DAKOTA ELECTRIC ASSOCIATION

Your Touchstone Energy® Cooperative

December 5, 2023

Will Seuffert, Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101

Re: Dakota Electric Association Petition to Implement a Pilot Residential and Small General Service Behind-the-Meter Battery Storage Program and Tariff
Docket No. E-111/M-23-___

Dear Mr. Seuffert:

Dakota Electric Association® (Dakota Electric or Cooperative) submits the attached Petition requesting approval to implement a pilot residential and small general service behind-the-meter battery storage program and associated rate tariff.

If you or your staff has any questions regarding Dakota Electric's petition, please contact me any time at (651) 463-6258 or aheinen@dakotaelectric.com.

Sincerely,

/s/ Adamis J. Heinen

Adam J. Heinen
Vice President of Regulatory Services
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STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

IN THE MATTER OF A DAKOTA ELECTRIC ASSOCIATION PETITION TO IMPLEMENT A PILOT RESIDENTIAL AND SMALL COMMERCIAL BEHIND-THE-METER BATTERY STORAGE PROGRAM AND TARIFF	DOCKET NO. E-111/M-23-___

SUMMARY

On December 5, 2023, Dakota Electric Association® (Dakota Electric or Cooperative) submitted a Petition to the Minnesota Public Utilities Commission (Commission or MPUC) requesting approval to implement a pilot residential and small general service behind-the-meter battery storage program and associated rate tariff.

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

Katie J. Sieben	Chair
Valerie Means	Commissioner
Matthew Schuerger	Commissioner
Joseph K. Sullivan	Commissioner
John A. Tuma	Commissioner

IN THE MATTER OF A DAKOTA ELECTRIC ASSOCIATION PETITION TO IMPLEMENT A PILOT RESIDENTIAL AND SMALL COMMERCIAL BEHIND-THE-METER BATTERY STORAGE PROGRAM AND TARIFF	DOCKET NO. E-111/M-23-___

PETITION OF DAKOTA ELECTRIC ASSOCIATION

I. Introduction

Dakota Electric Association® (Dakota Electric or Cooperative) submits the following Petition to the Minnesota Public Utilities Commission (Commission or MPUC) requesting approval to implement a pilot residential and small commercial behind-the-meter battery storage program and associated rate tariff.

II. Filing Requirements

Pursuant to Minn. Stat. § 216B.16, subd. 1 and Minn. Rule 7829.1300, Dakota Electric provides the following required general filing information.

1. Summary of Filing (Minn. Rule 7829.1300, subp.1)
A one paragraph summary accompanies this Petition.

2. Service on Other Parties (Minn. Rule 7829.1300, subp. 2)
Pursuant to Minn. Rules 7829.1300, subp. 2, Dakota Electric eFiles this Petition on the Minnesota Department of Commerce and the Office of Attorney General – Antitrust and

Utilities Division. A summary of the filing prepared in accordance with Minn. Rules 7829.1300, subp. 1 is being served on Dakota Electric's general service list.

3. Name, Address and Telephone Number of Utility (Minn. Rule 7829.1300, subp. 3(A))

Dakota Electric Association
4300 220th Street West
Farmington, MN 55024
(651) 463-6212

4. Name, Address and Telephone Number of Utility Attorney (Minn. Rule 7829.1300, subp. 3(B))

Eric F. Swanson
Winthrop & Weinstine
225 South Sixth Street, Suite 3500
Minneapolis, Minnesota 55402-4629

5. Date of Filing and Date Proposed Rate Takes Effect (Minn. Rule 7829.1300, subp. 3(C))

This Petition is being filed on December 5, 2023. Minn. Rule 7825.3200 requires that utilities serve notice to the Commission at least 90 days prior to the proposed effective date of modified rates. The proposed availability of the pilot residential and small commercial behind-the-meter battery service and tariff will take effect upon Commission approval, but no sooner than March 4, 2024.

6. Statute Controlling Schedule for Processing the Filing (Minn. Rule 7829.1300, subp.3(D))

This Petition is made pursuant to Minn. Stat. § 216B.16. Dakota Electric's filing falls within the definition of a "Miscellaneous Tariff Filing" under Minn. Rules 7829.0100, subp. 11. Minn. Rules 7829.1400, subp. 1 and 4 specify that comments in response to a miscellaneous filing be filed within 30 days, and reply comments be filed no later than 10 days from the expiration of the original comment period.

7. Utility Employee Responsible for Filing (Minn. Rule 7829.1300, subp. 3(E))

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8. Impact on Rates and Services (Minn. Rule 7829.1300, subp. 3(F))

The petition implements a new pilot for residential and small general service behind-the-meter battery service. This new program and rate offering allows members with a behind-the-meter battery energy storage system (BESS) the ability to receive lower priced energy for all load at the BESS premise in exchange for Dakota Electric having access to the BESS for reliability and economic purposes. Allowing Dakota Electric access to these storage resources, in exchange for a lower rate, provides the Cooperative with additional system flexibility and will allow us to decrease overall power costs for all members, not just those with the storage resource. This rate will be available to all members who take power under the existing residential rate (Schedule 31) and small general service rate (Schedule 41).

The additional information required under Minn. Rule 7829.1300, subp. 3(F) is included throughout this Petition.

III. Petition

1. Background

Dakota Electric has a long commitment to energy conservation, load management, and creative rate designs and structures to manage wholesale power cost and distribution system reliability. With continued growth in distributed energy resources (DER), and member interest in alternative sources and methods of electricity production and use, we have seen growing interest from our membership in battery storage systems. These systems provide consumers with greater overall resiliency in a changing environment and additional flexibility and capability when coupled with distributed solar production. Although consumer demand is increasing, the current consumer value for these systems in Minnesota is limited to outage protection, which does not capture the full potential economic value of these installations. With these facts in mind, the proposed residential and small commercial battery storage pilot program and rate tariff is intended to provide additional economic value to consumers while allowing the utility, and the entirety of the Dakota Electric membership, to derive value from being able to control the battery to respond to wholesale price signals and system reliability concerns. In addition, as the distribution grid becomes more complex and additional value streams become available to consumers, the presence of a program and tariff will streamline the ability for Dakota Electric to provide additional value to our members and respond to changing market conditions. Dakota Electric is proposing this as a pilot program 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.

Beyond the economic considerations for members, a BESS presents certain distribution planning and operational concerns that the utility must consider. These considerations are amplified when the utility does not have visibility or the opportunity to control this resource. Currently, most behind-the-meter (BTM) storage resources are associated with a member application for distributed solar; as such, these projects go through the interconnection process,[1] so we are aware that they exist. These systems also have certain requirements they must meet in terms of outage recovery and cold load pick up. Despite these interconnection requirements, the concerns are not fully mitigated because a BESS can be a significant electric load. If the BESS begins to fully recharge too soon after an outage condition, it can strain the distribution system and cause a rebound outage or potentially represent a safety concern depending on its original installation criteria. From an economic standpoint, if a BESS begins charging during on-peak periods, it can represent a significant wholesale power risk. This risk is bore by all Dakota Electric members, not just the member with the battery storage, because of how we are billed by our wholesale power supplier Great River Energy. The proposed pilot tariff provides Dakota Electric with additional options to mitigate these operational risks, and the economic risks associated with wholesale coincident peak

[1] The Cooperative notes that battery only installations may also go through the interconnection process, not only those installations associated with a solar installation.

events, while providing the participating members with additional monetary value and lowering overall system wholesale power costs.

