TO: COMMISSIONERS AND ADVISORS

FROM: BRITTANY MEHLHAFF AND AMANDA REISS (STAFF)

SUBJECT: EL21-014 STAFF MEMORANDUM

DATE: DECEMBER 2, 2021

STAFF MEMORANDUM

1.0 OVERVIEW

On May 3, 2021, Northern States Power Company, dba Xcel Energy (Xcel or Company), filed a Petition with the South Dakota Public Utilities Commission (Commission) requesting approval of the Company's 2020 Demand Side Management (DSM) Report, proposed DSM plan for 2022, revised DSM Cost Adjustment Factor for 2022 of $0.000527/kWh, and associated tariff sheets. In response to Staff data request 2-1, Xcel revised the proposed DSM Cost Adjustment Factor for 2022 to $0.000554/kWh and provided updated tariff sheets.

This memo discusses Xcel's 2020 DSM plan performance and the Company's proposed DSM Plan for 2022. Ultimately, Staff recommends the Commission approve Xcel's requests based on the supporting information provided by the Company.

2.0 DISCUSSION

2.1 Report on 2020 DSM Plan Activities

In 2020, Xcel's DSM Plan was over budget, spending $839,636 compared to the Commission approved budget of $804,891.[1] Table 1 shows the 2020 approved budgets and the 2020 actual spending for each program. The actual costs for residential programs were 75% of the approved budget, the business programs were 131% of the approved budget, and the planning segment was 50% of the approved budget. In total, the Company spent 104% compared to the approved budget.

[1] 2020 Budget approved in Docket EL19-019

Table 1. 2020 Budgeted Expenses vs. Actuals			
	Budget	Actual	% of Budget
Residential Home Lighting	$ 96,756	$ 85,291	88%
Residential Demand Response	$ 235,500	$ 181,557	77%
Consumer Education	$ 21,165	$ 9,119	43%
Water Heating	$ 12,900	$ 392	3%
Total Residential	$ 366,321	$ 276,359	75%
Lighting Efficiency	$ 389,320	$ 543,250	140%
Business Saver's Switch	$ 25,250	$ 5,289	21%
Peak and Energy Control	$ 10,000	$ 7,721	77%
Total Business	$ 424,570	$ 556,260	131%
Planning Segment	$ 14,000	$ 7,017	50%
All Programs	$ 804,891	$ 839,636	104%

Table 2 provides the energy savings, demand savings, and participation results from the 2020 DSM plan as compared to the approved budget. Overall Xcel's DSM plan experienced more energy savings than forecasted, mainly due to the significantly higher energy savings that occurred in the Residential Home Lighting, Business Lighting Efficiency, and Business Peak and Energy Control programs. Staff notes that Xcel's filing included an error regarding the actual number of participants for the Residential Home Lighting Program. The 74,950 participant number provided in the filing represents the number of LEDs discounted whereas the correct number of participants was 5,592. Table 2 below corrects this error. This typographical error only impacted the "% of Budget" amounts in addition to the number of participants.

Table 2. 2020 Results									
	Energy Savings (Annual kWh)			Demand Savings (kW)			Participation		
	Budget	Actual	% of Budget	Budget	Actual	% of Budget	Budget	Actual	% of Budget
Residential Home Lighting	3,009,728	3,920,682	130%	408	529	130%	5,245	5,592	107%
Residential Demand Response	99,889	817	1%	817	479	59%	1,410	511	36%
Consumer Education	-	-	-	-	-	-	68,000	5,700	8%
Water Heating	82,115	3,820	5%	12	1	5%	21	1	5%
Total Residential	3,191,731	3,925,319	123%	1,237	1,008	82%	74,676	11,804	16%
Lighting Efficiency	3,960,428	8,010,409	202%	453	1,402	310%	341	136	40%
Business Saver's Switch	39	8	22%	28	57	202%	10	2	20%
Peak and Energy Control	3,713	3,030	82%	101	1,527	1518%	1	3	300%
Total Business	3,964,179	8,013,447	202%	582	2,986	513%	352	141	40%
Planning Segment	-	-	-	-	-	-	-	-	-
All Programs	7,155,910	11,938,766	167%	1,819	3,995	220%	75,028	11,945	16%

