

Staff Briefing Papers

Meeting Date Tuesday, July 2, 2024

Agenda Item **3

Company Otter Tail Power

Docket No. **E017/M-23-380**

In the Matter of Otter Tail Power Company's 2023 Integrated Distribution Plan

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| Issues | <ol style="list-style-type: none"> 1. Should the Commission accept or reject Otter Tail Power's Integrated Distribution Plan (IDP)? 2. Should the Commission approve, modify, or reject Otter Tail Power's Transportation Electrification Plan (TEP)? 3. Should the Commission require any additional information or adjust any of the IDP filing requirements for Otter Tail Power? 4. Should the Commission take any other action related to Otter Tail Power's IDP? |
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Relevant Documents

Date

Otter Tail Power – Initial Filing, Integrated Distribution Plan	November 1, 2023
Department of Commerce – Initial Comments	March 22, 2024
Otter Tail Power – Reply Comments	April 5, 2024
Department of Commerce – Reply Comments	April 19, 2024
Grid Equity Commenters (GEC) – Reply Comments	April 19, 2024
Otter Tail Power – Information Request, Response to MN PUC IR 1	May 10, 2024

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The attached materials are work papers of the Commission Staff. They are intended for use by the Public Utilities Commission and are based upon information already in the record unless noted otherwise.

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Acronyms

AMI	Advanced Metering Infrastructure
Area EPS	Area Electric Power System
BIPOC	Black, Indigenous, and People of Color
BYOC	Bring Your Own Charger
CCT	Coalition for Clean Transportation
CEG	Clean Energy Groups
CIAC	Contribution In Aid of Construction
CSA	Customer Service Agreement
DCFC	Direct Current Fast Charger
DIC	Disproportionately Impacted Community
ECO	Energy Conservation and Optimization
EJ	Environmental Justice
EPA	Environmental Protection Agency
ESB	Electric School Bus
EV	Electric Vehicle
EVAAH	EV Accelerate At Home
EVSE	Electric Vehicle Supply Equipment
EVSI	Electric Vehicle Supply Infrastructure
IDP	Integrated Distribution Plan
IRA	Inflation Reduction Act
IRP	Integrated Resource Plan
IT	Information Technology
MADA	Minnesota Automobile Dealers Association
MDU	Multi-Dwelling Unit
MN DIP	Minnesota Distributed Interconnection Procedures
MPCA	Minnesota Pollution Control Agency

NEVI	National EV Infrastructure Program
O&M	Operations and Maintenance
OAG	Office of the Attorney general
PHEV	Plug-in Hybrid Electric Vehicle
PIM	Performance Incentive Mechanism
REC	Renewable Energy Credit
SAIPE	Small Area Income and Poverty Estimates
TEP	Transportation Electrification Plan
TOD	Time of Day
TOU	Time of Use
V2G	Vehicle to Grid
WACC	Weighted Average Cost of Capital

1. Statement of the Issues

1. Should the Commission accept or reject Otter Tail Power's Integrated Distribution Plan (IDP)?
2. Should the Commission approve, modify, or reject Otter Tail Power's Transportation Electrification Plan (TEP)?
3. Should the Commission require any additional information or adjust any of the IDP filing requirements in Otter Tail Power's next IDP?

2. Introduction and Background

On November 1, 2023, Otter Tail Power (Otter Tail, OTP, or Company) filed its updated Integrated Distribution Plan, a process that originated out of the Commission's February 20, 2019 Order in Docket Number E015/CI-18-253.

The Commission ordered a utility filing an IDP to submit a plan that would meet the following objectives:

- Maintain and enhance the safety, security, reliability, and resilience of the electricity grid, at fair and reasonable costs, consistent with the state's energy policies;
- Enable greater customer engagement, empowerment, and options for energy services;
- Move toward the creation of efficient, cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies;
- Ensure optimized utilization of electricity grid assets and resources to minimize total system costs; and
- Provide the Commission with the information necessary to understand the utility's short-term and long-term distribution system plans, the costs and benefits of specific investments, and a comprehensive analysis of ratepayer cost and value.

Otter Tail submitted its previous IDP on November 1, 2021, in Docket No. E017/M-21-612. On September 9, 2022, the Commission issued an order accepting the IDP, and ordering Otter Tail to file a new IDP on November 1, 2023, in which Otter Tail Power Company should detail the

status of the Innovation 2030 initiative and use the most up-to-date information and data available in describing its grid modernization plans.

The Commission also ordered that electric utility IDPs should include their Transportation Electrification Plans (TEPs) in a separate docket.¹ Thus, Otter Tail included its TEP in this IDP.

