BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF PUBLIC SERVICE COMPANY OF COLORADO FOR APPROVAL OF ITS 2021-2023 TRANSPORTATION ELECTRIFICATION PLAN.	**)**	**PROCEEDING NO. 20A-XXXXE**

DIRECT TESTIMONY AND ATTACHMENT OF KEVIN D. SCHWAIN

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

May 15, 2020

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
CES	Customer Effort Score
CO_2	Carbon Dioxide
Commission	Colorado Public Utilities Commission
CPP	Critical Peak Pricing
DCFC	Direct Current Fast Charge
DSM	Demand Side Management
EV	Electric Vehicle
kW	Kilowatt
LD EV	Light-Duty Electric Vehicle
MUD	Multi-Unit Dwelling
NSPM	Northern States Power- Minnesota
O&M	Operations and Maintenance
Performance Incentive Mechanism	PIM
Public Service or the Company	Public Service Company of Colorado
RFP	Request for Proposal
RIP	Research, Innovation, and Partnerships
SB 19-077	Senate Bill 19-077
S-EV	Secondary Voltage Time-of-Use- Electric Vehicle
SG	Secondary General
SG-CPP	Secondary General Critical Peak Pricing
SGL	Secondary General Low-Load Factor

Acronym/Defined Term	**Meaning**
TEP or Plan	Transportation Electrification Plan
V2G	Vehicle-to-Grid
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services Inc.

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I. INTRODUCTION, QUALIFICATIONS, PURPOSE OF TESTIMONY, RECOMMENDATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kevin Schwain. I work at 401 Nicollet Mall in Minneapolis, MN.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A. I am employed by Xcel Energy Services Inc. ("XES") as the Director of Electric Transportation.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THE PROCEEDING?

A. I am testifying on behalf of Public Service Company of Colorado ("Public Service" or the "Company").

Q. PLEASE SUMMARIZE YOUR RESPONSIBILITIES AND QUALIFICATIONS.

A. I lead the strategy, development, and operation of our customer-facing Electric Transportation efforts for all Xcel operating companies, including Public Service.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. First, I describe the Company's Transportation Electrification Plan ("TEP" or "Plan") and the programs within the Plan's five portfolios. In this section, I also

address our planned budgets and how we determined them for each TEP portfolio. I also address our plans to support low-income customers in the context of each TEP portfolio. Second, I address Public Service's planned budget for each TEP year broken down by capital investments, operation and maintenance ("O&M") expenses and administrative costs, and rebates, as well as by portfolio. In this section, I also support our proposed framework for managing these portfolios and related budgets over the course of the TEP, including our proposed stakeholder engagement process to make mid-course adjustments to optimize the TEP's ability to accomplish legislative objectives. Third, I propose two performance incentive mechanisms ("PIMs"), describe how these PIMs would work, and explain why they are appropriate to advance the purposes of the TEP. Last, I discuss the plan for evaluation activities for the TEP.

Q. ARE YOU SPONSORING ANY ATTACHMENTS AS PART OF YOUR DIRECT TESTIMONY?

A. Yes, I am sponsoring the TEP, which I attach to my Direct Testimony as Attachment KDS-1.

Q. WHAT RECOMMENDATIONS ARE YOU MAKING IN YOUR DIRECT TESTIMONY?

A. In my Direct Testimony, I recommend that the Colorado Public Utilities Commission ("Commission"):

1. Approve the Company's proposed TEP and find that it is prudent and in the public interest;
2. Approve the Company's proposed annual TEP budgets;

3. Approve the Company's proposed framework for managing TEP portfolios, programs, and related budgets over the course of the TEP and process to make mid-course adjustments;

4. Approve the Company's proposal to support a school bus electrification project through the TEP's Research, Innovation, and Partnerships portfolio as described below, using proceeds from the sale of Renewable Energy Credits ("RECs") and carbon offsets as discussed in Mr. Ihle's Direct Testimony;

5. Approve the Company's proposal for an independent evaluation of our TEP portfolios, ongoing stakeholder outreach, and reporting to ensure transparency and oversight; and

6. Approve the Company's proposed PIMs.

II. TRANSPORTATION ELECTRIFICATION PLAN

Q. PLEASE SUMMARIZE THE COMPANY'S TRANSPORTATION ELECTRIFICATION PLAN PROPOSAL.

A. We are proposing five distinct portfolios – three covering core market segments (Residential, Multi-unit Dwellings ("MUD"), and Commercial) and two that are cross-cutting (Advisory Services and Research, Innovation, and Partnerships). Our Plan includes a strong focus on supporting low-income customers and communities, and we propose initiatives targeted at this overarching objective within each portfolio. Lastly, we describe our plan for an independent evaluation of our portfolios, ongoing stakeholder outreach, and reporting to ensure transparency and oversight.

Q. WHAT ARE THE OBJECTIVES OF THE COMPANY'S TRANSPORTATION ELECTRIFICATION PLAN?

A. At the highest level, we are trying to reduce the barriers customers face when adopting electric transportation technologies and expand the benefits of transportation electrification so that Colorado can see the largest benefit as quickly as possible. Our TEP is comprised of 20 unique programs that will provide the advice and education customers need, support the infrastructure necessary to charge vehicles, and optimize energy usage so that everyone that uses the grid can benefit from this transition. A critical objective of our proposed TEP is to help the state of Colorado achieve its 2030 EV goal as well as its goals related to emissions reductions.

Q. PLEASE DESCRIBE THE BENEFITS OF THE ELECTRIC VEHICLE (EV) PROGRAMS AND HOW THEY WILL ADVANCE COLORADO'S ENVIRONMENTAL AND ECONOMIC GOALS.

A. As described by Company witness Jack Ihle, EVs can provide tremendous benefits to the state of Colorado. Analysis conducted on behalf of the Company suggests each EV in our service territory will save participants $1,150 per vehicle over the lifetime of that vehicle. Further, the charging of these vehicles on the Public Service system will increase efficiency and benefit everyone that uses the grid – and those savings are estimated to be $3,589 per vehicle over the lifetime of the vehicle. Finally, each vehicle that uses electricity in place of gasoline or diesel will improve air quality and reduce carbon emissions – producing total societal net benefits of $5,027 per vehicle over the lifetime of each vehicle. We believe our plan is a necessary first step in helping Colorado achieve its 2030 EV goals and beyond.

Q. PLEASE PROVIDE BACKGROUND ON THE STATE OF THE EV MARKET IN COLORADO.

A. The Colorado market for EVs has grown significantly in recent years, though this growth has occurred from a low starting base. With just a few thousand EVs on the road in 2015, the market has increased to roughly 24,000 EVs in the Company's service territory as of the end of 2019[1], with nearly 7,000 EVs sold in

[1] Estimates based on EV registrations by zip code, which do not perfectly align with electric utility service territories. As a result, there will be a margin of error.

2019 alone. The majority of EVs in Colorado are located in the Company's electric service territory.

Q. PLEASE DISCUSS THE COMPANY'S FORECAST FOR EVS IN ITS ELECTRIC SERVICE TERRITORY.

A. The Company forecasts continued growth in EV sales in the Company's electric service territory. Several factors will contribute to this trend, including vehicle costs that continue to decline, a wider range of vehicle sizes and capabilities, fuel and maintenance costs below those for conventional vehicles, the ongoing availability of federal and state tax incentives, and improved customer awareness and interest in EVs.

Table KDS-D-1: Colorado Service Territory Electric Vehicle Forecast (Cumulative Light Duty EVs)

	2020	2021	2022	2023
Low	26,638	31,139	37,745	49,994
Mid	30,450	41,284	61,323	99,195
High	46,806	74,648	116,628	185,915

While the market for EVs is expected to continue growing, several obstacles to EV adoption and their efficient integration into the electric system remain. Customer awareness of the technology and model types, higher initial costs for EVs, access to home and/or public charging infrastructure, and the availability and knowledge of charging rates suitable to the unique needs of

residential, workplace, and fleet vehicle charging have all been identified in recent years as obstacles to greater adoption.[2]

Adjusted proportionally to refer to Public Service's electric service territory rather than the whole state of Colorado, the Governor's stated goal of 940,000 EVs on the road by 2030[3] falls within the Company's medium and high scenarios. The Company believes this goal is aggressive but attainable. The portfolios contained within this TEP are designed as targeted investments to foster a dynamic market for charging infrastructure to support higher levels of EV adoption in line with the state's goals and to help convert rising numbers of EVs into grid assets.

Q. DOES THE COMPANY'S FORECAST BEGIN TO INCORPORATE THE POTENTIAL IMPACTS OF THE ONGOING COVID-19 PANDEMIC ON VEHICLE SALES?

A. Yes, the Company updated its EV forecast this spring to begin to account for how the pandemic and associated economic impacts could begin to affect the market for EVs in Colorado. Our latest EV forecast, produced in April 2020, incorporates a 40 percent reduction in new car sales this year as well as fewer miles driven. However, in recent weeks Governor Polis has reaffirmed a commitment to the goal of having 940,000 EVs on the road in Colorado by 2030.