The Residential Home Lighting program once again experienced strong participation during the year, resulting in Xcel exceeding the energy savings goal while remaining under budget. Xcel stated the average rebates were lower than expected due to current market pricing. Staff inquired as to whether rebate amounts change in between annual docket filings.[2] Xcel explained that the filed rebate amount is a best estimate for the upcoming year based on historical pricing values and market trends. However, every year retailers

[2] Refer to Xcel's response to Staff DR 2-7.

adjust pricing (typically lower) and offer new pack sizes and different bulbs. As prices are reduced, Xcel states that smaller rebates are enough to motivate customers to purchase the LED bulbs. Staff was previously unaware rebate amounts were changing in between annual docket filings. Refer to the discussion beginning on page 5 for additional information.

The Residential Demand Response program was under budget, with fewer participants than planned, and achievements were below target. Xcel explained[3] that the primary factor contributing to reduced participation and achievement for the Saver's Switch portion of the Residential Demand Response program was the effect that the COVID-19 pandemic had on program delivery. These challenges included customer site accessibility issues, impacting the ability to install equipment, as well as supply chain disruptions that slowed down equipment orders. The AC Rewards portion of the program was launched in 2020, which is when the COVID-10 pandemic began. Supply chain disruptions and cancelled consumer education events greatly contributed to the slow start to the program.

The Residential Heat Pump Water Heaters program spending was significantly less than the approved budget given there was only one participant. Xcel believes the rebate amount compared to the high upfront cost of the technology partially contributed to the low participation.

Looking at the Business programs, the Business Lighting program had lower participation than projected but achieved high energy and demand savings, while coming in a little over budget. The Company attributes the success of the program to linear LED tube options, which is a less costly option than upgrading to a new full fixture and accounted for a large portion of the total energy savings for the program. The Business Saver's Switch only had a couple participants, but each premise had a substantial number of AC units which resulted in exceeding demand savings goals while coming in under budget. The peak and energy controlled rates saw slightly above expected participation with demand savings above goal while spending was under budget.

Overall, Xcel's DSM Plan was cost-effective for the 2020 program year. All programs had Total Resource Cost (TRC) test results greater than 1.0. Table 3 provides a breakdown of the benefit/cost test results that occurred in 2020.

[3] Refer to Xcel's Response to Staff Data Request 3-1.

Table 3. 2020 Benefit/Cost Test Results				
	TRC	**Utility**	**Participant**	**RIM**
Residential Home Lighting	7.27	14.14	50.07	0.27
Residential Demand Response	2.04	1.99	INF	1.39
Consumer Education	-	-	-	-
Water Heating	1.97	4.28	3.96	0.67
Total Residential	4.49	5.68	50.72	0.33
Lighting Efficiency	1.58	8.29	3.72	0.52
Business Saver's Switch	11.85	11.85	INF	5.81
Peak and Energy Control	89.17	89.17	INF	9.23
Total Business	1.81	9.44	3.75	0.6
Planning Segment	-	-	-	-
All Programs	2.08	8.12	5.52	0.5

In its Petition, Xcel requests the Commission approve a performance incentive of $241,467 for 2020. The incentive is a fixed percentage (30%) of actual program expenses and capped at 30% of the approved budget. The purpose of the incentive is to cover lost margins Xcel incurs as a result of DSM Plan implementation. Staff reviewed Xcel's 2020 DSM tracker account and 2020 DSM tracker account adjustment and determined the incentive was properly accounted for.

2.2 DSM Plan for 2022

2.2.1 Proposed Program Changes for 2022

Xcel proposes no changes to the existing DSM program for the Business Saver's Switch and Peak and Energy Control programs. The proposed changes for the remaining programs in Xcel's 2022 DSM Plan are as follows:

Residential Home Lighting:

- Reduce A-line and Specialty LED bulbs rebates.