2. Proposed Pilot Schedule

As of December 1, 2023, we are aware of 31 battery energy storage systems installed, or approved, on our distribution system with a maximum rated capacity of 198 kW and 512 kWh. These systems have gone through the interconnection process and are currently being used as outage back up by members. In August 2022, the President signed the Inflation Reduction Act (IRA) into law, which extended and expanded tax credits for certain energy projects including BTM energy storage. In addition, as part of the 2023 Energy Omnibus Bill, the Minnesota Department of Commerce was appropriated $3 million for grants to support energy storage installations under 50kWh in capacity outside Xcel Energy service territories.[2] In light of these policy changes, and general growth in the battery market, the Cooperative notes that the potential exists for significant growth in the number of BTM BESS on our system. At current levels, the risks to the overall distribution system are low, but Dakota Electric believes that now is the best opportunity to manage these operational risks before the number of systems becomes significant. In addition, implementing a tariff and rate structure now allows our members to leverage current incentives, derive additional value from their investments, provides DER and storage installers a framework to standardize installations, and allows Dakota Electric to gain operational and program insights while the number of potential participants is still low.

As noted earlier in this Petition, Dakota Electric has a long history of successful energy conservation and load management, which is built on many different programs and Commission approved tariff rates. Dakota Electric continually evaluates its rate offerings and, as part of the review of this pilot offering, we reviewed our various program offerings to determine whether any existing rates could be used to facilitate a battery storage program. Our existing Controlled Energy Storage (Schedule 51) rate lists

[2] Energy Omnibus, Article 10: Climate and Energy Finance, Section 2, Subd 2(v). The Minnesota Department of Commerce is expected to provide guidance on the size of battery incentives at a later date.

storage batteries as a qualifying material,[3] but 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. In light of this reality, the Cooperative concluded that a new rate program and associated rate tariff was necessary.

After reaching this conclusion, Dakota Electric conducted research regarding how utilities currently handle BTM BESS. This topic can be complex because available compensation structures are dependent upon wholesale market factors and individual state regulatory realities. That being said, based on our review, we determined that compensation generally falls into three different categories:

1. Upfront payment to a customer based on the size of the battery. This can be 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.

Dakota Electric also observed that combinations of each of these three options also occur and that in many cases compensation is on a seasonal basis. For example, certain jurisdictions and utilities provide larger per kW or kWh compensation but only during the season (typically summer) when the battery is needed or has the most monetary value. The Cooperative also observed that longer term agreements are also common and many times in conjunction with upfront compensation.

Each of these compensation structures has its pluses and minuses in terms of customer benefit or limitations. Option 1 mimics a rebate or tax incentive and is advantageous to the customer because it provides upfront value. This is especially valuable given the high upfront costs associated with a BTM BESS. Conversely, 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

[3] Dakota Electric Tariff, Section VI, Sheet 18, Revision 4.

program), and it also limits future value streams. Option 2 is attractive because its compensation structure, based on the kW value of the battery, is theoretically in line with cost causation if the main use of the battery is for demand avoidance or to satisfy system peak requirements. This can also provide additional value if the customer is able to deliver additional kW. Option 2 may, however, create customer confusion, or require additional education from the utility, especially if the utility does not directly assign demand costs to affected customers (this is the case with Dakota Electric). Another drawback is that absent detailed metering and verification, it is possible that the customer will be overcompensated (*i.e.,* customer has 10kW battery but only sheds 4kw during control event). Option 3, which assigns payment on a kWh basis, is easier for a customer to understand if they are accustomed to standard energy pricing and they can increase compensation if they deliver more energy. However, if the main purpose of the battery is demand related, then the price signal being sent may be sub-optimal. This option is also susceptible to the overcompensation concern described for Option 2.

Dakota Electric considered each of these options and concluded that a fourth option, modeled after our existing demand side management programs, is available and represents a unique solution that we believe will interest our members and provide them with additional value for their BTM BESS. For many of our off-peak programs (*e.g.,* interruptible water heater, air source heat pump), associated loads are offered a discounted overall rate which acknowledges the system benefits we derive from their off-peak use and our ability to control these loads when necessary. Although a BESS is not load in the traditional sense, it does have loads associated with it, and it consumes energy (*i.e.,* is a load) when it charges. Given this, Dakota Electric considered whether it would be possible to offer an overall discount to energy consumption (kWh) associated with loads tied to a BESS. In exchange for the discounted rate, members would allow the Cooperative to control their use, via the BESS, to manage system peaks and other potential reliability issues.

There are several potential benefits to this approach. First, it mimics Option 3 above in that it provides compensation on a kWh basis, which aligns with how Dakota Electric bills members on Schedules 31 (Residential) and 41 (Small General Service), which are the rate classes covered by the proposed pilot. These rate classes do not have a separate demand (kW) charge. Second, it provides the member an incentive to manage loads at their premises and attempt to maximize potential benefits. How long a battery can serve load is dependent on how many loads are associated with it and how intensely they are used. With this rate design, if a member plans accordingly, they have the ability to have their entire premise under a discounted energy rate compared to the standard tariffed rate. It is important to note that this discounted rate is available for all usage, which differs from Option 3, which compensates the user for energy discharged or available from the battery. Third, and the Cooperative believes this may be of significant importance in the future, this rate incentive has the potential to provide the most realistic representation of system benefit and addresses the overcompensation issue noted above. Options 2 and 3 above are tied to the size of the battery, and that compensation remains static, but there is a possibility that true avoided load is lower than the compensated value (*e.g.,* 5 kW avoided capacity during peak but 7 kW battery). The Cooperative's approach seeks to mitigate this concern and, in fact, provides incentives for the member to move additional loads to the battery, or modify usage patterns, to maximize benefits.

Dakota Electric also considered the overall purpose of this proposed program and how to achieve it. As noted above, the primary objectives are to manage system costs, provide value to members, and provide certain distribution system and reliability benefits. To effectively manage system costs and provide value, it is important that the control period is designed so that there is a high probability that system peaks are avoided. In light of this fact, the Cooperative concluded that a four-hour control period is appropriate because: 1) it increases potential to avoid system peaks and will have a high probability of avoiding coincident wholesale power events, 2) it is technically feasible with current battery installations and technology, and 3) it satisfies requirements to bid these resources into the Midcontinent Independent Service Operator (MISO) if that is decided in the future. Dakota Electric also understands that a four-hour control period, although feasible, is a longer period and may not have been considered by some of the battery installations that we currently have on our system or may be cost prohibitive for other members. Since providing value to our membership is part of our reason for creating this pilot, we concluded that offering a shorter 2.5-hour control option is also appropriate, albeit at a lower discount level. We refer to the four-hour control as a full control option and the 2.5-hour control as a limited control option.

3. Cost Analysis and Rate Design

The cost analysis and rate design for the proposed Pilot BTM Storage Service is attached. The cost analysis is derived in large part from the existing Load Management Cost Analysis in our last general rate case.[4] This decision was made to ensure that the approach and costs used for this service are consistent with other special program rates. Although Great River Energy does not currently have a battery energy storage specific rate, it is possible to use the average overall Great River Energy kWh energy rate as the first step in deriving an estimated rate. The rate calculation is based on wholesale power costs and distribution costs from our last general rate case and these calculations support the reasonableness of the rate calculation. The content and key features of our rate calculation are as follows:

Load Management Cost Analysis

- Pages 1-4 – Estimated wholesale power costs
    - The wholesale power cost analysis identifies the estimated wholesale power costs using wholesale rates from our most recent general rate case. Although, based on our review of current battery technology, the Cooperative expects that these loads will be curtailed over a billing peak, there is no guarantee that this will occur. When looking at recent monthly Dakota Electric coincident and non-coincident billing peak, there are instances where coincident and non-coincident peaks are the same or these peaks occurred near the same time, indicating greater risk of control not aligning with the coincident billing peak. After considering these facts, the rate calculation relies largely on energy costs in the same manner that we do for other load control programs, but it also includes some level of capacity and transmission costs to account for the risk of missing the coincident peak. Until additional

[4] Docket No. E111/GR-19-478, Exhibit ___ (DEA-4).

experience is gained with this pilot, Dakota Electric assumes a 15% allocation of capacity and transmission costs to the pilot rate, which is comparable to the coincidence factor between non-coincident and coincident peak demand from the last general rate case. As noted above, the program is based on whole home usage; as such, the program does not require the installation of additional metering and control equipment. However, to effectively operate the program, the Cooperative will have to procure, and incur, software and control costs that Dakota Electric does not currently recover. As such, we continue to assess meter and control costs to account for these software and control costs. As we gain more experience with this pilot, we may expand the number of possible curtailments, provide membership with the option to receive additional value (*e.g.,* energy export), or make other necessary adjustments.