It is important to note that, like all forecasts, the Company's EV forecast is uncertain, and the COVID-19 pandemic has introduced even greater uncertainty,

[2] See Colorado PUC Electric Vehicle Working Group Report (Proceeding No. 17I-0692E) and the Colorado Electric Vehicle Plan 2020.
[3] Executive Order B 2019 002.

especially for near-term adoption. However, we believe this TEP will increase the likelihood of seeing increased levels of adoption and will position Colorado to meet its 2030 goal of 940,000 EVs on the road, including potentially more than 500,000 vehicles in our service territory by 2030.

Q. HOW MANY CHARGING PORTS DOES COLORADO LIKELY NEED TO SUPPORT THE STATE'S EV GOALS?

A. The state will require a significant expansion of charging infrastructure in the future. We estimate that the number of level 2 chargers necessary to support the market across the residential, MUD, and commercial sectors will need to increase from roughly 14,000 in 2019 to over 220,000 in 2030. We also anticipate a market need to significantly increase access to Direct Current Fast Charge ("DCFC") chargers to support larger vehicles, public charging, and intracommunity travel – with DCFC stations rising from under 200 in 2019 to more than 2,200 in 2030. Importantly, we see ourselves as one partner in enabling the market expansion of charging infrastructure, along with other public, non-profit, and for-profit organizations focused on transportation electrification.

Q. WHAT MAKES THE COMPANY UNIQUELY QUALIFIED TO SUCCESSFULLY IMPLEMENT THE PROPOSED EV PROGRAMS?

A. First, we have long-standing and trusted relationships with the customers in our service territory and can readily reach our customers to educate them on our TEP program offerings and help them navigate how to access the benefits of transportation electrification more broadly. Second, as a utility we are well positioned to efficiently design, install, operate, and maintain the electrical

infrastructure that will be critical to enabling widespread transportation electrification. Third, we are uniquely positioned to ensure that increased adoption of transportation electrification happens in a way that benefits—rather than burdens—the electric grid. Successfully integrating EV charging through all market segments in a way that unlocks participant, customer, and societal benefits requires coordination on rates, charging optimization programs, distribution systems, generation sources, information and awareness campaigns, and complementary program offerings across public, non-profit, and for-profit organizations. Doing so has the potential to reduce transportation costs, electricity costs, and vehicle-related emissions to the benefit of all customers. Finally, given Xcel Energy's footprint across eight states, we have been developing expertise in operating programs similar to those we are proposing in this TEP.

Q. DOES THE TEP ADDRESS THE COMPANY'S PLAN FOR STAKEHOLDER ENGAGEMENT AND REPORTING?

A. Yes. Stakeholder, Commission, and customer engagement are all critical components of the Company's TEP. We propose a robust process for gathering feedback and input from stakeholders, ensuring transparency, sharing lessons learned, and assessing our customers' experiences and perceptions about EVs that could lead to increased adoption. Specifically, we propose to:

1. Host quarterly stakeholder group meetings, similar to the Company's Demand Side Management (DSM) roundtables.
2. Submit comprehensive annual reports, providing data on key metrics.

3. Partner with public, private, and non-profit organizations to help target particular customer segments, leverage additional funding opportunities, and increase awareness of available resources and programs.

4. Engage independent third-party evaluators so that the Company and interested stakeholders gain a better understanding of the impacts and effectiveness of TEP programs.

Q. PLEASE SUMMARIZE THE AMOUNT OF INVESTMENT PROPOSED AND THE TIME PERIOD IN WHICH THE INVESTMENTS WILL BE MADE.

A. The Company proposes a total budget of about $102 million in investments, rebates, grants, and programmatic support across the three-year timeframe of the TEP. Section IX of my testimony provides more detail on the annual components and budget totals of the TEP.

Q. DOES THE COMPANY'S PROPOSAL INCLUDE THE FLEXIBILITY TO MOVE FUNDS WITHIN AND BETWEEN INITIATIVES?

A. Yes, the Company requests the ability to have flexibility at the programmatic, portfolio, and overall budget levels, though to varying degrees. Flexibility is critical for successful implementation of the TEP in order for the Company to adapt to actual customer interest and demand, actual market prices faced, and to aggregate economic activity in light of the ongoing pandemic. This ability to adapt to the market, adjust the timing and magnitude of particular programs, and even offer new programs will help maximize the benefits that the TEP will create through promoting state policy goals for transportation electrification. I discuss

the critical role that flexibility plays in the implementation of the TEP in Section IX of my testimony.

III. RESIDENTIAL PORTFOLIO

Q. PLEASE DESCRIBE THE RESIDENTIAL PORTFOLIO.

A. The Residential portfolio of the TEP aims to ensure that EV adoption amounts to a grid asset while directly addressing the equipment selection, upfront cost, and installation barriers that many EV customers encounter. The Company proposes four distinct programs within the Residential portfolio: a Standard Wiring Rebate for Level 2 charging equipment, a significantly expanded Low-Income Rebate for wiring and chargers for qualifying low-income customers, a Home Charging Service program to defray the cost of purchasing an EV charger and streamline the home charging process and experience, and an Early Adopter rebate that could assist us in increasing enrollment in our managed charging programs for those who have already installed an EV charger.

Q. WHAT REBATE LEVELS DO YOU PROPOSE AND HOW DID YOU DETERMINE THEM?

A. We propose rebates of up to $500 for wiring, $1,300 for low-income customers, and $200 for early adopters in our Residential programs. The wiring rebate was established to offset a significant portion of the average costs for a customer in a single-family structure to install level 2 wiring for an EV. The much-expanded low-income rebate is intended to not only offset a significant portion of the wiring costs but also much of the charger costs for eligible participants. Lastly, the early adopter rebate was designed with an eye toward fairness and providing an incentive for existing customers with EVs who already have level 2 charging to participate in one of our managed charging programs.

Q. WILL ANY DSM DEMAND RESPONSE PROGRAMS PLAY A ROLE IN RESIDENTIAL EV PROGRAMS?

A. Yes. The Company recently introduced a smart charging pilot (Charging Perks Pilot) in Colorado through its DSM portfolio.[4] This program seeks to proactively manage the peak demand from EV charging and explore the potential for using EV charging as a flexible load that can be managed to support the integration of renewable energy. We propose to build on our charging optimization offerings in DSM by adding a new static optimization program for our residential customers with EVs.

Q. WHAT ARE THE ELIGIBILITY REQUIREMENTS FOR THE RESIDENTIAL TEP PROGRAMS?

A. The Company has a strong desire to make the optional programs and services widely available, though some basic eligibility requirements will apply. New and existing residential EV customers who meet these requirements can participate in the Residential portfolio program that is right for them. The specific eligibility requirements are detailed in the full TEP in Attachment KDS-1.

Q. DOES XCEL ENERGY HAVE EXPERIENCE MANAGING THIS TYPE OF INITIATIVE IN ITS OTHER SERVICE TERRITORIES?

A. Yes, Xcel Energy's operating company in Minnesota – Northern States Power Company-Minnesota ("NSPM") – has successfully implemented a number of EV programs, and other operating companies are also in the process of proposing

[4] See Xcel Energy, Colorado-Demand Side Management, Past 60/90-Day Notices: https://www.xcelenergy.com/company/rates_and_regulations/filings/colorado_demand-side_management

transportation electrification plans and programs. In Minnesota, NSPM has worked with stakeholders and the Minnesota Public Utilities Commission to design and implement the following EV programs for its residential and commercial customers:

1. Residential EV charging tariff
2. Residential EV service pilot
3. Residential EV subscription service pilot
4. Fleet EV service pilot
5. Public charging infrastructure pilot

NSPM is also in the process of developing a charging optimization program for residential customers, a vehicle-to-grid demonstration project with school buses, and additional fleet service programs.

Q. WHAT ARE THE BENEFITS OF THE RESIDENTIAL PORTFOLIO AS PART OF THE TEP?

A. The Company anticipates several benefits for participants, Public Service electric customers at large, and the state of Colorado from its proposed Residential portfolio. By increasing access to managed level 2 home charging through reducing complexity and installation costs, we aim to maximize the overall benefits of transportation electrification while minimizing the costs. These benefits include reduced household vehicle fuel and maintenance costs for participating customers, improved efficiency of the grid for all electric customers, and reduced air pollution for the state of Colorado.

Q. WHAT IS THE INVESTMENT PROPOSED FOR RESIDENTIAL PORTFOLIO?

A. We propose a total budget of about $19 million for the Residential Charging portfolio of customer programs over the three-year timeframe of the TEP. This is comprised of about $8 million in capital investments, $8 million in rebates, and $2 million in program management and O&M costs. Section IX of my testimony discusses more details and timelines of the proposed budgets.

Q. HOW DID YOU DETERMINE THE BUDGET FOR THIS PORTFOLIO?

A. The Company determined the budget for the Residential portfolio by forecasting EV adoption and estimating what participation we might expect for level 2 charging that we seek to support in the residential programs we propose here. This participation estimate is a mix of both demand for the programs as well as where limited investment dollars should be targeted, across portfolios, to have the biggest bang-for-the-buck in supporting transportation electrification at this early stage. With the vast majority of charging projected to occur at home and with large potential net benefits from personal light duty EV adoption[5] (especially under managed charging scenarios), Residential programs should be a critical piece of the overall investment strategy.

