at the Customer Location or Site Host Location;

3.3 Customer plans to and must install a minimum two Level 2 charging ports per Customer Location or Site Host Location, or one DCFC charger;

3.4 Customer shall provide express written consent, in a form acceptable to Xcel Energy in its sole discretion, from the owner of the Customer Location or Site Host Location to grant Xcel Energy the appropriate real property rights and continuous access to EV Supply Infrastructure and Xcel Energy Supplied Charging Equipment, as applicable, installed, owned, and maintained by Xcel Energy, which may include any necessary license agreements or easements signed by the owner of the Customer Location or Site Host Location and approved by Xcel Energy;

3.5 if Optional Charging Equipment is available under the specific Use Case for the EV Program selected by Customer on its Program Application and Customer elects to use the Optional Charging Equipment, Customer must commit to paying the monthly bundled customer charge as provided in Xcel Energy’s applicable electric tariff on file with the Commission;

3.6 Customer must agree that all Charging Equipment electric load will be separately metered from any other load served at the Customer Location or Site Host Location;

3.7 If Customer does not use Xcel Energy-Supplied Charging Equipment, Customer must provide proof, acceptable to Xcel Energy in its sole determination, that Customer has purchased and has the ability, financial, technical, or otherwise, to install Charging Equipment that meets Xcel Energy’s technical and safety standards, demonstrates interoperability, cyber security, and smart charging capabilities that are required for Customer to participate in Xcel Energy’s managed charging rates

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

or programs;

3.8 Customer must provide proof, acceptable to Xcel Energy in its sole determination, that Customer can provide demonstrated support of its ability to utilize the EV Supply Infrastructure within six (6) months of its In-Service Date.

**4. CUSTOMER/SITE HOST LOCATION REQUIREMENTS.** To be eligible to receive EV Supply Infrastructure, Customer must also provide Xcel Energy documentation reasonably acceptable to Xcel Energy evidencing that the Customer Location or Site Host Location meets the following requirements, as well as any additional requirements which may be set forth in Section 11 which are applicable to the specific Use Case for the EV Program selected by Customer on the Program Application (the “**Customer Location Requirements**”):

4.1 the Customer Location or Site Host Location must be located in Xcel Energy’s electric service territory;

4.2 the Customer Location or Site Host Location must meet Xcel Energy’s minimum safety, accessibility, convenience, and reliability requirements; and,

4.3 the Customer Location or Site Host Location must provide a location acceptable to Xcel Energy, in Xcel Energy’s sole determination, to deploy Charging Equipment in a cost-effective manner, based on factors such as proximity to transformers, length of trenching, available transmission and distribution capacity, and ease of access for EV Drivers, as determined by Xcel Energy in its sole discretion; and,

4.4 If Customer’s Use Case is for public use, the Customer Location meet Xcel Energy’s minimum safety, accessibility, convenience, and reliability requirements; and the Charging Equipment must be located in public places that generally allow for continual access.

**5. CUSTOMER RESPONSIBILITIES AND OBLIGATIONS.**

5.1 Except for the costs incurred by Xcel Energy to undertake the responsibilities set forth in Section 6 of these Program Terms and Conditions, and except as provided in the applicable EV Program specific terms as set forth in Section 11, throughout the Term Customer will pay all other costs associated with this Agreement and its participation in the EV Program.

5.2 Except as provided in Section 11, during the Term, Customer shall take electric service to the Charging Equipment on Xcel Energy’s published rate or rates on file with the Commission which are applicable to the EV Program Use Case selected by Customer on its Program Application, or any rate that replaces such rate.

5.3 If Optional Charging Equipment is available for the specific EV Program selected by Customer in the Program Application, subject to Section 3.7 above, Customer may opt to either supply, and install Charging Equipment itself or have Xcel Energy supply and install Charging Equipment in connection with the EV Program. If such event, if Customer opts to have Xcel Energy supply and install Optional Charging Equipment, Customer must notify Xcel Energy of its decision within thirty (30) Calendar Days of the Acceptance of Customer’s Program Application and select Xcel Energy-approved Optional Charging Equipment subject to ongoing monthly rates applicable for such equipment under Xcel Energy’s published tariffs on file with the Commission.

5.4 If Customer has selected Optional Charging Equipment, Customer may subsequently decide to replace the Optional

Charging Equipment with Customer-Supplied Charging Equipment purchased, supplied, and installed by Customer upon thirty (30) days’ notice to Xcel Energy, during which time Xcel Energy and Customer can coordinate a mutually agreeable time for Xcel Energy to remove the Optional Charging Equipment at no cost to Customer. Once Xcel Energy has removed the Optional Charging Equipment from the Customer Location or Site Host Location, on a going-forward basis, the terms in this Agreement concerning Customer-Supplied Charging Equipment will apply, and the terms in this Agreement concerning Optional Charging Equipment shall no longer apply.

5.5 Customer will comply with Xcel Energy’s safety and technical specifications.

5.6 Customer will assist in coordinating installation and maintenance of the EV Supply Infrastructure, and Xcel Energy-Supplied Charging Equipment, if applicable, at the Customer Location or Site Host Location with Xcel Energy and its contractor(s), including any applicable Charging Equipment manufacturers, vendors, or subcontractors, who provide services in connection with installing and maintaining the EV Supply Infrastructure and Optional Charging Equipment. This will include issuing or obtaining any necessary license and right to allow Xcel Energy and its contractor(s) access to the Customer Location or Site Host Location for the installation and maintenance of the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable. Customer will also meet regularly with Xcel Energy to review and coordinate time schedules and track EV Supply Infrastructure and Charging Equipment installation status.

5.7 Unless Customer opts to have Xcel Energy supply and install the Optional Charging Equipment or the specific Use Case for the EV Program selected by Customer on its Program Application requires Xcel Energy to provide Xcel Energy-Supplied Charging Equipment, Customer will be responsible for the procurement of all necessary Charging Equipment (i.e. Customer-Supplied Charging Equipment) required for the EV Program at the Customer Location or Site Host Location within thirty (30) Calendar Days of the Acceptance of Customer’s Program Application, and shall provide proof of such purchase to Xcel Energy. Failure to provide proof of purchase within thirty (30) Calendar Days after the Acceptance of Customer’s Program Application will void any of Xcel Energy’s obligations under Section 6 of this Agreement, and Xcel Energy may terminate, in its sole discretion, this Agreement immediately upon written notice to Customer in the event of such failure.

5.8 Customer will provide Xcel Energy with accurate and complete information in order to permit Xcel Energy to successfully install and complete the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, for the EV Program. Customer consents to and permits Xcel Energy and its contractor(s), including any applicable Charging Equipment manufacturers, vendors, and subcontractors, who provided services in connection with installing and maintaining the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, to have remote access in order to access to the Charging Equipment to collect, and share data from the Charging Equipment with respect to charging activity, vehicle usage, and technical performance (the “Data”) during the Term of this Agreement for purposes of managing and administering the EV Program. In addition to the Data, Customer shall Xcel Energy any other information relating to the EV Program, the Charging Equipment and the usage of the Charging Equipment, which Xcel Energy is unable to obtain

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

through remote access and which Xcel Energy may request from time to time, including any rates and fees Customer charged to EV Drivers or other end users of the Charging Equipment and when such rates and fees were in effect. Xcel Energy shall not be prohibited or restricted from disclosure or use of any Data, information, or documents it receives from Customer, nor is Xcel Energy prohibited or restricted from disclosing documents or information Customer provides pursuant to this Agreement in connection with any legal or regulatory proceeding. Except for information or documents properly designated by Customer as "Not Public Data," Xcel Energy shall not be prohibited or restricted from disclosure or use of any Data, information, or documents it receives from Customer, nor is Xcel Energy prohibited or restricted from disclosing "Not Public Data" in connection with any legal or regulatory proceeding, provided Xcel Energy provides Customer with notice pursuant to Section 9.9 below.

5.9 If Customer opts to provide the Charging Equipment, under the applicable EV Program, Customer must install the Charging Equipment at the Customer Location or Site Host Location sufficient to fully utilize the EV Supply Infrastructure then within six (6) months of the In-Service Date of the EV Supply Infrastructure.

5.10 If Customer provides the Charging Equipment, after installation of both the Charging Equipment and EV Supply Infrastructure is completed, Customer will operate and maintain the Charging Equipment installed by Customer at the Customer Location or Site Host Location for the Term of this Agreement, at Customer's sole cost and expense, and guarantees the safe and reliable operation of the Charging Equipment installed by Customer in accordance with Applicable Laws.

5.11 During the Term, Customer grants Xcel Energy and its officers, agents, representatives, employees, and contractors a right of ingress, egress, and physical disturbance to the Customer Location or Site Host Location on a seven (7) day, twenty-four (24) hour per day basis as required to construct, install, maintain, operate, repair, and remove EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, in accordance with the provisions of this Agreement. The general manner of such ingress and egress is subject to coordination with Customer.

5.12 Customer will promptly notify Xcel Energy in the event Customer becomes aware that the Charging Equipment or EV Supply Infrastructure fails to operate or otherwise requires repair.

5.13 In the case of total equipment failure of all or a portion of the EV Supply Infrastructure or Xcel Energy-Supplied Charging Equipment, if applicable, that is caused by Customer, or its employees, agents, or contractors, and not covered by a manufacturer's warranty, Customer may either request that Xcel Energy replace the necessary equipment at Customer's expense or terminate this Agreement pursuant to Section 7.2 and pay Xcel Energy the Buyout Amount as set forth in Section 7.5.

5.14 Customer will maintain the area surrounding the EV Supply Infrastructure and Charging Equipment, including but not limited to pavement maintenance, pruning of vegetation, snow removal (including the prompt removal of snow within any parking spaces designated for use by EV Drivers), and the repair of security lighting.

5.15 Customer may remedy minor issues with the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, that do not require qualified technicians to address, such as resetting infrequently tripped circuit breakers.

5.16 It is Customer's responsibility to maintain the Customer-Supplied Charging Equipment.

5.17 Customer will participate in surveys initiated by Xcel Energy and provide feedback about the EV Program. Further, Customer will permit Xcel Energy to conduct surveys of EV drivers and potential EV drivers, as applicable, related to end-user satisfaction of the EV Program, and electric vehicles and electric vehicle charging infrastructure in general. Xcel Energy may freely use such feedback without restriction.

5.18 If Customer's Use Case is under the Public Charging Pilot or the "Shared Parking" Multi-Dwelling Unit (MDU) Service Pilot, any rates or fees Customer will charge EV Drivers or other end users for using the Charging Equipment at the Customer Location or Site Host Location must reflect the on-peak and off-peak time periods of Xcel Energy's applicable time-of-use rate on file with the Commission and will include an energy rate differential ratio of at least 2:1. Customer may opt out of this default arrangement at its discretion to set pricing that reflects other considerations or needs, provided that the prices Customer charges to EV Drivers or other end users are reported to Xcel Energy as set forth in Section 5.8.

## 6. XCEL ENERGY RESPONSIBILITIES

6.1 Xcel Energy and/or qualified contractors hired by Xcel Energy will prepare construction drawings ("**Construction Drawings**") for the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, at location(s) within the Customer Location or Site Host Location determined by Customer in coordination with Xcel Energy. The Construction Drawings will show the proposed EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if such Charging Equipment will be provided by Xcel Energy under the Use Case for the EV Program, and its location(s) within the Customer Location or Site Host Location. Prior to Xcel Energy commencing construction of the EV Supply Infrastructure, Customer must approve the Construction Drawings. Once approved, the Construction Drawings may be modified only with the mutual consent of both Parties.

6.2 Xcel Energy will prepare and coordinate the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, installation schedule ("**Installation Schedule**") with designated Customer staff as to minimize disruption to Customer's operations. Xcel Energy will also meet regularly with Customer staff to review and coordinate time schedules and track EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment status. Prior to Xcel Energy commencing construction of the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, as applicable, Customer must approve the Installation Schedule. Once approved, the Installation Schedule may be modified only with the mutual consent of both Parties.

6.3 Xcel Energy will install the EV Service Connection, EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, pursuant to the Installation Schedule and consistent with the Construction Drawings in a good and workmanlike manner, with qualified and competent contractors, in compliance with all applicable codes and engineering standards, and in compliance with all Applicable Laws.

6.4 Except as otherwise provided in this Agreement, Xcel Energy will retain title and ownership of the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

applicable, once installation and commissioning are completed. Customers shall acquire no right, title, or interest in any portion of the work performed by Xcel Energy or Xcel Energy's equipment, EV Supply Infrastructure, Xcel Energy-Supplied Charging Equipment, or Xcel Energy Facilities unless transferred to Customer under the provisions in Section 7 of these Program Terms and Conditions. The work constructed and installed by Xcel Energy shall be and remain the personal property of Xcel Energy, shall not be considered a fixture of the property, shall not attach to the realty, and shall not be alienable or lienable by Customer or any third party for the Term of this Agreement, and Customer shall not allow lien claims, third-party interest, or any encumbrances to be placed on the work, EV Supply Infrastructure, and/or Xcel Energy-Supplied Charging Equipment. Xcel Energy shall not permit any mechanics' or other liens to be placed on Customer Location or Site Host Location during the Term of this Agreement caused by or resulting from any work performed, materials, or supplies furnished by or at the request of Xcel Energy or its contractors.

65 Xcel Energy shall own, operate, and maintain, at its own expense, the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, at the Customer Location or Site Host Location for the Term of this Agreement, unless terminated earlier as provided herein. Xcel Energy may engage one or more third-party contractors to complete its obligations under this Agreement. Xcel Energy shall not knowingly award contracts to contractors who have been or are suspended or debarred by the State of Minnesota or the United States. Xcel Energy shall be responsible for supervising any third-party contractor it chooses to retain.

66 After installation of, and while Xcel Energy owns the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, if applicable, Xcel Energy shall conduct emergency repairs on the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, on an as needed basis in accordance with the following: (a) Requests for emergency repairs can be made by Customer or Xcel Energy staff; (b) Customer's requests for repair shall be made via telephone, email, or text message to an agreed-upon representative at Xcel Energy; (c) All emergency repairs shall be completed by qualified technicians selected by Xcel Energy; (d) emergency repair service calls shall begin with inspection of malfunctioning EV Supply Infrastructure or Xcel Energy-Supplied Charging Equipment, as applicable, a diagnosis of the potential issue, and an expected time required for repair; and, (e) Xcel Energy shall use commercially reasonable efforts to repair the EV Supply Infrastructure or Xcel Energy-Supplied Charging Equipment, as applicable, in a timely manner.

67 After installation of, and while Xcel Energy owns the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment, as applicable, Xcel Energy may inspect the EV Supply Infrastructure and Xcel Energy-Supplied Charging Equipment at the Customer Location or Site Host Location for general wear or malfunction on a periodic basis as determined by Xcel Energy. Such inspection may include but is not limited to the following: (a) Xcel Energy shall have the right, but not the obligation, to inspect the Charging Equipment for initial and ongoing integration with the EV Supply Infrastructure; and (b) if periodic inspections reveal failure of EV Supply Infrastructure or Xcel Energy-Supplied Charging Equipment, as applicable, Xcel Energy shall request on-site technical services for inspection, diagnosis, and emergency repair as set forth in Section 6.6.

68 Subject to any tariffs or rates applicable to the EV Program which are on file with the Commission and any EV

Program specific requirements and limitations set forth in Section 11 of these Program Terms and Conditions, Xcel Energy shall be responsible for the cost of purchasing and installing the EV Service Connection, EV Supply Infrastructure and Energy-Supplied Charging Equipment, as applicable. Xcel Energy shall also be responsible for all costs that Xcel Energy, in its sole discretion, deems reasonably required for operating and maintaining the EV Supply Infrastructure and Energy-Supplied Charging Equipment, as applicable, The foregoing notwithstanding and except as provided in the EV Program specific terms set forth in Section 11, Customer shall pay for all power consumed by the EV Supply Infrastructure and/or dispensed from the Charging Equipment, any applicable charges for Optional Charging Equipment as provided herein, and any costs set forth in Section 11 of these Program Terms and Conditions. All payments for this EV Supply Infrastructure and Energy-Supplied Charging Equipment, as applicable, will be made directly by Xcel Energy to the third-party contractor retained to complete the work, and Xcel Energy will have no financial obligation for any payments to Customer.

69 In the case of total equipment failure of all or a portion of the EV Supply Infrastructure and/or Xcel Energy-Supplied Charging Equipment, as applicable, that is caused by Xcel Energy, or its employees, agents, or contractors, and not covered by a manufacturer's warranty, Xcel Energy may either replace the necessary equipment at Xcel Energy's expense or terminate this Agreement pursuant to Section 7.1.

#### 7. TERM AND TERMINATION

71 This Agreement shall be effective upon Xcel Energy's Acceptance of Customer into the applicable EV Program pursuant to Section 2 of these Program Terms and Condition (the "Effective Date"). The term of this Agreement (the "Term") shall begin on the Effective Date and shall continue for ten (10) years following the In-Service Date.

72 Subject to Section 7.3, either Party may terminate this Agreement for any reason or no reason, without cause, at any time by providing the other Party sixty (60) Calendar Days prior written notice. If Xcel Energy terminates this Agreement pursuant to this Section 7.2 for a reason other than Customer's material breach of Customer's obligations under this Agreement, Xcel Energy shall transfer title of the EV Supply Infrastructure to Customer, without any payment from Customer, including the Buy Out Amount, and the EV Supply Infrastructure will be deemed abandoned in place in "AS IS" condition, without any warranty (express or implied) by Xcel Energy.

73 Either Party may terminate this Agreement if the other Party materially breaches any of its obligations under the Agreement, in accordance with the following: (a) prior to termination pursuant to this Section 7.3, the Party seeking the termination shall give the other Party written notice of the breach and of the Party's intent to terminate. If the breaching Party has not entirely cured the breach within thirty (30) days of its receipt of the notice (or if the breach is not one that can be reasonably cured within thirty (30) days or if the breaching Party is not working diligently to cure such breach), then the Party giving the notice may terminate the Agreement without reference to Section 7.1 at any time thereafter by giving a written notice of termination. A Party terminating this Agreement pursuant to this Section 7.3 does not waive its rights to any remedy at law or in equity for a material breach of the Agreement.

74 If Customer terminates the Agreement pursuant to Section 7.3 for Xcel Energy's uncured material breach of the Agreement,

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

Xcel Energy shall transfer title of the EV Supply Infrastructure to Customer, without any payment from Customer, including the Buyout Amount set forth in Section 7.5, and the EV Supply Infrastructure will be deemed abandoned in place in "AS IS" condition, without any warranty (express or implied) by Xcel Energy.

75 In the event (a) Customer terminates this Agreement for any reason other than pursuant to the provisions of Section 7.3 for Xcel Energy's uncured material breach of its obligations hereunder, or (b) Xcel Energy terminate this Agreement pursuant to the provisions of Section 7.3 for Customer's material breach of its obligations hereunder, Customer will pay to Xcel Energy the Buyout Amount. The Buyout Amount, if applicable, will be due and payable by Customer thirty (30) days following the termination of the Agreement. Upon payment of the Buyout Amount, Xcel Energy will transfer title of the EV Supply Infrastructure to Customer on an "AS IS" basis, without any warranty (express or implied).

76 No less than one hundred and eighty (180) days prior to the end of the Term, the Parties shall meet and negotiate, in good faith, a mutually agreeable plan for the EV Supply Infrastructure that will commence at the end of the Term of this Agreement, which plan may include but is not limited to: (a) an extension of the Term of this Agreement for a mutually agreed period of time; (b) the transfer of the title to the EV Supply Infrastructure to Customer in "AS IS" condition, without any warranties (express or implied) by Xcel Energy at the expiration of the Term; or (c) the removal, at Xcel Energy's expense, of the portion of the EV Supply Infrastructure that is above ground, and restoration of the Customer Location or Site Host Location to original conditions or any other conditions agreed upon by the Parties, with Xcel Energy transferring title of the remaining portion of the EV Supply Infrastructure that is not above ground to Customer, without any payment from Customer, and the Remaining EV Supply Infrastructure will be deemed abandoned in place in "AS IS" condition, without any warranty (express or implied) by Xcel Energy.

77 If, at the end of the Term, the Parties have not come to a mutual agreement pursuant to Section 7.6 above, the Term shall continue until the Parties are able to come to a mutual agreement or until either Party unilaterally terminates the Agreement pursuant to Section 7.1.

78 Upon termination or expiration of the Agreement, to the extent Customer takes ownership of the EV Supply Infrastructure, Customer assumes the responsibility of maintaining the EV Supply Infrastructure, and in order to continue receiving electric service, Customer must take electric service pursuant to a tariff for which the Customer is then eligible.

#### 8. WARRANTIES AND LIMITATION OF LIABILITY

81 Customer represents and warrants that: (a) the execution, delivery, and performance of the Agreement has been duly authorized by all requisite action on the part of Customer, and Customer has full power and authority to grant the rights and licenses granted by the Agreement to Xcel Energy, including but not limited to the real property rights and licenses set forth in this Agreement which are required for Xcel Energy to install, access and maintain the EV Supply Infrastructure and Optional Charging Equipment; (b) this Agreement constitutes the legal, valid, and binding obligation of Customer; (b) Customer is and will remain duly licensed, authorized or qualified to do business, and in good standing; and (c) Customer is and will remain in compliance with all Applicable Laws applicable to Customer in connection with

performance under this Agreement.

Minnesota  
82 Xcel Energy, itself or through its contractor(s), shall perform the installation of the EV Supply Infrastructure and the Optional Charging Equipment, as applicable, in a safe and professional manner in accordance with all Applicable Laws. **EXCEPT AS EXPRESSLY SET FORTH IN THIS SECTION 8.2, XCEL ENERGY DOES NOT PROVIDE AND HEREBY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE WORK TO BE PERFORMED, SERVICES TO BE PROVIDED, THE EV SUPPLY INFRASTRUCTURE OR XCEL ENERGY-SUPPLIED CHARGING EQUIPMENT TO BE DELIVERED UNDER THIS AGREEMENT. IN THE EVENT TITLE TO EV SUPPLY INFRASTRUCTURE OR XCEL ENERGY-SUPPLIED CHARGING EQUIPMENT IS TRANSFERRED TO CUSTOMER IN ACCORDANCE WITH THE TERMS OF THIS AGREEMENT, THE EV SUPPLY INFRASTRUCTURE AND XCEL ENERGY-SUPPLIED CHARGING EQUIPMENT IS PROVIDED "AS IS" AND WITH NO WARRANTY OF ANY KIND. XCEL ENERGY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

83 **IN NO EVENT, WHETHER BASED ON CONTRACT, INDEMNITY, WARRANTY, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE, SHALL XCEL ENERGY BE LIABLE TO CUSTOMER AND ITS AGENTS AND EMPLOYEES, FOR SPECIAL, INDIRECT, EXEMPLARY, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHATSOEVER INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS OR REVENUE. IN NO EVENT WILL XCEL ENERGY BE LIABLE TO CUSTOMER FOR ANY CLAIMS, EXPENSES, LOSSES, DAMAGES, OR LAWSUITS ARISING OUT OF ANY INTERRUPTIONS OR DISTURBANCES IN ELECTRIC SERVICE. XCEL ENERGY'S LIABILITY ON ANY CLAIM OF ANY KIND FOR ANY LOSS OR DAMAGE ARISING OUT OF OR IN CONNECTION WITH OR RESULTING FROM THIS AGREEMENT, OR FROM PERFORMANCE OR BREACH THEREOF, SHALL IN NO CASE EXCEED THE BUYOUT AMOUNT.**

84 Subject to the limitations contained in this Agreement, each Party agrees that it will be responsible for its own acts and the results thereof to the extent authorized by Applicable Laws and shall not be responsible for the acts of the other Party and the results thereof. Xcel Energy does not assume any responsibility for the adequacy, safety, design or satisfactory performance of the Customer Facilities, Customer's design of any EV Supply Infrastructure, or the Charging Equipment which is not Xcel Energy-Supplied Charging Equipment. Customer shall be responsible for any damages or claims arising out of Customer-Supplied Charging Equipment or use of any other Charging Equipment which is not supplied by Xcel Energy.

#### 9. GENERAL TERMS

91 *No Third-Party Beneficiary.* This Agreement is between the Parties and creates no third-party beneficiaries. Nothing in this Agreement gives or shall be construed to give or provide any benefit, direct, indirect, or otherwise, to third parties unless third persons are expressly described as intended to be beneficiaries of its terms.

92 *Assignment Prohibited.* Customer shall not assign the Agreement, or any part thereof, nor delegate in whole or in part, its responsibilities hereunder, without the prior written consent of Xcel Energy. Unless otherwise agreed to in writing by Xcel Energy, no assignment will release or discharge Customer from any

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

obligations under the Agreement. Any prohibited assignment or delegation shall be null and void.

93 *Legal Compliance.* The Parties shall comply with all Applicable Laws. Each Party shall monitor its agents, contractors, and employees for the purposes of ensuring compliance with all Applicable Laws. If any change in circumstances or law will affect a Party's performance under this Agreement, that Party shall notify the other Party of the change in circumstances or law at the earliest reasonable opportunity, and the Parties will negotiate in good faith to modify the Agreement to take into account the changed circumstance or law.

94 *Dispute Resolution.* In the event of any Dispute arising out of or relating to this Agreement, the complaining Party shall provide written notice of the Dispute to the other Party. The Dispute notice shall describe the facts surrounding the Dispute in sufficient detail to apprise the other Party of the nature of the Dispute. Xcel Energy and Customer shall attempt in good faith to settle all Disputes through the negotiation process set forth in this Section. To this effect, unless otherwise agreed, Xcel Energy and Customer shall conduct at least one face-to-face meeting between the designated representatives from both Parties in an attempt to reach a solution that is satisfactory to both Xcel Energy and Customer. Such a meeting shall take place within seven (7) days following delivery of a Dispute notice. If that meeting does not resolve the Dispute, Xcel Energy and Customer shall have executive level leadership from both Parties meet and attempt to resolve the Dispute. If Xcel Energy and Customer fail to resolve a Dispute in accordance with this Section, either Party may, subject to Section 9.5, proceed to a court of competent jurisdiction and may, subject to any limitation set forth herein, pursue any remedies available to it at law or in equity.

95 *Applicable Law and Venue.* This Agreement shall be interpreted in accordance with the laws of the State of Minnesota. Venue for all legal proceedings arising out of or relating to this Agreement or breach thereof shall be in the state or federal court with competent jurisdiction in Ramsey County, Minnesota.

96 *Non-Waiver.* The failure of either Party at any time to insist upon the strict performance of any or all of the terms, conditions, and covenants in this Agreement shall not be deemed a waiver by that Party of any subsequent breach or default in the said terms, conditions, or covenants by the other Party.

97 *Complete Agreement.* This Agreement constitutes the complete and exclusive understanding of the Parties concerning its subject matter. This Agreement supersedes all prior agreements, representations, understandings, and communications, written or oral, between the Parties as to the subject matter of this Agreement.

98 *Amendments.* The terms of this Agreement may be changed, amended or modified only by mutual signed agreement of the Parties.

