COMMERCE DEPARTMENT

February 19, 2019 **PUBLIC DOCUMENT**

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

RE: **Public Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket No. E002/M-13-315, E999/M-15-115

Dear Mr. Wolf:

Attached are the **Public** comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

Solar Photovoltaic (PV) Demand Credit Rider.

The Petition was filed on October 19, 2018 by:

Amy A. Liberkowski
Director, Regulatory Pricing and Analysis
414 Nicollet Mall
Minneapolis, MN 55401

The Department recommends that the Minnesota Public Utilities Commission (Commission) **approve an extension of the present PV demand credit of $0.07139 per kWh and require Xcel to propose a new rate design in its next rate case that includes a coincident peak based generation and transmission demand rate and billing quantities, and a non-coincident based distribution demand rate and billing quantities.** The Department is available to answer any questions that the Commission may have.

Sincerely,

/s/ CHRISTOPHER T. DAVIS
Analyst Coordinator

CTD/ja
Attachment

COMMERCE DEPARTMENT

Before the Minnesota Public Utilities Commission

Public Comments of the Minnesota Department of Commerce Division of Energy Resources

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

I. INTRODUCTION

On November 14, 2011, Northern States Power Company d/b/a Xcel Energy (Xcel or the Company) filed a Stipulation and Settlement Agreement between the Company and several parties to its then pending 2010 rate case, Docket No. E002/GR-10-971. Among the terms of the agreement, Xcel agreed to study the load profile of larger solar facilities to determine the applicability of a solar facility's unique load characteristics to the standby and supplemental rate tariff.

On May 14, 2012, the Minnesota Public Utilities Commission (Commission) issued its Findings of Fact, Conclusions, and Order in Xcel's rate case. The Commission adopted the Stipulation and Settlement Agreement, and directed Xcel to "file with the Commission and supply to the Department of Commerce the results of the study of the load profiles of Large Solar Facilities."

On August 24, 2012, Xcel filed a Solar Load Profile Study, which it re-filed on September 14, 2012 to include previously redacted information after customers consented to the public release of their solar load profile data. In its study, Xcel concluded that "solar contributes to capacity requirements during peak periods" but also that "further analysis would be needed to support decision making[1]."

In its December 3, 2012 comments the Department agreed with Xcel's conclusion that photovoltaic (PV) systems contribute to meeting power system capacity requirements during peak periods and that the current Standby Service Tariff does not yet incorporate this contribution. The Department also concluded:

> Because Xcel's ratepayers pay for the costs of power obtained from PV and other resources, calculating a reasonable capacity credit requires ensuring that the credit adequately reflects the value of the resources yet is not excessive. The best way to balance these goals is to set the capacity value of PV based on capacity costs that are avoided due to the addition of the PV

[1] Xcel Compliance Filing — Solar Load Profile Study, at 6 (August 24, 2012).

> systems. Thus, calculating a reasonable capacity credit for Xcel customers with PV installations requires first calculating the solar capacity value of PV installations in Xcel's service territory and second, multiplying the solar capacity values times the costs avoided due to capacity savings[2].

On May 13, 2013 the Commission issued its Order Setting Interim Rate and Establishing New Solar Rate Docket (Docket No. E002/M-13-315). In the Order, the Commission required Xcel to modify its Standby Service tariff to provide an interim photovoltaic capacity credit of $5.15 per kW per month. Xcel was required to give the credit to large photovoltaic customers on the Standby Service tariff. The Commission also required that customers receive this credit beginning with bills issued on or after June 1, 2013. In addition, the Commission required that on or before October 1, 2013, Xcel file a large customer photovoltaic rate proposal that appropriately reflects the value of solar resources on Xcel's system. As part of the Company's proposal, Xcel was also required to re-evaluate the interim Standby Service tariff capacity credit.

On October 1, 2013, Xcel submitted comments on a Rate for Large Solar Photovoltaic Installations in Docket No. E002/M-13-315 requesting that the Commission approve continuation of the existing solar Standby Service capacity credit of $5.15 per kW/ month, proposing to revisit the capacity credit upon Commission approval of a Value of Solar methodology.

On March 17, 2014, the Department filed its recommendation for a final solar standby service capacity credit of $5.15 per kW per month for customer-sited solar facilities over 100 kW. The Department also recommended that the Commission approve a start date of June 1 for each customer's grace period, unless the customer chose another date.