With target participation levels, we then fine-tuned the potential infrastructure and O&M costs of the program based on several sources. These sources included Requests for Proposals ("RFP") and discussions we have held with vendors in other states; service and technology costs we have encountered in our pilot experiences; and estimates of premises wiring, charging equipment, and O&M informed by our experiences managing pilots in other jurisdictions.

[5] See E3 analysis in Attachment SWW-7.

IV. MULTI-UNIT DWELLING PORTFOLIO

Q. PLEASE DECRIBE THE MUD PORTFOLIO.

A. The MUD portfolio of the TEP seeks to expand access to charging in apartment and condominium buildings, in much the same ways that single-family home customers rely on home charging. However, the obstacles that MUD residents can face to gaining access to EV charging can sometimes be more numerous or costly. These barriers can include awareness and technical knowledge of charging options, parking arrangements for charging, old electrical equipment, billing complexity between landlords and tenants, as well as more traditional upfront cost hurdles. Given these multi-faceted challenges, we propose a portfolio of five programs to help customers address the specific obstacles to charging that they face in ways that best match their needs.

Q. WHAT ARE THESE FIVE PROGRAMS?

A. We propose to work with the owners of apartment, condominium, and mixed-use buildings in our service territory who are interested in installing charging infrastructure. The five program offerings we propose are providing supply infrastructure in shared parking spaces (Shared Parking program), supply infrastructure and chargers for shared parking spaces (Shared Parking—Full Service program), chargers for personal parking spaces (Assigned Parking—Full Service program), a new construction rebate for buildings that prepare for EVs (New Construction Rebate program), and a rebate program specifically for buildings that serve larger shares of low-income residents (Low-Income Rebate program).

Q. WHAT REBATE LEVELS DO YOU PROPOSE AND HOW DID YOU DETERMINE THEM?

A. We propose a $2,000 rebate for new construction buildings that decide to exceed code requirements for EVs and rebates up to $800 for assigned parking and $2,200 for shared parking charging ports for low-income MUDs. We designed the new construction rebate to provide a clear but reasonable incentive for new buildings to prepare for additional EVs in the future and designed the low-income rebate to cover a significant portion of the expected costs of chargers.

Q. COULD YOU EXPLAIN HOW CUSTOMERS WILL PROCURE CHARGING EQUIPMENT?

A. For Shared Parking, MUD site hosts can opt to either acquire, install, and maintain their own charging equipment from the Company's pre-qualified list or they can have the Company acquire, install, own, and maintain the charging equipment for the term of the service agreement. For Assigned Parking, where the charging equipment is used for billing purposes, MUD site hosts can choose from a pre-qualified list and have the Company acquire, install, own, and maintain the charging equipment for the term of the service agreement.

Q. WHAT TYPE OF CHARGERS WILL BE USED AND HOW DOES THE COMPANY PROPOSE SELECTING THEM?

A. We believe it is important to preserve customer choice for charging throughout all market segments, including Multi-Unit Dwellings. We propose to allow site hosts to either purchase their own chargers from a Company pre-qualified list or select the Company's turn-key service, which will provide customers a select number of

options to choose from. The Company's pre-qualified chargers will have been tested and comply with applicable technical and safety standards, demonstrate interoperability, and meet cyber-security standards. In addition, the pre-qualified chargers will have smart charging capabilities.

Q. WHAT ARE THE ELGIBILITY REQUIREMENTS FOR THE MUD PORTFOLIO?

A. The Company proposes that eligibility for its MUD portfolio be dependent on a few criteria for site hosts, designed to maximize the benefits of the portfolio and specific programs. The specific eligibility requirements are detailed in the full TEP in Attachment KDS-1.

Q. WHY DID THE COMPANY CHOOSE THIS MODEL FOR THE MUD PORTFOLIO?

A. The Company reviewed MUD programs from other utilities across the country for best practices, spoke with several MUD owners and operators, spoke with experts, and relied on market research to determine the challenges and needs for EV charging in this market. This portfolio is designed to be responsive to this feedback and research and to be inclusive of all MUD types (apartments, condominiums, mixed-use), with additional support provided for buildings with a majority of low-income residents. The portfolio is designed to provide customer choice where possible (e.g. customer owned vs. utility owned chargers, and choice among a number of Company-approved chargers).

Q. WHAT CHARGING RATES AND PROGRAMS WILL CUSTOMERS HAVE FOR THE MUD PROGRAMS?

A. The Company proposes that customers participating in the Assigned Parking—Full-Service program participate in either a time-based rate and/or one of the Company's charging optimization programs. For MUD site hosts choosing the shared parking program, the Company will require them to take service under an approved commercial rate, which incorporates a time-varying rate. Importantly, participating multi-unit buildings in the shared parking programs will have the ability to set charging rates and parameters, as each customer will have different needs and constraints.

Q. HOW DOES THE COMPANY PLAN TO MEASURE PARTICIPATING CUSTOMERS' ENERGY USAGE FOR THE MUD ASSIGNED PARKING PROGRAM?

A. The Company plans to use the EV charger assigned to a participating customer's parking space to measure that customer's energy usage and then bill the customer. The Company is requesting that the Commission approve this proposed approach to billing in the MUD Assigned Parking—Full-Service program under Schedule EVC and find that the Commission's rules concerning meter-based measurement requirements do not apply in this instance.

We propose this approach because it will be more cost effective for customers for us to measure each participating customer's energy usage through the EV charger we are already providing to serve that customer's parking space than to procure and install a separate meter for each parking space, now and in the future.

Q. DO DATA PRIVACY CONCERNS ALSO FACTOR INTO THIS SPECIFIC BILLING PROPOSAL?

A. Yes. I support the Company's request that the Commission not apply rules providing customer access to meter-related data and ensuring the accuracy of meters to participants in the Assigned Parking—Full-Service program because these rules cannot be readily applied when a customer is not billed for meter-recorded energy usage. Providing access to customer energy usage data aggregated through a shared meter could undermine the protection of other customers' energy usage data in violation of the 15/15 rule.[6] Because these customers would not be billed for their meter-recorded energy usage and would be given complete access to their charger-recorded energy usage, having access to meter-related energy usage information or the right to challenge meter accuracy would not serve a useful purpose for these customers. The Company believes the Commission's meter-based measurement and billing requirements should still apply to its relationship with the property owner or site host being billed for residual energy usage because the property owner or site host would be billed based in part on meter-recorded usage.

Q. HOW WILL THE COMPANY ENSURE THAT THE EV CHARGERS CAN ACCURATELY MEASURE CUSTOMERS' ENERGY USAGE?

A. Public Service will only pre-qualify EV chargers that have a strong track record of accurately measuring energy usage timing and amounts. Public Service will provide participating customers complete access to their energy usage data as

[6] *See* Commission Rule 3033 (b), 4 CCR 723-3.

measured by the EV charger and will agree to work with participating customers and EV charger manufacturers to ensure billing accuracy and to resolve any potential concerns about the accuracy of EV chargers in a mutually agreeable manner.

Furthermore, as explained in Schedule EVC, the meter installed at the multi-unit dwelling that would serve the individually assigned chargers would be used to determine the relatively small difference between the energy usage recorded on the meter and the energy recorded through the collective EV chargers. Any residual amount would be billed to the property owner or site host based on one of the residential rates under which the individual EV drivers take service.

Q. WHAT ARE THE BENEFITS OF THE MUD PORTFOLIO AS PART OF THE TEP PROGRAM?

A. Like other portfolios in the TEP, we see several benefits to the MUD programs we propose here. These benefits include increasing access to charging in MUD by reducing costs and complexity, reducing inadequate or unsafe charging in MUD, reducing the need for unmanaged public DCFC charging that would likely fill the gaps left by lower availability of MUD charging, and increasing the numbers of customers participating in load management programs that seek to reduce system operating costs.

Q. WHAT IS THE INVESTMENT PROPOSED FOR THE MUD PORTFOLIO?

A. We propose a total budget of about $8 million for the MUD portfolio of customer programs over the three-year timeframe of the TEP. This is comprised of about

$6.5 million in capital investments, $1 million in rebates, and about $0.5 million in program management and O&M costs. Section IX of my testimony discusses more details and timelines of the proposed budgets.

Q. HOW DID YOU DETERMINE THE BUDGET FOR THIS PORTFOLIO?

A. Given the unique barriers that our customers in MUDs face in gaining access to vehicle charging, we believe that a focus on MUDs has to be an important priority in the Company's efforts to help unlock transportation electrification for personal Light Duty EVs ("LD EV"). This is further reinforced in light of the more urban communities of Denver and Boulder that we serve in Colorado.

Similar to our approach to developing the Residential portfolio budget, we forecasted likely costs based on our estimated MUD participants. In doing so, we relied on our experience running similar programs or RFPs in the Public Service and NSPM service territories, RFPs and conversations with charging equipment suppliers to understand hardware and software costs, cost ranges informed by analysis conducted by Guidehouse, and the costs other utilities have incurred for EV supply infrastructure and charging equipment for MUDs.