Residential Heat Pump Water Heaters:

- Increase rebate from $300 to $400
- Increase maximum tank size from 50 gallons to 80 gallons.

Residential Demand Response:

- Add townhomes as a qualifying AC Rewards dwelling type.

Business Lighting:

- Eliminate high bay and troffer fixture measures.

- Add new Custom Lighting measure allowing customers to submit applications regarding retrofit and new construction projects.

- Reduce prescriptive rebates for screw-in lamps, canopy, and parking garage fixtures.

Staff discusses each of these proposed program changes in more detail below.

Residential Home Lighting. The Company proposes to reduce the average rebate for A-line and specialty LEDs to reflect lower market pricing for those types of bulbs. As shown on the Company's Attachment B, the 2022 proposed average rebate for A-line LEDs is $0.90 compared to the 2021 average rebate amount of $1.07. The proposed 2022 average rebate for Specialty LEDs is $1.30 compared to the 2021 average rebate amount of $1.54.

As noted above, Staff was previously unaware rebate amounts were changing in between annual docket filings and that the rebate amount provided in the annual filings was a best guess for the upcoming year based on historical pricing. In response to Staff's discovery,[4] Xcel indicated it aims to keep rebates within a certain threshold of the incremental costs for LEDs and adjusts rebates accordingly. In addition, retailers only allow rebates at certain thresholds compared to the base retail price and thus requires Xcel to adjust rebates accordingly. Xcel also explained certain unforeseeable changes can happen throughout the year such as in 2020 when one manufacturer put at limit on the incentives due to supply shortages, requiring Xcel to change the incentive level. In 2020, Xcel adjusted LED bulb incentives 11 times. Table 4 provides the average residential LED rebates proposed in the Company's previous DSM filing compared with the actual average rebates offered in 2020.

Table 4. 2020 Average Residential LED Rebates

Measure Type	Proposed	Actual	Difference
A-line	$ 1.06	$ 0.82	$ (0.24)
Specialty	$ 1.10	$ 1.22	$ 0.12
TLED	$ 2.00	$ 2.00	$ -

Given Xcel verified that the Home Lighting program is the only program in which rebate amounts change throughout the program year, due to the in-store rebate mechanism and the requirements of different manufacturers and retailers, Staff is comfortable with Xcel continuing to adjust rebates in this manner as long as the program continues to be cost effective. A change in the rebate amount does not have a material direct impact on the TRC test ratio, however indirect impacts due to participation levels are possible. Given the minimal impact on the TRC test, allowing some discretion in adjusting the rebate levels in the Home Lighting program seems reasonable. If the Commission desires certainty on the rebates amounts, the Commission can consider a cap on the

[4] Refer to Xcel's Response to Staff Data Request 3-2.

allowed variability, similar to the flexibility granted to Otter Tail Power Company in Docket EL20-022, where the Commission granted Otter Tail's request for modification which included flexibility to change program rebates levels as long as rebates do not exceed the levels included in the plan approved by the Commission.

Residential Heat Pump Water Heaters. The Company had only one participant in this program for 2020. For 2022, the Company proposes to increase the rebate from $300 to $400 and increase the maximum tank size from 50 gallons to 80 gallons, allowing customers to install a water heater that better meets the needs of their home. 2020 was the first year for the new Heat Pump Water Heaters program. In Docket EL19-019, the Company proposed a $400 rebate but agreed to a $300 rebate after discussing the short pay-back period with Staff. The Commission approved the agreed upon $300 rebate. However, now Xcel claims the rebate is too low to incentivize participation.

