

**STATE OF SOUTH DAKOTA
BEFORE THE
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION**

IN THE MATTER OF THE APPLICATION OF
NORTHERN STATES POWER COMPANY
FOR APPROVAL OF PROPOSED TARIFF
MODIFICATIONS TO THE CONTROLLED
AIR CONDITIONING AND WATER
HEATER RIDER (RESIDENTIAL &
COMMERCIAL)

DOCKET NO. EL23-____

**PROPOSED TARIFF MODIFICATION
TO THE SAVER'S SWITCH PROGRAM**

INTRODUCTION

Northern States Power Company, doing business as Xcel Energy, submits to the South Dakota Public Utilities Commission this attached Petition proposing to modify the Residential Controlled Air Conditioning and Water Heating Rider and Commercial Controlled Air Conditioning Rider ("Saver's Switch") to allow for increased demand response control.

Specifically, the Company seeks approval to increase the maximum amount of load that can be controlled during a demand event by cycling a participants' air conditioning load from 50 percent to 60 percent. In addition, in the case of a NERC Level 2 system emergency, the Company requests the right to cycle up to a 80% reduction. The 80% cycling strategy could be used as a last resort for certain areas of our grid if all other demand response efforts have been deployed and additional load relief is necessary. As the resource with the most load availability, the Company wants to prepare for the ability to utilize this source as intended, the avoidance of system failures.

The Company proposes this change in an effort to increase the amount of available demand response from our Saver's Switch customers in North Dakota, South Dakota, and Minnesota and to be consistent across our jurisdictions for operational simplicity. The Company's experience operating Saver's Switch for more than 30 years indicates that there is a low risk to customers and through activation of smaller groups of customers, the Company can minimize the time allotment for control to limit any potential risk to customer comfort. In the past decade, the company has conducted an average of 1-2 control events per year.

The following attachments are included with this Petition in clean and redline formats:

South Dakota Electric Rate Book

- Section 5, 4th Revised Sheet No. 66
- Section 5, 1st Revised Sheet No. 67.1

REQUIRED INFORMATION

We provide the following information in accordance with South Dakota Administration Rule 20:10:13:26, the tariff schedule change notification requirements.

(1) Name and Address of the Public Utility

Northern States Power Company
500 West Russell Street
Sioux Falls, SD 57104
(605) 339-8350

(2) Section and Sheet Number of Tariff Schedule

We provide our proposed Section 5 tariff updates as Attachment A to this filing in both redline and clean formats, as follows:

Sheet No. 66, revision 4
Sheet No. 67.1, revision 1

(3) Description of the Tariff Change

The Company proposes to strike and replace the tariff language found on our Electric Rate Book at Section No. 5, 4th Revised Sheet No. 66 and 67.1, as follows:

TERMS AND CONDITIONS – 4th Revised Sheet No. 66

1. The duration and frequency of interruptions will be determined by Company. Customer's air conditioning equipment will normally be cycled on a schedule designed to achieve up to a 60% reduction in the home's air conditioning requirements during a load management period. The Company reserves the right to cycle on a schedule designed to achieve 80% reduction for additional load relief. Air conditioning interruptions will normally occur on high demand days during summer months. Water heating interruptions will normally occur on high demand days during summer and winter months.

Interruption will normally be based on meeting peak demands and system economic dispatch requirements of Company. However, interruption may also occur at times when, in the Company's opinion, the reliability of the system may be at risk. Air conditioning and water heating interruptions will not normally occur during the observation day of the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. The interruptions as described above, will be made so as to benefit native load and may occur up to a maximum of 300 hours per calendar year.

TERMS AND CONDITIONS – 4th Revised Sheet Nos. 67.1

1. The duration and frequency of interruptions will be determined by Company. Customer's air conditioning equipment will normally be cycled on a schedule designed to achieve up to a 60% reduction in the building's air conditioning requirements during a load management period. The Company reserves the right to cycle on a schedule designed to achieve 80% reduction for additional load relief. Air conditioning interruptions will normally occur on high demand days during summer months. Interruption will normally be based on meeting peak demands and system economic dispatch requirements of Company. However, interruption may also occur at times when, in the Company's opinion, the reliability of the system may be at risk. Air conditioning and water heating interruptions will not normally occur during the observation day of the following holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. The interruptions as described above, will be made so as to benefit native load and may occur up to a maximum of 300 hours per calendar year.

(4) Reason for the Requested Change

The Company seeks to increase the maximum amount of load that can be controlled during a demand event by cycling a participants' air conditioning load from 50 percent to 60 percent. The Company proposes this change in an effort to increase the amount of available demand response from our Saver's Switch and to be consistent across our jurisdictions for operational simplicity.