V. COMMERCIAL PORTFOLIO

Q. PLEASE DESCRIBE THE COMMERCIAL PORTFOLIO.

A. The Commercial portfolio of the TEP aims to expand access to charging beyond the home by directing targeted investments to commercial market segments. This portfolio focuses on increasing awareness and access to information, increasing access to charging, and reducing the upfront costs of charging infrastructure in commercial settings.

Q. WHAT ARE THE TARGET MARKETS FOR THE COMMERCIAL PORTFOLIO?

A. The Commercial portfolio seeks to focus it charging investments and services on workplaces, commercial fleets, and public sites. The Company proposes seven distinct programs within the Commercial Charging portfolio:

1. A Fleet and Workplace program to reduce infrastructure costs;
2. A Fleet and Workplace—Optional Charger Service program for providing level 2 charging;
3. A Fleet and Workplace—Low-Income program to further reduce costs for low-income customers;
4. A Community Charging Hubs program;
5. A Community Charging Hubs—Low-Income program specific for low-income communities;
6. A Public DCFC charging program for corridors; and
7. A limited Xcel Energy Public DCFC program to expand access to public charging.

Q. WHAT REBATE LEVELS DO YOU PROPOSE FOR THE LOW-INCOME FLEET AND WORKPLACE PROGRAM AND FOR LOW-INCOME COMMUNITY HUBS, AND HOW DID YOU DETERMINE THEM?

A. We propose rebates that range from up to $2,200 for level 2 charging and up to $45,000 for fast charging for the Fleet and Workplace—Low-Income program, and from up to $15,000 to $40,000 (depending on the site specifics) for the Community Charging Hubs—Low-Income program that help provide access to charging and e-mobility in low-income communities. We designed these low-income rebates to cover a significant portion of the expected costs of level 2 and DCFC chargers, depending on the needs of customers.

Q. WHAT ARE THE ELIGIBILITY REQUIREMENTS FOR THE COMMERCIAL PORTFOLIO?

A. Similar to our Residential and Multi-Unit Dwelling portfolios, the Company hopes to make the programs in the Commercial Charging portfolio as widely available as possible. The specific eligibility requirements for commercial customers in our proposed programs are detailed in Attachment KDS-1.

Q. WHAT IS THE PROCESS FOR ENROLLMENT?

A. Similar to the process that the Company and stakeholders recently agreed to in a settlement agreement for the EV Supply Infrastructure proceeding (Proceeding No. 19A-0471E), the Company intends to encourage customers to apply for the programs offered. The Company will then evaluate commercial customer applications and select the projects based on pre-determined criteria that will be clearly defined and communicated.

Q. HOW WILL THE COMPANY EVALUATE CUSTOMER APPLICATIONS FOR THE FLEET, WORKPLACE, AND PUBLIC CHARGING PROGRAMS?

A. The Company proposes to evaluate customer applications according to the same criteria that Colorado lawmakers directed the Commission to consider when evaluating TEPs, as outlined in the Senate Bill 19-077 ("SB 19-077"). These criteria include whether programs are reasonably expected to improve the use of the grid and renewable energy, increase the use of electricity as a transportation fuel, to ensure system safety and reliability, to contribute to meeting air quality standards, to stimulate innovation and customer choice, and provide access to low-income customers, among other criteria.

Q. COULD YOU EXPLAIN HOW CUSTOMERS WILL PROCURE CHARGING EQUIPMENT?

A. As is the case across our TEP portfolios, we believe that providing choice enables our customers to select the options that best fit their unique needs – and chargers are no exception. We propose allowing commercial customers to acquire and maintain their own chargers that comply with applicable safety standards and have charging optimization capabilities from a pre-qualified list. The Company will also offer to install, own, and maintain chargers that customers choose from a select number of chargers from the pre-qualified list if customers choose that option.

Q. WHAT TYPE OF CHARGERS WILL BE USED AND HOW DOES THE COMPANY PROPOSE SELECTING THEM?

A. Customers will be able to select chargers that best fit their preferences. The Company will provide a list of pre-qualified level 2 for fleets and workplaces that comply with the Company's safety and smart charging requirements. For Xcel Energy-owned DCFC charging stations, we intend to work with multiple vendors, though we will seek to ensure that stations comply with the specifications of the Charge Ahead Colorado program as well as any additional Company technical and safety requirements.

Q. IN WHAT CIRCUMSTANCES WOULD THE COMPANY SEEK TO OWN AND OPERATE PUBLIC CHARGING STATIONS?

A. We propose a limited program in which the Company would own and operate a small number of public charging stations to support areas that the competitive market may not serve. There is a gap between the number of public fast charging stations available today and the number needed to support intracommunity transportation in higher EV adoption scenarios, particularly for underserved communities. After soliciting and evaluating applications for the proposed Public DCFC program for EV supply infrastructure in the TEP, the Company would then determine whether those projects provide sufficient coverage throughout the service territory. If not, then the Company proposes to install, own, and operate a limited number of chargers to cover the gaps.

Q. HOW DOES THE COMPANY PROPOSE TO STRUCTURE PRICING FOR PUBLIC CHARGING STATIONS THAT THE COMPANY OWNS AND OPERATES?

A. For public Company charging stations, we propose a new charging rate modeled off the S-EV commercial charging rate. The stations would charge a standard rate per minute during most hours and a much higher Critical Peak Pricing (CPP) rate during the limited number of hours a year of high system-wide demand. Please see the Direct Testimony of Company witness Steven Wishart for more details of the proposed rate.

Q. WHAT CHARGING RATE OPTIONS WILL CUSTOMERS HAVE IN THE COMMERCIAL PORTFOLIO?

A. Commercial customers will be able to take service under any Commission-approved commercial rate. These rate options include the Secondary General ("SG") rate, the SG Low Load Factor ("SGL") rate, the SG Critical Peak Pricing ("SG-CPP") rate, and the Secondary Voltage Time-of-Use- Electric Vehicle ("S-EV") rate. We also propose a new DCFC rate discussed above for Xcel Energy owned and operated fast charging stations. Importantly, these rates all promote off-peak charging and the efficient use of the grid.

Q. DOES XCEL ENERGY HAVE EXPERIENCE MANAGING THIS TYPE OF INITIATIVE IN ITS OTHER SERVICE TERRITORIES?

A. Yes, as discussed previously NSPM (Xcel Energy's Minnesota operating utility) has experience managing residential and commercial EV programs in Minnesota.

Q. WHAT ARE THE BENEFITS OF THE COMMERCIAL PORTFOLIO AS PART OF THE TEP?

A. We anticipate several benefits to program participants, electric customers throughout our territory, and the state of Colorado from the programs we propose

here as part of the Commercial Charging portfolio. Specifically, we expect benefits from increasing access to charging by reducing upfront barriers for a diverse set of commercial customers, reducing peak load from EVs, reducing system costs by seeking to shift charging to lower-cost hours, and increasing awareness and customer engagement on the benefits to them of transportation electrification.

Q. WHAT IS THE INVESTMENT PROPOSED FOR THE FLEETS, WORKPLACE AND PUBLIC CHARGING PORTFOLIO?

A. We propose a total budget of about $48 million for the Commercial Charging portfolio of customer programs over the three-year timeframe of the TEP. This is comprised of about $41 million in capital investments, $6 million in capitalized rebates, and $2 million in program management and O&M costs. Section IX of my testimony discusses more details and timelines of the proposed budgets.

Q. HOW DID YOU DETERMINE THE BUDGET FOR THIS PORTFOLIO?

A. While the majority of EV adoption and charging will take place in the residential sector, there is a critical need to support workplace and public charging to enable widespread EV adoption and to support fleet electrification. In recognition of the sizable upfront cost barriers to commercial charging yet ratepayers and societal benefits that exceed residential EVs in light of higher utilization[7], we propose to direct about $50 million toward our Commercial charging programs. We developed the cost estimates for these programs by relying on our experience in

[7] See Attachment SWW-7, E3, "Benefit Cost Analysis of Transportation Electrification in the Xcel Energy Colorado Service Territory."

RFP processes, site visits, and information from analysis provided by Guidehouse.

VI. RESEARCH, INNOVATION, AND PARTNERSHIPS

Q. PLEASE DESCRIBE THE RESEARCH, INNOVATION, AND PARTNERSHIPS PORTFOLIO.

A. We propose this portfolio as a means to bring forward innovative pilots and projects to stakeholders throughout the course of the TEP. The goals of these pilots and projects would reflect those of the entire TEP – namely, expanding access to electricity as a transportation fuel, minimizing system costs of charging, and increasing the environmental benefits of electric transportation. In addition, these Research, Innovation, and Partnerships (RIP) pilots would also seek to inform future TEPs by testing technologies or approaches that may be less certain but which hold the potential to further increased benefits for customers in the future. Given the nascent state of some of the hardware, software, and real-world applications in the marketplace for transportation electrification, research will be critical. Testing innovative approaches allows the Company, interested stakeholders, and our customers to better understand the programs that can best maximize benefits in the future.

