

Staff Briefing Papers

Meeting Date	September 6, 2018	Agenda Item **2
Company	Xcel Energy Otter Tail Power Minnesota Power	
Docket No.	E002/M-15-111 E017/M-15-112 E015/M-15-120	
	In the Matter of Electric Vehicle Charging Tariffs	
Issues	What action should the Commission take on Minnesota Power’s tariff revision request? What action should the Commission take on the utilities annual EV Charging Tariff reports?	
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Relevant Documents

Date

2017 Electric Vehicle Reports

Xcel Energy	June 1, 2018
Minnesota Power	June 1, 2018
Otter Tail Power	June 1, 2018
DOC DER – Comments	August 9, 2018
Fresh Energy, Institute for Local Self Reliance, and Minnesota Center for Environmental Advocacy – Comments	August 10, 2018
Minnesota Power – Reply Comments	August 27, 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.

Background

Minn. Stat. [§216B.1614](#) requires the state’s investor-owned utilities (IOUs) to offer a tariff allowing a customer to purchase electricity solely for the purpose of charging an electric vehicle (EV). In the Spring of 2015, Minnesota Power (in [Docket 15-120](#)), Otter Tail Power (in [Docket 15-112](#)), and Xcel Energy (in [Docket 15-111](#)) each filed an EV tariff. On June 22, 2015, the Commission issued its [Order](#) approving the tariffs and requiring annual reports.

On October 26, 2017, the Commission issued its [Order](#) accepting in the above docket accepting the utilities second annual report and requiring additional information for the next reporting cycle. Appendix A contains current reporting requirements.

On June 1, 2018, Otter Tail, Minnesota Power, and Xcel each filed, in their respective dockets, their third annual reports. In the June 1 Report, Minnesota Power also requested tariff modifications to move from an off-peak only tariff to an on/off peak rate design that eliminates control equipment that was not functioning adequately.

The Department filed comments on all three reports as well as Minnesota Power’s tariff revision request. The Institute for Local Self Reliance, Fresh Energy, and Minnesota Center for Environmental Advocacy (collectively “EV Advocates”) filed joint comments on Minnesota Power’s proposed tariff revision.

Summary of 2018 EV Reports

The Department reviewed the annual reports, provided a summary of the utilities efforts and recommended the Commission accept the reports as complete.

	Xcel Energy	Minnesota Power	Otter Tail Power
Customers Enrolled as of April 2018	211	2	5
Total Energy Sold on Tariff (yearly)	737,256 kWh	7,292 kWh	9,844 kWh
% of Charging Occurring Off Peak¹	92%	100%	100%

Staff agrees with the Department that the utilities have fulfilled their statutory reporting requirement, and recommends that the Commission accept the reports (**Decision Option 1**). Staff also recommends one minor change to the reports for 2018, detailed below.

During the last round of EV reports the Commission required additional information (a complete list of reporting requirements is in [Attachment A](#)) from the utilities. This information and any actions the Commission should take on it will be incorporated with the ongoing Commission inquiry into electric vehicles in Docket 17-879. Staff appreciates the additional information provided by utilities in this round of annual reports.

¹ By design, Minnesota Power’s and Otter Tail Power’s offerings only allow customers to charge off peak.

Promotional Cost Trackers

Minn. Stat. 216B.1614 requires that an off peak charging tariff “includes a mechanism to allow the recovery of costs reasonably necessary to comply with this section, including costs to inform and educate customers about the financial, energy conservation, and environmental benefits of electric vehicles and to publicly advertise and promote participation in the customer-optional tariff.”

In the annual reports, the Commission has required the utilities to report on the status of communication cost trackers, if applicable.²

Reporting Period	Xcel Energy	Minnesota Power	Otter Tail Power
2015-2016	\$30,080.00	\$0.00	\$2,509.77
2016-2017	\$106,050.29	\$0.00	\$3,615.43
2017-2018	\$132,325.01	\$1,665.00	\$6,842.52

Both Minnesota Power and Otter Tail Power included cost breakdowns of their outreach activities at differing levels of detail in this year’s reports. Xcel did not provide an activity by activity breakdown of costs. Staff particularly appreciated Minnesota Power’s detailed breakdown of its promotional activities that included the estimated number of interactions and the cost for that particular activity. Staff recommends that in future reports that Xcel submit a breakdown of promotional costs as well. This is captured in **Decision Option 2**, which is not utility specific for uniformity among the IOUs.