With this filing, we intend to increase: (1) the load availability of our Saver's Switch Participants and (2) the demand response available from our Saver's Switch program for added demand response availability.

i. Load Availability

Technology has changed significantly since the Company established its 50 percent time-based cycling strategy in the early 90s. First, air conditioning units have changed substantially over the last 30 years. Newer models of central air-conditioning units use less energy to lower the temperature of a home or business. Every air conditioner comes with a Seasonal Energy-Efficiency Ratio (SEER) which measures how much cooling capacity a particular air conditioner produces compared to the amount of energy it uses. Higher SEER rates equate to more efficient unit; usually as a result of the compressor's ability to change motor speed based on weather conditions or a home's temperature setting. In 1992, the minimum rating for an air conditioner was 10. Comparatively, the minimum rating for newly installed air conditioners will increase to SEER 14 beginning in 2023 based on new Department of Energy standards. As equipment becomes more efficient, the load available for control during a hot summer day decrease.

While these technology improvements have provided many benefits, they have reduced the amount of flexible load the Company can obtain from Saver's Switch participants. The load availability per switch has decreased over time. We base this decrease on yearly measurement and verification using observed AC unit demand and switch signal reception rates. For residential Smart Switches, the per kW has declined by a third in the last fifteen years from 1.04 per kW to 0.69 per kW.

The Company began to install Smart Switches in the field beginning in 2004 that allowed for adaptive algorithms. These adaptive switches cycle customer air conditioner units off and on based on usage, aimed at achieving a 50 percent reduction in load compared to the traditional switches, which use a 50 percent time-based cycling strategy running 15 minutes on /15 minutes off. The adaptive switches increase overall kW reductions by minimizing free ridership by "smartly" determining how often an air conditioner runs normally and cycling at 50 percent that time. The change from the original cycling strategy to the adaptive algorithm had no discernable impact on program participant attrition. All new residential and business participants, as well as all switches replaced for maintenance purposes, received the adaptive algorithm switch. However, as the efficiency of central air conditioners increase, the available load at 50 percent cycling has still been reduced.

The result of these technology changes is that we are maximizing the amount of demand response we can receive from our existing program. We now seek to increase the available demand response available with this Petition.

With this background, the Company proposes to adjust the cycling scheme to allow the Company to cycle for a 60% reduction in load. Notably, the Company would not

use this “maximum” capability unless it is needed. Building in this flexibility allows the program to be utilized at a higher level of load relief for the future. This flexibility allows us to continue to control by substation for distribution efforts with more certainty of load relief and provides the flexibility allowed under tariff to control during any potential emergency event.

Over the last several years, we have seen more of a need to control more load for shorter periods of time to account for the changing needs of our system. We anticipate that increasing the cycling option will allow us to match the practices we have seen in Colorado to match load more efficiently without significant impact to customer comfort as the time frame is likely to be shortened.

As required by the Commission’s Order, upon approval of any tariff change impacting cycling, the Company will notify affected customers of the possible change to the Saver’s Switch program while providing them the opportunity to opt-out of the program if they so choose.

(5) Present Rate

Not applicable.

(6) Proposed Rate

Not applicable.

(7) Proposed Effective Date of Modified Rate

Xcel Energy proposes that the revised tariffs be effective upon Commission approval.

(8) Approximation of Annual Increase in Revenue

Not applicable.

(9) Points Affected

Approximately 20,000 residential and 600 commercial South Dakota customers will be affected by this modification.

(10) Estimation of the Number of Customers whose Cost of Service will be Affected and Annual Amounts of either Increases or Decreases, or both, in Cost of Service to those Customers

Not applicable.

(11) Statement of Facts, Expert Opinions, Documents, and Exhibits to Support the Proposed Changes

Supporting information is provided in narrative throughout this Petition and in Attachment A. Please see the Company's response to Section 4, Reason for the Requested Change.

PLANNED CUSTOMER NOTICE

In accordance with ARSD 20:10:16:01(2), the Company plans to provide notice to customers comparing the prior rate and the new rate through a bill insert.

Xcel Energy has recently implemented changes to the cycling strategies of the Saver's Switch program. For more information on this see www.xcelenergy.com/Saversswitch.

We will work with the Commission Staff to determine if there are any suggestions to modify this bill insert. To the extent that multiple new rider rates are implemented on the same date, we will coordinate the various rider customer notices.

COMMUNICATIONS REGARDING FILING

Utility Employee Responsible for Filing

Steve T. Kolbeck
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XCEL ENERGY SERVICES INC.
500 W. RUSSELL STREET
SIOUX FALLS, SD 57104
Steven.T.Kolbeck@xcelenergy.com
(605) 339-8350

We request that all communications regarding this proceeding, including data requests, also be directed to:

Christine Schwartz
Regulatory Administrator
Xcel Energy
414 Nicollet Mall – 401, 7th Floor
Minneapolis, MN 55401
Regulatory.Records@xcelenergy.com

CONCLUSION

Xcel Energy respectfully requests that the Commission approves the proposed tariff modification to the Residential Controlled Air conditioning and Water Heating Rider and Commercial Residential Controlled Air Conditioning Rider.

Dated: October 27, 2023

Northern States Power Company