- These calculations are used to determine the cost basis for the full control option. Since the limited control option has a greater probability of missing a system peak, it is inappropriate to price this option at the same level as full control. Until actual data are available regarding the limited control option, the Cooperative concludes that a rate approximately halfway between the full control rate and the current average Schedule 31/41 energy rate is reasonable.

The cost analysis is an important first step in our rate analysis because it sets a base for what credit amount is appropriate to ensure that Dakota Electric recovers power costs and other members are not unduly subsidizing this rate. Dakota Electric is an All-Requirements member of Great River Energy, which means that we receive all our energy and demand from them. Dakota Electric's peak demand is driven by a residential focused energy pattern, and our monthly billing peak generally corresponds with Great River Energy's billing peaks, which typically occur during the evening hours. Dakota Electric then conducted a rate design analysis to verify the potential savings from this program. This rate design analysis does not derive the proposed rate but is used as a check to verify the reasonableness of the rate and potential value to participating members and the entire membership.

- Pages 5-6 – Rate design
    - The rate design and savings verification is based on our existing cycled air conditioning credit.[5] This approach is relatively straightforward and is able to estimate, based on certain assumptions, what Dakota Electric's expected wholesale power cost savings are from the proposed program. Two key assumptions in this analysis are the anticipated availability, or capacity, of the battery and the coincidence of battery use with the monthly GRE wholesale billing peak. Both of these estimates will be refined as we gain knowledge from participating consumers, but we begin our analysis by assuming 80% availability and 80% coincidence factor. The 80% assumptions take into account that we want to allow the consumer to maintain some battery capacity in case of an outage and also the possibility that a system peak will be missed. The availability factor also accounts for the fact that certain battery OEMs limit available capacity to maximize battery life and usability. This analysis is used to estimate the amount of system benefit from avoided wholesale power costs that Dakota Electric expects.

This analysis shows that load during the billing peak represents significant wholesale demand cost risk for Dakota Electric, and its membership, and that battery associated loads can achieve significant wholesale power cost savings. These cost savings are available for both the full control and limited control option and result in a net benefit for all Dakota Electric members.

Dakota Electric's proposed pilot rate is similar to existing program rates, but it is less restrictive than these existing programs, and it does not have an associated Great

[5] Docket No. E111/GR-19-478, Exhibit ___ (DEA-13).

River Energy special program status. As noted earlier, this means it is necessary to compare the calculated rate to existing rates for other programs. The Cooperative compared these rates and found that the calculated rate is higher than existing program rates, which is the expected result. In addition, Dakota Electric also compared the effective compensation level of our program to similar BTM storage programs in the United States. It is important to note that the compensation levels of each individual program are driven by potentially disparate policy goals in each jurisdiction and the unique power cost realities of each utility. With these caveats in mind, the Cooperative provides the following table for illustrative purposes.

Illustrative List of Comparable Energy Storage Programs[6]

Utility/Jurisdiction	Rate	Annual Incentive	Commitment	10-Year Potential Compensation
Dakota Electric Association (proposed, full control option)	$0.0854 per kWh rate for all load associated with BESS (approximately $3.90 per kw/month)	$349 per year assuming 694 kWh per month consumption	No time commitment, up to 100 control events per year.	$3,490*
Xcel Energy—Minnesota (Proposed)	Upfront payment of $75 to $200 per kWh	N/A	Up to 60 cycles per year	$1,425 to $3,800
Vermont Electric Cooperative	$6.40 per kW/month or upfront $268 per kW and $3.20 per kW/month	$538 per year or $1,876 upfront and $269 per year	10-year commitment	$4,564 or $5,376
Arizona Public Service	Upfront payment of $500/kW capped at $3,750	$3,750 one-time payment	10-year commitment	$3,500
State of California—Demand Side Grid Support Program	Option 1: $2 per kWh Option 2: $2 per kWh and $0.25 per kWh for standby Option 3: up to $76.50 per kW	Option 1: $162 per year Option 2: $162 per year plus standby Option 3: $536 per year	Unknown	Option 1: $1,620 Option 2: $1,620 plus standby Option 3: $6,426
Sacramento Municipal Utility District—Partner Level	Upfront payment $150 per kWh up to $1,500	N/A	Unknown	$1,500
Xcel Energy—Colorado	Upfront payment $500 to $800 per kW	$100 annual incentive for first 5 years	Up to 60 cycles per year	$4,000 to $6,100

Note: Comparisons assume 7 kW battery capacity (19 kWh), which is the current average installation on the Dakota Electric system.
* The 10-year incentive value for Dakota Electric does not include potential grants. The incentive value for non-Xcel Energy utilities is unknown at this time, but if it is modeled after Xcel Energy's incentive in Minn. Stat. 216C.379, then the incentive could be up to $5,000.

This illustrative analysis shows that Dakota Electric's proposed pilot results in annual consumer benefits, and total benefits over 10 years, that are comparable to

[6] Certain information pulled from the March 9, 2023 SunRun *Comments* in Docket No. E999/CI-22-600.

compensation levels provided by other utilities in the United States that offer a BTM storage program.

4. Dakota Electric Request

Dakota Electric requests Commission approval to implement a Pilot Residential and Small Commercial Behind-the-Meter Energy Storage Service (Sheets 29.0, 29.1, 29.2, and 29.3 of Section V are attached). Key provisions of this service include:

- Available to residential and small commercial members currently receiving, or otherwise would receive, their main electric service through Schedule 31 or Schedule 41,
- Electrical load supplied under this rate will be metered at the main premise meter,
- Eligibility for pilot initially limited to whole home/main metered battery installations,
- Member receives per kWh rate of $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 compensation, BESS must have sufficient capacity to supply member load associated with BESS for a minimum of 4 hours in duration,
- To be eligible for Limited Control compensation, BESS must have sufficient capacity to supply member load associated with BESS for a minimum of 2.5 hours in duration,
- Member participating in this service is not eligible for concurrent service under any other load management or special rate schedule except retail net metering, Schedule 55, when applicable, under new rates specific for BESS installations. Member is not eligible for concurrent service because other load management programs (*e.g.,* Interruptible Storage, Cycled Air Conditioning) are deployed at the same time the pilot energy storage program would run. Dakota Electric will, however, offer continued use of load control and load

modifying equipment in an effort to maximize member battery and energy benefit,

- BESS must be connected to Dakota Electric's demand response system,
- Member maintains ability to use BESS for emergency power in case of outage,
- Preference that recharge of BESS delayed for at least 30 minutes after disruption of service,
- If load is returned to supply by Dakota Electric because BESS is unavailable, member may be assessed penalty charges for non-performance. If BESS is unavailable for two or more control events in a 12-month period, member may be removed from program,
- Maximum of 10 full control events per calendar month up to a maximum 40 total hours per calendar month,
- Maximum of 100 full control events per calendar year,
- No additional monthly fixed charge or demand charges are applied to this service, and
- Designated as a pilot rate, which offers potential flexibility to adjust rates and conditions of service as more experience is gained with this service.

