



414 Nicollet Mall
Minneapolis, MN 55401

October 19, 2018

—Via Electronic Filing—

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

RE: PHOTOVOLTAIC DEMAND CREDIT RIDER METHODOLOGY
COMMISSION INQUIRY INTO STANDBY SERVICE TARIFFS
DOCKET NO. E999/CI-15-115

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits the enclosed compliance filing proposing a Photovoltaic Demand Credit Rider methodology and updated credit rates to the Minnesota Public Utilities Commission in compliance with the Agreement between parties filed March 20, 2018, and the Commission's April 20, 2018 Order in the above mentioned docket.

We have electronically filed this document with the Minnesota Public Utilities Commission, and copies have been served on the parties on the attached service list. Please contact Amber Hedlund at amber.r.hedlund@xcelenergy.com or (612) 337-2268, or me at amy.a.liberkowski@xcelenergy.com or (612) 330-6613 if you have any questions regarding this filing.

Sincerely,

/s/

AMY A. LIBERKOWSKI
DIRECTOR, REGULATORY PRICING & ANALYSIS

Enclosures
c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Nancy Lange	Chair
Dan Lipschultz	Commissioner
Matthew Schuerger	Commissioner
Katie J. Sieben	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF THE PETITION OF
A COMMISSION INQUIRY INTO STANDBY
SERVICE TARIFFS

DOCKET NO. E999/CI-15-115

**PV DEMAND CREDIT RIDER
METHODOLOGY**

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits this compliance filing proposing a Photovoltaic (PV) Demand Credit Rider methodology, and updated credit rate to the Minnesota Public Utilities Commission in compliance with the Agreement between parties filed March 20, 2018, and the Commission's April 20, 2018 Order in the above mentioned docket.

In this proposal, we provide the background of the regulatory proceedings that predate this proposal, including the predecessor solar capacity credit, the current PV Demand Credit Rider filed as part of a settlement agreement with parties, and the results of recently filed studies supporting this proposal. We describe the proposed methodology and we provide a discussion of why we believe it is a better indicator of a solar credit than alternative methodologies.

As noted in the Commission's Order, the Company agreed to provide a qualitative discussion of the DER issues currently being addressed in other state and federal proceedings. This proposal includes an overview of other proceedings including the Minnesota Value of Solar, the state's interconnection process and standards reform initiative and the Company's adoption of IEEE 1547. Finally, the Company addresses distributed storage, a topic that was raised previously in this docket but was excluded from the Commission's Order addressing the PV Demand Credit Rider and is excluded from the current proposal.

I. BACKGROUND

This solar credit valuation methodology proposal arises following a series of proceedings beginning with an agreement made in the Company's 2010 rate case to study solar load profiles. That study informed an initial compromise value for a solar capacity credit, which was followed by a Company proposal for a revised structure for a PV Demand Credit Rider that maintained a roughly equivalent level of benefits to the original capacity credit. That was followed by a recently performed pair of studies which inform this current proposal for a new methodology for determining the credit level for the PV Demand Credit Rider. The Company briefly summarizes the background of this proposal here.

A. Origin of the (Now Closed) Solar Capacity Credit

As part of a settlement between the Company and the Minnesota Chamber of Commerce reached in the Company's 2010 electric rate case (Docket No. E002/GR-10-971), the Company agreed to study the load profile of large solar facilities to facilitate re-examination of the standby and supplemental rate tariffs for those facilities. Following the publication of the result of the Effective Load Carrying Capacity (ELCC) study conducted by the Company, the Commission met to consider a number of issues, including the level of a monthly solar standby capacity credit as identified through a lengthy stakeholder proceeding resulting in a compromise on the value of the solar capacity credit, proposed at \$5.15 per kW. Table 1 illustrates the establishment of the \$5.15 per kW credit.