On November 15, 2023, the Commission issued a Notice of Comment Period, seeking input on the following topics:

2023 Otter Tail Power Integrated Distribution System Plan (IDP)

1. Should the Commission accept or reject Otter Tail Power's IDP?
2. Did Otter Tail Power adequately address the Commission's IDP filing requirements and prior Orders, as outlined in Attachment A to this notice? Is additional information necessary for improved clarity?
3. Feedback, comments, and recommendations on the following areas of Otter Tail Power's IDP:
 - a) Non-wires alternatives analysis and potential pilot project
 - b) Planned grid modernization initiatives
 - c) Forecasted distribution budget
 - d) Distributed Energy Resource (DER) scenarios and forecasts
 - e) The System Infrastructure and Reliability and Improvement (SIRI) initiative
 - f) Results from the DER and Electric Vehicle (EV) impact study conducted in Morris, MN
4. In light of Otter Tail Power's pilot project on a utility-scale electrical battery system, is Otter Tail Power conducting its non-wires analyses in a reasonable way?
5. Has Otter Tail Power appropriately discussed its plans to maximize the benefits of the Inflation Reduction Act (IRA) and the IRA's impact on the utility's planning assumptions pursuant to Order Point 1 of the Commission's September 12, 2023 Order in Docket No. E,G-999/CI-22-624?
6. What should the Commission consider or address related to enhancing the resilience of the distribution system within Otter Tail's IDP?
7. Other areas of Otter Tail Power's IDP not listed above, along with any other issues or concerns related to this matter?

2023 Otter Tail Power Transportation Electrification Plan (TEP)

8. Should the Commission approve, modify, or reject Otter Tail Power's TEP?
9. Did Otter Tail Power adequately address the Commission's TEP filing requirements and prior Orders, as outlined in Attachment A to this notice? Is additional information necessary for improved clarity?
10. How should the Commission consider modifications or supplements to Otter Tail Power's Transportation Electrification Plan?

¹ Docket No. E-015/M-21-390, *ORDER*, December 8, 2022

11. Should the Commission establish any procedural or filing requirements for future TEPs under Minn. Stat. § 216B.1615?
12. Are there gaps in Otter Tail Power's transportation electrification programs the Commission should address to ensure equitable customer outcomes?
13. Are there other issues or concerns related to this matter?

Summary of Petition

In this IDP, Otter Tail Power provided details of its relevant activities since the prior IDP, as well as its plan over the next five-plus years to meet the IDP requirements. This IDP includes:

- Updates on grid modernization initiatives including its Advanced Metering System (AMI) rollout, Geographical Information System (GIS) data collection, Demand Response Management System (DRMS), and its newly deployed Outage Management System (OMS),
- A report on its System Infrastructure and Reliability and Improvement (SIRI) initiative,
- Takeaways from the balance of overall projected stagnant load growth with smaller areas of growth throughout its territory,
- Results from its Distributed Energy Resource (DER) and Electric Vehicle (EV) impact study conducted in Morris, MN, and
- An update on the non-wires alternative project with OATI and the University of Minnesota Morris on developing a utility-scale electrical battery.

On March 22, 2024, the Department filed its initial comments with additional information requests and initial recommendations.

On April 4, 2024, Otter Tail filed reply comments which responded to the Department's additional information requests.

On April 19, 2024, the Department filed reply comments with final recommendations.

On April 19, 2023, Cooperative Energy Futures, Environmental Law & Policy Center, Sierra Club, and Vote Solar, filed reply comments together as Grid Equity Commenters.

Otter Tail recommends the Commission accept Otter Tail's 2023 IDP (**Decision Option 1**).

The Department recommends the Commission accept Otter Tail's 2023 IDP with certain modifications.

Staff notes that several topics raised by the Department in Dakota's IDP were common across multiple IDPs. Staff prepared Joint Briefing Papers which should be seen as a companion to these briefing papers.

