414 Nicollet Mall
Minneapolis, MN 55401

PUBLIC DOCUMENT: TRADE SECRET INFORMATION EXCISED
—PUBLIC DATA—

January 30, 2015

—Via Electronic Filing—

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE: PETITION
RESIDENTIAL ELECTRIC VEHICLE CHARGING TARIFF
DOCKET NO. E002/M-15-____

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits the attached Petition for an electric vehicle charging tariff in compliance with Minnesota Statute Section 216B.1614.

The Company is pleased to offer our customers that own or lease electric vehicles with greater optionality with this new rate offering. These customers will be eligible for significant discounts when recharging their vehicles during off-peak hours and will have the opportunity to recharge their vehicles partially or entirely from renewable sources.

Attachment B to our Petition has been marked Non-Public as it contains information the Company considers to be trade secret data as defined by Minn. Stat. §13.37(1)(b). The information derives an independent economic value from not being generally known or readily ascertainable by others who could obtain a financial advantage from their use. Thus, Xcel Energy maintains this information as a trade secret pursuant to Minn. Rule 7829.0500.

We have electronically filed this document with the Minnesota Public Utilities Commission, and have provided hard copies of the Summary of Filing to parties per the attached service list.

PUBLIC DOCUMENT: TRADE SECRET INFORMATION EXCISED
—PUBLIC DATA—

Please contact Amy Liberkowski at amy.a.liberkowski@xcelenergy.com or 612-330-6613 if you have any questions regarding this filing.

Sincerely,

/s/

AAKASH H. CHANDARANA
REGIONAL VICE PRESIDENT
RATES AND REGULATORY AFFAIRS

Enclosures
c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF A RESIDENTIAL ELECTRIC VEHICLE CHARGING TARIFF	DOCKET NO. E002/M-15-____ PETITION

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission this Petition for approval of a Residential Electric Vehicle (EV) Service tariff as required by Minn. Stat. § 216B.1614, which allows a customer to purchase electricity solely for the purpose of recharging an EV.

An EV charging rate provides participating residential customers with an incentive to refuel their electric vehicles during off-peak hours, saving customers money, and shifting electricity demand away from peak periods. The tariff also offers customer choice by providing the option to purchase electricity from the utility's current mix of energy supply sources or partially or entirely from renewable energy sources. We are excited that we are able to offer our customers with a new option for off-peak EV charging that provides a significant discount of 43 percent from our standard flat residential rate and includes an opportunity to purchase green energy at a competitive price. We believe this rate offering will align with interest we're hearing for more options to better manage energy use and a more customized energy mix.

To comply with the legislation, passed as part of the 2014 Omnibus Energy Bill, we elected to use a time-of-day rate design, which provides reduced energy charges during off-peak periods solely for EV charging. The proposed periods for on- and off-peak rates for the EV charging tariff are:

- Off-peak: 9:00 p.m. – 9:00 a.m. weekdays, all day weekends and holidays
- On-peak 9:00 a.m. – 9:00 p.m. weekdays (except holidays)

We propose the following rates for our Residential Electric Vehicle Service tariff:

- June-September On-peak Energy Charge per kWh: $0.17564
- Other Months On-peak Energy Charge per kWh: $0.14170
- Off-peak Energy Charge per kWh: $0.03300

We respectfully request that the Commission approve the Company's proposed tariff, including definition of peak periods, terms and conditions of service, its proposal for a renewable energy option, and a tracker account for recovering costs associated with information, advertising, promotion and education.

The following attachments are included with this Petition:

- Attachment A: Compliance Matrix
- Attachment B: Electric Vehicle Rate Design Study, Christensen Associates
- Attachment C: Residential Electric Vehicle Service Tariff Sheet
- Attachment D: Residential Electric Vehicle Service Bill Mockup

I. SUMMARY OF FILING

A one-paragraph summary of the filing accompanies this Petition pursuant to Minn. R. 7829.1300, subp. 1.

II. SERVICE ON OTHER PARTIES

Pursuant to Minn. Stat. § 216B.17, subd. 3, and Minn R. 7829.1300, subp. 2, we have electronically filed this Petition. A summary of the filing has been provided to all persons on the Company's miscellaneous electric service list.

III. GENERAL FILING INFORMATION

Pursuant to Minn. R. 7825.1400 and 7829.1300, subp. 3, the Company provides the following required information.

A. Name, Address, and Telephone Number of Utility

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

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

Alison Archer
Assistant General Counsel
Xcel Energy
414 Nicollet Mall, 5th Floor
Minneapolis, MN 55401
(612) 215-4656

C. Date of Filing and Date Modified Rates Take Effect

The date of the filing is January 30, 2015. The Company requests approval of the Residential Electric Vehicle Service Tariff as an addition to our Electric Rate Book to become effective 60 days following Commission approval.

D. Statute Controlling the Schedule for Processing the Filing

This Petition is made pursuant to Minn. Stat. § 216B.16, subd. 1, which prescribes general timelines for rate and tariff changes, including but not limited to a requirement of 60-days' notice prior to any rate or tariff change.

Under Commission Rules, the proposed rate change discussed in this Petition falls within the definition of a "miscellaneous tariff filing" under Minn. Rule 7829.0100, subp. 11, since no determination of Xcel Energy's general revenue requirement is necessary. Minn. R. 7829.1400, subp. 1 and 4 permit comments in response to a miscellaneous filing to be filed within 30 days and reply comments to be filed no later than 10 days from the expiration of the original comment period. This permits the Commission to act within the 60-day notice period.

E. Utility Employee Responsible for Filing

Amy Liberkowski
Manager, Regulatory Analysis
Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401
(612) 330-7529

IV. MISCELLANEOUS INFORMATION

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

Alison Archer
Assistant General Counsel
Xcel Energy Services Inc.
414 Nicollet Mall, 5th Floor
Minneapolis, MN 55401
Alison.C.Archer@xcelenergy.com

Tiffany Hughes
Records Analyst
Xcel Energy Services Inc.
414 Nicollet Mall, 7th Floor
Minneapolis, MN 55401
Regulatory.Records@xcelenergy.com

V. DESCRIPTION AND PURPOSE OF FILING

The Company continually seeks to provide enhanced products and services that are responsive to customer needs. We believe utilities will necessarily play a critical role in enabling alternative transportation markets by providing the energy to fuel vehicles in a safe, reliable, and cost-effective manner. EVs offer a number of benefits including reduced emissions, lower fueling and maintenance costs, and increased energy security.

As EV ownership increases among our customers, this rate offers an opportunity for EV drivers to save on charging costs by refueling their cars at reduced off-peak rates. By encouraging EV customers to charge during off-peak hours, the Company shifts that demand to a time of day that imposes the least cost on all customers.

A. Background

During the State's 2014 legislative session, the Legislature passed an Omnibus Energy Bill which included amending Minn. Stat. § 216B.1614 to require public utilities to establish and offer a tariff that allows customers to purchase electricity solely for the purpose of charging an EV. The tariff must be filed by February 1, 2015 and include either a time-of-day or off-peak rate, and an option for customers to purchase electricity from the utility's current mix of energy supply sources or entirely from renewable energy sources under Minn. Stat. § 216B.169, subd. 2(b)(d) and subd. 3(a). In compliance with the statute, the Company is filing this Petition for a Residential Electric Vehicle Service tariff. A matrix of compliance items associated with the statute is included as Attachment A to this Petition.

B. Description of the Proposed Program and Tariff

In this Petition, we seek Commission approval of our proposed tariff, which will:

- Provide residential customers with time-of-day EV charging rates;
- Offer the option for participating customers to supply electricity for this service partially or entirely from renewable energy resources; and
- Propose a gift card or bill credit promotion for new Residential EV rate subscribers who also subscribe to Windsource, removing the barrier for customers to adopt the renewable energy option with this rate.
- Include a mechanism to recover costs for information, education, advertising and promotion of the program through a tracker account.

1. Subscription

This tariff will be available to all Residential customers for service exclusively for EV loads including battery charging and accessory usage. Customer participation is voluntary. In order to participate in this program, customers must complete Company-approved documentation verifying possession, through ownership or lease, of an EV as defined in Minn. Stat. § 169.011, subd. 26a. Service through this rate shall be separately metered, typically through a sub-meter installed behind the customer's main meter. Sub-metered consumption under this rate schedule will be subtracted from the main meter for purposes of billing the customer's non-EV electricity usage.

2. Rate Development

In 2014, we hired Christensen Associates Energy Consulting to complete a study on Electric Vehicle Rate Design. The study looked at the various issues associated with EV ratemaking, gave an overview of current utility EV ratemaking practice, and made a recommendation for EV rate offerings by Xcel Energy. The findings from this study helped to inform the pricing periods, rates, and customer charges associated with the EV tariff. A copy of the study is included as Attachment B to this Petition.

The Company also conducted outreach with interested stakeholders to get feedback on a draft version of the EV charging rate. At a December 2014 meeting with Drive Electric Minnesota, a partnership of public and private entities (of which Xcel Energy is a founding member) working to support the expansion of electric vehicles and plug-in charging infrastructure, we presented a draft EV rate design that used the off-peak period of 11:00 p.m. – 8:00 a.m. for every day of the week. We heard interest from stakeholders at that meeting in making two revisions to that proposed off-peak period design:

- Extending off-peak to include weekend days to accommodate the greater use of EVs on weekends as compared to weekdays; and
- Extending off-peak to end at 9:00 a.m. rather than 8:00 a.m. to allow vehicle pre-heating to continue until leaving for work for those on a later schedule.

The result of incorporating these revisions into our draft EV rate design was an off-peak schedule very similar to our current Residential Time of Day (TOD) Service. We recognized this similarity by adjusting the start of the EV off-peak period from 11:00 p.m. to 9:00 p.m. to be consistent with the Residential TOD Service time periods as defined in the current Definition of Peak Periods provision in Section 5, Sheet number 3 of our Minnesota Electric Rate Book. Using a consistent time schedule for both the Residential Time of Day and Residential Electric Vehicle tariffs matches our proposal more closely to the interests of EV advocates. It also provides significant benefits of rate simplicity, consistency and comparability. Comparability of TOD and EV rate schedules is an important consideration because customers can also take advantage of an off-peak rate incentive for EV charging by using Residential TOD Service for all of their electric energy usage.