Table 1. Compromise on (Now Closed) Solar Capacity Credit

<u>Line No.</u>	<u>Description</u>		<u>Notes</u>
(1)	Xcel Energy - Initial Proposed Credit (KW)	\$2.00	
(2)	SRRG/DOC - Average of HI and Low (KW)	\$8.35	
(3)	Solar PV Credit	\$5.18 ≈ \$5.15	[(1) + (2)] / 2

The Commission ultimately concluded that, while it did not approve of the methodology to arrive at the \$5.15 per kW credit, it did approve the credit level based on the parties' agreement that the credit level was generally reasonable.¹ The Commission also considered issues to be included as the Department of Commerce engaged in scoping a potential generic proceeding on standby service. The generic proceeding resulted in utility proposals to revise the terms of standby service.

¹ See Docket No. E002/13-315, *In the Matter of a Rate for Large Solar Photovoltaic Installations*, ORDER SETTING FINAL SOLAR PHOTOVOLTAIC STANDBY SERVICE CAPACITY CREDIT, REQUIRING UPDATES AND REQUIRING COMPLIANCE FILING, May 19, 2014.

B. Origin of the (Current) PV Demand Credit Rider

The Company filed a proposal to revise the design of standby service that included moving the solar credit to a separate PV Demand Credit Rider.² In making our proposal, the Company noted that, while the \$5.15 per kW credit level was not fully supported, among our redesign goals was to maintain a solar credit level consistent with the Commission's policy decision to provide a credit to solar generating customers. Therefore, while we structured our proposal to maintain a "legacy" level for solar PV customers, we emphasized that the level of the solar credit should be revisited. As noted here, the Commission adopted the Company's revised credit based on "legacy" levels and accepted the Company's proposal to come forward with a new methodology.

In its March 20, 2018 Order, the Commission approved another compromise between parties for the establishment of the PV Demand Credit Rider at a level of approximately \$.07 per kWh of solar generation during a peak period of 1:00-7:00 p.m., based on a \$4.52 per kW credit level. The Commission further required the Company to conduct a new ELCC study and PV Customer Demand study, to file the study results,³ and to work with stakeholders to propose a new PV Demand Credit Rider Methodology, taking into account the results of the studies.

C. Results of Recent Studies and Methodology Development

The Company and stakeholders met on June 5, 2018. Invited stakeholders included the Minnesota Department of Commerce, Minnesota Office of Attorney General, Minnesota Solar Energy Industries Association (MnSEIA), Wal-mart and Target Corporation. The Company presented the scope and methodology of a new ELCC study to be performed in compliance with the Commission's Order, as well as the scope and methodology of a study of billed demand at individual customer sites with PV. The Company filed its study results on August 17, 2018 and then hosted a follow-up meeting with stakeholders on August 28, 2018. The Company provided an overview of the results of both studies.

In performing the ELCC study, the Company found that the small scale solar ELCC was 45 percent based on 2017 data and 55 percent based on 2016 data. The 10 percent range in results between the two years demonstrates the sensitivity of the ELCC to actual hourly load and solar generation, and the coincidence of the two.

² See the Company's May 19, 2016 Petition in this docket.

³ See the Company's August 17, 2018 Compliance Filing in this docket.

The demand study indicated customers with installed PV had that billed kW reductions from the operation of solar generation of 7.8 percent in 2017 and 6.3 percent in 2016. The study found the highest billed demand reductions occurred during summer months when higher seasonal demand charges are applied. There was a wide range of individual customer impacts observed, significantly related to PV capacity as a percent of total site load requirements.

II. PV DEMAND CREDIT RIDER METHODOLOGY

A. Proposed Methodology

The Company’s proposed methodology is based on a capacity value stack approach that includes the cost components recommended by the Department in this docket and related preceding dockets for PV solar credit valuation. This is primarily an avoided cost approach that quantifies applicable avoided generation capacity costs and line losses, and can also recognize transmission costs. The total of component costs items are then applied to a system peak capacity contribution factor and then adjusted for a billed demand reduction associated with customer PV operation. The proposed methodology yields a credit level of \$2.15 per kW as the basis for conversion into the Rider peak period energy credit per kWh. This calculation is summarized below in Table 2.