99 *Data Practices.* Each Party must comply with the Minnesota Government Data Practices Act (Minnesota Statutes, chapter 13), as it applies to any data received, collected, stored, or disseminated by a Party for the work performed under this Agreement. However, nothing prevents the public filing of this Agreement with the Commission. Each Party shall be responsible for specifically identifying any information or data in the Agreement that it believes to be Not Public Data. If a Party receives a data practices request for information about or data from this Agreement (the "Receiving Party"), the Receiving Party shall promptly notify the other Party (the "Notified Party") in writing or email that a data practices request concerning this

Agreement has been received by the Receiving Party and identify what information or documents it would intend to produce in response to such a request. Upon receipt of notice from the Receiving Party that it has received a data request, the Notified Party shall have ten Working Days within which to notify the Receiving Party that the Notified Party does not believe the information or documents can be released pursuant to the Minnesota Government Data Practices Act or other applicable law, and why. The Receiving Party shall be responsible for determining whether the requested data are public or otherwise classified and shall notify the Notified Party in writing or email of its decision, which notification shall be given at least three Working Days prior to release of the information or data to the requesting third party (if applicable). If the Notified Party disagrees with the Receiving Party's determination, the Notified Party may seek a protective order via court of competent jurisdiction. Nothing in this section shall prohibit the disclosure of information, as required by law or legal process, to a court of competent jurisdiction or any agency or governmental body from the state or federal government with appropriate authority to request such information. If either Party is or could be legally compelled to make disclosure of information, the Receiving Party will notify the Notified Party prior to making such disclosure (unless prohibited by Applicable Laws) in order to permit the Notified Party to take steps to limit the effects of such disclosure. To be clear, any request for such information or documents issued to Xcel Energy from the Commission, the Minnesota Department of Commerce, or the Office of the Minnesota Attorney General may be responded to by Xcel Energy in full, and if either Party believes that some portion of the response is non-public, such information or document will be marked in a manner consistent with the Minnesota Government Data Practices Act.

910 *Consent to Disclose.* Customer consents to Xcel Energy's unrestricted disclosure of the existence, terms, and status of this Agreement. Customer further acknowledges that pursuant to the terms of this Agreement, Xcel Energy may disclose without restriction any information and documents Customer provides to Xcel Energy pursuant to this Agreement. Customer also consents to Xcel Energy's unrestricted disclosure of any information concerning the EV Supply Infrastructure and related services provided to Customer that Xcel Energy has in its possession, including "customer data" as defined by Commission rules, to address Xcel Energy's reporting requirements in Commission proceedings. To the extent the Commission requires any additional written consent from Customer for disclosure of such information, Customer agrees to cooperate with any such request by Xcel Energy.

911 *Property of Xcel Energy.* All reports, drawings, plans, specifications, calculations, studies, software programs, tapes, models, and memoranda, if any, assembled or prepared by Xcel Energy or Xcel Energy's affiliates, independent professional associates, agents, consultants, contractors, or subcontractors pursuant to this Agreement are instruments of service in respect of the Agreement, and Xcel Energy shall retain all ownership and property interest therein. Customer may make and retain copies for information and reference in connection with the Program, provided, however, that it is understood and agreed that such documents are not intended to be re-used by Customer or others on extensions of the Program or on any other project or for any

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

other purpose other than as expressly set forth in this Agreement, and Customer shall not re-use or disclose to any third party all or any portion of such work product without the express prior written consent of Xcel Energy, which consent shall not be unreasonably withheld.

9.12 *Force Majeure.* If a Party's performance is delayed or hindered by a Force Majeure Event, such Party is excused from such performance for the period of delay, provided that the Party claiming a Force Majeure Event has notified the other Party of the delay as soon as is reasonably possible. In such event, the period for performance shall be extended for the period of such delay.

9.13 The Parties are independent contractors. Nothing in this Agreement or in the activities contemplated by the Parties hereunder shall be deemed to create an agency, partnership, employment or joint venture relationship between the Parties or any of their representatives. Neither Party is an agent of the other nor has the authority to represent the other as to any matters. Customer responsible for the safety of its respective agents, employees and other representatives. Xcel Energy in no way assumes any of the duties, obligations or liabilities attributed to Customer under the Agreement.

9.14 Those provisions of this Agreement which would require that they survive termination of the Agreement in whole or part in order to give them full force and effect will survive the termination of the Agreement, regardless of the date, cause or manner of the termination. Company's right to retain any Data collected in connection with the EV Program shall survive termination or expiration of the Agreement. In addition, all rights of action arising from or related to the Agreement that accrue during the Term of the Agreement, and any remedies for such claims, both legal and equitable, will survive such termination.

9.15 *Branding and Consumer Education.* The Parties agree to discuss opportunities for Xcel Energy branding, consumer outreach and education efforts related to the benefits of electric vehicles, and implementation of renewable energy in connection with the EV Program.

9.16 *Taxes on Sale of EV Supply Infrastructure.* If Xcel Energy sells the EV Supply Infrastructure to Customer for an amount equal to the Buyout Amount, then Xcel Energy will deliver to Customer a Bill of Sale with a purchase price equal to the Buyout Amount for such EV Supply Infrastructure. Customer further agrees that, in accordance with federal and state laws in effect at the time of the sale of the EV Supply Infrastructure from Xcel Energy to Customer: (i) Customer shall be responsible for and shall pay transfer taxes, either directly to a taxing authority or to Xcel Energy, as required by law, related to the Buyout Amount as stated on the Bill of Sale; and (ii) Xcel Energy agrees to complete a Form W-9 "Request for Taxpayer Identification Number and Certification" in the event of such sale.

9.17 *Consent to Xcel Energy's Applicable Terms and Conditions.* Customer agrees that the electric service Customer will take in connection with this Agreement will be under and subject to Xcel Energy's published applicable rate schedule and shall be supplied for Customer's use as provided in the General Rules and Regulations of Xcel Energy's Electric Rate Book for Customer's service under this Agreement, as they now exist or may hereafter be changed, on file with the Commission. A copy of such Rules and Regulations and applicable Rate Schedules are available from Xcel Energy. Customer further acknowledges that the line

extension necessary for Xcel Energy to install the EV Supply Infrastructure and Customer's financial obligations in connection with the line extension and EV Supply Infrastructure Costs are described in Section 4 of this Agreement specifically, and in Section 5 of the General Rules and Regulations (Section 6) of the Company's Minnesota Electric Rate Book generally.

9.18 *Notice.* Any notice required or permitted by this Agreement shall be deemed given (i) when delivered by hand, (ii) on the next Working Day after being sent by a reputable overnight courier service for next Working Day delivery, or (iii) on the third Working Day after being sent by prepaid United States mail, return receipt requested. Notices to Customer shall be sent to the address provided by Customer on the Program Application. Notices to Xcel Energy shall be addressed to Xcel Energy Services Inc., Attention: EV Program Team, 401 Nicollet Mall, Floor 6, Minneapolis, MN 55401, with an electronic copy of the notice sent to [evapplications@xcelenergy.com](mailto:evapplications@xcelenergy.com). Either Party may change its address for notice purposes by giving the other Party prior written notice of the new address and the date upon which the change will be effective.

## 10. DEFINITIONS

10.1 "Affordable Housing Multi-Dwelling Unit" means units certified through the Low-Income Renter Certification process as described in the Minnesota Department of Commerce's Conservation Improvement Programs (CIP) Policy Guidelines: Low-Income Programming in Multifamily Buildings with 5+ Units.

10.2 "Applicable Laws" means all applicable federal and state laws, codes, ordinances, rules, regulations, judgments, decrees, directives, guidelines, policy requirements, and orders of any governmental entity having jurisdiction over the electric vehicle ("Electric Vehicle" or "EV"), the practices involved in the EV Program set forth in this Agreement, or any work Xcel Energy or Customer performs relating to this Agreement.

10.3 "Assigned EV Driver" means the EV Driver who has been assigned by the Site Host to use the Assigned Parking Space and Charging Station installed at such parking space and who has an active Residential Agreement with Xcel Energy that allows Xcel Energy to bill the EV Driver for electricity dispensed by the Charging Equipment.

10.4 "Assigned Parking Space" means a dedicated parking space at the Site Host Location having a Charging Station that Site Host agrees to make exclusively available to an Assigned EV Driver.

10.5 "Buyout Amount" means an amount equal to the EV Supply Infrastructure Costs reduced by ten percent (10%) for each full calendar year between the In-Service Date and the date of termination of the Agreement. By way of example only, if the Agreement is terminated eighteen (18) months after the In-Service Date, and Customer is required to pay the Buyout Amount in accordance with Section 7 of this Agreement, the Buyout Amount payable by Customer would be equal to ninety percent (90%) of the EV Supply Infrastructure Costs. In the event the Agreement is terminated by Customer under Section 7.1 or terminated by Xcel Energy for Customer's breach prior to the In-Service Date, the Buyout Amount shall equal the EV Supply Infrastructure Costs.

10.6 "Charging Equipment" means the electric vehicle charging equipment installed at the Customer Location or Site Host Location which is used to deliver electricity from the EV Supply Infrastructure to an electric vehicle. Charging Equipment includes the ungrounded, grounded, and equipment grounding

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

conductors, the electric vehicle connectors, attachment plugs, and all other fittings, devices (including the charger), power outlets, or apparatuses associated with the installed device, but does not include EV Supply Infrastructure.

107 "Charging Station" means the specific portion of the EV Charging Equipment located at each Assigned Parking Space which has a receptacle allowing an EV Driver to connect the EV Driver's electric vehicle to the Charging Equipment for the purposes of charging.

108 "Commission" means the Public Utility Commission of Minnesota.

109 "Customer" or "Site Host" means the entity which has completed, signed and submitted the EV Program Application. For the purposes of these Program Terms and Conditions, Customer shall include Site Host.

1010 "Customer-Supplied Charging Equipment" means all Charging Equipment that is not procured, installed, maintained and owned by Xcel Energy under the EV Program. Any Customer-Supplied Charging Equipment must meet Xcel Energy's technical and safety standards, and demonstrate interoperability, cyber security, and smart charging capabilities that are required for Customer to participate in Xcel Energy's managed charging rates or programs. Xcel Energy will maintain a prequalified list of Charging Equipment which Customer may select from.

1011 "Customer Location" or "Site Host Location" means the location set forth on the Program Application where the EV Supply Infrastructure and Charging Equipment will be installed. Any use of "Customer Location" in these Program Terms and Conditions shall be read to include Site Host Location

1012 "DCFC" means Charging Equipment capable of delivering via direct current using both CHAdeMO and SAE CCS charging connectors.

1013 "Dispute" means a disagreement between Xcel Energy and Customer that arises under, or that relates to, the Agreement.

1014 "EV Driver" means an individual who uses the Charging Equipment at the Customer Location or Site Host Location to charge an electric vehicle.

1015 "EV Service Connection" means all equipment for the service connection on the utility's traditional side of the point of connection, which includes necessary transformer upgrades, pads, poles, new service conductors, as well as metering equipment for EV charging separate from any existing service at the site.

1016 "EV Supply Infrastructure" means service panels, conduit, and wiring from the service connection to the charger stub. EV Supply Infrastructure does not include the line extension necessary to connect Xcel Energy's distribution system to the service connection and does not include the Charging Equipment.

1017 "EV Supply Infrastructure Costs" means the total costs and expenditures incurred by Xcel Energy to procure, design, construct, and install the EV Supply Infrastructure at the Customer Location or Site Host Location, including but not limited to costs of labor, labor loading, materials, transportation, overhead, indirect allocated costs, any allowance for funds used during construction ("AFUDC"), and any other capital related expenditures.

1018 "Facilities" means any privately, publicly, or cooperatively owned line, system, and/or other utility item that

produces, transmits, or distributes communications, power, cable, television, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway drainage, signal systems, and other products or services that serve the public, and/or a privately-owned irrigation system. Any necessary appurtenances to each Facility are considered a part of the Facility.

1019 "Force Majeure Event" means fire, flood, explosion, catastrophe, accident, declared war, riot, act of God, act of terrorism, insurrection, strike, and Applicable Laws that prevent performance, to the extent (i) such event is beyond a Party's control, that due diligence and use of reasonable efforts by the Party claiming the Force Majeure Event could not have avoided or prevented, (ii) that materially and adversely affects a Party's ability to meet its obligations under this Agreement, and (iii) the Party claiming the Force Majeure Event gives prompt written notice of the same to the other Party. A Force Majeure Event does not include events due to the acts or omissions of the Party claiming the Force Majeure Event.

1020 "In-Service Date" means the date the EV Supply Infrastructure has been completed for the specific Customer Location or Site Host Location and is ready for Customer to use, if Customer is providing Customer-Supplier Charging Equipment under the applicable EV Program. If Xcel Energy is providing Charging Equipment under the applicable Use Case for the EV Program, the In-Service Date means the date that EV Supply Infrastructure has been completed for the specific Customer Location or Site Host Location and is ready for Customer to use, and the Xcel Energy-Supplied Charging Equipment at the Customer Location or Site Host Location has been installed, connected, tested, and is ready to use by Customer and/or EV Drivers. Following the installation and testing of the EV Supply Infrastructure and Charging Equipment if provided by Xcel Energy at the Customer Location or Site Host Location, the Parties will mutually agree upon and document the In-Service Date applicable to the Customer Location or Site Host Location.

1021 "Monthly Port Charge" means the applicable rate for "Multi-Dwelling Unit Charging Service - Personal Parking" under Xcel Energy's applicable rate schedule on file with the Commission.

1022 "Multi-Dwelling Unit" includes apartment buildings, condominiums, and mixed-use buildings where EV Drivers currently reside. "Multi-Dwelling Unit" does not include townhouses, row houses, mobile homes, and single-family homes owned by individual residents.

1023 "Not Public Data" has the same definition as under Minn. Stat. § 13.02, subd. 8a, and means any Customer or Xcel Energy data which is classified by statute, federal law, or temporary classification as confidential, private, nonpublic, or protected nonpublic.

1024 "EV Program" means the Xcel Energy Commercial Pilot EV Infrastructure Programs on file with the Commission, which includes the Multi-Dwelling Unit (MDU) Service Pilot, EV Fleet Service Pilot and the Public Charging Pilot. Each EV Program allows Customer to enroll in specific uses for the EV Supply Infrastructure, which may include deploying Charging Equipment for public or community charging (i.e. the Public Charging Pilot), charging of Customer's fleet of EVs (i.e. the Fleet Service Pilot), or charging by residents at Customer's Multi-Dwelling Unit (i.e. the MDU Service Pilot) which may include

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

"Shared" or "Assigned Parking" uses cases under Section 11 of these Program Terms and Conditions (each individual EV Program a "Use Case"). Customer shall select the desired Use Case on its Program Application and such Use Case will determine whether Optional Charging Equipment, or Xcel Energy-Supplied Charging Equipment will be provided or if the program specific terms set forth in Section 11 apply.

1025 "Program Application" means the application, which was completed, signed and submitted by Customer to Xcel Energy to apply for and enroll into the EV Program.

1026 "Optional Charging Equipment" means Charging Equipment which is owned, supplied and installed by Xcel Energy at Customer's option at the Customer Location and for which Customer pays the monthly bundled customer charge as provided in Xcel Energy's applicable electric tariff on file with the Commission.

1027 "Residential Agreement" means the "EV Multi-Dwelling Unit Assigned Parking Customer Service Agreement" applicable to each Assigned EV Driver.

1028 "Residual Energy Usage" means the difference between the cumulative electric energy usage measured by the Charging Equipment and the electric energy usage measured by the electric meter(s) serving such Charging Equipment.

1029 "Working Days" means any Calendar Day, excluding Saturdays, Sundays, and legal public holidays, as set forth in 5 U.S.C. § 6103(a).

1030 "Xcel Energy" means Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy.

1031 "Xcel Energy-Supplied Charging Equipment" means Optional Charging Equipment and any Charging Equipment provided by Xcel Energy for Customer's enrolling in MDU Service Pilot "Assigned Parking" Use Cases.

**11. EV Program Specific Terms for the MDU Service Pilot Assigned or Shared Parking Use Cases.**

11.1 If Customer will participate in the Multi-Dwelling Unit (MDU) Service Pilot, which includes both the Assigned Parking or Shared Parking Use Case, notwithstanding anything to the contrary set forth in these Program Terms and Conditions, the following terms apply solely with respect to that MDU Service Pilot Use Case, and in the event such terms conflict with the terms set forth in Sections 1 through 10, the terms contained in this Section 11.1 shall supersede and control over such conflicting terms:

(a) If the applicable Site Host Location is a qualified Affordable Housing Multi-Dwelling Unit, Xcel Energy will be responsible for all costs associated with the installation and maintenance of the EV Service Connection and EV Supply Infrastructure

(b) If the applicable Site Host Location is not a qualified Affordable Housing Multi-Dwelling Unit, Xcel Energy will be responsible for costs associated with the installation and maintenance of the EV Service Connection and EV Supply Infrastructure as set forth in this 11.1(b), and Customer will be responsible for the remainder of costs related to the installation and maintenance of the EV Service Connection and EV Supply Infrastructure.

i. Xcel Energy will be responsible for all costs associated with the installation and maintenance of the EV Service Connection and EV

Supply Infrastructure if Customer's project is in Tranche 1 of the MDU Service Pilot, as defined in the MDU Service Pilot program on file with the Commission.

ii. Xcel Energy will be responsible for \$1,000 per port for EV Service Connection costs and 50% of costs for EV Supply Infrastructure if Customer's project is in Tranche 2 of the MDU Service Pilot, as defined in the MDU Service Pilot program on file with the Commission. Customer shall be responsible for all other costs associated with the installation and maintenance of the EV Service Connection and EV Supply Infrastructure.

iii. Xcel Energy will be responsible for \$1,000 per port for EV Service Connection costs if Customer's project is in Tranche 3 of the MDU Service Pilot, as defined in the MDU Service Pilot program on file with the Commission. Customer will be responsible for all other costs associated with the installation and maintenance of the EV Service Connection and EV Supply Infrastructure.

11.2 If Customer selects the Multi-Dwelling Unit (MDU) Service Pilot, Assigned Parking Use Case on its Program Application, the following terms apply solely with respect to that Use Case, and in the event such terms conflict with the terms set forth in Sections 1 through 10, the terms contained in this Section 11.2 shall supersede and control over such conflicting terms:

(a) Except for the costs incurred by Xcel Energy to undertake the responsibilities set forth in Section 6 of the Program Terms and Conditions and the amounts that will be billed to the Assigned EV Driver under the Assigned EV Driver's Residential Agreement for the Assigned EV Driver's consumption of electricity from the Assigned EV Driver's Charging Station, Site Host will pay all other costs associated with this Agreement.

(b) Site Host will cooperate and coordinate with Xcel Energy to facilitate EV Drivers' participation in the "Assigned Parking" EV Program. Such cooperation and coordination includes but is not limited to: making the EV Driver Program application and for EV Drivers available to residents of the Multi-Dwelling Unit associated with the Site Host Location, coordinating with Xcel Energy to activate Charging Stations for Assigned EV Drivers, and ensuring each Assigned EV Driver's continued access to their Assigned Parking Space and Charging Station. Site Host shall use commercially reasonable efforts to ensure each Charging Station is assigned and utilized.

(c) Site Host shall maintain, at its cost and expense, the connection between the Charging Equipment and an Internet Service Provider via Wi-Fi or cellular connection for the operation of the Charging Equipment under this Agreement. Late, incomplete, or inaccurate Charging Equipment usage information will be disregarded where the lack of Wi-Fi or cellular service is the cause of the data transmission failure and will effectively increase the Residual Energy Usage charged to the Site Host.

(d) Site Host shall pay the Monthly Port Charge for each Charging Station at the Site Host Location without an

COMMERCIAL ELECTRIC VEHICLE (EV) INFRASTRUCTURE PROGRAM TERMS AND CONDITIONS

Assigned EV Driver and for all energy usage billed through a Charging Station that does not have an Assigned EV Driver.

(e) Site Host shall pay for the Residual Energy Usage billed each month at the Xcel Energy residential electric rate applicable to the Site Host Location as determined by Xcel Energy.

(f) Site Host will also meet regularly with Xcel Energy to review and coordinate time schedules and track EV Supply Infrastructure and Assigned Charging Equipment installation status.

(g) After installation of both the Charging Equipment and EV Supply Infrastructure is completed, Site Host will make the Charging Equipment at Site Host Location available for the Assigned EV Drivers' exclusive and dedicated use, except at times when the Charging Equipment or EV Supply Infrastructure fails to operate or otherwise requires repair.

(h) In the case of total equipment failure of all or a portion of the EV Supply Infrastructure or Charging Equipment that is not caused by Xcel Energy or its employees, agents, or contractors, and not covered by a manufacturer's warranty, Site Host may either request that Xcel Energy replace the necessary equipment at Site Host's expense or terminate this Agreement pursuant to Section 7.1 and pay Xcel Energy the Buyout Amount as set forth in Section 7.

(i) Under the "Assigned Parking" Use Case, Xcel Energy shall, at Xcel Energy's cost, procure, install and own both the EV Supply Infrastructure and Charging Equipment at the Customer Location. Additionally, under the "Assigned Parking" Use Case, Xcel Energy will, during the Term and for as long as Xcel Energy owns the EV Supply Infrastructure and Charging Equipment, will be responsible all costs that Xcel Energy, in its sole discretion, deems reasonably required for operating and maintaining the EV Supply Infrastructure and Charging Equipment (except Site Host shall pay for the charges and any costs set forth in this Agreement). All payments for this EV Supply Infrastructure and Charging Equipment will be made directly by Xcel Energy to the third-party contractor retained to complete the work, and Xcel Energy will have no financial obligation for any payments to Site Host

(j) Upon termination of the Agreement prior to the end of the Term, Xcel Energy will remove any Charging Equipment from a market-rate (i.e., a non-income qualified customer, as determined by Xcel Energy) Customer Location for a one-time \$200 per port fee billed to the Site Host. Customer will not be subject to the fee upon expiration of the Term. This fee will be waived entirely if Site Host Location is an Affordable Housing Multi-Dwelling Unit regardless of when termination occurs.



# MULTIFAMILY ELECTRIC VEHICLE ASSIGNED PARKING CUSTOMER AGREEMENT FOR RESIDENTS

Northern States Power Company ("Xcel Energy," "we," or "our") is excited to offer the Electric Vehicle ("EV") Multi-Dwelling Unit Housing Assigned Parking Service (the "Program"), and we appreciate your participation in this innovative offering as a valued customer.

## 1. AVAILABILITY

To be eligible to participate in this Program, you must agree to the terms and conditions contained in this Service Agreement, be an Xcel Energy residential electric customer in our Minnesota service territory, reside in Multi-Dwelling Unit Housing that is participating in the Program as verified by the Site Host of record for your Multi-Dwelling Unit Housing (your "Site Host"), and intend to charge an EV at the Multi-Dwelling Unit Housing. To enter into this Service Agreement with Xcel Energy, you must also be the customer of record on the account and complete the Customer Energy Usage Data Release Form ("Energy Usage Data Release") to authorize Xcel Energy's disclosure of information regarding your participation in the Program to your Site Host. The Energy Usage Data Release can be found at the following link: [xcelenergy.com](https://xcelenergy.com). Your ability to participate in the Program will also depend on the availability of parking spaces with EV Charging Equipment, as defined below.

## 2. PROGRAM BENEFITS

Your participation in the Program will provide you the ability to access and use EV charging equipment owned, installed, and maintained by Xcel Energy ("EV Charging Equipment") located at the dedicated parking space assigned to you by your Site Host ("Assigned Parking Space") to charge your EV, and to be conveniently billed for your participation in the Program and usage of the EV Charging Equipment on your monthly Xcel Energy bill. (Please see paragraph 5 for more information concerning rates and billing). While Xcel Energy is responsible for maintaining and making any necessary repairs to the EV Charging Equipment, your Site Host is responsible for providing you exclusive access to the parking space and EV Charging Equipment.

## 3. ENROLLMENT PROCESS

After completing the Program application with your Site Host and accepting the terms of this Service Agreement, you will be prompted to upload a signed Energy Usage Data Release as referenced in paragraph 1 above. Once we have received your signed Service Agreement and Energy Usage Data Release, Xcel Energy will send you an email confirming your enrollment. The day you receive this email will be considered your "Enrollment Date." Following the Enrollment Date, Xcel Energy will promptly coordinate with your Site Host to ensure the EV Charging Equipment located at your Assigned Parking Space is ready for you to use and will set up your account and the EV Charging Equipment to allow Xcel Energy to include the Program charges on your bill. Once Xcel Energy has completed Program setup, Xcel Energy will send you an email update advising you of your "Activation Date," which is when you can start using the EV Charging Equipment located at your Assigned Parking Space. You will receive your first bill in connection with the Program in the first billing period following the Activation Date.

## 4. APPLICABLE CHARGES

Your participation in the Program will require you to pay for all electricity usage each month as measured by the EV Charging Equipment under Xcel Energy's published A91 rate. For your convenience, both your home and EV charging electricity usage will appear on your Xcel Energy electric bill,

but your home and EV charging electricity usage will be measured differently and appear separately, as explained further below. You will also be charged a monthly fee for the EV Charging Equipment provided by Xcel Energy as shown in Xcel Energy's published A91 rate.

## 5. CONTRACT TERM AND EARLY TERMINATION

This Service Agreement shall be effective as of the Enrollment Date. The term shall commence on the Enrollment Date and will continue until terminated in accordance with this Section 6 (the "Term").

You may terminate this Service Agreement for any reason at any time by providing Xcel Energy and your Site Host thirty (30) days of prior written notice of such termination.

Xcel Energy may terminate this Service Agreement for any reason, including but not limited to Xcel Energy no longer supporting the Program, and at any time by providing you with thirty (30) days prior written notice of such termination. Xcel Energy may also terminate this Service Agreement immediately, if: (i) you fail to meet any of the Program eligibility requirements or adhere to any of your obligations set forth in this Service Agreement; or (ii) your Site Host is no longer participating in the Program.

If either you or we terminate this Service Agreement, you will be responsible for all applicable charges and fees (including the electricity usage charges and the monthly fee for the EV Charging Equipment described in Section 5) through the date of termination.

In the event this Service Agreement terminates or expires under this Section, on the date of termination or expiration, your right to use the EV Charging Equipment will automatically expire.

## 6. EV CHARGING EQUIPMENT

At all times, even after termination of the Service Agreement, Xcel Energy will own and maintain the EV Charging Equipment. You are therefore not permitted to make any alterations, changes, or modifications to the EV Charging Equipment without first securing prior written permission from Xcel Energy, the Site Host, and/or any applicable underlying manufacturer. You are solely responsible for any and all use of the EV Charging Equipment during the Term of the Service Agreement and obligated to pay for the electricity dispensed by the EV Charging Equipment as measured by the EV Charging Equipment.

In the event the EV Charging Equipment fails to operate or otherwise requires repair, you agree to promptly notify Xcel Energy.

## 7. BILLING THROUGH THE EV CHARGING EQUIPMENT

For purposes of billing, Xcel Energy will measure the electricity usage through the EV Charging Equipment. By signing this Service Agreement and participating in the Program, you agree to be billed based on the electricity usage data generated by the EV Charging Equipment.

Because the electricity usage you will be billed for will be measured by the EV Charging Equipment itself and not the meter serving the EV Charging Equipment, you will not have access to data about your electricity usage as

measured by the meter serving the EV Charging Equipment or the option to request meter accuracy testing.