Consistent with the Residential TOD rate, the EV charging rate design proposed by the Company is a two-part time of day rate with a consistent definition of peak periods throughout the year. It has seasonal on-peak rates and a non-seasonal off-peak rate. Table 1 below shows the proposed schedule for on- and off-peak periods for the EV charging rate.

Table 1: Definition of Peak Periods

Off-peak Periods	**Peak Periods**
9:00 p.m. – 9:00 a.m. weekdays	9:00 a.m. – 9:00 p.m. weekdays (except holidays*)
All hours weekends and holidays[1]	

3. Pricing

Customers participating in this rate schedule will receive a bill which reflects energy charges based on kWh usage and a monthly Customer Charge. Energy charges will be calculated based on on-peak and off-peak energy usage. The methodology for calculating the tariff ensures that it "appropriately reflects off-peak versus peak cost differences in the rate charged," as required by Minn. Stat § 216B.1614, Section 10, subd. 2, paragraph (c) 1.

[1] Holidays, as defined by the draft tariff, include: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

EV energy charges were determined in consideration of the forecasted on- to off-peak relationship between marginal energy costs and consistency with the level of Residential Service energy charges. The proposed ratio of on- to off-peak EV energy charges, including the cost of fuel, is 3.0 to 1. This ratio moderates the current forecast ratio of 2.6 to 1 with the current Residential TOD ratio of 3.5 to 1. This approach maintains reasonable consistency with Residential TOD rates while better recognizing expected energy cost differences by time of day. The development of proposed EV energy charges and their comparability with current Residential and Residential TOD charges is provided in the Table 2 below.

Table 2:
Development of Proposed Residential EV Service Base Energy Charges*

	Usage	Summer	Winter	Annual Average		
	Percent	Base	Base	Base	Fuel	Total
Residential	100.0%	**8.671**	**7.393**	7.819	2.711	10.530
Residential TOD						
On	37.7%	**18.524**	**15.130**	16.261	2.711	18.973
Off	62.3%	**2.720**	**2.720**	2.720	2.711	5.431
Ave	100.0%	8.671	7.393	7.819	2.711	10.530
On/Off Ratio						3.5
EV TOD						
On	37.7%	**17.564**	**14.170**	15.301	2.711	18.013
Off	62.3%	**3.300**	**3.300**	3.300	2.711	6.011
Ave	100.0%	8.671	7.393	7.819	2.711	10.530
On/Off Ratio						3.0

*Based on compliance filing in Docket No. E002/GR-12-961

Customers will be subject to a monthly Customer Charge to cover fixed customer-related costs including additional metering requirements. This ensures that there is no cost for this tariff to non-participating customers. The proposed monthly Customer Charge for the EV tariff is $4.95, which is the same amount that has been established following Commission approval for two existing rate options for residential customers that have the same incremental metering and billing cost requirements. These existing rate options are Energy Controlled Service (Non-Demand Metered) and Limited Off Peak Service, which both provide separate metering and billing for specific electric loads at energy rates that differ from the Residential Service tariff.

Also consistent with the rate options of Energy Controlled Service (Non-Demand Metered) and Limited Off Peak Service, as a secondary service option the proposed

EV tariff does not include a provision for the application of a monthly surcharge for the Low Income Energy Discount Rider. This monthly surcharge is already applied to residential customers through their primary electric service tariff.

The proposed Residential EV Service tariff offers customers an average 43 percent energy charge discount for off-peak EV charging (($0.10530 - $0.06011 = $0.04519) divided by $0.10530). Customer rate savings from the proposed EV Service tariff will depend on total EV energy usage and the percent of that usage during the off-peak period. Total savings will be the amount of energy charge savings from off-peak energy usage net of the monthly Customer Charge and the additional cost of any on-peak energy usage. EV customers will experience a net savings from their off-peak energy consumption when their monthly off-peak energy usage exceeds 110 kWh (which equals $4.95 divided by ($0.10530 - $0.06011)). The net monthly savings for each additional 100 kWh of EV off-peak energy usage are $4.52 (100 kWh x ($0.10530 - $0.06011)). Assuming typical monthly EV usage of about 300 kWh, the monthly savings from off-peak charging would be approximately $8.60.

4. Renewable energy option

As required in subd. 2 of the statute, the tariff includes an option to purchase electricity entirely from renewable energy resources. The renewable energy supply option is available through our Voluntary Renewable and High-Efficiency Energy Purchase Rider (Windsource program) or any other available rate schedule for voluntary renewable energy supply that is applicable. The renewable energy supply option will be subject to the provisions contained in the relevant tariff sheet of our Minnesota Electric Rate Book. Customers who choose the renewable energy supply option will pay the currently applicable rate for the Windsource program in lieu of system energy fuel costs for the kWh of renewable energy usage selected, or the applicable rate for another available rate schedule for voluntary renewable energy.

In an effort to promote the EV charging rate to environmentally-minded customers, the Company proposes a promotional offering to new Residential EV Service subscribers. The promotion will consist of a one-time bill credit or gift card representing the approximate annual incremental cost of three (3) monthly 100 kWh blocks of Windsource subscription, a rough equivalent of offsetting 8,000-12,000 miles with renewable energy credits. The gift card or bill credit is planned to be $25 per participant for the 2015 calendar year for those customers that subscribe to both the Residential EV Service and Windsource (at either 3 blocks or 100% of usage on the EV rate). This promotion effectively allows customers to elect the renewable option without reducing their monthly savings.

5. *Mechanism for recovery of communications costs*

Consistent with the statute, the Company proposes that the appropriate costs to inform and educate customers on the benefits of electric vehicles and to advertise and promote the proposed optional Residential EV Service tariff be deferred and recorded in a separate tracker account. The Company intends to provide customer communication on the benefits of electric vehicles and the availability of this tariff through various marketing efforts. Preliminary plans include an online tool that helps customers select the best rate for their usage and a targeted promotional campaign. The Company will petition the Commission to recover qualifying costs in a future rate proceeding. This proposed approach recognizes uncertainty in the cost of our preliminary marketing plans and the costs that will qualify for a tracker account. It also recognizes uncertainty in the projected number of EV customers and their kWh charging usage.

However, the Company is concerned that a cost recovery mechanism specific only to the proposed Residential EV Service tariff may not be adequate or appropriate. In addition to the proposed Residential EV Service tariff, EV charging is also available without separate metering through the existing Residential Service and Residential TOD Service tariffs. Including EV communication costs only in a rate component for the proposed Residential EV Service tariff would make it an inconsistent and uneconomic alternative to existing tariffs that are also used for EV charging. A more general tracker account for EV communication costs that is not specific to only the proposed Residential EV Service tariff would be more appropriate.

C. Proposed Tariff Sheets

In this filing, the Company proposes to make the EV charging rate a permanent offering. Our proposed Residential Electric Vehicle Service tariff sheet is included as Attachment C to this Petition. An example bill illustrating the Residential Electric Vehicle Service is also enclosed with this Petition as Attachment D.

D. Program Implementation and Ongoing Operation

Recognizing the need for on-going reporting, the Company proposes to provide the Commission an annual compliance filing by the end of the first quarter of the year proceeding the Commission's Order on the status of this rate offering. The annual filing will include the number of customers participating in the rate, information under the tariff including kWh sales by on- and off-peak periods, the number of customers choosing the renewable option, the status of the communications costs tracker account, and any other data required by the Commission.

The Company proposes that the Residential EV Service Tariff option become effective and available to customers 60 days after the Commission Order is issued.

E. Effect of Change upon Xcel Energy Revenue

The Company does not currently have a forecast of energy sales or of the number of customers that will take service under this rate, but does not anticipate that this tariff will result in significant additional revenues in the near future.

F. Standard of Review

The legal standard of review for the Company's petition for its r Residential Electric Vehicle Charging Tariff is found at Minn. Stat. § 216B.1614 Subd. 2 (c).

The commission may approve the tariff if the public utility has demonstrated that the tariff:

(1) appropriately reflects off-peak versus peak cost differences in the rate charged;
(2) 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;
(3) provides for clear and transparent customer billing statements including, but not limited to, the amount of energy consumed under the tariff; and
(4) incorporates the cost of metering or sub-metering within the rate charged to the customer.

This Petition demonstrates to the Commission that the Company's Residential Electric Vehicle Charging Tariff satisfies those requirements.

CONCLUSION

Xcel Energy respectfully requests that the Commission approve the Company's proposed tariff for a Residential Electric Vehicle Service necessary to comply with Minn. Stat. § 216B.1614 related to EV charging rates as provided for in the 2014 Omnibus Energy Bill.

Dated: January 30, 2015

Northern States Power Company

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Beverly Jones Heydinger	Chair
David C. Boyd	Commissioner
Nancy Lange	Commissioner
Dan Lipschultz	Commissioner
Betsy Wergin	Commissioner

IN THE MATTER OF THE PETITION OF NORTHERN STATES POWER COMPANY FOR APPROVAL OF A RESIDENTIAL ELECTRIC VEHICLE CHARGING TARIFF	DOCKET NO. E002/M-15-____ **PETITION**

SUMMARY OF FILING

On January 30, 2015, Northern States Power Company, doing business as Xcel Energy, filed with the Minnesota Public Utilities Commission a petition for approval of a Residential Electric Vehicle (EV) Service in compliance with Minn. Stat. § 216B.1614, which allows a customer to purchase electricity solely for the purpose of recharging an EV.

