

January 29, 2024

Will Seuffert  
Executive Secretary  
Minnesota Public Utilities Commission  
121 7<sup>th</sup> Place East, Suite 350  
St. Paul, Minnesota 55101-2147

RE: **Comments of the Minnesota Department of Commerce, Division of Energy Resources**  
Docket No. E111/M-23-495

Dear Mr. Seuffert:

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

Dakota Electric Association's Petition to Implement a Pilot Residential and Small General Service Behind-the-Meter Battery Storage Program and Tariff.

The Petition was filed by Adam J. Heinen, Vice President of Regulatory Services, Dakota Electric Association on December 5, 2023.

The Department recommends **approval with a reporting requirement** and is available to answer any questions the Minnesota Public Utilities Commission may have.

Sincerely,

/s/ LOUISE MILTICH  
Assistant Commissioner of Regulatory Analysis

/s/ STEVE RAKOW  
Analyst Coordinator

SR/ar  
Attachment



## Before the Minnesota Public Utilities Commission

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

Docket No. E111/M-23-495

#### I. INTRODUCTION

On December 5, 2023 Dakota Electric Association (DEA, Dakota Electric, or the Cooperative) filed DEA's *Petition to Implement a Pilot Residential and Small General Service Behind-the-Meter Battery Storage Program and Tariff* (Petition).

The Petition requests the Minnesota Public Utilities Commission (Commission) approve a tariff for a pilot program. DEA states that the proposed tariff allows DEA's members with a behind-the-meter (BTM) battery energy storage system (BESS) the ability to receive lower priced energy for the load at the BESS premise in exchange for DEA having access to the BESS for reliability and economic purposes. The proposed pilot tariff would be open to residential and small commercial members with BTM BESS. The proposed tariff would take effect upon Commission approval, but no sooner than March 4, 2024.

On December 15, 2023, the Commission issued *Notice of Comment Period* (Notice). The Notice specified that the following topics are open for comment:

- Should the Commission approve the Behind-the-Meter Storage Pilot Program for Residential and Small General Service customers?
- Should the Commission approve the associated rate tariffs with the Pilot Program for Residential and Small General Service customers who choose to participate in the program?
- Should the Commission approve a new Net Metering rate for those customers enrolled in the pilot program?
- Are there other issues or concerns related to this matter?

Below are the comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) regarding the Petition and the issues listed in the Notice.

#### II. DEPARTMENT ANALYSIS

##### A. RATE CHANGE REQUIREMENTS

The Petition was filed pursuant to Minnesota Statutes § 216B.16 which addresses changes in rates. Minnesota Statutes § 216B.16, subd. 4 states that "The burden of proof to show that the rate change is just and reasonable shall be upon the public utility seeking the change." Minnesota Statutes § 216B.16, subd. 6 provides the factors to be considered by the Commission:

The commission, in the exercise of its powers under this chapter to determine just and reasonable rates for public utilities, shall give due consideration to the public need for adequate, efficient, and reasonable service and to the need of the public utility for revenue sufficient to enable it to meet the cost of furnishing the service, including adequate provision for depreciation of its utility property used and useful in rendering service to the public, and to earn a fair and reasonable return upon the investment in such property. In determining the rate base upon which the utility is to be allowed to earn a fair rate of return, the commission shall give due consideration to evidence of the cost of the property when first devoted to public use, to prudent acquisition cost to the public utility less appropriate depreciation on each, to construction work in progress, to offsets in the nature of capital provided by sources other than the investors, and to other expenses of a capital nature. For purposes of determining rate base, the commission shall consider the original cost of utility property included in the base and shall make no allowance for its estimated current replacement value.

Next, Minnesota Statutes §§ 216B.03 and 216B.07 require rates to be reasonable and not to be unreasonably discriminatory. Minnesota Statutes §§ 216B.03 and 216C.05 encourage rate design that favors energy conservation and the use of renewable energy. Minnesota Statutes § 216B.03 requires that any doubt as to reasonableness should be resolved in favor of the consumer.

In addition to the standard rate design principles, the Department recommends that a pilot program be targeted at learning particular information of value to the utility and have clear means to limit the risks presented by the novel technologies or processes being tested.

Finally, Minnesota Rules 7829.0100, Subp. 11 defines the Petition as a “miscellaneous filing” since no determination of DEA’s overall revenue requirement is necessary. Minnesota Rules part 7829.1300, Subp. 3 contains the completeness requirements for miscellaneous filings. The Department reviewed the Petition for compliance with the completeness requirements and concludes that the Petition is complete.

