Otter Tail Power Company
2021-2023 South Dakota Energy Efficiency Partnership

A. INTRODUCTION

On July 1, 2020, Otter Tail Power Company (Otter Tail or the Company) submitted its South Dakota Energy Efficiency Partnership (EEP) plan for 2021-2023 in Docket No. EL20-022. At the November 24, 2020, South Dakota Public Utilities Commission (SDPUC or the Commission) meeting, the Commission voted unanimously to approve Otter Tail's plan for 2021-2023 with a budget of $775,000 for 2021, and a budget of $525,000 for 2022 and 2023.

Otter Tail has a solid history of managing the EEP budget within the 110 percent limit set forth by the SDPUC. In the summer of 2018, the Company reduced rebate incentive offerings in its Drive Power, Lighting, and Custom Efficiency programs to mitigate exceeding the allowed budget. Each year Otter Tail strives to provide as much opportunity for all residential, farm, commercial, and industrial customers to participate in EEP programs and to maximize the net benefits provided to South Dakota customers. Since 2008, our South Dakota customers have cumulatively saved nearly 60 MWh and produced nearly $44 million in net benefits.

B. MODIFICATION REQUEST

Customer participation in EEP programs in 2021 has been so remarkable, Otter Tail respectfully requests an increase to the 2021 EEP budget of $775,000. Otter Tail requests an increase of 20% or an additional $155,000 for a total budget request of $930,000. Through August 2021 Otter Tail has realized over $720,000 in EEP expenses and is forecasting an additional $222,000 in expenses primarily for customer rebates, based on discussions with customers who intend to complete efficiency projects pending availability of incentives. Table 1 below, outlines the approved spending and savings goals, our 2021 Year-End Forecast for Spending and savings, and our Forecasted Change, or budget need going forward.

Table 1

	2021 Approved Goal		2021 Year-End Forecast		Forecasted Change	
	Spending	kWh Savings	Spending	kWh Savings	Spending	kWh Savings
2021 EEP Resd Rebates						
Resd Heat Pumps	$91,000	384,572	$129,875	806,786	$38,875	422,214
Appliance Recycling	$28,000	97,307	$7,000	19,461	-$21,000	(77,845)
Lighting	$35,000	295,269	$31,636	332,958	-$3,364	37,689
Cool Savings Rebates	$12,000	8,696	$5,504	8,239	-$6,496	(457)
Smart Thermostats	$17,000	48,020	$5,050	34,700	-$11,950	(13,320)
Total Residential	**$183,000**	**833,863**	**$179,065**	**1,202,144**	**-$3,935**	**368,281**
2021 EEP Comm Rebates						
Drive Power	$319,000	8,547,821	$292,175	7,497,598	-$26,825	(1,050,223)
Comm Heat Pumps	$45,000	223,355	$173,000	982,177	$128,000	758,822
Commercial Direct Install	$26,000	243,985	$17,266	243,984	-$8,734	(0)
Custom Efficiency Grants	$42,000	604,106	$61,467	535,822	$19,467	(68,285)
Lighting	$110,000	1,159,616	$161,893	1,638,575	$51,893	478,959
Total Commercial	**$542,000**	**10,778,884**	**$705,801**	**10,898,156**	**$163,801**	**119,272**
2021 Indirect Projects						
Advertising and Education	$35,000	-	$37,743	-	$2,743	-
Development	$15,000	-	$20,070	-	$5,070	-
Total Indirect	**$50,000**	**-**	**$57,813**	**-**	**$7,813**	**-**
Grand Total	**$775,000**	**11,612,747**	**$942,679**	**12,100,300**	**$167,679**	**487,553**

Otter Tail has highlighted in grey, the specific programs that are driving the requested budget increase. This includes Residential Heat Pumps, Commercial Heat Pumps, and Commercial Lighting. The payout of customer rebates based on known projects that are included in our forecast leads to the requested budget increase.

Table 2 below, includes Otter Tail's request for budget modification. Otter Tail has included budgets based on its best estimate of year-end spending and kWh savings. Although Otter Tail is forecasting an additional $167,679 in program costs as shown in Table 1, the Company is requesting a $155,000 budget increase (Table 2). Otter Tail believes some of the forecasted projects may not come to fruition and the requested $155,000 should be adequate in meeting customer energy efficiency needs for the remainder of 2021.