Compliance Matrix
Electric Vehicle Charging Tariff

Petition Requirements	Reference
(HF #2834) **Minnesota Statute § 216B.1614**	
Subd. 1. **Definitions.** Applicable Statutes:	
(a) Terms defined as follows:	Petition @ Pages 1, 4-5 & 10
(b) "Electric vehicle" as set out in Section 169.011, Subd. 26a;	Petition @ Page 5
(c) "Public utility" per Section 216B.02, Subd. 4; and	Petition @ Pages 1 & 10
(d) "Renewable energy" per Section 216B.169, Subd. 2, Para. (d).	Petition @ Page 4
Subd. 2. **Required Tariff.**	
(a) By February 1, 2015 each public utility selling electricity at retail must file with the commission a tariff that allows a customer to purchase electricity solely for the purpose of recharging an electric vehicle. The tariff must:	Petition @ Page 5
(1) contain either a time-of-day or off-peak rate, as elected by the public utility;	Petition @ Page 6
(2) offer a customer the option to purchase electricity:	Petition @ Pages 1 & 4
(i) from the utility's current mix of energy supply sources; or	Petition @ Page 4
(ii) entirely from renewable energy sources, subject to the conditions established under section 216B.169, subdivision 2, paragraph (b), and subdivision 3, paragraph (a); and	Petition @ Page 4
(3) be made available to the residential customer class.	Petition @ Page 5
(b) The public utility may, at its discretion, offer the tariff to other customer classes.	N/A
(c) The commission shall, after notice and opportunity for public comment, approve, modify, or reject the tariff. The commission may approve the tariff if the public utility has demonstrated that the tariff:	Petition @ Pages 3 & 5
(1) appropriately reflects off-peak versus peak cost differences in the rate charged;	Petition @ Pages 6-8 Attachment B
(2) 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;	Petition @ Page 9

Compliance Matrix
Electric Vehicle Charging Tariff

Petition Requirements	Reference
(3) provides for clear and transparent customer billing statements including, but not limited to, the amount of energy consumed under the tariff; and	Petition @ Pages 5, 7 & 10 Attachment D
(4) incorporates the cost of metering or sub-metering within the rate charged to the customer.	Petition @ Pages 7, 9 & 10
(d) Within 60 days of commission approval of a public utility's tariff filed under this section, the public utility shall make the tariff available to customers.	Petition @ Pages 3 & 10
(e) The utility may at any time propose revisions to a tariff filed under this subdivision based on changing costs or conditions.	Recognized via this governing Statute
Subd. 3. **Data reporting**. Each public utility providing a tariff under this section shall periodically report to the commission, as established by the commission and on a form prescribed by the commission, the following information, organized on a per-quarter basis:	Petition @ Pages 9-10
(1) the number of customers who have arranged to purchase electricity under the tariff;	Petition @ Pages 9-10
(2) the total amount of electricity sold under the tariff; and	Petition @ Pages 9-10
(3) other data required by the commission.	Petition @ Pages 9-10

CHRISTENSEN ASSOCIATES ENERGY CONSULTING

Electric Vehicle Rate Design

prepared for
Xcel Energy

prepared by
Laurence D. Kirsch
Eric Peterson
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January 19, 2015

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ELECTRIC VEHICLE RATE ISSUES

Electric vehicles (EVs) promise considerable environmental and economic benefits. The environmental benefits are due to electrical energy being a cleaner transportation fuel than gasoline. For example, EVs have about one-half the CO_2 emissions per mile of gasoline-fired vehicles, even with coal-fired generators in the electric generation mix. The economic benefits are mostly due to EVs having about one-quarter the cost per mile of gasoline-fired vehicles. Additional economic benefits arise from EVs reducing America's dependence upon imported oil, thus reducing the adverse financial and national security implications of such dependence.

In consideration of some or all of these benefits, Minnesota law now requires Minnesota's retail electric utilities to file EV tariffs with the Minnesota Public Utilities Commission by February 1, 2015. Section 10 of H.F. No. 2834 specifies that these tariffs must:

- allow customers "to purchase electricity solely for the purpose of recharging an electric vehicle";
- allow customers the option of purchasing electricity "entirely from renewable energy resources";
- "be made available to the residential customer class";
- include off-peak rates that "appropriately reflect[] off-peak versus peak cost differences in the rate charged";
- allow recovery of costs incurred to offer the tariff; and
- "incorporate[] the cost of metering or submetering within the rate charged to the customer."

This report provides information to assist Xcel Energy in developing its EV tariffs in compliance with H.F. No. 2834. Section 1 begins with a general discussion of EV ratemaking issues, focusing on the principles for designing EV tariffs and setting their rates. Section 2 provides a survey of EV tariffs in the U.S. Section 3 offers tentative recommendations for the EV tariffs that Xcel Energy might offer to its Minnesota customers.

1. OVERVIEW OF EV RATEMAKING ISSUES

This section describes many of the ratemaking issues that Xcel Energy needs to consider as it develops its EV tariffs.

1.1. Why should EV rates differ from other electricity rates?

EV rates might differ from those applicable to other electricity services because, relative to other electric services, the costs of serving EV load might be different and because the benefits of serving EV load might be different.

Significant cost differences between serving EVs and serving other electricity uses could arise from significant differences in the time patterns of electricity consumption by EVs relative to other electricity uses. For all electricity uses, efficient electricity prices vary hourly according to hourly variations in the marginal costs or market prices of electricity services. If there are practical reasons for not having such hourly pricing, then time-of-day (TOD) pricing (also known as "time-of-use pricing") can serve as a second-best alternative. An efficient TOD rate should reflect the load-weighted average of the hourly marginal costs or market prices within each TOD period. Because of differences in the time patterns of electricity use by EVs and other end-uses, the efficient load-weighted TOD rates for EV may be different than those for other end-uses.

Significant cost difference can also arise from the impacts that EVs have on distribution systems. EV charging by many households or businesses in a particular area may require distribution system upgrades in that area. As a matter of fairness and managing local peak loads, prices of service to EV customers should arguably reflect these prospective or actual upgrade costs.[1]

Significant benefit differences arise from the fuel-related benefits of vehicles running on electricity rather than gasoline. For pricing efficiency, the fuel-related costs of air pollution, water pollution, and national defense, for example, should be incorporated into the prices of fossil fuels through mitigation requirements, taxes, and/or cap-and-trade schemes applicable to the relevant pollutants and fuels. Incorporation of these externalities into fuel costs would allow consumers to see, in relative fuel prices, the full benefits of EV relative to gasoline-dependent vehicle choices. But because these externalities have been only partly incorporated into fuel costs – through SO_x and NO_x markets, for example – it may be argued that EV owners should be subsidized for the value of the unpriced externalities.[2] Such subsidies could be paid to EV owners through reduced electricity prices or sharing of the capital costs of EVs' charging equipment. Utilities would recover the costs of these subsidies through higher prices paid by all other electricity customers.

1.2. Should EV rates reflect the special needs of EV customers?

EV customers have special needs because EVs' batteries presently limit driving distances between charges and require at least a few hours for each charge. Charging can be relatively cheap and convenient when it occurs at night in consumers' homes, but may be relatively expensive and inconvenient when it occurs during the daytime when consumers have driven their EVs to work or to shopping areas, where power must be obtained from charging stations open to employees or to the public.

[1] In the near future, Xcel Energy may have a distribution cost impact study that facilitates analysis of these costs.

[2] Such an argument is problematic, however, because subsidies make energy relatively cheap compared to other goods and promote inefficiently high energy consumption: adding more subsidies promotes additional consumption.

As a matter of efficiency, electricity rates should reflect costs and should not discriminate among electricity customers or electricity uses based upon the special needs of some group of customers. Nonetheless, public policy might seek to encourage the development of EVs through EV rates that are discounted relative to costs and that consider EVs' special charging needs.

Offering non-cost-justified discounts for EVs' electricity use is financially risky for utilities because any discounts that are justified to develop the EV market might become permanent, thus requiring permanent subsidization by non-EV utility customers. There is the further risk that discounts for EVs' electricity use might discourage innovation in EV technologies. For example, true cost-based rates might encourage development of faster-charging EV batteries, while discounted rates might reduce the profitability and therefore the incentives for battery manufacturers to develop faster-charging batteries.

1.3. Should customers' EV use be metered separately from other uses?

In principle, separate metering is warranted if the benefits of separate metering exceed the extra metering costs. The extent of the benefits depends upon the relationships between the customer's standard rate, the time pattern of power system marginal costs, and the time pattern of EV charging.

In practice, however, H.F. No. 2834 mandates that customers be able "to purchase electricity solely for the purpose of recharging an electric vehicle." Regardless of benefit-cost considerations, separate metering is necessary to implement this sole purpose.

1.4. Should EV rates vary over time?

EV energy rates could change hourly to reflect marginal costs or market prices of electricity. This approach would give the most accurate price signal. Responding to this price signal could require some sort of "smart grid" computerized response mechanism. EV owners might not appreciate the price uncertainty inherent in this approach, however.

Alternatively, EV electricity rates could change on a time-of-day and seasonal basis to reflect marginal costs or market prices of electricity as forecast before the beginning of each rate year. This TOD rate could be the same as applies to the customers' non-EV loads; but because TOD rates depend upon the time patterns of customers' loads and because EV loads could have very different time patterns than other electricity uses, it may be advisable to specially tailor EVs' TOD rate according to EV loads. TOD pricing gives EV owners price certainty; but relative to hourly pricing, it reduces the accuracy of the price signal in indicating when EV charging would be least costly for the power system.

1.5. Should EV rates vary by customer location?

In theory, electricity prices – for EV and all other electricity uses – are most efficient if they vary by customer location according to locational marginal prices (LMPs) and according to how the need for distribution system upgrades depends upon changes in local electricity usage patterns. In practice, utilities rarely differentiate their retail rates by customer location. In particular, our

survey of utilities offering EV tariffs, which we present in Section 2 of this report, found no variation in EV rates within each utility service territory.[3]

1.6. Should EV rates vary among different customer types?

It would be efficient for EV rates to vary among different customer types to the extent that different customer types have different time patterns of EV electricity usage. For example, if residential EV customers generally charge at night when the marginal costs of electricity supply are relatively low and non-residential EV customers generally charge during daytime hours when marginal costs are relatively high, then efficient EV rates charged to residential customers would be lower, on average, than those charged to non-residential customers.