Because a single meter serves EV Charging Equipment assigned to multiple parking spaces, customer data privacy requirements prevent Xcel Energy from sharing this meter data with you because sharing such data with you would also involve us disclosing other customers' legally protected information. In the event you believe the EV Charging Equipment has generated a billing error, you should promptly notify Xcel Energy directly at the contact information provided below. Xcel Energy will work diligently and in good faith with the manufacturer of the EV Charging Equipment to ensure that you are accurately billed for your electricity usage and will work with you in a diligent and good faith manner to resolve any concerns about potential EV Charging Equipment measurement inaccuracies.

## 8. COOPERATION WITH SITE HOST, XCEL ENERGY, AND THEIR AGENTS AND AFFILIATES

Successful implementation of the Program depends on your cooperation with your Site Host, Xcel Energy, and their agents and affiliates.

To help Xcel Energy continue to improve the Program and our EV offerings, Xcel Energy needs to be able to easily communicate with you and solicit your feedback. By signing this Service Agreement, you consent to receive communications from Xcel Energy and participate in surveys relating to the Program in electronic form sent to your email address.

In addition to the Service Agreement and customer relationship you have with Xcel Energy, Xcel Energy also has a contract and customer relationship with your Site Host to facilitate your participation in the Program. To confirm your eligibility for the Program and provide you electric and EV charging services through the Program, we will need to coordinate with the Site Host for your Multi-Dwelling Unit Housing in several ways.

Your Site Host is responsible for maintaining your Assigned Parking Space and providing Xcel Energy with access to your Assigned Parking Space and the EV Charging Equipment as necessary for Xcel Energy to ensure the EV Charging Equipment and related infrastructure remain functional and in good working order. By signing this Service Agreement, you consent to cooperating with your Site Host as necessary for the Site Host to perform maintenance on your Assigned Parking Space and for Xcel Energy to maintain the EV Charging Equipment and other Xcel Energy-owned infrastructure supporting the EV Charging Equipment.

You are solely responsible for ensuring that your Assigned Parking Space and the EV Charging Equipment is accessed and used only by you or individuals who you authorize to use the Assigned Parking Space and the EV Charging Equipment. You will be responsible for paying for the electricity usage as measured by the EV Charging Equipment. Your Site Host will be responsible for paying the difference between the electricity usage measured by the meter serving all of the EV Charging Equipment at your Multi-Dwelling Unit Housing and the electricity usage measured by all of the EV Charging Equipment served by the meter. Because your Site Host will be billed for the electricity usage measured by the meter that is not measured by the EV Charging Equipment, the Site Host will have access to all electricity usage data measured by the meter, and you consent to Xcel Energy sharing the electricity usage data measured by the EV Charging Equipment with your Site Host by signing the Energy Usage Data Release. Such consent shall be valid for the Term of the Service Agreement.

By signing this Service Agreement, you consent to Xcel Energy's disclosure of your name, address, telephone number, EV charging data, and any EV charging or electrical usage patterns concerning the Program with the Site Host and with Xcel Energy's authorized third-party independent contractors, in order for the authorized third-party independent contractors to provide the EV Charging Equipment and maintain the EV Charging Equipment.

Xcel Energy will comply with all applicable laws to protect the privacy of your personal information and energy usage data.

## 9. XCEL ENERGY'S DISCLOSURE AND USE OF EV CHARGING EQUIPMENT DATA

You consent and acknowledge that Xcel Energy owns and may use the data recorded through the EV Charging Equipment for any purpose consistent with Minnesota law, including Commission rules. Such purposes include administering and providing you services through the Program, supporting regulatory filings (in accordance with customer data privacy requirements), responding to discovery or audit requests from the Commission, and developing regulated programs or offerings.

## 10. XCEL ENERGY'S ELECTRIC TARIFF

The service hereunder shall be supplied for your use as provided in the General Rules and Regulations and/or in the applicable Rate Schedules of Xcel Energy's Electric Rate Book for your service under this Service Agreement, as they now exist or may hereafter be changed, on file with the state regulatory commission in the state where the services are provided. A copy of such Rules and Regulations and applicable Rate Schedules are available from Xcel Energy.

## 11. OTHER TERMS AND CONDITIONS

- 11.1 Other than its obligation to make reasonable efforts to maintain the EV Charging Equipment, Xcel Energy is not responsible for and makes no representation or warranty with respect to the EV Charging Equipment, the accuracy of the usage data generated by the EV Charging Equipment, or that the EV Charging Equipment will operate error free, and Xcel Energy hereby disclaims any responsibility or warranty for the EV Charging Equipment or the usage data generated by the EV Charging Equipment.**
- 11.2 Notwithstanding anything herein to the contrary, under no circumstances or legal theory, whether arising in contract, tort, strict liability, warranty, infringement, or otherwise, shall either party be liable to the other party or any other person or entity for any indirect, consequential, secondary, incidental, special, reliance, exemplary, or punitive damages, which includes but is not limited to: (i) any property damage (real, personal, tangible, or intangible) or personal injury (including mental or emotional distress) arising from or alleged to have arisen under this Service Agreement; (ii) any damages arising or alleged to have arisen from any electrical malfunction or the repair or replacement of such malfunctioning items; or (iii) any environmental claims, damage, or causes of action.**
- 11.3 Under no circumstances will Xcel Energy or any Xcel Energy authorized third-party independent contractor be held liable to you or any other person or entity for matters involving the purchase, lease, use, non-use, or devaluation of any electric vehicle, plug-in hybrid vehicle, any vehicle of any nature, or any EV Charging Equipment or associated equipment infrastructure when applicable codes or standards prohibit the installation or use of such vehicle or EV Charging Equipment. Xcel Energy will not pay for any costs incurred or damages sustained by you for purchasing any vehicle or equipment or otherwise in reliance upon Xcel Energy being able to provide EV Charging Equipment. This section shall survive the termination of this Service Agreement.**
- 11.4 You shall not assign this Service Agreement except with the prior written consent of Xcel Energy. Any assignment without Xcel Energy's consent shall be null and void.
- 11.5 This Service Agreement shall be governed by the laws of the state of Minnesota, except that the Minnesota conflict-of-law provisions shall not be invoked in order to apply the laws of any other state or jurisdiction.

- 11.6 If any dispute arises between the parties regarding issues of interpretation of the Service Agreement, you may call Xcel Energy's Customer Service Representatives during call center hours Monday through Friday from 7 a.m. to 7 p.m. If further follow-up is required, you shall provide Xcel Energy with written notice explaining the dispute and providing associated documentation. Xcel Energy will consider all disputes and respond within fifteen (15) days of receiving notice of a dispute. In the event you are dissatisfied with the resolution of the dispute, you have the right to file an informal or formal complaint with the Commission by contacting the Commission. Xcel Energy will take no other action to enforce this Service Agreement until any complaint filed with the Commission is resolved.
- 11.7 Xcel Energy's failure to insist on performance of any of the terms and conditions herein or to exercise any right or privilege or Xcel Energy's waiver of any breach hereunder shall not thereafter waive any of Xcel Energy's rights or privileges under this Service Agreement or at law. Any waiver of any specific breach shall be effective only if given expressly by Xcel Energy in writing.

- 11.8 This Service Agreement, including any tariffs and/or rate schedules of Xcel Energy's Electric Rate Book applicable to your service, embodies the entire agreement between you and Xcel Energy. The parties shall not be bound by or liable for any statement, writing, representation, promise, inducement, or understanding not set forth above. No changes, modifications, or amendments of any terms and conditions of this Service Agreement are valid or binding unless agreed to by the parties in writing and signed by the parties.
- 11.9 Those provisions of this Service Agreement which would require that they survive termination or expiration of the Service Agreement in whole or in part in order to give them full force and effect will survive the termination or expiration of the Service Agreement, regardless of the date, cause, or manner of the termination.

**12. QUESTIONS**

If you have questions regarding these terms or the Program, or are required to provide Xcel Energy notice pursuant to this Service Agreement, please email [electricvehicles@xcelenergy.com](mailto:electricvehicles@xcelenergy.com).

**IN WITNESS WHEREOF**, each of the undersigned is duly authorized and directed to sign this Agreement.

**Customer Name** \_\_\_\_\_

By \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_

**Northern States Power Company, d/b/a Xcel Energy**

By \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_

Title \_\_\_\_\_



## Commercial Pilot Learnings and Customer Insights

Our commercial pilots have largely been successful in meeting their learning objectives to support the acceleration of commercial EV adoption and charging infrastructure installation, recognizing they are at an early stage of their implementation. The following learnings were gathered and provided by our third-party pilot evaluator, TRC Companies, and are particularly relevant to the proposed extension of and modifications to these pilots.

*1. Customers are highly satisfied with their experience*

Fleet EV Service Pilot participants are highly satisfied with the overall offering, including program processes, and highlighted the collaborative approach of Xcel Energy and its contractors to address new challenges as they arose. Public Charging pilot applicants are largely satisfied with their interactions with Xcel Energy pilot staff, and several felt their inability to participate was due to factors outside of Xcel Energy's control.<sup>1</sup>

*2. The benefits of electrification stemming from our programs are also reaching other stakeholders, like those without access to a private EV.*

Riders of the electric buses on the Metro Transit C Line (enabled by the Fleet EV Service Pilot) that were surveyed experienced key non-energy-related benefits from riding the buses. These riders expressed a strong preference for electric buses over diesel buses, particularly appreciating the lack of noise and pollution from the electric buses. This suggests that our investments are supporting increased access to the benefits of electric vehicle technology to transit riders who might not otherwise be able to consider a private electric vehicle to access those benefits.<sup>2</sup>

*3. Customers need and value support in reducing upfront infrastructure costs*

Customer feedback confirms that the Fleet EV Service Pilot reduced upfront project costs. However, feedback from customers also suggests that in some cases, more upfront cost reduction support is needed. Costs for DCFC chargers was the most common barrier that prevented interested applicants in the Public Charging Pilot from moving forward with public charging projects, though there were several different ways in which costs manifested as a challenge for different customers. Specific challenges included costs related to site development by the city, applicants not being selected by the state for matching grant funding, and the overall high cost of fast charging equipment.<sup>3</sup> Customer interest in the MDU EV Service Pilot's full

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<sup>1</sup> See our June 1, 2022 Annual Report submitted in Docket No. E002/M-15-111 at Page 34

<sup>2</sup> Ibid. at Page 30

<sup>3</sup> Ibid. at Page 34

funding option (Tranche 1, analogous to the support provided in the Fleet EV Service Pilot) exceeded expectations. We received 52 applications for Tranche 1 level funding, whereas to date we have been unable to identify any customers wishing to move forward with funding at the 50 percent funding level (Tranche 2).

*3. Customers need and value education and advice about vehicle electrification and infrastructure planning*

Customer feedback confirms that the Fleet EV Service Pilot and Fleet Electrification Advisory services streamlined education and execution through advisory and consultative services. Interviews revealed that the advisory services through Fleet Electrification Advisory services helped customers make tangible progress toward EV adoption and develop definitive plans and budget to purchase new fleet EVs and evaluate future sites for EV charging.<sup>4</sup>

*4. Our work with community partners has made a tangible impact on specific initiatives that support equitable access to EV charging*

Our partnership with HOURCAR provided the support to launch the recent EV spot network<sup>5</sup> and supports equitable access to EV charging in six income-qualified car share sites at MDU facilities.<sup>6</sup>

*5. Customers are satisfied with the Company's support for Total Cost of Ownership Analysis and it is leading to increased EV adoption*

Fleet Electrification Advisory services participants found the assessment data useful to help make plans for EV adoption more concrete and educate decision-makers within the participants' organizations. Two of three fleet customer participants in Fleet Electrification Advisory services who were later interviewed had developed definitive plans and budget to purchase new fleet EVs in the near future; one fleet's plans had also translated into growing interest in Xcel Energy's Fleet EV Service Pilot offering.<sup>7</sup>

*6. There are opportunities to more closely link total cost of ownership analysis with vehicle procurement and infrastructure planning*

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<sup>4</sup> Ibid. at Page 31

<sup>5</sup> Twin Cities Pioneer Press, *St. Paul, Minneapolis officially launch all-electric car-sharing network*, (May 13, 2022) <https://www.twincities.com/2022/05/13/st-paul-minneapolis-officially-launch-all-electric-car-sharing-network/>; Fox 9, *Mpls, St. Paul launch new electric car-sharing and charging station program*, (Feb. 2, 2022) <https://www.fox9.com/news/mps-st-paul-launch-new-electric-car-sharing-and-charging-station-program>.

<sup>6</sup> See our June 1, 2022 Annual Report submitted in Docket No. E002/M-15-111 at Page 36

<sup>7</sup> Ibid. at Page 31

Some customers noted an opportunity to enhance support and follow-up after Fleet Electrification Advisory services assessment completion. These customers sought more information on participating in the Fleet Service Pilot.

*7. Smaller fleets may need unique solutions*

Our program evaluation showed that the requirement to install a minimum of four charging ports in the Fleet EV Service Pilot was a barrier that prohibited some interested customers from participating. When surveyed, some non-participants indicated they were only likely to adopt one or two vehicles per year in the near future.<sup>8</sup>

*8. Vehicle-related barriers not currently addressed by our programs are deterring customers from EV adoption*

Vehicle availability and procurement-related challenges are currently deterring public fleets from initial or more comprehensive adoption of EVs – particularly availability of vehicles that meet their use-cases (i.e., trucks).<sup>9</sup> Issues of perception of EVs among internal departments that use fleet vehicles is a barrier to initial or more comprehensive adoption of EVs. Vehicle-related barriers were present during the initial round of interviews and persisted a year later.

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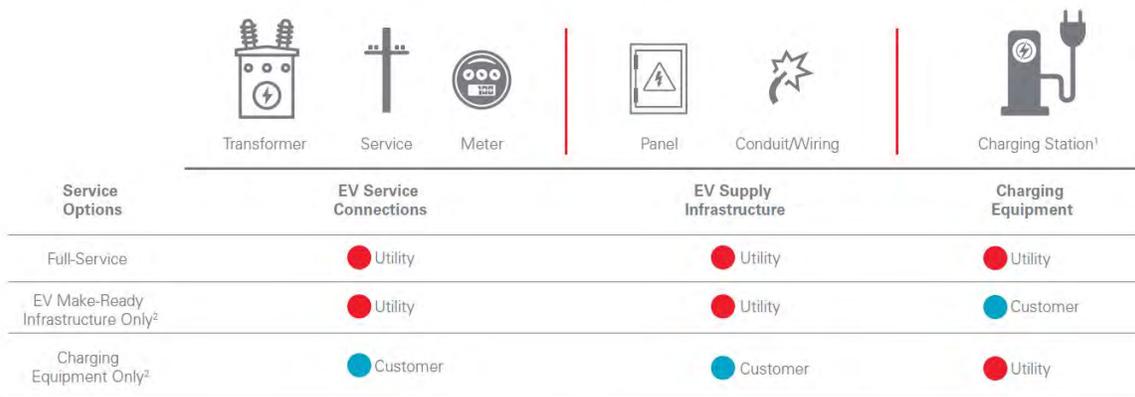
<sup>8</sup> See our June 1, 2021 Annual Report submitted in Docket No. E002/M-15-111 at Page 27

<sup>9</sup> See our June 1, 2022 Annual Report submitted in Docket No. E002/M-15-111 at Page 31

*Commercial EV Pilot Service Components & Billing Options*

Consistent with the approved pilots’ service offerings today, customers will have two service level options to participate being the Full-Service Option and the EV Make-Ready Only Option, the latter of which meaning customers have opted to only take EV Supply Infrastructure services and bring their own charging equipment. With an approval of our proposed modification to establish the Optional Charger Service as its own independent service option, customers will have three total service options to choose from, providing participants even more flexibility in customer choice for their electrification needs. The three service level options are illustrated below in Figure 1.

**Figure 1  
 Commercial EV Pilot Service Level Options**

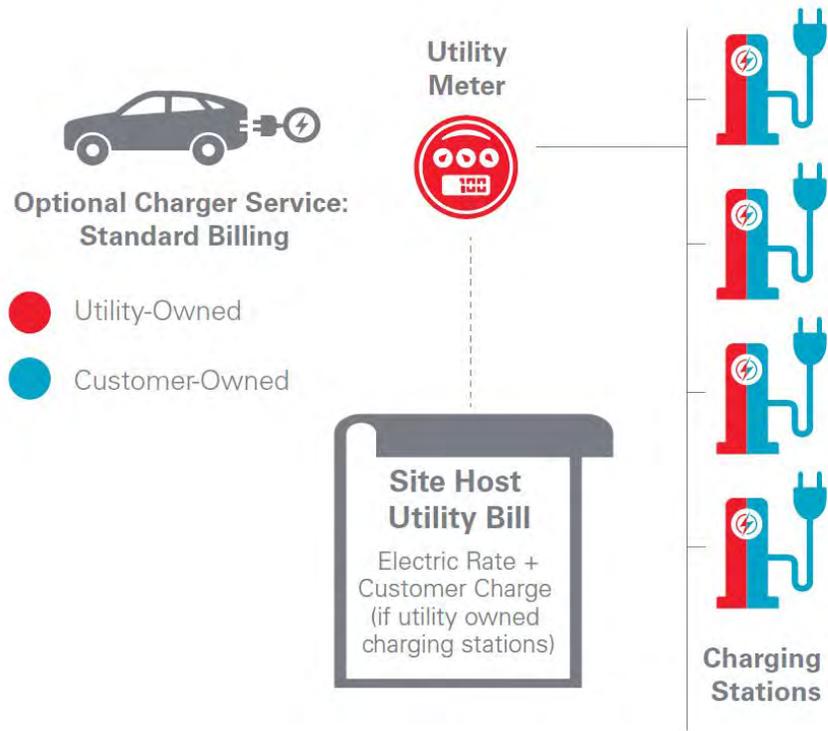


<sup>1</sup>Utility-provided charging equipment will be facilitated through the program’s Optional Charger Service, involving the monthly bundled customer charge for charging equipment. There are two billing options: 1) Standard billing; and 2) Assigned Parking billing. Assigned Parking billing is available only under the full-service option.

<sup>2</sup>Assigned Parking billing is not available through this service option.

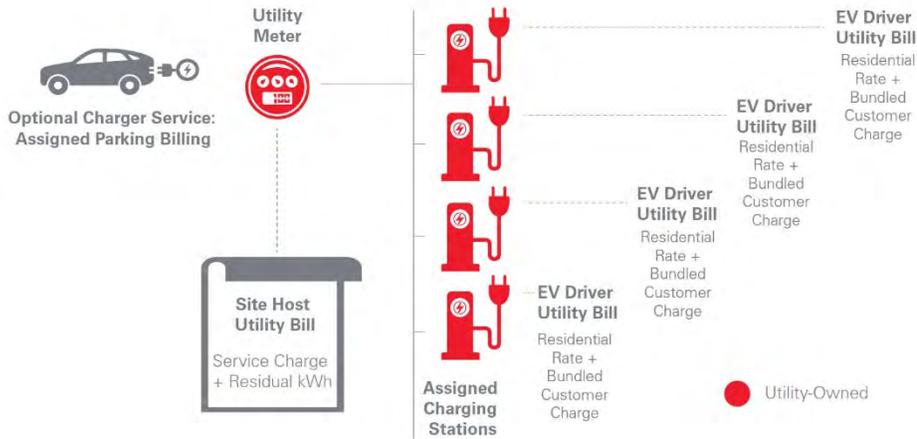
There are also two different billing options available for customers to choose from in our pilots today. The first option, known as the Shared Parking Billing option in the MDU EV Service Pilot, is available to all customers across all service levels. This billing option has been and remains the same structure for all customers taking either the Full-Service, EV Make-Ready Only, or Optional Charger Service Only option, and involves the site host paying their applicable electric rate depending on the pilot that they are participating in, as well as a customer charge for Company-provided charging equipment if they elected to use the Optional Charger Service. As this is a consistent option across all pilot service levels, moving forward this option will be known as the Standard Billing option as shown in Figure 2 below.

**Figure 2**  
**Standard Billing Option**



The second option, known as the Assigned Parking Billing option in the MDU EV Service Pilot, has been available to only MDU EV Service Pilot customers taking the Full-Service option to date. The Assigned Parking Billing option leverages Company-provided equipment to measure billing quality charging data from the charging stations and assign that usage to individually assigned residential tenants by subtracting it from the dedicated service and meter provided through the EV Make-Ready Infrastructure. This option involves the site host paying the service charge of the MDU EV Service Pilot residential electric rate and any residual kWh not measured by the connected charging equipment, and has individual residential tenants paying the residential electric rate plus the bundled customer charge for the Optional Charger Service in the MDU EV Service Pilot. As this option is a new billing solution that was well received by customers with all 52 projects selecting it in their applications, this billing option will remain available to MDU EV Service Pilot participants only as the Assigned Parking Billing option, illustrated in Figure 3 below.

**Figure 3**  
**Assigned Parking Billing Option**



Upon application acceptance, the Commercial EV Advisors will guide customers through the EV project workflow process consisting of site assessments, contract execution, construction, and in-servicing the infrastructure. The site design and infrastructure installation will be coordinated by the Company with our third-party installation contractor(s). Third-party installation contractors have been and will continue to be competitively sourced through RFPs in the Company's normal course of business, which may include soliciting bids for this work in combination with other RFPs for third-party distribution system contractors and/or making adjustments to account for rapidly changing technologies including needed contract amendments or appropriate additions consistent with previously conducted RFPs. Third-party contracts are currently in place to support design, installation, and maintenance services to support customers today and we plan to continue to leverage these contracts to support the pilot extensions.

PUBLIC DOCUMENT -

NON-PUBLIC DATA HAS BEEN EXCISED

Northern States Power Company

**EVA AH - Pay As You Go - Charger Pricing**

*Pricing per Charger*

<b>Bundled Pricing Option</b>		<b>Bundled</b>	
Charger Delivered Cost	(A)	[PROTECTED DATA BEGINS...]	
Installation	(B)	[PROTECTED DATA BEGINS...]	
		...PROTECTED DATA ENDS]	
Total Installed Cost	(C = A + B)	\$830.96	
Shipping	(D)	\$7.20	
Total Installed Cost with Shipping	(E = C + D)	\$838.16	
LARR Percentage	(F)	15.29%	
Annual Revenue Requirement of the Charger Investment	(G = E * F)	\$128.15	
Operations & Maintenance	(H)	\$15.75	
Customer Accounting & Service	(I)	\$29.63	
Data Services	(J)	\$25.98	
Revenue Requirement per Charger	(K = G + H + I + J)	\$199.50	
Months per Year	(L)	12	
Price per Month	(M = K / L)	\$16.63	
<b>Customer Funded Charger Option</b>		<b>Prepay (Closed)</b>	<b>BYOC</b>
Charger Delivered Cost	(A)	Upfront Payment	
Installation	(B)		
Total Installed Cost	(C = A + B)		
Shipping	(D)		
Total Installed Cost with Tax	(E = C + D)		
LARR Percentage	(F)		
Annual Revenue Requirement of the Charger Investment	(G = E * F)		
Operations & Maintenance	(H)	\$15.75	\$25.10
Customer Accounting & Service	(I)	\$29.63	\$29.63
Network Services	(J)	\$25.98	\$25.98
Revenue Requirement per Charger	(K = H + I + J)	\$71.36	\$80.71
Months per Year	(L)	12	12
Price per Month	(M = K / L)	\$5.95	\$6.73

**EVAAH - Voluntary Service Tariff - Charger Pricing**

*Pricing per Charger*

**Bundled Pricing Option**

[PROTECTED DATA BEGINS...]