On May 19, 2014 the Commission issued its Order Setting Final Solar Photovoltaic Standby Service Capacity Credit, Requiring Updates, and Requiring Compliance Filing. The Order, among other things, established a $5.15 per kW per month for solar PV customers and required Xcel to file an update in this docket within two years of this Order on the progress at MISO to establish a specific solar capacity accreditation value and any other changes potentially relevant to the decision as to whether to update the credit.

On May 19, 2016, the Company proposed to exempt solar and new wind customers from the standby service requirements and to replace the existing standby service solar capacity credit with a new volumetric capacity credit through a new rider. Although Xcel did not believe the

[2] December 3, 2012 comments, page 6.

$5.15 per kW credit was fully supported, Xcel used it as a "legacy" level for Solar PV customers. Xcel proposed converting the $5.15 per kW credit into a focused peak period capacity credit of $0.07395 per kWh, which is essentially a credit to billed firm demand charges. The Company proposed to apply the credit to renewable generation during the peak hours of 1:00 p.m. to 7:00 p.m. that represent the typical peak period for system load requirements.

On November 9, 2016, the Department submitted Reply Comments. The Department recommended that Xcel's solar capacity credit be calculated by:

- Estimating Xcel's avoided cost per kW-month, which consists of:
  - Avoided capacity costs ($/kW/month), plus
  - Avoided transmission costs ($/kW/month) plus
  - Line Losses

- Multiplying the avoided costs by either:
  - Effective Load Carrying Capability (ELCC)[3], or
  - MISO-determined solar capacity value.

In April 21, 2016 Comments the Department discussed how the capacity from Xcel's customers with PV would not provide value to Xcel unless they were registered with the Midcontinent Independent System Operator (MISO). However, the Department reported in its May 15, 2017 comments that Xcel had determined in discussions with MISO that the Company would not be able to register the capacity for these solar installations unless the energy was also available. The solar projects in question are currently net-metered so the energy is not available, and consequently project capacity is unable to be registered with MISO. In situations where the Company purchased all the energy, such as community solar gardens, Xcel is able to register the solar capacity with MISO because it is also purchasing all the energy output from the solar garden. Given this understanding, the Department proposed to continue discussions with Xcel, MISO, solar developers and other parties to try and reach some resolution for the issue.

[3] ELCC is an analytical approach that disaggregates the overall power system reliability into the individual generator's (power plant) contribution to the system reliability. Plants that are consistently able to deliver power during times of high risk (hours when demand on the system is high) have a high ELCC, while less reliable plants have a lower ELCC. For variable generators like solar and wind, the ELCC method can distinguish between solar and wind resources that consistently produce power during high-risk hours, sometimes produce power during high risk hours, and rarely produce power during high risk hours. Extensive peer-reviewed assessments, including work by the North American Electric Reliability Corporation (NERC) and the Institute of Electrical and Electronic Engineers (IEEE), have identified ELCC as the best industry practice for determining the capacity value of variable (intermittent) generation resources such as PV and wind.

On August 23, 2017, Xcel and the Department jointly proposed a decision option for the Commission to consider at its August 24, 2017 agenda. The recommendation included a proposal that Xcel study whether customers with solar installations 40 kW or greater are being overbilled for demand and if so, how to remedy the overbilling.

On October 3, 2017, the Commission issued its *Order Approving Three Tariffs with Conditions and Requiring Xcel to File a Proposal for its Solar PV Capacity Credit Rider*. Order Points 18, 19 and 20 required the following:

18. Xcel shall work with other interested stakeholders and parties in this docket on development of a Solar PV Capacity Credit Rider and, in so doing, seek to reach an agreement on what the value of the Solar PV Capacity Credit Rider will be in the interim, prior to establishment of a methodology.

19. Xcel shall work with the parties to reach agreement on a proposed process and timeframe for establishing a methodology to be used in developing the solar PV capacity rider.

20. Within 30 days of the Order, Xcel shall file a report with the Commission with any agreements or partial agreements reached by the parties on the PV Solar Capacity Credit, and explain or identify any areas of disagreement or impasse remaining and basis therefore.