Q. WHAT TYPES OF RESEARCH PROJECTS AND INNOVATION PILOTS IS THE COMPANY CONSIDERING BRINGING FORWARD?

A. We have begun to consider a few pilots that could be well suited for the proposed RIP portfolio.

One such project is an electric school bus grant program, in which we propose to make grant funding available for school districts throughout our service territory to help overcome the upfront cost barriers to acquiring electric

school buses. This program, however, would be unique in the TEP in that it would have its own source of dedicated funding, totaling roughly $2.2 million, that is distinct from the budgets and revenue requirements developed for the TEP portfolios. Company witness Jack Ihle discusses the source of this funding in more detail.

Other potential RIPs include a vehicle-to-grid (V2G) demonstration project to test current vehicle and software technologies and potential grid applications that maximize value to customers, and a battery project in which the Company would assess how on-site batteries installed at public DCFC sites could help reduce operating costs and grid impacts. The TEP document, included as Attachment KDS-1, provides additional details regarding potential research and innovation projects we may bring forward.

Q. WHAT OTHER FINDINGS IN THE RESEARCH AND INNOVATION AREAS WOULD BE USEFUL TO THE COMPANY AND OUR CUSTOMERS?

A. On the residential customer side, EV chargers can draw two to three times more power than other appliances in the home, and it is important to understand the impacts of this additional load on the edge of the distribution system. In addition, there may be less diversity with EV charging (i.e. tighter typical usage periods) and more active management, such as charging optimization, can reduce impacts at any given time, effectively increasing the amount of EVs that can be accommodated without requiring system upgrades. We have proposed some projects that would allow additional technical analysis, which can then be used to inform our policies, planning and design criteria, to efficiently expand EV

charging on a shared secondary service. One example described in the TEP is a small study that would create a test bed with additional monitoring capabilities that would examine EV impacts under various charging scenarios and equipment types. Another example we discuss in the TEP involves building capabilities to easily identify the presence of EVs in a particular location so that we can examine and predict future impacts. This could also be combined with a more proactive charging optimization scenario that modifies charging to reduce grid impacts. These types of measures could integrate higher levels of EV penetration more efficiently.

Q. WHAT IS THE PROPOSED PROCESS FOR BRINGING FORWARD RESEARCH PROJECTS AND INNOVATION PILOTS DURING THE PLAN PERIOD?

A. We propose the same process for implementing new innovation projects as the process for submitting changes to the TEP portfolio of programs. Under that process, as outlined in the TEP document in Attachment KDS-1, the Company would submit a 60-day notice to all interested stakeholders about the new addition, allowing 30 days for comments and then another 30 day for good faith consideration of all stakeholder feedback. This process is consistent with how the Company brings forward new programs in the context of annual DSM plans.

Q. WHAT ARE THE OBJECTIVES FOR THE RESEARCH, INNOVATION, AND PARTNERSHIPS PORTFOLIO?

A. Like all portfolios in the TEP, we propose this RIP portfolio to broaden access to electricity as a transportation fuel and minimize system costs from vehicle

charging. However, the RIP portfolio also serves an important additional function: to inform future TEPs by testing new innovative ideas, technologies, and grid applications.

Q. WHAT ARE THE BENEFITS OF THE RESEARCH, INNOVATION, AND PARTNERSHIPS PORTFOLIO AS PART OF THE TEP?

A. Simply put – ensuring that our TEP maximizes overall benefits and minimizes overall costs will require investment in Research, Innovation, and Partnerships. While the Company has expertise in planning and managing the distribution grid – focused research in this area (and perhaps others) is warranted given the scale of vehicle charging that could come in the future and that we seek to support in this TEP. Further, while the Company has well-formed ideas regarding utility program design and can benchmark other efforts – a focus on innovation will ensure we help Colorado communities identify and adopt leading practices. Finally, we know that utilities are but one critical player in the future EV ecosystem – so cultivating partnerships with other market actors will be important to unlock the potential of transportation electrification.

Q. HOW DID YOU DETERMINE THE BUDGET FOR THIS INITIATIVE?

A. We believe that these first iterations of Company TEPs over the next several years should have a relatively larger share of RIP funding at this early stage of the market. We expect that as the market matures, there will be relatively less need for robust research funding and that the share of this funding will decline in future TEPs. However, there will always be an important role for continuous research and experimentation. We have budgeted $12 million, including about

$2.2 million for an electric school bus program, over three years to support RIP projects. We believe these amounts, split between rebates and O&M costs, will provide strong opportunities to experiment with new technologies and grid applications while also balancing cost considerations.

Q. PLEASE DESCRIBE THE COMPANY'S PROPOSAL TO ACCELERATE THE ADOPTION OF EV SCHOOL BUSES.

A. EV school buses are an area of strong interest based on input we have received in stakeholder processes and communications with municipalities, school districts and advocates. The interest stems partly from the desire to reduce children's exposure to emissions from diesel buses. To explore this opportunity, the Company wishes to dedicate $2.2 million in funding to assist schools in implementing electric school buses. As described by Company witness Jack Ihle, the Company is providing these funds from a unique source – proceeds from a combination of earlier sales of RECs and proceeds from purchases and sales of carbon offsets the Company undertook several years ago. The Company will seek to leverage or multiply these funds by synchronizing with other funding sources and recruiting other private or philanthropic sources of capital to expand the reach of the program. Finally, the project would explore the operational capabilities of these new vehicles and evaluate options for reducing the ongoing cost of fueling. The Company anticipates use of RIP portfolio funds for this portion of the project.

Q. IS THE COMPANY REQUESTING PERMISSION TO PROCEED WITH THIS PROJECT THROUGH THIS APPLICATION?

A. No. Just like the other RIP projects, we anticipate spending more time with stakeholders, customers, and others in the industry to bring forward a formal proposal in 2021 through the mechanisms described in our TEP and application.

VII. ADVISORY SERVICES

Q. PLEASE DESCRIBE THE ADVISORY SERVICES PORTFOLIO.

A. As part of the TEP, we propose an Advisory Services portfolio in order to ramp up our ability to support planning efforts, education campaigns on the benefits of EVs, and outreach on TEP portfolios and programs that the Commission authorizes.

Q. WHAT ARE THE TARGET MARKETS FOR ADVISORY SERVICES?

A. We will offer these Advisory Services to three market segments: residential and MUD customers, commercial customers, and communities.

Q. WHAT EXPERIENCE DOES THE COMPANY HAVE OFFERING ADVISORY SERVICES?

A. The Company has a long history of providing high quality customer support and energy advice to multiple market segments.

For residential customers, the Company has promoted the benefits of EVs through the online EV advisor tool, established partnerships with auto dealers and other trade allies, hosted EV drive events, and relied on many more communication channels to engage customers and educate around EVs. For communities, we will be leveraging the experience and expertise developed through our Partners in Energy program, where we have supported the development and implementation of energy action plans for over 25 communities in Colorado since 2014. For commercial charging, we will leverage our experience managing a pilot offering fleet assessments to customers and continued engagement advising on EV Supply Infrastructure. Furthermore,

NSPM has supported residential and commercial EV advisory activities, which we will continue to adopt and build on here in Colorado.

The Advisory Services portfolio we propose seeks to broaden and deepen these efforts across all customer segments. In addition, our experience implementing and running successful DSM plans, with dozens of product and service offerings, has helped us develop expertise in running education campaigns and raising awareness about program offerings.

Q. WHAT ARE THE BENEFITS OF THE ADVISORY SERVICES PORTFOLIO AS PART OF THE TEP?

A. By engaging more directly with multiple customer segments through our Advisory Services programs, we hope to increase awareness and decrease the educational barriers to greater EV adoption. With 68 percent of national consumers stating that they have no experience with EVs[8] and with the lack of familiarity with charging technology, electric rate options, and where to go for trusted information, increased Company engagement with customers can help unlock more interest in personal light duty EVs, electric fleets, and electric mobility options.

Q. HOW DID YOU DETERMINE THE BUDGET FOR THIS PORTFOLIO?

A. In light of barriers to EV adoption that stem from lack of awareness and lack resources to consider and plan for EVs, an investment in Advisory Services serves as a complement to the charging programs we propose across our other TEP portfolios. The need for a robust Advisory Services portfolio is necessary at

[8] 2019 JD Edwards national survey, sample of 5,000 consumers.

this early stage in the market. As a result, we crafted our budget to be able to offer tailored solutions to residential customers, commercial customers, and communities. These solutions include hands-on electric driving events, enhanced digital tools to help customers navigate vehicle and charging options based on their needs and preferences, advertising campaigns, on-site information at key EV auto dealers, and an expansion of commercial and community outreach to support assessments and planning for EVs and associated charging. Our experience operating these types of programs across Xcel Energy's operating companies in recent years has informed us of the likely costs involved to run these programs at scale in Colorado.

