

March 19, 2019

—Via Electronic Filing—

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

RE: REPLY COMMENTS
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 Reply Comments in response to the Minnesota Public Utilities Commission's Notice of Extended Comment Period dated January 11, 2019 and Comments received from parties February 19, 2019 in the above-mentioned docket.

We acknowledge the letter filed by the Department of Commerce on March 13, 2019. The Company is available to participate in discussions to the extent the Department wishes to convene parties to further narrow the issues in this proceeding.

We have electronically filed this document with the 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

| | |
|-------------------|--------------|
| Dan Lipschultz | Commissioner |
| Matthew Schuerger | Commissioner |
| Katie J. Sieben | Commissioner |
| John A. Tuma | Commissioner |

IN THE MATTER OF A COMMISSION
INQUIRY INTO STANDBY SERVICE
TARIFFS

DOCKET NO. E999/CI-15-115

REPLY COMMENTS

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits these Reply Comments in response to the Minnesota Public Utilities Commission’s Notice of Extended Comment Period dated January 11, 2019 and Comments received from parties February 19, 2019 in the above-mentioned docket.

The Company’s proposed methodology, which updates and modifies the “value stack” avoided cost approach previously recommended in this proceeding, improves upon the compromise value underlying the current interim rate approach. The methodology is based on measured values, is replicable for future updates, and provides a reasonable recognition of PV value through the credit without imposing a capacity overpayment on all other customers. In so doing, the proposed methodology reflects the importance of customer equity in ratemaking.

We respond to Initial Comments by first providing a response to parties who introduced comments that were general or procedural in nature. Second, we address specific suggestions about the Company’s proposed PV Demand Credit Rider methodology, and finally, we note those recommendations which are out of scope for the current proceeding.

I. GENERAL AND PROCEDURAL MATTERS

A. Purpose of the PV Demand Credit Rider

At the outset, we raise one observation from parties' Initial Comments. We believe there is a fundamental misunderstanding evident among some parties about the purpose of the PV Demand Credit Rider.

Some parties ask that the methodology be developed to assist the market in responding to “financing realities”¹, and they assert that without modification, the proposed methodology would lead to “unfair suppression of the commercial solar market”². In parallel, the solar industry describes the value it places on “business certainty” and toward its stated end of “making a sale.”³

The advocates for the solar industry repeatedly describe the Rider as a “program” and attempt to draw a parallel between the Rider and statutory DG programs, such as community solar gardens.⁴ MnSEIA describes what it believes is required for the Rider to be a “viable program”⁵ and even what is required “if this program is going to be a success over the long-term.”⁶ The requirements for “program viability,” according to MnSEIA, begin with a 15-year period of fixed bill credits.

Contrary to statements made in Initial Comments, the purpose of the Rider is not to guarantee payback outcomes for solar customers or to influence the sales market for suppliers of on-site customer generation. The PV Demand Credit Rider is not a tool to facilitate financing, nor is it a public policy-driven “program.” It is not a proxy for a Value of Solar mechanism, where all system output is sold to the grid, and it is categorically not a mechanism to provide long-term certainty for commercial customer investments in the form of shifting risk to other customers.

Instead, the purpose of the PV Demand Credit Rider and the Company's proposed methodology is to explore whether there is a mismatch between the net billing demand of customers with on-site solar and their net demand on system peak days

¹ See February 19, 2019 Comments of City of Minneapolis and Target Corporation, at 1.

² *Id.* at 7.

³ See Comments of MnSEIA at 3.

⁴ *Id.* at 7.

⁵ *Id.* at 7.

⁶ *Id.* at 8.

relative to non-solar customers. If there is a mismatch, the Rider is in place to reflect an appropriate adjustment to the solar customer's demand billing component.⁷

We believe that increasing clarity on this point is critical for productive engagement in this proceeding because, without a shared understanding of the purpose of the Rider, regulators and parties will be unable to evaluate the fit of the proposed methodology or the appropriateness of the counter-proposals submitted in this record.

B. Requests to Delay Action

Initial Comments included a number of requests to delay Commission action on the Company's proposed methodology and credit update. The Department seeks to defer the methodology discussion to the next rate case and also to extend the present credit level for a period of six years beginning after the date of a Commission order in the next electric rate case. The City of Minneapolis and Target request that the current six-year negotiated term be extended for an unspecified length of time.⁸ Sundial Energy and MnSEIA seek a year to be added to the negotiated term.⁹

The Company does not support extending the term length for parties grandfathered in under the existing rate for several reasons. First, it is unreasonable to do so pre-emptively. Parties assert today that six years is no longer a sufficient term length, even though they agreed to this schedule more than one year ago, in November of 2017¹⁰. Parties assert that even though the Company has complied with its obligations under the settlement and the Commission's Order to come forward timely with its proposed methodology and revised rate, that at some point parties anticipate an unacceptable delay in establishing a new credit level and therefore require terms different than what was agreed upon. Pre-emptive extension is not reasonable.

Second, if the beneficiaries of the current interim rate expand to include new customers and new PV systems over the next year or more, it will sow confusion in the market as customers may lack a clear picture of the expiration of the interim rate. The more straightforward path – to review the methodology and issue an order approving an updated rate – avoids growing the class of customers that will be transitioned off the interim rate.

⁷ Or, as stated by the Department at 10-11, "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."

⁸ Comments of City of Minneapolis and Target at 10.

⁹ Comments of Sundial Energy at 1, MnSEIA at 9.

¹⁰ See the Company's Compliance filing in this docket, November 2, 2017.

Third, by extending the term length, the issue of overpayment by non-participating customers will be significantly exacerbated. We believe the record is very clear that the current interim rate, which is derived from a legacy value based on a compromise between stakeholders, is imprecise and too high relative to the purpose of addressing the mismatch in billed demand for customers with on-site solar. By lengthening the period of time that the credit is applied to current beneficiaries, as well as by expanding the class of beneficiaries to new enrollees, all other customers will overpay. This is not a reasonable outcome.

Fourth, the Company need not articulate the obvious negative public policy implications of dismantling a settlement agreement pursued in good faith and built on compromise. We caution parties against pursuing this path.