Staff does not in any way mean to imply that the level of investment in promotional costs is unreasonable. In fact, it may be that additional education and outreach is warranted to promoting off-peak EV tariffs. Broader EV issues, including EV education and promotion, are being discussed in the Commission’s EV Inquiry (Docket 17-879). As the Commission and stakeholders work to determine the appropriate level of EV investment, additional details on promotional activities will be helpful in determining the most cost effective way of reaching target audiences

Minnesota Power Request for Tariff Revision

In its annual report Minnesota Power detailed ongoing technical and programmatic issues and with its existing EV Tariff option. The current tariff only allows customers to charge between the hours of 11pm and 7pm. While this strictly enforces the off-peak charging time period, some customers want the flexibility to be able to charge during on peak time periods (at a higher rate) if necessary.

Furthermore, the hardware that Minnesota Power uses to administer the rate is aging and finding replacement parts in the event of malfunctions is becoming difficult. Minnesota Power also noted that “some EV chargers do not work effectively when they have been without power

² Minnesota Power did not choose to track cost for the first two reports, stating that these costs were minimal and the Company saw no need for a tracker account.

and are required to start charging automatically when energized” which caused issues with the tariff required equipment.

In their annual report, Minnesota Power evaluated five alternative methods to the current two-service/two-meter method of separate EV charging it currently employs (found on pages 11 to 16 of its report):

- Meter Data Management System (MDMS) + Advanced Metering Infrastructure (AMI) + Customer Information System (CIS)
- Advanced Metering Infrastructure + Customer Information System
- “Smart” EV charger with embedded meter + customer Wi-Fi
- External load monitoring + customer Wi-Fi
- Vehicle monitoring system with embedded meter + cellular signal

Minnesota Power indicated that its preferred option is the MDMS + AMI + CIS, which would result in a secondary meter for the EV load, but would not require a separate service. However, the Company acknowledged that due to the rollout timeline of the above technologies this option would not be available immediately, and instead proposed modest changes to its existing tariff.

In the modified tariff, Minnesota Power would move to an on peak/off peak program, similar to Xcel Energy’s (approved in Docket 15-111). Customers would no longer be required to pay for an additional switching device, however the tariff would still require a parallel service with two meters.

	Existing Tariff	Proposed Tariff Revisions
Monthly Service Charge	\$4.25	\$4.25
On-Peak Time Period	Not available	8 am – 10 pm M-F, excluding holidays
On-Peak Energy Charge	n/a	\$0.11763/kWh
Off-Peak Time Period	11pm to 7pm daily	10 pm – 8am M-F, weekends, and holidays
Off-Peak Energy Charge	\$0.04332/kWh	\$0.03903/kWh

The **Department** recommend approval of Minnesota Power’s proposed tariff changes.

EV Advocates (Fresh Energy, MCEA, and ILSR)

In their comments, the EV Advocates detailed that EVs can bring noticeable benefits to Minnesota, including:

- Possible utility bill reductions of over \$10 billion by 2050³
- Possible total benefits of \$30 billion by 2050⁴
- Higher levels of renewable integration

³ EV Advocates Comments, pg 2

⁴ Id.

However, in order to achieve these benefits, the EV Advocates posited that flexible charging, enabled by smart charging devices, is necessary. Without properly designed off peak and managed charging rates, customers will likely plug in their vehicles during non-optimal periods of peak demand. Furthermore, the EV Advocates pointed out that having such rates in place before EV adoption increases is imperative to high customer enrollment.

However, in order to take advantage of these types of programs, some kind of submetering or secondary metering is required unless the participant is enrolled in a whole house time of use rate. Therefore, the EV Advocates argued that while Minnesota Power's proposed revisions to the existing EV tariff would bring some benefits to customers, it did not eliminate the largest barrier to participation: the requirement of a second meter installation. They commented that beyond the extra \$51 a year in additional fixed costs, "the second meter provides no intrinsic value to a customer; it is simply a means to get lower-cost electricity overnight." Furthermore EV Advocates did not agree with MP's preferred future offering of MDMS + AMI + CIS as a submetered option since it still relied on a second meter and did not include a level two charging device.

While the EV Advocated did not oppose Minnesota Power's requested changes, they instead recommended that the Commission require Minnesota Power to file a smart charging pilot that uses EVSE as the submetering technology as it would bring large benefits to ratepayers and EV owners.