Rate Schedule

The Proposed Pilot Residential and Small Commercial Behind-the-Meter Energy Storage Service includes the following clauses:

- Availability,
- Term,
- Requirements and Terms of Service,
- Type of Service
- Rate,
- General Information,
- Resource and Tax Adjustment,
- Taxes, and

- Terms of Payment.

Key provisions in the Availability clause are that this schedule is only available to residential and small commercial members taking service under Schedule 31 and 41 respectively. The BESS must also be able to supply all of the consumer load metered under this rate. Initially, the pilot will only be available to whole home/ master meter battery installations. The Cooperative may consider the addition of partial home installations in the future but initially limiting availability to whole home installations will simplify the metering, verification, and engineering of these projects and ensure that we have practical experience administering the program because partial home installation may have unique operating and billing characteristics. Dakota Electric will also cap the number of participants to ensure we can adequately administer the program. This is a new program for Dakota Electric, and we are unclear at this time how many manual or unique processes it will require to correctly administer. The expectation is that the participation cap will be removed once we gain sufficient experience. Dakota Electric will also reserve the right to inspect and verify the appropriateness of installation and will make the final determination of applicability of this schedule and battery system eligibility.

The Term clause indicates that this schedule is a pilot program that will be offered for at least two years. Dakota Electric anticipates gathering usage information through this pilot program that could lead to future rate schedule modifications. The Cooperative also expects that any consumer taking service on this tariff will remain on it a minimum of 12 months.

The Requirements and Terms of Service clause lists the various requirements of service including the BESS being able to support load for a minimum of 4 hours (Full Control Option) or 2.5 hours (Limited Control Option) when a control event occurs and that retail net metering is only available under the new BESS storage specific rates.

The Type of Service clause lists the phase types and voltage required for this service.

The Rate clause identifies the energy charge for all load associated with the BESS and is split between the full control option and the limited control option. The development of these rates is shown in the attached analysis. The proposed energy rate for the full control option is $0.0854 per kWh and $0.1063 per kWh for the limited control option. In the event that a BESS does not perform, it is necessary that a penalty is applied to ensure that system costs are recovered. The development of these charges are also shown in the attached analysis and are based on the monthly difference between Schedule 31/41 energy recovery and the BESS recovery rate. The proposed penalty charge for the full control option is $30 and $15 for the limited control option.[7] The penalty charge is for each instance of non-performance.

The General Information clause notes that the member is required to provide information regarding the BESS for informational purposes to help refine operation of the pilot.

The Resource and Tax Adjustment (RTA) clause is the same RTA clause that is included in the Cooperative's Schedule 31 for residential service and Schedule 41 for small general service. The proposed rates anticipate that the present RTA will be applied to service under this new schedule as soon as it is implemented.

Finally, the Taxes and Terms of Payment clauses are consistent with all other Cooperative rate schedules.

5. New Net Metering Rate

The Cooperative's rate classes which are eligible for net metering are described in Schedule 55 of our tariff.[8] Currently, Schedules 31 and 41 are eligible for net metering and are compensated at 13.14 cents per kWh and 13.00 cents per kWh, respectively. Since this pilot rate represents a signficant rate decrease relative to the standard residential and small commercial rates, it is inappropriate to provide retail net metering

[7] DEA Attachment, Page 7.
[8] Dakota Electric Tariff, Section IX, Sheet 6, Revision 39 and Section IX, Sheet 11, Revision 40.

for members who participate in the pilot program at the prevailing rate. The retail net metered rate is calculated using the “Average Retail Energy Rate” as defined in Minnesota Rules. This is based in part on total annual class revenue from the previous year; however, since the pilot will not have historical revenue when it is implemented, Dakota Electric proposes that the retail net metering rate be initially set at the proposed energy rate for the full control option of $0.0854 per kWh and $0.1063 per kWh for limited control. These changes are shown in attached tariff sheets (Section IX, Sheet 6.0 and Sheet 6.1, Revision 40, and Section IX, Sheet 11, Revision 41).

5. Miscellaneous

Dakota Electric also submits a revised Table of Contents for Section V of the Rate Book (Section V, Sheet 2, Revision 16) that includes the proposed Pilot Residential and Small Commercial Behind-the-Meter Energy Storage Service.

Conclusion

Based on the information contained in this filing, Dakota Electric respectfully requests that the Commission approve the implementation of a pilot residential and small commercial behind-the-meter energy storage service. The Cooperative believes this proposal provides a unique rate option that allows our members to derive additional value from behind-the-meter storage systems while offering Dakota Electric the ability to control these devices and achieve lower wholesale power costs, which benefits all Dakota Electric ratepayers.

Dated: December 5, 2023

Respectfully Submitted,

/s/ Adam J. Heinen

Adam J. Heinen
Vice President of Regulatory Services
Dakota Electric Association

Certificate of Service

I, Melissa Cherney, hereby certify that I have this day served copies of the attached document to those on the following service list by e-filing, personal service, or by causing to be placed in the U.S. mail at Farmington, Minnesota.

Docket No. E-111/M-23-___

Dated this 5th day of December 2023

/s/ Melissa Cherney
____
Melissa Cherney

Summary of Cost of Service Analysis
Load Management Rates
I. Summary

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Rate Description	**GRE Rate** (¢/kWh)	**Line Losses** (¢/kWh)	**Meter & Control** (¢/kWh)	**Allocated Distribution** (¢/kWh)	**Margin** (¢/kWh)	**Total Cost** (¢/kWh)	**Weighted Sales** (%)	**Retail Rate** (¢/kWh)
Schedule 49								
Geothermal Heat Pump	8.13 [2]	0.12	0.42	2.13	0.27	11.07	100%	**11.07**
Schedule 51 (Storage)								
ETS-Water Heating (16 hr)	2.00	0.12	0.42	2.13	0.07	4.74	49%	2.32
ETS-Storage [1]	2.25	0.12	0.42	2.13	0.08	5.00	51%	2.55
							Schedule 51 Rate	**4.87**
Schedule 52 (Interruptible)								
Peak Shave - Water (8 hr)	3.40	0.12	0.42	2.13	0.11	6.18	53%	3.28
Dual Fuel - Space Heating	3.65	0.12	0.42	2.13	0.12	6.44	47%	3.03
							Schedule 52 Rate	**6.31**
Battery Energy Storage (Proposed)								
On Peak Rate	5.94	0.12	0.42	2.13	0.20	8.81	34%	2.96
Off Peak Rate	4.646	0.12	0.42	2.13	0.15	7.47	66%	4.96
							Energy Storage Rate	**7.92**

Col.	**Notes**
(a)	Load management rates per GRE's present wholesale rate schedules.
(b)	Based on GRE wholesale rate schedules for Year 2019.
(c)	GRE General Service Energy Rate x 2.50% which represents the average losses for the system.
(d)	See page 2.
(e)	See page 4.
(f)	See page 3 for calculation of margin.
(g)	Sum Col. (b) to Col. (f).
(h)	Relative (percent) energy sales under each GRE special program. See Exhibit __ (DEA-1) Page 22 of 22.
(i)	Equals Total Cost times Weighted Sales. Sum equals retail rate of each schedule.

[1] This rate may also apply to loads qualifying under the ETS Pool Heating program and/or Electric Vehicles program.
[2] Geothermal equals GRE average energy rate plus average system capacity, transmission, and ancillary services costs on a per kWh basis.