VIII. SUPPORTING LOW-INCOME CUSTOMERS AND COMMUNITIES

Q. PLEASE DESCRIBE HOW THE TEP WILL SUPPORT LOW INCOME CUSTOMERS AND COMMUNITIES.

A. Designing programs and services that seek to expand access to electricity as a transportation fuel has been our focus throughout the development of this TEP. However, expanding access to charging means not only focusing on programs for single family homes, workplaces, fleets, and public charging sites but on the unique needs of customers in each one of those market segments. In each of our proposed portfolios, we propose specific rebates and services for our customers and communities who have fewer resources and who might otherwise not have access to the benefits of electric transportation.

Q. WHAT SPECIFIC CHARGING PROGRAMS DOES THE COMPANY PROPOSE FOR LOW-INCOME CUSTOMERS?

A. We propose to incorporate low-income programs and services throughout our TEP portfolio. Specifically, we propose:

1. Enhanced rebates on the cost of wiring and chargers for level 2 charging in low-income single-family homes;
2. Rebates for charging stations for MUDs that serve larger shares of low-income customers;
3. Rebates for charging stations for fleets and workplaces that support low-income communities;

4. Support for Community Charging Hubs, where the Company can help defray the costs of chargers and support electrification for ride-hailing, electric car-sharing services, and electric micro-mobility services; and

5. Advisory Services, offered in both English and Spanish and free of charge, tailored to the specific needs of low-income communities and organizations that serve those communities.

The details on eligibility requirements for our low-income programs are provided in the full TEP in Attachment KDS-1.

Q. WHAT BENEFITS DO YOU ANTICIPATE THESE PROGRAMS WILL PROVIDE?

A. The programs we propose specifically for low-income customers and communities are intended to help address the cost and awareness barriers to electric transportation options and air-quality challenges from conventional vehicles. The Company believes it is important to note that low-income customers and other market segments alike face these same challenges, though often each in their own ways. By tailoring our approach to our low-income customers via larger rebates, partnerships with organizations and communities to help us identify the investments and/or programs they need, and installing infrastructure where there are gaps, we seek to improve the equity of access to the benefits of transportation electrification. These benefits include access to lower cost transportation after accounting for fuel and maintenance costs and cleaner air. While poor air quality affects the health of all the communities we serve in Colorado, it is the Company's understanding that there is a strong

relationship between the harmful environmental impacts of conventional vehicle travel and low-income communities. We hope to spur market development in EVs for both low-income communities and communities affected by poor air quality, particularly when they overlap.

Q. WHAT IS THE BUDGET PROPOSED FOR PROGRAMS FOCUSED ON SERVING OUR LOW-INCOME CUSTOMERS?

A. Across all the portfolios we propose as part of the TEP, low-income customer programs account for about $16 million over the three-year period, or about 16 percent of the total budget.

Q. HOW DID YOU DETERMINE THE BUDGET FOR THIS INITIATIVE?

A. Because of the importance of expanding access to electricity as a transportation fuel, directing a notable portion of our budget to programs tailored to lower-income customers and communities naturally follows. In determining the specific budgets for low-income programs throughout our portfolios, we assessed the participants we might see in those programs and the costs those participation levels would generate. By offering more expansive rebates for wiring and charging equipment compared to our other customer groups, the costs of our low-income programs are larger on a per customer and per charger basis.

IX. BUDGETS, FLEXIBILITY, AND ADMINISTRATIVE COSTS

Q. WHAT IS THE OVERALL PROPOSED INVESTMENT AND EXPENSE BUDGET OF THE TEP?

A. The Company proposes a budget of about $102 million over the three-year timeframe of the TEP, including funding for the proposed school bus electrification project. The Company proposes a spending and investment schedule that increases gradually each year as program implementation, customer awareness, and overall EV adoption increase. Table KDS-D-2 below breaks down the anticipated capital investments and O&M costs each year.

Table KDS-D-2: Capital Investments and Program Costs in the TEP ($, millions)

	2021	2022	2023	Total
Capital	$11.46	$17.31	$26.54	$55.31
Rebates	$5.38	$7.17	$10.16	$22.71
O&M	$6.69	$7.29	$7.98	$21.95
Sub-Total	**$23.52**	**$31.76**	**$44.69**	**$99.97**
School Bus Project	$0	$2.2	$0	$2.2
Total	**$23.52**	**$33.96**	**$44.69**	**$102.17**

Source: Attachment KDS-1.

Q. HOW WERE THESE BUDGETS CREATED?

A. The Company created these budgets with the intent of matching its investments to the portfolios and programs where those limited resources would have the greatest impact on helping the state reach its aggressive but achievable goals for transportation electrification. Those goals include reaching 940,000 EVs on the road by 2030, increasing access to electricity as a transportation fuel for underserved communities, and improving the efficiency and flexibility of the electric grid, among other statutory goals established in SB 19-077.

Q. WHAT IS THE BREAKDOWN OF PROPOSED PORTFOLIOS AND ADMINISTRATIVE COSTS?

A. As discussed in previous sections, we propose a portfolio of plans as part of our entire TEP proposal. Most portfolios contain a mix of proposed infrastructure investment, rebate, and program administration costs, except for Advisory Services and Evaluation which only contain rebates and administrative costs. In Table KDS-D-3 below, I summarize the investments and costs associated with each of the proposed portfolios.

Table KDS-D-3: Proposed TEP Budget by Portfolio ($, millions)

	2021	2022	2023	Total
Residential	$4.24	$5.27	$9.14	$18.65
Multi-Unit Dwellings	$1.71	$2.51	$4.07	$8.29
Commercial	$9.97	$15.67	$22.79	$48.43
Advisory Services	$3.77	$4.48	$4.86	$13.10
Research, Innovation, and Partnerships	$3.33	$5.53	$3.33	$12.20
Evaluation	$0.50	$0.50	$0.50	$1.50
Total	**$23.52**	**$33.96**	**$44.69**	**$102.17**

Source: See Attachment KDS-1.

Q. DO YOU EXPECT TO SPEND EXACTLY THIS AMOUNT OF MONEY?

A. No. The actual amounts of investment and administrative costs for each year are expected to differ from the Company's proposed budgets given the difficulty in forecasting the timing and magnitude of customer demand for the programs and services proposed in this TEP. This is especially true given the uncertainty of the pandemic's duration and impacts.

Q. DOES THE COMPANY'S PROPOSAL INCLUDE THE FLEXIBILITY TO MOVE FUNDS WITHIN A SPECIFIC PORTFOLIO?

A. Yes, the Company requests budget flexibility on a programmatic level. This is similar to the process that the Commission has authorized the Company to follow for its DSM programs, whereby the Commission establishes a budget and identifies core areas for the Company to focus on and/or budget minimums for certain topics but leaves the specific product and service offerings and their design to the Company.[9] For the TEP, we request the ability to move funds within portfolios to best match the demands of our customers and the market.

Q. DOES THE COMPANY'S PROPOSAL INCLUDE THE FLEXIBILITY TO MOVE FUNDS BETWEEN PORTFOLIOS?

A. Yes, the Company also requests the flexibility to adjust the allocation of spending across portfolios, but with each portfolio subject to a cap of 150 percent of the estimated costs within a calendar year. Again, given the uncertainty surrounding the timing and magnitude of customer demand across market segments for the particular programs and service we propose to offer in the TEP, especially in light of the COVID-19 pandemic, the Company proposes portfolio flexibility in order to adapt in real-time to the needs of customers. Furthermore, the market costs for EV supply infrastructure, charging equipment, and labor may differ from our forecasts for each product and overall portfolio. The ability to speed up or delay particular programs in light of these factors will help the Company implement the proposed TEP in a way that best promotes the transportation electrification goals of the state.

[9] See Decision No. C18-0417 and "Corrected Non-Unanimous Comprehensive Settlement Agreement", Sections B and L, in Proceeding No. 17A-0462EG.

Q. DOES THE COMPANY'S PROPOSAL INCLUDE FLEXIBILITY TO INCREASE OR DECREASE THE OVERALL BUDGET IF CONDITIONS WARRANT IT?

A. Yes. Similar to the Commission-approved process for the Company's DSM plans, the Company requests flexibility regarding the overall budget for each year of the proposed TEP. The Company proposes budget flexibility up to 125 percent of the forecasted budget for each year, continuing the precedent established in the Commission-approved process for Company DSM plans to have the presumption of prudence for costs incurred up to reasonable amounts above budgeted levels. As a result, while a particular portfolio within the TEP would have to remain within 150 percent of its forecasted budget, the Company proposes a more limited annual cap for each year of the TEP.

It is also important to highlight the need for having flexibility to decrease the overall budget over the course of the three-year timeframe for the same reasons. Especially in light of uncertainties regarding the duration and impacts of the COVID-19 pandemic, we propose to retain flexibility to reduce the total amount of rebates, investments, and program administration costs directed to TEP programs should conditions warrant it.

X. PERFORMANCE INCENTIVE MECHANISMS FOR ELECTRIC VEHICLES

Q. PLEASE DESCRIBE THE PIMS THAT THE COMPANY PROPOSES FOR THIS TEP.

A. SB 19-077 expressly provides that the rates and charges for services provided by a TEP may allow performance-based incentive returns or similar investment incentives.[10] As Company witness Jack Ihle discusses, the Company is proposing two limited-scope PIMs as part of our TEP for Commission and stakeholder consideration.