Table 2

	2021 Approved Goal		2021 Proposed	
	Spending	kWh Savings	Modification Spending	kWh Savings
2021 EEP Resd Rebates				
Resd Heat Pumps	$91,000	384,572	$124,000	806,786
Appliance Recycling	$28,000	97,307	$7,000	19,461
Lighting	$35,000	295,269	$32,000	332,958
Cool Savings Rebates	$12,000	8,696	$5,500	8,239
Smart Thermostats	$17,000	48,020	$5,000	34,700
Total Residential	**$183,000**	**833,863**	**$173,500**	**1,202,144**
2021 EEP Comm Rebates				
Drive Power	$319,000	8,547,821	$292,000	7,497,598
Comm Heat Pumps	$45,000	223,355	$170,000	982,177
Commercial Direct Install	$26,000	243,985	$17,000	243,984
Custom Efficiency Grants	$42,000	604,106	$61,500	535,822
Lighting	$110,000	1,159,616	$158,000	1,638,575
Total Commercial	**$542,000**	**10,778,884**	**$698,500**	**10,898,156**
2021 Indirect Projects				
Advertising and Education	$35,000	-	$38,000	-
Development	$15,000	-	$20,000	-
Total Indirect	**$50,000**	**-**	**$58,000**	**-**
Grand Total	**$775,000**	**11,612,747**	**$930,000**	**12,100,300**

Table 3 below, illustrates how customer rebates are driving the budget request. Otter Tail budgeted $468,250 for customer rebates in the approved budget, but is now forecasting $633,325 in customer rebates, and increase of $165,075.

Table 3

	Customer Rebate Summary		
	Budget	**Forecast**	**Change**
2021 EEP Resd Rebates			
Resd Heat Pumps	$36,400	$103,375	$66,975
Appliance Recycling	$5,000	$300	-$4,700
Lighting	$17,000	$20,000	$3,000
Cool Savings Rebates	$1,400	$1,400	$0
Smart Thermostats	$4,100	$2,400	-$1,700
Total Residential	**$63,900**	**$127,475**	**$63,575**
2021 EEP Comm Rebates			
Drive Power	$307,000	$283,065	-$23,935
Comm Heat Pumps	$35,250	$149,300	$114,050
Commercial Direct Install	$9,000	$10,600	$1,600
Custom Efficiency Grants	$30,000	$55,467	$25,467
Lighting	$87,000	$134,893	$47,893
Total Commercial	**$468,250**	**$633,325**	**$165,075**

Otter Tail believes the additional dollars available will allow the momentum for energy efficiency to continue without interruption. The Company prefers to avoid communicating to customers the EEP program has no funding remaining in 2021. This communication can provide a significant interruption to customers planning projects and delay cost-effective energy efficiency investments into their homes or businesses.

C. COST-EFFECTIVENESS

The requested budget increase is driven by the larger number of customer projects which are cost-effective based on planning year evaluations.

D. IMPACTS TO EEP SURCHARGE

Otter Tail has analyzed the impacts of the proposed budget increase of $155,000 to the EEP expense tracker. The proposed $155,000 divided by 2022 forecasted sales results in an increase to the tracker of $0.00031/kWh. The Company has included Table 4 below, displaying the monthly dollar impact to each customer class.

Table 4: Comparison of Monthly Bill Impacts
Impacts of EEP Surcharge Increase of $0.00031 / kWh

			Monthly Bill Impacts	
Rate Class	Average kWh/Bill	Average $/Bill before EEP	Additional EEP $0.00031/kWh	Monthly Bill % Change
Residential	927	$84.57	$0.29	0.34%
Farm	1,730	$147.24	$0.54	0.36%
General Service	2,604	$224.68	$0.81	0.36%
Large General Service	274,707	$15,224.40	$85.16	0.56%
Irrigation	2,036	$190.88	$0.63	0.33%
Outdoor Lighting	79	$10.69	$0.02	0.23%
Municipal Pumping	2,870	$186.65	$0.89	0.48%
Water Heating Control	198	$13.20	$0.06	0.46%
Interruptible Load	1,777	$72.83	$0.55	0.76%
Deferred Load	2,159	$94.85	$0.67	0.71%

*All average data comes from Otter Tail's present rates in Statement-I filed April 20, 2018 (Docket no. EL18-021).