Table 2

Proposed Methodology - PV Demand Credit per kW			
a	Levelized CT Cost	\$4.54	
b	Embedded Transmission Cost	\$3.47	
c	Total Generation and Transmission	\$8.01	a + b
d	Line Losses	6.65%	
e	Total with Losses	\$8.54	c * (1+d)
f	Future Need (2025) Timing Factor	60%	
g	Future Need Adjusted Total	\$5.13	e * f
h	Capacity Contribution	50%	
i	Capacity Contribution Adjusted Total	\$2.56	g * h
j	Reduced Billed Demand Value	\$0.41	
k	Demand Credit per kW	\$2.15	i - j

The levelized CT cost is based on the current levelized monthly avoided cost of a combustion turbine. The future need timing factor is a discount adjustment recognizing that no incremental capacity need is forecasted until the year 2025. The reduced billed demand value is based on a 6.4 percent decrease in billed demand

charges. This reduction is determined by applying seasonal demand rates to the 2017 average seasonal PV based reductions in peak billed demand quantities that average 5.9 percent for the year. This 5.9 percent quantity reduction is an update based on further analysis of the filed PV Billed Demand Study that identified a 2017 average billed demand quantity reduction of 7.8 percent.

The 6.4 percent demand charge reduction is a conservative value that does not fully consider the trend of PV installations with PV capacity that is closer to total site load requirements, which is a relationship associated with higher billed demand reductions. When the billed demand reduction is measured relative to PV capacity, the average billed demand quantity reduction is 11.2 percent.

The approved rate design of the PV Demand Credit Rider includes the conversion of a demand credit per kW into an energy credit per kWh of peak period solar PV generation. Table 3 below shows the calculation steps involved in this process.

Table 3

Credit per kW Conversion to Peak Period kWh Credit			
a	Demand Credit per kW	\$2.15	
b	Applicable Months per Year	11	
c	Annual PV Credit per kW	\$23.65	a * b
d	Total Annual Hours	8,760	
e	Annual Solar PV Capacity Factor	15.90%	
f	Peak Period Solar PV Capacity Factor	7.95%	e * 50%
g	Annual Peak Period Solar PV kWh per kW	696.42	d * f
h	Solar PV Capacity Credit per kWh	\$0.03396	c / g

We provide the updated credit rates on the proposed compliance PV Demand Credit Tariff Sheet in redline and final format, as Attachment A.

B. Credit Methodology More Accurately Reflects Solar Value

In its agreement with parties, the Company also committed to providing a discussion of rationales for why this proposal is or is not a better indicator of capacity or demand value than previously derived values. We believe care should be taken in the methodology to ensure it is as reasonable as possible to fairly consider the cost responsibility of all customers that pay for the credits received by customers on the PV Demand Credit Rider. After careful review, we believe the approach proposed

here incorporates cost of service principles and is a better indicator of solar credit values than prior approaches.

This proposed updated value stack methodology includes a number of improvements to initial applications of this approach. It recognizes that incremental capacity additions are not required for several years. The 50 percent PV capacity contribution to system peak requirements is consistent with the 45 percent to 55 percent range in the Company's small scale solar ELCC study and also with the MISO accreditation assumption prior to data availability. This initial assumed 50 percent contribution is higher than the comparable relationship of 36 percent for the PV Billed Demand Study as described in the following alternative methodology section.

A reasonable capacity contribution measurement also provides a direct and replicable method for future updates. We recommend reviewing the capacity contribution input value every two years to recognize the anticipated trend of lower contributions as solar capacity supply mix penetrations increase, as discussed in our ELCC study. We also suggest using MISO information as the information source in the future to increase transparency and to avoid dependency on additional customer specific ELCC studies.

The starting CT cost for the methodology calculation also acknowledges the significant CT cost drop from the 2013 annual value of \$87.04 per kW to an updated 2019 levelized annual cost of \$54.48.