Charger Delivered Cost	(A)	
Installation	(B)	
[PROTECTED DATA BEGINS...]		
...PROTECTED DATA ENDS]		
Total Installed Cost	(C = A + B)	\$830.96
Shipping	(D)	\$7.20
Total Installed Cost with Tax	(E = C + D)	\$838.16
LARR Percentage	(F)	15.29%
Annual Revenue Requirement of the Charger Investment	(G = E * F)	\$128.15
Operations & Maintenance	(H)	\$15.75
Customer Accounting & Service	(I)	\$0.00
Data Services	(J)	\$0.00
Revenue Requirement per Charger	(K = G + H + I + J)	\$143.90
Months per Year	(L)	12
Price per Month	(M = K / L)	\$11.99

**Prepay (Closed)**

Charger Delivered Cost	(A)	Upfront Payment	
Installation	(B)		
Total Installed Cost	(C = A + B)		
Shipping	(D)		
Total Installed Cost with Tax	(E = C + D)		
LARR Percentage	(F)		
Annual Revenue Requirement of the Charger Investment	(G = E * F)		
Operations & Maintenance	(H)		\$15.75
Customer Accounting & Service	(I)		\$0.00
Network Services	(J)		\$0.00
Revenue Requirement per Charger	(K = H + I + J)	\$15.75	
Months per Year	(L)	12	
Price per Month	(M = K / L)	\$1.31	

Northern States Power Company

**EVA AH - Subscription Service Pricing**

*In dollars, except where specified*

	Rate	Standard				Rate	Renewable			
		KWh	Bundled	BYOC	Pre-Pay (Closed)		KWh	Bundled	BYOC	Pre-Pay (Closed)
Customer Charge			\$16.63	\$6.73	\$5.95			\$16.63	\$6.73	\$5.95
Energy Charges										
Off-Peak	\$ 0.027840	375	\$10.44	\$10.44	\$10.44	\$ 0.027840	375	\$10.44	\$10.44	\$10.44
Fuel Clause Rider	\$ 0.031858	375	\$11.95	\$11.95	\$11.95	\$ 0.035300	375	\$13.24	\$13.24	\$13.24
Other Riders Charges										
Transmission Cost Recovery	\$ 0.003614	375	\$1.36	\$1.36	\$1.36	\$ 0.003614	375	\$1.36	\$1.36	\$1.36
Renewable Development Fund	\$ 0.000902	375	\$0.34	\$0.34	\$0.34	\$ 0.000902	375	\$0.34	\$0.34	\$0.34
Conservation Improvement Program	\$ 0.003521	375	\$1.32	\$1.32	\$1.32	\$ 0.003521	375	\$1.32	\$1.32	\$1.32
Renewable Energy Standard	9.765%		\$2.64	\$1.68	\$1.60	9.765%		\$2.64	\$1.68	\$1.60
Sub-Total Other Rider Charges			\$5.66	\$4.70	\$4.62			\$5.66	\$4.70	\$4.62
Total Monthly Charge			\$44.68	\$33.82	\$32.96			\$45.97	\$35.11	\$34.25

# Redline

**TABLE OF CONTENTS**

Section No. 1  
~~13th~~<sup>12th</sup> Revised Sheet No. 1

Section	Item	<u>Sheet No.</u>
<b>TITLE SHEET</b>	.....	Title Sheet
<b>SECTION 1</b>	<b>TABLE OF CONTENTS</b> .....	1-1
<b>SECTION 2</b>	<b>CONTACT LIST</b> .....	2-1
<b>SECTION 3</b>	<b>INDEX OF COMPANY'S SERVICE AREA</b> .....	3-1
<b>SECTION 4</b>	<b>TECHNICAL AND SPECIAL TERMS AND ABBREVIATIONS</b>	
	Definition of Symbols .....	4-1
	Classification of Customers .....	4-2
<b>SECTION 5</b>	<b>RATE SCHEDULES</b>	
	Table of Contents .....	TOC
	<u>RESIDENTIAL</u>	
	Residential Service .....	5-1
	Residential Time of Day Service .....	5-2
	Residential Time of Use Pilot Program Service .....	5-4.1
	Residential Electric Vehicle Service .....	5-5
	<del>Residential EV Accelerate At Home Pay As You Go</del> Residential EV Accelerate At Home Service .....	5.7
	<del>Residential EV Accelerate At Home</del> Voluntary <del>Electric Vehicle Charger</del> Service ...	5-8
	Residential <del>EV Accelerate At Home</del> <del>Electric Vehicle</del> Subscription <del>Pilot</del> Service .....	5-8.1
	Energy Controlled Service (Non-Demand Metered) .....	5-9
	Limited Off Peak Service .....	5-11
	Rules for Application of Residential Rates .....	5-13
	Automatic Protective Lighting Service .....	5-14
	Residential Optimize Your Charge .....	5-16
	<u>GENERAL</u>	
	Energy Controlled Service (Non-Demand Metered) .....	5-9
	Limited Off Peak Service .....	5-11
	Automatic Protective Lighting Service .....	5-14
	Small General Service .....	5-21
	Small General Time of Day Service .....	5-23
	Commercial Optimize Your Charge .....	5-50.6

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(Continued on Sheet No. 1-2)

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**TABLE OF CONTENTS (Continued)**

Section No. 1  
~~12th~~14th Revised Sheet No. 2

<u>Section</u>	<u>Item</u>	<u>Sheet No.</u>
<b>SECTION 5      RATE SCHEDULES (Continued)</b>		
<u>GENERAL</u> (Continued)		
	General Service .....	5-26
	General Time of Day Service.....	5-29
	Peak Controlled Service .....	5-40
	Peak Controlled Time of Day Service.....	5-44
	Rules for Application of Peak Controlled Services.....	5-48
	Electric Vehicle Fleet Pilot Service .....	5-51
	Electric Vehicle Public Charging Pilot Service.....	5-52
	Electric Service Public Charging Station <del>PilotRate</del> .....	5-52.7
	Real Time Pricing Service .....	5-64
 <u>MUNICIPAL</u>		
	Light Rail Line Tariff.....	5-71
	Street Lighting System Service.....	5-74
	Street Lighting Energy Service (Closed).....	5-76
	Street Lighting Energy Service - Metered.....	5-78
	Street Lighting Service - City of St. Paul.....	5-80
	Rules for Application of Street Lighting Rates .....	5-82
	Small Municipal Pumping Service .....	5-85
	Municipal Pumping Service .....	5-87
	Fire and Civil Defense Siren Service .....	5-89

~~AND~~

(Continued on Sheet No. 1-3)

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**MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2**

**RATE SCHEDULES  
 TABLE OF CONTENTS**

Section No. 5  
~~16th~~<sup>15th</sup> Revised Sheet No. TOC-1

<u>Item</u>	<u>Sheet No.</u>	
<b><u>RESIDENTIAL</u></b>		
Residential .....	5-1	
Residential Time of Day .....	5-2	
Residential Time of Use Pilot Program Service .....	5-4.1	
Residential Electric Vehicle Service .....	5-5	
<del>Residential EV Accelerate At Home Pay As You Go</del> <del>Electric Vehicle Home</del> Service .....	5-7	<u>ND</u>
<del>Residential EV Accelerate At Home</del> Voluntary <del>Electric Vehicle Charger</del> Service .....	5-8	<u>ND</u>
Residential <del>EV Accelerate At Home</del> <del>Electric Vehicle</del> Subscription <del>Pilot</del> Service .....	5-8.1	<u>ND</u>
Energy Controlled (Non-Demand Metered) .....	5-9	
Limited Off Peak .....	5-11	
Rules for Application of Residential Rates .....	5-13	
Automatic Protective Lighting .....	5-14	
Residential Optimize Your Charge .....	5-16	<u>N</u>
 <b><u>GENERAL</u></b>		
Small General .....	5-21	
Small General Time of Day (Metered and Non-Metered) .....	5-23	
General .....	5-26	
General Time of Day .....	5-29	
Peak Controlled .....	5-40	
Peak Controlled Time of Day .....	5-44	
Rules for Application of Peak Controlled .....	5-48	<u>N</u>
Commercial Optimize Your Charge .....	5-50.6	
Electric Vehicle Fleet Pilot Service .....	5-51	<u>N</u>
Electric Vehicle Public Charging Pilot Service .....	5-52	
Electric Service Public Charging Station <del>Pilot</del> <u>Rate</u> .....	5-52.7	<u>ND</u>
Real Time Pricing .....	5-64	
 <b><u>MUNICIPAL</u></b>		
Light Rail Line Tariff .....	5-71	
Street Lighting System .....	5-74	
Street Lighting Energy (Closed) .....	5-76	
Street Lighting Energy (Metered) .....	5-78	
Street Lighting City of St. Paul .....	5-80	
Rules for Application of Street Lighting Rates .....	5-82	
Small Municipal Pumping .....	5-85	
Municipal Pumping .....	5-87	
Fire and Civil Defense Siren .....	5-89	

(Continued on Sheet No. TOC-2)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU**  
**GOELECTRIC VEHICLE HOME SERVICE**  
**RATE CODE A79, A80, AND A81**

Section No. 5  
~~7th~~ Revised Sheet No. 7

**AVAILABILITY**

Available to Residential Service customers for service only to electric vehicle loads including battery charging and accessory usage. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service with this tariff. ~~Pre-Pay option is closed and not available to new customers. Bring-Your-Own-Charger ("BYOC") Option service is available to customers electing to bring their own charging equipment as approved by the Company, prior to beginning service with this tariff. Customers electing Pre-Pay Option service are separately invoiced at the time of installation. Installation Only Service is available for customers who have purchased a compatible EV charger before the launch date of the Electric Vehicle Home Service. The customer must complete Company approved documentation verifying possession, through ownership or lease, of an electric vehicle as defined in Section 169.011, subdivision 26a of Minnesota law.~~

Enrollment in the Residential Electric Vehicle Pilot Service previously available under these rate codes is no longer available.

**CONTRACT**

Customers must contract for this service through an ~~Electric Vehicle Home Service/Voluntary Electric Vehicle Charger Service~~ EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment.

~~Customers who initially contracted for the Residential Electric Vehicle Pilot Service through an Electric Vehicle Pilot Electric Service Agreement can still take service under that agreement through the end of the 24-month initial term. At the end of that agreement, the customer can continue service by contracting through the service through an Electric Vehicle Home Service/Voluntary Electric Vehicle Charger Service Customer Service Agreement or terminate their service at no cost to them.~~

**CHARACTER OF SERVICE**

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable\*Connect Pilot Program (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

(Continued on Sheet No. 5-7.1)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU**  
**GOELECTRIC VEHICLE HOME SERVICE**  
**RATE CODE A79, A80, AND A81**

Section No. 5  
2nd~~1st~~ Revised Sheet No. 7.1

**RATE**

Customer Charge per Month

Bundled (A80)	\$16.4863
Pre-Pay Option/Installation Only (A81) <del>(CLOSED)</del>	<del>\$6.685.95</del>
<u>BYOC (A79)</u>	<u>\$6.73</u>

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Energy Charge per kWh

June – September	
On-Peak Period	\$0.22576
Mid-Peak Period	\$0.09013
Off-Peak Period	\$0.02784

Other Months

On-Peak Period	\$0.19266
Mid-Peak Period	\$0.07515
Off-Peak Period	\$0.02784

**PRE-PAY/INSTALLATION ONLY OPTION**

The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company ~~, or who have purchased a compatible EV charger before the launch date of the Electric Vehicle Home Service~~

D  
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The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

N  
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**BYOC OPTION**

Customers choosing the ~~Installation Only~~BYOC Service are required to have a Company-contracted electrician perform a site visit and hardwire the charging equipment if needed, and to confirm equipment eligibility and that the equipment is correctly set up for the program. The cost of the site visit is included in the monthly customer charge. Customers choosing the BYOC Service are required to utilize a vehicle charger model that is approved by the Company for use for this rate, also responsible for a \$240 charge covering the cost of installing and setting up the customer-owned charger for integration with the Company's systems and participation in the program.

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**INTERIM RATE ADJUSTMENT**

An 8.92% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

N  
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N

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**MONTHLY MINIMUM CHARGE**

Customer Charge.

**SURCHARGE**

(Continued on Sheet No. 7.2)

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Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

---

**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU**  
**GOELECTRIC VEHICLE HOME SERVICE**  
**RATE CODE A79, A80, AND A81**

Section No. 5  
~~2nd~~<sup>1st</sup> Revised Sheet No. 7.1

---

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 7.2)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU GO**  
**ELECTRIC VEHICLE HOME SERVICE**  
**RATE CODE A79, A80, AND A81**

Section No. 5  
~~1st Revised~~ Original Sheet No. 7.2

**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The mid-peak period is defined as all hours not defined as on-peak or off-peak periods. The off-peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

**COMMUNICATION COSTS**

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles, ~~as provided in Minn. Stat. §216B.1614, subd. 2, paragraph (c) 2 by deferring the costs to a tracker account, and will petition the Minnesota Public Utilities Commission to recover the qualifying costs.~~

**TERMS AND CONDITIONS OF SERVICE**

1. ~~EV Accelerate At Home Pay As You Go Service~~~~Electric Vehicle Home Service~~ shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access ~~to charging~~~~for Company owned~~ equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an ~~EV Accelerate At Home~~~~Electric Vehicle Home Service~~~~Voluntary Electric Vehicle Charger Service~~ Customer Service Agreement with the Company.

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Date Filed: ~~10-16-2008-02-~~  
22

By: Christopher B. Clark

Effective Date: ~~11-16-20~~

President, Northern States Power Company, a Minnesota Corporation

Docket No. E002/M-~~10-55922-~~

Order Date: ~~10-06-20~~

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME  
VOLUNTARY ELECTRIC VEHICLE CHARGER SERVICE  
RATE CODE A76, A77**

Section No. 5  
6th~~5th~~ Revised Sheet No. 8

**AVAILABILITY**

Available to ~~residential~~Residential Service customers taking service under the Residential Time of Day (Rate Codes A02 and A04) or Time-of-Use Pilots (Rate Codes A72 and A74) to provide electric vehicle charging equipment to serve electric vehicle loads including battery charging and accessory usage. Customers' energy usage will be billed based on their applicable rate codes. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service. ~~Customers electing Pre-Pay Option service are separately invoiced at the time of installation. Installation-Only Service is available for customers who have purchased a compatible EV charger before the launch date of the Voluntary Electric Vehicle Charger Service. Pre-Pay Option is closed and not available to new customers. The customer must complete Company approved documentation verifying possession, through ownership or lease, of an electric vehicle as defined in Section 169.011, subdivision 26a of Minnesota law.~~

ND  
N  
D  
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D

**CONTRACT**

Customers must contract for this service through an ~~Electric Vehicle Home Service/Voluntary Electric Vehicle Charger Service~~EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment

ND

**CHARACTER OF SERVICE**

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

**COST OF SERVICE**

Customer Charge per Month

Bundled (A76)

~~\$12,091.99~~

R

Pre-Pay/Installation Only Option (A77) ~~(Closed)~~

~~\$2,301.31~~

R

**PRE-PAY/INSTALLATION-ONLY OPTION**

~~The Pre-Pay/Installation-Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company, or who have purchased a compatible EV charger before the launch date of the Electric Vehicle Home Service. Customers choosing the Installation-Only Service are also responsible for a \$240 charge covering the cost of installing and setting up the customer-owned charger for integration with the Company's systems and participation in the program.~~

D

~~The Pre-Pay/Installation-Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.~~

N

~~The Company will continue to support existing customers on the Pre-Pay/Installation-Only Option, but the Option is closed to new customers.~~

N

**COMMUNICATION COSTS**

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles, ~~as provided in Minn. Stat. §216B.1614, subd. 2, paragraph (c) 2 by deferring the costs to a tracker account, and will petition the Minnesota Public Utilities Commission to recover the qualifying costs.~~

D

**TERMS AND CONDITIONS OF SERVICE**

1. ~~EV Accelerate At Home~~ Voluntary ~~Electric Vehicle Charger~~ Service shall be serviced through wiring connected to customer's single meter provided for Residential Service.

ND

2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.

~~2-3. Company may require customer to provide access to charging equipment.~~

N

~~3-4.~~ The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.

~~4-5.~~ This schedule is also subject to provisions contained in Rules for Application of Residential Rates.

Customer must execute an ~~Electric Vehicle Home Service~~EV Accelerate At Home Customer Service Agreement with the Company.

ND

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41-17-20

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL ~~EV ACCELERATE AT HOME-ELECTRIC~~  
~~VEHICLE SUBSCRIPTION-PILOT SERVICE~~  
RATE CODE A82, A83, AND 84**

Section No. 5  
~~1st Revised~~Original Sheet No. 8.1

**AVAILABILITY**

Available while this ~~Pilot~~ Service is in effect to Residential Service customers for service only to electric vehicle loads including battery charging and accessory usage. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service with this tariff. ~~Customers electing Pre-Pay Option is closed and not available to new customers, service are separately invoiced at the time of installation. Bring-Your-Own-Charger ("BYOC") Option service is available to customers electing to bring their own charging equipment as approved by the Company, prior to beginning service with this tariff. The customer must complete Company approved documentation verifying possession, through ownership or lease, of an electric vehicle as defined in Section 169.011, subdivision 26a of Minnesota law.~~

~~Enrollment in the Subscription Services Pilot previously available under these rate codes is no longer available.~~

**CONTRACT**

Customers must contract for this service through an ~~EV Accelerate At Home Customer Electric Vehicle Subscription Pilot Electric~~ Service Agreement with the Company. ~~The contract period will be as long as the customer wishes to use the equipment. Customers who initially contracted for the Residential Electric Vehicle Subscription Service Pilot through an Electric Vehicle Subscription Pilot Customer Service Agreement can still stake service under that agreement through the end of the 36-month initial term. At the end of the agreement, the customer can continue service by contracting for the service through an EV Accelerate At Home Customer Service Agreement or terminate their service at no cost to them~~

~~The contract period will be as long as the customer wishes to use the equipment. The initial contract period will normally be for 24 months.~~ Contract allows customers to participate with ~~more than one~~ one electric vehicle.

**CHARACTER OF SERVICE**

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsor Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's Expected Average Electric Vehicle kWh Usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

(Continued on Sheet No. 5-8.2)

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Docket No. E002/M-~~19-18622-~~ Order Date: ~~10-07-19~~

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**RESIDENTIAL ~~EV ACCELERATE AT HOME~~ ELECTRIC-  
 VEHICLE SUBSCRIPTION PILOT SERVICE (Continued)  
 RATE CODE A82, A83 AND A84**

Section No. 5  
~~4th~~<sup>3rd</sup> Revised Sheet No. 8.2

**RATE**

Customer Charge per Month ( <u>Up to 1,000 kWh of off-peak charging per month</u> )		<u>N</u>
<u>General System Energy</u>		
Bundled (A82)	\$42.50	
Pre-Pay <del>Option</del> (A83) <del>(CLOSED)</del>	\$32.65	<u>ND</u>
<u>BYOC (A84)</u>	<u>\$33.82</u>	<u>N</u>
<u>Renewable Energy (Windsorce)</u>		
Bundled (A82)	<del>\$45.02</del> <u>45.92</u>	<u>R</u>
Pre-Pay <del>Option</del> (A83) <del>(CLOSED)</del>	<del>\$35.47</del> <u>34.25</u>	<u>R</u>
<u>BYOC (A84)</u>	<u>\$35.11</u>	<u>N</u>
<u>Excess On-Peak Period Energy Charge per kWh</u>		
June - September	\$0. <del>20497</del> <u>22576</u>	<u>R</u>
Other Months	\$0. <del>16508</del> <u>19266</u>	<u>R</u>
<u>Mid-Peak Period Energy Charge per kWh</u>		
June – September	\$0.09013	<u>N</u>
Other Months	\$0.07515	<u>N</u>
<u>Excess (above 1,000 kWh per month) Off-Peak Energy Charge per kWh</u>		
All Months	\$0.027840	<u>N</u>

**PRE-PAY OPTION (CLOSED)**

The Pre-Pay Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers

**BYOC PRE-PAY OPTION**

Customers choosing the BYOC Service are also required to have a Company-contracted electrician perform a site visit to install and hardwire the charging equipment if needed, and to confirm equipment eligibility and that the equipment is correctly set up for the program. This cost of the site visit is included in the monthly customer charge. Customers choosing the BYOC Service are required to utilize a vehicle charger model that is approved by the Company for use for this rate.  
~~The Pre-Pay Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.~~

**INTERIM RATE ADJUSTMENT**

An 8.92% Interim Rate Surcharge will be applied to rate components specified in the “Interim Rate Surcharge Rider” to service provided beginning January 1, 2022.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

(Continued on Sheet No. 5-8.2-1)

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**RESIDENTIAL EV ACCELERATE AT HOME**  
**SUBSCRIPTION SERVICE (Continued)**  
**RATE CODE A82, A83, AND A84**

Section No. 5  
Original Sheet No. 8.2-1

**FUEL CLAUSE**

The monthly customer charge includes preset fuel charges for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

The monthly customer charge includes a preset Resource Adjustment charge for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**MONTHLY MINIMUM CHARGE**

Customer Charge.

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 5-8.3)

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**RESIDENTIAL ~~EV ACCELERATE AT HOME~~ELECTRIC-  
VEHICLE SUBSCRIPTION ~~PILOT~~ SERVICE (Continued)  
RATE CODE A82, A83, AND A84**

Section No. 5  
~~1st Revised~~Original Sheet No. 8.3

**DEFINITION OF PEAK PERIODS**

~~The on-peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The mid-peak period is defined as all hours not defined as on-peak or off-peak periods. The off-peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics. The on-peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off-peak period is defined as all other hours. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.~~

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**DEFINITION OF EXPECTED AVERAGE ELECTRIC VEHICLE KWH USAGE**

The expected average electric vehicle kWh usage is defined as the Company's estimated average monthly EV energy consumption across all ~~PILOT~~ participants.

D

**COMMUNICATION COSTS**

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles, ~~as provided in Minn. Stat. §216B.1614, subd. 2, paragraph (c) 2 by deferring the costs to a tracker account, and will petition the Minnesota Public Utilities Commission to recover the qualifying costs.~~

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**TERMS AND CONDITIONS OF SERVICE**

1. ~~EV Accelerate At Home~~Residential Electric Vehicle Subscription ~~PILOT~~ Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access ~~to charging for Company-owned~~ equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an ~~EV Accelerate At Home~~Electric Vehicle Subscription ~~PILOT~~ Customer Service Agreement with the Company.

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**TABLE OF CONTENTS**

Section No. 1  
 13th Revised Sheet No. 1

Section	Item	<u>Sheet No.</u>
<b>TITLE SHEET</b>	.....	Title Sheet
<b>SECTION 1</b>	<b>TABLE OF CONTENTS</b> .....	1-1
<b>SECTION 2</b>	<b>CONTACT LIST</b> .....	2-1
<b>SECTION 3</b>	<b>INDEX OF COMPANY'S SERVICE AREA</b> .....	3-1
<b>SECTION 4</b>	<b>TECHNICAL AND SPECIAL TERMS AND ABBREVIATIONS</b>	
	Definition of Symbols .....	4-1
	Classification of Customers .....	4-2
<b>SECTION 5</b>	<b>RATE SCHEDULES</b>	
	Table of Contents .....	TOC
	<u>RESIDENTIAL</u>	
	Residential Service .....	5-1
	Residential Time of Day Service .....	5-2
	Residential Time of Use Pilot Program Service .....	5-4.1
	Residential Electric Vehicle Service .....	5-5
	Residential EV Accelerate At Home Pay As You Go Service .....	5.7
	Residential EV Accelerate At Home Voluntary Service .....	5-8
	Residential EV Accelerate At Home Subscription Service .....	5-8.1
	Energy Controlled Service (Non-Demand Metered) .....	5-9
	Limited Off Peak Service .....	5-11
	Rules for Application of Residential Rates .....	5-13
	Automatic Protective Lighting Service .....	5-14
	Residential Optimize Your Charge .....	5-16
	<u>GENERAL</u>	
	Energy Controlled Service (Non-Demand Metered) .....	5-9
	Limited Off Peak Service .....	5-11
	Automatic Protective Lighting Service .....	5-14
	Small General Service .....	5-21
	Small General Time of Day Service .....	5-23
	Commercial Optimize Your Charge .....	5-50.6

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(Continued on Sheet No. 1-2)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**TABLE OF CONTENTS (Continued)**

Section No. 1  
 12th Revised Sheet No. 2

<u>Section</u>	<u>Item</u>	<u>Sheet No.</u>
<b>SECTION 5</b>	<b>RATE SCHEDULES (Continued)</b>	
	<u>GENERAL</u> (Continued)	
	General Service .....	5-26
	General Time of Day Service.....	5-29
	Peak Controlled Service .....	5-40
	Peak Controlled Time of Day Service.....	5-44
	Rules for Application of Peak Controlled Services.....	5-48
	Electric Vehicle Fleet Pilot Service .....	5-51
	Electric Vehicle Public Charging Pilot Service.....	5-52
	Electric Service Public Charging Station Rate.....	5-52.7
	Real Time Pricing Service .....	5-64
	 <u>MUNICIPAL</u>	
	Light Rail Line Tariff.....	5-71
	Street Lighting System Service.....	5-74
	Street Lighting Energy Service (Closed).....	5-76
	Street Lighting Energy Service - Metered.....	5-78
	Street Lighting Service - City of St. Paul.....	5-80
	Rules for Application of Street Lighting Rates .....	5-82
	Small Municipal Pumping Service .....	5-85
	Municipal Pumping Service .....	5-87
	Fire and Civil Defense Siren Service .....	5-89

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(Continued on Sheet No. 1-3)

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**MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2**

**RATE SCHEDULES  
 TABLE OF CONTENTS**

Section No. 5  
 16th Revised Sheet No. TOC-1

<u>Item</u>	<u>Sheet No.</u>	
<b><u>RESIDENTIAL</u></b>		
Residential .....	5-1	
Residential Time of Day .....	5-2	
Residential Time of Use Pilot Program Service .....	5-4.1	
Residential Electric Vehicle Service .....	5-5	
Residential EV Accelerate At Home Pay As You Go Service .....	5-7	ND
Residential EV Accelerate At Home Voluntary Service .....	5-8	ND
Residential EV Accelerate At Home Subscription Service .....	5-8.1	ND
Energy Controlled (Non-Demand Metered).....	5-9	
Limited Off Peak .....	5-11	
Rules for Application of Residential Rates .....	5-13	
Automatic Protective Lighting.....	5-14	
Residential Optimize Your Charge... ..	5-16	
 <b><u>GENERAL</u></b>		
Small General .....	5-21	
Small General Time of Day (Metered and Non-Metered).....	5-23	
General .....	5-26	
General Time of Day .....	5-29	
Peak Controlled .....	5-40	
Peak Controlled Time of Day .....	5-44	
Rules for Application of Peak Controlled.....	5-48	
Commercial Optimize Your Charge... ..	5-50.6	
Electric Vehicle Fleet Pilot Service.....	5-51	
Electric Vehicle Public Charging Pilot Service .....	5-52	
Electric Service Public Charging Station Rate. ....	5-52.7	ND
Real Time Pricing.....	5-64	
 <b><u>MUNICIPAL</u></b>		
Light Rail Line Tariff .....	5-71	
Street Lighting System .....	5-74	
Street Lighting Energy (Closed).....	5-76	
Street Lighting Energy (Metered).....	5-78	
Street Lighting City of St. Paul .....	5-80	
Rules for Application of Street Lighting Rates.....	5-82	
Small Municipal Pumping.....	5-85	
Municipal Pumping.....	5-87	
Fire and Civil Defense Siren .....	5-89	

(Continued on Sheet No. TOC-2)

Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU  
GO SERVICE  
RATE CODE A79, A80, AND A81**

Section No. 5  
7th Revised Sheet No. 7

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**AVAILABILITY**

Available to Residential Service customers for service only to electric vehicle loads including battery charging and accessory usage. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service with this tariff. Pre-Pay option is closed and not available to new customers. Bring-Your-Own-Charger ("BYOC") Option service is available to customers electing to bring their own charging equipment as approved by the Company, prior to beginning service with this tariff.

N  
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Enrollment in the Residential Electric Vehicle Pilot Service previously available under these rate codes is no longer available.

**CONTRACT**

Customers must contract for this service through an EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment.

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**CHARACTER OF SERVICE**

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

D

**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable\*Connect Pilot Program (Windsor Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

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(Continued on Sheet No. 5-7.1)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU GO  
SERVICE  
RATE CODE A79, A80, AND A81**

Section No. 5  
2nd Revised Sheet No. 7.1

**RATE**

Customer Charge per Month			
Bundled (A80)	\$16.63		R
Pre-Pay Option/Installation Only (A81) (CLOSED)	\$5.95		R
BYOC (A79)	\$6.73		N
Energy Charge per kWh			
June – September			
On-Peak Period	\$0.22576		
Mid-Peak Period	\$0.09013		
Off-Peak Period	\$0.02784		
Other Months			
On-Peak Period	\$0.19266		
Mid-Peak Period	\$0.07515		
Off-Peak Period	\$0.02784		

**PRE-PAY/INSTALLATION ONLY OPTION**

The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

**BYOC OPTION**

Customers choosing the BYOC Service are required to have a Company-contracted electrician perform a site visit and hardwire the charging equipment if needed, and to confirm equipment eligibility and that the equipment is correctly set up for the program. The cost of the site visit is included in the monthly customer charge. Customers choosing the BYOC Service are required to utilize a vehicle charger model that is approved by the Company for use for this rate.

**INTERIM RATE ADJUSTMENT**

An 8.92% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 1, 2022.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

**FUEL CLAUSE**

Bills are subject to the adjustments provided for in the Fuel Clause Rider

**RESOURCE ADJUSTMENT**

Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**MONTHLY MINIMUM CHARGE**

Customer Charge.

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

(Continued on Sheet No. 7.2)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**RESIDENTIAL EV ACCELERATE AT HOME PAY AS YOU  
GO SERVICE  
RATE CODE A79, A80, AND A81**

Section No. 5  
1st Revised Sheet No. 7.2

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**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The mid-peak period is defined as all hours not defined as on-peak or off-peak periods. The off-peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

**COMMUNICATION COSTS**

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles.

D

**TERMS AND CONDITIONS OF SERVICE**

1. EV Accelerate At Home Pay As You Go Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage. ND
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access to charging equipment for the recording and wireless communication of energy usage. ND
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company. ND

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME  
VOLUNTARY SERVICE  
RATE CODE A76, A77**

Section No. 5  
6th Revised Sheet No. 8

**AVAILABILITY**

Available to Residential Service customers taking service under the Residential Time of Day (Rate Codes A02 and A04) or Time-of-Use Pilots (Rate Codes A72 and A74) to provide electric vehicle charging equipment to serve electric vehicle loads including battery charging and accessory usage. Customers' energy usage will be billed based on their applicable rate codes. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service. Pre-Pay Option is closed and not available to new customers.

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**CONTRACT**

Customers must contract for this service through an EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment

ND

**CHARACTER OF SERVICE**

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

**COST OF SERVICE**

Customer Charge per Month

Bundled (A76)	\$11.99
Pre-Pay/Installation Only Option (A77) (Closed)	\$1.31

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**PRE-PAY/INSTALLATION-ONLY OPTION**

The Pre-Pay/Installation Only Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers.