1.7. Who should build, own, operate, and pay for EV charging stations?

The beneficiary pays principle implies that customers should pay for the charging stations they use. For EV charging in homes or private commercial enterprises, this principle implies that the costs of charging facilities should be fully borne by the owners of these homes or commercial enterprises. If non-owners use these facilities, as may be the case for residents of multi-family apartment buildings and employees of business enterprises, the owners can charge for use of their facilities as market conditions will allow.

Subsidization of the costs of charging stations may be justified by some specific public policy goals, such as jump-starting the market for EVs.

Although utilities must build, own, and operate the distribution systems that support private and public charging infrastructure, it is not clear that they must build, own, and operate the charging stations themselves. Utilities would be the least-cost builders, owners, and operators of charging stations if there are some economies of scope that give utilities greater expertise or lower costs than could be expected of unaffiliated enterprises. Perhaps utilities would have such an expertise and cost advantage for private infrastructure, such as in helping homeowners deal with the installation and use of their charging equipment. On the other hand, it is plausible that unaffiliated enterprises could offer such services as cheaply and as well as utilities. It is less likely that utilities would have such an advantage for public charging stations, as the expertise needed to run such stations is quite different than that needed to run power systems. Furthermore, competing unaffiliated enterprises might be better at providing customers with consumer-responsive charging services at least cost. Finally, for utilities that set rates under cost-of-service regulation, owning charging stations raises complex ratemaking issues with respect to the inevitable over- or under-recoveries of costs of charging stations.

[3] We did, however, find that Nevada Power and Sierra Pacific, which are under the same corporate umbrella, have similar EV tariff designs but different EV prices. This is a pattern that we would expect that Xcel will follow in the different states that it serves.

1.8. How should EV rates depend upon the costs of renewable energy?

H.F. No. 2834 mandates that Minnesota utilities allow customers the option of purchasing electricity "entirely from renewable energy resources." Because renewable energy in Minnesota is preponderantly from wind resources and because the wind sometimes stops blowing, a literal interpretation of this mandate would require curtailment of electric service to customers taking this option whenever the wind stops blowing. Consequently, to offer continuous service to EV customers while meeting the spirit of the law, an EV tariff must have some sort of "banking" process by which renewable energy produced in one hour could be used by renewable energy customers in other hours.

The rationale for a "banking" process is that, aside from capacity values, renewable resources' environmental benefits depend upon their total electrical energy output over time, not their output in any particular hour. Renewable energy output reduces fossil fuel-fired electrical energy output, which reduces fossil fuel use, which reduces fossil fuel-related pollution. Unless the hourly pattern of renewable resource output is systematically related to significant hourly differences among the pollution characteristics of marginal fossil fuel sources, that hourly pattern is of little importance in determining environmental benefits. Consequently, the renewable resource mandate of H.F. No. 2834 can be reasonably interpreted to mean that each Minnesota utility must procure a quantity of renewable energy that, over a period such as a year, equals or exceeds its sales of renewable energy.

If renewable energy is no more expensive than the utility's traditional energy mix, then the utility can charge renewable energy EV customers the same rates as are charged to customers who rely upon the utility's traditional mix. If renewable energy *is* more expensive than the traditional mix, then the utility should charge renewable energy EV customers at rates that exceed those of the traditional mix by enough to cover the additional expense. To encourage efficient time patterns of electricity consumption, the recovery of this additional expense should be achieved, to the extent possible, through rates that have a time pattern that is proportional to the time pattern of the power system's marginal costs.

1.9. How should EV rates evolve with the passage of years?

EV rates need to evolve over time with changes in the costs of serving EV customers, in electricity competition, in EV ratemaking goals, and in utility ratemaking methods. This can be accomplished through rate filings or through formula rates that quantify how rates change with factors such as LMPs or specific utility costs.

2. OVERVIEW OF CURRENT UTILITY EV RATEMAKING PRACTICE[4]

We have identified twenty-two utilities in thirteen states that have tariff schedules that are specifically designed for electric vehicle charging.[5] Table 1 lists these utilities and their tariffs.

- Of the fifty tariffs shown in the table, thirty-four apply to residential customers only, nine apply to non-residential general service (GS) customers only, four apply to both residential and GS customers, and three apply to public charging stations.
- Twenty-eight of the tariffs are experimental, while the other twenty-two are permanent.

In addition to the utilities identified in the table, we have found other utilities who specifically say that their customers may take EV charging service through their standard non-EV rates, thus paying the same prices for electricity used to charge EVs as for any other electricity uses. Such utilities often give EV customers the option of requesting the TOD rate applicable to their customer class so that they have an opportunity to charge their EVs when prices are relatively low.

2.1. Are EVs separately metered from other electricity uses?

About half of the EV tariffs shown in Table 1 – twenty-three of them – require that electric vehicles be metered separately from all other loads. On the other hand, fourteen tariffs, all for residential customers, are explicitly for EV loads that share common (single) metering with the rest of the household load. Customers on these fourteen tariffs pay the same prices for electricity used to charge EVs as for any other electricity uses.

Four utilities seem to be using their experimental tariffs to examine how customer behavior varies according to whether there is separate metering or single metering. Pacific Gas & Electric's Schedules E-9A and EVA allow either separate metering or single metering, while its nearly identical Schedules E-9B and EVB require separate metering. Similarly, Consumers Energy's REV-1 tariff option requires single metering while its nearly identical REV-2 option requires separate metering. Sacramento Municipal Utility District and San Diego Gas & Electric have similar arrangements.

2.2. Do EV tariffs have minimum terms for participation?

As shown in Table 1, most tariffs have no minimum requirement for use of the EV tariff. Fourteen tariffs have a 12-month minimum. Alabama Power is alone in having longer requirements, namely a 36-month minimum on one tariff and a 60-month minimum on another.

[4] The information in this section was gathered in September 2014.

[5] These are not necessarily the only EV tariffs that are presently being offered in the U.S.

2.3. Do EV tariffs have enrollment fees?

With a single exception, no. The exception is Pacific Gas & Electric's experimental Schedule PEVSP, which covers its metering-related costs through a $210 enrollment fee plus $17.50 in monthly fees.

2.4. Do EV tariffs subsidize customers' EV-related investments?

In general, no. The few exceptions pay a portion of customers' up-front costs for EV-related circuits, chargers, and/or meters. The Michigan utilities – Consumers Energy, Detroit Edison, and Indiana Michigan Power – all offer up to $2,500 subsidies for the installation of the equipment needed to charge an electric vehicle in a home. In Maryland, Potomac Edison's Schedule PIV pays for 50% of a Level II home EV charger. In Minnesota, Connexus' Residential Time-of-Day rate gives each customer a $270 rebate on an EV-related time-of-day meter.

2.5. Do EV tariffs have monthly charges?

Yes, two-thirds of the tariffs have monthly charges. As shown in Table 1, all of the GS tariffs have monthly charges, which range from $5 to $200 and which have a median value of $25. Most of the residential tariffs also have monthly charges, which range up to $223 and which have a median value of $7.

2.6. Do EV tariffs have prices that vary by season?

Yes. Table 2 describes the seasonality of the EV tariffs. The "Summer Months" column shows that, of the forty-eight tariffs shown in the table, thirty-one differentiate between summer and non-summer months.[6] The exceptions are marked by "N/A" for "not applicable." Fully half of the exceptions are in Hawaii, in which seasonal temperature variations are small relative to those in the rest of the U.S.

2.7. Do EV tariffs have prices that vary by time of day?

Yes. As shown in Table 2, to encourage EVs to use electricity when marginal costs of power supply are relative low, nearly all utilities' EV rates encourage off-peak consumption by offering lower electricity prices during off-peak periods.[7] Forty-six of the forty-eight EV tariffs shown in the table have prices that vary by time of day.

The two tariffs for which prices do not vary by time of day are experimental rates. Indianapolis Power & Light's Rate EVP levies a flat fee of $2.50 per charging session at public charging stations owned and operated by the utility. Detroit Edison's Schedule D1.9-2 has a $40 per

[6] There are two EV tariffs that appear in Table 1 that do not appear in Table 2. These are Pacific Gas & Electric's Schedule PEVSP and Pacific Power's Oregon Schedule 5, both of which have pricing schemes that depend upon mazes of their other tariffs.

[7] The table presents as "off-peak hours" those hours when EV prices are lowest. The tariffs sometimes call these "super off-peak hours."

month flat charge on separately metered EV service: this charge does not depend upon the quantity or time of use; and it may allow the utility to derive experimental information from comparing the behavior of customers on this schedule with that of customers on its Schedule D1.9-1, which *does* have prices that depend upon the quantity and time of use.

2.8. What are the time periods for EV tariffs?

Table 2 shows that off-peak periods are always at night and early mornings. Of the forty-eight tariffs shown in the table, only six have periods that are different in the winter than in the summer, sixteen have periods that are different on weekends than on weekdays, and twelve have periods that are different on holidays than on non-holiday weekdays. Sixteen EV tariffs count all weekend hours as off-peak, and seven count all holiday hours as off-peak.[8] Pacific Gas & Electric and Sacramento Municipal Utility District have the only EV tariffs with different off-peak hours on weekends than on weekdays.

A few rates have unusual characteristics. Arizona Public Service, Georgia Power, San Diego Gas & Electric, Southern California Edison, and Virginia Electric & Power have both off-peak and "super off-peak" periods, the latter of which are intended to strongly encourage customers to charge their cars between the late night and early morning hours.[9] Most tariffs have an intermediate rate between peak and off-peak in the summer, while most do not in the winter. Virginia Electric & Power's Schedule 1EV tariff has four different summer rates. Hawaiian Electric's EV-U tariff has a per-charge rate that differs depending on the time of day. Dakota Electric's EV Storage Rate and Potomac Electric's Schedule EV only allow EV charging at night.