Otter Tail's approved spending budget for 2022 and 2023 is $525,000, a significant reduction from the 2021 $775,000 budget and proposed 2021 $155,000 increase. The reason for the budget decrease in 2022 and 2023 is due to the end of the Commission's approved $250,000 annual budget increase for the EEP participation of a very large customer in 2019, 2020, and finishing in 2021. After including the $155,000 budget increase request in the EEP tracker, we are estimating an approximately 40 percent reduction in the EEP surcharge on July 1, 2023.

E. MANAGING BUDGETS IN 2022 & 2023

To mitigate future modification requests, Otter Tail requests the Commission allow several EEP program changes and reduction of rebate amounts for three programs in 2022 and 2023. Proposed program changes include, discontinuing rebates for standard air source heat pumps, and adding a new measure and rebate for air-to-water heat pumps. The Company also proposes to decrease the rebates for the residential and commercial Heat Pump programs, and commercial and [1]residential Lighting for 2022 and 2023. As described above, these programs were the main drivers contributing to the 2021 budget modification request.

i. Lighting Rebate Changes

Based on costs data collected from actual lighting retrofit projects completed in South Dakota, the Company has observed a reduction in project costs per kWh saved for both hard-wired and screw-

[1] Changes to residential lighting only include a reduced rebate for hard-wired lighting fixtures. The vast majority of residential Lighting participation stems from screw-in light bulbs which are discounted at the retail store. Screw-in bulbs discounts are not being impacted in this filing.

in LED retrofits. A more general inquiry with a locally based wholesale electric and lighting supplier further indicates a declining trend in LED lighting costs in recent years. The Company consequently believes the proposed rebate levels will still be strong enough to entice customers to select premium efficiency technologies. The Company, however, will closely monitor program participation and work with customers on planning their projects to gauge any potential reduction in participation.

Otter Tail also proposes to decrease rebates for its commercial and residential Lighting retrofit programs as indicated below in Table 5.

Table 5

Existing	**Replaced with**	**Current rebate**	**Proposed rebate**
Low-efficiency incandescent	Screw-in LED interior	$0.20	$0.15
	Screw-in LED exterior	$0.10	$0.05
	Hard-wired LED interior	$0.60	$0.40
	Hard-wired LED Exterior	$0.40	$0.20
Low-efficiency fluorescent	Low-watt T8 fluorescent lamp retrofits (w/ lamps rated at 28 watts per lamp or less)	$.05/watt installed	$.05/watt installed
	Hard-wired LED	$0.60	$0.40
Standard T8 fluorescent lamps	Low-watt T8 fluorescent lamp retrofits (w/ lamps rated at 28 watts per lamp or less)	$0.40	$0.20
	LED lamp only retrofit	$0.40	$0.20
Mercury Vapor	Hard-wired LED interior	$0.60	$0.40
	Hard-wired LED exterior	$0.40	$0.20
	Screw-in LED interior	$0.40	$0.15
	Screw-in LED exterior	$0.20	$0.05
Standard HID	Hard-wired LED interior	$0.60	$0.40
	Hard-wired LED exterior	$0.40	$0.20
	Screw-in LED interior	$0.40	$0.15
	Screw-in LED exterior	$0.20	$0.05
Exit lighting	High-efficiency exit lighting (based on maximum demand reduction of 20 watts/fixture)	$0.60	$0.40

Occupancy/daylight sensing controls		$200/connected kW	$125/connected kW

ii. Heat Pump Program and Rebate Changes

Air Source Heat Pumps

Energy Star rated standard Air-Source Heat Pumps (ASHP) are currently offered as part of Otter Tail's rebate program. With the introduction of scroll compressors and inverters within the air source heat pump technology, the energy efficiency has increased as the performance ratings carry into lower temperatures. This advancement has led the industry to designating a segment of equipment as Cold Climate Heat Pumps (CCHP) to highlight the technology and showcase efficient operation down to (-10° F). Because of the rebates being offered and the savings customers are seeing on their bills, Otter Tail has experienced strong participation and adoption of CCHPs. To manage the Heat Pump budgets going forward into 2022 and 2023, Otter Tail is requesting a modification to its heat pump program, as shown in Table 6.