The proposed methodology update retains a transmission component, which is not clearly indicated as a result of significant timing differences for generation and transmission peak time requirements. As a balanced approach, we have included transmission cost with the same future timing discount factor applied to generation peak capacity.

The additional recognition in the proposed methodology of the fact that PV does have some impact on reducing billed demand quantities is also a reasonable improvement over the founding assumption of no impact that was used for setting the existing credit level. This additional consideration addresses an original concern with overpayments to PV customers by recognizing their benefit from partial demand charge avoidance.

The monthly \$2.15 per kW credit level from the proposed methodology will provide a reasonable recognition of PV value without imposing a capacity overpayment on all other customers. The proposed methodology provides a transparent basis for determining the credit and has the additional benefit of being reasonably practical to

update. Its direct use of a capacity contribution factor will allow for the PV credit to move in step with ELCC or other measurement reductions that are anticipated as PV becomes a higher share of the generation mix and system peaks continue to shift to later times of the day. Alternately, to the extent that lead times for additional capacity requirements are reduced, the resulting increase in PV capacity value will be recognized by the proposed methodology.

The proposed PV demand credit level is also reasonable in the context of its relationship to existing interruptible service credits. The controllable load of interruptible customers is required to be removed during a control periods. Comparably, there is significant variability in PV capacity contributions during the highest system load days, and between the highest system load days. This variability increases later in the defined 1 to 7 p.m. peak period for the PV credit, which is when PV capacity contributions are declining as system capacity requirements net of renewable generation is increasing. The current interruptible credit for the majority of interruptible service customers ranges from \$3.17 to \$4.67 per kW, with the credit level based on a measured contribution to reducing system peak load requirements. Interruptible loads also provide relatively higher value by qualifying for capacity registration with MISO, which is not available for customer PV capacity. In addition, interruptible customers incur penalties when they do not curtail load when requested.

III. ALTERNATIVE METHODOLOGY CONSIDERED

The Company also developed and considered another credit methodology using a PV capacity contribution from the individual PV customer information in the PV Billed Demand Study. This approach compared the 2017 maximum PV contribution to the average PV kW contribution during the top 10 system peak days. The resulting capacity contribution was 36 percent for the hour between 5 pm and 6 pm and 50 percent for the hour between 4 pm and 5 pm. These capacity contributions are based on a simple average of all 24 customers included in the updated PV demand study, which individually comprise a wide range of the capacity contributions. The average 36 percent contribution for the hour ending 6 pm represents a range from 17 percent to 61 percent. The average 50 percent contribution for the hour ending 5 pm represents a range from 23 percent to 67 percent.

These PV capacity contributions during the top ten system load days are based on the ten day average, although there is a significant variation in the PV contribution within the ten days. Compared to the average for the top ten days, the PV capacity contribution for the individual 10 days varied from the average by a range of -33 percent to +13 percent for the hour ending 6 pm, and by a range of -10 percent to +7 percent for the hour ending 5 pm.

The next step in the alternative methodology applied the capacity contribution to the embedded generation capacity cost of \$6.40 less the \$0.41 per kW value of reduced billed kW demand quantities. This produced the same demand credit value of \$2.15 per kW as the proposed methodology for the hour ending 6 pm, and a demand credit value of \$3.02 per kW for the hour ending 5 pm.

Although this alternative methodology has value in affirming the proposed methodology, we believe our proposed methodology is more appropriate. The alternative methodology is highly data intensive, which reduces transparency and increases the difficulty of updating. It also includes a very diverse and limited set of specific current customers that may affect the reliability of its results.

IV. OTHER DER ISSUES

At the Commission's April 5, 2018 hearing, the Company agreed to provide a brief summary of other state and federal proceedings where DER issues are being addressed. We provide these brief overviews, and we note that the Company will provide further information on related topics in the Integrated Distribution Plan, to be filed with the Commission November 1, 2018. Here we describe the Value of Solar methodology proceeding, the statewide interconnection process and standards updates, the Company's efforts to adopt IEEE 1547-2018, and select proceedings at FERC.

