

Staff Briefing Papers

Meeting Date April 12, 2018 Agenda Item **4

Company	Xcel Energy E002/M-17-817		
Docket No.	In the Matter of Xcel Energy – Electric – Petition for Approval of a Residential EV Service Pilot Program		
Issue	Should the Commission approve Xcel’s proposal to implement a Residential EV Service Pilot Program?		
Staff	Hanna Terwilliger	Hanna.terwilliger@state.mn.us	651-201-2243

Relevant Documents	Date
Xcel Initial Filing – Residential EV Service Pilot Program	November 17, 2017
Xcel IRs – Response to MPUC IRs 1-6 (Public)	December 11, 2017
Xcel IRs – Response to MPUC IRs 1, 2 and 5 (Trade Secret)	December 11, 2017
Initial Comments	
ChargePoint, Inc.	February 2, 2018
Greenlots	February 2, 2018
Fresh Energy, MCEA, and The Sierra Club	February 2, 2018
Institute for Local Self Reliance	February 27, 2018
Department of Commerce	March 5, 2018
Reply Comments	
Xcel Energy	March 15, 2018
Public Comments	March 22, 2018

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

I. Statement of the Issues

Should the Commission approve Xcel’s proposal to implement a Residential EV Service Pilot Program?

II. Background

Xcel’s existing off-peak Residential Electric Vehicle EV tariff (“existing EV tariff”) was initiated in 2015 in response to 2014 legislation requiring all investor-owned utilities to offer off peak residential EV charging tariffs.¹

Through statute required annual filings in Docket 15-111, the existing EV tariff docket, stakeholders raised concerns that the upfront costs of enrolling in the EV rate were deterring individuals from enrolling in the program.

In response to these concerns, on November 17, 2017, Xcel filed the following Pilot. Six parties and the Department of Commerce submitted comments, as well as two EV owners who commented through SpeakUp!.

Electric Vehicle Supply Equipment (EVSE)

Table 1: Types of Charging Equipment

<i>Type</i>	<i>Power Supply</i>	<i>Charger Power</i>	<i>Charging rate</i>	<i>Charger cost</i>
<i>Level 1 Charger</i>	120V _{ac}	1.4 kW	4.5 miles/hour	Typically included with vehicle
<i>Level 2 Charger</i>	240V _{ac}	3 – 7 kW	20 miles/hour	\$450-\$1000
<i>DC Fast Charger</i>	200 – 600 V _{dc}	45+ kW	40 miles/10 minutes	\$100,000+

Different customers will have varying charging needs, which will impact their choice of EVSE. For example, an individual commuting a short distance to work each day, say, under 40 miles round trip, will be able to charge their vehicle overnight using only a Level 1 Charger. For the occasional longer trip they may choose to charge their vehicle at a public Level 2 charging station or DC Fast Charger. However, a different customer who drives more than 50 miles each day may require a Level 2 charger to fill their vehicle enough overnight to return to a full charge to get to work the next day.

III. Xcel Proposal

Xcel’s proposal is for an off-peak EV rate offering using Level 2 Electric Vehicle Supply Equipment (EVSE) to meter consumption. The Company’s existing EV tariff requires the installation of a second, parallel meter, estimated to cost anywhere from \$200 - \$3,500,

¹ [Minn. Stat. 216B.1614](#)

depending on existing electrical infrastructure and whether or not a Level 2 EVSE is required. In the pilot, the EVSE takes the place of this second parallel meter. Customers have the option to purchase the EVSE upfront or to pay for it through a monthly charge. Under the proposal, all pilot participants will pay a monthly charge for load monitoring and data management, maintenance, and customer accounting and information.

Xcel developed the pilot in response to customer and stakeholder feedback about the high initial cost of enrolling in the existing Residential EV Charging Tariff. Throughout 2016 and 2017, Xcel held three stakeholder meetings on the proposed pilot. Xcel also conducted an online survey to which 89 individuals responded.

Pilot Objectives

Xcel outlined objectives and learnings it hopes to attain from the pilot program:

- Seek and confirm cost savings compared to the existing EV tariff.
- Confirm off-peak charging rates save customers money compared to the standard residential rate.
- Improve service and experience by:
 - Giving access to granular usage data through web portal.
 - Pay-up-front vs pay-as-you-go options for equipment costs.
 - One-stop-shop for obtaining an EVSE and enrolling in an EV rate.
- Maintain safety, reliability, and billing accuracy in line with company requirements.

Technology Procurement

Through Request for Information and Proposal processes, Xcel investigated various ways to submeter EV specific load. In the initial RFI, seven vendors with two types of load monitoring equipment responded: EVSEs with embedded load monitoring, and stand-alone load monitoring equipment. After a formal RFP, Xcel invited five vendors with both types of technology to field test the equipment. Three vendors, all Level 2 EVSE technology, met Xcel's requirements and were selected to participate in the pilot. While no standalone load monitoring equipment was selected, due to non-conformity with Xcel's pilot requirements, the Company indicated that if the technology improves it will bring forward additional proposals as soon as feasible.

Pilot Design

1. Outreach, enrollment, and installation

Xcel's pilot proposed to use new and existing methods of outreach to enroll customer in the new rate, including targeted marketing, social media and word of mouth promotion, and incentives for referral. In the final method, automakers would receive a monetary incentive for each customer they refer to the rate.² Customers would be referred to Xcel's website where they could enroll in the pilot.