On November 2, 2017 Xcel submitted the PV Demand Credit Agreement terms reached by Xcel, the Department, and Minnesota Solar Energy Industries Association (MNSEIA). The agreed terms included:

1. *Interim Rate Level*
   Approve Xcel's PV Demand Credit Rider ("PV Rider"), as filed on May 19, 2016, but Xcel will recalculate the level of the credit in the PV Rider assuming a starting value of $4.52/kW[footnote omitted] credit and 11 months as the average non-grace period months in the conversion formula for the kWh based solar credit. This recalculation results in a credit value of 7.139 cents per kWh.

2. *Customer Eligibility*
   Current customers under the Standby Service Rider who qualify under the PV Rider at a given location will no longer be on the Standby Service Rider and will be enrolled in the PV Rider. New customers who qualify for the PV Rider at a given location may

also enroll in the PV Rider under this rate provided that they do so before the date of an order issued by the Commission authorizing a change to this rate. This subsequently revised rate in an updated PV Demand Credit Rider is referred to as the Revised PV Rider Rate.

3. *Availability Term*
   The PV Rider credit rate of 7.139 cents per kWh will be available to customers properly enrolled at the rate as described above for a given location for six years from the date of the Commission order approving the PV Rider. Any customer enrolling in the Revised PV Rider will receive the credit as set forth in the Revised PV Rider.

4. *Proposed Process and Time Frame for Establishing Methodology to Develop Solar PV Capacity Rider*
   Require Xcel, following discussions with the Department of Commerce, MNSEIA and other interested parties, to file a proposed methodology for determining the appropriate solar capacity or demand credit. The methodology should consider reasonable ways to incorporate cost of service principles in demand charges for behind-the-meter solar customer accounts as well as also address the additional issues surrounding the solar capacity or demand credit rider as raised by parties in this docket. Xcel should file its proposal and discussion of the additional issues by September 19, 2018 as well as rationales for why this study is or is not a better indicator of capacity or demand value than previously derived values. Parties will be allowed 60 days to respond.

   As part of this process, Xcel, with input from the Department, MNSEIA and other interested parties, will evaluate to what extent the billing demand quantities of customers with solar generation is affected by their solar production. Xcel will review whether there is a mismatch between the net billing demand of individual customers with solar installations and their net demand on system peak demand days relative to non-solar generation customers and, if so, how to reflect that difference appropriately in demand billing or comparable rate component. Xcel will also be conducting a new ELCC load study

> in preparations for its resource planning process. In addition, Xcel will compare this credit to current peak controlled demand credits. All study results will be provided to parties by July 1, 2018.

On January 4, 2018, Xcel submitted redlined and clean versions of its Photovoltaic Demand Credit Rider Tariff. On April 20, 2018, the Commission issued its Order Approving Solar PV Demand Credit Rider with Modifications and Standby Service Rider. The Commission's Order included the following two Order Points in regards to the Rider:

1. Xcel's proposed solar PV Demand Credit Rider, and the terms and conditions of the agreement regarding Xcel's PV Demand Credit Rider, as filed on March 20, 2018, is adopted, as modified herein.[4]

2. Xcel shall file the studies provided to parties under the PV Demand Credit Agreement with the Commission in this docket at the same time Xcel provides the studies to the parties.

On August 17, 2018, Xcel submitted its Compliance Filing Solar Effective Load Carrying Capability (ELCC) Study and PV Billed Demand Study. The ELCC Study indicated a small scale solar capacity value of 55% in 2016 and 45% in 2017, using Xcel's actual system load and solar customer meter data. The PV Demand Billed Demand Study indicated that Xcel's commercial customers with PV installations had average monthly billing demand charges reductions of 6.3% for year 2016 and 7.8% for year 2017.

On October 19, 2018, Xcel submitted its Photovoltaic Demand Credit Methodology.

II. XCEL'S PROPOSED PV DEMAND CREDIT METHODOLOGY

The purpose behind the PV demand credit is to address any mismatch between the net billing demand of individual customers with solar installations and their net demand on system peak demand days relative to non-solar generation customers.

[4] In adopting the terms and conditions of the March 20, 2018 Agreement, the PUC modified the date of certain terms of the Agreement. The Commission set a date of August 18, 2018 for Xcel to file the billing demand and ELCC studies. The Commission set a date of October 19, 2018 for Xcel to file a proposed methodology for determining the appropriate PV demand credit.