A. The Value of Solar (VOS)

Legislation was passed in 2013 requiring the Minnesota Department of Commerce (Department) to file a Distributed Solar Value methodology with the Commission by January 31, 2014. Under Minn. Stat. §216B.164, subd. 10 (a) – (d), a public utility may elect to offer PV generating customers an alternative tariff that applies the distributed solar value methodology established by the Department and approved by the Commission, and that meets other listed statutory requirements.

The Commission approved the Department's proposed methodology on April 1, 2014, which was presented as a successor to net energy metering compensation mechanisms.⁴ Subsequently, the Company was ordered by the Commission to apply the VOS as the rate of compensation for subscribers in the community solar gardens

⁴ See ORDER APPROVING DISTRIBUTED SOLAR VALUE METHODOLOGY, Docket No. E999/M-14-65.

program. The Department is presently reviewing the potential to incorporate locational values for avoided distribution costs as a component of the VOS.

At this time, the Company has not elected the VOS for other applications, such as in lieu of net energy metering. Should the Company in the future elect the VOS, such a tariff would likely apply to customers with systems sized less than 1 MW considering the PV Demand Credit Rider.

B. Interconnection Process and Technical Standards Reforms and IEEE 1547-2018 Adoption

IEEE 1547-2018 is a recently published distributed energy resources (DER) interconnection and interoperability standard. The Company is in the process of adopting the standard and determining implementation pathways for the numerous options it offers.

The revised standard addresses three new broad types of capabilities for DER: local grid support functions; response to abnormal grid conditions; and exchange of information with the DER for operational purposes. The standard was written with a large set of required capabilities with an expectation that not all capabilities would be immediately implemented in the field. In this way, it offers options for grid operators preparing for scenarios with high penetration of DER. Some details associated with implementing the standard are part of the Commission's E002/M-16-521 docket, especially in Phase II which considers statewide technical standards, and other details are expected to be associated with Company business practice decisions.

In terms of specifying DER response to abnormal grid conditions, IEEE 1547 indicates that the Authority Governing Interconnection Requirements and Regional Reliability Coordinator possess a guidance role in implementing these capabilities, which, in Minnesota, are the Minnesota Commission and MISO respectively. Commission Staff requested information and guidance from MISO through a working group associated with the E002/M-16-521 docket. The response from MISO included a plan to convene a stakeholder group so that guidance on the topic could be provided on a regional basis. The Commission's interest in resolving questions associated with adopting these capabilities is helping to drive important stakeholder conversations.

Local grid support functions have generated interest in the industry in recent years based on implementation of these functions in states such as Hawaii and California in areas of high DER deployment. The IEEE 1547-2018 standard allows the Company to specify how local grid support functions are used. The Company is exploring a

stepped approach for implementing more advanced functions, such as volt-var, with the objective of enabling for segments of DER in a way that has the greatest benefit on hosting capacity while maintaining grid operating capabilities. The Company proposed in the E002/M-16-521 docket that use of the local grid support functions should be published in utility-specific technical manuals.

The interoperability aspects of IEEE 1547-2018, which include concepts of DER monitoring and control, mark the most future-leaning required capabilities. When certified equipment is available, every DER will have a standardized communication interface for exchanging data and performing remote operations. A communication network would be necessary for making use of the interoperability interface. The Company is evaluating pathways for implementing the interoperability interface in the future.

C. FERC Order 841

The Company has participated in a couple of recent matters at the federal level. Federal Energy Regulatory Commission (FERC) Order No. 841 addresses two different levels of participation of storage resources in wholesale markets. First, the rule requires that RTOs and ISOs accommodate the various types of services that transmission-interconnected resources can provide, including transmission system support, energy, capacity and ancillary services. Xcel Energy Services, Inc. (Xcel Energy) filed comments supporting these aspects of the proposed rule in the FERC rulemaking process in FERC Docket No. RM16-23 on behalf of Northern States Power Company and the other Xcel Energy Operating Companies⁵ and is optimistic that expanded utilization of electric storage resources interconnected at transmission level will bring added value to customers and add security and reliability of the grid, though the pace of adoption of storage technology remains unclear.