The pilot would enroll up to 100 participants over a six month period, with customers signing the Customer Service Agreement (Attachment C in Xcel's filing). Xcel would then coordinate the

² Xcel did not specify what would constitute as a referral.

installation of the EVSE, and provide a cost estimates for the installation of a second parallel meter for a cost comparison between enrolling in the proposed EV pilot or the existing EV tariff.

Customers would select whether they wish to pay for an EVSE and installation up front, or through a monthly cost, and then select the model of EVSE from a list of approved vendors.³ In both cases, customers would be responsible for costs of additional wiring to serve the EVSE and the permits needed for installation. Xcel estimated these costs to average around \$675 per customer.

2. Rate Design

Xcel maintained the same energy rates as its existing EV tariff. However, the fixed charge is different to account for the aspects of the new metering system. Customers enrolling in the “bundled” option would pay a fixed monthly charge of \$27.45 plus energy costs, while customers who “pre-pay” for the EVSE and installation will pay a \$13.88 month charge plus energy costs. Xcel created Table 2, outlining various EVSE options that are available for customers, including standard “whole home” rates.

³ As Xcel is in final negotiations with vendors, the list of potential candidates is listed as trade secret and can be found in the response to PUC IR #2.

Table 2: Comparison of Rate Options for Residential Customers with Electric Vehicles⁴

Rate Options		Customer upfront out-of-pocket expenses	Customer monthly charge for EV Service	Services included in monthly charge for EV Service	Illustrative monthly usage charges for EV driving*	<i>Illustrative Total EV Monthly Bill (Staff addition)</i>
Dedicated Electric Vehicle Rates	Existing Residential Electric Vehicle Service Rate Code: A08	- EVSE and Installation** - Premise Wiring - Housing for second meter	\$4.95	- Second, Parallel Meter - Customer Service - Customer accounting	\$24.64	\$29.59
	Proposed Electric Vehicle Service Pilot Bundled Service Proposed Rate Code: A80	- Premise Wiring	\$27.45	- EVSE and Installation payment - Customer Services - Customer accounting - Load Monitoring and Data Management - Maintenance Service	\$24.64	\$52.09
	Proposed Electric Vehicle Service Pilot with Pre-pay Option Proposed Rate Code: A81	- EVSE with load monitoring technologies and Installation - Premise Wiring	\$13.88	- Customer Services - Customer accounting - Load Monitoring and Data Management -Maintenance Service	\$24.64	\$38.52
Whole Home Rates	Residential Service Rate Codes: A00, A01, A03	- EVSE and Installation** -Premise Wiring	\$0.00	N/A	\$38.53	\$38.53
	Residential Time-of-Day Rate Rate codes: A02, A04	- EVSE and Installation** - Premise Wiring	\$0.00	N/A	\$24.64	\$24.64

*Assumes 1,000 miles of driving per month; 3.3 kWh per mile; 95% of charging off-peak. Includes fuel and rider charges.

**In some cases, residential customers will use a dedicated wall outlet instead of an EVSE for charging

In response to PUC Staff IR #1, Xcel provided the following additional information on how it developed the customer charges, and how much the upfront costs would be for customers selecting the pre-pay option. The pilot customer charges are paid in addition to a customer’s standard monthly residential service fixed charge.

⁴ Xcel Initial Proposal, p. 16

a. EVSE Equipment and Installation Costs

Three vendors met Xcel's requirements for EVSE with embedded monitoring. Each had different pricing, leading Xcel to "blend" the costs for equipment to a cost 10% higher than the average of the two lowest equipment prices. Xcel noted that these prices are subject to change after it completes final vendor negotiations. Xcel estimated the cost to install the EVSE equipment based on its own analysis and data from other reports and jurisdictions. These costs were combined to come up with a cost of \$1,061.40 for the EVSE equipment and installation.⁵ Customers on the pre-pay option would pay this cost upfront. Customers on the bundled option would pay for the equipment through an additional monthly charge that includes a carrying cost, the amount of which was not specified by Xcel. Xcel classified the breakdown of this cost as Trade Secret.

b. Load Monitoring and Data Management Costs

The monthly charge for Load Monitoring and Data Management was developed in a similar way, as a "blend" of vendor costs that was 10% higher than the average of the lowest two vendor bids. Xcel was unclear on the exact yearly costs for this service from various vendors, and did not provide a breakdown of calculations. All pilot participants pay these costs in their monthly charge. Xcel classified the breakdown of this cost as Trade Secret.

c. Maintenance Costs

Xcel estimated the annual maintenance costs for the EVSE to be 5% of the cost of the EVSE and installation, equating to \$4.42 per month. Xcel explained its approach to this number:

Anecdotally, we have heard little evidence of equipment needing significant maintenance, but have heard there are issues with relying on customers' Wi-Fi networks and a continued need for some technician support. As a result, we've taken a forward-looking estimate that annual maintenance service will be five percent of the cost of the EVSE with embedded load monitoring and the install.⁶

All pilot participants pay this cost in their monthly charge.

d. Customer Accounting and Information

Xcel stated these costs are \$1.89 for customer accounting and \$0.07 for customer service and installation, for a combined \$1.96 per month. All pilot participants pay these costs in their monthly charge.