#### *C. DEA’S EXISTING TARIFF*

DEA currently has a tariff, Controlled Energy Storage (Schedule 51), listing storage batteries that would allow battery energy storage systems (BESS) to be installed by DEA’s members. Thus, DEA’s members currently have access to tariffs that reflect the benefits and costs of a BESS. However, the Petition states that:

the purpose and application of Schedule 51 makes it inappropriate for how a BESS is used, and can be used, currently. Schedule 51 provides significant rate savings to members for uses such as supplemental heating and water

heating, but it restricts energy consumption to eight overnight hours (11pm to 7am) to achieve this rate savings. The expectation then is that these “charged loads” are sustained for the remaining 16 hours of the day. In theory, the battery system could operate in this manner, but it would require the battery to carry load for 16 hours each day, which is not feasible with current battery technology.<sup>1</sup>

DEA concluded that a pilot program and associated tariff was needed to explore ways to better enable DEA’s members to install a BTM BESS and realize any associated benefits. Given that the standard BESS technology has a four-hour duration the Department agrees with DEA’s assessment of a 16-hour requirement.

*D. GOALS FOR THE PILOT*

First, DEA is proposing the tariff as a pilot because:

behind-the-meter storage is a relatively new and evolving segment of the industry. A pilot offering will allow Dakota Electric, and our members, to gain experience with this type of program and rate design, while at the same time being able to efficiently make adjustments, when necessary, to better align the program with the consumer expectations.<sup>2</sup>

The Department agrees that a pilot program is warranted in this instance so that DEA can gain experience with BTM BESS technologies.

The petition includes several other goals or issues to be addressed through the pilot program, including:

- provide economic value to participants while allowing DEA, and the entirety of the DEA’s members to derive value from BESS installations;
- the tariff will streamline the ability for DEA to provide additional value to DEA’s members and respond to changing market conditions;
- a BESS can be a significant electric load, if a BESS recharges too soon after an outage it could strain the distribution system and cause another outage;
- if a BESS begins charging during on-peak periods, it can represent a significant wholesale power risk borne by all members, not just the member with the battery storage.

DEA’s proposal is for the BESS pilot tariff last two years. In addition, DEA states that the proposed pilot tariff provides the Cooperative with additional options to mitigate operational and economic risks associated with BESS, while providing participating members with additional monetary value and lowering overall system wholesale power costs.

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<sup>1</sup> See the Petition at page 8.

<sup>2</sup> See the Petition at page 6.

Overall, the Department agrees with DEA that:

- a pilot BESS tariff could benefit both individual participants and ratepayers as a whole;
- a new tariff (in addition to Schedule 51) could streamline DEA's processes;
- a BESS recharging at the wrong time could present a reliability risk; and
- a BESS recharging at the wrong time could present an economic risk.

*E. DESIGN OF THE PILOT*

*1. DEA's Research*

DEA reviewed existing BTM energy storage tariffs and determined that compensation generally falls into three different categories:

1. upfront payment to a customer based on the size of the battery, either on a kW or kWh basis;
2. monthly payment based on the installed or available kW of the battery; and
3. monthly payment based on the delivered or available kWh of the battery.

DEA's Petition discusses each of the three options. Option 1 provides upfront value to the customer, offsetting the high upfront costs of a BTM BESS. However, Option 1 may be less attractive from a customer perspective because it is generally coupled with a long-term agreement (subject to early termination fees if the customer opts out of the program). This limits future value streams to those identified in the initial agreement.

Option 2 is based on the kW value of the battery and is theoretically in line with cost causation if the main use of the battery is for demand avoidance or to satisfy system peak demand requirements. However, Option 2 has two distinct disadvantages:

- It may create customer confusion, or require additional education from the utility, especially if the utility does not directly assign demand costs to affected customers (as in this instance).
- Absent detailed metering and verification, it is possible that the customer will be overcompensated (i.e., a member has a 10 kW battery but only sheds 4 kw during a control event).

Option 3 is easier for a member to understand if they are accustomed to standard energy pricing. Members can also increase compensation if they deliver more energy. The drawback with this option is that the main purpose of the BESS is demand related. That means the price signal being sent is likely to be sub-optimal because demand benefits to DEA are compensated via an energy payment from DEA. Additionally, Option 3 is susceptible to overcompensation.

After considering the research DEA concluded that a fourth option—in addition to the three options discussed above—modeled after DEA's existing demand-side management programs, is available and

represents a solution that may interest DEA's members and provide them with additional value for their BTM BESS. The design for the fourth option is explained in the next section.

## *2. DEA's Design*

Based upon the research and existing tariffs, DEA proposed a pilot tariff for members with a BESS that offers a discount to that member's payment for energy consumption while requiring that member to allow DEA to control their use, via the BESS, to manage DEA's system peaks.