Finally, we note that it is unreasonable to delay action on the proposed methodology because delaying for the reasons cited by parties is inconsistent with traditional ratemaking. The Company and its stakeholders are routinely challenged to move forward with the best information available at a point in time. MnSEIA seeks delay in order to capture a larger population in a refreshed study. As discussed in this record, the study included all the available data at the time it was conducted, and the methodology is designed to be regularly refreshed with the growing data set going forward. Regulators approve rates with the knowledge that more data will be available in the future, and that there will be opportunities to reconcile and update rates with the passage of time. There is nothing new here, and it would be unreasonable to delay resolution in this matter.

II. PARTIES' SUGGESTIONS ABOUT THE METHODOLOGY

Parties introduced a number of counter proposals to the methodology presented by the Company. We respond to parties' suggestions on a long term fixed rate component, calls for the development of new rates, suggestions on sources for CT capacity costs, the inclusion of different components in the methodology, the future need provision, the credit limiter provision, the reduced billed demand value, and the annual months per year component.

A. Term Length on Revised Rate

Interested parties seek extraordinary treatment from the Commission in the form of suspended action on rate updates. In ratemaking, the tariffed rates are periodically determined based on approved costs and other valuations. The Rider works by

directly modifying the net billing impact of approved tariffs. Here, parties request that the Commission instead approve a locked in credit level. Parties seek Commission approval to suspend their rate updates for 15 years¹¹.

Parties assert that by not accepting terms that resemble power purchase agreements (PPA), where “longer term compensation commitments are the norm,”¹² the Commission will engage in discriminatory rate design. As discussed in these Comments, there are substantial and critical distinctions between the facilities at issue here—on the one hand, customers’ on-site solar used for self-generation, and on the other, resources whose full output and contractual rights (including capacity) are offered for sale to the Company and are subject to cost-effectiveness review.

Parties appear to seek PPA-like terms without providing the benefits that come with a PPA resource. Further, parties do not support their claim of right to a long term fixed rate, beyond noting the inherent difficulty of planning around rates subject to change. It is both reasonable and prudent to treat different resource types in different ways, and accordingly, we believe the Commission should reject the extraordinary request to suspend rate updates for customers on the Rider.

B. New Rate Designs with Coincident-Peak and Non-Coincident Peak Bases

The Department recommends the development of a wholly new rate design for all 48,500 demand-metered customers in the Company’s next general rate case proceeding. The 50 current Rider customers represent 0.1 percent of these customers. Similarly, the City of Minneapolis and Target support the development of a generation demand rate assessed at system peak, separate from the distribution demand rate. In support of its proposal, the City of Minneapolis and Target assert that “this is the approach the Company’s affiliated company the Public Service Company of Colorado takes”.¹³ As discussed here, the City of Minneapolis and Target misstate the Colorado rate structure and they inaccurately characterize the likely outcome of their proposal.

The Department recommends the Company propose a new rate design in its next rate case filing that would separate the current single demand charge into two components. The proposed design would include a coincident-peak based generation

¹¹ Comments of City of Minneapolis and Target at 8 and MnSEIA at 9.

¹² Comments of City of Minneapolis and Target at 7.

¹³ City of Minneapolis and Target at 5.

and transmission demand rate and billing quantities, and a non-coincident-peak based distribution demand rate and billing quantities.

A coincident-peak based demand approach can have two forms. The billed quantity can be determined after-the-fact based on customer loads at the time of monthly system peaks defined by a specific hourly system load. While this true coincident-peak approach has some theoretical merit, it is an inherently volatile and unpredictable measure that in all likelihood would be unacceptable to all parties. As a result, it is rarely if ever used for electric rate design.

The other demand form that can be referred to as coincident-peak based is essentially a time-of-use (TOU) rate design that measures customers' non-coincident-peak loads during typical system peak hours, with an on-peak period, for example, of four to six hours duration. This narrower TOU approach may more precisely represent customer cost responsibility, but is not a reasonable or practical option to implement for all customers at once at this time. It would require interval metering for all demand-metered customers with enough historical usage to forecast what would be substantial changes in demand billing quantities, in total and by individual customers. Individual customers can also experience substantial bill impacts from a sharp change to a narrowly defined on-peak period. Transitioning to a narrower TOU-based rate design that carries with it these substantial billing quantity changes would at a minimum require a phased-in approach.

A narrower TOU billing approach also would do little to address the central concern of this proceeding, which is to differentiate PV customer contributions to system peak loads relative to non-coincident-peak loads from other customers. An on-peak rate period, even if narrowly defined, would measure customer loads during most days of the month. One overcast cloudy day during the month would overshadow PV capacity contributions on sunnier days, leaving little net benefit to PV-owning customers from a substantially different and more complicated rate design.

This TOU "coincident-peak" approach is used by Public Service Company of Colorado (PSCo) and is limited to only primary voltage customers. PSCo's experience with this rate design with a weekday 2pm – 6pm on-peak non-coincident-peak demand measurement period has not yet supported its extension to the majority of demand-metered customers. Historically, PSCo has also used an unbundled non-TOU non-coincident-peak distribution demand charge, which is a requirement for any type of separate coincident-peak based generation and transmission rate design. This rate design also does not address the cloudy day based peak billing demand problem for PV customers.

The Department also supports “coincident-peak” based rate design by referring to the Option R rate available in California for large customers with PV installations. This rate design, based on a study of five customers, addresses the system coincident peak demand measurement issue only by reducing demand charges and increasing energy charges. This approach is less precise and less performance-based than the Company’s Rider. This more complicated approach also produces a significant inconsistency with other demand-billed customers, which is a potentially serious problem. For example, it could have the unintended consequence of encouraging customers with lower load factors to use a nominal PV installation only as a strategy to avoid full cost responsibility from the standard rate design.

The Company has a single demand-metered rate design with a bundled demand rate and an energy rate that already includes significant generation capacity costs, which is important to maintain for preserving equity between all customers. The Company’s Rider has the advantage of compatibility with this existing demand-metered rate design and also providing a simple performance-based rate adjustment for PV customers to address their contribution to system peak loads.