3. Annual Reporting

Xcel proposed to include annual reporting on the pilot with its annual report in Docket E002/M-15-111, the existing EV tariff. In its report, Xcel proposed to include:

- Number of Customer enrolled in the tariff
- Total electricity sold under the tariff, on a quarterly basis
- Tracker balances

⁵ Xcel Public Response to PUC IR #1, p. 2

⁶ Xcel Public Response to PUC IR #1, p. 3

- Key learnings from the pilot
- Analysis of cost savings compared to two meter alternatives
- Customer experience
- Performance of equipment to safety and reliability standards.

4. Terms of Participation

a. Eligibility and Customer Obligations

In order to participate in the pilot, customers must meet the following criteria:

- receive residential electric service from Xcel Energy in Minnesota with no past due bills;
- live in a single-family home, defined as a detached single family home, townhome/row house, or duplex;
- have possession of an electric vehicle, through ownership or lease;
- have wireless internet (Wi-Fi) service at Site;
- not participate in the [existing EV tariff];
- not participate in the Residential Time of Day Service Rate;
- not participate in the Time of Use Rate Design Pilot Program; and
- not participate in the Company's net metering tariffs.⁷

Additionally, pilot participants would agree to participate in surveys and provide feedback about the pilot, provide access for random meter testing, be responsible for some routine maintenance, and allow Company-selected contractors to perform any more necessary troubleshooting options.

b. Pilot Term and EVSE Ownership

The pilot would last 24 months after six month enrollment period. During the pilot, Xcel would own all equipment including that which customers have purchased on the "pre-pay" option. At the end of the pilot term, customers on the pre-pay option may:

- Have ownership transferred to them and move back to their original rate.
- Continue to any permanent EV tariff offering with which the technology is compatible.
- Elect to have the EVSE replaced or upgraded if a new EV charging tariff uses a different technology.

Xcel would immediately transfer ownership of the EVSE to customers under the prepay option who exit the pilot for any reason.

At the end of the pilot, customers on the "bundled" option would be able to:

- Return to their original rate and have the EVSE removed at no cost
- Purchase the EVSE at the remaining undepreciated balance and move back to a previous rate or continue with a new EV offering
- Elect to have the EVSE replaced or upgraded if a new EV charging tariff uses a different technology.

⁷ Xcel Initial Filing, pp. 17-18

IV. Parties' Comments

ChargePoint

ChargePoint offered comments in support of Xcel's pilot proposal, specifically the pilot's efforts to reduce upfront cost barriers. However, it recommends that the Commission clarify that the pilot is only intended to address the initial metering deployment cost, and defer other considerations, such as those surrounding cost recovery, to the generic EV docket, E999/CI-17-879. It appears as though ChargePoint would like the Commission to deny Xcel's proposed accounting treatment of placing the EVSE and installation costs into ratebase, but ChargePoint may wish to clarify this position on the day of the agenda meeting.

ChargePoint also recommended that the Commission grant Xcel's requested rule variance from Minn. R. Part 7820.3700 and 7820.3800 around metering, stating that "the Company's identified measures...will ensure the same consumer protection for the purposes of this pilot."⁸

Greenlots

Greenlots provided comments supporting Xcel's pilot as proposed, noting that it would bring "significant, rapid" cost savings. They also encouraged the Commission to view the pilot as a first step, and continue its efforts to lower costs to participate in time varying rates for EV owners, and to implement more advanced rate offerings.

Fresh Energy, Minnesota Center for Environmental Advocacy, and The Sierra Club (CEO)

CEO recommended approval of Xcel's pilot as proposed, saying the pilot offers the opportunity to engage with new technology and reduce upfront cost barriers. However, while maintaining that the pilot should be approved as is, CEO indicated several outstanding issues that would need to be addressed before the pilot transitioned into a permanent offering.

CEO offered that while the pilot may be an attractive option for individuals who want a "turnkey" offering and are willing to pay a premium, other individuals may be more "cost conscious." As written, CEO noted that the pilot does not offer any options for further minimizing costs. For example, if a customer already had a 240v outlet in their garage, they would be able to purchase a plug-in model of a Level 2 charger for around \$600 and use it on the existing rate with no additional monthly fee or installation costs. If these chargers could be enrolled in a permanent rate offering, the customer would avoid the installation cost and averaged prices of equipment.

Furthermore, CEO commented that, "while appropriate for the pilot, the size of the monthly customer fees may be cost-prohibitive for some customers." If, in future offerings, customers could purchase and install their own EVSE, which would remove the installation and maintenance components. CEO maintains that is appropriate for customers to pay the "Customer Accounting and Information" costs. The final category, "Load Monitory and Data Management," could be reduced as technology improves. If Xcel were to implement a managed charging program, CEO contends that would bring enough system benefits to all customers to justify eliminating that portion of the fee.

⁸ ChargePoint Initial Comments, p. 4

Finally, CEO recommended that in any future iterations of the program, Xcel include multifamily dwelling charging.

Xcel Response

In reply comments, Xcel stated that it preferred to wait until “operation experience is gathered” before it begins to plan for any future offerings. The Company also added that it “hopes to work with stakeholders to develop a set of development criteria and reporting metrics that would facilitate the process of scaling programs from pilot state to broader offerings.”⁹

Xcel also responded to CEO’s mention of having the all-renewable option be the default offering, say that given that all renewable options are “premium priced services” they do not support auto enrolment at this time.

