PUBLIC – TRADE SECRET DATA HAS BEEN EXCISED

STATE OF SOUTH DAKOTA
BEFORE THE
SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

In the Matter of Otter Tail Power Company's Petition for Approval of Rate Schedule, Section 13.09, Phase-In Rider	**Docket No. EL22-** **PETITION FOR ANNUAL UPDATE TO PHASE-IN RIDER**

I. INTRODUCTION

Otter Tail Power Company (Otter Tail) hereby Petitions the South Dakota Public Utilities Commission for approval of its third annual update to its Phase-In Rate Plan Rider (Rider). This filing is made in compliance with the South Dakota Public Utilities Commission's (Commission) Order[1] in Otter Tail's 2019 Rider Filing (2019 Filing) and under the Commission's authority granted in South Dakota Codified Laws 49-34A-73 through 49-34A-78 under Otter Tail's Rider, Electric Rate Schedule Section 13.09. This Rider is described in the Settlement Stipulation[2] (Settlement) and approved by the Commission's Order (Order) in Otter Tail's last general rate case in Docket No. EL18-021[3] (Rate Case). This filing includes the components described in the Settlement.

In this filing, Otter Tail's Rider rate is adjusted to reflect the applicable Rider revenue requirements for the next recovery period (September 2022 – August 2023). This update includes the projected tracker balance for the Rider to recover actual and forecasted costs for the Astoria Station Natural Gas Plant project (Astoria Station), Merricourt Wind Project (Merricourt Project), together (Projects), forecasted net benefits associated with additional load in the Lake Norden area, and net savings associated with Otter Tail's retirement of its Hoot Lake Plant (HLP) in Otter Tail's South Dakota jurisdiction.

Otter Tail also includes two new projects in this filing for recovery. The Ashtabula III wind farm purchase and the Advanced Grid Infrastructure (AGI) projects will be described in more detail in the sections below. Otter Tail proposes to collect the revenue requirement for the AGI project through a per meter rate and to include the Ashtabula III

[1] Commission's August 26, 2019 Order in the Matter of Otter Tail Power Company's Petition for Approval of Rate Schedule, Section 13.09, Phase-In Rider in Docket No. EL19-025.
[2] February 15, 2019 Joint Settlement Stipulation of Otter Tail Power Company and South Dakota Public Utilities Commission Staff IN THE MATTER OF THE APPLICATION OF OTTER TAIL POWER COMPANY FOR AUTHORITY TO INCREASE ITS ELECTRIC RATES in Docket No. EL18-021.
[3] Commission's March 6, 2019 Order Granting Joint Motion for Approval of Settlement Stipulation; Order Approving Settlement Stipulation IN THE MATTER OF THE APPLICATION OF OTTER TAIL POWER COMPANY FOR AUTHORITY TO INCREASE ITS ELECTRIC RATES in Docket No. EL18-021.

purchase in the established percent of bill rate. Otter Tail proposes two different rates structures to provide an accurate cost for the percent of bill projects and the per meter rate (AGI) projects. The petition is broken into two sections which describe how the different types of rates are established.

The rate of return (ROR) included in this filing is based on Otter Tail's actual capital structure as of December 31 of the preceding year using the return on equity (ROE) approved by the Commission in the Rate Case. This Petition establishes the rates to collect the 12 months of revenue requirements for the recovery period of September 2022 through August 2023 as well as the projected tracker balance at the end of August 2022. The Petition includes actual investment costs, expenses, and revenues through April 2022 and forecasted information for May 2022 through August 2023. The proposed revenue to be collected for the percent of bill portion of this rider during the September 1, 2022 through August 31, 2023 recovery period, as shown in Attachment 1 is $2,582,108 and the proposed revenue to be collected for the per meter rate in Attachment 12 is $415,580 for a total revenue requirement of $2,997,688.

For a residential customer using 1,000 kWh per month, the change from the current factor to that proposed in this annual update results in an increase of $7.54 per month. For a Large General Service (LGS) customer using 486 kW and 222,350 kWh, the bill impact of this update is an increase of $965.49 per month.

II. GENERAL FILING INFORMATION

A. Name, address, and telephone number of the utility making the filing

Otter Tail Power Company
215 South Cascade Street
P.O. Box 496
Fergus Falls, MN 56538-0496
Phone (218) 739-8200

B. Name, address, and telephone number of the attorney for Otter Tail Power Company

Cary R. Stephenson
Associate General Counsel
Otter Tail Power Company
215 South Cascade Street
P.O. Box 496
Fergus Falls, MN 56538-0496
Phone (218) 739-8956

C. Title of utility employee responsible for filing

Lynn A. Wolters
Rates Analyst, Regulatory Administration
Otter Tail Power Company
215 South Cascade Street
P.O. Box 496
Fergus Falls, MN 56538-0496
Phone (218) 739-8577

D. The date of filing and the date changes will take effect

The date of this filing is June 1, 2022. Otter Tail proposes the update to the Rider factor to go into effect for usage on and after September 1, 2022.

E. Statutes controlling schedule for processing the filing

Otter Tail files this Rider for Commission approval authorized by South Dakota Codified Laws 49-34A-73 through 49-34A-78. ARSD Part 20:10:13:15 requires a 30-day notice to the Commission of a proposed change in a utility's tariff schedule. Attachment 21 to this Petition is the proposed customer notice required by ARSD 20:10:13:19, which will be sent to customers with the first bill rendered when the rate is implemented. Otter Tail includes Attachment 22 to comply with ARSD 20:10:13:26, which requires the Utility to report all rate schedule changes and customer impacts. Otter Tail will provide notice of this proceeding to its customers pursuant to South Dakota Codified Laws Chapter 49-34A-12 in June 2022 billing statements.

III. PHASE-IN COST RECOVERY BACKGROUND

On April 20, 2018, Otter Tail filed its Rate Case with the Commission requesting to increase rates for electric service to customers in its South Dakota service territory. Otter Tail's application proposed a step increase, to be effective January 1, 2020, to facilitate recovery of the Merricourt Project and the Astoria Project. Commission Staff and Otter Tail (together the Parties) held settlement conferences to arrive at jointly acceptable resolutions to issues raised in the Rate Case and the Parties filed a Joint Settlement that was approved by the Order. Section 3, Part 2 of that Settlement contemplates the Merricourt and Astoria Projects as part of a Phase-In Rate Plan for recovery of capital projects as well as additional components. Staff's description of the Phase-In portion of the Settlement Agreement reads as follows:

> *The Parties agree that OTP may file for the establishment of a phase-in rate plan under SDCL 49-34A-73 through 78, seeking recovery of Merricourt and Astoria construction work in progress and continuing once the projects are in-service and*

until the time the Company files its next rate case. This approach provides OTP the opportunity to recover costs associated with the two capital projects while avoiding multiple rate cases[4]*…*

The phase-in rate plan will also include an adjustment reflecting the net benefit of the additional load in the Lake Norden area, including corresponding updates to jurisdictional allocation factors resulting from the increased load to South Dakota…

The phase-in plan will also include an adjustment to reflect the net savings associated with the Hoot Lake plant retirement, which is scheduled for retirement in May of 2021.

The Parties agree OTP will submit an annual Phase-In Rider filing on a going forward basis to be received by the PUC by June 1 of each year. Based on this annual report, OTP will adjust the Phase-In rate each year based on actual costs and collections.

In compliance with the above referenced statutes and the approved Settlement, this Petition provides information on the projects included in the Phase-In Plan; information associated with the Lake Norden area load growth; the retirement of Hoot Lake Plant; and Otter Tail's calculations for its Phase-In Rider rate. Otter Tail also requests recovery of two additional projects within the Phase-In Rider; the recovery of Otter Tail's proposed purchase of the Ashtabula III wind farm, and recovery of Otter Tail's AGI projects as described later in this petition.

Otter Tail provides an updated tariff rate schedule, Section 13.09, as Attachment 20 to this filing. The updated tariff contains information about the percent of bill type of charge employed to date and includes the additional new per meter charge Otter Tail proposes to apply to bills going forward to recover the AGI projects.

The percent of bill charges are calculated in Attachments 1 through 10, and the per meter charges are calculated in Attachments 11 through 18. The projects being recovered in the Phase-In rider under each of these different types of charges are discussed separately in this filing.

[4] February 21, 2019 Staff Memorandum Supporting Settlement Stipulation, beginning on page 14.

IV. Projects Recovered within Percent of Bill Tracker

A. Components included in the Percent of Bill Tracker Petition

Otter Tail provides updated costs and revenue requirements for the Projects included in Attachments 4, 5 and 6 that are recovered through the percent of bill rate. Otter Tail also provides its revenue requirement calculation for the material load growth in its Lake Norden Area service territory. The adjustment reflecting the net benefit of new load in the Lake Norden area, including corresponding updates to jurisdictional allocation factors resulting from the increased load to South Dakota, is provided in Attachments 7a, 7b, 7c, and 7d. Otter Tail provides detail on cost implications with the Hoot Lake retirement in Attachment 8 in this Petition.

B. Astoria Station – Attachment 4

Otter Tail has commissioned a 245 MW natural gas-fired simple cycle combustion turbine near Astoria, South Dakota. Otter Tail's Energy Conversion Facility Permit Application for Astoria Station[5] (Permit Application) provides a complete description of the project. All cold commissioning was completed the first quarter 2021 and the first fire of the combustion turbine was achieved on January 24, 2021. Once full load was achieved, testing and tuning continued for emissions; startup and online ramp rates; heat rate; generator capability testing; noise emissions; and cold and hot start parameters. On February 13, 2021, Astoria successfully completed a key commissioning milestone of running at full load for at least one hour to satisfy requirements necessary for the unit to meet MISO capacity accreditation for the 2021/2022 planning year which began June 1, 2021. Formal performance and acceptance testing was conducted in early April 2021 and the Unit was made available for dispatch on April 30, 2021. As is typical with large projects, final closeout activities, punch-list and warranty items, final contractor payments/release of contractual retention dollars are expected to continue into 2022 and through mid-2023. Overall, the project was completed one month before Astoria Station was needed as a generation resource. As shown in Attachment 4, the current estimate at completion is $153.2 million (OTP Total) / $15.6 million (OTP SD) with an accounting in-service date of February 2021.