With respect to the Department’s proposal, we believe this is an interesting idea but it will not resolve the PV demand billing issue. Instead, it would allow for participation growth at the outdated interim credit level rather than through a more accurate methodology. We believe the Company’s approach more effectively fulfills the purpose of the Rider.

C. CT Capacity Cost Inputs

Several parties provided comments on the CT capacity costs we relied on to update the PV Demand Credit Rider methodology. The Company used its most recent estimate of the levelized cost of a brownfield CT for a 2019 capacity accredited resource. At the time of filing, the levelized cost was \$4.54 per kW. Since our initial filing, the cost of a brownfield CT was revised slightly upward to \$4.62, which was reflected in subsequent resource acquisition filings.¹⁴ The Company would agree to update the CT costs as reflected in more recent acquisition filings. Additional responses to parties’ Initial Comments are provided below.

1. *The Department recommends the Company use the 2025 cost for a CT as assumed in E999/PR-19-9.*¹⁵

¹⁴ See response to MnSEIA IR No. 6 in this docket and Docket Nos. E002/PA-18-702, E002/M-18-765, and E002/M-18-777.

¹⁵ The Department recognized other sources of avoided cost value in its recent Comments in the Commission’s Inquiry into Electric Vehicle Charging Infrastructure, where it stated, “For the capacity cost

The 2025 cost for a CT in Docket No. E999/PR-19-9 is based on the costs of 2019 Black Dog CT escalated to 2025. The Company does not believe it is appropriate to use 2025 escalated costs for a 2019 rate. When the 2025 costs are discounted to 2019, the levelized CT costs are similar to those proposed by the Company.

2. *The City of Minneapolis and Target recommend the Company use a Levelized CT cost sourced from a Brattle Cost of New Entry Study.*

The CT costs used to develop the 2019 rate should reflect the potential avoided costs to customers. The Cost of New Entry in PJM does not reflect the likely avoided costs due to capacity additions for NSP customers. The Company's estimate of a brownfield CT represents the likely avoided cost of capacity and appropriately values that capacity. The Company notes that it referred to the Brattle Cost of New Entry Study as support for a declining trend in capacity costs, not as an appropriate basis for an NSP rate.

3. *Vote Solar recommends the Company replace levelized CT costs with embedded generation costs allocated to demand charges.*

The embedded generation costs allocated to demand charges were determined in the last rate case based on the total generation costs in the relevant test year stratified into demand and energy related costs in order to allocate those costs to customer classes, and the relationship between demand and energy rates. The Company's proposal relies on the most recent estimate of avoided capacity costs. The most recent estimate of avoided CT costs best reflects the value of the next increment of capacity.

4. *MnSELA recommends the Company replace the levelized CT costs with an average cost based on both brownfield and greenfield CTs.*

The brownfield CT represents the next likely CT addition and therefore is the best representation of the avoided capacity cost. The Company would seek to use brownfield sites in order to avoid the transmission and gas delivery costs associated with developing a new site and to limit the environmental impacts of greenfield

impact, currently new load only creates a capacity cost if it increases the utility's demand at the time of MISO's annual peak (referred to as coincident peak). If the new load is added at any time other than the coincident peak there would be no capacity cost. Load added during the coincident peak requires new capacity. For Minnesota, MISO's annual capacity auction in the last six years has resulted in a cost of capacity varying between \$1 per MW-day and \$19.72 per MW-day. The average capacity price was about \$5 per MW-day. Again, in terms of demand costs, the cost difference between additions of new load on-peak and off-peak is relatively small." July 25, 2018. Docket No. E999/CI-17-879.

development. The Company notes that the greenfield generic CT costs included in the Dakota Range III filing included an electric transmission delivery cost of \$100/kW for the cost of new transmission. As the PV Demand Credit already incorporates a credit for avoided transmission costs, it would not be appropriate to include an additional credit for avoided transmission. Removing the transmission costs from the greenfield CT cost results in a levelized cost of \$4.69/kW month.

While the Company does not believe it is appropriate to rely on the greenfield CT as the basis for avoided capacity costs, we note that after removing the avoided transmission costs so that avoided transmission is not double counted, the avoided generation costs are similar.

D. Avoided Distribution

Some parties suggest that a component for avoided distribution capacity costs should be included in the PV Demand Credit Rider methodology based on the rationale that it is a component currently recognized in the Value of Solar. The Company disagrees with this proposal because, as a general matter, grid-connected scenarios do not allow for the avoidance of the cost to serve the customer through the distribution system. Where the Company and ratepayers would see no cost savings, there can be no credit to pass along to solar customers. Providing a credit to customers for avoided distribution capacity costs through the PV Demand Credit Rider is neither reasonable nor credible.

As with all other customers, a distribution system is required to serve a PV customer whether it is used one hour or all hours of the year.¹⁶ When a PV customer exports energy, additional use of the distribution system occurs. Given the wide variability of PV generation at all times and on all days, including system peak load days, combined with distribution system capacity availability that is required at all times, distribution costs savings from customers using DG for self-generation unlikely or insignificant.

As stated in the Company's October 19, 2018 compliance filing, the methodology retains an embedded transmission component even though that component is not clearly indicated based on the significant timing differences for generation and transmission peak time requirements. The Company retained this component only in order to provide continuity and balance to the resulting credit while recognizing the justification for excluding a transmission component.

¹⁶ The Commission has previously determined that self-generators must pay distribution system costs in its adoption of standby reservation rates in this proceeding. *See* Order Approving Solar PV Demand Credit Rider with Modifications and Standby Service Rider, April 20, 2018.

Further, a component's inclusion in the Value of Solar methodology provides no basis for inclusion in the Rider methodology. Unlike customer rates under the PV Demand Credit Rider, the Value of Solar is a buy-all sell-all construct where customers pay full demand charges.