Institute for Local Self Reliance (ILSR)

ILSR opposed the implementation of Xcel’s pilot as proposed, stating that the high monthly fixed charges eliminate any benefit to customers. Instead, ILSR offered that since off peak EV charging brings system wide benefits to all ratepayers, the portion of the monthly charge related to maintenance and data services should be eliminated.

ILSR made the point that Xcel should not compare the new pilot to the existing EV tariff, but instead to the standard residential service rate, as customers who have already invested in a second parallel meter are unlikely to switch to the pilot offering.

Using the bill of an existing EV customer on Xcel’s standard residential service, ILSR provided a cost analysis of Xcel’s new pilot offering:

⁹ Xcel Reply Comments, p. 3

Xcel EV Pilot Program Charging Cost Analysis

CONSUMPTION

303	kWh per month
288	off peak
15	on peak



RATES

\$0.0940	Default summer*
\$0.0900	Default winter*
\$0.0270	fuel cost surcharge (July 2017), .0255 in Dec. 2017*
\$13.88	EV rate monthly cost
\$0.0426	EV rate off peak
\$0.1700	EV rate on peak winter
\$0.2100	EV rate on peak summer

Cost to Charge

Monthly driving	Winter		Summer	
	Existing Rate	EV Rate	Existing Rate	EV Rate
1000 miles	\$35.45	\$36.88	\$36.66	\$37.48
500 miles	\$17.73	\$25.38	\$18.33	\$25.68

Americans average 29 miles per day of driving, 870 miles per month: <http://bit.ly/2EWEJof>

*Taken from residential bill of Xcel customer, July 2017 and December 2017

Their analysis found that customers would pay more each month on the new rate unless they drive around 1000 miles each month.

ILSR recommended that the Commission approve Xcel's pilot, but cut the monthly fee of \$13.88. The total cost of the pilot, ILSR noted, would then be around \$33,000 for the entire 24-month period, less than the estimated marketing and outreach expenses.

Xcel Response

In reply comments, Xcel expressed concern of ILSR's proposal to eliminate the monthly charge, stating that one of the proposed learnings from the pilot was to gather "information about customer response to the Pilot's price signals." Furthermore, Xcel noted that the pilot could have a greater benefit for high mileage drivers, but that it "has several rate options to serve EV charging needs."¹⁰

Staff Comment

Staff did a similar analysis to estimate the monthly kWh purchased at which Xcel's various EV offerings would reach cost parity with the standard residential service rate, using a percentage of on/off peak charging in line with the averages from Xcel's most recent report in Docket 15-111, 94% off-peak and 6% on-peak. The graph below shows that a customer would need to use

¹⁰ Xcel Reply Comments, p. 2

at least 369 kWh a month on the prepay option and 729 kWh a month on the bundled option before they would achieve any savings in comparison to the standard residential rate. In fact, customers who use below those thresholds would actually pay more on Xcel’s proposed pilot than on the standard residential rate. A typical customer enrolled on Xcel’s existing EV tariff uses on average 368 kWh a month. This analysis does not take into account the upfront costs needed to enroll in any of the EV rates, staff provided a comparison of upfront costs in Table 3 below.