Cost of Service Summary
Revenue Requirements Summary

Line No.	Description	Total	Resid. & Farm	Small General Service	Irrigation	General Service	C&I Interruptible	Lighting
1	**Revenue Requirements**							
2	Revenue Requirements	207,070,443	119,475,495	6,242,283	892,507	50,536,453	27,455,236	2,468,469
3								
4	**Present Rates**							
5	Revenue-Present Rates	197,242,256	112,877,123	5,701,055	912,232	50,388,052	25,295,556	2,068,238
6	Other Operating Revenue	1,100,791	629,957	31,817	5,091	281,211	141,172	11,543
7	Total Revenue	198,343,047	113,507,080	5,732,872	917,323	50,669,263	25,436,728	2,079,781
8								
9	Difference	8,727,396	5,968,415	509,411	(24,816)	(132,811)	2,018,508	388,689
10	Percent		5.29%	8.94%	(2.72%)	(0.26%)	7.98%	18.79%

Cost of Service Summary
Class Allocation Summary

Line No.	Category	Total	Resid. & Farm	Small General Service	Irrigation	General Service	C&I Interruptible	Lighting
1	**Power Supply**							
2	**Direct and Revenue Related**							
3	Wholesale Cost							
4	Allocated Cost							
5	Subtotal							
6	**Capacity Related**							
7	Wholesale Cost	33,514,067	20,781,131	1,032,371	24,859	11,370,890	149,849	154,967
8	Allocated Cost	328,991	198,146	10,188	183	105,776	12,878	1,819
9	Subtotal	33,843,058	20,979,277	1,042,559	25,042	11,476,666	162,728	156,786
10	**Energy Related**							
11	Wholesale Cost	92,910,647	44,057,307	2,234,564	418,354	24,325,231	21,369,810	505,382
12	Allocated Cost	892,910	420,872	21,278	4,042	235,006	206,454	5,257
13	Subtotal	93,803,557	44,478,179	2,255,842	422,396	24,560,237	21,576,264	510,639
14	Subtotal Power Supply	127,646,615	65,457,456	3,298,400	447,438	36,036,904	21,738,992	667,425
15	**Transmission**							
16	Direct							
17	Capacity	22,649,623	13,696,762	706,106	12,511	7,229,676	880,227	124,341
18	Energy							
19	Allocated Cost							
20	Subtotal Transmission	22,649,623	13,696,762	706,106	12,511	7,229,676	880,227	124,341
21	**Distribution**							
22	Direct	1,446,444						1,446,444
23	Consumer	35,017,518	30,207,652	1,736,178	269,591	2,007,933	695,080	101,085
24	Capacity	20,310,243	10,113,625	501,599	162,967	5,261,940	4,140,938	129,175
25	Energy							
26	Subtotal Distribution	56,774,205	40,321,277	2,237,776	432,558	7,269,873	4,836,017	1,676,703
27								
28	**Total**	207,070,443	119,475,495	6,242,283	892,507	50,536,453	27,455,236	2,468,469

Cost of Service Summary
Rate Design Factors

Line No.	Category	Units	Resid. & Farm	Small General Service	Irrigation	General Service	C&I Interruptible	Lighting
1	**Costs Broken Down by Function**							
2	**Power Supply**							
3	**Direct and Revenue Related**							
4	Wholesale Cost	$/Mo./cons						
5	Allocated Cost	$/Mo./cons						
6	Subtotal							
7	**Capacity Related**							
8	Wholesale Cost	¢/kWh	2.48	2.43	0.31	2.46	0.04	1.50
9	Allocated Cost	¢/kWh	0.02	0.02	0.00	0.02	0.00	0.02
10	Subtotal	¢/kWh	2.50	2.45	0.31	2.48	0.04	1.51
11	**Energy Related**							
12	Wholesale Cost	¢/kWh	5.25	5.25	5.25	5.25	5.25	4.88
13	Allocated Cost	¢/kWh	0.05	0.05	0.05	0.05	0.05	0.05
14	Subtotal	¢/kWh	5.30	5.30	5.30	5.30	5.30	4.93
15	Subtotal Power Supply	¢/kWh	7.80	7.75	5.62	7.78	5.34	6.44
16	**Transmission**							
17	Direct	¢/kWh						
18	Capacity	¢/kWh	1.63	1.66	0.16	1.56	0.22	1.20
19	Energy	¢/kWh						
20	Allocated Cost	¢/kWh						
21	Subtotal Transmission	¢/kWh	1.63	1.66	0.16	1.56	0.22	1.20
22	**Distribution**							
23	Direct	$/Mo./cons						7.19
24	Consumer	$/Mo./cons	25.11	32.65	57.31	60.71	221.08	0.50
25	Capacity	¢/kWh	1.21	1.18	2.05	1.14	1.02	1.25
26	Energy	¢/kWh						
27	Subtotal Distribution	¢/kWh	4.81	5.26	5.43	1.57	1.19	16.19
28	**Total**	¢/kWh	14.25	14.67	11.21	10.91	6.75	23.83
29	**Costs Broken Down by Classification**							
30	Direct	$/Mo./cons						7.19
31	Consumer	$/Mo./cons	25.11	32.65	57.31	60.71	221.08	0.50
32	Capacity	¢/kWh	5.34	5.29	2.52	5.18	1.27	3.96
33	Energy	¢/kWh	5.30	5.30	5.30	5.30	5.30	4.93
34	**Total**		14.25	14.67	11.21	10.91	6.75	23.83

	Capacity and Transmission	**15% Allocation**
¢/kWh	4.13	0.62

	Full Control Option		**Limited Control Option**	
	Cost Analysis (2019 GRE wholesale rates)		**Cost Analysis (2019 GRE wholesale rates)**	
	$ 10.64	Capacity (per kW month)	$ 10.64	Capacity (per kW month)
+		Transmission (per kW month)	$ -	Transmission (per kW month)
+		Ancillary Service (per kW month)	$ -	Ancillary Service (per kW month)
=	$ 10.64	Subtotal	$ 10.64	Subtotal
	80%	Battery Capacity Available to DEA	80%	Battery Capacity Available to DEA
	$8.51	Estimated Power Cost Savings per kW per Month	$8.51	Estimated Power Cost Savings per kW per Month
	0.80	Estimated Coincident Demand Reduction (kW)	0.40	Estimated Coincident Demand Reduction (kW)
	$6.81	Power Cost Savings per kW	$3.40	
	$0.22	Program cost per kwW per month	$0.22	Program cost per kwW per month
	$6.59	Estimated Power Cost Savings (net of cost) per kW per Month	$3.19	Estimated Power Cost Savings (net of cost) per kW per Month
	12	Months	12	Months
	$79.11	Capacity Savings per Coincident kW	$38.25	Capacity Savings per Coincident kW
	$79.11	Total Annual Savings per kW	$38.25	Total Annual Savings per kW
	$6.59	Monthly Savings per kW	$3.19	Monthly Savings per kW
	5.73%	Commission Approved Return on Equity (Docket No. 19-478)	5.73%	Commission Approved Return on Equity (Docket No. 19-478)
	$0.38	Margin (Risk Quotient)	$0.18	Margin (Risk Quotient)
	$6.21	Monthly Credit per kW	$3.00	Monthly Credit per kW
	$ 10.64	2019 Average Demand Rate	$ 10.64	2019 Average Demand Rate
x	12	Months	12	Months
=	$ 127.68	Capacity Savings per Coincident kW	$ 127.68	Capacity Savings per Coincident kW
x	0.80	Estimated Coincident Demand Reduction (kW)	0.40	Estimated Coincident Demand Reduction (kW)
=	$ 102.14	Power Cost Capacity Savings	$ 51.07	Power Cost Capacity Savings
+	$ -	Estimated Critical Peak Energy Savings	$ -	Estimated Critical Peak Energy Savings
+	$ -	GRE Credit	$ -	GRE Credit
=	$ 102.14	Estimated Net Power Cost Savings	$ 51.07	Estimated Net Power Cost Savings
-	$ 18.24	Control Equipment and Program Costs	$ 18.24	Control Equipment and Program Costs
-	**$ -**	**Controlled Credits for Summer Season**	**$ -**	**Controlled Credits for Summer Season**
=	$ 83.90	Net Annual Revenue	$ 32.83	Net Annual Revenue
	Program Costs:		Program Costs:	
	$ 116.00	Receiver	$ 116.00	Receiver
+	$ -	Electrician and Permit	$ -	Electrician and Permit
+	$ -	Meter Technician	$ -	Meter Technician
+	$ -	GRE Reimbursement	$ -	GRE Reimbursement
=	$ 116.00	Net installed cost of control equipment	$ 116.00	Net installed cost of control equipment
x	14.7%	Annualizing Factor *	14.7%	Annualizing Factor *
=	$ 17.04	Subtotal	$ 17.04	Subtotal
+	$ 1.20	Program marketing and Administration **	$ 1.20	Program marketing and Administration **
=	$ 18.24	Control Equipment and Program Costs	$ 18.24	Control Equipment and Program Costs
	7.00	Average size installed BTM system (kW)	7.00	Average size installed BTM system (kW)
	$2.61	Program cost per kW per year	$2.61	Program cost per kW per year
	$0.22	Program cost per kwW per month	$0.22	Program cost per kwW per month