E. Future Need

The Company's proposed methodology recognizes that incremental capacity additions are not required for several years. In Comments, some parties argue for the elimination of this provision, and the Department recommends that customers enrolled since January 11, 2017 should not have a discount applied to their credit assumptions as this was the date of the Commission's most recent Integrated Resource Plan (IRP) Order, which included certain obligations to acquire capacity from solar generation.

We provide context for the inclusion of the future need provision in the methodology by clarifying the developments in the IRP cited by parties, describing the MISO capacity registration process and impact, and highlighting the reasonableness and customer equity "check" provided by the inclusion of the future need component.

1. Integrated Resource Plan Background

The Department agrees that a new resource provides utility capacity value in years when there is a capacity need. In the Company's most recent IRP (Docket No. E002/RP-15-21, January 2, 2015), the initial Preferred Plan recommended no resource additions, and identified a resource need in 2024. The supplement (January 29, 2016) continued to identify a resource need in 2024 with the additions resulting from the outcome of the CAP CON proceeding (Docket No. E002/CN-12-1240) and the proposed retirement of Sherco Units 1 & 2. The IRP Order acknowledges a system need for intermediate capacity in 2026 following the retirement of Sherco Units 1 and 2.¹⁷ During the IRP deliberations the Commission recommended resource additions resulting in a revised capacity need of 2025. These resource additions included 1000+ MW of wind based on existing market pricing and availability, 400 MW demand response based on a potential study, and solar resources to achieve 650 MW by 2021 based on the high interest in the Community Solar

¹⁷ "Therefore, the Commission concludes that, more likely than not, there will be a need for approximately 750 MW of intermediate capacity coinciding with the retirement of Sherco 1 in 2026." Order Approving Plan with Modifications and Establishing Requirements for Future Resource Plan Filings, Minnesota Public Utilities Commission, January 11, 2017. Docket No. E002/RP-15-21.

Gardens program. We believe parties misconstrue the Order when they imply the Commission found the Company's system had a near-term need for solar resources.

2. *MISO Capacity Registration*

The MISO annual registration process and IRP modeling operate differently, but result in a similar net capacity position. MISO obligation and resource registration is an annual process, subject to MISO's prevailing Business Practices. As discussed in the response to DOC IR No. 41, provided as Attachment A to this Reply, the right to register or claim capacity credit for DG PV resources would require NSP to have ownership or equivalent contractual rights to the capacity. The annual MISO registration process, discussed in parts C and D of the response to DOC IR 41, differs from the IRP process, described in parts A and B of the same response. The IRP process reflects a system-wide forecast of obligation and resources of the forward 15 year period. Supply side resource modeling is designed to account for interactive effects of different technologies, programs, and traditional resources. This effort allows for distributed generation (DG) PV to be modeled with operational characteristics specific to the technology. Applying the impact of DG PV as a supply side generation resource then necessitates the removal of DG PV impact in the load forecast (as an offset to load) from the obligation side of the Load and Resource (L&R) profile. This isolates resource impact to the supply side of the modeling, and prevents double counting on the obligation side of the L&R profile.

3. *Rider Reasonableness and Customer Equity*

The proposed methodology is designed to apply to PV customers that begin service with the Rider after a revised credit rate is approved by the Commission. The Company's proposed methodology included an avoided cost approach for generation costs with some reluctance as the purpose of the Rider is to modify the impact of embedded cost based rates for PV customers, with the objective of providing parity with other customers that are billed on rates derived from embedded costs. This was done with the recognition that it is important to be careful using avoided cost adjustments to embedded cost based rates. For example, avoided costs are used as an upper boundary reference point for determining interruptible service credits, recognizing the need for significant adjustments related to limitations on the use of interruptions as compared with peaking plant generation. For the Rider methodology, a comparable adjustment was made to recognize that capacity additions are not needed for several years.

When using avoided cost references, it is also important to check for reasonable results, especially with respect to embedded cost based rate levels. For example, one

test of reasonableness is that a credit for PV capacity that is not able to be a registered resource should be less than a credit for not service that can be registered as capacity resource. These considerations support applying a future need adjustment factor to a peaking plant avoided cost. This is especially true considering that avoided cost is not necessarily connected to a peaking plant, but may also be represented by alternative market-based generation capacity supply measurements such as market prices or capacity auction prices.

A reasonable generation capacity valuation approach for the purpose of the Rider should also be designed to reasonably address current circumstances and also anticipate the future. As discussed later, increasing supplies of solar generation capacity will shift peak load requirements later in the day. As that happens, the effective amount of avoided costs will decline. For example, as noted by the Department, the Company's PV Billed Demand Study showed that PV capacity contributions drop from 50 percent for the hour ending 5pm to 36 percent for the hour ending 6pm. This impact is consistent with the Companies approved Residential TOU Pilot that has an on-peak period of 3pm to 8pm that was based on year 2024 forecast system loads net of renewable resources.

Further, Target Corporation and the City of Minneapolis suggest that this component of the methodology is in some way inconsistent with the provision of Minn. Stat. § 216B.164, Subd. 1 that states: "This section shall at all times be construed in accordance with its intent to give the maximum possible encouragement to cogeneration and small power production consistent with protection of the ratepayers and the public."

The proposed methodology is fully consistent with the law. The Commission has previously interpreted this passage in its May 31, 2018, *Red Lake Falls* decision in Docket No. E017/CG-16-1021. The Commission's reasoning in that matter is instructive here.

The Commission finds no need to determine if there is any conflict between PURPA and state law. Both were written to encourage renewables, at a time when renewable prices were high and could not effectively compete in the marketplace. The Commission is cognizant that renewable prices have dropped significantly in recent years; however, neither PURPA nor the state statute has been updated to address that change. [...] PURPA is not intended to require customers to subsidize developers. And, as noted by the ALJ, the fact that the Project may not be economically viable at Otter Tail's avoided cost is simply not relevant to the analysis under PURPA or Minnesota law. As

noted by the ALJ, the conclusion reached here may render QFs of a size and technology similar to the Project not economically viable, at least not for utilities with access to large wind power installations. But that is an issue that can only be addressed by the Legislature, not the Commission.