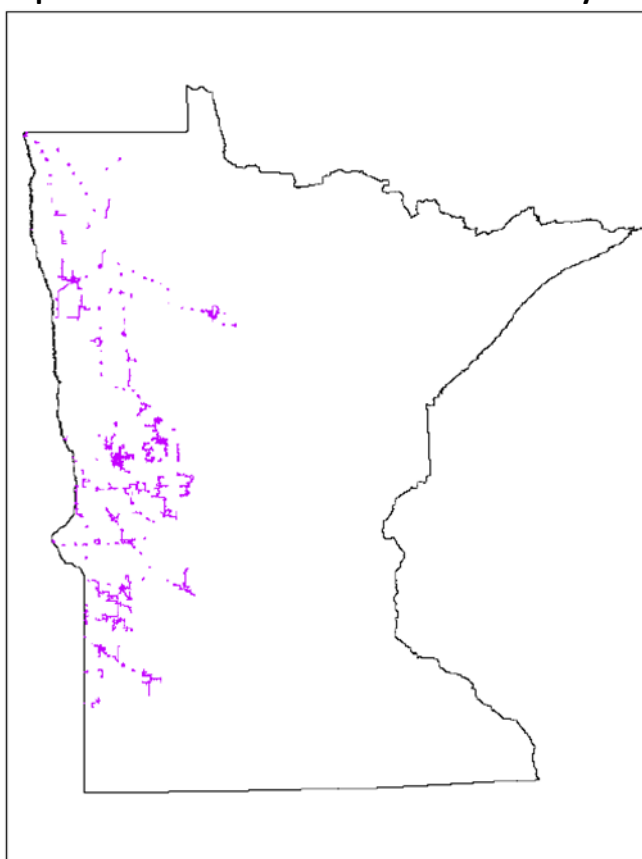
3. Summary of IDP

A. System and Financial Overview

i. Existing System Summary

Otter Tail Power provides electricity and energy services in communities across western Minnesota, northeastern South Dakota, and eastern North Dakota. In Minnesota, the Company serves 155 communities with an average population of approximately 630.

Figure 1. Map of Otter Tail's Minnesota Distribution System from GIS



Otter Tail Power reports that its load growth has remained generally stagnant since its previous IDP, and that most substations in the territory are either not growing or well within the system limits. Therefore, Otter Tail Power uses a flat growth profile on the distribution system, as it did with its latest Integrated Resource Plan (IRP).

Figures 2 and 3 below show Otter Tail’s demand trends within Minnesota over the last fifteen years. As shown in these figures, Otter Tail has seen minimal load growth over the past five to seven years.²

Figure 2. Minnesota Distribution System Demand Growth Trends (kW) – Winter Season (Metered Substations)

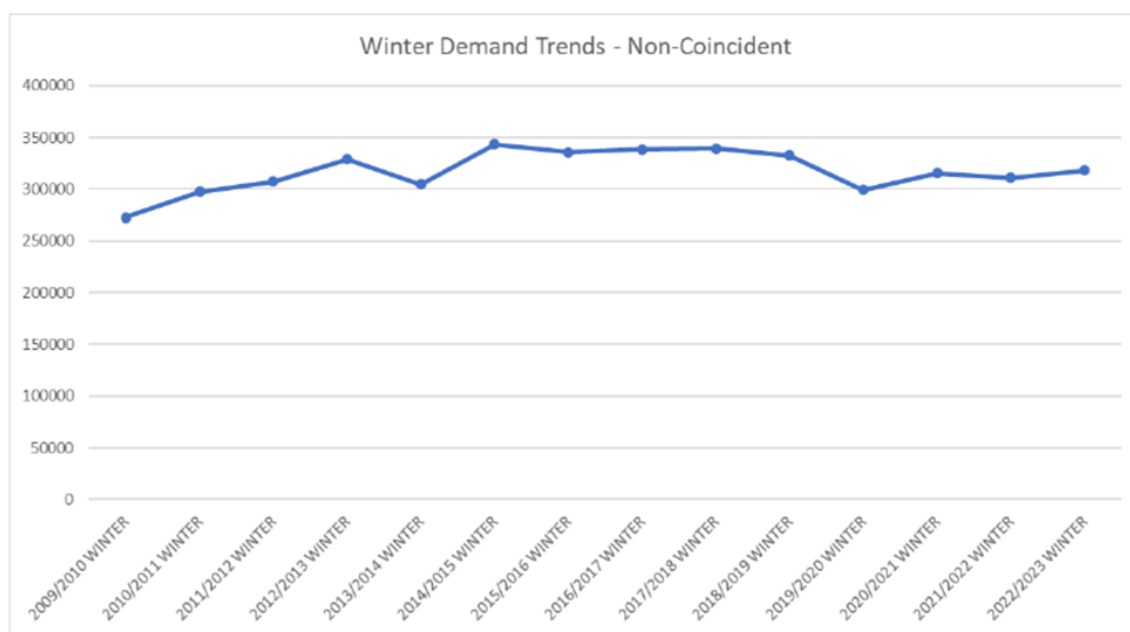
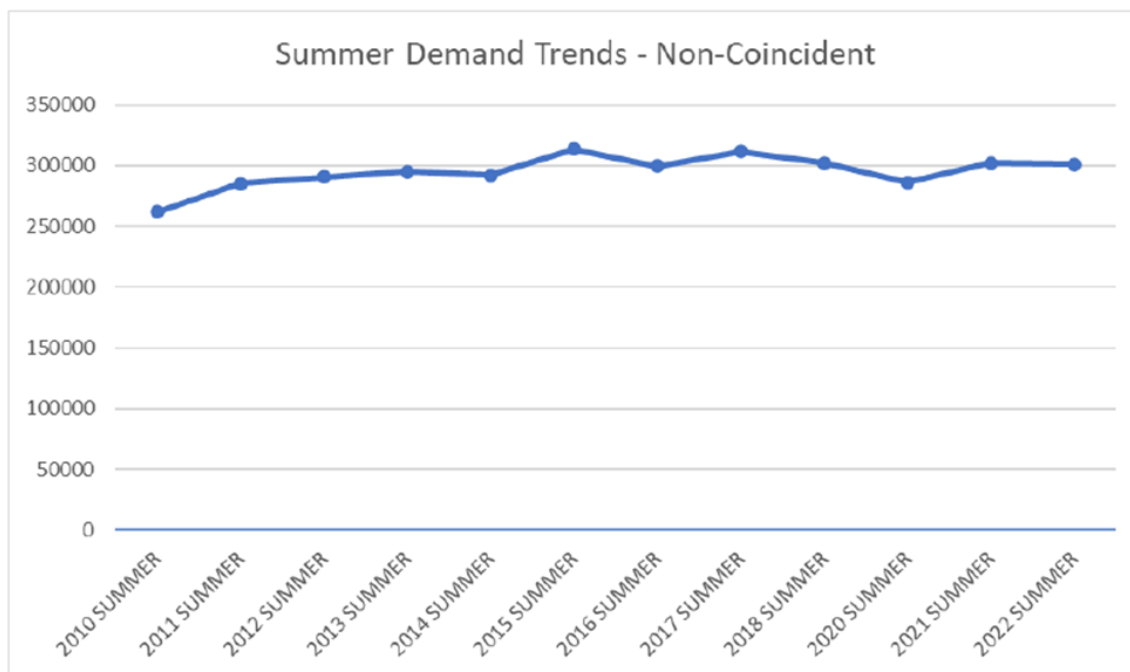