The Company believes that any PIM should first fall within the broad categories of "public benefit goals" that Senate Bill 19-236 and the Commission have outlined. These goals include safety, reliability, cost efficiency, emissions reductions, expansion of distributed energy resources, and customer service. As part of this TEP, we propose two PIMs to focus on providing a high-quality customer experience and cost efficiency. We propose the specific metrics be based upon the following:

1. Customer experience: The Customer Effort Score (CES) for residential customers participating in one of our TEP programs, and
2. Cost efficiency: the percentage of LD EVs in the Company's electric service territory participating in some form of managed charging.

[10] Other recent legislation in Colorado has directed the Colorado Commission to investigate financial performance incentives as options to help align "utility operations, expenditures, and investments with various public benefit goals…." *See* C.R.S. § 40-3-117. As a result, the Commission has initiated a process to study how performance incentives could help align utility operations and investments with "safety, reliability, cost efficiency, emissions reductions, and expansion of distributed energy resources", along with the "quality of customer service". *See* Decision No. C19-0969, paragraph 13, Proceeding No. 19M-0661EG.

We propose that the Company be eligible for any reward from the customer experience PIM annually, whereas eligibility for the cost efficiency PIM would occur once at the end of the three-year TEP timeframe.

Q. WHAT ARE THE BENEFITS OF THE PIMS TO THE TEP AND TO COLORADO'S PUBLIC POLICY GOALS?

A. As Mr. Ihle discusses, well-designed PIMs have the potential to encourage strong or exceptional performance on metrics that the Commission deems important for achieving the goals of the Company's TEP and ensuring alignment of the TEP with the state's overall policy goals for transportation electrification. Given that transportation electrification offers several benefits to direct TEP program participants, to electric customers, and to the state of Colorado, PIMs are an opportunity to help further align public and utility interests. Since this is the first TEP that the Company will implement, we thought it was appropriate to focus proposed PIMs on the public benefit goals of customer satisfaction and cost efficiency. Metrics related to these public benefit goals will assist in measuring the acceptance and effectiveness of the Company's actions to promote transportation electrification. They also align with the Company's corporate objectives to lead the clean energy transition, enhance the customer experience, and keep bills low.

Q. HOW DID THE COMPANY DETERMINE THE STRUCTURE OF THE EV PIMS?

A. The Company sought to achieve the following design principles when determining the structure of the two EV PIMs:

1. Clearly relate the PIMs to established policy goals;

2. Ensure the metrics are clearly defined, able to be quantified using reasonably available data, and sufficiently objective and free from external influences;
3. Ensure the metrics are easily interpreted, verified, and inform evaluation of utility performance; and
4. Be limited in scope in this first iteration of the Company's TEP.

The Company also established two key goals for selected PIMs:

1. Provide an additional incentive for the Company to achieve strong results on key metrics in order to further achieve the selected public benefit goals; and
2. Reasonably balance risks and rewards for the Company and our customers.

Q. ARE THE DESIGN CRITERIA, GOALS, AND ASSOCIATED REWARDS FOR THE COMPANY REASONABLE AND WELL-CALIBRATED?

A. Yes. We designed these specific PIMs to be quite modest in order adhere to the design criteria and to best achieve the goals described above. By not creating overly complex or risky PIMs for either the Company or for customers at this first stage, we hope to build collective comfort, for all parties involved, on the use of performance-based incentives related to EV program implementation. The proposed incentives would range between $0 and $1.5 million for the cost efficiency PIM and $0 and $1.5 million for the customer experience PIM. Achieving the higher end of the awarded incentives would require exceptional performance.

Q. WHY ARE INCENTIVE-ONLY PIMS WARRANTED IN THIS FIRST TEP?

A. This TEP brings forward programs and areas of investment that are new for the state of Colorado. These new programs also provide the Company the opportunity to expand on the work we have begun both here in Colorado and in other jurisdictions to support transportation electrification. This will all require innovation, flexibility, and new coordination with third parties. Incentive-only PIMs are well suited for this type of environment, and SB 19-077 expressly mentions incentives as an option to consider as part of utility TEPs.

Specifically, on the customer service front, if the Company falls short on implementing TEP programs that promote a positive customer experience and are easy for customers to navigate, then the Company will already face negative impacts to its reputation and from reduced demand for TEP programs. This would naturally lead to fewer investment opportunities and revenue potential in the future. Furthermore, on the cost efficiency front, an incentive-only PIM can better reflect the underlying relationship with public benefit goals, when stronger utility performance is directly aligned with increasing societal value.

Q. HOW DOES THE COMPANY PROPOSE TO RECOVER ANY PERFORMANCE DOLLARS AWARDED?

A. We propose to bring forward information on the Company's performance on the two PIMs from the previous year or previous three years, depending on the frequency of the specific PIM, as part of the comprehensive annual April filing. If the Company succeeds in achieving strong or exceptional performance on one or both PIMs, we propose that any incentive amounts be added to the true-up

amounts for the Customer Program Costs Adjustment rider for any given year, to be implemented in July subject to Commission review and approval.

A. Customer Experience PIM

Q. PLEASE DESCRIBE HOW THE COMPANY WOULD MEASURE CUSTOMER SERVICE.

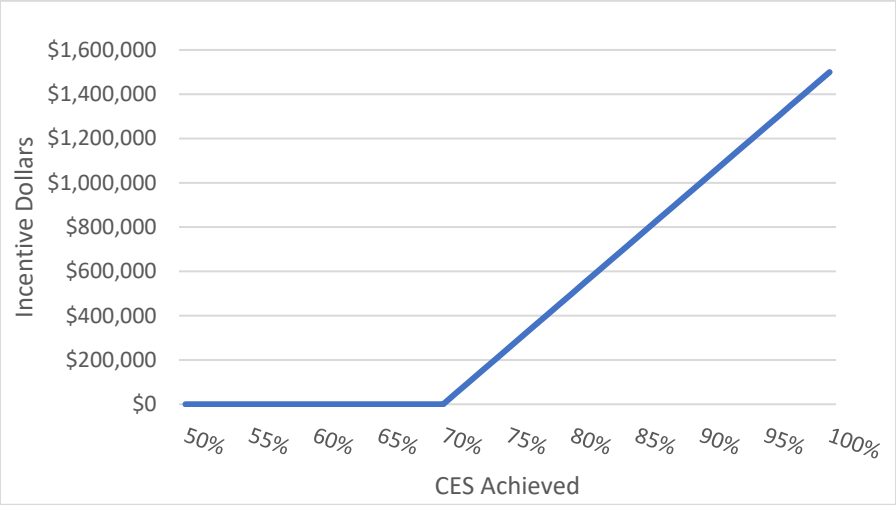
A. We propose to measure the quality of customer service based on the CES of residential customers participating in our TEP programs. The CES is a widely-used industry metric to assess the ease with which customers report being able to navigate a program or receive a service. We plan on automatically surveying customers as they move through one of the TEP programs. We propose to restrict the focus to residential customers only given the potential challenge in receiving sufficient survey results from a more limited group of commercial customers participating in TEP programs.

Q. WHAT LEVEL WOULD THE COMPANY HAVE TO ACHIEVE ON THE CUSTOMER SERVICE METRIC TO BE ELIGIBLE FOR A REWARD?

A. We propose benchmarking the CES from TEP programs to CES results the Company has received recently for some of its residential renewable programs, such as solar rewards. Like our proposed TEP programs, renewable programs can also involve more time intensive and multi-step processes for customers, and thus are more appropriate for comparison than some of the Company's other energy efficiency programs and services. Those results averaged 71.7 percent in December 2019 and 74.0 percent in Q1 2020. We propose that the Company would become eligible for a performance incentive at levels above 70 percent

and have the financial reward grow linearly through 100 percent to encourage ever-higher levels of achievement. An illustration of the incentive structure is shown below in Figure KDS-D-1.

Figure KDS-D-1: Incentive Dollars at Each CES Level Achieved



Q. CAN YOU PLEASE EXPLAIN HOW THE INCENTIVE WILL INCREASE WITH INCREASED PERFORMANCE AS SHOWN IN THIS FIGURE?

A. The customer experience PIM will seek to apply a $50,000 incentive for each percentage point above 70 percent for customer CES results. To encourage continued performance to reach ever-higher results, there would not be a cap imposed, though the maximum possible award stemming from a 100 percent CES result would be $1.5 million in a given year. The Company would be eligible for the award on a yearly basis, based on the cumulative results from customers participating in TEP programs.

B. Cost Efficiency PIM

Q. PLEASE DESCRIBE HOW THE COMPANY SEEKS TO ENCOURAGE COST EFFICIENCY THROUGH A PIM.

A. We propose that the share of registered LD EVs in the Company's service territory participating in one of the Residential TEP programs or the Assigned Parking program in the MUD portfolio, which require participation in a time-varying rate and/or participation in a charging optimization program, and/or stand-alone participation in a DSM charging optimization program serve as the metric for cost efficiency. The Company's TEP programs and upcoming offerings of static and dynamic charging management seek to align EV charging with non-peak hours, customers' preferences, staggered start and end times to reduce "timer peak" issues[11], and (in the case of dynamic charging) algorithms involving hourly grid prices and other factors. As a result, managed charging is a central component of cost efficiency for EVs.