While Xcel Energy supports FERC Order No. 841 as it relates to resources interconnected at transmission level, we have concerns about implementation

⁵ Xcel Energy Services (XES) has participated in the Federal Energy Regulatory Commission's (FERC's) dockets regarding participation of storage resources and distributed energy resources (DERs) in wholesale markets on behalf of the Xcel Energy Inc. Operating Companies NSPM, Northern States Power Company, a Wisconsin corporation (NSPW), Public Service Company of Colorado (PSCo), and Southwestern Public Service Company (SPS). A copy of XES's comments filed in Docket No. RM16-23-000 and AD16-20-000 is available at this link: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14538803

of Order 841 as it relates to storage resources interconnected at distribution level, as discussed below.⁶

D. FERC Docket RM-18-9-000

Xcel Energy also has concerns about FERC's proposal in Docket No. RM-18-9-000, Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, which would expand the requirements of FERC Order No. 841 to all types of energy resources interconnected at distribution level (DERs), not just storage resources.⁷

Even at low penetration levels of DERs, FERC's expectation that storage resources and DERs be enabled to participate in wholesale RTO or ISO markets poses challenges for both utilities and their customers. The implications of these challenges become more significant at higher penetration levels, and are discussed in greater detail in the Company's forthcoming Integrated Distribution Plan on November 1, 2018.⁸

The provisions of Order No. 841 regarding participation of distribution-interconnected storage resources in wholesale RTO markets have not been stayed pending rehearing. MISO must make a compliance filing with FERC on December 3, 2018 and has a year thereafter to implement provisions of its compliance filing. MISO is actively working through its stakeholder process to develop its compliance filing.

One of the key aspects of MISO's compliance filing will be the relationship between MISO, the DER, and the applicable distribution system operator (DSO). After reviewing MISO's draft agreement with the DER, we have tentatively concluded that it may be appropriate to file a tariff at FERC that would address aspects of DER participation in wholesale markets. If the Company were to go forward with this concept, the tariff would address matters such as direct assignment of distribution system upgrade costs incurred

⁶ XES requested rehearing of various aspects of Order 841 as it relates to resources interconnected at distribution level. A copy of XES's request for rehearing is available at this link: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14651369

⁷ A copy of XES's comments in Docket No. RM18-9-000 is available at this link: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14682284. These comments largely capture input provided in XES's original comments in Docket Nos. RM16-23-000 and AD16-20-000 and XES's request for rehearing in those dockets. Therefore, FERC declined to accept these comments in Docket No. RM18-9-000 because they were duplicative.

⁸ See Docket No. E002/CI-18-251, *In the Matter of Distribution System Planning for Xcel Energy*.

due to DER participation in wholesale markets, the need for a DER to establish to the satisfaction of the utility that it has metering capability needed to ensure that it does not charge a storage resource at wholesale rates for retail usage, mechanisms to limit DER output to the extent that reliability of the distribution system is compromised by the DER's activities, and cost recovery for services provided by the distribution system operator to the DER. Xcel Energy plans to evaluate this issue further and take appropriate steps to move forward to ensure that DER participation in wholesale markets is not subsidized by other retail customers and that such participation is conducted in a manner that does not threaten reliability of the distribution system.

V. STORAGE

Some parties in this proceeding have attempted to introduce storage as a topic for consideration in the development of a credit for solar customers. The Company has made clear that distributed storage or battery applications are out of scope in the PV Demand Credit Rider. As the Company has stated, “Applications and technologies related to energy storage by customers are an emerging area, and system benefits from storage are unclear at this time. We believe there is more to learn about this new field and we do not believe this issue is developed sufficiently to consider in this proceeding.”⁹

This is clear in the approved language of the PV Demand Credit Rider tariff, which states that the credit applies to peak period solar PV generation, which directly excludes other energy delivery sources such as batteries. Further, the Company is unable to verify if a battery is charged exclusively from an on-site PV system. Also, when this matter was heard by the Commission, the Commission declined to adopt a decision option specific to providing an additional credit for solar plus storage systems.