Figure 3. Minnesota Distribution System Demand Growth Trends (kW) – Summer Season (Metered Substations)

² OTP Initial Filing at 9.



However, Otter Tail notes that it does have pockets of its service territory which show increasing demand on its distributions system. Over the last two years, Otter Tail has conducted 20 studies in Minnesota communities where load growth has required an electrical study.

Figure 4. List of Minnesota Studies Completed Since November 1, 2021³

#	Town	Date Completed
1	Crookston	2/7/2022
2	Wendell	3/9/2022
3	Wilton	5/9/2022
4	Fergus Falls	5/31/2022
5	Campbell-Tenney	7/19/2022
6	Appleton-Milan-Holloway	7/27/2022
7	Wahpeton	7/28/2022
8	Battle Lake-Amor	9/7/2022
9	Mahnomen	10/21/2022
10	Kerkhoven	10/26/2022
11	Beltrami	11/4/2022
12	Otter Tail City	1/19/2023
13	Bemidji	2/6/2023
14	Vergas-Frazee	4/3/2023

³ OTP Initial Filing at 11.

15	Odessa-Bellingham-Louisburg-Lac Qui Parle	5/11/2023
16	Clitherall-Vining	6/7/2023
17	Red Lake Falls	6/12/2023
18	Brandon-Garfield-Holmes City-Forada	6/23/2023
19	Erskine-Mentor	6/28/2023
20	Morris	7/13/2023

Current Infrastructure

Otter Tail currently has limited visibility of distribution facilities in real-time basis. 356 of its substations are metered (covering 90% of delivered energy), and Otter Tail states that it is not cost justifiable to meter the remaining substations, at \$10,000 - \$15,000 each. 13 of the substations have control and monitoring within Otter Tail's System Operations Energy Management System. Table 1 below shows the breakdown of Otter Tail's substation and feeder statistics.

Table 1. Substation and Feeder Statistics

Distribution Substation	Minnesota	North Dakota	South Dakota	Total
Substation Count	177	265	72	414
Control/Monitoring	6	4	2	13
Metering	132	179	45	356
Substation/Transformer Capacity (MVA)	737	750	284	1,694
Distribution Feeder	Minnesota	North Dakota	South Dakota	Total
Feeder Count	288	348	95	731
Control/Monitoring	24	9	4	37

Table 2 below provides Otter Tail's asset counts across its distribution system.