Xcel calculated a demand credit per kW of solar nameplate capacity by:

1. Estimating avoided generation and transmission costs and line losses per kW. Xcel calculated that this value was $8.54 per kW.
2. Reducing the $8.54 per kW estimate by 40 percent to recognize that the Company does not forecast an incremental capacity need until 2025. This reduction results in an avoided capacity value of $5.13 per kW[5].
3. Recognizing that MISO currently assigns a capacity credit of 50 percent of nameplate solar capacity, Xcel adjusted the capacity contribution to $2.56 per kW[6].
4. Finally, reducing the adjusted capacity contribution total by 6.4 percent to recognize that the Company's PV Billed Demand Study of its customers with PV determined that in 2017, Xcel's customers with PV installations experienced a 6.4 reduction in billed demand charges. Xcel calculated that the Reduced Billed Demand value was $0.41 and thus the Demand Credit per kW was $2.15.

Table 1 below reproduces Xcel's table on page 4 of the Company's October 19, 2018 filing, showing Xcel's calculation of the PV Demand Credit per kW.

Table 1: Xcel's Calculation of a PV Demand Credit per kW

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

In its March 20, 2018 Order, the Commission approved the establishment of the PV Demand Credit Rider that set the credit based on solar during a peak period of 1:00-7:00 p.m. The approved rate design includes the conversion of a demand credit per kW into an energy credit per kWh of peak period solar PV generation.

[5] $8.54 per kW * (1-.4) = $5.13 per kW.
[6] $5.13 per kW * 50% = $2.56 per kW.

The March 20, 2018 Order was based on an assumed demand credit of $4.52 per credit. Table 2 below reproduces Xcel's table from page 5 of the Company's October 19, 2018 filing. Table 2 shows the conversion of the $2.15 demand credit per kW to a peak period kWh credit. The conversion included Xcel starting with the $2.15 demand credit per kW and converting it into an annual PV credit per kW of $23.65[7]. The $23.65 is then divided by the annual peak period solar PV kWh per kW, which Xcel calculated to be 696.42 kWh. Dividing the annual PV credit per kW by the annual peak period solar PV kWh per kW resulted in a solar PV capacity credit per kWh of $0.03396.

Table 2: Xcel's Calculation of a Peak Period kWh Credit

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

III. XCEL'S ALTERNATIVE METHODOLOGY

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

[7] 11 months, the average non-grace period, multiplied by the $2.15 demand credit per kW.

The PV capacity contributions during the top ten system load days were 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.

Xcel's 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 approach 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.

Xcel stated that although this alternative methodology has value in affirming the proposed methodology, the Company believed its proposed methodology is more appropriate because the alternative methodology is highly data intensive, which reduces transparency and increases the difficulty of updating, and it also includes a very diverse and limited set of specific current customers that may affect the reliability of its results.

IV. DEPARTMENT ANALYSIS

A. THE CHANGE IN THE DEPARTMENT'S POSITION FROM CUSTOMER-OWNED MEETING XCEL'S SYSTEM CAPACITY REQUIREMENTS

As mentioned above, in our December 3, 2012 comments in Xcel's 2010 rate case, the Department agreed with Xcel's conclusion that PV systems contribute to meeting power system capacity requirements during peak periods and that the Standby Service Tariff did not incorporate this contribution. The Department also concluded that the capacity value of solar PV should be based on capacity costs that are avoided due to the addition of the PV systems.

However, the Department's position changed when communication with MISO experts made the Department aware that the capacity from Xcel's customers with PV would not provide value to Xcel unless the systems were registered with MISO. When discussing this situation with MISO, Xcel determined that the Company could not register the capacity for these solar installations unless the energy was also available. Since the customer solar projects in question were net-metered and thus the energy was not available to the MISO system, the Department's understanding was that the capacity of solar PV of Xcel's customers could not count toward Xcel's power supply requirements.