Staff understands the Commission's desire to monitor incentive levels as it is impacting all customers. There are ways to evaluate and mitigate the impacts to non-participants through design of the program. These include increasing access to programs for all customers and monitoring the incentive levels so that the rebates are only set as high as needed to attract the necessary participation. Xcel appears to have tried to address the non-participant impacts by making available programs accessible to different types of customers as well as attempting to design the rebate level to attract just the right amount of participation. Staff agrees with Xcel's approach to attract different types of customers by increasing the maximum tank size from 50 gallons to 80 gallons. This modification should allow more customers the opportunity to participate who may have been restricted from participating thus far if the needs of their home require a larger water heater.

Staff realizes designing the rebate level can be complicated to get exactly right and try to predict customer behavior. Xcel evaluates the expected customer pay-back period associated with the investment so that it is not less than one year and cannot extend past the life of the measure.[5] Xcel's analysis regarding the heat pump water heaters considering a $400 rebate shows the average pay-back period fits within this range.[6] The pay-back period will vary depending on the size of the customer's home and energy usage levels.

The average cost of a baseline electric resistance water heater is $959 whereas the average cost of a heat pump water heater is $1,743.[7] Therefore, the average incremental cost of the heat pump water heater is $784. This could be a sizeable cost difference for some customers to consider when looking at the up-front costs of the water heater. The $400 rebate helps bring down that up-front cost to a more manageable level while still

[5] Refer to Xcel's Response to Staff Data Request 3-3c.
[6] Refer to Xcel's Response to Staff Data Request 2-8.
[7] Refer to Xcel's Response to Staff Data Request 3-3d.

requiring the customer to make an investment in the energy efficient option. This is comparable to the rebate approved in Docket EL19-019 where the $300 rebate was approximately half of the $611 incremental cost. Given the incremental cost is more, it makes sense the rebate should be more as well to incentivize participation, especially since Xcel has had little participation thus far with the $300 rebate.

The pay-back period is just one item considered in Xcel's determination of an appropriate rebate amount. Xcel's feedback from manufacturers also indicates a higher rebate is necessary to increase customer demand.[8]

Given this program is still in its beginning stages and the unique challenges experienced in 2020, Staff recommends the Commission approve Xcel's proposal regarding the Residential Heat Pump Water Heaters Program for 2022 as supply issues and customer education regarding the availability of the program hopefully improve. Staff is hopeful the program design changes including increasing the maximum tank size and the higher rebate will also help to increase participation. If the program continues to have low participation or is not cost-effective in the future, the Commission can review the viability of the program as part of Xcel's future DSM plan approval filings.

Residential Demand Response. The only change Xcel proposes for this program is to add townhomes as a qualifying AC Rewards Residential dwelling type. Staff has no issues with this addition. In response to the slow start to the AC Rewards program experienced in 2020 associated with the COVID-19 pandemic, Xcel states it identified ways to simplify the qualification and enrollment process for the AC Rewards program and hopes this streamlined approach combined with a more robust marketing plan will increase participation and achievement to align with program achievement in 2022.[9]

Business Lighting. Xcel's latest models indicate the generation, transmission, distribution, and marginal energy avoided revenue requirement assumptions have all decreased for 2022. This results in certain measures being eliminated from the Business Lighting program in order to ensure the program remains cost-effective. The Company proposes eliminating the high bay and troffer fixture measures. Since this eliminates options for customers, Xcel also proposes implementing a Custom Lighting measure which will allow customers the opportunity to submit retrofit or new construction lighting projects for consideration of a custom rebate pending a cost-benefit analysis. Xcel also proposes to reduce some of its prescriptive rebates, as shown on the Company's Attachment B. Staff has no concerns with these proposed program changes.

[8] Refer to Xcel's Response to Staff Data Request 3-3e.
[9] Refer to Xcel's Response to Staff Data Request 3-1.

2.2.2 Proposed Budget for 2022

The proposed budget for 2022 is provided in Table 5. The table reflects a correction to the Residential Water Heating budget, as the original budget calculation incorrectly assumed 25 participations instead of 21 participants.[10] Staff reviewed the impact of this small budget change on the 2022 DSM Cost Adjustment Factor and determined it would have a negligible impact on the rate and therefore recommends approval of the revised rate provided in response to Staff Data Request 2-1.