[5] In the Matter of the Application of Otter Tail Power Company for an Energy Conversion Facility Permit for the Construction of a Combustion Turbine Generator and Associated Infrastructure Including a Natural Gas Pipeline and Electric Transmission line near Astoria, South Dakota in Docket No. EL17-042.

The Astoria Station Project includes transmission network upgrades required to accommodate the interconnection of these facilities into the integrated transmission system. Transmission network upgrades of approximately $8.7 million (OTP Total) were included in the total cost estimate of the project. Per prior FERC Orders,[6,7] Transmission owners may elect to self-fund the transmission network upgrades. The Transmission Owner will pay for and build the necessary transmission network upgrades that are needed by the interconnection customer(s). The interconnection customer(s) will then pay the transmission owner for the cost of the network upgrade through facility service agreement (FSA) revenues over a 20-year term.

In the case of the transmission upgrades necessary to interconnect the Astoria Station Project, Otter Tail is the owner of those transmission facilities. In addition, the Midcontinent Independent System Operator (MISO) determined that the costs of those transmission upgrades benefitted two interconnection customers, and so therefor, the costs are being shared between Astoria Station and the Tatanka Ridge Wind, LLC project. MISO determined Astoria Station is responsible for 65.48 percent of the interconnection costs, while Tatanka Ridge Wind, LLC is responsible for 34.52 percent of the interconnection costs. As Otter Tail owns the transmission facilities and is the owner of Astoria Station, the network upgrades are included as part of the overall capital spend of the project along with the associated FSA revenues received and paid for from Tatanka Ridge Wind, LLC. Attachment 4, Line 24 identifies forecasted Net FSA Revenues for the Astoria Station interconnection of approximately $304,000 (OTP Total) / $30,900 (OTP SD) to be paid to Otter Tail during the September 2022 through August 2023 recovery period. This revenue stream represents the FSA revenues to be received from Tatanka Ridge Wind, LLC to pay for their share of the interconnection upgrades. No revenue stream exists related to Otter Tail's ownership of both Astoria and the Transmission facilities under the FSA.

Otter Tail entered into a Long-Term Service Agreement (LTSA) with Mitsubishi, the combustion turbine supplier. The arrangement of an LTSA is one where the manufacturer maintains a parts pool for its fleet of combustion

[6] See FERC Order dated August 31, 2018 in FERC Docket No. ER18-2513 and FERC Orders on Remand dated August 31, 2018 under FERC Docket Nos. EL15-36, EL15-68, ER16-696, ER18-1964 and EL18-1965. See Remand Order at PP 28-88; see also Ameren Srvs. Co. v. FERC, 880 F.3d 571, 581 (D.C. Cir. 2018). FERC further denied requests for rehearing of the Commission's August 31, 2018 order on remand in a December 20, 2019 order under Docket No. ER18-2513, Midcontinent Independent System Operator, Inc., 164 FERC ¶ 61,158 (2018).
[7] See FERC Order dated December 20, 2019 under FERC Docket No. ER18-2513. (169 FERC ¶ 61,233).

turbines and takes on the risk of the repair and/or replacement of the combustion components. The owner makes prepayments to the manufacturer for the major maintenance based on the hours and/or starts the unit is operated up until the major maintenance is complete. There are many benefits to an LTSA which include: predictable major maintenance costs paid over time; predictable planned outage lengths, long-term parts warranties, coverage for damage caused by failed parts, and remote monitoring of the combustion turbine by the manufacturer. The annual LTSA fee is estimated to be $2.0 million (OTP Total) / $0.20 million (OTP SD) during a typical year Astoria Station is in service. Attachment 4, Line No. 8 includes approximately 80 percent of the LTSA agreement as capital costs, as estimated by Mitsubishi. The remaining 20 percent is included as part of operating costs for Astoria Station on Attachment 4, Line No. 23. The capital portion of the LTSA Prepayments is included in rate base until major maintenance is completed. At that point, the amount of accumulated LTSA Prepayments that have been utilized during major maintenance will be included in Plant Balance and subject to depreciation.

C. Merricourt Project – Attachment 5

Otter Tail completed the construction of the Merricourt Project located near the town of Merricourt, North Dakota, approximately 15 miles south of Edgeley in McIntosh and Dickey Counties. This project consists of 75 V110-2.0 MW Vestas wind turbine generator with an aggregate nameplate capacity of 150 MW. Commissioning of turbines began in October 2020, with some in operation. All 75 units were fully in service by December 19, 2020, with the entire facility deemed commercially operational December 2020. Total project costs incurred through April 2022, is $258.9 million (OTP Total) / $25.9 million (OTP SD) based on jurisdictional allocation factor of 10.00 percent.

At full generation, the Merricourt Project will add approximately 666,000 megawatt hours (MWh) annually, at a projected net capacity rate of 50.7 percent, of zero fuel cost energy to Otter Tail's generation portfolio. Merricourt Project generation will result in a reduction to the cost of energy paid through the Energy Adjustment Rider in tariff rate schedule, Section 13.01. Merricourt Project generation is expected to be fairly level over the life of the project.

As per the Minnesota Depreciation filing, Docket No. 20-703,[8] that was approved in March 2021, Otter Tail has updated the useful life of the Merricourt Facility from 25 years to 35 years. This will keep the project in line with industry standards for this type of facility and benefit customers by amortizing the costs associated with the project over a longer period of time.

In 2021, the Merricourt Project generated about 75% (500,000 MWHs of 660,000 MWHs) of the expected output at full operation. We anticipate about the same output due to delays in the completion of various MISO network upgrades being completed in the region in 2022. The Remedial Action Scheme Otter Tail obtained to ensure available transmission pathways has performed as expected. As with other components of the Rider, Otter Tail will update the actual dispatch as it is available in future updates.

The Merricourt Project included transmission interconnection upgrades required to accommodate the interconnection of these facilities into the integrated transmission system. While the costs of these necessary transmission interconnection upgrades are included as part of the project, ownership of the facilities may be held by other transmission owners. In these cases, the transmission owners may elect to self-fund the transmission interconnection upgrade. This reduces Otter Tail's overall capital investment in the project and increases the project's ongoing facility charge payments, which are reflected as an operations and maintenance expense. In the case of these transmission facilities being owned by Otter Tail, the interconnection investments are included as part of the overall capital spend of the project, as are associated revenues. Attachment 5, Line 27 identifies the annual Net Self-Fund Transmission Payment of the Merricourt Project interconnection of $774 Thousand (OTP Total) / $77 Thousand (OTP SD). This payment stream is related to other transmission owners self-funding approximately $12.5 Million of transmission upgrades needed for its facilities to accommodate the interconnection of the Merricourt Project.

[8] In the Matter of the Filing by Otter Tail Power Company Regarding its 2020 Annual Review of Deprecation. Docket No. E-07/D-20-703. Order approving Petition with Modifications issued on April 21, 2021.

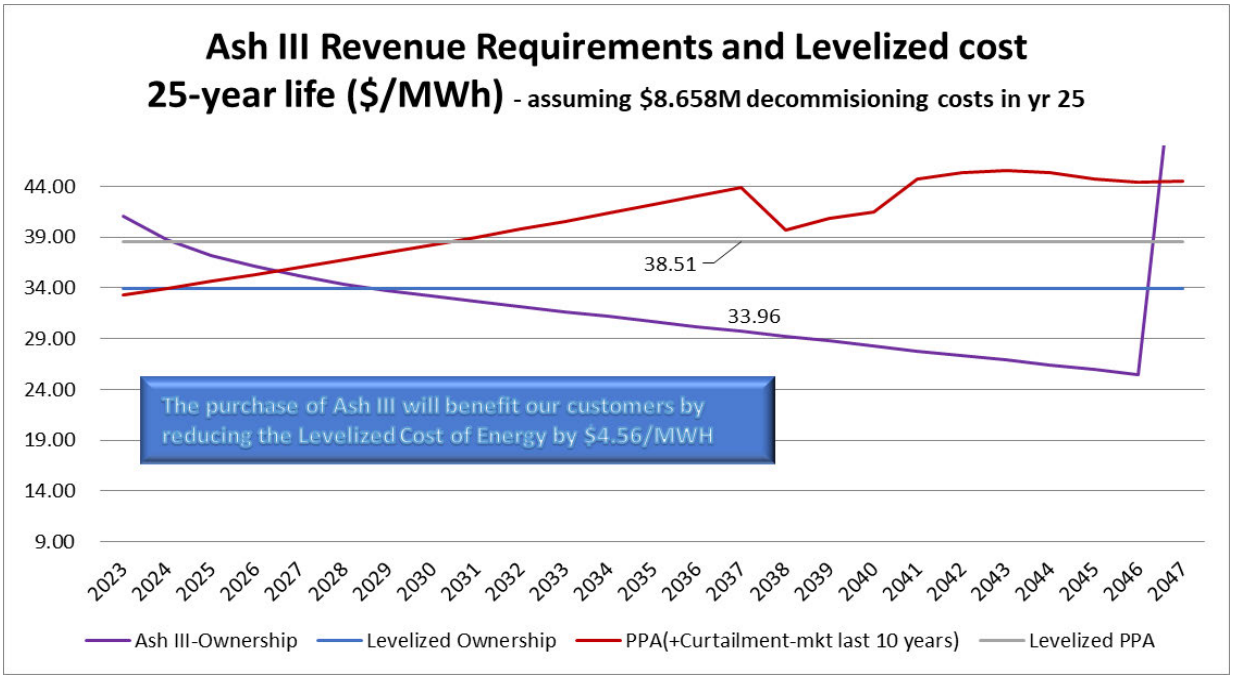
D. New Project - Ashtabula III Wind Farm- Attachment 6