Full Control Option:

* Annualizing factor includes interest, depreciation, and O&M.
** Program marketing and administration estimated at 0.1¢ per kWh times typical annual AC consumption of 1,200 kWh.

Limited Control Option:

Annualizing factor includes interest, depreciation, and O&M.
Program marketing and administration estimated at 0.1¢ per kWh times typical annual AC consumption of 1,200 kWh.

DEA Savings for Average Residential Member		
	Full Control	Limited Control
Average Battery Size	7	7
Monthly Credit Per kW	$6.21	$3.00
Battery Compensation	$43.50	$21.03
Total Average Credit	$43.50	$21.03
Average Monthly Usage RS31	694	694
Average kWh	$0.06268	$0.03031
Average Retail Rate	0.127275	0.127275
Average Effective Rate	$0.06459	$0.09697
Average Demand Rate per kW	$10.64	$10.64
Estimated Coincidence Factor	80%	40%
Avoided Wholesale Power (D&T)	$715.01	$357.50
Total Cost Savings	$715.01	$357.50
Average Monthly Energy Cost (existing rates)	$88.33	$88.33
Average Monthly Energy Cost (after credit)	$44.83	$67.29
Energy Loss per day (kWh)	1.00	1.00
Monthly Energy Loss (kWh)	30	30
Additional Sales Revenue (month)	$3.82	$3.82
Effective Monthly Energy Cost (after credit)	$48.64	$71.11
Lost Margin with Credit (per month)	$39.68	$17.22
Lost Margin per year	$476.22	$206.60
Total Savings DEA per Installation	$238.79	$150.90

	Full	Limited	Average Residential Rate
Monthly Average Usage	694	694	$0.127275
Calculated Rate	$0.08540	$0.10634	
Monthly Energy Schedule 31/41	$88.33	$88.33	
Monthly Energy BESS	$59.27	$73.80	
Lost Margin	$29.06	$14.53	
Penalty	$30	$15	

PILOT RESIDENTIAL AND SMALL GENERAL SERVICE BEHIND THE METER ENERGY STORAGE SERVICE

Availability

Available as a pilot offering to residential and small general service consumers taking service concurrently under Schedules 31 or 41, respectively, who have an energy storage system (ESS) which satisfies the *Requirements and Terms of Service* section of this tariff. ESS must be able to supply all the consumer load metered under this rate, when directed by the Association. Members participating in this service are not eligible for concurrent service under any other load management or special rate schedule, except Schedule 55 when applicable. Direct fossil fueled ESS are not eligible to participate under this rate schedule. Members requesting service under this rate schedule must remain on this rate schedule for a minimum of 12 months. Service is subject to the established rules and regulations of the Association. This rate schedule is not available to any member who has opted out of having an advanced communicating meter installed.

Pilot is only available to whole home/main metered battery storage installations. There will be two separate offerings available: a full control event option and a limited control event option. The Cooperative will cap participation at a reasonable level to ensure effective administration of program. Association reserves the right to inspect and verify the appropriateness of installation and will make the final determination of applicability of this schedule and battery system eligibility.

Term

The pilot program will be offered for a minimum of a two-year period, and the consumer is expected to remain on this tariff for a minimum of twelve (12) consecutive months. At the end of the initial pilot period, the Association will determine if this program will be continued, modified, or eliminated.

Requirements and Terms of Service

The following requirements and terms of service are associated with the pilot offering. If consumer is unable to satisfy any requirement, it may result in removal from the pilot or impact program credits. Consumer understands that control events could occur at any time of day, or the month, and with little advanced notice.

1. The electrical load supplied under this rate shall be metered by the Cooperative at the main premise meter.
2. For limited control event option, ESS must have an output capacity sufficient to supply all member load supplied by the meter for a minimum of 2.5 hours in duration, when requested by the Cooperative (control event).

PILOT RESIDENTIAL AND SMALL GENERAL SERVICE BEHIND THE METER ENERGY STORAGE SERVICE

CONTINUED

3. For full control event option, ESS must have an output capacity sufficient to supply all member load supplied by the meter for a minimum of 4 hours in duration, when requested by the Cooperative (control event).
4. ESS must be connected to the Dakota Electric demand response system and allow Dakota Electric to remotely control the ESS.
5. ESS may be utilized to provide member's load with emergency power in case of outage.
6. After any disruption of service, it is preferred that the ESS is configured to delay recharge a minimum of 30 minutes.
7. If ESS is not fully charged, or unavailable, when requested to operate by the Cooperative for a control event, and the load is returned for supply by the Cooperative during the control event (*i.e.*, member load is not controlled), member may be assessed a penalty charge. If ESS is unavailable during two or more control events in any 12-month period, the Association reserves the right to remove consumer from program.
8. A control event may not have a duration greater than 4.5 hours. Any control event 1 hour or less in duration will be consider ½ of an event for purposes of determining daily, monthly, and yearly control events.
9. Association may only request 1 (one) full control event per calendar day. 1 (one) full control event may include 2 (two) ½ control events.
10. Association may only request a maximum of 10 full control events per calendar month and a maximum of 40 total control hours per calendar month.
11. Association may only request a maximum of 100 full control events per calendar year.
12. Association reserves the right to periodically (not to exceed 4 times per year) perform a short 10-30 minute output test of the ESS to confirm operational capability of the ESS and the demand reduction control systems. These short duration tests do not count toward daily, monthly, or annual full control event totals. Association will provide notice to member via electronic message (e.g., SMS, electronic mail) prior to any output test.
13. Although member is not eligible for concurrent service under any other special rate schedule, Association will facilitate continued use of load control and load modifying equipment in an effort to maximize member battery and energy benefit.

Type of Service

Single phase or three phase, 60 hertz, at available secondary voltages. Service under this schedule will be available at all times except when interrupted by the Association during times of peak system demand or system emergencies.

PILOT RESIDENTIAL AND SMALL GENERAL SERVICE BEHIND THE METER ENERGY STORAGE SERVICE

CONTINUED

Monthly Rate

Full Control Option

Energy Charge	@	$0.0854 per kWh

Plus Applicable Taxes.