Table 6

Type	2021 Rebate	2022-23 (New)
ASHP: Energy Star	$250	Discontinued
CCHP: Ductless	$700	$500
CCHP: Ducted	$900	$700
Air-to-Water Heat Pump	-	$400

The proposed modifications include discontinuing the rebates for standard Energy Star ASHP's and reducing rebate amounts for CCHP's. The Company also proposes to include Air-to-Water Heat Pumps (AWHP's), an emerging heat pump technology, within its residential and commercial Heat Pump programs. This new segment of heat pumps is a recent addition that is growing in potential as more products are being developed and released into the marketplace. AWHP's add the benefit of being able to integrate with hydronic in-floor heating systems. This is a significant benefit to customers desiring thermal storage where the current options only include a traditional boiler or geothermal system. Additionally, for customers that do not have the land space or upfront capital for a geothermal system, they are limited to installing a boiler system that is a less efficient base electric resistance technology.

AWHP products that have been released recently, have shown efficient operation down to (-10° F) while maintaining coefficient of performance (COP) above 1.5. Currently, this is an emerging technology without an official Energy Star labeling system, however, we used the Energy Star "Emerging Technology" rating criteria[2] and the "Efficiency Vermont" performance requirements for qualifying equipment[3]. The COP @ A5W110 must be above 1.7. The A5W110 designation stands for the full load capacity at a dry bulb outdoor temperature of 5° F and an exiting water temperature of 110° F. Cost-effectiveness for the new AWHP measure are consistent with other air source heat pump offerings and included in Table 7 below.

[2] 2019-2020 Air-to-Water Heat Pumps | About ENERGY STAR | ENERGY STAR
[3] efficiency-vermont-awhp-qpl.pdf (efficiencyvermont.com)

Table 7

Type	Utility Test	TRC Test	Participant Test
SD Resd 2.5 ton Air to Water Heat Pump	3.62	1.09	3.39

Geothermal Heat Pumps

Proposed modifications to the geothermal heat pump program include changes to the performance requirements for larger systems where an individual heat pump is larger than 6 tons. Contractors are finding it difficult to locate equipment that meets current requirements. This size of equipment also generally falls outside of standard Energy Star ratings testing, while still being considered a high performing unit relative to its size. For these reasons Otter Tail is requesting the modifications found in Table 8 below.

Table 8

Type	2021		2022-23 (New)	
	COP (Range)	EER (Range)	COP	EER
Geothermal (6 tons <)	3.1 - 4.1	16 - 21.1	3.1	13

F. ONGOING PROGRAM FLEXIBILITY

In the Commission's November 30, 2020, Order approving Otter Tail's EEP Triennial Plan the Commission further ordered, "that all changes in rebate amounts shall be approved by the Commission." Otter Tail requests the Commission recognize 2021-2023 approved customer rebate levels and allow the Company to offer rebates at lesser levels but not to exceed rebate levels approved in the Commission's November 2020 Order. This proposal enables the company to make program changes more nimbly based on customer participation and allows customers to plan and implement their projects in a timely fashion without waiting for regulatory lag.

This change will allow program flexibility and Otter Tail to better manage overall budgets and cost-effectiveness. One strategy the Company has used in another jurisdiction with success is to start the year with a lower rebate level and depending on customer participation, offer a limited-time promotional higher rebate to build a pipeline of customer projects. The Company believes this flexibility will help to manage day to day operations of the programs, ensure management of overall budgets, and ensure cost-effectiveness going forward through the 2022 and 2023 years.

G. CONCLUSION

Otter Tail respectfully requests the following modifications to its 2021-2023 EEP Plan:

1. An increase to the 2021 EEP budget of $775,000. Otter Tail requests an increase of 20% or an additional $155,000 for a total budget request of $930,000 as listed by program in Table 2 above.
2. The Company requests approval of its proposed changes to the Heat Pump program by discontinuing the ASHP: Energy Star measure and adding Air to Water Heat Pump measure for 2022 and 2023 program years.
3. The Company requests approval of reduced rebate levels to the Heat Pump and the Lighting programs for 2022 and 2023 program years.
4. Lastly the Company proposes the Commission to allow the Company to change program rebate levels for 2022 and 2023, based on customer participation, as long as rebates do not exceed the levels included in programs approved by the Commission in its November 2020 Order. The Company must also maintain program cost-effectiveness and overall budgets are managed within the Commission approved 110% spending cap.