Otter Tail entered into a Purchased Power Agreement (PPA) with Ashtabula III, LLC in 2013 which included an option for Otter Tail to purchase the wind facility assets in 2023. If Otter Tail does not exercise this option, the PPA continues through 2037. Consistent with the option to purchase in the PPA, in July 2021, Otter Tail entered into a Purchase and Sale Agreement (PSA), subject to regulatory approvals, for the purchase of the wind facility assets with an anticipated closing of January 2, 2023. The PSA for Ashtabula III facility assets includes: 39 wind generators with an aggregate nameplate of 62.4 MW that were placed into service in 2010; real estate interests, substation assets, as well as licenses and permits necessary to own and operate the wind facility. On November 12, 2021, Otter Tail petitioned the Minnesota Public Utilities Commission under Minn. Stat. § 216.B50 for approval to purchase the assets of the Ashtabula III wind facility.[9] Otter Tail's petition is pending with the Minnesota Public Utilities Commission.

The requested acquisition is compatible with the public interest because it lowers energy costs to Otter Tail customers over the life of the wind facility. In simple terms, Otter Tail can provide its customers lower energy costs by exercising its purchase option and owning and operating the Purchased Assets than by foregoing its option and remaining in the PPA. Otter Tail's analysis demonstrates that the purchase of the wind facility will benefit Otter Tail customers by reducing energy costs from the wind facility by approximately $4.56 /MWh over the life of the wind facility. The graph in Figure 1 below shows a comparison of continuing with the existing PPA (red line) to the purchase of the wind facility (purple line) on per MWh basis.

[9] *In the Matter of the Petition of Otter Tail Power Company for Approval of a Transfer of Property*, Docket No. E017/PA-21-793.

Figure 1



The existing PPA price in 2023 would be **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** with a 2 percent escalation with an ending price of **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** in 2037, the last year of the PPA. Anticipated PPA curtailment payments add another **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** in 2023 growing to **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** in 2037, based on **[PROTECTED DATA BEGINS… …PROTECTED DATA ENDS]** MWh of curtailed energy per year. After the PPA expires in 2037, the assumed replacement energy cost is based on the market energy forecasted costs (Wood Mackenzie forecast).

The following ownership assumptions are used in calculating the ownership costs on a per MWh basis (purple line in Figure 1)[10]:

1) Project costs of $51.5 million which consists of the purchase price of the assets and the costs associated with the purchase including legal and due diligence related items.

[10] Attachment 6, Ashtabula III Revenue Requirements and Levelized Costs Analysis, contains Otter Tail's detailed analysis of the ownership costs.

2) Net Capacity factor of 40 percent which is based on historical 6-year average production of the facility.
3) Remaining life of 25 years starting in 2023.
4) Decommissioning costs of $8.7 million in 2047 at the end of the useful life.
5) Annual O&M costs in 2023 of $2.5 million, which includes $1.7 million of operating costs/property tax/production tax and $0.8 million routine spend for component failure with escalations through the life of the project.

E. Replacing the Ashtabula III PPA with $0 cost energy in Energy Adjustment Rider will Lower Energy Adjustment Rider Rates

Owning the Ashtabula III wind farm will result in all output of the facility being included in the Energy Adjustment rider at $0/MWh. Otter Tail estimates that the average EAR rate per kWh will drop approximately $.00140/kWh. Otter Tail estimates a customer using 1000 kWhs in a month would see an approximately $1.40/month reduction in their monthly bill.[11]

F. Lake Norden Area Load Growth Credit – Attachments 7a, 7b, 7c and 7d

As contemplated in the Rate Case and in Docket No. EL16-020,[12] Otter Tail anticipates additional revenues associated with load growth in its South Dakota Lake Norden area service territory. The Settlement directed that Otter Tail reflect future benefits associated with the additional post-test year load in the Lake Norden, South Dakota area in the Rider. Otter Tail's Rate Case utilized a 2017 Test Year and included costs and revenues associated with the 2017 Test Year. Otter Tail utilizes the same methodology approved in its 2019 Filing for calculating the Lake Norden Area load growth credit in this annual update. This Rider credit due to Lake Norden Area load growth includes the impact of the new load revenues as well as the impact on costs associated with changes in jurisdictional allocation factors for each recovery period. The impacts of the Lake Norden Area load growth in comparison to the 2017 Test Year are

[11] 2021 System costs of energy were approximately $103 million for 5 million MWhs. Ashtabula III annual generation of **[PROTECTED DATA BEGINS…**

…PROTECTED DATA ENDS] resulting in a reduction to overall cost of energy from $20.60 per MWh down to $19.20 per MWh or a $1.40 per MWh reduction [$0.00140 per kWh * 1,000 kWh usage = $1.40 per month].

[12] In the Matter of the Filing by Otter Tail Power Company Regarding its Proposed South Dakota Energy Efficiency Plan for 2017-2019.

provided in Attachment 7a. The revenue requirement credit to customers due to the Lake Norden Area load growth compared to the 2017 Test Year are spread evenly over the months of each of the respective recovery periods included in the Rider and shown in Attachment 3, Line No. 11.

The jurisdictional allocation factors for the 2017 Test Year were included in Otter Tail's initial filing[13] in the Rate Case. Otter Tail includes Attachment 7b, which provides the 2017 Test Year baseline kWh [Lines 1, 4 and 7] and the Lake Norden Area additional kWh [Lines 2, 5 and 8]. Otter Tail includes Attachment 7c which provides the summary of the D and E allocation factors from the 2017 Test Year jurisdictional cost of service study (JCOSS) [Columns C & D] compared to the inclusion of the Lake Norden Area load growth in the 2017 Test Year allocation factors for the various recovery periods [Columns E:M]. The E jurisdictional allocation factor updates provided in Attachment 7c for the various recovery periods result from the actual and forecasted Lake Norden Area load growth.[14] Otter Tail estimates the D jurisdictional allocation factors for the same recovery periods by applying the 2017 Test Year amount of these factors compared to the E factors. For example, the 2017 Test Year D1 factor as a percent of the 2017 Test Year E1 factor is 14.7 percent. This percent is applied to the MWh in Column F, I, and L, Line No. 1, to arrive at the D1 generation demand factor in Column F, I, and L, Line No. 7. These updates to South Dakota jurisdictional allocation factors result in additional JCOSS allocations to South Dakota which is more than offset by the additional revenues associated with the load growth.

Otter Tail provides Attachment 7d that includes a revenue summary of the Lake Norden Area load growth for the 2017 Test Year revenues compared to the respective recovery periods. The 2017 Test Year baseline sales and sales forecast for the Lake Norden Area are provided in Attachment 7b.

The actual Lake Norden Area load growth change from the 2017 Test Year baseline for September 2020 through August 2021 are provided in Attachment 7a, Columns G & H and result in a $1,902,501 [Column H, Line No. 21] credit to the Rider. This credit is spread evenly by month over the September 2020 through August 2021 time period.

The Lake Norden Area load growth changes from the 2017 Test Year baseline for the September 2021 through August 2022 time period (actuals

[13] Rate Case Initial Filing, Volume 4A, Section 1 2017 Test Year Workpapers, JCOSS, Page 15-1.
[14] The change provided in Columns G, J and M represent the load growth provided in Attachment 7b plus a line loss factor estimate.

through April 2022) are provided in Attachment 7a, Columns I & J and result in a $668,969 [Column J, Line No. 21] credit to the Rider. This credit is spread evenly by month over the September 2021 through August 2022 time period.

The forecasted Lake Norden Area load growth changes from the 2017 Test Year baseline for the September 2022 through August 2023 time period are provided in Attachment 7a, Columns K & L and result in a $439,345 [Column L, Line No. 21] credit to the Rider. This credit is spread evenly by month over the September 2022 through August 2023 time period.

Detailed in Attachment 7a, the Lake Norden Area load growth has resulted in a cumulative revenue requirement credit, including forecast through August 2023, of $4,565,087 [Attachment 7a, Columns D, F, H, J &L, Line No. 21]. Otter Tail will update the actual revenues as they are available in future updates.

[PROTECTED DATA BEGINS…

…PROTECTED DATA ENDS]

G. Description Hoot Lake Plant Adjustment

The Settlement requires Otter Tail to discuss the retirement of Hoot Lake Plant (HLP) and include the net savings associated with Otter Tail's

retirement of this facility (HLP Adjustment) within the Rider. HLP, located in Fergus Falls, Minnesota, was 100 percent owned by Otter Tail.

HLP ceased operations on May 27, 2021. Otter Tail staff remained onsite until August 2021 to commence decommissioning of HLP. Decommissioning activities included de-energizing equipment and systems to place them in a safe state, draining oils, and disposing of consumables no longer needed. Once this phase of decommissioning was complete, a demolition contractor mobilized to site and began abatement of regulated materials, such as asbestos. At the end of January 2022, abatement was mostly complete, and demolition of structure commenced. Completion of demolition and site reclamation is expected by the end of 2022.