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**COMMUNICATION COSTS**

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles.

D

**TERMS AND CONDITIONS OF SERVICE**

1. EV Accelerate At Home Voluntary Service shall be serviced through wiring connected to customer's single meter provided for Residential Service.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access to charging equipment.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company.

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**RESIDENTIAL EV ACCELERATE AT HOME  
SUBSCRIPTION SERVICE  
RATE CODE A82, A83, AND 84**

Section No. 5  
1st Revised Sheet No. 8.1

**AVAILABILITY**

Available while this Service is in effect to Residential Service customers for service only to electric vehicle loads including battery charging and accessory usage. Bundled service includes Company installed and provided charging equipment. Pre-Pay Option service is available to customers electing to pay Company for the installed cost of charging equipment prior to beginning service with this tariff. Pre-Pay Option is closed and not available to new customers. Bring-Your-Own-Charger ("BYOC") Option service is available to customers electing to bring their own charging equipment as approved by the Company, prior to beginning service with this tariff.

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Enrollment in the Subscription Services Pilot previously available under these rate codes is no longer available.

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**CONTRACT**

Customers must contract for this service through an EV Accelerate At Home Customer Service Agreement with the Company. The contract period will be as long as the customer wishes to use the equipment. Customers who initially contracted for the Residential Electric Vehicle Subscription Service Pilot through an Electric Vehicle Subscription Pilot Customer Service Agreement can still stake service under that agreement through the end of the 36-month initial term. At the end of the agreement, the customer can continue service by contracting for the service through an EV Accelerate At Home Customer Service Agreement or terminate their service at no cost to them

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The contract period will be as long as the customer wishes to use the equipment. Contract allows customers to participate with more than one electric vehicle.

ND

**CHARACTER OF SERVICE**

Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

**RENEWABLE ENERGY SUPPLY OPTION**

Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

**DETERMINATION OF CUSTOMER BILLS**

Customer bills shall reflect energy charges (if applicable) based on customer's Expected Average Electric Vehicle kWh Usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and /or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

(Continued on Sheet No. 5-8.2)

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**RESIDENTIAL EV ACCELERATE AT HOME  
 SUBSCRIPTION SERVICE (Continued)  
 RATE CODE A82, A83 AND A84**

Section No. 5  
 4th Revised Sheet No. 8.2

**RATE**

Customer Charge per Month (Up to 1,000 kWh of off-peak charging per month)		N
<u>General System Energy</u>		
Bundled (A82)	\$42.50	
Pre-Pay (A83) (CLOSED)	\$32.65	ND
BYOC (A84)	\$33.82	N
<u>Renewable Energy (Windsorce)</u>		
Bundled (A82)	\$45.92	R
Pre-Pay (A83) (CLOSED)	\$34.25	R
BYOC (A84)	\$35.11	N
Excess On-Peak Period Energy Charge per kWh		
June - September	\$0.22576	R
Other Months	\$0.19266	R
Mid-Peak Period Energy Charge per kWh		
June – September	\$0.09013	N
Other Months	\$0.07515	
Excess (above 1,000 kWh per month) Off-Peak Energy Charge per kWh		
All Months	\$0.027840	

**PRE-PAY OPTION (CLOSED)**

The Pre-Pay Option Customer Charge per Month applies in place of the Bundled Customer Charge per Month to customers that have paid the installed cost of charging equipment to the Company.

The Company will continue to support existing customers on the Pre-Pay/Installation Only Option, but the Option is closed to new customers

**BYOC OPTION**

Customers choosing the BYOC Service are also required to have a Company-contracted electrician perform a site visit to install and hardwire the charging equipment if needed, and to confirm equipment eligibility and that the equipment is correctly set up for the program. This cost of the site visit is included in the monthly customer charge. Customers choosing the BYOC Service are required to utilize a vehicle charger model that is approved by the Company for use for this rate

**INTERIM RATE ADJUSTMENT**

An 8.92% Interim Rate Surcharge will be applied to rate components specified in the “Interim Rate Surcharge Rider” to service provided beginning January 1, 2022.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

(Continued on Sheet No. 5-8.2-1)

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**RESIDENTIAL EV ACCELERATE AT HOME  
SUBSCRIPTION SERVICE (Continued)  
RATE CODE A82, A83, AND A84**

Section No. 5  
Original Sheet No. 8.2-1

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**FUEL CLAUSE**

The monthly customer charge includes preset fuel charges for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Fuel Clause Rider.

**RESOURCE ADJUSTMENT**

The monthly customer charge includes a preset Resource Adjustment charge for established energy usage during off-peak and on-peak periods. Excess on-peak period energy charges are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

**MONTHLY MINIMUM CHARGE**

Customer Charge.

**SURCHARGE**

In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

**LATE PAYMENT CHARGE**

Any unpaid balance over \$10.00 is subject to a 1.5% late payment charge or \$1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

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(Continued on Sheet No. 5-8.3)

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

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**RESIDENTIAL EV ACCELERATE AT HOME  
SUBSCRIPTION SERVICE (Continued)  
RATE CODE A82, A83, AND A84**

Section No. 5  
1st Revised Sheet No. 8.3

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**DEFINITION OF PEAK PERIODS**

The on-peak period is defined as those hours between 3:00 p.m. and 8:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The mid-peak period is defined as all hours not defined as on-peak or off-peak periods. The off-peak period is defined as those hours between midnight (12:00 a.m.) and 6:00 a.m. every day. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

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**DEFINITION OF EXPECTED AVERAGE ELECTRIC VEHICLE KWH USAGE**

The expected average electric vehicle kWh usage is defined as the Company's estimated average monthly EV energy consumption across all participants.

D

**COMMUNICATION COSTS**

The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles.

D

**TERMS AND CONDITIONS OF SERVICE**

1. EV Accelerate At Home Subscription Service shall be served through wiring connected to customer's single meter provided for Residential Service. Consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, premises wiring and a suitable location for connection of charging and associated equipment.
3. Company may require customer to provide access to charging equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customer must execute an EV Accelerate At Home Customer Service Agreement with the Company.

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**TABLE OF CONTENTS (Continued)**

Section No. 1  
~~20th~~ Revised Sheet No. 4

<u>Section</u>	<u>Item</u>	<u>Sheet No.</u>
<b>SECTION 6</b>	<b>GENERAL RULES AND REGULATIONS</b>	
	Table of Contents .....	TOC
	General Service Rules .....	6-3
	Rate Application .....	6-8
	Metering and Billing .....	6-13
	Use of Service Rules .....	6-18
	Standard Installation and Extension Rules .....	6-22
	Curtailment or Interruption of Service .....	6-33
	Company's Rights .....	6-35
<b>SECTION 7</b>	<b>CONTRACT AND AGREEMENT FORMS</b>	
	Table of Contents .....	TOC
	Electric Service Agreement .....	7-2
	Electric Service Agreement - Peak Controlled Services .....	7-5
	Automatic Throw-Over/Manual Throw-Over Dual Feeder Agreement .....	7-9
	WAPA Bill Crediting Program Agreement .....	7-15
	St. Anthony Falls Upper Lock and Dam .....	7-36
	Underground Gas and/or Electric Distribution Agreement .....	7-38
	Overhead Service Form .....	7-44
	Underground Service Form .....	7-46
	Underground Distribution Form .....	7-49
	Statement of Work Requested .....	7-52
	Statement of Work Requested - Municipality .....	7-53.1
	Advance Payment Subject to Reimbursement Form .....	7-54
	Advance Payment by Note Subject to Reimbursement Form .....	7-56
	Promissory Note .....	7-58
	MN, ND & SD Residential Underground Service Contract .....	7-60
	eBill and eBill Payment Terms of Use .....	7-69
	Interconnection Agreement – Federal Agency Distributed Generation under 2000 kW (Closed to New Applicants) .....	7-75
	One-Time My Account Payment Terms of Use .....	7-92
	Voluntary Renewable*Connect Rider Service Agreement	7-98
	Voluntary Renewable*Connect Government Rider Service Agreement	7-102
	Electric Vehicle Home Service / <del>EV Accelerate At Home</del> Voluntary Electric Vehicle Charger Service	
	Customer Service Agreement	7-113
	Online Terms of Use	7-124

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(Continued on Sheet No. 1-5)

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Northern States Power Company, a Minnesota corporation  
Minneapolis, Minnesota 55401

**MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2**

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**CONTRACTS**  
**TABLE OF CONTENTS (Continued)**

Section No. 7  
~~3rd~~ Revised Sheet No. TOC-2

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<u>Item</u>	<u>Sheet No.</u>	
<del>Electric Vehicle Home Service /</del> <del>Voluntary Electric Vehicle Charger Service</del> <u>EV Accelerate At Home</u> Customer Service Agreement	7-113	<del>DN</del>
.....	7-113	
Online Terms of Use .....	7-124	<del>N</del>

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**EV HOME SERVICE/VOLUNTARY EV CHARGER  
 SERVICE ACCELERATE AT HOME CUSTOMER  
 SERVICE AGREEMENT**

Section No. 7  
 2nd4st Revised Sheet No. 113

**XCEL ENERGY'S EV Accelerate At Home HOME SERVICE/VOLUNTARY ELECTRIC VEHICLE CHARGER SERVICE CUSTOMER SERVICE AGREEMENT ("Service Agreement")**

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Northern States Power Company, doing business as Xcel Energy ("Xcel Energy") is excited to offer the Electric Vehicle Home Service to its Minnesota Electric Vehicle ("EV") Accelerate At Home program at residential rates (the "EV Accelerate at Home Program") to Xcel Energy's electric customers ("Customers", "you" or "your").

ND

Under the EV Accelerate At Home Program, Xcel Energy will offer eligible Customers installation of home Charging Equipment and enrollment in an Xcel Energy Time-of-Use Electric Vehicle rate. Customer's participation in the EV Accelerate At Home Program is subject to the terms and conditions of this Service Agreement, which incorporate by this reference. The Program is described in more detail in T the General Rules and Regulations and/or in the Rate Schedules of Xcel Energy's Electric Rate Book for Customer's specific service ("Service Tariffs"), as ~~they~~ the Service Tariffs now exist or may hereafter be changed, on file with the Minnesota Public Utilities Commission (the "Commission"). In the event of a conflict between the terms of this Service Agreement and any applicable Service Tariff, the Service Tariff shall govern. Unless otherwise defined in the Service Agreement Specifically, the definitions, rates and other terms, and conditions set forth in the Residential EV Accelerate At Home Pay As You Go Electric Vehicle Home Service Tariff, and/or the Residential EV Accelerate At Home Voluntary Electric Vehicle Charger Service Tariff and/or the Residential EV Accelerate At Home Subscription Service Tariff, General Rules and Regulations and Rate Schedules are applicable to, and incorporated into, this Service Agreement. The applicable Service Tariffs, as currently on file with the Commission, are summarized in the following chart, as if fully set forth herein.

ND

**EV Home Service Accelerate At Home Program Offerings**

Rate Options	Customer upfront out-of-pocket expenses	Customer monthly charge for EV Home Service	Services included in monthly charge for EV Service	Monthly usage billed
Bundled <del>Electric Vehicle Home Service</del> Residential EV Accelerate At Home Pay As You Go Service Rate Code: A80	•Premises wiring	<del>\$16.48</del> \$16.63	•Charging Equipment and installation •Customer services •Customer accounting •Load monitoring and data management •Maintenance service •Charging Equipment removal and relocation	EV charging is billed according to Rate Code A80
Prepay/Installation-Only <del>Electric Vehicle Home Service</del> Rate Code: A81	•Charging Equipment and installation •Premises wiring	\$6.68	•Customer services •Customer accounting •Load monitoring and data management	EV charging is billed according to Rate Code A81

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(Continued on Sheet No. 7-113.1)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE AGREEMENT (Continued)**

Rate Options	Customer upfront out-of-pocket expenses	Customer monthly charge for EV Home Service	Services included in monthly charge for EV Service	Monthly usage billed
<a href="#">BYOC Residential EV Accelerate At Home Pay As You Go Service</a> Rate Code: A79	<ul style="list-style-type: none"> <li>• Charging Equipment</li> <li>• Premises Wiring</li> </ul>	\$6.73	<ul style="list-style-type: none"> <li>•Charging equipment installation (initial electrician visit)</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> <li>•Charging Equipment relocation</li> </ul>	EV charging is billed according to Rate Code A79
<a href="#">Bundled Residential EV Accelerate At Home Voluntary Service</a> Rate Code : A76	<ul style="list-style-type: none"> <li>•Premises Wiring</li> </ul>	\$11.99	<ul style="list-style-type: none"> <li>•Charging Equipment and installation</li> <li>•Maintenance service</li> <li>•Charging eEquipment removal and relocation</li> </ul>	EV charging is billed according to Rate Code A02 or A04
<a href="#">Prepay/Installation Only Voluntary Electric Vehicle Charger Service</a> Rate Code: A77	<ul style="list-style-type: none"> <li>•Premises wiring</li> <li>•Charging Equipment and installation</li> </ul>	\$2.30	<ul style="list-style-type: none"> <li>•Maintenance service</li> </ul>	EV charging is billed according to Rate Code A02 or A04
<a href="#">Bundled Residential EV Accelerate At Home Subscription Service</a> Rate Code: A82	<ul style="list-style-type: none"> <li>•Premises Wiring</li> </ul>	\$42.50 \$45.92 with Windsorce •Subject to Maximum of 1,000 kWh of "off-peak" charging	<ul style="list-style-type: none"> <li>•Charging Equipment and installation</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> <li>•Maintenance service</li> <li>•Charging equipment removal and relocation</li> <li>•Off-peak usage until 1,000 kWh</li> </ul>	EV charging is billed according to Rate Code A82
<a href="#">BYOC Residential EV Accelerate At Home Subscription Service</a> Rate Code: A84	<ul style="list-style-type: none"> <li>•Premises wiring</li> <li>•Charging Equipment</li> </ul>	\$33.82 \$35.11 with Windsorce •Subject to Maximum of 1,000 kWh of "off-peak" charging	<ul style="list-style-type: none"> <li>•Charging equipment installation (initial electrician visit)</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> </ul>	EV charging is billed according to Rate Code A84

(Continued on Sheet No. 7-114)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
 AGREEMENT (Continued)**

Section No. 7  
 Original Sheet No. 113.1

Rate Options	Customer upfront out-of-pocket expenses	Customer monthly charge for EV Home Service	Services included in monthly charge for EV Service	Monthly usage billed
			<ul style="list-style-type: none"> <li>•Charging equipment relocation</li> <li>•Off-peak usage until 1,000 kWh cap is reached</li> </ul>	

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(Continued on Sheet No. 7-114)

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**EV ACCELERATE AT HOME HOME SERVICE/VOLUNTARY EV CHARGER SERVICE CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~4<sup>st</sup> Revised Sheet No. 114

**XCEL ENERGY'S EV Accelerate At Home Home Service/Voluntary Electric Vehicle Charger Service Customer Service Agreement (Continued)**

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In order to enroll in the EV Accelerate At Home Program, please review these ~~se~~ terms of the Service Agreement and indicate your understanding and agreement ~~below~~ by selecting the appropriate check box on the EV Accelerate At Home Program enrollment page ~~found on Xcel Energy's website at [link to be generated at xcelenergy.com](#)~~. Once enrolled, Xcel Energy will notify ~~you the Customer~~ (a) that ~~the Customer's~~your eligible Charging Equipment has been installed, and (b) Xcel Energy and the ~~e~~Equipment vendor have confirmed that the Charger is operational and activated, by e-mail (the date of the e-mail will be the "Activation Date").

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**Definitions**

"Electric Vehicle," ~~means any device or contrivance that transports persons or property and that is able to be powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electricity. Electric Vehicle includes, but is not limited to, an electric vehicle as defined in Minnesota Statutes Section 169.011, subdivision 26a; an electric-assisted bicycle as defined in Section 169.011, subdivision 27; an off-road vehicle, as defined in Section 84.797, subdivision 7; a motorboat, as defined in Section 86B.005, subdivision 9; or an aircraft, as defined in Section 360.013, subdivision 37. defined in Section 169.011, subdivision 26a of Minnesota law, means a motor vehicle that is able to be powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electric current, and meets or exceeds applicable regulations in the Code of Federal Regulations, title 49, part 571. Electric vehicles include neighborhood electric vehicles, medium-speed electric vehicles, and plug-in hybrid electric vehicles.~~

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"Charging Equipment," or "Charger," or "Equipment" means the installed device used to deliver electricity from the Premises Wiring to the ~~e~~Electric ~~v~~Vehicle, meeting Standard J1772 of the Society of Automotive Engineers International and listed under applicable UL Standards and requirements or equivalent listing by a nationally recognized testing laboratory. ~~Theis device~~ Charging Equipment includes the ungrounded, grounded, and Equipment grounding conductors, the Electric Vehicle connectors, attachment plugs, and all other fittings, devices, power outlets or apparatuses associated with the installed device, but does not include Premises Wiring.

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"Premises Wiring" means a dedicated 208/240V AC circuit that supplies electricity directly to the installed Charging Equipment. This includes the protective breaker at the supply panel, wiring, final junction box, receptacle and all attachments and connections. The Customer retains ownership and is wholly responsible for the Premises Wiring, including that it meets all workmanship standards and applicable requirements in the National Electric Code, Minnesota law and Administrative Rules, and local municipal codes.

"Site" means the enclosed garage or other area approved by Xcel Energy ~~on~~within or on a single-family home (defined as a detached single home, townhome/rowhouse, or duplex) property owned or rented or owned by the Customer ~~where the Charger will be installed and operated, as the Customer's dwelling.~~

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(Continued on Sheet No. 7-115)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~4<sup>st</sup> Revised Sheet No. 115

- ~~• complete Xcel Energy-approved documentation verifying possession, through ownership or lease, of an electric vehicle as defined in Section 169.011, subdivision 26a of Minnesota law;~~
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on ~~its~~Xcel Energy's behalf, ~~or be inspected and confirmed as eligible by an Xcel Energy contracted electrician~~ for the exclusive use of tracking the ~~energy~~electricity used to charge ~~their~~your electric vehicle; and
- have Wi-Fi service at Site;
- be on a current Xcel Energy Residential Time of Day rate (RATE CODE A02 and A04) ~~or Time of Use Rate Design Pilot Program.~~

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(Continued on Sheet No. 7-116)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~ Revised Sheet No. 116

**2. Charging Equipment Installation, Maintenance, and Title**

- 2.1 Except as provided in Section 2.4 below regarding a Customer Provided Charger, once enrolled into the EV Accelerate At Home Program, Xcel Energy, through its network of authorized third party independent contractors and at its expense, shall provide (except for a Customer Provided Charger), install, maintain, repair or replace (collectively the "Work") the Charging Equipment (collectively the "Work") on property owned by the Customer (the "Site"). The Work does not include any Premises Wiring. The Charging Equipment will be hardwired to the Premises Wiring at the Site. Xcel Energy shall provide electric utility services to the Customer, and the Customer shall pay for such electric service consistent with the applicable electric utility tariff in force and effect. Xcel Energy, in Xcel Energy's sole discretion, shall have the right to repair, modify, or replace the Charger at any time during the Term of this Agreement. Xcel Energy will use commercially reasonable efforts to maintain the Charging Equipment in working order, and will attempt to provide you reasonable advance notice of any required maintenance of the Charging Equipment. Xcel Energy will coordinate with you to schedule maintenance Work. You understand that if Xcel Energy is unable to arrange for maintenance Work to be completed at a mutually agreeable time, the Charging Equipment may not function and you may not be able to charge your EV at your Site. N  
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- 2.2 Except as provided in Section 2.4 below, ~~upon completion of installation and~~ at all times during the Term of this Service Agreement, ownership of and title to the Charging Equipment shall remain with Xcel Energy and you are therefore not permitted to make any alterations, changes, or modifications to the Charging Equipment without first securing prior written permission from Xcel Energy. ~~The Customer shall not sell or allow ensure that any the~~ Charger ~~shall not to become be~~ subject to any lien, security interest or other claim asserted by any creditor of ~~the Customer, and~~ ~~a~~Any sale of the Site by the Customer shall not include the Charging Equipment. D  
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- 2.3 Customer, at Customer's sole cost and expense, shall maintain the connection between the Charging Equipment and an Internet Service Provider via Wi-Fi connection, for the operation of the Charger under this Service Agreement. Late, incomplete, or inaccurate Charging Equipment usage information will be disregarded where the lack of Wi-Fi service is the cause of the data transmission failure. As a result, for Customers subscribing to the EV Accelerate At Home Home Service, any actual EV charging during these intervals will be billed at the Customer's current rate and will not be adjusted in any future bills if any EV usage data is subsequently received. N  
N  
ND
- 2.4 If Customer owns an Electric Vehicle Charger that is approved and offered by Xcel Energy for the EV Accelerate At Home Program ("Customer Provided Charger"), ~~Home Service and Customer must allow an Xcel Energy-contracted electrician to perform a Site visit to confirm Equipment eligibility, install and hardwire the Equipment as needed, and confirm that the Equipment is correctly set up for the EV Accelerate At Home Program.~~ ~~has proof of purchase of such Charger prior to the launch date of the EV Home Service. Customer may opt to have Xcel Energy install and set up the Customer owned Charger for participation in the EV Home Service program (the "Installation Only Service").~~ Xcel Energy shall provide electric utility services to the Customer, and the Customer shall pay for such electric service consistent with the applicable electric utility tariff in force and effect. Notwithstanding Section 2.2, Xcel Energy shall have no ownership interest in the Customer Provided Charger and title to the Customer ~~owned~~ Provided Charger will remain with Customer. ~~and no obligation to repair, modify, or replace the Charger.~~ N  
N  
D  
D  
N  
N  
D

(Continued on Sheet No. 7-117)

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**EV ACCELERATE AT HOME -HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~4<sup>st</sup> Revised Sheet No. 117

**3. Customer's CHARGING EQUIPMENT Obligations and Duties**

Throughout the Term of this Service Agreement:

- 3.1 Customer shall grant to Xcel Energy, or its authorized third party contractor, such access to the Site and sufficient space for locating the Charging Equipment at the Site as may be deemed necessary or desirable by Xcel Energy, or its authorized third party contractor, to perform for the Work. Installations must conform to Xcel Energy's~~the Company's~~ specifications. N  
N  
ND
- 3.2 Customer shall be responsible for the expense and installation of any Premises Wiring necessary to provide electricity to the Charging Equipment. Customer may, in Customer's sole discretion, opt to use Xcel Energy's third-party independent contractor to install the necessary Premises Wiring in addition to the Charging Equipment, provided that Customer will be responsible for the expense to have the third-party independent contractor install the Premises Wiring.
- 3.3 Until the Charging Equipment (in Xcel Energy's sole discretion) is deemed non-functional or this Service Agreement is terminated, ~~the~~ Customer hereby consents to and shall permit both Xcel Energy and any underlying equipment manufacturer, vendor or subcontractor to the underlying manufacturer or vendor to access, collect and share with their respective parent, affiliates, subsidiaries and subcontractors all data from the Charger with respect to Electric vVehicle charging activity, Electric vVehicle usage and technical performance (the "Data") of the Electric vVehicle and Charger. Xcel Energy shall comply with all federal, state, and local laws, as applicable, in the access, collection, and sharing of the Data. In the event the Charger fails to operate or otherwise require repair, the Customer shall promptly notify Xcel Energy. ND  
N  
N
- 3.4 Customer, Xcel Energy and ~~its~~Xcel Energy's authorized equipment manufacturers, vendors, and subcontractors shall comply with all applicable rules and regulations of federal, state or city regulatory agencies relating to the Work and operation of the Charger, including environmental requirements associated therewith. Customer will use the Charging Equipment only as specified by the Charging Equipment manufacturer and will be responsible for any damage caused to the Charging Equipment due to Customer's misuse, neglect or abuse. ND  
N  
N
- 3.5 Customer shall maintain the area surrounding the Charging Equipment and will promptly notify Xcel Energy of any problems related to the Equipment that the Customer becomes aware of. Such maintenance includes, but is not limited to, pavement maintenance, pruning of vegetation, and snow removal. For avoidance of doubt, and except for Customer Provided Chargers, Customer is not responsible for the ongoing maintenance of the Equipment, itself. N
- 3.6 Customer agrees to remedy minor issues that do not require qualified technicians to address, such as resetting infrequently tripped circuit breakers.
- 3.7 Customer agrees to provide access and assistance to facilitate random Charging Equipment testing, ~~if selected~~. Such cooperation may include, but not be limited to, periodic inspection of the Charger and the addition of monitoring hardware or software at Xcel Energy's expense. D
- 3.8 Customer agrees to participate in surveys and provide feedback about the EV Accelerate At Home Program as well as cooperate with Xcel Energy in fulfilling Xcel Energy's reporting requirements to any federal, state or local regulatory or governing entities. N

(Continued on Sheet No. 7-118)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~ Revised Sheet No. 118

**3. Customer's Charging Equipment Obligations and Duties (Continued)**

Throughout the Term of this Agreement:

- 3.9 Customer consents to receive communications from Xcel Energy relating to the EV Accelerate At Home Program in electronic form sent to Customer's email address on file with Xcel Energy. N  
N
- ~~3.10~~ If the Customer who has opted into the Bundled ~~Electric Vehicle Home~~ EV Accelerate At Home Program Service ~~Options or Bundled Voluntary Electric Vehicle Charger Service~~ or Xcel Energy fails to meet any of its obligations under this Service Agreement, Xcel Energy may remove the Charging Equipment. If the Customer who has opted into the EV Accelerate At Home Program Prepay/ ~~Electric Vehicle Home Service. Prepay Voluntary Electric Vehicle Charger Service,~~ or Installation-Only or BYOC Service Options or Xcel Energy fails to meet any of its obligations under this Service Agreement, Xcel Energy may move the Customer back to ~~their~~ Customer's previous rate. ND  
ND
- 3.11 Customer is solely responsible for any and all use of the Charging Equipment during the Term and is obligated to pay for the electricity consumed by the Charging Equipment consistent with and at the rate of the applicable electric utility tariff in force and effect. N  
N

**4. Program Term, Withdrawal, and Termination**

- 4.1 This Service Agreement shall be effective as of the Enrollment Date ~~by both Parties. The Term shall commence on the date when the Charging Equipment is installed, and Xcel Energy and the equipment vendor have confirmed that the Charger is operational. The Agreement shall continue as long as the Customer wishes to use the Equipment until terminated in accordance with this Section 4 (the "Term").~~ D  
D  
D  
N
- 4.2 All fees, rates, and charges applicable to Customer shall be assessed as provided in the General Rules and Regulations and/or in the Rate Schedules of Xcel Energy's Electric Rate Book for Customer's specific service, as they now exist or may hereafter be changed, on file with the Commission. All fees, rates and charges assessed by Xcel Energy under this Service Agreement shall be set forth on the retail electric bill of the Customer and be billed and collected similar to other retail electric charges.
- 4.3 The Work and electric service hereunder shall be supplied for the Customer's use as provided in the General Rules and Regulations in the applicable Rate Schedules of Xcel Energy's Electric Rate Book for Customer's specific service, as they now exist or may hereafter be changed, on file with the Commission. A Copy of such Rules and Regulations and applicable Rate schedules are available from Xcel Energy. Customer will not assign this Agreement except upon written consent of Xcel Energy. N
- 4.4 Activations of Charging Equipment must be completed by Xcel Energy at least 5 business days prior to the start date of ~~the~~ Customer's next billing cycle to become effective on that date. If ~~the a~~ Activation Date is less than 5 days prior, Customer will become effective in the EV Accelerate At Home Program on the ~~stated~~ date of the Customer's subsequent billing cycle. N  
N  
N
- 4.5 Subject to Sections 4.6, 4.7 and 4.8, Customer may terminate this Service Agreement for any reason at any time by providing Xcel Energy written notice of such termination. The termination will be effective as and when set forth in this Section 4. N  
N  
N
- 4.56 If the Customer ~~requests to~~ terminates the Service Agreement and has been paying the bundled service customer charge, Customer will have the following options: ND
- 4.6.1 In the event Customer terminates this Service Agreement and the effective date of the termination ~~Customers who have taken service pursuant to this Agreement for at least~~ occurs ten (10) years or more from Customer's Activation Date, have the following options Customer may: ND  
ND
  - Have the Charging Equipment removed at no cost and move back to ~~their~~ Customer's previous electric rate; ND
  - Sign a new Customer Service Agreement and have the Charging Equipment replaced or upgraded; ND  
or

(Continued on Sheet No. 7-119)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~ Revised Sheet No. 118

- Purchase the Charging Equipment for an amount equal to the installed cost of the Charging Equipment reduced by ten percent (10%) of the installed costs of the Charging Equipment for each full calendar year between the Charging Equipment's ~~original in service date~~ Activation Date and the date of termination of the Agreement ("Buyout Amount"). Xcel Energy will provide Customer the Buyout Amount. If Customer exercises this option, Customer will receive the Charging Equipment from Xcel Energy on an "As-Is" basis, with no warranty of any kind, express or implied, and Customer will be responsible for any necessary maintenance, repair, or replacement of the Equipment.