The Commission notes parenthetically that the interpretation of avoided costs advanced by ConEd would result in costs per ratepayer of some \$57 MWh. This is hardly a fair and equitable rate in an environment where the record developed in this matter shows that current avoided cost of renewables is significantly less.¹⁸

Based on the Commission's previous interpretation of the intent of this provision—that it provides no requirement that regulators act to create economic viability for projects—we do not believe there is any statutory barrier to a methodology component that reflects the timing of a utility's future need for capacity.

F. Credit Limiter

Commenters propose elimination of tariffed safeguards for ratepayers by establishing conditions for maximum monthly credits under the Rider. The credit limitations in the tariff are reasonable safeguards that prevent extreme and excessive overcrediting scenarios, and these provisions should be retained. Proposals to eliminate credit limits demonstrate either a misunderstanding of the concept and purpose of the Rider, or are an attempt to unfairly bolster the credit at the expense of all other customers.

The purpose of the Rider is to provide a rate adjustment that results in PV customers paying a comparable amount for peak generation relative to their peak load requirements as other non-PV customers. The cost of generation is recovered through a demand rate per kW. The design of the Rider converts a demand value per kW into an energy value per kWh. This was done to simplify the rate design and to provide a value focused performance incentive to maximize the value of PV generation for all customers.

¹⁸ Docket Nos. E017/CG-16-1021 & E017/CG-17-464, In the Matter of a Complaint by Red Lake Falls Community Hybrid LLC Regarding Potential Purchased Power Agreement Terms and Pricing with Otter Tail Power Company, ORDER ESTABLISHING DATE OF LEGALLY ENFORCEABLE OBLIGATION, TERM LENGTH, AND AVOIDED COST OF ENERGY FOR THE RED LAKE FALLS HYBRID SOLAR/WIND PROJECT, (May 31, 2018) Page 13.

The process of converting a demand value into an energy based rate, however, carries the risk of not having a limit on the resulting capacity credit per kW. As mentioned in our initial petition, an example of this risk is a PV efficiency improvement that provides increased kWh production with no corresponding change in peak load requirements. The conversion risk of using an energy basis for the credit is necessarily managed through two credit limits.

A credit kWh limit sets the maximum credited kWh per maximum kW demand contribution. This kWh limit was carefully designed to recognize seasonal production variations and to have little or no effect on credited production under normal circumstances. It is essentially a safety check against unjustified credit levels.

The other credit limit specifies that the PV credit amount cannot exceed the billed demand charge for the same month. This is an entirely reasonable provision consistent with the purpose of the Rider as a credit to demand charges. Eliminating this credit limit would allow the possibility of a credit exceeding the charge it was designed to offset, an absurd result. We remind parties that the credit limiter is a longstanding provision that was a part of the Standby Service Rider tariff before it exempted PV generation.

A fair evaluation of this credit limit should also recognize its unrestricted nature. Since billed demand charges result from a demand rate that includes distribution costs, this credit limit would allow a PV customer to avoid distribution system cost responsibility without providing any reduction to those costs. The only basis for including distribution costs in this credit limit is to reduce complexity; there is no cost basis for including distribution costs in the limit. The probability of reaching the limit varies with differences in monthly solar radiation and generally requires PV capacity that is a large share of total electric load requirements. The Company does not anticipate that customers will avoid all demand charges in all months, but we will continue to review results for enrolled customers.

G. Reduced Billed Demand Value

The City of Minneapolis and Target seek the elimination of the “Reduced Bill Demand Value” component of the proposed methodology. This component reduces the separate PV demand credit per peak kWh of PV production to recognize billed demand savings that already occur by some billed demand reduction from PV. We used a conservative demand charge reduction of 6.4 percent in our proposed methodology, based on a comprehensive analysis of a 24 PV customer sample.

Excluding this component from the methodology because there may be a larger data set to study in the future is not reasonable. It is the Company's understanding that a five customer sample was sufficient in the development of the Option R tariff in California, so it is unclear why the Company's study sample would be deficient. Further, the Company's finding, a 6.4 percent demand charge reduction, is essentially identical to the 7 percent reduction found in a joint analysis of the issue by the Lawrence Berkeley National Laboratory and the National Renewable Energy Laboratory reported in a July 2017 presentation¹⁹. This analysis, also consistent with the Company's customer analysis, found a wide distribution of customers with higher demand charge reduction impacts. The reduced billed demand value should be retained in the methodology, as it is required for an outcome consistent with the purpose of the Rider.

H. Applicable Months

The City of Minneapolis and Target also seek to eliminate the "Applicable Months per Year" provision of the proposed methodology. This provision is a defined part of the settlement agreement that applies a determined monthly demand credit to eleven months. The result is a 11/12 reduction factor as compared to a twelve month application.

In addition to retaining this adjustment as an established settlement agreement term, this reduction is supported by the expected continuing reduction in PV value as it supplies a greater share of system loads. As PV supply increases, its marginal value decreases as net system peak capacity requirements shift to later in the day. This effect has been recognized, including by the Solar Energy Industries Association²⁰, and in an August 2017 report by the Institute for Energy Research "The Solar Value Cliff: The Diminishing Value of Solar Power"²¹. It is not appropriate to dismantle the settlement by changing this provision, or to disregard the observed effects of PV supply increases.

¹⁹ <https://emp.lbl.gov/sites/default/files/comdemandcharge-briefing.pdf> Page 13

²⁰ <https://www.seia.org/research-resources/solar-valuation-utility-planning-studies>

²¹ <http://instituteeforenergyresearch.org/wp-content/uploads/2017/08/The-Solar-Value-Cliff-August-21-1.pdf>

III. OUT OF SCOPE RECOMMENDATIONS

A. Storage

Some parties suggest that customers with energy storage technologies be permitted to receive benefits under the PV Demand Credit Rider. Although storage is a tool that may have more value to PV customers than other customers, to manage PV intermittency, there is no justification for the inclusion of storage in the Rider. As discussed here, the rate was tailored specifically to the unique attributes of PV generation, attributes which are fundamentally altered when storage is present. Additionally, storage is at odds with the underlying purpose of the Rider and can be used to “game” the rate. Finally, the new metering configurations required to include PV and storage are not feasible under the Company’s proposal.