2.9. What are the peak-to-off-peak price ratios for EV tariffs?

Table 3 shows peak and off-peak prices and peak to off-peak price ratios for various EV rates in each of two seasons, summer and winter. For every utility, data are those for each season's highest peak price and the lowest off-peak price applicable to EVs, including all applicable energy rate components (i.e., generation, delivery, and other charges, as applicable). Consistent with the general U.S. pattern of marginal energy costs and energy prices being higher in summer than winter, the simple average peak to off-peak energy price ratios for the EV tariffs shown in the table is 4.5 in summer and 2.4 in winter. With off-peak prices being nearly the same in both seasons, the difference in seasonal price ratios is entirely due to summer on-peak prices being about 75% higher than winter on-peak prices.

California and Nevada have the highest peak EV rates, with Minnesota (including only Connexus and Dakota Electric) taking third place. Georgia Power's off-peak EV rate is an extraordinarily low 1.33 cents per kWh, with the consequence that Georgia Power's peak to off-peak price ratio is an outlier at 15.28.

[8] Different utilities have different definitions of holidays.

[9] For these utilities, Table 2 shows only the super off-peak periods, and Table 3 shows only super off-peak prices.

2.10. Do EV tariffs have prices that vary by amount of electricity consumption?

Only three EV tariffs have energy prices that vary according to the quantity of electricity consumed:[10]

- Pacific Gas & Electric's Schedule E-9 has energy prices that rise dramatically with the customer's monthly consumption in all pricing periods. For Schedule E-9a, the ranges of prices are: in the summer peak period, from 33.10 cents to 53.58 cents per kWh; in the summer off-peak period, from 5.05 to 16.99 cents per kWh; in the winter peak period, from 11.55 to 32.03 cents per kWh; and in the winter off-peak period, from 6.05 to 16.99 cents per kWh. The energy prices for Schedule E-9b follow very similar patterns.
- Southern California Edison's Schedule TOU-D-TEV also has energy prices that rise with the customer's monthly consumption in peak periods, but not in super-off-peak periods. In the summer peak period, prices range from 32.07 cents to 48.90 cents per kWh; while in the winter peak period, they range from 20.07 to 36.90 cents per kWh.
- Hawaiian Electric's TOU EV Rate has energy prices that rise modestly with the customer's monthly consumption in all pricing periods. The ranges of prices are: in the peak period, from 27.34 cents to 30.38 cents per kWh; and in the off-peak period, from 15.61 to 18.64 cents per kWh.

Only one EV tariff has monthly customer charges that depend upon the quantity of electricity consumed. This is Arizona Public Service's ET-EV rate, which has monthly customer charges that increase modestly from $17.28 per month to $23.19 per month as the customer's monthly load increases.

2.11. Do EV tariffs have demand charges?

As shown in Table 3, only a few of the tariffs have demand charges. Sacramento Municipal Utility District's Schedule EVPN2 is levied only on residential customer loads greater than 2 kW on each Summer Conservation Day: each such day gets its own demand charge. All the other utilities' demand charges are levied on each month's peak period maximum load of non-residential customers. The Southern California Edison demand charge is discounted for customers receiving service at high voltage levels.

A few demand charges are not shown in Table 3. The Nevada Power and Sierra Pacific on-peak demand charges are accompanied by additional demand charges on maximum loads in periods other than the summer peak. Pacific Power's Oregon Schedule 5 has a demand charge of $2.20 per kW-month on three-phase residential EV loads in all months.

[10] For the California utilities, Table 3 shows prices for consumption at 131% of baseline. For Hawaiian Electric, Table 3 shows prices for consumption at 500 kWh per month.

3. RECOMMENDATIONS FOR EV RATE OFFERINGS BY XCEL ENERGY

The following recommendations are ordered to roughly correspond to the order of the sections of Xcel's present residential tariffs.

3.1. To which customers will Xcel's EV rate offerings be available?

H.F. No. 2834 requires that Xcel's EV rate "be made available to the residential customer class" and allows Xcel "discretion" to "offer the tariff to other customer classes".

The Availability section of the tariff needs to address the following:

- *Define eligible customers*. Given that Xcel intends to limit its initial EV tariff offering to residential customers, these are probably customers served under Rate Codes A00, A01, A02, A03, and A04.
- *Define electric vehicles*. This can be accomplished by reference to section 169.011, subdivision 26a of Minnesota law.
- *Define connection requirements*. Depending upon the law and engineering considerations, Xcel may need to impose requirements on the voltage level, plug type, and other physical conditions of EV service.
- *Define metering requirements*. H.F. No. 2834 mandates that customers be able "to purchase electricity solely for the purpose of recharging an electric vehicle." Unless the customer's whole load is subject to hourly pricing or the customer elects to be served under an optional TOD rate that is specifically designed with consideration of EV charging loads, the implication of this mandate is that separate metering is necessary to implement this sole purpose. In addition, Xcel may wish to require wireless communication and/or data recording with the metering equipment.

3.2. How will Xcel's EV customer bills be determined?

H.F. No. 2834 "allow[s] the recovery of costs reasonably necessary" to offer EV service. Although demand charges may be warranted by distribution cost causation considerations, they are probably not feasible for residential EV service due to metering and customer relations reasons. Xcel is thus limited to recovering costs through monthly customer charges and per-kWh energy charges.

Consequently, the Determination of Customer Bills section of Xcel's EV tariff should specify the following:

- *Monthly customer charges* that cover customer-related costs, including any metering charges. Indeed, H.F. No. 2834 specifically requires Xcel's EV tariff to "incorporate[] the cost of metering or submetering within the rate charged to the customer."
- *Energy charges* that cover all other costs of EV service.

3.3. How will Xcel define its EV pricing periods?

H.F. No. 2834 requires that Xcel's EV tariff "contain either a time-of-day or off-peak rate." Such time-differentiation of EV energy prices should depend upon the time pattern of marginal energy costs, which for Xcel in Minnesota is identical with the time pattern of LMPs of the Midcontinent Independent System Operator (MISO). The time-differentiation of EV prices may also consider the precedents set by Xcel's existing TOD rates.

The Definition of Pricing Periods section of the tariff should therefore be based, at least in part, upon Xcel's forecast of LMPs for MISO's Minnesota hub. Such a forecast, for 2015, is summarized in Tables 4 and 5. These tables respectively show peak-day and non-peak-day simple averages of hourly LMPs for each hour of the day of each month. For visibility, hours with average prices below $20 per MWh are shown in blue while hours with average prices above $40 per MWh are shown in red.

From Table 4, it is apparent that the peak-day hours with the lowest LMPs are 1 am to 5 am, with a simple average of [redacted] per MWh. For the slightly broader period of midnight to 6 am, the simple average is [redacted] per MWh. For the period 9 pm to 9 am, the simple average is [redacted]. The lowest LMPs are in the shoulder and summer months of May through November. Although it may seem counterintuitive for low off-peak prices to occur in the summer, this phenomenon reflects the abundance of capacity that is deliberately made available in summer to meet annual peak loads, with the consequence that available on-line capacity happens to be superabundant during the summer off-peak hours.

From Table 5, it is apparent that the weekend and holiday hours with the lowest LMPs are 1 am to 6 am, with a simple average of [redacted] per MWh. For the slightly broader period of midnight to 7 am, the simple average is [redacted] per MWh. For the period 9 pm to 9 am, the simple average is [redacted] per MWh. The lowest LMPs are in the shoulder and summer months of April through November.

Table 6 shows the average LMPs for an EV rate that has the following constraints:

- There are two seasons each year.
- The summer season is June through September.
- There are two pricing periods in each season.
- Every non-holiday weekday of the year has an off-peak period of 9 pm to 9am.
- All holiday and weekend hours are in the off-peak period.
- On-peak rates may vary by season, but the off-peak rate is the same in both seasons.

The key figure is the [redacted] per MWh average LMP for the off-peak period, which should as the basis for the EV's off-peak rate.

Table 7 shows the TOD periods and average LMPs for an EV rate that, for a somewhat different set of constraints, minimize the variances between hourly LMPs and the simple average LMPs

within each TOD period.[11] The theoretical advantage of the variance-minimizing TOD periods is that, by facilitating the best available match between wholesale LMPs and retail prices, the net benefits of electricity production and consumption is maximized. In Table 7, the choice of months in the summer season is not constrained, nor are there constraints on the choice of non-holiday weekday hours. For such an optimization, the summer season would include only the two months of July and August, and the off-peak period would begin at 10 pm and end at 8 am. The off-peak LMP, applicable to a smaller number of hours, would be [redacted] per MWh.

In general, the smaller the number of constraints on the choice of seasons and hours, the closer the match between hourly LMPs and the average LMPs of each pricing period, and the lower the average LMP of the off-peak period. On the other hand, the lower off-peak LMP will apply to a smaller number of hours, and the on-peak hours may have higher prices.

3.4. What will be Xcel's EV rates?

H.F. No. 2834 requires that EV rates "appropriately reflect[] off-peak versus peak cost differences in the rate charged." This is consistent with the theory that an efficient TOD rate should reflect the load-weighted average of the hourly marginal costs or market prices within each TOD period.

The Rate section of the tariff needs to include monthly customer charges as described in Section 3.2. It also needs to include energy charges that recover all costs of EV service that are not recovered through customer charges.

- Energy charges for each TOD period should be based upon a combination of the marginal costs for that period (including LMPs, marginal energy losses, and peak-period marginal capacity costs) and the total costs that must be recovered through energy charges. In general, revenues raised by prices equal to marginal costs will fall short of the cost recovery requirement. The shortfall may be reconciled by either: a) setting prices above marginal costs by X% in all TOD periods; b) setting prices at 100% of marginal costs in off-peak hours and setting prices above marginal costs by Y% in peak hours; or c) other methods that are acceptable in Minnesota.