N  
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N

(Continued on Sheet No. 7-119)

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**EV ACCELERATE AT HOME - HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
2nd4st Revised Sheet No. 119

- 4.56.2 (Continued)
  - ~~In the event Customer terminates this Service Agreement or Xcel Energy terminates this Service Agreement, and the effective date of the termination occurs less than ten (10) years from Customer's Activation Date, Customer may~~Customers who have taken service pursuant to this Agreement for less than ten (10) years have the following options:
    - Have the Charging Equipment removed ~~at no cost for a one-time \$200 fee~~ and move back to ~~their~~Customer's previous electric rate; or,
    - Purchase the Charging Equipment for an amount equal to the installed cost of the Charging Equipment reduced by ten percent (10%) of the installed costs of the Charging Equipment for each full calendar year between the Charging Equipment's ~~original in-service date~~Activation Date and the date of termination of the Agreement ("Buyout Amount"). Xcel Energy will provide Customer the Buyout Amount. If Customer exercises this option, Customer will receive the Charging Equipment from Xcel Energy on an "As-Is" basis, with no warranty of any kind, express or implied, and Customer will be responsible for any necessary maintenance, repair, or replacement of the Equipment.
- ~~4.7 In the event Customer terminates this Service Agreement, and~~ Customers who paid for the Equipment ~~upfront and are paying the prepay~~under the BYOC service customer charge, ~~Customer may~~ elect to have the Company transfer ownership of the Charging Equipment to the customer at no cost and either (i) move back to ~~their~~Customer's previous rate, or (ii) move to any EV charging tariff offered by the Company that is compatible with the Charging Equipment already in place, ~~or (iii) sign a new Customer Agreement and have the Charging Equipment replaced or upgraded;~~
- 4.68 ~~If and when a~~ Customer is paying the ~~b~~undled service customer charge ~~and~~ requests termination of the Service Agreement and removal of the Equipment, then following notification from the Customer to Xcel Energy advising Xcel Energy of the Customer's intent to withdraw and have the Charging Equipment removed, Xcel Energy or a Xcel Energy third party independent contractor shall remove and take possession of the CHARGING EQUIPMENT within sixty (60) days of Customer's notification, and this Service Agreement shall be terminated upon such removal; ~~if a~~ Customer is paying the ~~B~~undled service customer charge ~~and~~ requests to purchase the Charging Equipment, this Service Agreement shall be terminated upon Xcel Energy's receipt of payment for of the Buyout Amount for the Charging Equipment. If and when a Customer is paying the ~~prepay~~BYOC service customer charge ~~and~~ requests termination of the Agreement, ~~the Company will either replace, upgrade, or transfer ownership of the Charging Equipment to the Customer, as appropriate based on the Customer's election pursuant to Section 4.5 of this Agreement then this Service Agreement will terminate, within~~ sixty (60) days ~~after Xcel Energy's receipt~~ of Customer's notification, ~~and this Agreement shall be terminated at such time.~~ Xcel Energy or its authorized third party independent contractor's removal and possession of the Charging Equipment shall not include any removal or possession of Premises Wiring. All such ancillary hardware will be disconnected by Xcel Energy or its authorized third party independent contractor and left in place at the Site.
- 4.79 If, due to a physical relocation of the Charging Equipment to a new Site within Xcel Energy's regulated service territory in Minnesota (provided Customer and the new Site meet the requirements of this Service Agreement), the Customer requests to relocate the Charging Equipment (but not to terminate the Service Agreement), then following at least a sixty (60) days' notification from the Customer to Xcel Energy advising Xcel Energy of the Customer's relocation request, the Customer shall thereafter exclusively utilize Xcel Energy's third party independent contractor to install a Charger at the new location eligible Site at Customer's sole expense. Any removal and/or relocation of the Charger at the original ~~s~~Site shall be determined solely by

(Continued on Sheet No. 7-120)

**EV ACCELERATE AT HOME -HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~<sup>4st</sup> Revised Sheet No. 119

Xcel Energy, utilizing Xcel Energy's third party independent contractor. In both cases, this Agreement shall remain in effect for the remainder of the Term. The Customer acknowledges that failure to utilize Xcel Energy's third party independent contractor for Charging Equipment installations or relocations under this Section 4.~~79~~ may result in voiding any ~~E~~equipment warranty and/or maintenance support, ~~that may transfer to the Customer at the end of the Term.~~

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(Continued on Sheet No. 7-120)

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**EV ACCELERATE AT HOMEHOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~ Revised Sheet No. 120

- 4.8 Xcel Energy, in its sole discretion, may terminate the Service Agreement at any time, in which case Xcel Energy will provide Customers ~~paying the bundled service customer charge with~~ sixty (60) days' prior written notice of its intent to terminate the Agreement and remove the Charging Equipment, if Customer is paying the Bundled service customer charge. Upon such notice Customer will promptly make the Site and Charging Equipment available to Xcel Energy or its authorized 3<sup>rd</sup> party contractor for the purpose of removing the Charging Equipment. For Customers paying the ~~prepay service customer charge~~, Xcel Energy will provide the Customers with sixty (60) days' prior written notice of its intent to terminate the Agreement and transfer ownership of the Charging Equipment to the Customer at no cost. ~~For If Customers using is paying the Installation-Only BYOC Service customer charge~~, Xcel Energy will provide ~~the Customers with~~ sixty (60) days' prior written notice of its intent to terminate the Agreement. ~~The Customers may continue using the Charging Equipment after termination, before it is transferred or removed, as applicable. Xcel Energy may also terminate this Service Agreement immediately, if: (i) Customer fails to meet any of the EV Accelerate At Home Program eligibility requirements or adhere to any of Customer's obligations set forth in this Service Agreement; or (ii) Xcel Energy is required to terminate the EV Accelerate At Home Program by the Commission.~~

ND  
|  
ND  
N  
|  
N

**5. ~~Title to~~ Equipment and Data**

- ~~At all times under this Agreement where~~ Except for Customer Provided Charging Equipment, Xcel Energy shall own and maintain title to the Charging Equipment, ~~and the~~ Customer shall not make any alterations, changes or modifications to the Charger without first securing prior written permission from Xcel Energy and/or any applicable underlying manufacturer. All rights, title and interest in the ~~Equipment~~ Data and related information generated by, collected from, or recorded through the Equipment shall also immediately vest in and shall be owned by Xcel Energy.

ND  
ND  
D  
N  
N

Xcel Energy shall therefore have the right to use, copy, and distribute such Data ~~and information~~ as may be necessary and helpful to administer, provide and evaluate the EV Accelerate At Home Program, evaluate Electric Vehicles and Electric Vehicle support equipment, to support regulatory filings, to respond to discovery and audit requests from the Commission, to develop regulated programs and offerings and for any other Xcel Energy business purpose consistent with Minnesota law, including Commission rules. To the extent applicable, Xcel Energy shall indemnify and hold harmless the Customer from any and all claims whatsoever for the use and distribution of said Data.

ND  
N  
|  
N

**6. Insurance Coverage**

- Throughout the Term, Customer shall have in full force and effect a standard fire and homeowner's insurance policy with amounts sufficient to cover the full replacement cost of the Site. The Parties hereby waive any and all claims and rights of action (by way of subrogation or otherwise) against the other (and against any insurance company insuring the other Party) which may hereafter arise on account of bodily injury or damage to the Charging Equipment or to the Site, resulting from any fire, or other perils or claims of the kind covered by standard fire and homeowner's insurance policies with extended coverage (Causes of Loss Special Form) regardless of whether or not, or in what amounts, such insurance is now or hereafter carried by the Parties, or either of them. Customer agrees that Xcel Energy self-insures against any loss or damage which could be covered by a commercial general public liability insurance policy and or a property policy. **Customer shall give written notice of this mutual waiver to each insurance company which issues insurance policies to Customer with respect to the items covered by this waiver, and shall have Customer's insurance policies properly endorsed, if necessary, to prevent the invalidation of any of the coverage provided by such insurance policies by reason of such waiver.**

N

**7. Indemnification**

- To the extent permitted by applicable law (but except to the extent waived in Section ~~408 or 9~~ below), each Party shall indemnify and hold the other Party harmless against any third party claim of liability or loss from

ND

(Continued on Sheet No. 7-121)

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**EV ACCELERATE AT HOMEHOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~<sup>4st</sup> Revised Sheet No. 120

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bodily injury (including mental or emotional or death of any person) or property damage (real, personal, tangible or intangible including without limitation real or personal property of any third party, the Charging Equipment and any associated Equipment hardware) resulting from or arising out of the use of the Site by the Party, its servants or agents, except however, such claims or damages as may be due to or caused by the acts or omissions of the other Party, its servants, or agents.

(Continued on Sheet No. 7-121)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 121

**8. Warranty**

- 8.1 Xcel Energy warrants that ~~Charging Equipment work~~Work performed by Xcel Energy's network of authorized Third party independent contractors will be performed in a safe and professional manner and in accordance with all applicable laws free from defects in materials and workmanship during the Term of the Agreement.

ND  
N  
ND

In the event that any ~~Charging Equipment work performed~~Work is found to be defective in either materials or workmanship, and customer notifies Xcel Energy of such defect, Xcel Energy shall repair or replace such defective Equipment (provided such Equipment is not Customer Provided Equipment) or ~~work~~. THE REPAIR OR REPLACEMENT OF SUCH DEFECTIVE WORK IS CUSTOMER'S SOLE AND EXCLUSIVE REMEDY, AND XCEL ENERGY'S ENTIRE LIABILITY UNDER THIS SERVICE AGREEMENT FOR ANY FAILURE OF XCEL ENERGY TO COMPLY WITH XCEL ENERGY'S WARRANTY OBLIGATIONS. OTHER THAN ITS OBLIGATION TO MAKE REASONABLE EFFORTS TO MAINTAIN THE CHARGING EQUIPMENT WHILE CUSOTMER PARTICIPATES IN THE EV ACCELERATE AT HOME PROGRAM. XCEL ENERGY IS NOT RESPONSIBLE FOR AND MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE CHARGING EQUIPMENT OR THAT THE CHARGING EQUIPMENT WILL OPERATE ERROR FREE, AND XCEL ENERGY HEREBY DISCLAIMS ANY RESPONSIBILITY OR WARRANTY FOR THE CHARGING EQUIPMENT. EXCEPT AS EXPRESSLY SET FORTH IN THIS SECTION, XCEL ENERGY MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, TO THE FULLEST EXTENT PERMITTED BY LAW, AND UNLESS OTHERWISE SPECIFIED IN WRITING, XCEL ENERGY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, AS TO THE WORK OR CHARGING EQUIPMENT, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN THE EVENT TITLE TO CHARGING EQUIPMENT IS TRANSFERRED TO CUSTOMER IN ACCORDANCE WITH THE TERMS OF THIS SERVICE AGREEMENT, THE CHARGING EQUIPMENT IS PROVIDED "AS IS" AND WITH NO WARRANTY OF ANY KIND.~~The repair or replacement of such defective work is Customer's sole and exclusive remedy under this warranty for any failure of Xcel Energy to comply with Xcel Energy's Warranty Obligations, and Xcel Energy expressly disclaims any and all other warranties including any warranties of merchantability or fitness for a particular purpose, whether expressed or implied. For avoidance of doubt, repair, or replacement of non-conformities in the manner and for the period of time provided above shall constitute Xcel Energy's sole liability and the Customer's exclusive remedy for failure of Xcel Energy to meet Xcel Energy's warranty obligations, whether any claims of host are based in contract, in tort (including negligence or strict liability), or otherwise.~~

ND  
N

N  
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D

**9. Limits of Liability**

- A. NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY, UNDER NO CIRCUMSTANCES OR LEGAL THEORY, WHETHER ARISING IN CONTRACT, TORT, STRICT LIABILITY, WARRANTY, INFRINGEMENT OR OTHERWISE, SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY OR ANY OTHER PERSON OR ENTITY FOR ANY INDIRECT, CONSEQUENTIAL, SECONDARY, INCIDENTAL, SPECIAL, RELIANCE, EXEMPLARY OR PUNITIVE DAMAGES, WHICH INCLUDES BUT IS NOT LIMITED TO: I) ANY PROPERTY DAMAGE (REAL, PERSONAL, TANGIBLE OR INTANGIBLE) OR PERSONAL INJURY (INCLUDING MENTAL OR EMOTIONAL DISTRESS) ARISING FROM OR ALLEGED TO HAVE ARISEN UNDER THIS AGREEMENT; II) ANY CLAIMS OR CAUSES OF ACTION THAT ARISE OR ARE ALLEGED TO HAVE ARISEN AS A RESULT OF ANY REQUIRED SPACE VENTILATION NOT MADE KNOWN IN WRITING TO XCEL ENERGY OR XCEL ENERGY'S AUTHORIZED THIRD PARTY INDEPENDENT CONTRACTOR IN WRITING PRIOR TO ANY WORK; III) ANY DAMAGES ARISING OR ALLEGED TO HAVE ARISEN FROM ANY ELECTRICAL MALFUNCTION OR THE REPAIR OR REPLACEMENT OF SUCH MALFUNCTIONING ITEMS; OR IV) ANY ENVIRONMENTAL CLAIMS, DAMAGE OR CAUSES OF ACTION.
- B. UNDER NO CIRCUMSTANCES WILL XCEL ENERGY OR ANY XCEL ENERGY AUTHORIZED THIRD PARTY INDEPENDENT CONTRACTOR BE HELD LIABLE TO CUSTOMER OR ANY OTHER PERSON OR ENTITY FOR MATTERS INVOLVING THE PURCHASE, LEASE, USE, NON-USE, OR DEVALUATION OF ANY ELECTRIC VEHICLE, PLUG-IN HYBRID VEHICLE OR ANY VEHICLE OF ANY NATURE, ANY CHARGING EQUIPMENT OR ASSOCIATED EQUIPMENT INFRASTRUCTURE WHEN APPLICABLE CODES OR STANDARDS PROHIBIT THE INSTALLATION OR USE OF SUCH VEHICLE OR EQUIPMENT. XCEL ENERGY WILL NOT PAY FOR ANY COSTS INCURRED OR DAMAGES SUSTAINED BY CUSTOMER FOR PURCHASING ANY VEHICLE OR EQUIPMENT OR OTHERWISE IN RELIANCE UPON XCEL ENERGY BEING ABLE TO PROVIDE A CHARGER TO CUSTOMER. NOTWITHSTANDING ANYTHING SET FORTH IN

(Continued on Sheet No. 7-122)

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**EV ACCELERATE AT HOME HOME  
~~SERVICE/VOLUNTARY EV CHARGER SERVICE~~  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~<sup>4st</sup> Revised Sheet No. 121

THIS AGREEMENT TO THE CONTRARY, UNDER NO CIRCUMSTANCES SHALL XCEL ENERGY'S TOTAL LIABILITY UNDER THIS AGREEMENT EXCEED THE TOTAL COST OF THE CHARGING EQUIPMENT PLUS INSTALLATION COSTS MADE BY XCEL ENERGY UNDER THIS AGREEMENT. THIS SECTION SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT. IN NO EVENT WILL XCEL ENERGY BE LIABLE TO CUSTOMER FOR ANY CLAIMS, EXPENSES, LOSSES, DAMAGES, OR LAWSUITS ARISING OUT OF ANY INTERRUPTIONS OR DISTURBANCES IN ELECTRIC SERVICE.

N  
N  
N

(Continued on Sheet No. 7-122)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~4<sup>st</sup> Revised Sheet No. 122

**10. Miscellaneous Provisions**

**A. Compliance with Laws.** Performance under this Service Agreement is subject to all valid laws and regulations of courts or regulatory bodies having jurisdiction, including compliance with the Americans With Disabilities Act, as amended, if Customer is offering the Charging Equipment to the general public. N

**B. Assignment.** This Service Agreement shall not be assigned by Customer except with the prior written consent of ~~all parties hereto~~ Xcel Energy. The terms and conditions of this Agreement shall bind any permitted successors and assigns of the parties. Any assignment without Xcel Energy's consent shall be null and void. N  
ND  
N  
N

**C. Status of Parties.** This Service Agreement shall not be construed as creating a partnership, joint venture, agency relationship, franchise or association, nor shall this Agreement render Xcel Energy and Customer liable as partners, co-ventures or principals. It is agreed that nothing shall operate to change or alter such relationship, except a further agreement in writing between ~~them~~ the parties. N  
ND  
N

**D. Severability.** If any term or provision of this Service Agreement is held illegal or unenforceable by a court with jurisdiction over the Service Agreement, all other terms in this Service Agreement will remain in full force and the illegal or unenforceable provision shall be deemed struck. In the event that the stricken provision materially affects the rights, obligations or duties of either party, Xcel Energy and Customer shall substitute a provision by mutual agreement that preserves the original intent of the Parties as closely as possible under applicable law. N  
N

**E. Governing Law.** This agreement shall be governed by the laws of the state of Minnesota, except that the Minnesota conflict-of-law provisions shall not be invoked in order to apply the laws of any other state or jurisdiction.

**F. Dispute Resolution.** If any dispute arises between the Parties regarding issues of interpretation of the Service Agreement or the ~~services~~ Work performed pursuant to the Agreement, Customer may call the Xcel Energy Representative identified in Section ~~11~~ 12 below during call center hours Monday-Friday 7 a.m. to 7 p.m. If further follow-up is required, Customer shall provide Xcel Energy with written notice explaining the dispute and associated documentation. Xcel Energy will consider all disputes and respond within fifteen (15) days of receiving notice of a dispute. In the event Customer is dissatisfied with the resolution of the dispute, Customer has the right to file an informal or formal complaint with the Commission by contacting the ~~Minnesota Public Utilities~~ Commission. Xcel Energy will take no other action to enforce this Agreement until any complaint filed with the Commission is resolved. ND  
N  
D

**G. Public Communication.** Customer agrees to cooperate with Xcel Energy in maintaining good community relations. Xcel Energy will issue all public statements, press releases, and similar publicity concerning the Charging Equipment and the Work (including its progress, completion and characteristics). Customer shall not make or assist anyone to make any such statements, releases, photographs, or publicity without prior written approval of Xcel Energy.

**H. Non-waiver.** Xcel Energy's failure to insist on performance of any of the terms and conditions herein or to exercise any right or privilege or Xcel Energy's waiver of any breach hereunder shall not thereafter waive any of Xcel Energy's rights or privileges under this Agreement or at law. Any waiver of any specific breach shall be effective only if given expressly by Xcel Energy in writing.

(Continued on Sheet No. 7-123)

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**EV ACCELERATE AT HOME HOME  
SERVICE/VOLUNTARY EV CHARGER SERVICE  
CUSTOMER SERVICE AGREEMENT (Continued)**

Section No. 7  
~~2nd~~4<sup>st</sup> Revised Sheet No. 123

**10. Miscellaneous Provisions (Continued)**

**I. Merger.** This Service Agreement embodies the entire agreement between Xcel Energy and Customer. The Parties shall not be bound by or liable for any statement, writing, representation, promise, inducement or understanding not set forth above. No changes, modifications or amendments of any terms and conditions of this Service Agreement are valid or binding unless agreed to by the ~~p~~Parties in writing and signed by their authorized agents.

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**J. Privacy Law.** Customer further acknowledges and agrees that Customer is knowingly consenting to and authorizing: i) Xcel Energy to release and share Customer's name, address, telephone number, charging data and any charging or electrical usage patterns concerning the Work with Xcel Energy's authorized third party independent contractors, in order for the authorized third party independent contractors to provide the Charging Equipment to Customer; and ii) Xcel Energy's authorized third party independent contractors to retain all of the aforementioned Customer data (following any transfer of Charging Equipment ownership from Xcel Energy to Customer) for all equipment warranty and maintenance support obligations only.

**K. Survival.** The following sections shall survive the expiration or termination of this Agreement: Section ~~65~~ (~~Title To~~ Equipment And Data); Section ~~76~~ (Insurance Coverage); Section ~~87~~ (Indemnification); Section ~~98~~ (Warranty); Section ~~109~~ (Limits of Liability); Section ~~104~~ (a) (~~Compliance With Laws~~ Miscellaneous Provision) and Section 11 (~~Privacy Law~~ Questions).

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**11. Questions**

If you have questions regarding these Program terms, please email [ElectricVehicles@xcelenergy.com](mailto:ElectricVehicles@xcelenergy.com) or call 1-800-895-4999.

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**MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2**

**TABLE OF CONTENTS (Continued)**

Section No. 1  
 20th Revised Sheet No. 4

<u>Section</u>	<u>Item</u>	<u>Sheet No.</u>
<b>SECTION 6</b>	<b>GENERAL RULES AND REGULATIONS</b>	
	Table of Contents .....	TOC
	General Service Rules .....	6-3
	Rate Application .....	6-8
	Metering and Billing .....	6-13
	Use of Service Rules .....	6-18
	Standard Installation and Extension Rules .....	6-22
	Curtailment or Interruption of Service .....	6-33
	Company's Rights .....	6-35
<b>SECTION 7</b>	<b>CONTRACT AND AGREEMENT FORMS</b>	
	Table of Contents .....	TOC
	Electric Service Agreement .....	7-2
	Electric Service Agreement - Peak Controlled Services .....	7-5
	Automatic Throw-Over/Manual Throw-Over Dual Feeder Agreement .....	7-9
	WAPA Bill Crediting Program Agreement .....	7-15
	St. Anthony Falls Upper Lock and Dam .....	7-36
	Underground Gas and/or Electric Distribution Agreement .....	7-38
	Overhead Service Form .....	7-44
	Underground Service Form .....	7-46
	Underground Distribution Form .....	7-49
	Statement of Work Requested .....	7-52
	Statement of Work Requested - Municipality .....	7-53.1
	Advance Payment Subject to Reimbursement Form .....	7-54
	Advance Payment by Note Subject to Reimbursement Form .....	7-56
	Promissory Note .....	7-58
	MN, ND & SD Residential Underground Service Contract .....	7-60
	eBill and eBill Payment Terms of Use .....	7-69
	Interconnection Agreement – Federal Agency Distributed Generation under 2000 kW (Closed to New Applicants) .....	7-75
	One-Time My Account Payment Terms of Use .....	7-92
	Voluntary Renewable*Connect Rider Service Agreement .....	7-98
	Voluntary Renewable*Connect Government Rider Service Agreement .....	7-102
	Electric Vehicle Home Service /	
	EV Accelerate At Home Customer Service Agreement .....	7-113
	Online Terms of Use .....	7-124

N

(Continued on Sheet No. 1-5)

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**MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2**

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**CONTRACTS**  
**TABLE OF CONTENTS (Continued)**

Section No. 7  
3rd Revised Sheet No. TOC-2

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<u>Item</u>	<u>Sheet No.</u>	
EV Accelerate At Home Customer Service Agreement .....	7-113	N
Online Terms of Use .....	7-124	

**EV ACCELERATE AT HOME CUSTOMER SERVICE AGREEMENT**

Section No. 7  
 2nd Revised Sheet No. 113

**XCEL ENERGY'S EV Accelerate At Home CUSTOMER SERVICE AGREEMENT ("Service Agreement")**

Northern States Power Company, doing business as Xcel Energy ("Xcel Energy") is excited to offer the Electric Vehicle ("EV") Accelerate At Home program at residential rates (the "EV Accelerate at Home Program") to Xcel Energy's electric customers ("Customers", "you" or "your"). Under the EV Accelerate At Home Program, Xcel Energy will offer eligible Customers installation of home Charging Equipment and enrollment in an Xcel Energy Time-of-Use Electric Vehicle rate. Customer's participation in the EV Accelerate At Home Program is subject to the terms and conditions of this Service Agreement, which incorporate by this reference. The General Rules and Regulations and/or in the Rate Schedules of Xcel Energy's Electric Rate Book for Customer's specific service ("Service Tariffs"), as the Service Tariffs now exist or may hereafter be changed, on file with the Minnesota Public Utilities Commission (the "Commission"). In the event of a conflict between the terms of this Service Agreement and any applicable Service Tariff, the Service Tariff shall govern. Specifically, the definitions, rates and, other terms, and conditions set forth in the Residential EV Accelerate At Home Pay As You Go Service Tariff, the Residential EV Accelerate At Home Voluntary Service Tariff and/or the Residential EV Accelerate At Home Subscription Service Tariff, are applicable to, and incorporated into, this Service Agreement. The applicable Service Tariffs, as currently on file with the Commission, are summarized in the following chart,

**EV Accelerate At Home Program Offerings**

Rate Options	Customer upfront out-of-pocket expenses	Customer monthly charge for EV Home Service	Services included in monthly charge for EV Service	Monthly usage billed
Bundled Residential EV Accelerate At Home Pay As You Go Service Rate Code: A80	•Premises wiring	\$16.63	<ul style="list-style-type: none"> <li>•Charging Equipment and installation</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> <li>•Maintenance service</li> <li>•Charging Equipment removal and relocation</li> </ul>	EV charging is billed according to Rate Code A80

(Continued on Sheet No. 7-113.1)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
 AGREEMENT (Continued)**

Section No. 7  
 Original Sheet No. 113.1

Rate Options	Customer upfront out-of-pocket expenses	Customer monthly charge for EV Home Service	Services included in monthly charge for EV Service	Monthly usage billed
BYOC Residential EV Accelerate At Home Pay As You Go Service Rate Code: A79	<ul style="list-style-type: none"> <li>• Charging Equipment</li> <li>• Premises Wiring</li> </ul>	\$6.73	<ul style="list-style-type: none"> <li>•Charging equipment installation (initial electrician visit)</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> <li>•Charging Equipment relocation</li> </ul>	EV charging is billed according to Rate Code A79
Bundled Residential EV Accelerate At Home Voluntary Service Rate Code : A76	<ul style="list-style-type: none"> <li>•Premises Wiring</li> </ul>	\$11.99	<ul style="list-style-type: none"> <li>•Charging Equipment and installation</li> <li>•Maintenance service</li> <li>•Charging eEquipment removal and relocation</li> </ul>	EV charging is billed according to Rate Code A02 or A04
Bundled Residential EV Accelerate At Home Subscription Service Rate Code: A82	<ul style="list-style-type: none"> <li>•Premises Wiring</li> </ul>	\$42.50 \$45.92 with Windsorce •Subject to Maximum of 1,000 kWh of "off-peak" charging	<ul style="list-style-type: none"> <li>•Charging Equipment and installation</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> <li>•Maintenance service</li> <li>•Charging equipment removal and relocation</li> <li>•Off-peak usage until 1,000 kWh</li> </ul>	EV charging is billed according to Rate Code A82
BYOC Residential EV Accelerate At Home Subscription Service Rate Code: A84	<ul style="list-style-type: none"> <li>•Premises wiring</li> <li>•Charging Equipment</li> </ul>	\$33.82 \$35.11 with Windsorce •Subject to Maximum of 1,000 kWh of "off-peak" charging	<ul style="list-style-type: none"> <li>•Charging equipment installation (initial electrician visit)</li> <li>•Customer services</li> <li>•Customer accounting</li> <li>•Load monitoring and data management</li> <li>•Charging equipment relocation</li> <li>•Off-peak usage until 1,000 kWh cap is reached</li> </ul>	EV charging is billed according to Rate Code A84

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(Continued on Sheet No. 7-114)

**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 114

**XCEL ENERGY'S EV Accelerate At Home Customer Service Agreement (Continued)**

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In order to enroll in the EV Accelerate At Home Program, please review the terms of the Service Agreement and indicate your understanding and agreement by selecting the appropriate check box on the EV Accelerate At Home Program enrollment page found on Xcel Energy's website. Once enrolled, Xcel Energy will notify you (a) that your eligible Charging Equipment has been installed, and (b) Xcel Energy and the Equipment vendor have confirmed that the Charger is operational and activated, by e-mail (the date of the e-mail will be the "Activation Date").