B. BASING CAPACITY RATES ON COINCIDENT PEAK USE

The Department discussed with the Regulatory Assistance Project (RAP) staff the problem with customer-owned PV on net metering being unable to provide Xcel capacity in the MISO system. RAP staff pointed out that in California a special *Option R* rate is available for large customers with PV installations. The rate recognizes that if customers with PV pay capacity charges based on the highest 15-minute non-coincident demand, they would pay too much for capacity. Attachment 1 is a copy of the December 18, 2014 California PUC *Decision on a Rate Design Proposal to Adopt an Option R Tariff for Pacific Gas and Electric Company*. The California Commission's decision regarding Option R was based on part of a study of five large PG&E customers with PV installations by the Solar Energy Industries Association (SEIA). The SEIA study showed that for the five large PG&E customers:

- The average load during the 40 intervals of highest system peak demand was 203 kW. In contrast, the average maximum peak period loads billed for these five customers across the six across summer months was 744 kW, resulting in demand charges for generation capacity in excess of the demands these customers imposed on PG&E's grid during the highest coincident peak load hours of the summer. SEIA estimated that these customers were billed for 3.9 times more peak and part-peak period capacity than was required to serve them.
- SEIA concluded that PG&E charged the five large customers five times more capacity than they required during the 40 highest system peak intervals.

The reason that PG&E overbilled its customers for capacity was that their capacity was billed on non-coincident peaks, usually when the sun was not shining, even though on coincidental peak days their solar arrays were typically producing significant amounts of energy and their demand requirements were much lower than what they were billed for. The California PUC stated that it approved the Option R for PG&E because it was persuaded by SEIA's arguments that PG&E's then-current demand charge structure unfairly charged solar customers more for coincident demand related capacity costs than they actually caused PG&E to incur.

C. XCEL'S PROPOSED AND ALTERNATIVE METHODOLOGIES

The Department appreciates all of the thought and work that Xcel and parties have put into the issue of how to treat large customers with PV installations.

The purpose behind Xcel's proposed new PV Demand Credit Methodology is to address the fact that the peak demand charge for solar customers will often be set on the days that system peaks do not occur and thus capacity charges do not reflect costs caused by

customers with solar PV. The Department reviewed Xcel's proposed PV demand credit methodology with this purpose in mind.

On October 19, 2019 Xcel proposed a specific capacity value stack approach methodology that included the avoided cost components of generation capacity and line losses, and embedded transmission costs. Although the Department supported the capacity value approach when the record indicated that customer-owned solar installations would contribute to Xcel's power supply requirements, the present process/investigation indicates that PV customers are being overbilled for demand costs. Thus, the solution to this issue should no longer look for a proxy to value customer-owned capacity, but instead should attempt to fix the fact that customers are being overbilled for their use of capacity supplied by the utility. Under this situation, the Department believes a different approach should be considered.

Xcel's alternative approach, which analyzes a PV capacity contribution from the individual PV customer information in the PV Billed Demand Study, is more appropriate for the task at hand. The alternative approach concluded that 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. However, Xcel states that the alternative approach is data intensive, which reduces transparency and increases the difficulty of updating the value in future years, and also includes a very diverse and limited set of specific current customers that may affect the reliability of its result. The Department also points out that the Demand Billed Study indicated that the individual customers studied were overbilled (or underbilled) for their capacity by a wide range.

The purpose behind offering a capacity or demand credit or recognizing that customers with PVs should be billed for demand appropriately has always been to charge customers for costs they caused, not to provide an incentive for PV installations and operations. The Department believes that a third approach offers the best means of ensuring that the rates charged to customers with PV should be based on cost-causation principles. The approach is for Xcel to offer a bundled rate that includes coincident-peak based generation and transmission demand rates and billing quantities, and a non-coincident-peak based distribution demand rate and billing quantities. Using this methodology would ensure that each PV customer's demand charge is based on their contribution to costs on Xcel's system, rather than the average impact calculated in Xcel's alternative approach, or based on the mixture of avoided cost and embedded costs included in Xcel's proposed methodology.

The Department discussed this approach with Xcel in a series of emails in December 2018. The Department includes the relevant parts of the emails below.

Department's question:

> Since we are talking about how Xcel customers with PV may be overbilled, why is Xcel proposing a demand credit that is based on avoided costs instead of basing the credit on demand charges in rates?