The Company’s proposed methodology was designed specifically for the capacity factor and production supply characteristics of solar PV, which are essentially known over the course of a year with the exceptions of weather and maintenance variations. The Rider defines a credit rate in units of kWh PV generation that is based on solar production characteristics. The energy supply profile provided by storage technology is determined at the discretion of a customer and is not known and is not convertible to a specific credit rate.

Storage is also incompatible with the underlying purpose of the Rider, which is to recognize that billed kW demand quantities do not fully recognize PV contributions to system peak load requirements. In contrast to solar PV, storage technologies have the inherent flexibility to allow customers to manage their load profiles to reduce their non-coincident peak based billing demand quantities without a credit mechanism. Furthermore, using storage for its design purpose of reducing kW billing demand produces customer savings that would be doubled counted by also applying the Rider credit.

Applying the rider credit per kWh of PV generation requires direct metering of PV production, since PV specifications are the basis for the design. As such, the required metering configuration for this measurement is also not compatible with a separate energy storage device used by a customer. The feasibility of measuring energy provided by storage technology is not clear and such costs are not included in the Rider. In addition, applying energy from storage technology to the Rider credit provides no assurance that its flexible energy output would be provided on system peak days comparable to the fixed assumed peak day contributions of solar PV.

Importantly, there is no unique basis for associating a storage payment with only solar PV, which raises the fundamental problem of the basis for any type of storage payment to any customer. Such compensation would essentially amount to a purchased power agreement with the real possibility that on behalf of all its customers, the Company would sell energy put into storage at a low rate, and uneconomically buy it back at a high rate. For all these reasons, storage is not included in the PV Demand Credit Rider.

B. Sharing Customer Data

We are unclear what data MnSEIA seeks in its Comments —whether it is customer data or other information— but it appears to be seeking utility involvement in a developer’s sales process. Without further information the Company is unable to respond to this recommendation.

CONCLUSION

We appreciate the opportunity to provide our Reply Comments in this matter, and we respectfully request the Commission approve our proposed methodology and the resulting rate. We believe the proposed methodology effectively fulfills the purpose of the Rider, and it does so in a way that is reasonably precise, replicable, and equitable for all customers. By contrast, counterproposals in this record would exacerbate overpayment from ratepayers, stagnate the effort to achieve a Rider based on a calculable methodology, and provide long term certainty to some customers at the expense of others.

Dated: March 19, 2019

Northern States Power Company

- Not Public Document – Not For Public Disclosure**
 Public Document – Not Public Data Has Been Excised
 Public Document

Xcel Energy Information Request No. 41
Docket No.: E002/M-13-315, E999/CI-15-115
Response To: MN Department of Commerce
Requestor: Christopher Davis, Lise Trudeau
Date Received: February 22, 2019

Question:

Topic: PV Solar Demand Credit

The Department understands that the way distributed generation is treated in the bulk system is continuing to evolve. As a part of this process, the Department is trying to understand better how Xcel treats various distributed resources in regards to MISO Module E requirements.

- a. Does customer-owned PV generation reduce Xcel's system load in a way that results in a corresponding reduction in resource needs?
- b. Does customer-owned PV generation reduce Xcel's system load in forecasting for resource adequacy?
- c. Are Aurora Distributed Solar and Community Solar Gardens registered and accredited with MISO?
- d. What kind of visibility or contractual arrangements would be needed so that customer PV can be registered and accredited with MISO?

Response:

We understand the phrase "customer-owned PV generation" in this context to refer to situations where a retail customer is net metering distributed generation (DG) under our A50-A56 rate codes, or is interconnected to us but is self-using all DG without exporting to us. Under these situations, the customer still owns the capacity of the DG and has not assigned that to NSP. For example, under our A50-A56 rate codes we do not pay for, nor receive, the capacity of customer-owned PV DG. Examples of DG systems in this context that we do not consider to be customer-owned include the sites associated with the Aurora DG project, and the DG

Community Solar Gardens. The Aurora and Community Solar Garden sites are projects where the Company by contract is entitled to the energy and capacity.

We also note that the NSP system has an obligation of approximately 9400 MW, while the aggregate nameplate capacity of customer-owned DG PV resources as defined above is less than 100 MW.

- a. Customer-owned DG PV resources may act as an overall reduction to system load once historical operation results are incorporated into modeling, thereby reducing resource need. In modeling, the determination of obligation for resource adequacy modeling begins with the current load forecast, adjusted to remove impacts of customer-owned DG PV systems. The solar removed from the obligation (side of the Load and Resource Balance Table) is returned to the evaluation as a supply side resource (on the other side of the L&R Table). As a supply side resource, the capacity is grossed up by the MISO planning reserve margin requirement (PRMR). Customer-owned DG PV solar is modeled in Strategist with capacity credit informed by ELCC studies. The impact to load and demand forecast lags resource installation in the resource adequacy forecast due to the load research conducted to evaluate the expected impact, using operational historic data from these resource classes. The load research, forecasting, and resource adequacy activities applies only to customer-owned DG PV resources known to exist by the Company (i.e. net metered projects, or other customer-owned projects that have an interconnection agreement). A customer-owned DG PV resource that is not net-metered and which does not have an interconnection agreement with us is not accounted for in the process outlined above, but instead would only be reflected to the extent to which load has been reduced by the presence of the production from the PV resource.
- b. See the response to Part a. above.
- c. Yes, Aurora Distributed Solar projects and Community Solar Gardens are registered and accredited as capacity resources under MISO Module E Tracking Tool (MECT) and in accordance with the requirements of the MISO Business Practice Module for Resource Adequacy. NSP, as the Market Participant, has contractual rights to the capacity of these resources. However, this same right does not extend to customer-owned DG PV systems as explained in Part d. below.
- d. NSP could have the capacity of these resources registered and accredited with MISO if it by contract with the customer NSP has the right to the capacity, and it NSP meets the MISO requirements to claim this capacity with MISO. The MISO requirements are set forth in Section 69A.3.1.e of the MISO Tariff that

requires the following to qualify intermittent generation resources as a Capacity Resource in the MISO Module E Tracking Tool (MECT).