Some operational costs will continue to be charged to HLP in 2022 and 2023. For example, the air emission permit fees paid by Otter Tail are paid two years in arrears, so the fees related to 2021 operations are not paid until 2023.

The 2017 Test Year[15] included components of HLP that are representative of the way that the plant operated until it ceased operations in May 2021. Beginning June of 2021, Otter Tail included a credit in the Rider that reflects the HLP Adjustment. Otter Tail provides a summary of the HLP Adjustment as Attachment 8. The HLP Adjustment in this filing compares the blended year 2021 to the 2017 Test Year which resulted in a HLP Adjustment credit for 2021 of $284,106 [Attachment 8, Column C, Line 29]. This adjustment is shown monthly for the months of June 2021 through December 2021 in Attachment 3, Line 12. Otter Tail also includes the 2022 annual forecasted credit totaling $685,072, as shown in Attachment 8, Column D, Line 29, and a 2023 forecasted credit totaling $790,147, as shown in Attachment 8, Column E, Line 29. These forecasted credits are shown monthly in Attachment 3, Line 12. Otter Tail will update forecasts and actuals in its next annual update for the Rider.

H. Phase-In Percent of Bill revenue requirements calculations

Attachments 1 - 3 are, respectively, the Revenue Requirements Summary, Rate Design, and Tracker Summary calculations used for Otter Tail's Percent of Bill Phase-In Plan rate submittal. Attachments 4, 5, and 6 provide the revenue requirement calculations for the Projects for which Otter Tail

[15] The 2017 Test Year includes the Ash Storage expenses which increased the revenue requirement by $34,211 from prior year approved filings. Ash Storage expense is also included in the 2021 actuals, 2022 and 2023 forecasted expenses. In prior filings Ash Storage expense was not included in either the test year or forecasts and is now included to provide all actual Hoot Lake expenses.

requests Phase-In Plan percent of bill recovery. Attachments 7a through 7c provide the adjustment reflecting the net benefit of new load in the Lake Norden area, including corresponding updates to jurisdictional allocation factors resulting from the increased load to South Dakota. Further information on these components is included above in Section IV.

Specifically, the calculations of the revenue requirement in this Petition include the following:

- *Rate base section.* This section provides details on the amount of plant in service, accumulated depreciation (if applicable), construction work in progress (CWIP), accumulated deferred taxes including the effect of proration on Federal amounts, accumulated deferred and utilized LTSA, and a 13-month average rate base calculation.
- *Construction Work in Progress* (CWIP). SDCL §49-34A-25.2 allows a current return on CWIP.
- *Expense section.* The expenses applicable to a project are listed here and include operating costs, property taxes, depreciation, and income taxes.
- *Revenue requirements section.* This section shows the components of the revenue requirements, including expenses and return on rate base.
- *Return on investment (cost of capital).* The return on investment utilizes the return on equity approved in Otter Tail's Rate Case. As described on page 15 in the Settlement for the Rate Case:
  While the projects are under construction, the rate of return will include the weighted average cost of debt calculated at year-end levels, including short-term debt costs, and the equity ratio calculated at year-end levels. Once the projects are in-service the weighted average cost of long-term debt calculated at year-end levels will be used.
- *Depreciation expense.* Depreciation expense is calculated using the Company's current depreciation rates.
- *Property taxes.* The property tax calculation is based on Otter Tail's composite tax rate for the jurisdiction in which the facilities are located and is calculated in accordance with the procedures specified

by that state. Based on agreements with the state of South Dakota, the year after Astoria Station is in-service, the total property tax expense will be subject to a ramp-up period where the total property tax will be multiplied by 0 percent the first year, 20 percent the second year, 40 percent the third year, 60 percent the fourth year, and 80 percent the fifth year, and 100 percent the sixth year and years forward. With Astoria Station going into service in 2021, the 0 percent treatment begins with property tax expense in 2022 (based on 2021 year-end values). The composite rate calculation applies to Merricourt while the funds are in FERC account 1070, construction work in progress. After Merricourt is placed into service, it will be subject to taxes consisting of the following two components:

1. A tax of two dollars and fifty cents per kilowatt times the rated capacity of the wind generator.
2. A tax of one-half of one mill per kilowatt-hour of electricity generated by the wind generator during the taxable period.

- *Operation and maintenance Expense.* Once the Astoria Station, Merricourt, and Ashtabula III projects are in-service, Otter Tail will track operation and maintenance costs specifically related to these projects in Attachments 4, 5, and 6. Annual O&M expenses for these generation facilities include operating costs, ground lease payments, property taxes and depreciation.
- *Proration of Federal Accumulated Deferred Income Taxes (ADIT).* Otter Tail provides Attachment 9 to this filing to show the Federal ADIT proration calculation impact on the revenue requirement for the recovery period. Otter Tail provides Attachment 10 calculating the Accumulated Deferred Income Tax (ADIT) balances to preserve the effect of the application of the proration methodology for the true-up period. The methodology used for proration of Federal ADIT will be consistent with the United States Internal Revenue Service (IRS) rules related to proration, including recently issued IRS private letter rulings and Otter Tail's most recent Transmission Cost Recovery Rider (Case No. EL20-032) update. This calculation methodology is necessary in order to comply with Section

1.167(l)-l(h)(6)(ii) of the IRS regulations and to avoid a tax normalization violation.[16]

- *Federal Production Tax Credit (PTC).* Merricourt became eligible for PTCs when it was placed in service. The rate is $25.00 per megawatt hour for the period starting September 2020 through December 2021. Effective January 1, 2022 the rate was increased to $26.00 per megawatt hour. As approved in the 2019 Filing, Otter Tail includes the PTCs as a credit to tax expense [Attachment 5, Line No. 42] at the time they are generated. Otter Tail Corporation procured approximately $5.1 million of Otter Tail's Merricourt PTCs in early 2022 which will be utilized on the 2021 tax return. This procurement reduces the deferred tax PTC balance and associated 2022-2023 Phase-In revenue requirement by approximately $47,000.
- *Baseline Year*. The Rate Case included a 2017 Test Year upon which base rates were set. Otter Tail utilizes the Commission approved 2017 Test Year as the baseline year. Attachments 7a through 7c reflect updates to the 2017 Test Year resulting from load growth in the Lake Norden Area.
- *Jurisdictional Allocation Factors*. Jurisdictional allocators are used to allocate system cost among jurisdictions. The Commission approved Otter Tail's South Dakota jurisdictional allocations for the 2017 Test Year in the Rate Case.

I. Percent of Bill Rate Design

The Commission approved the percent-of-bill method for the Rider in Docket No. EL19-025. Under this method, the rate is calculated by dividing the total Percent of Bill revenue requirement for September 2022 through August 2023 by the total base rate revenue for this recovery period. For this filing, this method results in a percent of base revenue charge of 10.181 percent. The rate design is shown on Attachment 2.

[16] *See* Treas. Reg. SS 1.167(l)-1(h)(6)(ii).

V. NEW ADVANCED GRID INFRASTRUCTURE (AGI) PROJECTS PROPOSED TO BE RECOVERED THROUGH PER METER TRACKER

Otter Tail has spent the past several years evaluating and planning its approach to grid modernization as part of the Company's Innovation 2030 (I2030) initiative. I2030 has three main objectives: (1) improve reliability and safety of the Otter Tail system, (2) improve customer engagement, and (3) improve business processes. Each of the projects and programs within the initiative contribute to at least one of the initiative's objectives.

Projects included in the overall I2030 initiative include: (1) Advanced Metering Infrastructure (AMI); (2) Demand Response (DR) System replacement (3) Telecommunications Infrastructure; (4) Outage Management System (OMS) with required Geographic Information System (GIS) enhancements; (5) Transmission and Distribution replacement programs; and (6) a Work Asset Management System (WAMS). The AMI and Telecommunications projects have the largest scope, and implementation of them will occur over multiple years. Of the projects listed above, Otter Tail proposes including in this annual update, recovery of three projects from the overall I2030 initiative:

1. AMI
2. OMS Project
3. DR System

These projects will allow Otter Tail to meet all three of the I2030 objectives mentioned above, while continuing to provide low cost, reliable service.

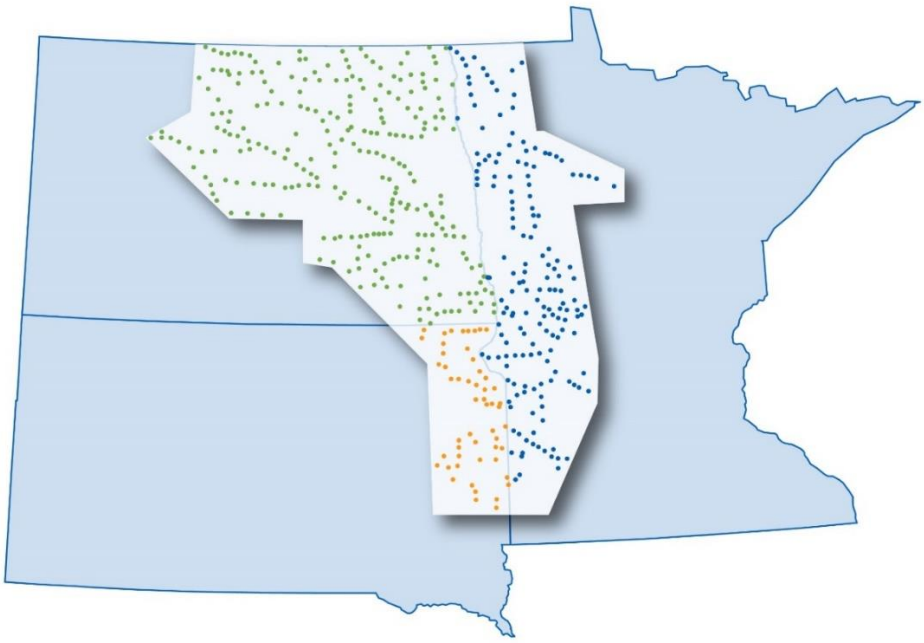
A. Advanced Metering Infrastructure

AMI is a foundational part of the I2030 initiative and will involve the deployment of the following infrastructure: (1) approximately 170,000 AMI meters, of which approximately 15,000 will be located in South Dakota; (2) local data collectors in a Field Area Network (FAN) that will collect and transmit meter data back to Otter Tail; and (3) a head-end system and Meter Data Management System (MDM) where data will be routed and stored, as needed, to facilitate automated meter reading, DR, and automated distribution control in the Company's provision of electric service.