The main features of DEA's proposed pilot tariff include the following:

- available to residential and small commercial members currently receiving service through Schedule 31 or Schedule 41;
- eligibility for pilot initially limited to whole home/main metered battery installations;<sup>3</sup>
- load supplied under this rate will be metered at the main premise meter;
- the rate is \$0.08540 per kWh for all load on the full control option and \$0.1063 per kWh on the limited control option;
  - to be eligible for Full Control, the BESS must have sufficient capacity to supply all of the member's load associated with the BESS for a minimum of 4 hours;
  - to be eligible for Limited Control, the BESS must have sufficient capacity to supply all of the member's load associated with BESS for a minimum of 2.5 hours;
- no additional monthly fixed charge or demand charges are applied to this service;
- a member participating in this service is not eligible for concurrent service under any other load management or special rate schedule except retail net metering;
- if the BESS is unavailable, the member may be assessed charges for non-performance; and
- a maximum of 10 full control events per calendar month, up to a maximum 40 total hours per calendar month, and a maximum of 100 full control events per calendar year.

While this approach is similar to Option 3 by providing compensation on a kWh basis, it differs by making the discounted rate available for *all* usage (Option 3 only compensates the user for energy discharged or available from the battery). Second, this approach is consistent with how DEA bills members on Schedules 31 (Residential) and 41 (Small General Service), which are the rate classes covered by the proposed pilot. Third, DEA believes the approach provides participating members an incentive to manage loads to maximize potential benefits. Lastly, DEA believes the rate incentive will provide the most realistic representation of system benefits and addresses the potential for overcompensation.

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<sup>3</sup> This restriction is part of DEA's learning process. DEA may consider the addition of partial home installations in the future. Limiting availability to whole home installations will simplify the metering, verification, and engineering of these projects and ensure that DEA gains practical experience administering the program; partial home installation may have unique operating and billing characteristics which can be addressed in subsequent versions of the tariff.

### *3. Evaluation of DEA's Design*

#### *i. Rate Design Principles*

The Department uses four standard rate design principles when evaluating rates. First, rates should allow a utility a fair of and on its investment.<sup>4</sup> The Petition's Attachment shows DEA's analysis regarding the economics of the proposed tariff. The analysis is based upon assumptions about the battery capacity available to DEA and the coincident demand reduction, among other things. Presumably DEA's assumptions can be verified through the pilot. DEA's analysis shows that the Cooperative should be able to recover its revenue requirement under the pilot's tariff.

Next, rates must be reasonable and not be unreasonably discriminatory.<sup>5</sup> In this case the rate is available to all residential and small commercial customers with energy storage equal to peak demand for either 2.5 or 4 hours, depending on the option selected. Therefore, the rate is not discriminatory; the limits in the tariff are in place to achieve rate design principles such as tariffs being easily understood and administered.

Rate design should also favor energy conservation and the use of renewable energy.<sup>6</sup> In this case the tariff is designed to address load management, energy conservation is neither harmed nor helped by the proposed tariff. In addition, the proposed tariff does not directly address renewable energy. However, direct fossil-fueled BESS are not eligible to participate under the proposed tariff. Moreover, Another rate design principle is that rates should promote the efficient use of resources. The proposed tariff, by enabling DEA to control a member's demand, should enable DEA to use generation, transmission, and distribution resources in a more efficient manner, which should promote the efficient use of resources.

In rate design any doubt as to reasonableness should be resolved in favor of the consumer.<sup>7</sup> Because DEA is a member owned entity and does not have shareholders There is no conflict between shareholder and consumer interests. Also DEA designed the pilot tariff to be revenue neutral. Thus, participating members will not be subsidized by non-participating members.

In rate design rate changes should be gradual in order to limit consumer rate shock. Because DEA members will voluntarily sign up for the pilot program, the members have control over the application of the rate rather than having a rate imposed upon them through the regulatory process as is the case in a general rate case proceeding.

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<sup>4</sup> Minn. Stat. § 216.16, subd. 6.

<sup>5</sup> Minn. Stat. §§ 216B.03 and 216B.07

<sup>6</sup> Minn. Stat. §§ 216B.03 and 216C.05

<sup>7</sup> Minn. Stat. § 216B.03

In rate design, rates should be understandable and easy to administer. DEA's rate design is relatively straightforward in that it does not require additional metering, applies to all usage at the premises, and is similar to other existing tariffs. Therefore, it should be understandable and easy to administer.

By evaluating the proposed pilot program and statutory rate design requirements, the Department concludes that the statutory rate design principles have been met.