Intermittent Generation and Dispatchable Intermittent Resources are resources that are eligible to qualify as a Capacity Resource by a Market Participant provided that the Market Participant: (a) possesses ownership or equivalent contractual rights for the resource; (b) supplies historical performance data for the resource as established in the BPM for Resource Adequacy; and (c) registers the resource with the Transmission Provider in accordance with the BPM for Market Registration (if the resource is located within the MISO Balancing Authority Area metered boundary), or the BPM for Resource Adequacy (if the resource is located outside the MISO Balancing Authority Area metered boundary).

In order for requirement (a) to be met (*that the Market Participant possesses ownership or equivalent contractual rights for the resource*), at a minimum NSP would need to possess ownership or equivalent contractual rights to the capacity, such as is the case under the PPAs we have with Aurora and the contracts we have with Community Solar Gardens. Where there is a customer-owned DG PV facility as defined above, NSP does not have ownership or contractual rights for the capacity, thus making NSP ineligible to claim accredited capacity with MISO.

In order for requirement (b) to be met (*that the Market Participant supplies historical performance data for the resource as established in the BPM for Resource Adequacy*) at a minimum there would need to be a production meter installed and NSP would need access to the 15-minute interval data from the production meter

In addition to the above which explains how NSP as the Market Participant can register and claim the capacity, the customer can also directly be a Market Participant if it meets the MISO requirements set forth above. However, if it does so, then NSP would need to have visibility into this arrangement in order to avoid doubling counting the accredited capacity and the reduction in load.

Preparer: Mary Morrison / Tom McDonough
Title: Senior Analyst / Manager, Transmission Access
Department: Resource Planning / Market Operation
Telephone: 612-330-5862 / 612-337-2258
Date: March 4, 2019

CERTIFICATE OF SERVICE

I, Lynnette Sweet, 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 March 2019

/s/

Lynnette Sweet
Regulatory Administrator

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| Samantha | Norris | samanthanorris@alliantenergy.com | Interstate Power and Light Company | 200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351 | Electronic Service | No | OFF_SL_15-115_Official |
| Kate | O'Connell | kate.oconnell@state.mn.us | Department of Commerce | Suite 50085 Seventh Place East St. Paul, MN 551012198 | Electronic Service | No | OFF_SL_15-115_Official |
| Greg | Padden | gpadden@grenergy.com | Great River Energy | 12300 Elm Creek Blvd Maple Grove, MN 55369-4718 | Electronic Service | No | OFF_SL_15-115_Official |
| Nick | Paluck | nick.paluck@xcelenergy.com | Xcel Energy | 7th Floor 414 Nicollet Mall Minneapolis, MN 554011993 | Electronic Service | No | OFF_SL_15-115_Official |
| James | Pearson | james.g.pearson@xcelenergy.com | Xcel Energy | 414 Nicollet Mall Minneapolis, MN 55401 | Electronic Service | No | OFF_SL_15-115_Official |
| Susan | Peirce | Susan.Peirce@state.mn.us | Department of Commerce | 85 Seventh Place East St. Paul, MN 55101 | Electronic Service | No | OFF_SL_15-115_Official |
| John | Pendray | john.pendray@cummins.com | | N/A | Electronic Service | No | OFF_SL_15-115_Official |
| Joyce | Peppin | joyce@mrea.org | Minnesota Rural Electric Association | 11640 73rd Ave N Maple Grove, MN 55369 | Electronic Service | No | OFF_SL_15-115_Official |
| Leah | Peterson | lpeterson11@gmail.com | | N/A | Electronic Service | No | OFF_SL_15-115_Official |
| Jessica | Peterson | jessica.k.peterson@xcelenergy.com | Xcel Energy | 414 Nicollet Mall GO 6 Minneapolis, MN 55401 | Electronic Service | No | OFF_SL_15-115_Official |
| Donna | Pickard | dpickardgsss@gmail.com | Genie Solar Support Services | 1215 Lilac Lane Excelsior, MN 55331 | Electronic Service | No | OFF_SL_15-115_Official |

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|------------|----------------|--------------------------------|--------------------------|--|--------------------|-------------------|------------------------|
| Jerry | Pittman | jerry.pittman@charter.net | | N/A | Electronic Service | No | OFF_SL_15-115_Official |
| Marcia | Podratz | mpodratz@mnpower.com | Minnesota Power | 30 W Superior S Duluth, MN 55802 | Electronic Service | No | OFF_SL_15-115_Official |
| David G. | Prazak | dprazak@otpc.com | Otter Tail Power Company | P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380496 | Electronic Service | No | OFF_SL_15-115_Official |
| Chris | Psihos | Chris.psihos@idealenergies.com | Ideal Energies, LLC | 5810 Nicollet Ave Minneapolis, MN 55419 | Electronic Service | No | OFF_SL_15-115_Official |
| Doug | Renier | doug.renier@state.mn.us | Department of Commerce | 85 7th Place E Ste 500 St. Paul, MN 55101 | Electronic Service | No | OFF_SL_15-115_Official |
| Richard | Savelkoul | rsavelkoul@martinsquires.com | Martin & Squires, P.A. | 332 Minnesota Street Ste W2750 St. Paul, MN 55101 | Electronic Service | No | OFF_SL_15-115_Official |
| Thomas | Scharff | thomas.scharff@versoco.com | Verso Corp | 600 High Street Wisconsin Rapids, WI 54495 | Electronic Service | No | OFF_SL_15-115_Official |
| Larry L. | Schedin | Larry@LLSResources.com | LLS Resources, LLC | 332 Minnesota St, Ste W1390 St. Paul, MN 55101 | Electronic Service | No | OFF_SL_15-115_Official |
| Kevin | Schwain | Kevin.D.Schwain@xcelenergy.com | Xcel Energy | 404 Nicollet Mall Minneapolis, MN 55401 | Electronic Service | No | OFF_SL_15-115_Official |
| Janet | Shaddix Elling | jshaddix@janetshaddix.com | Shaddix And Associates | 7400 Lyndale Ave S Ste 190 Richfield, MN 55423 | Electronic Service | Yes | OFF_SL_15-115_Official |