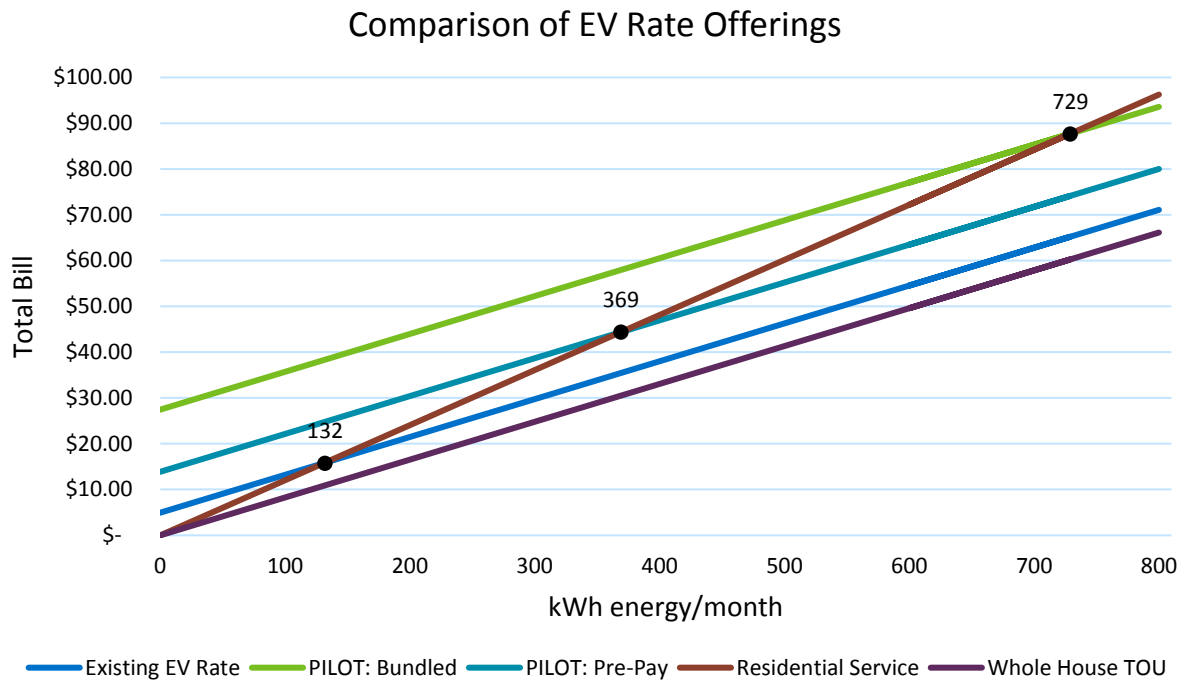


Table 3: Comparison of Upfront Costs to Enroll in Various Rate Options

	Charging Level	Upfront cost to enroll in rate without a Level 2 Charger	Upfront cost to enroll in rate with a Level 2 Charger
Existing EV Tariff	Level 1 (Level 2 optional)	\$200-\$2,000	\$650-\$3,525
PILOT: Bundled	Level 2	n/a	\$1,061.50 – \$1,736.50
PILOT: Pre-Pay	Level 2	n/a	\$0 – \$675
Residential Service	Level 1 (Level 2 optional)	\$0	\$450-\$2,000
Whole House TOU	Level 1 (Level 2 optional)	\$0	\$450-\$2,000

Note: Cost ranges depend on a variety of customer situations, such as:

- Does the customer have a 240v outlet already installed?
- Does the customer require additional wiring to accommodate a higher level of charging?
- What model of EVSE is the customer selecting? (on existing options)

Department of Commerce

The Department recommended that the Commission approve Xcel's pilot with minor modifications to the tariff language to align the pilot with the current EV offerings, and some additional reporting requirements.

The Department summarized Xcel's proposal and stated that it "agrees with the Company's proposed method for cost recovery, as well as their method for averaging the different vendor prices up to a threshold to preserve choice and affordability."¹¹ No other analysis was provided on Xcel's rate design or cost recovery methods. The Department recommended that Xcel be allowed to continue to track customer education costs in its existing EV tracker for recovery in general rates "as soon as practicable."

In regards to Xcel's proposed tariff and customer agreement, the Department suggested minor clarifications to better align it with the current EV offering. Specifically, it recommended that Xcel mirror the language around a customer's option to purchase renewable energy to say:

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.

This would make the two EV tariff offerings consistent.

The Department took no issue with Xcel's proposed customer options for the end of the pilot, but noted that the Company should include a sample bill in its tariff. In reply comments, Xcel offered instead to place a sample bill on its website on its EV page instead of in its tariff book.

Rule Variance

In response to Xcel's request for an exemption from Minn. R. 7820.3700 and 7820.3800, the Department noted that Xcel had not formally asked for a rule variance nor applied the typical three-factor test for granting a rule variance (Minn. R. 7829.3200, subp. 1):

The commission shall grant a variance to its rules when it determines that the following requirements are met:

- A. enforcement of the rule would impose an excessive burden upon the applicant or others affected by the rule;
- B. granting the variance would not adversely affect the public interest; and
- C. granting the variance would not conflict with standards imposed by law.

However, the Department applied the above criteria and found that:

- A. "Enforcement of the Minnesota Rules governing matters related to inaccurate electric meters and billing errors in the proposed pilot would impose an excessive burden upon the Company as, unlike Xcel's existing customer metering

¹¹ Department, Comments, p. 8

equipment, the technology involved in the proposed pilot is dependent on the participant's Wi-Fi connections.”

- B. “The variance would not adversely affect the public interest as it is limited to a two-year pilot program consisting of 100 customers, so any negative effects related to Wi-Fi speeds would be limited in scope to the pilot program and its participants.”
- C. Granting the rule variance would not conflict with standards imposed by law.

Therefore, the Department recommended that the Commission grant Xcel a rule variance limited to the scope of the pilot for the participant's Wi-Fi connection.

Finally, the Department recommended additional reporting requirements, including reporting on a biannual basis throughout the duration of the pilot. They suggested, at a minimum, a report including the following:

- number of participating customers and amount of electricity sold in the program;
- tracker balances;
- analyses of customer cost savings;
- learnings on customer experience and pilot performance under Xcel's safety and reliability standards;
- the number of customers choosing the bundled option;
- the costs and revenues associated with the bundled option;
- the number of customers choosing the pre-pay option;
- the costs and revenues associated with the pre-pay option;
- which types of EVSE equipment are chosen by the participants;
- the contractors' estimated second-meter installation costs;
- the extent to which Wi-Fi connections impacted pilot participation; and
- how often Wi-Fi connectivity issues prevented billing under the pilot.

In reply comments, Xcel noted that is willing to provide the information the department requested, but would prefer to do it on an annual rather than biannual basis.

Public Comments

Two members of the public, both EV owners, submitted comments through SpeakUp!. Both remarked that Xcel's pilot was not appealing, and they would not sign up for the rate.

As one of the commenters wrote:

As a current EV driver, this rate plan is not at all compelling to me. Even if I ignore for now the need to replace my existing EVSE equipment at a high price, the remaining \$13.88 monthly fee would still erode nearly all savings from the off-peak rate. I drive roughly 1000 miles/month at about 3 miles per kWh, so my monthly EV charging comes out to about 333 kWh/month. By my calculations, the break-even point to offset the monthly fee would be about 262 kWh/month, leaving 71kWh/month of actual savings at the reduced rate, which would be less than \$4/month savings. \$4/month savings to replace my existing EVSE and restrict my available charging hours simply would not motivate me to consider this rate plan.