Encouraging enrollment in managed charging with a modest financial reward helps maximize the benefits of EV charging while minimizing the system-wide costs. According to E3's analysis, residential managed charging offers the potential to increase net benefits by 70 percent for EV drivers compared to unmanaged charging.[12] In terms of societal net benefits, managed charging

[11] Timer peaks refer to scenarios in which multiple customers begin charging at the same time, such as when off-peak time periods begin.
[12] See Attachment SWW-7. The managed charging scenario compared 100% residential managed charging to the baseline scenario.

translates into more than $107 million in benefits from all personal LD EVs adopted through 2030.

Q. WHAT LEVEL WOULD THE COMPANY HAVE TO ACHIEVE ON THE MANAGED CHARGING METRIC TO BE ELIGIBILE FOR A REWARD?

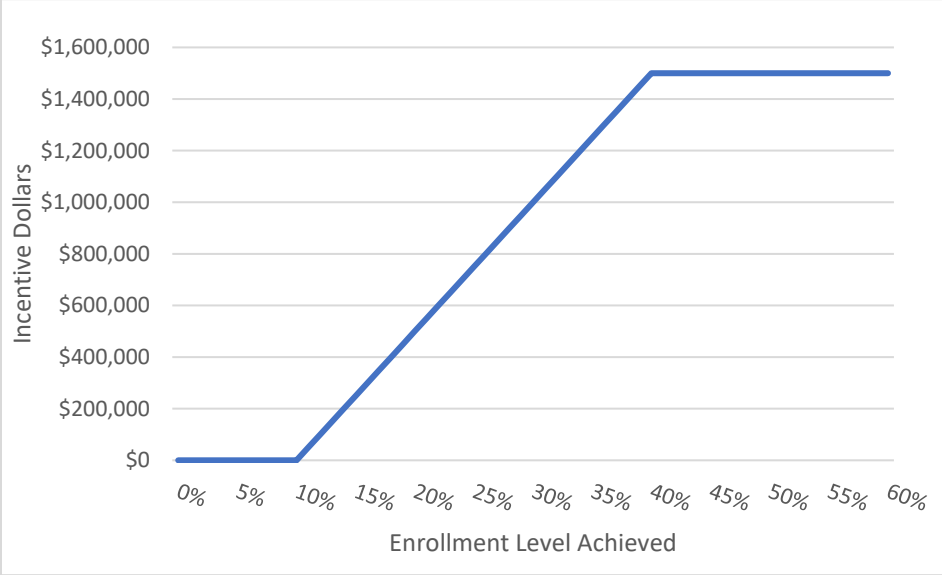
A. We propose benchmarking the managed charging enrollment metric to the Company's forecast for the number of participants we are expecting in the Residential TEP programs, in upcoming DSM charging optimization programs, and in the Assigned Parking—Full-Service program in the MUD portfolio. These programs encompass participation in some form of managed charging, via one of the Company's charging optimization programs and/or in a residential time-based rate. Comparing those participation levels to the Company's forecast for LD EVs produces an estimate of about 17 percent of LD EVs participating in some form of managed or time-based charging by the end of 2023. At current levels of less than 2 percent, we propose that participation in these programs reaching 10 percent of the market -- a more than 5x increase -- would be a reasonable level for the Company to begin being eligible for a performance incentive.

Q. WHAT REWARDS WOULD THE COMPANY BE ELIGIBLE TO RECEIVE?

A. We propose that the Company be eligible for a performance incentive for enrollment levels between 10 percent and 40 percent of the residential EV market at the end of the three-year TEP. This reward would increase linearly for each percentage point achieved above 10 percent to provide continuous incentives to increase enrollment. However, we propose capping the incentive at its value at 40 percent enrollment in order to balance the rewards and risks for

the Company and for customers. An illustration of the incentive structure is shown below in Figure KDS-2.

Figure KDS-D-2: Incentive Dollars at Each Enrollment Level Achieved



Q. CAN YOU PLEASE EXPLAIN IN MORE DETAIL HOW THIS INCENTIVE INCREASES WITH INCREASED PERFORMANCE AS SHOWN IN THIS FIGURE?

A. Like the customer experience PIM, the cost efficiency PIM will also seek to apply a $50,000 incentive for each percentage point achieved above the minimum threshold, in this case 10 percent enrollment in some form of managed charging. However, unlike the customer service PIM, this PIM would apply only once at the end of the three-year TEP period and would be capped at the incentive value associated with 40 percent enrollment, or $1.5 million.

Q. PLEASE EXPLAIN HOW THIS PIM INTERACTS WITH THE COMPANY'S DSM PLANS. DOES THIS PIM CREATE ANY OVERLAP?

A. This PIM offers an opportunity to maximize the value that managed charging presents to customers and the Company alike and does not overlap with the incentives or rewards provided through the DSM performance incentive.

Based on the Commission's decision in the Company's most recent DSM Strategic Issues docket (Proceeding No. 17AL-0462EG), the Company does not receive a separate performance incentive for its demand response program as a whole. The Residential Demand Response product – which consists of the Saver's Switch and AC Rewards offerings – is the only Demand Response product for which the net economic benefits contribute to the energy efficiency (i.e. DSM) performance incentive.[13] As a result, the Company's charging optimization programs do not contribute to the net economic benefits eligible for the DSM performance incentive.

While our proposed expansion of enrollment in new charging optimization programs would occur within the DSM portfolio, it is simply a question of program placement and not one of overlap.

[13] See Commission Decision No. C18-0743.

XI. EVALUATION

Q. HOW WILL THE COMPANY EVALUATE TRANSPORTATION ELECTRIFICATION PROGRAMS?

A. Having a robust evaluation process is critical for us and stakeholders to understand the impacts of TEP programs. This is important for real-time adjustments we can make over the three-year period as well as for the design of future TEPs. Through evaluation activities, we hope to gain a better understanding of how we are impacting EV adoption, customer awareness and attitudes, and vehicle emissions in addition to how actual customer experiences and program costs are living up to our goals, among several other focus areas we highlight in the TEP document. We propose a total budget of $1.5 million for evaluation activities, including assessments of customers' experiences and perceptions and gathering feedback and input from stakeholders. We propose to host quarterly advisory group meetings similar to our DSM processes, provide data on key metrics in annual filings, and engage in external stakeholder and partner forums to both communicate our efforts and hear feedback and new ideas.

Q. HOW WILL THE EVALUATION OF TEP PROGRAMS BE ADMINISTERED?

A. We plan to select and work with an independent third-party evaluator, though will wait to do so until after the Commission has rendered a decision on our proposed TEP.

XII. CONCLUSION

Q. PLEASE SUMMARIZE YOUR DIRECT TESTIMONY AND RECOMMENDATIONS.

A. I recommend that the Commission:

1. Approve the Company's proposed TEP and find that it is prudent and in the public interest;
2. Approve the Company's proposed annual TEP budgets;
3. Approve the Company's proposed framework for managing TEP portfolios, programs, and related budgets over the course of the TEP and process to make mid-course adjustments;
4. Approve the Company's proposal to support a school bus electrification initiative through the TEP's Research, Innovation, and Partnerships portfolio as described below, using proceeds from the sale of Renewable Energy Credits ("RECs") and carbon offsets as discussed in Mr. Ihle's Direct Testimony;
5. Approve the Company's proposal for an independent evaluation of our TEP portfolios, ongoing stakeholder outreach, and reporting to ensure transparency and oversight; and
6. Approve the Company's proposed PIMs.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

Statement of Qualifications

Kevin D. Schwain

I lead the strategy, development, and operation of our customer-facing Electric Transportation efforts for all Xcel operating companies, including Public Service.

I have been with Xcel Energy since the beginning of 2008. I previously lead the development of new programs in support of our DSM, load management, and renewable energy portfolios. I have held previous leadership roles at Target Corp, Advanced Technology Materials, and Hewlett-Packard. I have a Bachelor of Science Degree in Mechanical Engineering from Iowa State University. I have a Master of Science in Mechanical Engineering degree and Master of Business Administration degree from Massachusetts Institute of Technology.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * *

IN THE MATTER OF THE APPLICATION	)	
OF PUBLIC SERVICE COMPANY OF	)	
COLORADO FOR APPROVAL OF ITS	)	**PROCEEDING NO. 20A-XXXXE**
2021-2023 TRANSPORTATION	)	
ELECTRIFICATION PLAN	)	

AFFIDAVIT OF KEVIN D. SCHWAIN
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

I, Kevin D. Schwain, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Testimony and attachments are true and correct to the best of my information, knowledge and belief; and that I would give the same testimony orally and would present the same attachments if asked under oath.

Signed in Minneapolis, Minnesota, this 14 day of May 2020.

Kevin D. Schwain
Director, Electric Transportation

Subscribed and sworn to before me this 14th day of May, 2020.

MONICA M WEILER
Notary Public
Minnesota
My Commission Expires
Jan 31, 2025

Monica M. Weiler
Notary Public

My Commission expires Jan. 31, 2025