Otter Tail provides retail electric service to approximately 133,000 customers, including approximately 62,000 customers in Minnesota, 59,000 customers in North Dakota, and 12,000 customers in South Dakota. Currently,

about 99 percent of Otter Tail's customer meters are a combination of electromechanical and digital meters that are manually read each month.[17] This means that Otter Tail employees or a contracted meter reading service provider must physically visit almost all of our customers' premises to read their meters, which is a significant expense given Otter Tail's rural 70,000 square-mile service territory. Full implementation of AMI will enable two-way communication between the Company and the meters, allowing Otter Tail to read meters, turn service on and off, and check meter status remotely. This will reduce costs and safety risks by reducing driving miles and the need to be physically on customer property for these utility functions. Figure 2 provides an overview of the communities Otter Tail serves.

Figure 2
Overview of the Communities Served by Otter Tail



AMI meters, and their associated communications infrastructure and software, have significant benefits over Otter Tail's existing equipment and processes. By deploying AMI meters along with the associated communications network and enabling software, not only will Otter Tail enhance its visibility into its distribution network and increase safety and reliability, but Otter Tail

[17] The Company has a small number of AMI meters that are used for interruption monitoring purposes, and a small number of automatic meter reading (AMR) meters in use for some larger customers and substations.

will also realize significant operations and maintenance (O&M) savings. AMI voltage readings will be a foundation for potential future grid modernization functions such as Voltage and Reactive Power (Volt/Var) optimization, or automated system restoration which would rely on a communication network.

AMI will allow for improved outage communications with customers as well as give customers access to usage information online, whether it is via a future Otter Tail platform or third-party applications enabled by AMI. Additionally, AMI investments will benefit customers by enabling the Company to create new rate offerings and support customer located generation. AMI will also make numerous conservation and clean energy resource programs possible, including time-differentiated rates that can encourage efficient use of resources and incorporation of energy conserving consumer technologies.

The implementation schedule for AMI is discussed in section F below.

B. Outage Management System (OMS)

Otter Tail's planned OMS offers many operational and customer benefits related to outage response as well as a foundation that will be beneficial in future grid modernization plans. An OMS will allow Otter Tail to identify outages more rapidly and deploy crews more efficiently to reduce the number and length of outages, and it will allow Otter Tail to better communicate with customers during outage events, such as notifying them of the estimated time of restoration, etc. The following benefits will be realized as a result of the completion of the OMS project:

1) **Outage Restoration & Reliability:** The connectivity model will allow Otter Tail to understand outage extents and respond to interruptions quicker when they do occur on the system. The most critical aspect for a well-functioning OMS is the electrical network model. Without a solid representation of the system within the model, the OMS prediction algorithms do not work properly. In addition to quicker restoration and improved reliability during outages, the OMS will house much more granular information related to system outages than Otter Tail is able to track today. This information will be used by Otter Tail engineers to plan and design reliability improvements.
2) **Customer Engagement and Communication:** An OMS will allow Otter Tail to provide more information to customers during outages.

a) **Outage Notifications:** With the OMS, Otter Tail will receive information regarding the extent of predicted outages on the electrical network based on reported outages by customers and will be able to initiate communication to individual customers who are experiencing outages. This prediction will be further enhanced when AMI in installed and the meters report outages before any customers report their outage. Otter Tail is currently not able to provide this to customers today outside of mass communications on social media.

b) **Planned Outage Notifications:** With the OMS, planned outages are scheduled, which allows Otter Tail to communicate ahead of an outage with customers who will be impacted. This is not currently possible outside of mass communications on social media with tools Otter Tail has today.

c) **Estimated Time of Restoration:** The OMS will calculate the estimated time of restoration (ETR) for each outage event. This ETR can also be updated by OMS operators or field employees. The initial ETR and any subsequent ETR updates can be communicated to customers in real time to keep them informed about their outage. In addition to ETRs, the OMS will allow other status updates to be shared with the customer, such as crew dispatched, crew onsite, and outage restored. Otter Tail is unable to provide this to customers today.

d) **Outage Reporting:** Customers will be able to report their outage through an Interactive Voice Response system, online, or via text. Today, customers can only report an outage by calling into Otter Tail. This multi-channel aspect for reporting outages will drastically improve the speed of reporting an outage as well as the ease of use for customers.

e) **Outage Viewing:** Today's outage map published on Otter Tail's website is only for feeder level outages due to the lack of an OMS. Once Otter Tail has deployed an OMS, all outage activity, regardless of size, will be published on the public outage map. Today's reporting level has led to frustration and confusion with customers.

3) **Safety:** The connectivity model will be updated in real time by both field employees and OMS operators. This is a key safety improvement to ensure all stakeholders responding to an outage understand the current state of the electrical system.

4) **AMI/Meter Data Management (MDM) Tools:** In scope for the AMI project is a consumption of the connectivity model. The following are related benefits:
   a) **Facility Loading Report**: This will allow facility loading reports on assets, such as transformers, feeders, or sub-feeders. For a loading report to work, it must understand the electrical equipment hierarchy that comes from the connectivity model.
   b) **Reliability Planning**: One of the MDM tools in scope for the AMI project is a Reliability Planner. This tool takes outage information from OMS and pairs it with the connectivity model to estimate reliability improvements from standard mitigation measures such as vegetation management, lateral tap fusing, etc.
5) **Future Smart Grid Applications:** Though implementation of the following applications is not planned in the near-term at Otter Tail, the connectivity model is foundational to tools such as Fault Location, Isolation, and Service Restoration technology, Volt/VAR automation, Conservation Voltage Reduction, as well as more granular DR control algorithms.
6) **Outage Metrics:** The connectivity model paired with the OMS will allow Otter Tail to report industry reliability metrics such as the System Average Interruption Duration Index, System Average Interruption Frequency Index, Customer Average Interruption Duration Index, etc. It should be noted that metrics from the OMS will be more granular than Otter Tail is able to report with the current Interruption Monitoring System. This will lead to changes in metrics in the future.
7) **System Studies:** Today, when an Otter Tail engineer requests a system study of a portion of the distribution system, assumptions are made related to attribution and connectivity. When the OMS project is complete, these studies will be more accurate and the time to create the models for these studies will be greatly reduced.

Throughout the OMS project, Otter Tail has interviewed neighboring peers and others within the industry. From these interviews and research, Otter Tail has determined it is unique in the sense of operating without an OMS today. Nearly all utilities, from large Investor-Owned Utilities to small co-ops and municipalities, utilize an OMS to improve service to customers. While Otter Tail has provided excellent service to customers without an OMS, this

project will address shortcomings identified through customer satisfaction surveys including requests for improved outage transparency and communication.

As part of the OMS project, Otter Tail will develop the electrical connectivity model from meter to substation and specific attribution data of Otter Tail's GIS features. The data collection effort will ensure the Company has accurate and complete data and can track how each customer on the delivery system is connected from the meter to a delivery transformer, to a feeder, and finally to a distribution substation. This updated data will facilitate better outage response when outage information is sent to the OMS. The GIS work is being performed by a third-party vendor that has extensive experience updating GIS models in preparation for grid modernization tools. In addition, the attribution data will be leveraged by Otter Tail engineers to refine various asset health programs, such as underground cable replacement and overhead line replacement projects. The connectivity model will also be utilized by the MDM for operational and planning tools and will be available for future tools, such as Volt/Var optimization, DR controls, and automated system reconfiguration. As such, the GIS effort is foundational to the I2030 initiative.

Lastly, the implementation of AMI will enhance the speed in which the OMS receives outage information and therefore improve restoration times even further. The individual meters will provide power-off and power-on notifications to be utilized by the OMS.

A pilot for the GIS update portion of the project began in August 2021. The work done by the contractor for the pilot was approved and work on the full system began in October 2021. The GIS updates are projected to be completed by the end of 2022. The vendor contract for the OMS project was signed in April 2022 with Milsoft, and project completion is estimated by early 2023.

C. Demand Response System

Otter Tail's DR programs are core Company service offerings utilized by nearly one-third of Otter Tail customers, making Otter Tail's DR portfolio one of the largest in the country by customer adoption. This strong customer participation allows Otter Tail to control between 10-15 percent of total winter peak load, reducing overall system capacity needs, and materially lowering costs for customers. These programs reduce individual customer energy costs and allow Otter Tail to lower overall system energy and fuel costs for all

customers and create efficiencies to the grid and generators. Other benefits for customers may include, avoided generation capacity, avoided energy and transmission, frequency regulation, and emergency system protection.

The Company's DR program consists of three systems: a communications network, load control switches, and a software platform to interface with customers' devices and to reduce load during system events for customers participating in DR programs. This allows Otter Tail, and customers, to save costs by shifting and reducing load during periods of high market prices or to support system reliability.