The other commenter had similar opinions on Xcel’s proposed pilot:

I’m afraid you will have a difficult time convincing EV owners to pay an average up-front cost of equipment in the neighborhood of \$2,625 in exchange for reduced off-peak electric rates. Many EV owners have converted from gas vehicles for the lower fueling and maintenance costs, making an unexpected investment of thousands of dollars unlikely. I would not pay a gas station thousands up front for lower gas prices. Electric vehicles are very energy efficient and an EV driver would need to drive about 58,000 miles, (or ~4-1/2 years) just to break-even on this arrangement.

V. Staff Analysis

While staff appreciates Xcel’s work with stakeholders to address the concerns related to its EV residential rate offering, staff has some concerns that this pilot does not address customer’s underlying issues with the lack of EV Tariff options. Some EV owners may already have a Level 2 charger, or desire one that is not offered by Xcel. As one speaker at the recent Commission Workshop on Electric Vehicles brought up, Level 2 charging cords may start to come standard with newer models, eliminating the need for an additional EVSE. Other EV owners may not require a Level 2 charger to reach a full charge on a typical day. These customers will likely want an option that allows them to enroll in an off-peak charging options without paying for an additional Level 2 Charger or an expensive second meter. Additionally, some EV customers identified monthly fixed charges as a barrier to enrollment in a special rate in addition to high upfront costs, and the pilot does not address this concern.¹²

Many utilities within Minnesota have adopted off peak EV charging rates that have no monthly customer charge, and offer rebates of up to \$700 to assist with the installation of a Level 2 EVSE or other charging equipment. Staff performed a non-exhaustive search of cooperative and municipal utilities offering such programs:

Utility	Rebate Available
<i>Dakota Electric Association</i>	\$500
<i>Wright Hennepin Electric Cooperative</i>	Up to \$700
<i>Elk River Municipal Utilities</i>	\$500
<i>Connexus Energy</i>	\$500
<i>Minnesota Valley Electric Cooperative</i>	\$150
<i>East Central Energy</i>	\$500
<i>People’s Energy Cooperative</i>	20% of charging equipment

In a February presentation to investors, Xcel indicated that by 2030 a moderate growth assumption of EV growth could reach 500,000 vehicles across all of the Company’s service

¹² Public comments on SpeakUp! In the present docket and in response to the utility’s annual reports in the existing EV tariffs.

territories, with the potential for additional sales of 3 MWh per EV per year.¹³ As EV load increases, EVSE with integration for utility load management and/or well-designed charging rates can both minimize adverse system impact and assist with a safe, reliable, and efficient distribution grid for all ratepayers.

A well designed, affordable residential EV charging program is therefore critical at the earliest stages of EV adoption, especially since once EV customers are identified it will be easier to move them onto more advance rate offerings as these become available. Studies show that 80% of charging still takes place in the home, making residential EV offerings the critical piece to figure out correctly.

In order to maximize the system wide benefits of EVs and avoid any negative impacts, a good residential charging program must be in place before EV adoption becomes wide scale. Staff has concerns whether Xcel's proposal will accomplish those goals.

Overall, staff's main concern is the high monthly fixed cost for both the prepay and bundled options will discourage customers from signing up for Xcel's pilot offering. As of April 2017, Xcel's existing EV tariff offering only enrolled 95 customers. Within a six month time span, Xcel proposes to sign up 100 customer for a pilot that has the same average fuel savings, but increased monthly charges (even for customers who elect to prepay for the EVSE). Customers who were unwilling to sign up for the existing EV tariff because the upfront and ongoing costs of participation were too high are unlikely to enroll in an offering that still has significant upfront costs and even higher monthly charges. As one member of the public put it, "It occurs to me that this proposed pilot is, in effect, allowing a submetered EV service via a relatively complex and expensive 3rd party metering and data collection agreement." Programs that come with a net benefit to the entire system by increasing efficiencies should not come at a cost premium to participants.

Below, staff lays out several options for the Commission to consider that would decrease the fixed monthly charge associated with either option on the pilot. The Commission may wish to consider that as a part of any approval given to Xcel's pilot, it also require Xcel within one year to file a permanent off-peak EV offering that does not have a fixed monthly charge paired with a rebate, similar to what many other utilities offer, to reduce the upfront cost of enrolling in an off-peak rate.

Statute

Minn. Stat. 216B.1614 requires public utilities to make available an off-peak charging rate available. One of the conditions of the statutes is that this rate must incorporate the cost of metering or submetering. All utilities currently have a rate offering that satisfies these conditions, but that does not necessarily need to be in the form of a fixed charge, nor does it prevent a utility from filing other types of EV charging options that offer different benefits.

¹³ Attachment to Office of Attorney General Comments in Docket 17-797, Transmission Cost Recovery Rider, p 55

EVSE and Installation charges

Staff appreciates that customers have a choice of chargers, but is concerned with the method under which the overall cost of the EVSE and installation equipment is calculated. Some options for equipment came in significantly lower than the highest total cost. Additionally, the installation cost may be much lower for some participants if it is simply a wall plug option. However, given that this is a small pilot, it may make sense for the EVSE equipment and installation costs to consist of blended amounts. Any permanent tariff option should have a more thorough analysis and detailed accounting for equipment and installations amounts, including what carrying charge the Company is using to calculate the bundled option.