Xcel's response:

> NSP has a bundled demand rate that recovers distribution, transmission, and generation costs.
>
> Theoretically, it would be more precise to have a coincident peak based generation and transmission demand rate and billing quantities, and a non-coincident based distribution demand rate and billing quantities.
>
> Having only one coincident based demand rate, without a corresponding non-coincident demand rate, would substantially reduce the accuracy of distribution cost recovery.
>
> Another significant concern with a coincident based demand rate is using an after-the-fact billing quantity, which introduces customers to significant variability and unpredictability in their billed demand quantity. All considered, even if theoretically appropriate, it's unlikely that coincident base billing would be administratively easier than the current PV Demand Credit Rider rate design.
>
> Theoretically and practically, a large concern with differential demand billing for PV customers is inconsistency with other demand-billed customers. This inconsistency could lead, for example, to customers installing a nominal PV system, with the only objective of acquiring a set of billing demand quantities more favorable to their particular load profile. It is very important for equity between customers and the avoidance of unintended consequences to have a consistent demand billing rate design for all customers.

> The PV Demand Credit Rider provides a simple and performance-based rate mechanism to credit PV customers, based on the size of their PV system, for measured demand quantities above their load requirements at peak times. This credit, however, should be applied to demand billing that is consistent for all customers.

The Department addresses Xcel's concerns with the Department's proposed approach below.

1. Inconsistency with other demand-billed customers.

The Department agrees that the best situation is when all of the demand-billed customers are treated consistently. The best way to address this issue is for Xcel to switch all demand-billed customers to coincident peak billing in its upcoming rate case. Such an approach would be more accurate in recovering generation and transmission costs from all ratepayers, and encouraging ratepayers to reduce their use of electricity at peak periods.

2. Having only one coincident-based demand rate, without a corresponding non-coincident demand rate, would substantially reduce the accuracy of distribution cost recovery.

Xcel's current rate design inaccurately recovers costs of the generation and transmission systems. The Department proposes that distribution costs be recovered through a non-coincident demand rate, while generation and transmission costs would be recovered through a coincident demand rate. The Department believes that this approach would ameliorate Xcel's concerns.

The Department concludes that the best approach for ensuring that Xcel properly bills its customers with solar installations is by basing the customers' demand charges on the customer's coincident peak, not the non-coincident peak. Given that Xcel announced its intention to file a rate case later this year, that proceeding would allow these issues to be addressed.

The Department thus recommends that the Commission approve an extension of the present PV demand credit of $0.07139 per kWh, which would be available to customers properly enrolled at the rate for a given location for six years from the date of the Commission's order in Xcel's next rate case.

The Department also recommends that the Commission require the Company to propose a new rate design in its next rate case that includes a coincident-peak based generation and transmission demand rate and billing quantities, and a non-coincident-peak based distribution demand rate and billing quantities.

D. XCEL'S PROPOSED AND ALTERNATIVE METHODOLOGIES

If, despite the concerns identified above, the Commission opts to approve Xcel's proposed methodology, the Department evaluated the cost assumptions used by the Company in its capacity value stack approach.

In its response to MNSEIA IR No. 2, Xcel described its calculations for lines a-k in Table 2 above. The Department discusses Xcel's calculation of the Levelized CT cost (line a) and Future Need (2025) Timing Factor, below.

1. Levelized CT Cost

On page 6 of its October 19, 2018 filing, Xcel stated that its 2019 levelized annual cost of a CT is $54.48/kW, significantly lower than its 2013 annual value of $87.04/kW. In response to MNSEIA IR No. 7, Xcel provided the inputs used for the determination of the two different annual levelized costs, as shown in Table 3 below.

Table 3: Xcel's Comparison of New Avoided Combustion Turbine Avoided Costs with Old Avoided Costs

Comparison of Generic CT Components		
Related IRP	**2011-2025 IRP**	**2020-2034 IRP**
Book life	35	40
Nameplate Capacity (MW)	210	374
Summer Peak Capacity with Ducts (MW)	NA	NA
Summer Peak Capacity without Ducts (MW)	195	331
Planning Reserve Margin	12%	7.9%
MISO Zone I Coincident Factor	NA	95%
Capital Cost ($/kW)	$636	$446
Electric Transmission Delivery ($/kW)	NA	NA
Ongoing Capital Expenditures ($/kW-yr)		$4.77
Gas Demand ($/kW-yr) 2018$	NA	NA
Fixed O&M Cost ($000/yr)	$502	$422
Variable O&M Cost ($/MWh)		$4.90
Levelized $/kw-mo (All Fixed Costs)	$6.92	$4.54