Table 2. Otter Tail's Distribution Assets

Primary Distribution Line (miles)	Minnesota	North Dakota	South Dakota	Total
Overhead	1,988	1,876	465	4,329
Underground	718	617	125	1,460
Total	2,706	2,493	590	5,789
Secondary Distribution Line (miles)	Minnesota	North Dakota	South Dakota	Total
Overhead	758	963	180	1,901

Underground	232	228	43	503
Total	990	1,191	223	4,404
Distribution Poles	Minnesota	North Dakota	South Dakota	Total
Total	74,962	79,768	16,579	171,309
Service Transformers	Minnesota	North Dakota	South Dakota	Total
Overhead	12,142	10,528	2,636	25,306
Pad-Mount	6,358	5,135	968	12,461
Total	18,500	15,663	3,604	37,767

As for metering, the vast majority of Otter Tail's billing meters are manually read today, as shown below in Table 3. As a result, Advanced Metering Infrastructure is a large focus of Otter Tail's IDP because of its potential efficiencies.

Table 3. Otter Tail's Minnesota Service Territory Metering

	Manually Read	AMR	AMI	Total
Minnesota Meters	81,665	168	576	82,241

- ii. Historic and forecasted budget overview, including a summary of how the utility develops their budget

Otter Tail's IDP capital budget forecast is usually broken into funding categories as shown on the tables below. Historical spend in Minnesota increased each year from 2018 to 2022 as depicted on Table 4.

Table 4. Otter Tail's 5-Year Historical Distribution Spend in Minnesota⁴

Category	2018	2019	2020	2021	2022
Age Related/Asset Renewal	\$3,987,317	\$4,208,275	\$4,960,670	\$7,960,670	\$8,354,640
Capacity Upgrade	\$640,579	\$1,020,909	\$408,238	\$344,710	107,012
PQ & Reliability Upgrades	605,066	885,530	886,530	2,093,766	6,207,152
New Customer Projects	6,357,358	5,495,608	5,439,448	6,427,394	6,321,997

⁴ OTP Initial Filing at 38.

Grid Mod & Pilot Projects	695,274	758,179	1,831,678	2,563,237	5,576,858
Projects Related to Local Gov Req.	184,657	215,958	493,196	481,003	437,306
Metering	97,762	503,665	498,749	417,895	233,003
Other	97,613	9,568	261,717	(109,192)	238,280
Grand Total	\$12,665,626	\$13,097,692	\$14,770,226	\$19,845,234	\$27,466,248

Table 5 shows Otter Tail's forecasted distribution spending over the next five years.

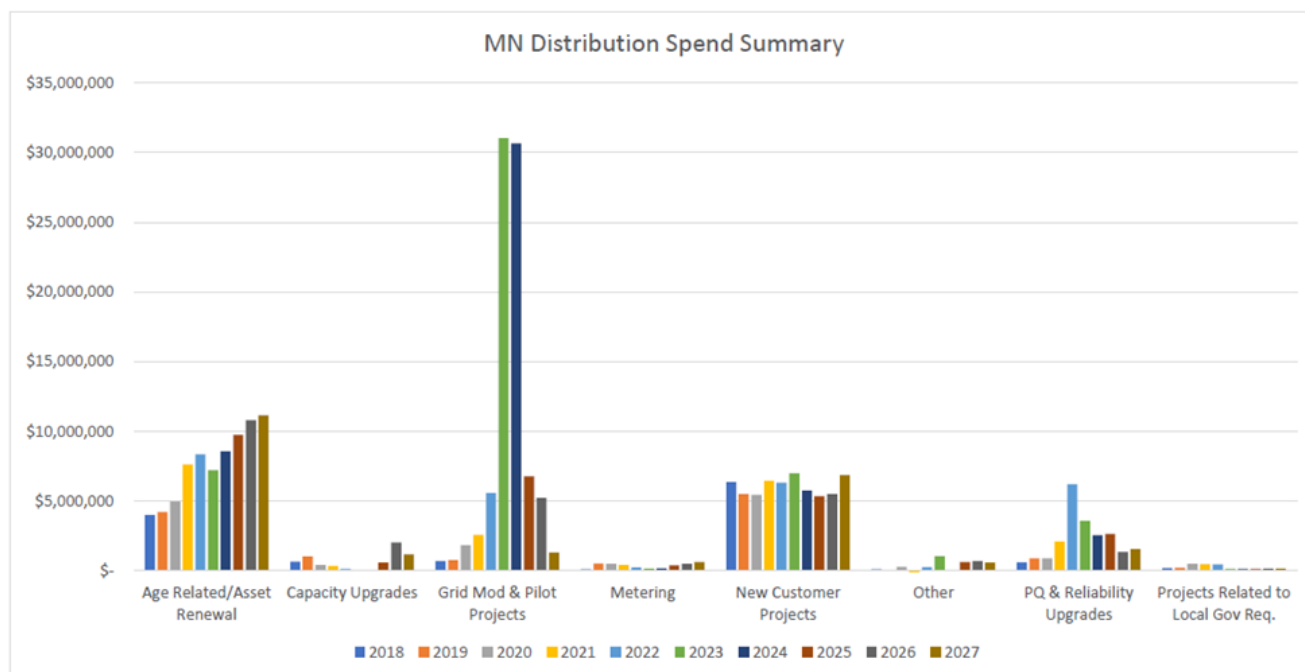
Table 5. Otter Tail's forecasted 5-Year Distribution Spend in Minnesota⁵