However, much of the Company's existing DR infrastructure is either approaching end of life or already functionally obsolete, threatening the Company's ability to continue to offer DR options in the future. Otter Tail procured its current DR software in 2003 and now, nearly 20 years later, the system is running unsupported by the vendor. Necessary components of Otter Tail's current DR system, such as communications equipment and load control switches, are either limited in availability or no longer sold or supported. As of January 1, 2022, the software system is no longer supported by its vendor in any functionality. As a result, the DR system is rapidly becoming obsolete, which limits Otter Tail's ability to grow and enhance its DR offerings.

A two-way communications network will be utilized to support the continued long-term functionality of the Company's DR programs and enable their improvement and expansion. Further, because Otter Tail receives capacity accreditation for the amount of DR based interruptible load on its system, the future expansion and modernization of the Company's DR System is expected to generate additional benefits by potentially delaying the need for new resources.

Replacement of the DR System is currently in the RFP phase. Installation is expected to begin in 2024 with full implementation being completed in 2027.

D. Otter Tail's Evaluation Process

For several years, Otter Tail has monitored and evaluated the evolution of Automatic Meter Reading (AMR) and AMI technology. AMR meters provide one-way communication from the meter to the utility, either via a handheld meter reading device or through radio frequency communications, powerline communication systems, or cellular communications networks. Otter Tail did not invest in AMR when that technology was introduced in the 1990s because

the business case (cost benefit analysis) for doing so was not yet strong enough to justify it. However, in recent years, customers' expectations have changed and the technology advantages of AMI systems, along with the need to address our aging DR system, have increased, and it now makes sense to deploy AMI meters system wide. According to the Energy Information Administration (EIA) advanced metering data report from 2017,[18] almost 94 percent of the meters in South Dakota were AMR or AMI meters as of January 2017. Otter Tail believes the time is right to meet the new industry standard.

During the evaluation phase for AMI over the past few years, the Otter Tail team evaluated AMI functions and requirements, use case development, business case development, and considered procurement options. Otter Tail hired a consultant in early 2018 for guidance in completing a benefit analysis, completing vendor discovery, developing requests for proposals, and negotiating contracts. An additional consultant was hired in late 2019 to update current business practices with proposed business practices.

The findings from discussions with external resources and other utilities stressed the importance of integrating the AMI system with plans for improvements to our DR system and implementation of an OMS.

There are many key project features included for customers. With AMI, Otter Tail will automatically be informed when power is out at customer locations, allowing the Company to be more efficient in addressing outage issues. Customers will have information available to help them conserve energy, and they will be able to monitor the benefits of their efforts on the Otter Tail website. Otter Tail will be able to offer more flexible pricing, which will give customers options for reducing bills if customers choose to use more electricity during off-peak hours. With this type of rate structure, prices will be higher during times of high system demand. In addition, Otter Tail will use both AMI and OMS to focus maintenance efforts to the areas of highest significance.

AMI enables a holistic system for OMS, future grid modernization, and DR projects. Otter Tail has contracted with Landis + Gyr (L+G) to purchase the most advanced AMI meters available today. With an estimated useful life of 20 years, the meters will enable Otter Tail to continue to implement other useful and more efficient advanced technologies. Otter Tail expects to use the data from the AMI system to assess loading on specific assets, such as transformers and electric lines, and to use this information to help avoid overloading

[18] U.S. Energy Information Administration, Form EIA-861M, Advanced Metering Data (2017), available at Form EIA-861M (formerly EIA-826) detailed data.

conditions. This data may also help the Company find ways to change usage patterns that may enable it to keep low rates.

E. Business Case

1. Advanced Metering Infrastructure

As mentioned earlier, in January 2017 almost 94 percent of the meters in South Dakota were AMR or AMI meters. Otter Tail is clearly lagging behind its neighboring utilities in adopting and implementing advanced metering technology.

The Edison Foundation website contains an infographic of "Smart Meters at a Glance",[19] which provides data estimating that electric companies had installed more than 107 million AMI meters by the end of 2020, covering 75 percent of U.S. households. The publication projected that by the end of 2021, approximately 115 million AMI meters would be deployed nationwide. Although AMR and AMI systems have been available for many years, state-of-the-art AMI meters introduced in recent years provide a step-change in capability over prior models.

The Company expects the capital cost of the AMI project to be $56.1 million on a company-wide basis. Otter Tail staff worked with outside consultants who have prior experience with AMI implementation to develop this cost estimate based on industry standards and known pricing of AMI infrastructure. The Company has validated these estimates using the information received in the responses to its RFP process. Figure 3 provides a breakdown of the estimated capital costs of the AMI project.

Figure 3: Estimated Capital Costs of AMI Project (in millions)
OTP Total

	A		B
1	AMI Meters	$	46.7
2	Field Area Network (FAN)	$	2.5
3	Software	$	6.9
4	Project Total	$	56.1

[19] IEI_Smart_Meter_Report_April_2021.ashx (edisonfoundation.net).

Consistent with past practice for meter-related expenses, the Company plans to allocate system wide costs of the AMI Project to the South Dakota jurisdiction.

Significant cost savings are expected as a result of the AMI implementation. These savings largely result from Otter Tail no longer having to manually read meters across its large and sparsely populated service area in Minnesota, North Dakota, and South Dakota[20]. Savings also include the associated costs for field and office work and lower meter reading system and equipment costs. In addition, Otter Tail will realize savings on meter replacement costs that would normally have occurred for older meters still in use.

While there are O&M costs associated with AMI meters and other components of the AMI Project, those costs are less than the Company's current O&M costs with existing meters due to the reduction in meter reading costs and other meter associated expenses. Measured incremental savings realized from AMI through initial deployment and use of AMI while AMI recovery is part of the Phase In rider will be included in the Phase In rider tracker and will lower the amount to be collected from customers. These measured savings will include such things as avoided contracted meter reading costs and avoided maintenance expenses attributable to hand-held meter reading devices net of new AMI O&M costs incurred that are attributable to the new AMI system. When AMI recovery becomes part of base rates, long term savings realized by impacts to internal labor through employee reductions from attrition will be captured in rates set in each future rate case. As described below, *Otter Tail expects to incur overall net new expenses between now and 2027, with overall net savings beginning in 2027.*

Figure 4 below shows the net expenses projected through 2045 for the AMI project. The Company estimates that implementation of AMI will result in average annual O&M savings of approximately $6.61 million (OTP Total) / $0.61 million (OTP SD) from the beginning of initial deployment in 2022 through 2045 as shown in Figure 4, Columns E and F, Line No. 14.

"Other Expenses" on lines 3, 7, 11 and 15 in Figure 4 include the following annual expenses: O&M, depreciation, property tax, and income tax. The net expense savings (O&M Cost/(Benefit) less Other Expenses) are

[20] Otter Tail intends to manage the impact to its workforce of this automation through attrition and reassignment of personnel.

estimated to begin in 2025 when they will be ($0.030)[21] million (OTP Total) / ($0.002) million (OTP SD) and will then increase annually thereafter as Otter Tail avoids the projected inflation in O&M costs for the manually read meters as shown in Figure 4, Column E, Line No. 4.

Figure 4
AMI Project Estimate of Annual Expenses (in millions)

Line	A	B	C	D	E	F	G	H	I
1	**AMI Project (OTP Total)**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
2	O&M Cost/(Benefit)	$ 0 35	$ 0 32	$ (3 38)	$ (5 40)	$ (5 45)	$ (5 74)	$ (5 92)	$ (5 98)
3	Other Expenses	$ 0 09	$ 2 37	$ 4 78	$ 5 37	$ 5 32	$ 5 26	$ 3 97	$ 3 31
4	**Net Expenses**	$ 0 44	$ 2 69	$ 1 39	$ (0 03)	$ (0 13)	$ (0 48)	$ (1 95)	$ (2 67)
5	**AMI Project (OTP Total)**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
6	O&M Cost/(Benefit)	$ (6 30)	$ (6 49)	$ (6 56)	$ (6 90)	$ (7 12)	$ (7 20)	$ (7 57)	$ (7 80)
7	Other Expenses	$ 3 28	$ 3 25	$ 3 22	$ 3 19	$ 3 16	$ 3 13	$ 3 10	$ 3 07
8	**Net Expenses**	$ (3 02)	$ (3 24)	$ (3 34)	$ (3 71)	$ (3 96)	$ (4 07)	$ (4 46)	$ (4 73)
9	**AMI Project (OTP Total)**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**
10	O&M Cost/(Benefit)	$ (7 89)	$ (8 29)	$ (8 55)	$ (8 65)	$ (9 09)	$ (9 37)	$ (9 66)	$ (9 95)
11	Other Expenses	$ 3 04	$ 3 02	$ 2 99	$ 2 96	$ 2 93	$ 2 78	$ 1 47	$ 0 79
12	**Net Expenses**	$ (4 85)	$ (5 28)	$ (5 56)	$ (5 69)	$ (6 16)	$ (6 59)	$ (8 19)	$ (9 16)

					Time Period Annual Average	
13	**AMI Project (OTP Total)**	**Total 2022-2045 (OTP Total)**	**Total 2022-2045 (OTP SD)***		**2022-2045 (OTP Total)**	**2022-2045 (OTP SD)***
14	O&M Cost/(Benefit)	$ (158 60)	$ (14 53)		$ (6 61)	$ (0 61)
15	Other Expenses	$ 75 84	$ 6 95		$ 3 16	$ 0 29
16	**Net Expenses**	$ (82 75)	$ (7 58)		$ (3 45)	$ (0 32)

*Based on OTP's C6 jurisdictional allocation of 9 1624 percent as approved in Docket No EL18-021

Figure 5 below presents the revenue requirement impacts of the scenario in which the AMI Project is implemented. It shows total revenue requirement savings of approximately $46.75 million (OTP Total) / $4.28 million (OTP SD) over the 20-year life of the meters, using South Dakota's 9.1624 percent C6 allocation factor approved by the Commission in Otter Tail's last general rate case.[22]

[21] Figure 4, Column E, Line No. 4.
[22] Docket No. EL-18-021.