Together with PV generation, battery storage could be used to move non-peak PV generation into the peak period for application of the energy credit per kWh. Battery storage could also be used to reduce customer peak billing demand quantities when PV generation is reduced or not available. Since both of these storage uses would provide unjustified and duplicative credits, and the Commission has declined to incorporate a storage component, the PV Demand Credit Rider is not available to battery storage applications.

⁹ See Xcel Energy's Reply Comments, November 9, 2016, Docket No. E999/CI-15-115.

CONCLUSION

We appreciate the opportunity to file this proposed methodology and updated credit rate consistent with our agreement with stakeholders and in compliance with the Commission's order.

Dated: October 19, 2018

Northern States Power Company

Redline

MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2

PHOTOVOLTAIC DEMAND CREDIT RIDER

Section No. 5

RATE CODE A85 (CLOSED)

~~4th~~^{5th} Revised Sheet No. 125

RATE CODE A86

AVAILABILITY – GENERAL

Applicable by customer request to demand-metered commercial and industrial customers that use Solar Photovoltaic as a customer-sited generation source with a capacity greater than 40 kW (AC) with a single production meter to serve all or a portion of customer's electric energy requirements. Not available to customer-sited generation that is the subject of another incentive program such as Solar*Rewards.

AVAILABILITY – CLOSED RATE

Availability of the closed rate is limited to qualifying customer account locations that: 1) are receiving Standby Service Rider tariff service with the Photovoltaic Solar Credit on the date this Rider is originally approved by the Commission, or 2) have enrolled for the Rider before the date the credit rate in this Rider is revised by the Commission. The closed rate will remain fixed for a six year period beginning with the original Commission order date approving this Rider, expiring April 20, 2024. After expiration of the closed rate, the applicable standard rate will replace the closed rate.

The standard rate will apply to customer account locations that do not qualify for the closed rate. The standard rate may be revised at any time subject to approval by the Commission.

RATE

Customer Charge per Month \$25.75

Credit per kWh of Peak Period Solar Photovoltaic Generation (A85 - Closed)

\$0.07139

Credit per kWh of Peak Period Solar Photovoltaic Generation (A86 - Standard)

~~\$0.07139~~ \$0.03396

CREDIT KWH LIMIT

The maximum kWh applied to the Rider credit per kWh each billing period is the Peak Period maximum 15-minute Solar Photovoltaic kW output for the billing period times 100 hours for billing periods ending in the months of June, July, August or September and 75 hours for billing periods ending in other months.

CREDIT LIMIT

The maximum credit for each billing period is the applicable standard or on-peak billed demand charge from the base tariff associated with this Rider. For Peak-Controlled Service and Peak-Controlled Time of Day Service customers, the maximum credit for each billing period is the billed demand charge for Firm Demand.

DEFINITION OF PEAK PERIOD

Peak period hours are the six hours between 1:00 p.m. and 7 p.m. for all days.

TERMS AND CONDITIONS OF SERVICE

1. Customer will execute an Electric Service Agreement with the Company that will specify:
 - a) The base tariff associated with this Rider, and
 - b) The installed capacity (AC) of customer's Solar Photovoltaic generation.
2. Company will install, own, and maintain the metering to measure the electric power and energy supplied by customer generation to allow for proper billing of the customer under this Rider. If, as a result of the customer's construction and installation of their generating facility, it is more practical for the customer to install some or all of the metering equipment required, the customer may be permitted to do so, subject to Company's approval of such equipment.
3. Company reserves the right to limit availability of this Rider to customer situations where the Solar Photovoltaic generation used by customer does not significantly affect the monthly peak demand of customer.
4. For Solar Photovoltaic generation, this Rider supersedes other Standby Service tariff provisions.