Load monitoring and data management charges

Staff understand that customers already have access to information when they buy a Level 2 EVSE as a part of the manufacturers' app based services. Load and data monitoring provided by the EVSE vendors primarily benefits the utility, as they will have detailed information on EVs that they can use for load forecasting and system impacts. The utility derives system wide benefits from collecting this data, and as such should not charge pilot participants. Other utilities, such as Dakota Electric, install load research metering equipment at their own expense, or do not require participants to pay for the data monitoring costs when using a third party EVSE vendor¹⁴. Staff recommends removing this charge and placing expenses in a tracker account for possible recovery in a future rate case, especially considering the variation in the cost of data services from the vendors.

Monthly Maintenance Fee

The monthly customer charges includes \$4.42 for a "maintenance service." Costs could be much lower, and customers could never end up using the maintenance service. Instead of having customers pay a not insignificant amount each month for an unproven cost, the Commission may wish to consider removing this portion of the charge, and allow Xcel to track the actual costs of maintenance in a tracker account for possible future recovery.

Customer Accounting and Information

While Xcel did not submit a detailed breakdown what is included in "Customer Accounting and Information – \$1.96/month" Staff concludes that some charge here is reasonable, provided it aligns with incremental customer accounting and information costs identified in other dockets. For example, in Xcel's DG Tariff Docket, 16-222, the incremental accounting costs for customers with a bidirectional meter was identified at \$1.68/month.¹⁵ Customer accounting and information costs for additional metering have been discussed recently in other dockets, and the Commission may wish to keep this in mind as rate offerings for extra services appear.

Proposed Accounting Treatment

Staff is concerned that Xcel's proposed accounting method could result in double recovery of capital costs. As staff understands, the pilot monthly customer charge is designed to recover all

¹⁴ PG&E has an ongoing EVSE submetering [pilot](#) where the utility pays the data related costs.

¹⁵ See Attachment C of Xcel's reply comments December 5th, 2016 in Docket 16-222

costs of the pilot expenses, including a carrying charge for the purchase and installation of the EVSE under the bundled service rate.¹⁶ In the prepay option, customers are paying the entire cost of the installation and charging equipment ahead of time. However, on page 19 under its “Accounting Treatment” Xcel states:

The purchase and installation of the EV charging and metering equipment will be capitalized as an Electric Distribution asset to FERC Account 101, Plant in Service in plant account 370 Meters. The EV bundled service customer charge (see Rate Design discussion in Section C-5 above) will be designed to recover the carrying cost for this asset during the pilot. The Company also requests that the capitalized costs be allowed in rate base and receive a return on investment.¹⁷

If Xcel is already recovering the costs of the EVSE and installation through the bundled customer charge, the same equipment should not be placed in rate base. Furthermore, it is unclear whether Xcel’s proposal would also include placing prepay equipment into ratebase. Xcel did not provide details on how it developed the specific amounts for the different monthly charge components, including a lack of what carrying charge was used for the bundled option. For these reasons, Staff recommends the Commission deny Xcel’s proposed accounting treatment and not allow Xcel to place the capitalized costs of the EVSE equipment and installation in ratebase for recovery unless it removes the associated monthly charges and provides more details of the proposal.

Annual Reporting

Staff recommends that Xcel report energy sales and customer participation on a monthly basis, as it currently does in its existing EV annual reports. Staff supports the Department’s additional reporting recommendations.

Final Costs

In both reply and initial comments, Xcel has said that it is still undergoing final negotiations with its vendors, and that final prices may change for the various services. However, Xcel has submitted tariff sheets for approval to the Commission, which include the monthly costs. It is difficult for staff to recommend final approval of tariff sheets when the final costs are not known. If there are further cost savings and Xcel finalizes contracts with its vendors, those should be passed along to customers. However, there could also be cost increases that would result in less savings for customers on the rate. At a minimum, Xcel would need to submit a compliance filing once vendor costs are finalized.

Tariff and Customer Service Agreement

For the most part, parties did not comment on the Pilot’s Customer Service Agreement or Tariff pages.

In the Terms and Conditions of Service in Xcel’s tariff the following is a requirement:

¹⁶ Xcel states on page 15 of its initial proposal that the bundled monthly customer charge “includes cost recovery for Company provided and installed EVSE equipment.”

¹⁷ Xcel Initial Proposal, p. 19

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.

This provision is also in Xcel's existing EV tariff, but staff notes that this contemplates distribution systems upgrades paid for by a single customer, which have come up in other proceedings before the Commission.

AMI and Interoperability

In its annual Grid Modernization Report filed in Docket E002/M-17-776, Xcel has indicated that it is preparing to bring forward an Advanced Metering Infrastructure (AMI) proposal as soon as November of this year. As Xcel works through the process of vendor selection and designing its "smart grid" system, staff encourages the company to carefully consider how it can ensure that the technology proposal it brings forward can incorporate submetering of EVs and other demand response technology at minimal additional cost to customers. Replacing metering technology is the perfect opportunity to reevaluate how Xcel can offer programs to customers that enable them to better control their electrical usage to maximize system wide efficiencies. AMI and Smart Grid investments are large capital expenditures meant to enable the grid of the future, and in order to maximize the benefits to all ratepayers must be able to incorporate new technologies like EVs and other DERs.