Limited Control Option

Energy Charge	@	$0.10634 per kWh

Plus Applicable Taxes.

Penalty for Non-Performance—Full Control Option

In a month where the ESS fails to perform as required, the member may be assessed a penalty of $30 for each instance of non-performance.

Penalty for Non-Performance—Limited Control Option

In a month where the ESS fails to perform as required, the member may be assessed a penalty of $15 for each instance of non-performance.

Resource and Tax Adjustment (RTA)

The Energy Charge shall be adjusted for incremental changes in purchased power costs, incremental changes in Dakota Electric’s conservation tracker account balance, and incremental changes in real and personal property taxes above or below the appropriate base costs. The conservation tracker account factor shall be calculated as described in the Resource Adjustment Rider (Sheet 51). The real and personal property tax factor shall be calculated as described in the Property Tax Adjustment Rider (Sheet 53). The purchased power cost factor shall be adjusted by $0.0001 per kilowatt-hour or major fraction thereof, of which the Association’s total projected power cost per kilowatt-hour annually exceeds, or is less than $0.0939 per kilowatt-hour sold. The year used for the annualized RTA will be January 1 through December 31. The projection shall be reviewed after six months (July) and adjusted if necessary. The RTA shall be filed with the Public Utilities Commission each year before implementation.

General Information

Member is required to provide Dakota Electric with information regarding the number, make, type, model, and output and capacity rating(s) of ESS taking service under this schedule. This information may be used to refine the operation of the pilot.

PILOT RESIDENTIAL AND SMALL GENERAL SERVICE BEHIND THE METER ENERGY STORAGE SERVICE

CONTINUED

Taxes

The rates set fourth are based on taxes as of January 1, 2019. The amount of any increase in existing or new taxes on the transmission, distribution, or sales of electricity allocable to sales hereunder, excluding real and personal property taxes already recovered through the RTA, shall be added to the above rate as appropriate.

Terms of Payment

The above charges are net. Balances over $10.00 not received by the Association by the next scheduled billing date will have an interest charge of 1.5 percent or $1.00, whichever is greater, added to the balance.

DAKOTA ELECTRIC ASSOCIATION
4300 220th Street West
Farmington, MN 55024

SECTION: V
SHEET: 2
REVISION: 16~~5~~

DAKOTA ELECTRIC ASSOCIATION
ELECTRIC RATE BOOK

RATE	CLASSIFICATION	SHEET
31	RESIDENTIAL AND FARM SERVICE	
32	RESIDENTIAL AND FARM DEMAND CONTROL RATE	3.
33 (EV-1)	RESIDENTIAL ELECTRIC VEHICLE SERVICE	4.
36	IRRIGATION SERVICE	5.
41	SMALL GENERAL SERVICE	6.
	VOLUNTEER FIRE DEPARTMENT RIDER	6.
44	SECURITY LIGHTING SERVICE	11.
44-1	STREET LIGHTING SERVICE (MEMBER-OWNED)	11.
44-2	STREET LIGHTING SERVICE (DEA-OWNED EQUIPMENT)	11.
44-3	CUSTOM RESIDENTIAL STREET LIGHTING (DEA-OWNED CONTRIBUTION BY MEMBER)	11.
44-4	LED SECURITY LIGHTING SERVICE	12.
44-5	LED STREET LIGHTING (MEMBER-OWNED)	12.1
44-6	LED STREET LIGHTING (DEA-OWNED – CONTRIBUTION BY MEMBER)	12.3
45	LOW WATTAGE UNMETERED SERVICE	1
46	GENERAL SERVICE	16.
	SEASONAL MEMBER RIDER	1
47	MUNICIPAL CIVIL DEFENSE SIRENS	1
49	GEOTHERMAL HEAT PUMP RIDER	19.
51	CONTROLLED ENERGY STORAGE	2
52	CONTROLLED INTERRUPTIBLE SERVICE	2
53	RESIDENTIAL AND FARM SERVICE TIME-OF-DAY RATE	23.
54	GENERAL SERVICE OPTIONAL TIME-OF-DAY RATE	24.
56	RESIDENTIAL AND FARM SERVICE TIME-OF-DAY RATE	25.
57	PILOT NON-RESIDENTIAL ELECTRIC VEHICLE SERVICE	26.
58	PILOT MULTI-FAMILY RESIDENTIAL ELECTRIC VEHICLE SERVICE	27.
59	PILOT VIRTUAL METERED RESIDENTIAL ELECTRIC VEHICLE SERVICE	28.
	PILOT RESIDENTIAL AND SMALL COMMERCIAL BEHIND THE METER ENERGY STORAGE SERVICE	29.0
60	RIDER FOR STANDBY SERVICE	31.0
61	RIDER FOR DISTRIBUTED GENERATION	32.
62	MEMBER SPECIFIC DISCOUNT RIDER	58.0
63	LARGE LOAD HIGH LOAD FACTOR RIDER	58.2
70	INTERRUPTIBLE SERVICE (FULL INTERRUPTIBLE OPTION)	41.
71	INTERRUPTIBLE SERVICE (PARTIAL INTERRUPTIBLE OPTION)	42.
72	CONTRACT RATE SERVICE	58.4
80	CYCLED AIR CONDITIONING SERVICE	4
90	OPTIONAL RENEWABLE ENERGY RIDER	4
	SPECIAL FEES OR CHARGES	45
	RESOURCE ADJUSTMENT RIDER	5
	ENERGY COST ADJUSTMENT RIDER	5
	PROPERTY TAX ADJUSTMENT RIDER	5
	FRANCHISE FEE SURCHARGE RIDER	54.
	COMPETITIVE SERVICE RIDER	55.
	MEMBER ENERGY EXCHANGE RIDER	56.
	VOLUNTARY ENERGY REDUCTION RIDER	5
	ADVANCED GRID INFRASTRUCTURE RIDER	5
	ADVANCED METER OPT-OUT (AMO) RIDER	60.

DAKOTA ELECTRIC ASSOCIATION
ELECTRIC RATE BOOK

COGENERATION AND SMALL POWER PRODUCTION
MPUC SCHEDULE C
CALCULATION OF THE AVERAGE COOPERATIVE ENERGY RATES

Definition: "Average Retail Cooperative Energy Rate" means for any rate class of cooperative member, the quotient of the total annual class revenue from sales of electricity minus the annual revenue resulting from fixed charges, divided by the annual class kilowatt-hour sales. Data from the most recent 12-month period available shall be used in the computation.

1. **Residential Class (Rate Schedules 31, 32, 53, and 56)**

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

($128,291,291) - ($12,634,780) - ($13,634) = $0.1314 per kWh
880,205,138 kWh

$0.1314 per kWh is the Residential "Average Retail Cooperative Energy Rate"
13.14¢/kWh

2. **Small General Service Class (Rate Schedule 41)**

(Total 12-month class revenue) - (12-month class fixed charges) = $/kWh
Total 12-month class kWh sales

($6,228,691) - ($846,488) = $0.1300 per kWh
41,401,172 kWh

$0.1300 per kWh is the Small General Service "Average Retail Cooperative Energy Rate"
13.00¢/kWh

3. **General Service Class (Rate Schedules 46 and 54)**

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

($54,196,415) - ($1,250,494) - ($16,570,204) = $0.0747 per kWh
486,729,906 kWh

$0.0747 per kWh is the General Service "Average Retail Cooperative Energy Rate"
7.47¢/kWh

4. **C&I Interruptible Class (Rate Schedules 36, 70 and 71)**

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

($23,489,869) - ($567,285) - ($5,132,929) = $0.0488 per kWh
364,502,526 kWh

$0.0488 per kWh is the C&I Interruptible "Average Retail Cooperative Energy Rate"
4.88¢/kWh

COGENERATION AND SMALL POWER PRODUCTION
MPUC SCHEDULE C
CALCULATION OF THE AVERAGE COOPERATIVE ENERGY RATES
CONTINUED

Definition: "Average Retail Cooperative Energy Rate" means for any rate class of cooperative member, the quotient of the total annual class revenue from sales of electricity minus the annual revenue resulting from fixed charges, divided by the annual class kilowatt-hour sales. Data from the most recent 12-month period available shall be used in the computation.