Category	2023	2024	2025	2026	2027
Age Related/Asset Renewal	\$7,211,500	\$8,572,500	\$9,752,500	\$10,802,500	\$11,157,500
Capacity Upgrade	-	-	570,000	2,040,000	1,172,000
PQ & Reliability Upgrades	3,566,090	2,539,273	2,647,548	1,335,924	1,530,000
New Customer Projects	7,001,667	5,735,000	5,340,000	5,500,000	6,865,000
Grid Mod & Pilot Projects	31,042,326	30,662,947	6,768,920	5,231,262	1,307,815
Projects Related to Local Gov Req.	130,000	135,000	137,500	142,500	147,500
Metering	150,000	162,500	375,000	500,000	625,000
Other	1,037,500	37,500	623,750	691,000	581,498
Grand Total	\$50,139,083	\$47,845,720	\$26,215,218	\$26,243,186	\$23,386,313

Figure 5 visually summarizes the numbers shown in Tables 4 and 5, showing the changes in spending over time from actual spending in 2018-2022 through forecasted spending from 2023-2028.

Figure 5. Otter Tail Power Distribution Spending

⁵ *Id.*



Note that the greatest investments in grid modification and pilot projects fall in 2023-2024, in line with Otter Tail’s statements of its priorities.

iii. DOC Comments

The Department reviewed OTP’s annual spending projections provided in the 2021 and 2023 IDP respectively and found forecasted total distribution system spending from 2023 through 2025 period increased by \$49.0 million (63 percent), which were mostly driven by increases in two categories: Grid Modernization and Pilot Programs (\$43.4 million) and System Expansion or Upgrades for Reliability and Power Quality (\$7.8 million). The Department also provided a high-level overview of financial data in OTP’s 2023 IDP and found a 98% increase in OTP’s projected distribution system spending for 2023-2027 compared with historical spending in 2018-2022.

Table 6. Otter Tail Power Grid Modernization Project Costs⁶

Grid Modernization Project Name	Total Investment 2023-2027 (millions)
AMI – Innovation 2030	\$49.45
DRMS – Innovation 2030	\$23.37
MN EV DCFC Infrastructure	\$0.7
LED Street & Area Light Conversion	\$1.5

⁶ Department Comments at 13.

The Department suggests that OTP should quantify the effects of its grid investments on capacity, reliability, ratepayer impacts, and equity across various demographics, even though measuring these impacts can be challenging.⁷

Staff discusses this recommendation in the Joint Briefing papers.

Decision Option 8 is the Department's recommendation

Decision Option 9 is Staff's recommendation

B. Roadmap for major initiatives

Otter Tail is undergoing its "2030 Initiative" in which it implements technological improvements to the grid and its other infrastructure to ensure longevity, security, and other upgrades for its Company and customers. The 2030 initiative includes the following projects/programs:

- Advanced Metering Infrastructure: an integrated system of smart meters, communication networks, and data management systems that enables two-way communication between a utility and its customers. The entire project is further described in Docket No. E017/M-23-131.
- Outage Management System (OMS): a system through which outages are managed and communicated to customers.
- Load Management Replacement Project (aka Demand Response Management System (DRMS)): a system intended to reduce energy consumption to assist during stability and reliability issues, shift energy consumption to less expensive times, improve customer choice, and integrate with future products.
- System Infrastructure and Reliability Improvements (SIRI): addresses aging infrastructure and prepares for future needs in the transmission and distribution system
- Telecommunication Architecture Plan: a plan to update Otter Tail's telecommunications infrastructure to address aging infrastructure and cybersecurity risks.

iii. DOC Comments

The Department recommends that the Commission direct OTP to file a cost-benefit analysis for DRMS in a supplemental filing, to be provided within 180 days of the Commission's final Order in this proceeding. (**Decision Option 2**)

C. Load Forecasts

DER and EV Scenarios

To best understand how different DER and EV adoption scenarios might impact Otter Tail's distribution grid, Otter Tail conducted a study in Morris, Minnesota. Morris is Otter Tail's largest adopter of DERs to date, with almost 4 MW aggregate nameplate generation.

⁷ Department reply comments at 10.