[11] In general, a TOD rate should be based upon a load-weighted average of LMPs, as follows:

$$AVGLMP_T = \sum_{h \in T} (Q_h * LMP_h) \Big/ \sum_{h \in T} Q_h$$

where *T* is the TOD period, *h* is an index of hours, and Q_h is prospective class load in hour *h*. In general, the variance should also be load-weighted, as follows:

$$Variance = \sum_{T} \sum_{h \in T} [Q_h * (LMP_h - AVGLMP_T)^2]$$

Because EV loads are presently trivial and have a time-pattern of use that is largely unestablished, the results of Table 6 are calculated without weighting. This is equivalent to setting Q_h equal to one in all periods.

- There is no need for EV energy prices that vary with the quantity consumed. Inclining block rates in off-peak hours would only discourage off-peak consumption by EVs, contrary to both Minnesota policy and economic efficiency.
- For reasons of equity, EV energy charges will not vary by customer location.

For EV customers who purchase electricity "entirely from renewable energy resources," the tariff needs to: a) define the banking process that assures that the customer is served "entirely from renewable energy resources"; and b) charge energy prices that have a higher cost recovery requirement than applies to Xcel's overall resource mix. The principles for setting such prices are stated in the first of the preceding three bullets. In addition, it may be advisable for Xcel to seek consistency in the cost recovery methods it applies to its Windsource program and its EV customers who want renewable energy.

EV rates will need to evolve over time, particularly because of changes over time in the costs of serving EV customers. General rate cases provide one forum for such evolution. Alternatively, EV rates could change according to a formula that depends upon LMPs and other specified factors. The survey presented in Section 2 of this report found no EV tariffs that had such a formula rate.

3.5. Will Xcel's EV tariff have a Minimum Monthly Charge?

This would likely be the Customer Charge.

3.6. What adjustments will be applicable to Xcel's EV rates?

These adjustments may include an Interim Rate Adjustment, a Fuel Clause Adjustment, a Resource Adjustment, an Environmental Improvement Rider, a Surcharge Rider, and a Low Energy Discount Rider.

3.7. What other issues might Xcel's EV tariff address?

Given the requirements of Minnesota law, the tariff would need to be non-experimental.

Unless there are significant or unusual costs of customers initiating service under this rate, there is no need for any enrollment fee or for any minimum duration of participation. If there are such costs, then enrollment fees, minimum duration, or early termination fees may be justified.

In the absence of a legal requirement, there is no need for subsidization of customer's fixed costs of initiating service under this rate.

There are good reasons for Xcel's system operators to have some control of EV loads. With the development of smart grid technologies, including wireless communication between Xcel and EV charging equipment, substantial cost-saving opportunities may be gained if system operators can modestly shift the timing of customers' EV charging. Such shifts can reduce the need for ramping capability as numerous customers attempt to begin charging simultaneously at the beginning of the off-peak period, and can relieve stresses on local distribution systems.

With present EV charging technologies requiring hours for a single charge, such shifts would have trivial impacts on customers.

Table 1
Electric Vehicle Tariff Characteristics

State	Utility	Schedule	Class	Experimental?	Metering	Minimum Months	Fixed Charge ($/mo)
Alabama	Alabama Power	BEVT	GS	No	separate	60	100.00
		PEV	res	No		36	
Arizona	Arizona Public Service	ET-EV	Res	Yes	single		16.68
California	Pacific Gas & Electric	E-9a	Res	Yes	single		1.59
		E-9b	Res	Yes	separate		6.56
		EV-a	Res	Yes	single		-0.53
		EV-b	Res	Yes	separate		6.56
		PEVSP	Res, GS	Yes	submeter	0	17.50
	Sacramento Municipal Utility District	EVNP1	Res	Yes	single		0.00
		EVNP2	Res	Yes	separate		3.00
	San Diego Gas & Electric	EV-TOU	Res	No	separate		
		EV-TOU2	Res	No	single		
	Southern California Edison	TOU-D-TEV	Res	No	single	0	
		TOU-EV-1	Res	No	separate	12	
		TOU-EV-3	GS	No	separate	12	25.08
		TOU-EV-4	GS	No	separate	12	200.07
Georgia	Georgia Power	TOU-PEV-4	Res	No			10.00

Table 1 (continued)
Electric Vehicle Tariff Characteristics

State	Utility	Schedule	Class	Experimental?	Metering	Minimum Months	Fixed Charge ($/mo)
Hawaii	Hawaiian Electric	EV-C ND	GS	Yes	separate		5.00
		EV-C Dem	GS	Yes	separate		5.00
		EV-F	Public	Yes	separate		5.00
		EV-R	Res	Yes	separate		1.50
		EV-U	Public	Yes	separate		N/A
		TOU EV	Res	Yes			10.50-18.50
Indiana	Indianapolis Power & Lt	EVP	Public	Yes			
Kentucky	Kentucky Utilities Co.	LEV	Res	Yes			10.75
	Louisville Gas & Electric	LEV	Res	Yes			10.75
Maryland	Baltimore Gas & Electric	EV	Res	Yes	single		6.88
	Potomac Edison Power	EV	Res, GS	Yes			4.01
		PIV	Res	Yes			
		R-PIV	Res	Yes			7.39
Michigan	Consumers Energy	REV-1	Res	Yes	single		7.00
		REV-2	Res	Yes	separate		0.00
	Detroit Edison	D1.9 1	Res, GS	Yes	separate		1.95
		D1.9 2	Res, GS	Yes	separate		40.00
	Indiana Michigan	RS-OPES/PEV	Res	No	single		

Table 1 (continued)
Electric Vehicle Tariff Characteristics

State	Utility	Schedule	Class	Experimental?	Metering	Minimum Months	Fixed Charge ($/mo)
Minnesota	Connexus	Res TOD	Res	No	separate		
	Dakota Electric	EV1	Res	Yes			
		EV Storage	Res	No			
Nevada	Nevada Power	GSHEVRR ND	GS	No	separate	12	24.30
		GSHEVRR Dem	GS	No	separate	12	24.62
		RHEVRR-TOU 1A	Res	No	single	12	11.30
		RHEVRR-TOU 1B	Res	No	single	12	33.60
		RHEVRR-TOU 2A	Res	No	single	12	72.00
		RHEVRR-TOU 2B	Res	No	single	12	223.20
	Sierra Pacific	OD-REVRR-TOU	Res	No	single	12	
		OGS-EVRR-TOU ND	GS	No		12	32.00
		OGS-EVRR-TOU Dem	GS	No		12	83.00
Oregon	Pacific Power	5	Res	No	separate		9.50
Virginia	Virginia Electric & Power	EV	Res	Yes	separate	12	2.90
		1EV	Res	Yes	separate	12	7.00

Table 2
Electric Vehicle Tariff Time Periods

State	Utility	Schedule	Summer Months	Off-Peak Hours			
				Summer	Winter	Weekends	Holidays
Alabama	Alabama Power	BEVT	Jun-Sep	9p-10a	9p-7a	All	
		PEV	N/A	9p-5a			
Arizona	Arizona Public Service	ET-EV	May-Oct	11p-5a		None	
California	Pacific Gas & Electric	E-9a	May-Oct	Midnight-7a		9p-5p	N/A
		E-9b	May-Oct	Midnight-7a		9p-5p	N/A
		EV-a	May-Oct	11p-7a		7p-3p	
		EV-b	May-Oct	11p-7a		7p-3p	
	Sacramento Municipal Utility District	EVNP1	Jun-Sep	10p-2p	10p-4p	10p-2p (S), 10p-4p (W)	
		EVNP2	Jun-Sep	MN-2p	10p-4p	N/A	
	San Diego Gas & Electric	EV-TOU	May-Oct	Midnight-5a			
		EV-TOU2	May-Oct	Midnight-5a			
	Southern California Edison	TOU-D-TEV	Jun-Sep	Midnight-6a			
		TOU-EV-1	May-Oct	9p-Noon			
		TOU-EV-3	unspecified	11p-8a		All	
		TOU-EV-4	unspecified	11p-8a		All	
Georgia	Georgia Power	TOU-PEV-4	Jun-Sep	11p-7a			

Table 2 (continued)
Electric Vehicle Tariff Time Periods

State	Utility	Schedule	Summer Months	Off-Peak Hours			
				Summer	Winter	Weekends	Holidays
Hawaii	Hawaiian Electric	EV-C Non-Demand	N/A	9p-7a		All	N/A
		EV-C Demand	N/A	9p-7a		All	N/A
		EV-F	N/A	9p-7a			N/A
		EV-U	N/A	9p-7a			
		EV-R	N/A	9p-7a		All	N/A
		TOU EV	N/A	9p-7a			N/A
Indiana	Indianapolis Power & Light	EVP	N/A				
Kentucky	Kentucky Utilities Company	LEV	May-Sep	10p-10a	10p-6a	All	N/A
	Louisville Gas & Electric	LEV	May-Sep	10p-10a	10p-6a	All	N/A
Maryland	Baltimore Gas & Electric	EV	Jun-Sep	8p-10a	9p-7a; 11a-5p	All	
	Potomac Edison Power	EV	Jun-Sep	8p-8a			
		PIV	Jun-Oct	8p-noon		All	N/A
		R-PIV	Jun-Oct	8p-noon		All	N/A
Michigan	Consumers Energy	REV-1	Jun-Sep	11p-7a		All	
		REV-2	Jun-Sep	11p-7a		All	
	Detroit Edison	D1.9 1	N/A	11p-9a		All	
		D1.9 2	N/A				
	Indiana Michigan	RS-OPES/PEV	N/A	9p-7a		All	N/A
Minnesota	Connexus	Res TOD	Jun-Sep	8p-8a			
	Dakota Electric	EV1	Jun-Aug	9p-8a		All	
		EV Storage	N/A	11p-7a			