In response to DOC IR No. 40, the Department asked why Xcel's Annual Report, Schedules A-C, G, and H in Docket No. E999/PR-19-9 filed January 2, 2019 assumed a cost in $/kW for a generic 215 MW combustion turbine that is significantly different from the $446/kW assumed by the Company for the PV Demand Credit Rider. Xcel's response (see Attachment B) stated that the difference between the values is because the Company's 2013 value of $636/kW was reduced to $446/kW[8]. The Company also stated that the value referenced in Docket No. E999/PR-19-9, Schedule B of **[PROTECTED DATA HAS BEEN EXCISED]** is project specific. However, the Department was referencing Unit 5, in Xcel's E999/PR-19-9 filing, which is a 215 MW CT with an in-service date of 2025 (MISO PY 25/26), where Xcel assumed a cost of **[PROTECTED DATA HAS BEEN EXCISED].** Given that Xcel has a need for capacity in 2026, Xcel should use this value when using a capacity value stack approach methodology to calculate a PV demand credit.

2. Future Need Adjusted Total

Xcel proposed to reduce the value of capacity from its customers with PV by 40 percent because the Company does not have a capacity need until 2025[9]. Line f of Table 1 includes a Future Need (2025) Adjustment Factor of 60 percent. In response to DOC IR No. 38, Xcel provided an Excel workbook that shows the calculations used to calculate the 60 percent reduction in the value of the capacity provided by PV. In its calculations, Xcel included no avoided capacity benefit for the PV for 2019-2025.

The Department agrees that theoretically a new resource does not provide a utility capacity value in years when there is not a capacity need. However, the Commission approved the Company's most recent IRP in Docket No. E002/RP-15-21 on January 11, 2017. The Department concludes that Xcel should not discount the avoided capacity cost assumptions of any customer that already was participating in the program by January 11, 2017 because this approach would assume that these customers provide capacity only in years when Xcel is projected to have a deficit. Thus, the Department recommends that the Commission require Xcel to grandfather customers that were receiving a credit prior to January 11, 2017. Such customers would have their Future Need (2025) Timing factor shown in line (f) in Table 1 above set at 100 percent. The result of this change would be that Xcel's demand credit would be based on $3.86 per kW[10]

[8] In response to MNSEIA IR No. 5, Xcel stated that some of the cost reduction drivers include:
- Xcel no longer assumes firm gas demand, thus there is no gas demand charge;
- Significant increases in combustion turbine efficiencies have reduced prices; and
- Xcel now assumes that combustion turbines will be constructed on brownfield sites, which typically offer transmission access for both electricity and natural gas, as well as existing infrastructure (e.g., water, roads, and buildings.

[9] Line f of Table 1 above includes a Future Need (2025) Timing Factor of 60%.

[10] Using the figures in Table 1, the calculation would be $8.54*100%*50%-$0.41 = $3.86.

rather than $2.15 per kW. The credit/kW would be higher if Xcel's 2025 estimated cost of a combustion turbine is used.

V. DEPARTMENT CONCLUSIONS AND RECOMMENDATIONS

The Department recommends that the Commission deny Xcel's proposed PV Demand Credit Rider. Instead, the Department recommends that the Commission:

- approve an extension of the present PV demand credit of $0.07139 per kWh, which would be available to customers properly enrolled at the rate for a given location for six years from the date of the Commission order in Xcel's next rate case.
- require the Company to propose a new rate design in its next rate case that includes a coincident-peak based generation and transmission demand rate and billing quantities, and a non-coincident-peak based distribution demand rate and billing quantities.

If, despite the concerns discussed above, the Commission wishes to approve Xcel's proposed methodology, the Department recommends that the Commission:

- require Xcel to use the Company's 2025 cost for a combustion turbine that the Company assumed in E999/PR-19-9 of **[PROTECTED DATA HAS BEEN EXCISED];** and
- not apply a Future Need Timing Factor to customers participating in Xcel's solar demand credit program as of January 11, 2017.

/ja

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Public Comments

Docket No. E002/M-13-315 and E999/M-15-115

Dated this 19th day of February 2019

/s/Sharon Ferguson

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