Otter Tail created three scenarios: baseline, medium, and high penetration of DER and EVs. As summarized below, each scenario was tested with three demand profiles: summer peak, daytime minimum load, and absolute minimum load with all solar DER turned off.⁸

Scenario	Levels of Adoption	Potential Violation Findings
Baseline	Existing levels of DER and EV adoption that Morris has today. DER: ~3.83 megawatts of aggregate DER EVs: 17 known EVs, seven L2 EV chargers, and one DC Fast Charger.	Overvoltage due to the amount of localized generation being added. Magnitude of overvoltage worsened as systems demand profile lowered from peak to daytime minimum, for example. Increased violations for reverse power flow at substation breakers.
Medium Penetration	DER: Slight increase of 320 kW from base case to an aggregate total of 4.25 megawatts EVs: additional 23 L2 chargers and 4 DC Fast Chargers, which brought the total number of aggregate EV chargers in town up to 30 L2 chargers and 5 DC Fast Chargers.	DER: Worsened overvoltage in the same feeders and locations identified in base case analysis EVs: Greatest issues identified in rural areas. Significant midline and endline undervoltage criteria violations and overloaded segments of conductors, all due to voltage drop on long rural feeders, and existing smaller conductor sizes.
High Penetration	DER: 6 MW nameplate EVs: 50 L2 chargers and 12 DC Fast chargers to be allocated throughout the town	DER: Locational overvoltage violations, unintentional islanding, reverse power flows. 67% scenarios had overvoltage violations, 48% had reverse power flow violations, and 33% had both EVs: Undervoltage violations along the midline and endline segments as well as thermally overloaded conductor segments on or near

⁸ OTP Initial Filing at 28.

		where the EV Chargers were placed within the model. Of 17 scenarios, 35% showed undervoltage, thermal overload, or both.
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Otter Tail's main takeaways from these studies were:

- Concerns begin to arise as DER penetration levels approach either ~50% of Peak System Loading OR ~100 percent of Daytime Minimum Loading. Concerns are primarily voltage impacts and reverse power flow.
- The need for increased granularity in study types, e.g. hourly profiles and stability analysis.
- The need to review internal design and interconnection standards to keep up with an evolving DER landscape.
- The potential for unintentional islanding.

Otter Tail provides the current DER queue and states that it does not believe that its queue warrants immediate concerns of the risks above, but that it will continue to monitor them as more DER comes online.

Table 6. Current DER by Service Area, Size, and Fuel Source⁹

Queue No	Customer Service Area	Size (kW)	Fuel Source
D22-10	Morris	14.80	Solar
D22-25	Morris	11.31	Solar
D22-26	Morris	30.75	Solar
D23-01	Ferguson Falls	11.40	Solar
D23-04	Ferguson Falls	40.00	Solar
D23-05	Ferguson Falls	8.96	Solar
D23-06	Crookston	7.68	Solar
D23-07	Ferguson Falls	25.10	Solar and battery
D23-09	Ferguson Falls	11.71	Solar and battery
D23-10	Bemidji	20.50	Solar
D23-11	Ferguson Falls	11.40	Solar
D23-12	Ferguson Falls	33.00	Solar
D23-17	Bemidji	22.88	Solar
D23-18	Ferguson Falls	11.00	Solar and Diesel
D23-25	Ferguson Falls	6.96	Solar

⁹ OTP Initial Filing at 16.

In addition, Otter Tail is part of the DGWG workgroup, which is currently tasked with identifying additional screens that utilities can perform to assess the risk of unintentional islanding and determine solutions.

i. DOC Comments

The Department does not believe Otter Tail has adequately quantified the impacts of distribution grid investment in either its initial filing or its reply comments. The Department suggested the Company should be quantifying the following impacts for its investments, irrespective of whether investments are required or discretionary:

- Capacity – marginal expected increase in MW capacity (at the level of system/substation/feeder)
- Reliability – marginal expected increase in reliability, as per SAIDI/SAIFI or other metrics
- Ratepayer impacts – marginal increase/decrease in rates and average bills
- Equity impacts – impacts on reliability, rates/bills, or other metrics by income group, race, environmental justice community, and potentially other dimensions.