In total, Xcel proposes a decrease of $6,698 for its 2022 DSM Plan compared to 2021. Business Lighting and Residential Water Heating budgets are less while Residential Home Lighting and Demand Response are increasing slightly. Based on forecasted participation and associated energy savings, Xcel estimates that all programs will be cost-effective in 2022, with an estimated overall TRC ratio of 1.59. Staff has no concerns with Xcel's proposed budget for 2022.

Table 5. 2022 DSM Plan

	2021	2022	YOY Change	TRC Ratio
Residential Home Lighting	$ 99,655	$ 101,933	2%	5.97
Residential Demand Response	$ 235,500	$ 243,500	3%	2.04
Consumer Education	$ 21,165	$ 21,165	0%	-
Water Heating	$ 12,900	$ 10,250	-21%	1.00
Total Residential	$ 369,220	$ 376,848	2%	3.27
Lighting Efficiency	$ 414,226	$ 399,900	-3%	1.06
Business Saver's Switch	$ 25,250	$ 25,250	0%	1.07
Peak and Energy Control	$ 10,000	$ 10,000	0%	5.64
Total Business	$ 449,476	$ 435,150	-3%	1.08
Planning Segment	$ 10,000	$ 10,000	0%	-
All Programs	$ 828,696	$ 821,998	-1%	1.59

In addition, the fixed percentage incentive of 30 percent of actual spending with a cap set at 30 percent of the approved budget ($247,079) is proposed to continue in 2022.

2.2.3 DSM Cost Adjustment Factor for 2022

In its original filing, Xcel proposed to increase the DSM Cost Adjustment Factor to $0.0005368/kWh for 2022 from $0.000528/kWh in 2021. In response to Staff Data Request 2-1, where Xcel updated its tracker account to factor in actual expenses and revenues recorded between the initial filing and Staff's data request, Xcel identified that

[10] Refer to Xcel's Response to Staff's Data Request 3-3b.

the rate should be revised to $0.000554/kWh. Note that although the proposed 2022 budget is slightly lower than the 2021 budget, the proposed rate is slightly higher due to a forecasted under recovery in the DSM tracker account as of December 2021. Table 6 provides the estimated bill impacts of the proposed DSM cost adjustment factor for 2022.

Table 6: Bill Impacts of 2022 DSM Cost Adjustment Factor

	Prior Rates				New Rates				Amount of Bill Increase	Percent Increase
Usage (kWh)	Other Rates	Prior DSM Factor	Prior DSM	Prior Bill	Other Rates	New DSM Factor	New DSM	New Bill		
400	$53.35	$0.000528	$0.21	$53.56	$53.35	$0.000554	$0.22	$53.57	$0.01	0.02%
500	$64.62	$0.000528	$0.26	$64.88	$64.62	$0.000554	$0.28	$64.90	$0.02	0.03%
600	$75.89	$0.000528	$0.32	$76.21	$75.89	$0.000554	$0.33	$76.22	$0.01	0.01%
750	$92.80	$0.000528	$0.40	$93.20	$92.80	$0.000554	$0.42	$93.22	$0.02	0.02%
1000	$120.99	$0.000528	$0.53	$121.52	$120.99	$0.000554	$0.55	$121.54	$0.02	0.02%
2000	$233.73	$0.000528	$1.06	$234.79	$233.73	$0.000554	$1.11	$234.84	$0.05	0.02%

3.0 STAFF RECOMMENDATION

For Docket EL21-014, Staff makes the following recommendations:

1) The Commission approve Xcel's 2020 DSM tracker account;

2) The Commission approve the performance incentive earned in 2020;

3) The Commission approve Xcel's proposed DSM Plan for 2022; and

4) The Commission approve the 2022 DSM Cost Adjustment Factor of $0.000554/kWh, with an effective date of January 1, 2022, and the associated tariff sheet.