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**Definitions**

"Electric Vehicle," means any device or contrivance that transports persons or property and that is able to be powered by an electric motor drawing current from rechargeable storage batteries, fuel cells, or other portable sources of electricity. Electric Vehicle includes, but is not limited to, an electric vehicle as defined in Minnesota Statutes Section 169.011, subdivision 26a; an electric-assisted bicycle as defined in Section 169.011, subdivision 27; an off-road vehicle, as defined in Section 84.797, subdivision 7; a motorboat, as defined in Section 86B.005, subdivision 9; or an aircraft, as defined in Section 360.013, subdivision 37.

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"Charging Equipment," or "Charger", or "Equipment" means the installed device used to deliver electricity from the Premises Wiring to the Electric Vehicle, meeting Standard J1772 of the Society of Automotive Engineers International and listed under applicable UL Standards and requirements or equivalent listing by a nationally recognized testing laboratory. The Charging Equipment includes the ungrounded, grounded, and Equipment grounding conductors, the Electric Vehicle connectors, attachment plugs, and all other fittings, devices, power outlets or apparatuses associated with the installed device, but does not include Premises Wiring.

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"Premises Wiring" means a dedicated 208/240V AC circuit that supplies electricity directly to the installed Charging Equipment. This includes the protective breaker at the supply panel, wiring, final junction box, receptacle and all attachments and connections. The Customer retains ownership and is wholly responsible for the Premises Wiring, including that it meets all workmanship standards and applicable requirements in the National Electric Code, Minnesota law and Administrative Rules, and local municipal codes.

"Site" means the enclosed garage or other area approved by Xcel Energy within or on a single-family home (defined as a detached single home, townhome/rowhouse, or duplex) or owned by the Customer where the Charger will be installed and operated.

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(Continued on Sheet No. 7-115)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 115

**1. Eligibility and Availability**

1.1. To be eligible for the EV Accelerate At Home Program Rate Codes A79, A80, A82, A84, you, must:

- Agree to the terms and conditions of this Services Agreement;
- have an active Xcel Energy residential electric service account in Xcel Energy's Minnesota regulated electric service territory with no past due bills;
- rent or own the Site, provided that if you rent the Site, you must have a separately metered service, pay for any necessary Premises Wiring, and have the Site owner's written consent to participate in the EV Accelerate At Home Program;
- represent that the Site is owned or rented by the Customer, is located within Xcel Energy's Minnesota regulated electrical service territory, and corresponds with a Xcel Energy residential electrical account on which the Charger will be installed;
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on Xcel Energy's behalf, or be inspected and confirmed as eligible by an Xcel Energy contracted electrician, for the exclusive use of tracking the electricity used to charge your Electric Vehicle;
- have wireless internet ("Wi-Fi") service at Site;
- not be on current Xcel Energy Residential EV Service Rate (RATE CODE A08). If you are already enrolled on Rate Code A08, you must unenroll for the duration of your participation on the EV Accelerate At Home Program;
- not participate in Xcel Energy's Time of Use Rate Design Pilot Program. If you are already enrolled in the Time of Use Rate Design Pilot Program, you must unenroll for the duration of your participation in the EV Accelerate At Home Program; and
- not participate in Xcel Energy's Net Metering tariffs.

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1.2 To be eligible for the EV Accelerate At Home Program Voluntary Electric Service (Rate Code A76), you must:

- Agree to the terms and conditions of this Service Agreement;
- have an active Xcel Energy residential electric service account in Xcel Energy's Minnesota regulated electric service territory with no past due bills;
- rent or own the Site, provided if you rent the Site, you must have a separately metered service, pay for any necessary Premises Wiring, and have the Site owner's written consent to participate in the EV Accelerate At Home Program ;
- represent that the Site is owned or rented by you, is located within Xcel Energy's Minnesota regulated electrical service territory, and corresponds with an Xcel Energy residential electrical account on which the Charger will be installed;
- have an approved Charger installed by Xcel Energy, or an authorized third-party independent contractor on Xcel Energy's behalf, or be inspected and confirmed as eligible by an Xcel Energy contracted electrician for the exclusive use of tracking the electricity used to charge your electric vehicle; and
- have Wi-Fi service at Site;
- be on a current Xcel Energy Residential Time of Day rate (RATE CODE A02 and A04) or Time of Use Rate Design Pilot Program.

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(Continued on Sheet No. 7-116)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 116

**2. Charging Equipment Installation, Maintenance, and Title**

- 2.1 Except as provided in Section 2.4 below regarding a Customer Provided Charger, once enrolled into the EV Accelerate At Home Program, Xcel Energy, through its network of authorized third party independent contractors and at its expense, shall provide (except for a Customer Provided Charger), install, maintain, repair or replace the Charging Equipment (collectively the "Work") on the Site. The Work does not include any Premises Wiring. The Charging Equipment will be hardwired to the Premises Wiring at the Site. Xcel Energy shall provide electric utility services to the Customer, and the Customer shall pay for such electric service consistent with the applicable electric utility tariff in force and effect. Xcel Energy, in Xcel Energy's sole discretion, shall have the right to repair, modify, or replace the Charger at any time during the Term of this Agreement. Xcel Energy will use commercially reasonable efforts to maintain the Charging Equipment in working order, and will attempt to provide you reasonable advance notice of any required maintenance of the Charging Equipment. Xcel Energy will coordinate with you to schedule maintenance Work. You understand that if Xcel Energy is unable to arrange for maintenance Work to be completed at a mutually agreeable time, the Charging Equipment may not function and you may not be able to charge your EV at your Site. N  
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- 2.2 Except as provided in Section 2.4 below, at all times during the Term of this Service Agreement, ownership of and title to the Charging Equipment shall remain with Xcel Energy and you are therefore not permitted to make any alterations, changes, or modifications to the Charging Equipment without first securing prior written permission from Xcel Energy. Customer shall not sell or allow the Charger to become subject to any lien, security interest or other claim asserted by any creditor of Customer. Any sale of the Site by the Customer shall not include the Charging Equipment. D  
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- 2.3 Customer, at Customer's sole cost and expense, shall maintain the connection between the Charging Equipment and an Internet Service Provider via Wi-Fi connection, for the operation of the Charger under this Service Agreement. Late, incomplete, or inaccurate Charging Equipment usage information will be disregarded where the lack of Wi-Fi service is the cause of the data transmission failure. As a result, for Customers subscribing to the EV Accelerate At Home, any actual EV charging during these intervals will be billed at the Customer's current rate and will not be adjusted in any future bills if any EV usage data is subsequently received. N  
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- 2.4 If Customer owns an Electric Vehicle Charger that is approved and offered by Xcel Energy for the EV Accelerate At Home Program ("Customer Provided Charger"), Customer must allow an Xcel Energy-contracted electrician to perform a Site visit to confirm Equipment eligibility, install and hardwire the Equipment as needed, and confirm that the Equipment is correctly set up for the EV Accelerate At Home Program. Xcel Energy shall provide electric utility services to the Customer, and the Customer shall pay for such electric service consistent with the applicable electric utility tariff in force and effect. Notwithstanding Section 2.2, Xcel Energy shall have no ownership interest in the Customer Provided Charger and title to the Customer Provided Charger will remain with Customer. N  
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(Continued on Sheet No. 7-117)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 117

**3. Customer's CHARGING EQUIPMENT Obligations and Duties**

Throughout the Term of this Service Agreement:

- 3.1 Customer shall grant to Xcel Energy, or its authorized third party contractor, such access to the Site and sufficient space for locating the Charging Equipment at the Site as may be deemed necessary or desirable by Xcel Energy, or its authorized third party contractor, to perform the Work. Installations must conform to Xcel Energy's specifications. N  
N  
ND
- 3.2 Customer shall be responsible for the expense and installation of any Premises Wiring necessary to provide electricity to the Charging Equipment. Customer may, in Customer's sole discretion, opt to use Xcel Energy's third-party independent contractor to install the necessary Premises Wiring in addition to the Charging Equipment, provided that Customer will be responsible for the expense to have the third-party independent contractor install the Premises Wiring.
- 3.3 Until the Charging Equipment (in Xcel Energy's sole discretion) is deemed non-functional or this Service Agreement is terminated, Customer hereby consents to and shall permit both Xcel Energy and any underlying equipment manufacturer, vendor or subcontractor to the underlying manufacturer or vendor to access, collect and share with their respective parent, affiliates, subsidiaries and subcontractors all data from the Charger with respect to Electric Vehicle charging activity, Electric Vehicle usage and technical performance (the "Data") of the Electric Vehicle and Charger. Xcel Energy shall comply with all federal, state, and local laws, as applicable, in the access, collection, and sharing of the Data. In the event the Charger fails to operate or otherwise require repair, the Customer shall promptly notify Xcel Energy. ND  
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N
- 3.4 Customer, Xcel Energy and Xcel Energy's authorized equipment manufacturers, vendors, and subcontractors shall comply with all applicable rules and regulations of federal, state or city regulatory agencies relating to the Work and operation of the Charger, including environmental requirements associated therewith. Customer will use the Charging Equipment only as specified by the Charging Equipment manufacturer and will be responsible for any damage caused to the Charging Equipment due to Customer's misuse, neglect or abuse. ND  
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- 3.5 Customer shall maintain the area surrounding the Charging Equipment and will promptly notify Xcel Energy of any problems related to the Equipment that the Customer becomes aware of. Such maintenance includes, but is not limited to, pavement maintenance, pruning of vegetation, and snow removal. For avoidance of doubt, and except for Customer Provided Chargers, Customer is not responsible for the ongoing maintenance of the Equipment, itself. N
- 3.6 Customer agrees to remedy minor issues that do not require qualified technicians to address, such as resetting infrequently tripped circuit breakers.
- 3.7 Customer agrees to provide access and assistance to facilitate random Charging Equipment testing. Such cooperation may include, but not be limited to, periodic inspection of the Charger and the addition of monitoring hardware or software at Xcel Energy's expense. D
- 3.8 Customer agrees to participate in surveys and provide feedback about the EV Accelerate At Home Program as well as cooperate with Xcel Energy in fulfilling Xcel Energy's reporting requirements to any federal, state or local regulatory or governing entities. N

(Continued on Sheet No. 7-118)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 118

**3. Customer's Charging Equipment Obligations and Duties (Continued)**

Throughout the Term of this Agreement:

- 3.9 Customer consents to receive communications from Xcel Energy relating to the EV Accelerate At Home Program in electronic form sent to Customer's email address on file with Xcel Energy. N  
N
- 3.10 If the Customer who has opted into the Bundled EV Accelerate At Home Program Service Options or Xcel Energy fails to meet any of its obligations under this Service Agreement, Xcel Energy may remove the Charging Equipment. If the Customer who has opted into the EV Accelerate At Home Program Prepay/ Installation-Only or BYOC Service Options or Xcel Energy fails to meet any of its obligations under this Service Agreement, Xcel Energy may move the Customer back to Customer's previous rate. ND  
|  
ND
- 3.11 Customer is solely responsible for any and all use of the Charging Equipment during the Term and is obligated to pay for the electricity consumed by the Charging Equipment consistent with and at the rate of the applicable electric utility tariff in force and effect. N  
N

**4. Program Term, Withdrawal, and Termination**

- 4.1 This Service Agreement shall be effective as of the Enrollment Date shall continue until terminated in accordance with this Section 4(the "Term"). ND  
ND
- 4.2 All fees, rates, and charges applicable to Customer shall be assessed as provided in the General Rules and Regulations and/or in the Rate Schedules of Xcel Energy's Electric Rate Book for Customer's specific service, as they now exist or may hereafter be changed, on file with the Commission. All fees, rates and charges assessed by Xcel Energy under this Service Agreement shall be set forth on the retail electric bill of the Customer and be billed and collected similar to other retail electric charges.
- 4.3 The Work and electric service hereunder shall be supplied for the Customer's use as provided in the General Rules and Regulations in the applicable Rate Schedules of Xcel Energy's Electric Rate Book for Customer's specific service, as they now exist or may hereafter be changed, on file with the Commission. A Copy of such Rules and Regulations and applicable Rate schedules are available from Xcel Energy. Customer will not assign this Agreement except upon written consent of Xcel Energy. N
- 4.4 Activations of Charging Equipment must be completed by Xcel Energy at least 5 business days prior to the start date of Customer's next billing cycle to become effective on that date. If the Activation Date is less than 5 days prior, Customer will become effective in the EV Accelerate At Home Program on the date of the Customer's subsequent billing cycle. N  
N  
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- 4.5 Subject to Sections 4.6, 4.7 and 4.8, Customer may terminate this Service Agreement for any reason at any time by providing Xcel Energy written notice of such termination. The termination will be effective as and when set forth in this Section 4. N  
N  
N
- 4.6 If the Customer terminates the Service Agreement and has been paying the bundled service customer charge, Customer will have the following options: ND
- 4.6.1 In the event Customer terminates this Service Agreement and the effective date of the termination occurs ten (10) years or more from Customer's Activation Date, Customer may:
  - Have the Charging Equipment removed at no cost and move back to Customer's previous electric rate;
  - Sign a new Service Agreement and have the Charging Equipment replaced or upgraded; or,
  - Purchase the Charging Equipment for an amount equal to the installed cost of the Charging Equipment reduced by ten percent (10%) of the installed costs of the Charging Equipment for each full calendar year between the Charging Equipment's Activation Date and the date of termination of the Agreement ("Buyout Amount"). Xcel Energy will provide Customer the Buyout Amount. If Customer exercises this option, Customer will receive the Charging Equipment from Xcel Energy on an "As-Is" basis, with no warranty of any kind, express or implied, and Customer will be responsible for any necessary maintenance, repair, or replacement of the Equipment. ND  
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(Continued on Sheet No. 7-119)

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
 AGREEMENT (Continued)**

Section No. 7  
 2nd Revised Sheet No. 119

- 4.6.2 (Continued)
  - In the event Customer terminates this Service Agreement or Xcel Energy terminates this Service Agreement, and the effective date of the termination occurs less than ten (10) years from Customer's Activation Date, Customer may:
    - Have the Charging Equipment removed at no cost and move back to Customer's previous electric rate; or,
    - Purchase the Charging Equipment for an amount equal to the installed cost of the Charging Equipment reduced by ten percent (10%) of the installed costs of the Charging Equipment for each full calendar year between the Charging Equipment's Activation Date and the date of termination of the Agreement ("Buyout Amount"). Xcel Energy will provide Customer the Buyout Amount. If Customer exercises this option, Customer will receive the Charging Equipment from Xcel Energy on an "As-Is" basis, with no warranty of any kind, express or implied, and Customer will be responsible for any necessary maintenance, repair, or replacement of the Equipment.
  
- 4.7 In the event Customer terminates this Service Agreement, and Customer paid for the Equipment under the BYOC service customer charge, Customer may elect to (i) move back to Customer's previous rate, or (ii) move to any EV charging tariff offered by the Company that is compatible with the Charging Equipment already in place.
  
- 4.8 If Customer is paying the Bundled service customer charge and requests termination of the Service Agreement and removal of the Equipment, then following notification from the Customer to Xcel Energy advising Xcel Energy of the Customer's intent to withdraw and have the Charging Equipment removed, Xcel Energy or a Xcel Energy third party independent contractor shall remove and take possession of the CHARGING EQUIPMENT within sixty (60) days of Customer's notification, and this Service Agreement shall be terminated upon such removal. If Customer is paying the Bundled service customer charge and requests to purchase the Charging Equipment, this Service Agreement shall be terminated upon Xcel Energy's receipt of the Buyout Amount for the Charging Equipment. If Customer is paying the BYOC service customer charge and requests termination of the Agreement, then this Service Agreement will terminate sixty (60) days after Xcel Energy's receipt of Customer's notification. Xcel Energy or its authorized third party independent contractor's removal and possession of the Charging Equipment shall not include any removal or possession of Premises Wiring. All such ancillary hardware will be disconnected by Xcel Energy or its authorized third party independent contractor and left in place at the Site.
  
- 4.9 If, due to a physical relocation of the Charging Equipment to a new Site within Xcel Energy's service territory in Minnesota (provided Customer and the new Site meet the requirements of this Service Agreement), the Customer requests to relocate the Charging Equipment (but not to terminate the Service Agreement), then following at least a sixty (60) days' notification from the Customer to Xcel Energy advising Xcel Energy of the Customer's relocation request, the Customer shall thereafter exclusively utilize Xcel Energy's third party independent contractor to install a Charger at the new eligible Site. Any removal and/or relocation of the Charger at the original Site shall be determined solely by Xcel Energy, utilizing Xcel Energy's third party independent contractor. In both cases, this Agreement shall remain in effect for the remainder of the Term. The Customer acknowledges that failure to utilize Xcel Energy's third party independent contractor for Charging Equipment installations or relocations under this Section 4.9 may result in voiding any Equipment warranty and/or maintenance support.

(Continued on Sheet No. 7-120)

**EV ACCELERATE AT HOME CUSTOMER SERVICE  
 AGREEMENT (Continued)**

Section No. 7  
 2nd Revised Sheet No. 120

- 4.8 Xcel Energy, in its sole discretion, may terminate the Service Agreement at any time, in which case Xcel Energy will provide Customer sixty (60) days' prior written notice of its intent to terminate the Agreement and remove the Charging Equipment, if Customer is paying the Bundled service customer charge. Upon such notice Customer will promptly make the Site and Charging Equipment available to Xcel Energy or its authorized 3<sup>rd</sup> party contractor for the purpose of removing the Charging Equipment. If Customer is paying the BYOC Service customer charge, Xcel Energy will provide Customer sixty (60) days' prior written notice of its intent to terminate the Agreement. Xcel Energy may also terminate this Service Agreement immediately, if: (i) Customer fails to meet any of the EV Accelerate At Home Program eligibility requirements or adhere to any of Customer's obligations set forth in this Service Agreement; or (ii) Xcel Energy is required to terminate the EV Accelerate At Home Program by the Commission. ND  
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**5. Equipment and Data** D

- Except for Customer Provided Charging Equipment, Xcel Energy shall own and maintain title to the Charging Equipment, and Customer shall not make any alterations, changes or modifications to the Charger without first securing prior written permission from Xcel Energy and/or any applicable underlying manufacturer. All rights, title and interest in the Data and related information generated by, collected from, or recorded through the Equipment shall also immediately vest in and shall be owned by Xcel Energy. ND  
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Xcel Energy shall therefore have the right to use, copy, and distribute such Data as may be necessary and helpful to administer, provide and evaluate the EV Accelerate At Home Program, evaluate Electric Vehicles and Electric Vehicle support equipment, to support regulatory filings, to respond to discovery and audit requests from the Commission, to develop regulated programs and offerings and for any other Xcel Energy business purpose consistent with Minnesota law, including Commission rules. To the extent applicable, Xcel Energy shall indemnify and hold harmless the Customer from any and all claims whatsoever for the use and distribution of said Data. ND  
 N  
 |  
 N

**6. Insurance Coverage**

- Throughout the Term, Customer shall have in full force and effect a standard fire and homeowner's insurance policy with amounts sufficient to cover the full replacement cost of the Site. The Parties hereby waive any and all claims and rights of action (by way of subrogation or otherwise) against the other (and against any insurance company insuring the other Party) which may hereafter arise on account of bodily injury or damage to the Charging Equipment or to the Site, resulting from any fire, or other perils or claims of the kind covered by standard fire and homeowner's insurance policies with extended coverage (Causes of Loss Special Form) regardless of whether or not, or in what amounts, such insurance is now or hereafter carried by the Parties, or either of them. Customer agrees that Xcel Energy self-insures against any loss or damage which could be covered by a commercial general public liability insurance policy and or a property policy. **Customer shall give written notice of this mutual waiver to each insurance company which issues insurance policies to Customer with respect to the items covered by this waiver, and shall have Customer's insurance policies properly endorsed, if necessary, to prevent the invalidation of any of the coverage provided by such insurance policies by reason of such waiver.** N

**7. Indemnification**

- To the extent permitted by applicable law (but except to the extent waived in Section 8 or 9 below), each Party shall indemnify and hold the other Party harmless against any third party claim of liability or loss from bodily injury (including mental or emotional or death of any person) or property damage (real, personal, tangible or intangible including without limitation real or personal property of any third party, the Charging Equipment and any associated Equipment hardware) resulting from or arising out of the use of the Site by the Party, its servants or agents, except however, such claims or damages as may be due to or caused by the acts or omissions of the other Party, its servants, or agents. ND

(Continued on Sheet No. 7-121)

**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 121

**8. Warranty**

- 8.1 Xcel Energy warrants that Work performed by Xcel Energy's network of authorized Third party independent contractors will be performed in a safe and professional manner and in accordance with all applicable laws during the Term of the Agreement.

In the event that any Work is found to be defective in either materials or workmanship, and customer notifies Xcel Energy of such defect, Xcel Energy shall repair or replace such defective Equipment (provided such Equipment is not Customer Provided Equipment) or work. THE REPAIR OR REPLACEMENT OF SUCH DEFECTIVE WORK IS CUSTOMER'S SOLE AND EXCLUSIVE REMEDY, AND XCEL ENERGY'S ENTIRE LIABILITY UNDER THIS SERVICE AGREEMENT FOR ANY FAILURE OF XCEL ENERGY TO COMPLY WITH XCEL ENERGY'S WARRANTY OBLIGATIONS. OTHER THAN ITS OBLIGATION TO MAKE REASONABLE EFFORTS TO MAINTAIN THE CHARGING EQUIPMENT WHILE CUSOTMER PARTICIPATES IN THE EV ACCELERATE AT HOME PROGRAM. XCEL ENERGY IS NOT RESPONSIBLE FOR AND MAKES NO REPRESENTATIONS OR WARRANTIES WITH RESPECT TO THE CHARGING EQUIPMENT OR THAT THE CHARGING EQUIPMENT WILL OPERATE ERROR FREE, AND XCEL ENERGY HEREBY DISCLAIMS ANY RESPONSIBILITY OR WARRANTY FOR THE CHARGING EQUIPMENT. EXCEPT AS EXPRESSLY SET FORTH IN THIS SECTION, XCEL ENERGY MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED. TO THE FULLEST EXTENT PERMITTED BY LAW, AND UNLESS OTHERWISE SPECIFIED IN WRITING, XCEL ENERGY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, AS TO THE WORK OR CHARGING EQUIPMENT, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. IN THE EVENT TITLE TO CHARGING EQUIPMENT IS TRANSFERRED TO CUSTOMER IN ACCORDANCE WITH THE TERMS OF THIS SERVICE AGREEMENT, THE CHARGING EQUIPMENT IS PROVIDED "AS IS" AND WITH NO WARRANTY OF ANY KIND.

**9. Limits of Liability**

- A. NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY, UNDER NO CIRCUMSTANCES OR LEGAL THEORY, WHETHER ARISING IN CONTRACT, TORT, STRICT LIABILITY, WARRANTY, INFRINGEMENT OR OTHERWISE, SHALL EITHER PARTY BE LIABLE TO THE OTHER PARTY OR ANY OTHER PERSON OR ENTITY FOR ANY INDIRECT, CONSEQUENTIAL, SECONDARY, INCIDENTAL, SPECIAL, RELIANCE, EXEMPLARY OR PUNITIVE DAMAGES, WHICH INCLUDES BUT IS NOT LIMITED TO: I) ANY PROPERTY DAMAGE (REAL, PERSONAL, TANGIBLE OR INTANGIBLE) OR PERSONAL INJURY (INCLUDING MENTAL OR EMOTIONAL DISTRESS) ARISING FROM OR ALLEGED TO HAVE ARISEN UNDER THIS AGREEMENT; II) ANY CLAIMS OR CAUSES OF ACTION THAT ARISE OR ARE ALLEGED TO HAVE ARISEN AS A RESULT OF ANY REQUIRED SPACE VENTILATION NOT MADE KNOWN IN WRITING TO XCEL ENERGY OR XCEL ENERGY'S AUTHORIZED THIRD PARTY INDEPENDENT CONTRACTOR IN WRITING PRIOR TO ANY WORK; III) ANY DAMAGES ARISING OR ALLEGED TO HAVE ARISEN FROM ANY ELECTRICAL MALFUNCTION OR THE REPAIR OR REPLACEMENT OF SUCH MALFUNCTIONING ITEMS; OR IV) ANY ENVIRONMENTAL CLAIMS, DAMAGE OR CAUSES OF ACTION.
- B. UNDER NO CIRCUMSTANCES WILL XCEL ENERGY OR ANY XCEL ENERGY AUTHORIZED THIRD PARTY INDEPENDENT CONTRACTOR BE HELD LIABLE TO CUSTOMER OR ANY OTHER PERSON OR ENTITY FOR MATTERS INVOLVING THE PURCHASE, LEASE, USE, NON-USE, OR DEVALUATION OF ANY ELECTRIC VEHICLE, PLUG-IN HYBRID VEHICLE OR ANY VEHICLE OF ANY NATURE, ANY CHARGING EQUIPMENT OR ASSOCIATED EQUIPMENT INFRASTRUCTURE WHEN APPLICABLE CODES OR STANDARDS PROHIBIT THE INSTALLATION OR USE OF SUCH VEHICLE OR EQUIPMENT. XCEL ENERGY WILL NOT PAY FOR ANY COSTS INCURRED OR DAMAGES SUSTAINED BY CUSTOMER FOR PURCHASING ANY VEHICLE OR EQUIPMENT OR OTHERWISE IN RELIANCE UPON XCEL ENERGY BEING ABLE TO PROVIDE A CHARGER TO CUSTOMER. NOTWITHSTANDING ANYTHING SET FORTH IN THIS AGREEMENT TO THE CONTRARY, UNDER NO CIRCUMSTANCES SHALL XCEL ENERGY'S TOTAL LIABILITY UNDER THIS AGREEMENT EXCEED THE TOTAL COST OF THE CHARGING EQUIPMENT PLUS INSTALLATION COSTS MADE BY XCEL ENERGY UNDER THIS AGREEMENT. THIS SECTION SHALL SURVIVE THE TERMINATION OF THIS AGREEMENT. IN NO EVENT WILL XCEL ENERGY BE LIABLE TO CUSTOMER FOR ANY CLAIMS, EXPENSES, LOSSES, DAMAGES, OR LAWSUITS ARISING OUT OF ANY INTERRUPTIONS OR DISTURBANCES IN ELECTRIC SERVICE.