Date Filed: ~~05-19-18~~ 05-19-18

By: Christopher B. Clark

Effective Date: ~~06-01-18~~

President, Northern States Power Company, a Minnesota corporation

Docket No. ~~E002/M-13-315 &~~ E999/CI-15-115

Order Date: ~~04-20-18~~

Clean

MINNESOTA ELECTRIC RATE BOOK – MPUC NO. 2

PHOTOVOLTAIC DEMAND CREDIT RIDER
RATE CODE A85 (CLOSED)
RATE CODE A86

Section No. 5
5th Revised Sheet No. 125

AVAILABILITY – GENERAL

Applicable by customer request to demand-metered commercial and industrial customers that use Solar Photovoltaic as a customer-sited generation source with a capacity greater than 40 kW (AC) with a single production meter to serve all or a portion of customer's electric energy requirements. Not available to customer-sited generation that is the subject of another incentive program such as Solar*Rewards.

AVAILABILITY – CLOSED RATE

Availability of the closed rate is limited to qualifying customer account locations that: 1) are receiving Standby Service Rider tariff service with the Photovoltaic Solar Credit on the date this Rider is originally approved by the Commission, or 2) have enrolled for the Rider before the date the credit rate in this Rider is revised by the Commission. The closed rate will remain fixed for a six year period beginning with the original Commission order date approving this Rider, expiring April 20, 2024. After expiration of the closed rate, the applicable standard rate will replace the closed rate.

The standard rate will apply to customer account locations that do not qualify for the closed rate. The standard rate may be revised at any time subject to approval by the Commission.

RATE

Customer Charge per Month \$25.75

Credit per kWh of Peak Period Solar Photovoltaic Generation (A85 - Closed) \$0.07139
Credit per kWh of Peak Period Solar Photovoltaic Generation (A86 - Standard) \$0.03396

R

CREDIT KWH LIMIT

The maximum kWh applied to the Rider credit per kWh each billing period is the Peak Period maximum 15-minute Solar Photovoltaic kW output for the billing period times 100 hours for billing periods ending in the months of June, July, August or September and 75 hours for billing periods ending in other months.

CREDIT LIMIT

The maximum credit for each billing period is the applicable standard or on-peak billed demand charge from the base tariff associated with this Rider. For Peak-Controlled Service and Peak-Controlled Time of Day Service customers, the maximum credit for each billing period is the billed demand charge for Firm Demand.

DEFINITION OF PEAK PERIOD

Peak period hours are the six hours between 1:00 p.m. and 7 p.m. for all days.

TERMS AND CONDITIONS OF SERVICE

1. Customer will execute an Electric Service Agreement with the Company that will specify:
 - a) The base tariff associated with this Rider, and
 - b) The installed capacity (AC) of customer's Solar Photovoltaic generation.
2. Company will install, own, and maintain the metering to measure the electric power and energy supplied by customer generation to allow for proper billing of the customer under this Rider. If, as a result of the customer's construction and installation of their generating facility, it is more practical for the customer to install some or all of the metering equipment required, the customer may be permitted to do so, subject to Company's approval of such equipment.
3. Company reserves the right to limit availability of this Rider to customer situations where the Solar Photovoltaic generation used by customer does not significantly affect the monthly peak demand of customer.
4. For Solar Photovoltaic generation, this Rider supersedes other Standby Service tariff provisions.

Date Filed: 10-19-18

By: Christopher B. Clark

Effective Date:

President, Northern States Power Company, a Minnesota corporation

Docket No. E999/CI-15-115

Order Date:

CERTIFICATE OF SERVICE

I, Jim Erickson, 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

xx electronic filing

Docket No. E999/CI-15-115

Dated this 19th day of October 2018

/s/

Jim Erickson
Regulatory Administrator

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Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	Yes	OFF_SL_15-115_Official
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