In any such proposal, specific details on actual technology and the definite ability to incorporate better submetering would be appreciated." Part of the company's proposal is to develop its own Field Area Network (FAN) to facilitate two-way meter communications.¹⁸ In its response to PUC IR #6, Xcel stated that "At this time, the Company plans to collect and transfer billing meter data only from traditional electric service meters with the Field Area Network (FAN). Over the longer term, it has not been determined whether the FAN could or should be used in lieu of the customer's home Wi-Fi network, nor whether there would be any inherent advantages to this approach." Ensuring that any permanent EV tariff option could use the FAN instead of a customer's Wi-Fi connection would help eliminated additional forecasted expenses and potential billing errors associated with the current pilot.

Pilots

The purpose of a pilot projects is to test new and unproven technology. Many times pilots do not have a specific end date in mind or propose a set of metrics to determine what a successful outcome looks like along with evaluation criteria for whether or not it should continue, and for what success looks like. While Xcel's pilot does have a specific period (30 months), it does not offer any metrics or evaluation. In reply comments, Xcel states they "believe it is appropriate to start this Pilot with a focused scope and then consider the appropriate next steps for future developments once operation experience is gathered" and "we hope to work with stakeholders to develop a set of development criteria and reporting metrics that would facilitate the process of scaling programs from pilot stage to broader offerings."¹⁹ Staff urges Xcel to consider

¹⁸ Xcel 2017 Biennial Report – Distribution Grid Modernization, November 1, 2017, Docket 17-776 pp. 12-17

¹⁹ Xcel Reply Comments, p. 3

identifying a set of metrics to evaluate what success looks like with this pilot, and with future pilot offerings. Oftentimes pilots are proposed without specific evaluation criteria, and this case is no exception. The Commission may wish to consider requiring Xcel to identify what criteria would mean it would move forward with the pilot, and what types of customer responses would prompt changes to the program. One option is for Xcel, within 60 days of the order, to develop set of evaluation criteria for the pilot meant to assess desired outcomes of the pilot and what success would entail.

VI. Decision Options

Pilot Approval

1. Approve Xcel's proposal for implementing a Residential EV Service Pilot.
2. Approve Xcel's proposal for implementing a Residential EV Service Pilot with modifications.
3. Deny Xcel's proposal for implementing a Residential EV Service Pilot.

Accounting Treatment

4. Approve Xcel's proposed accounting treatment. *(Xcel, Department)*
5. Deny Xcel's request to place the capitalized costs of the EVSE equipment and installation in ratebase for recovery unless it removes the associated monthly charges.
6. Allow Xcel to place costs incurred for customer education and information initiatives in the existing tracker account under the EV service Tariff in Docket No. E002/M-15-111.

Monthly Customer Charge

7. Eliminate the monthly customer charge and allow Xcel to place all costs associated with the pilot in a tracker account for possible recovery in a future rate case.
8. Eliminate the portions of the monthly fee related Load Monitoring and Data Management, and Maintenance service, and allow Xcel to place the costs in a tracker account for possible recovery in a future rate case.

Pilot Tariff

9. Approve Xcel's proposed Customer Agreement and Residential EV Service Pilot Tariff. *(Xcel)*
10. Modify Xcel's tariff to add the following sentence to the Renewable Energy Supply Option section of the proposed pilot tariff: "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." *(Department)*

Rule Variance

11. Approve Xcel's request for a rule variance to Minn. R. 7829.3200 and 7829.1300 *(Xcel)*
12. Grant the Company a variance to Minnesota Rules, parts 7820.3700 and 7820.3800 and the associated tariff language in Xcel's Electric Rate Book, limited to errors occurring due to the pilot participant's Wi-Fi connection. *(Department)*

Reporting Requirements

13. Within 60 days of the order, Xcel shall develop a set of evaluation criteria for the pilot meant to assess desired outcomes of the pilot and what success would entail.
14. Xcel shall, in its 2019 annual compliance filing, include a plan to transition the pilot into a permanent program, including modifications to address the following concerns, by no later than June 2020.
 - a. Minimize equipment and installation costs, including a "bring your own" option
 - b. Reduce the size of the monthly fixed customer charge
 - c. Include multifamily housing*(CEO)*

15. Xcel shall file biannual reports with the Commission, including, at a minimum:
 - a. number of participating customers and amount of electricity sold in the program, reported on a monthly basis;
 - b. tracker balances;
 - c. analyses of customer cost savings;
 - d. learnings on customer experience and pilot performance under Xcel's safety and reliability standards;
 - e. the number of customers choosing the bundled option;
 - f. the costs and revenues associated with the bundled option;
 - g. the number of customers choosing the pre-pay option;
 - h. the costs and revenues associated with the pre-pay option;
 - i. which types of EVSE equipment are chosen by the participants;
 - j. the contractors' estimated second-meter installation costs;
 - k. the extent to which Wi-Fi connections impacted pilot participation; and
 - l. how often Wi-Fi connectivity issues prevented billing under the pilot.

(Department)
16. Where not otherwise specifically required, require Xcel, within 30 days of the Order in this matter, to submit compliance filings in the current docket and updated tariff sheets to reflect the Commission's decisions.