5. Pilot Residential and Small General Service Storage Class (Rate Schedule ##--Full)

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

0 - 0 - 0 = $0.0854 per kWh (New Rate Offering)
0 kWh

$0.0854 per kWh is the Pilot Energy Storage—Full Control "Average Retail Cooperative Energy Rate"
8.54¢/kWh

5. Pilot Residential and Small General Service Storage Class (Rate Schedule ##--Limited)

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

0 - 0 - 0 = $0.1063 per kWh (New Rate Offering)
0 kWh

$0.1063 per kWh is the Pilot Energy Storage—Full Control "Average Retail Cooperative Energy Rate"
10.63¢/kWh

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COGENERATION AND SMALL POWER PRODUCTION
MPUC SCHEDULE C
CALCULATION OF THE AVERAGE COOPERATIVE ENERGY RATES

Definition: "Average Retail Cooperative Energy Rate" means for any rate class of cooperative member, the quotient of the total annual class revenue from sales of electricity minus the annual revenue resulting from fixed charges, divided by the annual class kilowatt-hour sales. Data from the most recent 12-month period available shall be used in the computation.

1. **Residential Class (Rate Schedules 31, 32, 53, and 56)**

   (Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
   Total 12-month class kWh sales

   ($128,291,291) - ($12,634,780) - ($13,634) = $0.1314 per kWh
   880,205,138 kWh

   $0.1314 per kWh is the Residential "Average Retail Cooperative Energy Rate"
   13.14¢/kWh

2. **Small General Service Class (Rate Schedule 41)**

   (Total 12-month class revenue) - (12-month class fixed charges) = $/kWh
   Total 12-month class kWh sales

   ($6,228,691) - ($846,488) = $0.1300 per kWh
   41,401,172 kWh

   $0.1300 per kWh is the Small General Service "Average Retail Cooperative Energy Rate"
   13.00¢/kWh

3. **General Service Class (Rate Schedules 46 and 54)**

   (Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
   Total 12-month class kWh sales

   ($54,196,415) - ($1,250,494) - ($16,570,204) = $0.0747 per kWh
   486,729,906 kWh

   $0.0747 per kWh is the General Service "Average Retail Cooperative Energy Rate"
   7.47¢/kWh

4. **C&I Interruptible Class (Rate Schedules 36, 70 and 71)**

   (Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
   Total 12-month class kWh sales

   ($23,489,869) - ($567,285) - ($5,132,929) = $0.0488 per kWh
   364,502,526 kWh

   $0.0488 per kWh is the C&I Interruptible "Average Retail Cooperative Energy Rate"
   4.88¢/kWh

COGENERATION AND SMALL POWER PRODUCTION
MPUC SCHEDULE C
CALCULATION OF THE AVERAGE COOPERATIVE ENERGY RATES
CONTINUED

Definition: "Average Retail Cooperative Energy Rate" means for any rate class of cooperative member, the quotient of the total annual class revenue from sales of electricity minus the annual revenue resulting from fixed charges, divided by the annual class kilowatt-hour sales. Data from the most recent 12-month period available shall be used in the computation.

5. Pilot Residential and Small General Service Storage Class (Rate Schedule ##--Full)

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

0 - 0 - 0 = $0.0854 per kWh (New Rate Offering)
0 kWh

$0.0854 per kWh is the Pilot Energy Storage—Full Control "Average Retail Cooperative Energy Rate"
8.54¢/kWh

5. Pilot Residential and Small General Service Storage Class (Rate Schedule ##--Limited)

(Total 12-month class revenue) - (12-month class fixed & demand charges) = $/kWh
Total 12-month class kWh sales

0 - 0 - 0 = $0.1063 per kWh (New Rate Offering)
0 kWh

$0.1063 per kWh is the Pilot Energy Storage—Full Control "Average Retail Cooperative Energy Rate"
10.63¢/kWh

COGENERATION AND SMALL POWER PRODUCTION

MPUC SCHEDULE D
SCHEDULE 55
PARALLEL GENERATION RATE

AVAILABILITY

Available to all Members where the Member has qualified small power production or cogeneration facilities connected in parallel with the Cooperative's facilities. The Member is required to execute an Electric Service Agreement with the Cooperative.

SERVICE CHARACTERISTICS

Service hereunder shall be alternating current, 60 Hertz, at available voltages.

RATE

The Cooperative shall pay the Member monthly for all energy furnished during the month at the rate shown in Section 1.01 below. The rate selected shall be at the Member's option and shall conform to the capacity rules established by the MPUC. Members with a QF that exceeds 100 kW may agree with Cooperative to execute this standard agreement with the Time-Of-Day Rate, or the parties may agree that a negotiated agreement is more appropriate.

1.01 Net Energy Billing Rate: Available to QFs with capacity of less than 40 kW that do not select either the Time-Of-Day Rate or Simultaneous Purchase and Sale Billing Rate as specified in Minnesota Rule 7835.3300.

Cooperative shall pay the Member as follows:

Type Service	Rate Schedules	Rate
Residential	31, 32, 53, 56	13.14¢ Per kWh
Small General Service	41	13.00¢ Per kWh
General Service	46, 54	7.47¢ Per kWh
C&I Interruptible Service	36, 70, 71	4.88¢ Per kWh
Pilot Battery Energy Storage—Full		8.54¢ Per kWh
Pilot Battery Energy Storage—Full		10.63¢ Per kWh

For members receiving service concurrently under Schedules 51 or 52, metered energy supplied by the QF to the Cooperative will be credited on the monthly bill at the applicable average retail energy rate, with all other consumption being billed according to applicable rate schedules.

1.02 Simultaneous Purchase and Sale Billing Rate: Available to QFs with capacity of less than 40 kW that do not select the Time-Of-Day Rate as specified in Minnesota Rule 7835.3400.

Cooperative shall pay the Member as follows:

A. The energy component of the rate is specified in Schedule A.

B. If the QF provides firm power to the Cooperative, then the capacity component of the rate is specified in Schedule B.

COGENERATION AND SMALL POWER PRODUCTION

MPUC SCHEDULE D
SCHEDULE 55
PARALLEL GENERATION RATE

AVAILABILITY

Available to all Members where the Member has qualified small power production or cogeneration facilities connected in parallel with the Cooperative's facilities. The Member is required to execute an Electric Service Agreement with the Cooperative.

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First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Eric	Fehlhaber	efehlhaber@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List
Adam	Heinen	aheinen@dakotaelectric.com	Dakota Electric Association	4300 220th St W Farmington, MN 55024	Electronic Service	Yes	GEN_SL_Dakota Electric Association_General Service List
Corey	Hintz	chintz@dakotaelectric.com	Dakota Electric Association	4300 220th Street Farmington, MN 550249583	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List
Pam	Marshall	pam@energycents.org	Energy CENTS Coalition	823 E 7th St St Paul, MN 55106	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List
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	No	GEN_SL_Dakota Electric Association_General Service List
Will	Seuffert	Will.Seuffert@state.mn.us	Public Utilities Commission	121 7th Pl E Ste 350 Saint Paul, MN 55101	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	GEN_SL_Dakota Electric Association_General Service List