Figure 5
AMI Project Estimate of Annual Revenue Requirements (in millions)
OTP Total

Line	A	B	C	D	E	F	G	H	I
1	**AMI Project (OTP Total)**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
2	Return on Rate Base	$ 0 36	$ 2 14	$ 3 31	$ 3 33	$ 3 04	$ 2 76	$ 2 52	$ 2 34
3	Net Expenses (Savings)	$ 0 44	$ 2 69	$ 1 39	$ (0 03)	$ (0 13)	$ (0 48)	$ (1 95)	$ (2 67)
4	**Annual Revenue Requirement**	$ 0 80	$ 4 83	$ 4 70	$ 3 31	$ 2 91	$ 2 28	$ 0 57	$ (0 33)
5	**AMI Project (OTP Total)**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
6	Return on Rate Base	$ 2 18	$ 2 02	$ 1 86	$ 1 71	$ 1 55	$ 1 39	$ 1 23	$ 1 07
7	Net Expenses (Savings)	$ (3 02)	$ (3 24)	$ (3 34)	$ (3 71)	$ (3 96)	$ (4 07)	$ (4 46)	$ (4 73)
8	**Annual Revenue Requirement**	$ (0 84)	$ (1 22)	$ (1 48)	$ (2 01)	$ (2 41)	$ (2 68)	$ (3 23)	$ (3 65)
9	**AMI Project (OTP Total)**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**
10	Return on Rate Base	$ 0 92	$ 0 76	$ 0 60	$ 0 44	$ 0 28	$ 0 14	$ 0 04	$ 0 01
11	Net Expenses (Savings)	$ (4 85)	$ (5 28)	$ (5 56)	$ (5 69)	$ (6 16)	$ (6 59)	$ (8 19)	$ (9 16)
12	**Annual Revenue Requirement**	$ (3 93)	$ (4 52)	$ (4 96)	$ (5 25)	$ (5 87)	$ (6 45)	$ (8 15)	$ (9 15)

13	**AMI Project (OTP Total)**	**Total 2022-2045 (OTP Total)**	**Total 2022-2045 (OTP SD)***
14	Return on Rate Base	$ 36 01	$ 3 30
15	Net Expenses (Savings)	$ (82 75)	$ (7 58)
16	**Annual Revenue Requirement**	$ (46 75)	$ (4 28)

*Based on OTP's C6 jurisdictional allocation of 9 1624 percent as approved in Docket No EL18-021

The estimated projected cost/(benefit) per meter is shown on lines 5 and 10 in Figure 6 below. Early years of project implementation include higher depreciation expense due to the five-year depreciation schedule for software. The Field Area Network collectors and routers will be depreciated over 15 years, and the meters will be depreciated over 20 years. The Otter Tail employee reductions achieved as part of AMI implementation are largely due to automation, which will almost completely eliminate the need for employees to physically read customer meters. This reduction is expected to be accomplished through attrition, and Otter Tail anticipates the total reduction between now and 2032. Pro-rated meter reading costs are also still included in the implementation years until full implementation has occurred and Otter Tail can discontinue the manual activities that drive these costs. The full credit to expenses will not happen immediately but will be reflected in the tracker and on customer bills as the savings are realized by Otter Tail.

Figure 6
AMI Project Annual Revenue Requirement - Monthly Cost/(Benefit) Per Meter

Line	AMI Project (OTP Total)	2022	2023	2024	2025	2026	2027
1							
2	Return on Rate Base	$ 426,711	$ 1,941,646	$ 3,289,901	$ 3,332,196	$ 3,039,985	$ 2,760,086
3	Expenses (Savings)	$ 440,525	$ 2,687,534	$ 1,390,574	$ (26,264)	$ (131,873)	$ (477,466)
4	**Annual Revenue Requirement**	$ 867,236	$ 4,629,180	$ 4,680,475	$ 3,305,933	$ 2,908,113	$ 2,282,619
5	Monthly Cost / (Benefit) Per Meter	0.42	2.25	2.27	1.61	1.41	1.11

6	AMI Project (OTP Total)	2028	2029	2030	2031	2032	2022-2032
7	Return on Rate Base	$ 2,522,493	$ 2,341,345	$ 2,181,068	$ 2,022,510	$ 1,864,425	$ 25,722,368
8	Expenses (Savings)	$ (1,954,542)	$ (2,674,797)	$ (3,018,380)	$ (3,243,615)	$ (3,343,328)	$ (10,351,633)
9	**Annual Revenue Requirement**	$ 567,951	$ (333,452)	$ (837,311)	$ (1,221,105)	$ (1,478,903)	$ 15,370,735
10	Monthly Cost / (Benefit) Per Meter	0.28	(0.16)	(0.41)	(0.59)	(0.72)	

Along with the estimated cost savings in Figure 6, AMI implementation brings the benefit of increased safety of Company employees by vastly reducing the in-person visits to customer locations. This will reduce the possibilities for slips, trips, falls, and even dog bites while on customer property. Additionally, AMI will eliminate the need for Company employees to enter customer buildings and structures on a monthly basis to read meters that are located inside.

AMI enhances reliability by providing the utility with improved system awareness and planning insight, as well as providing the network communication system that could allow the Company to eventually automate the distribution system at the substation and circuit level using smart devices. This will allow Otter Tail to identify and respond to outages more quickly, thereby improving overall reliability. Additionally, the near real-time data provided by the AMI system will allow the Company to predict and plan for potential loading-related outages and will enable the reduction in response times for outages that do occur on the system. The AMI system will improve reliability and safety by providing better and more reliable alarms for tampering and overheating of Company equipment.

Other devices, when added to the Company's distribution system, can also benefit from the deployment of the FAN, including fault indicators, switch controls, and regulator controls with the ability to enable programs such as Conservation Voltage Reduction, where the Company can use AMI voltage data to automatically adjust the voltage in a distribution system and potentially optimize the voltage and reduce customers' energy consumption.

2. Outage Management Project

Otter Tail is also deploying an OMS, which will allow the Company to identify outages more accurately and rapidly and deploy crews more efficiently to reduce the duration of outages. This in turn will improve reliability metrics of Customer Average Interruption Duration Index (CAIDI) and System Average Interruption Duration Index (SAIDI). Otter Tail's processes for responding to outages on the system have served customers well but are out of date. An OMS will greatly improve the organization of disparate data that exists during outages within today's processes, which will allow restorations to occur more quickly. The OMS will also greatly improve how the Company can communicate outage information with customers to keep them appraised of restoration efforts.

Currently, a customer will call to report an outage and must speak to a live call agent. The call agent or on-call management then must compile data from calls, field devices, and employees and dispatch a field crew to respond to the information. With an OMS, all outage related data will funnel into the system, including field updates, and automated outage call information received from customers through an outage Interactive Voice Response (IVR) system. This will allow better management of the outage response as well as provide much desired information to customers. This desire for outage and restoration information has been reflected in the Company's past few customer satisfaction surveys.

As briefly mentioned, the GIS data collection effort improvements, as well as outage information recorded and organized in the OMS, will allow Company asset planners to develop more refined asset health programs, which will further improve reliability of the Transmission and Distribution systems.

The OMS project cost is estimated at approximately **[PROTECTED DATA BEGINS…**

…PROTECTED DATA ENDS] These costs reflect the GIS enhancements and the OMS implementation with the outage IVR. Otter Tail proposes to begin recovery on the OMS project as costs are incurred, but not earlier than September 2022.

3. Demand Response System

Through strong customer engagement, Otter Tail has built a robust DR portfolio over many decades. Otter Tail customers have invested in heating, water heating, and cooling technologies that provide the Company with substantial DR capabilities. The Company offers several rates in each jurisdiction that incorporate DR, providing flexibility and savings for residential, commercial, and industrial customers.

Otter Tail's DR program also provides the Company with the ability to economically assess the cost of serving load in organized electricity markets. The Company can choose to either buy the energy at market cost or interrupt customers during periods of higher prices. In general, the Company's DR system shifts or reduces load when called upon by activating load control switches located at customer homes, businesses, or on their appliances, such as air conditioners. The ability to reduce load in this way allows the Company to realize economic efficiencies for customers by offering them a lower rate in return for the ability to reduce their load during certain times. Customers are also able to reduce their bills by taking advantage of time of use (TOU) rates which match customer electric use with the pricing of electricity at particular times of day, thereby encouraging customers to shift electric use to times when it is cheaper to provide.

The ability to reduce load also provides reliability benefits for the grid by providing an additional tool to address high-demand situations, which in turn can generate capacity benefits for the Company and customers. The amount of DR based interruptible load on the Company's system, can be used to fulfill a portion of the Company's annual capacity requirement set by the Midcontinent Independent System Operator (MISO) under Module E of the MISO Open Access Transmission, Energy, and Operating Reserve Markets Tariff. Maintaining and expanding Otter Tail's DR capability will allow the Company to continue to reduce overall system energy and fuel costs for customers.

Much of the hardware and software used to support the existing DR system is antiquated and/or obsolete. The radio communication system that forms the backbone of the Company's DR program is approaching its obsolescence. Much of the hardware used to support the current radio system and its associated load control switches is antiquated and/or obsolete.