Table 2 (continued)
Electric Vehicle Tariff Time Periods

State	Utility	Schedule	Summer Months	Off-Peak Hours			
				Summer	Winter	Weekends	Holidays
Nevada	Nevada Power	GSHEVRR ND	Jun-Sep	10p-6a			
		GSHEVRR Dem	Jun-Sep	10p-6a			
		RHEVRR-TOU 1A	Jun-Sep	10p-6a			
		RHEVRR-TOU 1B	Jun-Sep	10p-6a			
		RHEVRR-TOU 2A	Jul-Aug	10p-6a			
		RHEVRR-TOU 2B	Jul-Aug	10p-6a			
	Sierra Pacific	OD-REVRR-TOU	Jul-Sep	10p-6a			
		OGS-EVRR-TOU ND	Jul-Sep	10p-6a			
		OGS-EVRR-TOU Dem	Jul-Sep	10p-6a			
Virginia	Virginia Electric & Power	EV	N/A	1a-5a			
		1EV	Apr-Oct	1a-5a			

Table 3
Electric Vehicle Tariff Rates

State	Utility	Schedule	Summer Pk Dem Chg ($/kW-mo)	Energy Charges (cents/kWh)					
				Summer			Winter		
				Peak	Off-Pk	Ratio	Peak	Off-Pk	Ratio
Alabama	Alabama Power	BEVT		17.82	4.52	3.9	7.31	4.52	1.6
Arizona	Arizona Public Service	ET-EV		24.78	4.20	5.9	20.17	4.20	4.8
California	Pacific Gas & Electric	E-9a		47.58	10.99	4.3	26.03	10.99	2.4
		E-9b		47.10	20.32	2.3	25.61	21.22	1.2
		EV-a		39.27	9.71	4.0	26.55	9.97	2.7
		EV-b		38.74	9.67	4.0	25.97	9.93	2.6
	Sacramento Municipal Utility District	EVNP1		23.40	8.10	2.9	14.10	8.10	1.7
		EVNP2	3.50	43.00	6.00	7.2	13.00	6.00	2.2
	San Diego Gas & Electric	EV-TOU		43.99	16.08	2.7	20.18	17.17	1.2
		EV-TOU2		44.07	16.07	2.7	19.84	17.17	1.2
	Southern California Edison	TOU-D-TEV		48.90	9.51	5.1	36.90	10.31	3.6
		TOU-EV-1		37.34	10.83	3.4	25.46	11.17	2.3
		TOU-EV-3		38.90	9.31	4.2	17.11	10.20	1.7
		TOU-EV-4	13.00	28.45	4.99	5.7	10.32	5.88	1.8
Georgia	Georgia Power	TOU-PEV-4		20.32	1.33	15.3	6.21	1.33	4.7

Table 3 (continued)
Electric Vehicle Tariff Rates

State	Utility	Schedule	Summer Pk Dem Chg ($/kW-mo)	Energy Charges (cents/kWh)					
				Summer			Winter		
				Peak	Off-Pk	Ratio	Peak	Off-Pk	Ratio
Hawaii	Hawaiian Electric	EV-C Non-Demand		23.33	15.61	1.5	23.33	15.61	1.5
		EV-C Demand	11.69	18.97	15.61	1.2	18.97	15.61	1.2
		EV-F		31.97	26.97	1.2	31.97	26.97	1.2
		EV-R		25.06	15.61	1.6	25.06	15.61	1.6
		TOU EV		28.50	16.76	1.7	28.50	16.76	1.7
Kentucky	Kentucky Utilities Co.	LEV		13.79	5.08	2.7	13.79	5.08	2.7
	Louisville Gas & Electric	LEV		13.81	5.18	2.7	13.81	5.18	2.7
Maryland	Baltimore Gas & Electric	EV		18.84	8.74	2.2	21.45	8.40	2.6
	Potomac Edison Power	EV (GS)		N/A	9.53		N/A	9.93	
		EV (res)		N/A	9.63		N/A	10.03	
		PIV		18.82	7.86	2.4	17.06	6.67	2.6
		R-PIV		18.82	11.72		17.06	10.01	
Michigan	Consumers Energy	REV-1		22.10	8.97	2.5	12.94	8.97	1.4
		REV-2		22.10	8.97	2.5	12.94	8.97	1.4
	Detroit Edison	D1.9 1		19.62	9.12	2.2	19.62	9.12	2.2
		D1.9 2		0.00	0.00		0.00	0.00	
	Indiana Michigan	RS-OPES/PEV		14.18	3.69	3.8	14.18	3.69	3.8

Table 3 (continued)
Electric Vehicle Tariff Rates

State	Utility	Schedule	Summer Pk Dem Chg ($/kW-mo)	Energy Charges (cents/kWh)					
				Summer			Winter		
				Peak	Off-Pk	Ratio	Peak	Off-Pk	Ratio
Minnesota	Connexus	Res TOD		43.80	5.70	7.7	32.80	5.70	5.8
	Dakota Electric	EV1		37.85	5.85	6.5	37.85	5.85	6.5
		EV Storage		N/A	4.00		N/A	4.00	
Nevada	Nevada Power	GSHEVRR ND		30.52	6.01	5.1	5.37	4.88	1.1
		GSHEVRR Dem	8.25	21.05	5.85	3.6	5.35	4.87	1.1
		RHEVRR-TOU 1A		34.05	7.51	4.5	6.13	5.59	1.1
		RHEVRR-TOU 1B		51.25	6.38	8.0	5.79	5.27	1.1
		RHEVRR-TOU 2A		35.31	7.42	4.8	6.06	5.52	1.1
		RHEVRR-TOU 2B		56.22	7.85	7.2	5.56	5.07	1.1
	Sierra Pacific	OD-REVRR-TOU		41.57	6.35	6.5	8.86	6.35	1.4
		OGS-EVRR-TOU ND		39.43	5.42	7.3	7.88	5.42	1.5
		OGS-EVRR-TOU Dem	5.25	12.18	5.29	2.3	6.31	4.84	1.3
Virginia	Virginia Electric & Power	EV		14.28	1.68	8.5	14.28	1.68	8.5
		1EV		12.55	1.44	8.7	7.65	2.38	3.2

Table 4
Xcel Forecast of LMPs for MINN.HUB for 2015, Non-Holiday Weekdays (dollars per MWh)[12]

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
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19												
20												
21												
22												
23												
24												

[12] Based upon Xcel file "Hourly MISO LMPs Loads2014to2019B.xls", Sheet 1, column D.

Table 5
Xcel Forecast of LMPs for MINN.HUB for 2015, Weekends and Holidays (dollars per MWh)[13]

Hour	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1												
2												
3												
4												
5												
6												
7												
8												
9												
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14												
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16												
17												
18												
19												
20												
21												
22												
23												
24												

[13] Based upon Xcel file "Hourly MISO LMPs Loads2014to2019B.xls", Sheet 1, column D.

Table 6
Average Forecast LMPs for Xcel's TOD Periods
(prices in $ per MWh)

Period	Season	Hours	Avg LMP
Peak	June-Sept	9 am – 9 pm	
Peak	Oct-May	9 am – 9 pm	
Off	All year	9 pm – 9 am	

Table 7
Variance Minimizing Pricing Periods and Their Average LMPs
for a Two-Season, Two-Period Rate Design
(prices in $ per MWh)

Period	Season	Hours	Avg LMP
Peak	July-August	8 am – 10 pm	
Peak	Sept-June	8 am – 10 pm	
Off	All year	10 pm – 8 am	

Redline

Northern States Power Company, a Minnesota corporation
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

PROPOSED

TABLE OF CONTENTS

Section No. 1
~~4th~~5th Revised Sheet No. 1

(Continued on Sheet No. 1-2)

Northern States Power Company, a Minnesota corporation
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2

PROPOSED

RATE SCHEDULES Section No. 5
TABLE OF CONTENTS ~~6th~~7th Revised Sheet No. TOC-1

(Continued on Sheet No. TOC-2)

Northern States Power Company, a Minnesota corporation
~~and wholly owned subsidiary of Xcel Energy Inc.~~
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

PROPOSED

RESIDENTIAL ~~SERVICE - UNDERGROUND~~ELECTRIC VEHICLE SERVICE
RATE CODE ~~A03~~A08

Section No. 5
~~13th~~14th Revised Sheet No. 5

D
N

~~CANCELED~~

AVAILABILITY
Available to residential customers for service only to electric vehicle loads including battery charging and accessory usage. The customer must complete Company-approved documentation verifying possession, through ownership or lease, of an electric vehicle as defined in Section 169.011, subdivision 26a of Minnesota law.

CHARACTER OF SERVICE
Single-phase 60-Hertz service at approximately 120 or 120/240 volts will be provided hereunder. Three-phase service or other service upgrade requests will be provided in accordance with Company service regulations.

RENEWABLE ENERGY SUPPLY OPTION
Customers have the option to elect all or a portion of the supply of electricity under this schedule from renewable energy resources. The renewable energy supply option is available subject to the provisions contained in the Voluntary Renewable and High-Efficiency Energy Purchase (Windsource Program) Rider, or other available rate schedule for voluntary renewable energy supply that is applicable.

DETERMINATION OF CUSTOMER BILLS
Customer bills shall reflect energy charges (if applicable) based on customer's kWh usage, plus a customer charge (if applicable), plus demand charges (if applicable) based on customer's kW billing demand as defined below. Bills may be subject to a minimum charge based on the monthly customer charge and / or certain monthly or annual demand charges. Bills also include applicable riders, adjustments, surcharges, voltage discounts, and energy credits. Details regarding the specific charges applicable to this service are listed below.

RATE

Customer Charge per Month	$4.95
On-Peak Period Energy Charge per kWh	
June - September	$0.17564
Other Months	$0.14170
Off-Peak Period Energy Charge per kWh	$0.03300

INTERIM RATE ADJUSTMENT
A 6.61% Interim Rate Surcharge will be applied to rate components specified in the "Interim Rate Surcharge Rider" to service provided beginning January 3, 2014.

In addition, customer bills under this rate are subject to the following adjustments and/or charges.

FUEL CLAUSE
Bills are subject to the adjustments provided for in the Fuel Clause Rider.