Minnesota Power Reply

In reply comments, Minnesota Power stated that while it agreed with the EV Advocates that a second meter was a barrier to off-peak EV charging, it was premature to require the Company to implement a smart charging pilot at this time for numerous reasons, including:

- Low regional EV adoption in Minnesota Power's service territory
- Xcel Energy's smart charging pilot is just getting under way. The Company, which serves roughly 1/10 the number of residential customers that Xcel does, will look to this pilot for lessons learned, as well as recruitment success.
- The Company's ongoing progress in regards to the Time-of-Day Pilot, will likely be a future option for residential EV owners that will not have the upfront cost burden, or monthly fees of a smart charging pilot
- The results of the Commission's inquiry will provide Minnesota's electric utilities with more direction regarding the utilities role in driving adoption of EVs.

Therefore, Minnesota Power recommended that the Commission approve its requested changes as a bridge to a future rate offering and address the issue of a smart charging tariff as the EV market evolves.

Staff Analysis

While Staff agrees that a 'smart charging' pilot may bring valuable learnings and benefits to Minnesota Power and its customers, the Commission's EV Inquiry (Docket 17-879) would be a more appropriate forum to discuss required EV programs. For example, the Commission may make provide insights into the appropriate cost allocation of in-home charging devices that

would be helpful for Minnesota Power as they design a program. Staff wishes to avoid competing processes while the inquiry is ongoing.

Staff also wishes to emphasize Minnesota Power's point that using Wi-Fi to send metering data via a charger embedded smart meter is likely to be challenge in large portions of the Company's service territory. Rural areas do not have access to the same internet and telephone infrastructure as metro areas – for example, in the Commission's investigation into Frontier Communications (Docket 18-122), many members of the public living in northern Minnesota commented on the slow internet service they received.

The changes request by Minnesota Power will address immediate problems with the Company's charging tariff, including lowering the off peak rate and expanding the time it is available. Staff recommends that the Commission approve Minnesota Power's requested tariff modifications and take up the issue of smart charging technology and rate design for the Company in the ongoing EV Inquiry (Docket 17-879).

Decision Options

Docket 15-111, 15-112, 15-120

1. Accept the utilities' 2017 Annual Electric Vehicle Reports. *(DOC, Staff)*
2. Require the utilities in subsequent reports a breakdown costs by educational and outreach initiatives, including, where possible, a separation of costs used to promote the off peak charging tariff versus EV adoption in general. *(Staff)*

Docket 15-120 (Minnesota Power) Decision Options

3. Approve Minnesota Power's proposed changes to its EV Tariff. *(MP, DOC)*
4. Require Minnesota Power to file a smart charging pilot that eliminates the requirement for a second meter and will permit managed charging in the future. *(EV Advocates)*
5. Take some other action.

Staff recommends decision options 1-3

Attachment A: EV Reporting Requirements

June 22, 2015 [Order](#)

1. The amount of energy sold in on- and off-peak periods, if applicable;
2. A brief description of all development and promotional activities and their costs;
3. The number of customers choosing the renewable-source option;
4. The status of the communications costs tracker account, if applicable; and
5. Copies of any EV promotional materials distributed to customers.

October 26, 2017 [Order](#)

6. Minnesota Power shall include in its next annual report an evaluation of options to reduce the upfront cost burden for customers looking to opt into the EV tariff, including but not limited to a discussion of sub-metering technologies available. Minnesota Power shall also include a timeline for filing a proposed pilot program or implementation of any other feasible option.
7. Otter Tail Power shall meet the following additional requirements as part of its next annual report:
 - a. Submit monthly usage data;
 - b. Discuss the feasibility of a sub-metering pilot proposal and options and feasibility of implementing a sub-metering pilot program proposal; and
 - c. Analyze whether to continue recovering promotional costs from only EV customers or whether those costs could be recovered through some other mechanism.
8. Xcel shall file in next year's annual report ... an assessment of current and forecasted EV penetration in Xcel's service territory, including an analysis of current and forecasted tariffs in use and charging practices.

Note: staff understands reporting requirements 6, 7b, and 7c to only apply to the reports submitted in 2018. Otter Tail should continue to file monthly usage data in ongoing reports. Staff expects that a deeper discussion of EV forecasting will occur through Docket 17-879.