Most of the software that supports the DR system was procured in 2003 and is currently unsupported by the vendor, putting it at risk of losing

functionality. As a result, the legacy DR system is essentially limited to existing functionality, limiting Otter Tail's ability to grow and enhance its DR offerings.

Several specific hardware components of the DR system are no longer available for sale, which means replacement units cannot be purchased, and/or are no longer supported by their manufacturers. For example, the Company uses discontinued Palm Pilot devices to program and control load control switches. Palm Pilot devices have not been supported by the manufacturer since 2011, and of the 16 Palm Pilots that Otter Tail originally purchased, only 6 remain operational. The communications system installed as part of the AMI Project may provide the foundation for upgrading to a new two-way communications network which will maintain the functionality of Otter Tail's DR programs and allow for potential improvement and expansion of the Company's DR offerings in the future. The cost for new hardware and software to continue the DR program is estimated at **[PROTECTED DATA BEGINS…** . **…PROTECTED DATA ENDS]**

F. Implementation Schedules

The Company is planning to roll out the AMI Project in phases. Phase 1 is complete and entailed issuing RFPs, evaluating bids, contract negotiations with suppliers, implementation and deployment planning, proof of concept, and internal project staffing. The Company competitively bid all aspects of the Project. Phase 2 of the AMI Project is underway from the fourth quarter of 2021 through the fourth quarter 2022 or first quarter 2023 and entails business process development, system integrations, and initial deployment for proof of concept. Phase 3, which will run from early 2023 to the third quarter of 2024, is when full deployment occurs, including the AMI meters, the FAN, and the MDM. To summarize, the current estimated timeline is as follows:

- AMI
  - Phase 1: Selection of 1 preferred vendor and finalize contracts is complete,
  - Phase 2: Business process development, system integration and initial deployment from Q1 2022 to Q4 2022 or Q1 2023; and,
  - Phase 3: Full Deployment from Q1/Q2 2023 and to Q3 2024.
- OMS is currently in the initial part of execution.

- The DR project will follow the development of the AMI project and is currently in the RFP development phase.

G. Phase-In Per Meter revenue requirements calculations

Attachments 11-14 are, respectively, the Revenue, Revenue Requirements Summary, Rate Design, and Tracker Summary calculations used for Otter Tail's Per Meter Phase-In rate submittal. Attachments 15-17 provide the revenue requirement calculations for the Projects for which Otter Tail requests Phase-In Plan recovery. Attachment 18 is the AMI adjustment reflecting the O&M savings due to the AMI implementation in South Dakota. Further information on these components is included above in Section V.

Specifically, the calculations of the revenue requirement in this Petition include the following:

- *Rate base section.* This section provides details on the amount of plant in service, accumulated depreciation (if applicable), construction work in progress (CWIP), accumulated deferred taxes including the effect of proration on Federal amounts, and a 13-month average rate base calculation.
- *Expense section.* The expenses applicable to a project are listed here and include operating costs, property taxes, depreciation, and income taxes.
- *Revenue requirements section.* This section shows the components of the revenue requirements, including expenses and return on rate base.
- *Return on investment (cost of capital).* The return on investment utilizes the return on equity approved in Otter Tail's Rate Case.
- *Depreciation expense.* Depreciation expense is calculated using the Company's current estimated depreciation rates.
- *Property taxes.* The property tax calculation is based on a weighted average of Otter Tail's composite tax rate for the jurisdictions using a weight of 50 percent (MN), 40 percent (ND) and 10 percent (SD) and applied in accordance with the procedures specified by the states.
- *Operation and maintenance Expense.* Once the project is in service, Otter Tail will track operation and maintenance costs specifically

related to each project in Attachments 15-17. Annual O&M expenses related to these projects include operating costs, property taxes, and depreciation.

- *Operation and maintenance Savings.* Once the projects are in service, Otter Tail will track operation and maintenance savings specifically related to this project in Attachment 18. Annual O&M savings related to AGI implementation primarily include costs related to manual meter reading, of which a certain portion is completed by third party contract services and a certain portion conducted internally by service reps across Otter Tail's system
- *Proration of Federal Accumulated Deferred Income Taxes (ADIT).* Once the project is in service, Otter Tail will include proration of Federal ADIT, as shown in Attachment 19. The methodology used for proration of Federal ADIT is in adherence to United States Internal Revenue Service (IRS) rules related to proration, including recently issued IRS private letter rulings. Otter Tail interprets this to include proration of Federal ADIT for the (forward-looking) recovery period and, in future filings, preserving the effect of the application of the proration methodology for the true-up period. This calculation methodology is necessary in order to comply with Section 1.167(l)-l(h)(6)(ii) of the IRS regulations and to avoid a tax normalization violation.[23] In annual Updates, Otter Tail will include a workpaper with the details of the calculation of the proration of Federal ADIT for the recovery period and whether it results in an increase or decrease to the revenue requirement.
- *Jurisdictional Allocation Factors*. Jurisdictional allocators are used to allocate system cost among jurisdictions. The Commission approved Otter Tail's South Dakota jurisdictional allocations for the 2017 Test Year in the Rate Case.

H. Per Meter Rate (AGI) Rate Design

Otter Tail proposes to use a monthly per meter charge rate design for the Per Meter (AGI) Tracker portion of the Phase In rider. The proposed calculation will determine the average cost per meter for materials and labor for each customer class. The weighted average cost per customer class is then

[23] *See* Treas. Reg. SS 1.167(l)-1(h)(6)(ii).

used to determine the percentage of project costs to be charged to each class. The weighted average cost per class divided by the average annual number of meters per class equals the monthly per meter charge.

VI. RATE APPLICATION AND IMPACT

As indicated earlier, the total annual revenue requirement to be collected for the next recovery period of September 2022 through August 2023 is estimated at $2,997,688, which includes $2,582,108 recovered under the percent of bill rate and $415,580 recovered under the per meter rates. The proposed percent of bill rate of 10.181 percent of base rates is calculated on Attachment 2, Line No. 3 and the proposed per meter rates are listed on Attachment 11, Lines 1 through 14. The impact to a customer's total bill is approximately 8.447 percent.[24]

The new total billed charge amount of the Phase-In rates, beginning September 1, 2022, for a residential customer using 1,000 kWh per month with a residential meter is approximately $8.52 per month. For a Large General Service (LGS) customer using 486 kW and 222,350 kWh with an LGS Meter the total billed charge is approximately $1,111.55 per month. See Table 1 for bill impact and proposed rates.

Table 1

Customer Class	Average kWh per month	Percent of bill (current rate) Sept 21 - Aug 22	Per meter (current rate) Sept 21-Aug 22	Percent of bill (proposed rate) Sept 22-Aug 23	Per meter rate (proposed rate) Sept 22-Aug 23	Monthly Impact (increase or decrease from current rate)	Overall bill impact (proposed) Sept 22 - Aug 23
Residential	1,000	1.351%	$ -	10.181%	$ 1.1406	$ 7.54	$ 8.52
Large General Service	222,350 kWh and 486 Kw	1.351%	$ -	10.181%	$ 10.8824	$ 965.49	$ 1,111.55

At full operating capacity, the Merricourt Project will generate energy that will displace other costs of fuel recovered in the Energy Adjustment Rider. These average savings for a 1,000 kWh residential customer will be approximately $2.74 per month.[25]

Customers will also see similar reductions in the Energy Adjustment Rider costs with the transition of the Ashtabula III PPA costs currently included in the Energy Adjustment Rider, with zero cost energy upon acquiring ownership of the wind farm. As

[24] Rider revenue of $2,997,688 / Total Rate Case approved revenues of $35,489,214 = 8.447 percent.
[25] 2021 System costs of energy were approximately $103 million for 5 million MWhs. Merricourt annual generation of 666,000 MWhs at $20.60 average cost of MWh avoided is approximately $14 million of avoided costs resulting in a reduction to overall cost of energy from $20.60 per MWh down to $17.86 per MWh or a $2.74 per MWh reduction [$0.00274 per kWh * 1,000 kWh usage = $2.74 per month].

noted earlier, Otter Tail estimates the average savings for a 1,000 kWh residential customer to be approximately $1.40 per month.

The Customer Notice and Rate Impact is contained in Attachment 21 which represents the incremental increase/decrease between the prior rate and updated rate. Otter Tail provides the report to Commission of tariff schedule changes as Attachment 22 to this filing.

VII. PHASE-IN RIDER TARIFF SHEET

Otter Tail's Phase-In Rider tariff sheet (Section 13.09) is Attachment 20 to this Petition. The rates listed in the RATE section of the tariff sheet are updated to reflect the changes described in this annual update.

VIII. FILING FEE

Under SDCL 49-34A-77, the electric utility shall pay a filing fee to be determined by the commission in an amount not to exceed two hundred fifty thousand dollars. Otter Tail will pay such deposit amount as the Commission determines appropriate upon the Commission's Order assessing such fee.

IX. CONCLUSION

For the foregoing reasons, Otter Tail respectfully requests the Commission approve Otter Tail's proposals to:

1. Include the Ashtabula III acquisition recovery in the Phase-In Rider.
2. Include recovery of the AMI, OMS and DR projects in the Phase-In Rider.
3. Include updated costs and collections associated with current projects being recovered in the Phase-In Rider.
4. Implement the proposed rates for Otter Tail's Phase-In Rider, Section 13.09, effective as of September 1, 2022.

Date: June 1, 2022

Respectfully submitted:
OTTER TAIL POWER COMPANY

/s/ LYNN A. WOLTERS

Lynn A. Wolters
Rates Analyst
Regulatory Administration
Otter Tail Power Company
215 South Cascade Street
P.O. Box 496
Fergus Falls, MN 56538-0496
Phone (218) 739-8577