(Continued on Sheet No. 7-122)

Date Filed: 08-02-22 By: Christopher B. Clark Effective Date:  
President, Northern States Power Company, a Minnesota corporation  
Docket No. E002/M-22- Order Date:

ND  
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N  
D

N  
N  
N

**10. Miscellaneous Provisions**

- A. Compliance with Laws.** Performance under this Service Agreement is subject to all valid laws and regulations of courts or regulatory bodies having jurisdiction, including compliance with the Americans With Disabilities Act, as amended, if Customer is offering the Charging Equipment to the general public. N
- B. Assignment.** This Service Agreement shall not be assigned by Customer except with the prior written consent of Xcel Energy. The terms and conditions of this Agreement shall bind any permitted successors and assigns of the parties. Any assignment without Xcel Energy's consent shall be null and void. N  
ND  
N  
N
- C. Status of Parties.** This Service Agreement shall not be construed as creating a partnership, joint venture, agency relationship, franchise or association, nor shall this Agreement render Xcel Energy and Customer liable as partners, co-ventures or principals. It is agreed that nothing shall operate to change or alter such relationship, except a further agreement in writing between the parties. N  
ND  
N
- D. Severability.** If any term or provision of this Service Agreement is held illegal or unenforceable by a court with jurisdiction over the Service Agreement, all other terms in this Service Agreement will remain in full force and the illegal or unenforceable provision shall be deemed struck. In the event that the stricken provision materially affects the rights, obligations or duties of either party, Xcel Energy and Customer shall substitute a provision by mutual agreement that preserves the original intent of the Parties as closely as possible under applicable law. N  
N
- E. Governing Law.** This agreement shall be governed by the laws of the state of Minnesota, except that the Minnesota conflict-of-law provisions shall not be invoked in order to apply the laws of any other state or jurisdiction.
- F. Dispute Resolution.** If any dispute arises between the Parties regarding issues of interpretation of the Service Agreement or the Work performed pursuant to the Agreement, Customer may call the Xcel Energy Representative identified in Section 11 below during call center hours Monday-Friday 7 a.m. to 7 p.m. If further follow-up is required, Customer shall provide Xcel Energy with written notice explaining the dispute and associated documentation. Xcel Energy will consider all disputes and respond within fifteen (15) days of receiving notice of a dispute. In the event Customer is dissatisfied with the resolution of the dispute, Customer has the right to file an informal or formal complaint with the Commission by contacting the Commission. Xcel Energy will take no other action to enforce this Agreement until any complaint filed with the Commission is resolved. ND  
N  
D
- G. Public Communication.** Customer agrees to cooperate with Xcel Energy in maintaining good community relations. Xcel Energy will issue all public statements, press releases, and similar publicity concerning the Charging Equipment and the Work (including its progress, completion and characteristics). Customer shall not make or assist anyone to make any such statements, releases, photographs, or publicity without prior written approval of Xcel Energy.
- H. Non-waiver.** Xcel Energy's failure to insist on performance of any of the terms and conditions herein or to exercise any right or privilege or Xcel Energy's waiver of any breach hereunder shall not thereafter waive any of Xcel Energy's rights or privileges under this Agreement or at law. Any waiver of any specific breach shall be effective only if given expressly by Xcel Energy in writing.

(Continued on Sheet No. 7-123)

Date Filed: 08-02-22

By: Christopher B. Clark

Effective Date:

President, Northern States Power Company, a Minnesota corporation

Docket No. E002/M-22-

Order Date:

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**EV ACCELERATE AT HOME CUSTOMER SERVICE  
AGREEMENT (Continued)**

Section No. 7  
2nd Revised Sheet No. 123

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**10. Miscellaneous Provisions (Continued)**

**I. Merger.** This Service Agreement embodies the entire agreement between Xcel Energy and Customer. The Parties shall not be bound by or liable for any statement, writing, representation, promise, inducement or understanding not set forth above. No changes, modifications or amendments of any terms and conditions of this Service Agreement are valid or binding unless agreed to by the parties in writing and signed by their authorized agents. N

**J. Privacy Law.** Customer further acknowledges and agrees that Customer is knowingly consenting to and authorizing: i) Xcel Energy to release and share Customer's name, address, telephone number, charging data and any charging or electrical usage patterns concerning the Work with Xcel Energy's authorized third party independent contractors, in order for the authorized third party independent contractors to provide the Charging Equipment to Customer; and ii) Xcel Energy's authorized third party independent contractors to retain all of the aforementioned Customer data (following any transfer of Charging Equipment ownership from Xcel Energy to Customer) for all equipment warranty and maintenance support obligations only. N

**K. Survival.** The following sections shall survive the expiration or termination of this Agreement: Section 5 (Equipment And Data); Section 6 (Insurance Coverage); Section 7 (Indemnification); Section 8 (Warranty); Section 9 (Limits of Liability); Section 10 (a) (Miscellaneous Provision) and Section 11 (Questions). ND  
|  
ND

**11. Questions**

If you have questions regarding these Program terms, please email [ElectricVehicles@xcelenergy.com](mailto:ElectricVehicles@xcelenergy.com) or call 1-800-895-4999. N

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Date Filed: 08-02-22

By: Christopher B. Clark

Effective Date:

President, Northern States Power Company, a Minnesota corporation

Docket No. E002/M-22-

Order Date:

## Program Evaluation and Customer Insights

### *1. Insight into Expanding the EV Subscription Service Pilot*

We launched the EV Subscription Service pilot to address the following issues: assess customer understanding and satisfaction of a flat rate for EV charging, assess if the pilot and rate structure provide appropriate signals and automation for off-peak charging, and assess the costs for providing service to customers and determine the accuracy of flat rate cost assumptions.

Based on the pilot's performance and our evaluation, we have determined that the pilot has been successful in addressing the issues, and as such, we propose to expand the pilot to a permanent offering as "EV Accelerate At Home – Subscription." See our 2022 Annual EV Report for thorough evaluation and reporting of the EV Subscription Service Pilot.

In doing so, we propose modifying the rate structure by 1) adopting the 3-period residential TOU rate structure which has the impact of decreasing the assumed off-peak energy costs, and 2) incorporating a monthly kWh subscription cap on total off-peak charging to address charging behaviors that consume kWh that exceed this cap. These recommendations still enable an offer that delivers the simplicity of a flat rate for EV charging but will also ensure that we are able to provide this service with more accuracy regarding costs, at scale.

### *2. Insight into Providing a Bring Your Own Charger Option*

Based on our observations of the EV Accelerate At Home program, we have concluded that a BYOC option provides similar benefits to the existing prepay option. Since the program launched, 35 percent of participating customers in Minnesota have chosen to prepay for their charging stations. We have received requests from customers who have similar charging station models that we offer in the program, wanting to bring their chargers to participate. This topic continues to be of interest for stakeholders and the Commission. Enabling a BYOC solution not only addresses the needs of customers and stakeholders, but also allows us to further streamline our portfolio, enhance the customer experience, and improve our operations.

We have a handful of customers participating in the Installation-Only option today, and the charger commissioning and subtractive billing process has been successful. Removing the prepay option will alleviate our administrative and billing efforts since we currently need to collect the customer's payment prior to installation and the

current customer experience for this is not efficient. Helping customers understand the difference between the bundled and prepay options has also been a challenge, as there are many questions surrounding which option is best for them.

### *3. Insight into Pricing Modifications Based on Customer Feedback*

We have received feedback from customers who have gone through the charger relocation and removal process. Customers responded negatively to paying a removal fee or paying the electrician for relocating their charging stations. For example, some customers have removed their own charging stations (breaching the contract) and requested to ship the station back to our contracted electrician to avoid the electrician visit or \$200 removal fee.

We have also observed customers relocating (again, breaching the contract) the charging stations themselves or moving out without informing us to avoid the charger relocation or removal fees.

Adding a forecast of these anticipated costs to the overall program administration cost that is the basis for all customers' monthly pricing, rather than charging them to individual customers, would make our program more flexible, valuable, and safe for participating customers. Elimination of the removal and relocation fees would also alleviate our administrative and billing efforts since we cannot remove the charging station until we collect the payment from the customer up front.

# PILOT LEARNINGS FINAL REPORTING REQUIREMENTS

## Residential EV Subscription Service Pilot: Findings by Learning Objective

Pilot Learning Objective	Findings
Assess customer understanding and satisfaction of a flat rate for EV charging	<ul style="list-style-type: none"> <li>○ In early 2020, four months after launch, we saw overwhelming interest in the program, with 60 applications (more than 30% coming from auto dealerships).</li> <li>○ We observed infrequent customer feedback that their participation in the pilot may impact them financially. Those who are hesitant to participate due to the flat fee design of the pilot typically withdraw their enrollment altogether, and, or, switch to the EV Accelerate At Home program or another off-peak Time-Of-Use rate that the company offers to lessen the potential financial impact of a flat rate for EV charging.</li> <li>○ From our post-charger installation surveys, we've received 73 responses from the 150 customers that have had a charger installed for a response rate of 49%.</li> <li>○ Overall satisfaction of the Installation Experience continues to be high as compared to EV Accelerate At Home, with a satisfaction score of 96%</li> <li>○ Satisfaction with the upfront experience such as the Ease of Enrollment, and Information about Program Costs and How the Program Works, all scored in the 96% or higher range, which are higher satisfaction scores than what was received for the EV Accelerate At Home program (79%). <ul style="list-style-type: none"> <li>▪ This difference indicates that a flat monthly subscription rate for EV charging is easily understood by customers.</li> </ul> </li> <li>○ 92% satisfaction with Communication from Xcel Energy</li> <li>○ 90% were highly likely to recommend the program to a friend</li> <li>○ 81% very/extremely satisfied with their charging schedule or time window,</li> <li>○ 82% very/extremely satisfied with the value for the energy used, and</li> <li>○ 78% very/extremely satisfied with program services (charger, installation, maintenance)</li> </ul>

	<ul style="list-style-type: none"> <li>○ 88% of pilot participant research respondents very clearly understood “unlimited off-peak charging”</li> <li>○ 72% stated that they understood it completely</li> </ul>
Assess if the pilot and rate structure provide appropriate signals and automation for off-peak charging	<ul style="list-style-type: none"> <li>○ May 2022 research showed that 88% of pilot participant research respondents very clearly understood “unlimited off-peak charging”, with 72% stating that they understood it completely</li> <li>○ In the 2021-2022 reporting period, 96% of all charging during the pilot occurred during the off-peak window.</li> </ul>
Assess the costs for providing service to customers and determine the accuracy of flat rate cost assumptions.	<ul style="list-style-type: none"> <li>○ In the early stages of the Residential EV Subscription Pilot in 2020-2021, costs exceeded revenues. We anticipated immediate growth in the pilot and expected that, over the life of the pilot, subscription revenues would come close to matching program costs. Due to the COVID-19 pandemic, pilot enrollment initially slowed, but returned to a brisk pace.</li> <li>○ Pilot costs in total have exceeded total revenues by 2022 in the pilot. However, revenues in the 2021-2022 reporting period were almost double those from the year before. At the same time, continued costs are relatively minimal as the program has reached the participation cap and does not require a large amount of ongoing costs beyond O&amp;M costs.</li> <li>○ The pilot was designed to recover the full costs from participations over the duration of equipment life and we anticipate that the program is on track to do so if cost and revenue trends continue.</li> <li>○ While only a few customers were found to charge around 2,000 kWh per month or more, 68% of participating customers charge less than 500 kWh per month, and 96% charge less than 1,000 kWh per month.</li> <li>○ The average monthly consumption being 372 kWh for the group below 1,000 (with the average for all customers at 403 kWh per month). As such, participants have been slightly underpaying for the subscription since the current rate structure assumes 339 kWh off-peak per month.</li> <li>○ We suspect that the customers who are charging at around 2,000 kWh per month or more are charging two vehicles on the pilot, which breaches the customer service agreement and requirement of one vehicle per customer charge and subscription.</li> </ul>

### Residential EV Subscription Service Pilot: Final Reporting Requirements

Reporting Requirements	Findings
<p>Participant Information</p> <ul style="list-style-type: none"> <li>A) Number of pilot participants</li> <li>B) Number selecting each type of equipment</li> <li>C) Number choosing to pre-pay for the charger, and number choosing to spread the payments over time</li> <li>D) Number choosing Windsource, and number choosing standard rates</li> </ul>	<ul style="list-style-type: none"> <li>A) Currently we have 135 participants enrolled</li> <li>B) 108 have chosen the ChargePoint model and 25 have chosen Enel X</li> <li>C) To date, 114 have chosen the bundled option, which allows them to pay for the charger monthly, and 20 chose to prepay for the charger at the time of installation</li> <li>D) 81 have chosen to use Windsource. (2022 Annual Report, pg 22)</li> </ul>
<p>kWh consumption details on a per month basis, including:</p> <ul style="list-style-type: none"> <li>A) kWh consumed in the on-peak period</li> </ul> <p>kWh consumed in the off-peak period</p> <ul style="list-style-type: none"> <li>B) Comparison of actual consumption to estimated amounts</li> <li>C) Highest and lowest usage customer in each month</li> </ul>	<ul style="list-style-type: none"> <li>A) See 2022 Annual Report, Attachment A.</li> <li>B) See 2022 Annual Report, Attachment A. When developing the EV Subscription Service pilot, we estimated that the average customer would have a monthly energy usage of 340 kWh. The average monthly charging usage per customer during the pilot has been about 430 kWh per month (2022 Annual Report, page 22)</li> <li>C) See 2022 Annual Report, Attachment A.</li> </ul>
<p>The costs and revenues associated with each service option, including the amount of metering equipment added to rate base and whether the pilot is revenue neutral</p>	<ul style="list-style-type: none"> <li>o See 2022 Annual Report, pages 22-24.</li> </ul>
<p>Insights drawn from customer experience and pilot performance under Xcel's safety and reliability standards</p>	<ul style="list-style-type: none"> <li>o Based on customer satisfaction and managed charging participation with a flat subscription rate, the pilot has been successful and has met our safety and reliability standards. (2022 Annual Report, pages 24-25)</li> </ul>

<p>Any problems encountered connecting to the homeowner's wireless internet connection</p>	<ul style="list-style-type: none"> <li>○ See 2022 Annual Report, pages 14-15.</li> </ul>
<p>A side-by-side comparison of data on Xcel's current Electric Vehicle Service Pilot Program and Xcel's new Electric Vehicle Subscription Pilot Program, and a discussion about whether any difference in results may have resulted from differences between the two pilots' terms and conditions</p>	<ul style="list-style-type: none"> <li>○ Overall satisfaction of the Installation Experience for the Residential EV Subscription Service Pilot continues to be high as compared to EV Accelerate At Home, with a satisfaction score of 96%.</li> <li>○ Satisfaction with the upfront experience such as the Ease of Enrollment, and Information about Program Costs and How the Program Works, all scored in the 96% or higher range, which are higher satisfaction scores than what was received for the EV Accelerate At Home program (79%).</li> <li>○ This difference indicates that a flat monthly subscription rate for EV charging is easily understood by customers.</li> <li>○ Further, managed charging participation is also higher in the Subscription pilot, with 96% of all charging occurring off-peak compared to more than 80% with EV Accelerate At Home. However, this may be a result of the EV Accelerate At Home program switching to a three-period TOU rate while the subscription pilot maintained a two-period TOU schedule.</li> </ul> <p>(2022 Annual Report, pages 24-25)</p>

**Clean'n'Press®**

7/21/2022

Attn: Executive Secretary, Minnesota Public Utilities Commission

We, at East Metro Clean'n'Press, have a strong need for additional utility support for electric vehicle (EV) charging infrastructure for private fleets. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for fleet operators. Fleet electrification represents a significant emissions reduction opportunity for Minnesota, however, fleet operators face significant barriers to electrification today. These barriers include the high upfront-costs associated with charging infrastructure projects (both the chargers themselves and make-ready equipment supporting the charger).

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure for fleet operators. We also appreciate the additional support Xcel Energy is planning to offer for fleet electrification planning, and we value Xcel Energy's educational efforts and advice regarding how to identify transportation electrification opportunities and help making decisions about our future plans.

We thank Xcel Energy for its leadership on electric transportation, and look forward to the additional support Xcel plans to offer. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

Keith Aune

Owner

East Metro Clean'n'Press, Inc

186 Marie Ave East

West St. Paul, MN 55118

651-450-4759

[keith@cleannpress.com](mailto:keith@cleannpress.com)

Northern States Power Company



## LUNDS & BYERLYS

July 15, 2022

Attn: Executive Secretary of the Minnesota Public Utilities Commission

Lunds & Byerlys sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. We know a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. As a retailer who provides EV charging opportunities to its customers, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and hope that Lunds & Byerlys can serve as a host for some of Xcel Energy's public fast charging hubs.

We thank Xcel Energy for its leadership on electric transportation.

Sincerely,

A handwritten signature in cursive script that reads 'Wally Lindeman'.

Wally Lindeman  
Director, Store Development

*NSP Drive Electric Support Letter*



7/8/2022

Attn: Executive Secretary of the Minnesota Public Utilities Commission

Dollar Tree / Family Dollar sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We support Xcel Energy's efforts to establish a strong vision and specific plans to support transportation electrification. We have been actively engaged with Xcel Energy on the development of electric vehicle projects, and we have been excited to support Xcel Energy's pilots and programs to advance the transportation electrification of our communities. While we have all been working hard together to bring forward the charging infrastructure needed to support the decarbonization of our transportation system, we recognize things are not moving as quickly as we would like.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving meaningful transportation electrification in our communities will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and hope that Dollar Tree and Family Dollar can serve as a host for some of Xcel Energy's public fast charging hubs.

We thank Xcel Energy for its leadership on electric transportation, and hope that other utilities and electric providers in the state follow suit, so that Minnesotans can travel throughout the state in an electric vehicle with confidence. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

A handwritten signature in black ink, appearing to read "Menno Enters", written over a large, light-colored scribble or watermark.

**Menno Enters**  
**VP Property Management, RPM**  
**Dollar Tree / Family Dollar**

STORE SUPPORT CENTER  
500 Volvo Parkway | Chesapeake, Virginia 23320 | Tel 757-321-5000 | [www.dollartree.com](http://www.dollartree.com)  
Proprietary Information – Highly Confidential – Authorized Users Only

Northern States Power Company



**NATIVE SUN  
COMMUNITY  
POWER  
DEVELOPMENT**

July 5, 2022

Attn: Executive Secretary of the Minnesota Public Utilities Commission

Native Sun Community Power Development is partnering with Xcel Energy and others on the *Upper Midwest Inter-Tribal EV Charging Community Network*, an initiative funded by the U.S. Department of Energy to address electric vehicle (EV) barriers for Tribal members in the Upper Midwest and build EV-friendly corridors connecting Tribal Nations with urban centers in Minnesota, North Dakota and South Dakota.

Related to that effort, Native Sun sees a strong need for additional utility support for EV charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption; however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving our transportation electrification goals will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace EVs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network, and hope that the Tribal Nations and/or travel corridors we are focusing on in the *Upper Midwest Inter-Tribal EV Charging Community Network* can serve as a host for some of Xcel Energy's public fast charging hubs. This would advance the objectives, shared by Native Sun and Xcel Energy, of promoting equitable access to electric transportation, reducing emissions, and supporting Tribal sovereignty.

We thank Xcel Energy for its leadership on electric transportation, and hope that other utilities and electric providers in the state follow suit, so that Minnesotans can travel throughout the state in an EV with confidence. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

Robert Blake  
Executive Director

Northern States Power Company



7/20/2022

Attn: Executive Secretary, Minnesota Public Utilities Commission

PepsiCo sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure for private fleets. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for fleet operators. Fleet electrification represents a significant emissions reduction opportunity for Minnesota, however, fleet operators face significant barriers to electrification today. These barriers include the high upfront-costs associated with charging infrastructure projects (both the chargers themselves and make-ready equipment supporting the charger).

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure for fleet operators. We also appreciate the additional support Xcel Energy is planning to offer for fleet electrification planning, and we value Xcel Energy's educational efforts and advice regarding how to identify transportation electrification opportunities and help making decisions about our future plans.

We thank Xcel Energy for its leadership on electric transportation, and look forward to the additional support Xcel plans to offer. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

Dejan Antunovic, Electrification Program Manager



7/20/2022

Attn: Executive Secretary, Minnesota Public Utilities Commission

Room & Board sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure for private fleets. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for fleet operators. Fleet electrification represents a significant emissions reduction opportunity for Minnesota; however, fleet operators face significant barriers to electrification today. These barriers include the high upfront-costs associated with charging infrastructure projects (both the chargers themselves and make-ready equipment supporting the charger).

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure for fleet operators. We also appreciate the additional support Xcel Energy is planning to offer for fleet electrification planning, and we value Xcel Energy's educational efforts and advice regarding how to identify transportation electrification opportunities and help making decisions about our future plans.

We thank Xcel Energy for its leadership on electric transportation and look forward to the additional support Xcel plans to offer. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

Emily McGarvey  
Director of Sustainability



July 19, 2022

Attn: Executive Secretary, Minnesota Public Utilities Commission

The City of Monticello sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We support Xcel Energy's efforts to establish a strong vision and specific plans to support transportation electrification. We have been actively engaged with Xcel Energy on the development of electric vehicle projects over the past few years, and we have been excited to use Xcel Energy's pilots and programs to advance our transportation electrification goals. While we have all been working hard together to bring forward the charging infrastructure needed to support the decarbonization of our transportation system, we recognize things are not moving as quickly as we would like.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving our transportation electrification goals will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and hope that Monticello can serve as a host for some of Xcel Energy's public fast charging hubs.

We thank Xcel Energy for its leadership on electric transportation, and hope that other utilities and electric providers in the state follow suit, so that Minnesotans can travel throughout the state in an electric vehicle with confidence. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lloyd Hilgart", is written over a light blue circular stamp.

Mayor Lloyd Hilgart  
City of Monticello



14405 West 62nd Street, Eden Prairie, MN 55346  
swtransit.org • 952-949-2BUS (2287)

July 21, 2022

Attn: Executive Secretary, Minnesota Public Utilities Commission

SouthWest Transit sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We support Xcel Energy's efforts to establish a strong vision and specific plans to support transportation electrification. We have been actively engaged with Xcel Energy on the development of electric vehicle projects over the past few years, and we have been excited to use Xcel Energy's pilots and programs to advance our transportation electrification goals. While we have all been working hard together to bring forward the charging infrastructure needed to support the decarbonization of our transportation system, we recognize things are not moving as quickly as we would like.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving our transportation electrification goals will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and hope that SouthWest Transit can serve as a host for some of Xcel Energy's public fast charging hubs.

We thank Xcel Energy for its leadership on electric transportation, and hope that other utilities and electric providers in the state follow suit, so that Minnesotans can travel throughout the state in an electric vehicle with confidence. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

A handwritten signature in black ink, appearing to read 'Matt Fyten'.

Matt Fyten  
Interim CEO  
SouthWest Transit



July 26, 2022

Attn: Executive Secretary of the Minnesota Public Utilities Commission

Hy-Vee, Inc. sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving our transportation electrification goals will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and hope that Hy-Vee stores can serve as a host for some of Xcel Energy's public fast charging hubs.

Sincerely,

***John Brehm***

Director, Site Planning

Hy-Vee, Inc.

P: (515) 453-2795

E: [jbrehm@hy-vee.com](mailto:jbrehm@hy-vee.com)

Cc: Tina Pothoff, SVP, Hy-Vee Inc.

**Hy-Vee, Inc.**

5820 Westown Parkway, West Des Moines, Iowa 50266

Phone: (515) 267-2800



Cub  
421 S Third St.  
Stillwater, MN 55082

July 25, 2022

Attn: Executive Secretary of the Minnesota Public Utilities Commission

Cub Foods sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving our transportation electrification goals will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and determine whether Cub Foods locations can serve as a host for some of Xcel Energy's public fast charging hubs.

We thank Xcel Energy for its leadership on electric transportation, and hope that other utilities and electric providers in the state follow suit, so that Minnesotans can travel throughout the state in an electric vehicle with confidence. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

A handwritten signature in cursive script that reads "Jim Hornecker".

Jim Hornecker  
Director of Real Estate  
Cub Foods

July 29, 2022

Attn: Executive Secretary of the Minnesota Public Utilities Commission

Life Time sees a strong need for additional utility support for electric vehicle (EV) charging infrastructure. Electric transportation provides both environmental benefits and the opportunity for lower fuel and maintenance costs for EV drivers. We know that a lack of public charging availability is a primary barrier to EV adoption, however, EV charging infrastructure comes at a high upfront cost, and other sources of funding (such as grants and utility programs) are frequently needed to support these installations.

We support Xcel Energy's efforts to establish a strong vision and specific plans to support transportation electrification. We have been actively engaged with Xcel Energy on the development of electric vehicle projects over the past few years, and we have been excited to use Xcel Energy's pilots and programs to advance our transportation electrification goals. While we have all been working hard together to bring forward the charging infrastructure needed to support the decarbonization of our transportation system, we recognize things are not moving as quickly as we would like.

We are excited to see Xcel Energy taking a proactive approach to reducing the upfront costs of EV charging infrastructure. Achieving our transportation electrification goals will require significant effort from many interested parties. As an infrastructure provider, we believe Xcel Energy is well positioned to build, operate and maintain charging infrastructure to meet a wide variety of needs.

Xcel Energy's plan to build and operate a convenient and robust public fast charging network throughout its service territory will ensure that its customers can confidently embrace electric vehicles for their transportation needs. We are looking forward to working closely with Xcel Energy to identify locations suitable for its public fast charging network and hope that Life Time can serve as a host for some of Xcel Energy's public fast charging hubs.

We thank Xcel Energy for its leadership on electric transportation, and hope that other utilities and electric providers in the state follow suit, so that Minnesotans can travel throughout the state in an electric vehicle with confidence. We look forward to providing further comments on Xcel Energy's proposals throughout the Commission's review process.

Sincerely,

Peter M. Isabell