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|------------|-----------|--------------------------------------|---|--|--------------------|-------------------|------------------------|
| David | Shaffer | shaff081@gmail.com | Minnesota Solar Energy Industries Project | 1005 Fairmount Ave Saint Paul, MN 55105 | Electronic Service | No | OFF_SL_15-115_Official |
| Patricia | Sharkey | psharkey@environmentallawcounsel.com | Midwest Cogeneration Association. | 180 N. LaSalle Street Suite 3700 Chicago, Illinois 60601 | Electronic Service | No | OFF_SL_15-115_Official |
| Gary | Shaver | gshaver@silicon-energy.com | Silicon Energy | 3506 124th St NE Marysville, WA 98271 | Electronic Service | No | OFF_SL_15-115_Official |
| Erin | Shea | eshea@silicon-energy.com | Silicon Energy | PO Box 376 8787 Silicon Way Mt Iron, MN 55768 | Electronic Service | No | OFF_SL_15-115_Official |
| Doug | Shoemaker | dougs@mnRenewables.org | Minnesota Renewable Energy | 2928 5th Ave S Minneapolis, MN 55408 | Electronic Service | No | OFF_SL_15-115_Official |
| Ken | Smith | ken.smith@districtenergy.com | District Energy St. Paul Inc. | 76 W Kellogg Blvd St. Paul, MN 55102 | Electronic Service | No | OFF_SL_15-115_Official |
| Sara | Smith | sara.smith@metc.state.mn.us | Metropolitan Council | 390 Robert St N St. Paul, MN 55101-1805 | Electronic Service | No | OFF_SL_15-115_Official |
| Russ | Stark | Russ.Stark@ci.stpaul.mn.us | City of St. Paul | 390 City Hall 15 West Kellogg Boulevard Saint Paul, MN 55102 | Electronic Service | No | OFF_SL_15-115_Official |
| Byron E. | Starns | byron.starns@stinson.com | Stinson Leonard Street LLP | 50 S 6th St Ste 2600 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_15-115_Official |
| James M. | Strommen | jstrommen@kennedy-graven.com | Kennedy & Graven, Chartered | 470 U.S. Bank Plaza 200 South Sixth Street Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_15-115_Official |

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|------------|------------|-----------------------------------|--------------------------|---|--------------------|-------------------|------------------------|
| Eric | Swanson | eswanson@winthrop.com | Winthrop & Weinstine | 225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629 | Electronic Service | No | OFF_SL_15-115_Official |
| Lynnette | Sweet | Regulatory.records@xcelenergy.com | Xcel Energy | 414 Nicollet Mall FL 7 Minneapolis, MN 554011993 | Electronic Service | No | OFF_SL_15-115_Official |
| Craig | Tarr, PE | ctarr@energyconcepts.us | Energy Concepts | 2349 Willis Niller Dr Hudson, WI 54016 | Electronic Service | No | OFF_SL_15-115_Official |
| Leisa | Thompson | N/A | Metropolitan Council | 390 Robert St N Saint Paul, MN 55101-1805 | Paper Service | No | OFF_SL_15-115_Official |
| Stuart | Tommerdahl | stommerdahl@otpc.com | Otter Tail Power Company | 215 S Cascade St PO Box 496 Fergus Falls, MN 56537 | Electronic Service | No | OFF_SL_15-115_Official |
| Daniel | Tonder | d.tonder@mnpower.com | Minnesota Power | PO Box 60 Little Falls, MN 56345 | Electronic Service | No | OFF_SL_15-115_Official |
| Lise | Trudeau | lise.trudeau@state.mn.us | Department of Commerce | 85 7th Place East Suite 500 Saint Paul, MN 55101 | Electronic Service | No | OFF_SL_15-115_Official |
| Karen | Turnboom | karen.turnboom@versocom.com | Verso Corporation | 100 Central Avenue Duluth, MN 55807 | Electronic Service | No | OFF_SL_15-115_Official |
| Ken | Valley | ken@epsolar.com | EPF Solar | 825 Nicollet, #1510 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_15-115_Official |
| Erick | Van Meter | evanmete@umn.edu | University of Minnesota | N/A | Electronic Service | No | OFF_SL_15-115_Official |

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|------------|-----------|-------------------------------------|---|--|--------------------|-------------------|------------------------|
| Lisa | Veith | lisa.veith@ci.stpaul.mn.us | City of St. Paul | 400 City Hall and Courthouse 15 West Kellogg Blvd. St. Paul, MN 55102 | Electronic Service | No | OFF_SL_15-115_Official |
| Kevin | Walli | kwalli@fryberger.com | Fryberger, Buchanan, Smith & Frederick | 380 St. Peter St Ste 710 St. Paul, MN 55102 | Electronic Service | No | OFF_SL_15-115_Official |
| Elizabeth | Wefel | eawefel@flaherty- hood.com | Flaherty & Hood, P.A. | 525 Park St Ste 470 Saint Paul, MN 55103 | Electronic Service | No | OFF_SL_15-115_Official |
| Scott M. | Wilensky | scott.wilensky@xcelenergy. com | Xcel Energy | 7th Floor 414 Nicollet Mall Minneapolis, MN 554011993 | Electronic Service | No | OFF_SL_15-115_Official |
| Steven | Wishart | steven.w.wishart@xcelener gy.com | Xcel Energy | 7th Floor 414 Nicollet Mall Minneapolis, MN 554011993 | Electronic Service | No | OFF_SL_15-115_Official |
| Robyn | Woeste | robynwoeste@alliantenerg y.com | Interstate Power and Light Company | 200 First St SE Cedar Rapids, IA 52401 | Electronic Service | No | OFF_SL_15-115_Official |
| 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 |
| Adam | Zoet | adam.zoet@state.mn.us | Department of Commerce | 85 7th Place E Ste 500 St. Paul, MN 55101 | Electronic Service | No | OFF_SL_15-115_Official |