### *iii. Pilot Program Principles*

The Department considered two principles regarding a pilot tariff. First, the pilot should be targeted at learning particular information of value to the utility. In this case the tariff will enable DEA to verify that the numerous assumptions used in the cost analysis are reasonable, such as:

- the assumption that 80% of the BESS capacity would be available to DEA;
- an 80% coincidence factor for peak demand reduction;
- an average monthly usage of 694 kWh for members using the tariff; and
- an installed BESS size of 7 kW.

In addition, the pilot should give DEA experience with when, how often, and why the BESS is accessed. Such knowledge may enable DEA to refine the tariff in the future.

Second, the pilot should have clear means to limit the potential risks presented by new technologies. In this case, potential risks are limited by the duration of the pilot, currently proposed for 24-months, at which point DEA will determine if the pilot tariff will be continued. Another risk management strategy associated with the pilot are the non-performance penalties, which are designed to prevent members benefiting from the tariff without providing the desired load reduction. Finally, the proposed tariff provides DEA the right to periodically test the BESS, to ensure it is operational.

The Department concludes that the proposed pilot tariff should provide DEA with the information needed to assess and limit potential risks to DEA's members.

### *F. DEA'S REQUEST*

DEA requests that the Commission approve the implementation of a pilot residential and small commercial BTM energy storage tariff, implemented via the *Pilot Residential and Small Commercial Behind-the-Meter Energy Storage Service* tariff language provided in tariff sheets 29.0, 29.1, 29.2, and 29.3 which are attached to the Petition.

Based upon the above analysis and a review of DEA's proposed tariff sheets the Department recommends that the Commission approve the Petition, including the *Pilot Residential and Small Commercial Behind-the-Meter Energy Storage Service* tariff language provided in tariff sheets 29.0, 29.1, 29.2, and 29.3.



*F. REPLY TO THE NOTICE*

*1. Approve the Pilot Program?*

The first issue in the Notice is “Should the Commission approve the Behind-the-Meter Storage Pilot Program for Residential and Small General Service customers?”

Based upon the above analysis the Department recommends that the Commission approve the Behind-the-Meter Storage Pilot Program for Residential and Small General Service customers.

*2. Approve the Rate Tariffs?*

The second issue in the Notice is “Should the Commission approve the associated rate tariffs with the Pilot Program for Residential and Small General Service customers who choose to participate in the program?”

Based upon the above analysis the Department recommends that the Commission approve the rate tariffs with the Pilot Program for Residential and Small General Service customers.

*3. Approve the New Net Metering Rate?*

The third issue in the Notice is “Should the Commission approve a new Net Metering rate for those customers enrolled in the pilot program?”

Based upon the above analysis the Department recommends that the Commission approve the proposed new Net Metering rate for those customers enrolled in the pilot program.

*4. Other Issues?*

The fourth issue in the Notice is “Are there other issues or concerns related to this matter?”

The Department requests DEA answer three questions in reply comments:

1. What will be net costs for an average customer who installs a 4-hour battery and participates in the pilot’s tariff?
2. What will be net costs for an average customer who installs a 2.5-hour battery and participates in the pilot’s tariff?
3. How much of federal and state funds can be used by potential pilot participants?

In addition, the Department requests DEA provide, in a summary of findings at the completion of the pilot:

- answers to the 3 questions based on actual data collected through surveys from the pilot participants; and
- the number of control events each participant was subjected to during the pilot.

### **III. DEPARTMENT RECOMMENDATION**

The Department recommends that the Commission approve the Petition and provide a summary of findings from the pilot program within 60 days of the pilot's end date. The summary should include:

- DEA's next steps regarding scaling of BESS systems;
- if DEA intends to proceed with the proposed tariff or modify the tariff based on results from the pilot;
- answers to the 3 questions above based on actual data collected through surveys from the pilot participants:
  - What were the net costs for an average customer who installs a 4-hour battery and participates in the pilot's tariff?
  - What were the net costs for an average customer who installs a 2.5-hour battery and participates in the pilot's tariff?
  - How much of federal and state funds were used by potential pilot participants?
- the number of control events each participant was subjected to during the pilot.

## **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**  
**Comments**

**Docket No. E111/M-23-495**

Dated this **29<sup>th</sup>** day of **January 2024**

**/s/Sharon Ferguson**

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1400  St. Paul, MN 55101	Electronic Service	Yes	OFF_SL_23-495_M-23-495
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Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280  Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_23-495_M-23-495
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Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St  St Paul, MN 55106	Electronic Service	No	OFF_SL_23-495_M-23-495
David	Moeller	dmoeller@allte.com	Minnesota Power	30 W Superior St  Duluth, MN 558022093	Electronic Service	No	OFF_SL_23-495_M-23-495
Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131	Electronic Service	Yes	OFF_SL_23-495_M-23-495
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350  Saint Paul, MN 55101	Electronic Service	Yes	OFF_SL_23-495_M-23-495
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