RESOURCE ADJUSTMENT
Bills are subject to the adjustments provided for in the Conservation Improvement Program Adjustment Rider, the State Energy Policy Rate Rider, the Renewable Development Fund Rider, the Transmission Cost Recovery Rider, the Renewable Energy Standard Rider and the Mercury Cost Recovery Rider.

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(Continued on Sheet No. 5-6)

Northern States Power Company, a Minnesota corporation
~~and wholly owned subsidiary of Xcel Energy Inc.~~
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

PROPOSED

RESIDENTIAL ~~TIME OF DAY SERVICE - UNDERGROUND~~ELECTRIC VEHICLE SERVICE
RATE CODE ~~A04~~A08

Section No. 5
~~13th~~14th Revised Sheet No. 6

D
N

~~CANCELED~~

MONTHLY MINIMUM CHARGE
Customer Charge.

SURCHARGE
In certain communities, bills are subject to surcharges provided for in a Surcharge Rider.

LATE PAYMENT CHARGE
Any unpaid balance over $10.00 is subject to a 1.5% late payment charge or $1.00, whichever is greater, after the date due. The charge may be assessed as provided for in the General Rules and Regulations, Section 3.5.

DEFINITION OF PEAK PERIODS
The on-peak period is defined as those hours between 9:00 a.m. and 9:00 p.m. Monday through Friday, except the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. When a designated holiday occurs on Saturday, the preceding Friday will be designated a holiday. When a designated holiday occurs on Sunday, the following Monday will be designated a holiday. The off-peak period is defined as all other hours. Definition of on-peak and off-peak period is subject to change with change in Company's system operating characteristics.

COMMUNICATION COSTS
The Company will maintain separate accounting of the information, education, advertising and promotion costs associated with electric vehicles as provided in Minn. Stat. §216B.1614, subd.2, paragraph (c) 2 by deferring the costs to a tracker account, and will petition the Minnesota Public Utilities Commission to recover the qualifying costs.

TERMS AND CONDITIONS OF SERVICE

1. Residential Electric Vehicle Service shall be separately served and metered and must at no time be connected to facilities serving customer's other loads. Metering may be installed as a sub-meter behind the customer's main meter, in which case consumption under this rate schedule will be subtracted from the main meter for purposes of billing customer's non-Electric Vehicle electricity usage.
2. The customer shall supply, at no expense to the Company, a suitable location for meters and associated equipment used for billing. Installations must conform to the Company's specifications.
3. Company may require customer to provide access for Company-owned equipment for the recording and wireless communication of energy usage.
4. The rate contemplates that this service will utilize existing facilities with no additional major expenditures. Customer shall reimburse Company for any expenditure for facilities necessary to serve this load which would not otherwise be required to serve customer's load.
5. This schedule is also subject to provisions contained in Rules for Application of Residential Rates.
6. Customers that elect the Windsource program in calendar year 2015 for at least three (3) 100 kWh blocks or their entire usage on this schedule may receive a one-time $25 bill credit or gift card of the same value.

N

Date Filed: ~~11-02-05~~01-30-15 By: ~~Cynthia L. Lesher~~Christopher B. Clark Effective Date: ~~02-01-07~~
President and CEO of Northern States Power Company, a Minnesota corporation
Docket No. E002/~~GR-05-1428~~M-15- Order Date: ~~09-01-06~~

Clean

Northern States Power Company, a Minnesota corporation
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

PROPOSED

TABLE OF CONTENTS

Section No. 1
5th Revised Sheet No. 1

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Northern States Power Company, a Minnesota corporation
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2

PROPOSED

RATE SCHEDULES Section No. 5
TABLE OF CONTENTS 7th Revised Sheet No. TOC-1

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(Continued on Sheet No. TOC-2)

Date Filed: 01-30-15 By: Christopher B. Clark Effective Date:
President and CEO of Northern States Power Company, a Minnesota corporation
Docket No. E002/M-15- Order Date:

Northern States Power Company, a Minnesota corporation
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

PROPOSED

RESIDENTIAL ELECTRIC VEHICLE SERVICE
RATE CODE A08

Section No. 5
14th Revised Sheet No. 5

D
N

AVAILABILITY
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(Continued on Sheet No. 5-6)

Northern States Power Company, a Minnesota corporation
Minneapolis, Minnesota 55401
MINNESOTA ELECTRIC RATE BOOK - MPUC NO. 2

PROPOSED

RESIDENTIAL ELECTRIC VEHICLE SERVICE Section No. 5
RATE CODE A08 14th Revised Sheet No. 6

D
N

MONTHLY MINIMUM CHARGE
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6. Customers that elect the Windsource program in calendar year 2015 for at least three (3) 100 kWh blocks or their entire usage on this schedule may receive a one-time $25 bill credit or gift card of the same value.

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Xcel Energy®
RESPONSIBLE BY NATURE®

NORTHERN STATES POWER COMPANY

MAILING ADDRESS	ACCOUNT NUMBER		DUE DATE
J. SMITH 5555 MAIN STREET CITY MN 55XXX-XXXX	XX-XXXXXXX-X		05/18/2015
	STATEMENT NUMBER	STATEMENT DATE	AMOUNT DUE
	XXXXXXXXX	4/09/2015	$137.95

DAILY AVERAGES	Last Year	This Year
Temperature	32° F	32° F
Electricity kWh	32.3	41.9
Electricity Cost	$3.61	$4.45

QUESTIONS ABOUT YOUR BILL?

See our website: xcelenergy.com
Email us at: Customerservice@xcelenergy.com

Call 24 hours a day, 7 days a week

Please Call: 1-800-895-4999
Hearing Impaired: 1-800-895-4949
Español: 1-800-687-8778

Or write us at: XCEL ENERGY
PO BOX 8
EAU CLAIRE WI 54702-0008

Like us on Facebook Follow us on Twitter

SUMMARY OF CURRENT CHARGES (detailed charges begin on page 2)

Electricity Service	03/08/15 - 04/08/15	1300 kWh	$137.95
Current Charges			**$137.95**

ACCOUNT BALANCE

Previous Balance	As of 03/08	$110.10
Payment Received	Check 03/29	-$110.10 **CR**
Balance Forward		**$0.00**
Current Charges		$137.95
Amount Due		**$137.95**

INFORMATION ABOUT YOUR BILL

Thank you for your payment.

RETURN BOTTOM PORTION WITH YOUR PAYMENT • **PLEASE DO NOT USE STAPLES, TAPE OR PAPER CLIPS**

Xcel Energy®

ACCOUNT NUMBER	DUE DATE	AMOUNT DUE	AMOUNT ENCLOSED
XX-XXXXXXX-X	05/18/2015	$137.95	

To avoid a late pay charge of 1% of the unpaid balance, payment of total amount must be received by due date.
Make your check payable to XCEL ENERGY

MAY

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

------ manifest line ---------

J. SMITH
5555 MAIN STREET
CITY MN 55XXX-XXXX

XCEL ENERGY
P.O. BOX 9477
MPLS MN 55484-9477

Xcel Energy®

MAILING ADDRESS	ACCOUNT NUMBER		DUE DATE
J. SMITH 5555 MAIN STREET CITY MN 55XXX-XXXX	XX-XXXXXXX-X		05/18/2015
	STATEMENT NUMBER	STATEMENT DATE	AMOUNT DUE
	XXXXXXXXX	04/09/2015	$137.95

SERVICE ADDRESS: **5555 MAIN STREET CITY MN 55XXX-XXXX**
NEXT READ DATE: 05/08/15

ELECTRICITY SERVICE DETAILS

PREMISES NUMBER: 123456789
INVOICE NUMBER: XXXXXXXXXX

METER READING INFORMATION

METER 12345678 Read Dates: 03/08/15 - 04/08/15 (31 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	MEASURED USAGE	BILLED USAGE
Total Energy	9300 Actual	8000 Actual	1300	1300 kWh
Energy	9000 Actual	Actual	1000	1000 kWh

ELECTRICITY CHARGES — RATE: Residential Service

DESCRIPTION	USAGE UNITS	RATE	CHARGE
Basic Service Chg			$ 8.00
Energy Charge Winter	1000 kWh	$0.073930	$ 73.93
Fuel Cost Charge	1000 kWh	$0.030000	$ 30.00
Total			**$111.93**

METER READING INFORMATION

METER 22334455 Read Dates: 03/08/15 - 04/08/15 (31 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE
Total Energy	300 Actual	0 Actual	300 kWh
On-Pk Energy	20 Actual	0 Actual	20 kWh
Off-Pk Energy	280 Actual	0 Actual	280 kWh

ELECTRICITY CHARGES — RATE: Elec Vehicle Srvc

DESCRIPTION	USAGE UNITS	RATE	CHARGE
Basic Service Chg			$4.95
Off-Peak Energy Chg	280 kWh	$0.03300	$9.24
On-Peak Energy Chg Winter	20 kWh	$0.14170	$2.83
Fuel Cost Charge	300 kWh	$0.03000	$9.00
Total			**$26.02**

Pop Quiz

The largest power outage in the U.S. occurred in _____ and is known as _____.

A. 2003; The Great Midwest Blackout

B. 2005; The Great Blackout of the South

C. 2003; The Great Northeast Blackout

D. 2003; The Largest Blackout of the East

Source: http://www.history.com/this-day-in-history/the-great-northeast-blackout

Answer: C

CERTIFICATE OF SERVICE

I, Tiffany Hughes, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota; or

xx by electronic filing.

MPUC Docket No: Miscellaneous Electric Service List

Dated this 30th day of January 2015.

/s/

_____

Tiffany Hughes

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
Christopher	Anderson	canderson@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022191	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
James J.	Bertrand	james.bertrand@leonard.com	Leonard Street & Deinard	150 South Fifth Street, Suite 2300 Minneapolis, MN 55402	Electronic Service	No	GEN_SL_Northern States Power Company dba Xcel Energy-Elec_Xcel Miscl Electric
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