Therefore, the Department recommends the Commission direct OTP to provide a proposal for measuring the capacity, reliability, ratepayer, and equity impacts of its distribution grid investments in its next IDP. This proposal should specifically address the level of granularity at which OTP will evaluate these impacts for each budget category, indicating for each category whether OTP plans to measure these impacts at the level of the budget category, program, project, or at some other level of resolution, or not at all, and specifically accounting for the impact of any expected changes to IDP budget categories. **(Decision Option 8)**

D. Non-wires alternatives

Although Otter Tail does not have any distribution projects above \$2,000,000 (and is therefore not required to report on non-wires alternatives), Otter Tail does share that it has partnered with the University of Minnesota Morris to develop a utility-scale electrical battery. The goal of the project is for Otter Tail and the University to learn “how a utility scale battery can better utilize locally produced renewable energy, how the battery can provide additional benefits to the rest of the system throughout the greater Morris area, and for Otter Tail to gain a better overall understanding of utility-scale battery storage technology.” While there are not many details available for this early-stage project, Otter Tail states that it intends to apply for cost recovery for the estimate \$2.1 million of the project’s cost.

i. DOC Comment

The Department requested Otter Tail further describe its process for conducting the NWA analysis in its initial comments. In their reply comments the Department notes that Otter Tail has not responded to this request. Therefore, The Department recommends that the Commission direct OTP to submit a supplemental filing, to be provided within 180 days of the Commission’s final Order in this proceeding, with a detailed description of its process for NWA analysis. **(Decision Option 3)**

In OTP's reply comments, the company stated that the costs for the battery project at UMN Morris is expected to be between \$20.4 and \$27.2 Million. OTP customers on DR programs produced \$43 million in energy sales for the Company in 2023. Without the DR offerings, the customers would either have to place their loads on more expensive firm service rates and it would increase the Company's fuel expense. OTP expects to provide more information regarding the Morris battery project in the 2025 IDP.¹⁰

The Department is satisfied with the Company's response to its request for additional information in the 2025 IDP on the Morris Flow Battery Project. The Department recommends that Otter Tail include in its 2025 IDP an update on the Morris Flow Battery project, and provide a Morris, MN impact study identifying the specific investments included in its budget to mitigate risks identified in the study. **(Decision Options 4 and 5)**

E. Transportation Electrification Plan

As per the Commission's December 8, 2022 Order¹¹ Otter Tail Power included their Transportation Electrification Plan within their IDP filing for the first time. As summarized below, the Company highlighted the work they are doing to encourage beneficial electrification of the transportation system including installation of direct current fast chargers (DCFC), implementation of time of use rates, and rebates. The Department of Commerce provided analysis and reply comments, ultimately encouraging the Commission to approve the OTP TEP.

i. OTP Initial Filing

In their TEP, the Company discussed six Direct Current Fast Chargers (DCFC) that were recently commissioned out of the eleven sites approved in Docket 20-181. OTP expects the installation of the final five in 2024. The utility also discussed their offerings such as their rebate (currently \$400 with a proposal to increase to \$500) for hardwiring level two chargers installed with an off-peak rate. This rebate is part of the Company's load management program. The Company's recent ECO triennial plan includes proposals to expand outreach and rebates for plug in vehicles and school buses to encourage efficient fuel switching.¹² Along with these items, the Company participates in outreach activities including ride and drive events, local city festivals, parades, and discussions with customers.¹³ Ultimately, the Company is looking forward to new rate offerings and a make-ready program discussed below along with a review of multi-family dwelling unit charging options.

While the Company currently only serves a few DCFC sites, third parties indicated interest in expansion of more DCFC sites due to National Electric Vehicle Infrastructure (NEVI) funding.

¹¹ In Dockets 17-879, 21-694, 21-390 and 21-612

¹² Docket E017/CIP-23-94

¹³ Docket 23-380, Initial Filing on 11/1/23, p. 55

This will create further growth of charging networks in the Company's service area which has caused the Company to consider and begin evaluating a Make-Ready type program. This program would go beyond the meter and offset some upfront capital requirements of a third-party such as transformers, underground line extensions, and mounting pads. The Company expects this offering to come forward at the end of 2024 after the completion of pilot infrastructure buildout, insights, and cost estimates are acquired to ensure long-term viability of a program.¹⁴

The Company currently does not offer any specific multi-family dwelling unit (MDU) offering nor have they received a request for such a program. The Company argued the variability and unique situations of MDUs make these programs difficult to develop and equitably distribute costs across tenants and landlords. The utility provided a hypothetical situation explaining the variability in cost which can be drastic depending on MDU needs. The Company argued these costs would likely be passed onto the renter over time. To confront these issues, the Company stated they want to work with managed charging third parties to enable better load management and will keep monitoring the technological advances in these areas for a future MDU offering.¹⁵

Currently, the Company has proposed a modification to their tariff section 10.07 EV DCFC General Service Time of Day Pilot Rates to allow the Company modifications that bundle miscellaneous fees into a flat \$/kWh rate.¹⁶ The Company is also developing and proposing a residential rate similar to their Water Heating Control Rate¹⁷ which allows customers to enroll their water heater on a demand control rate without significant upfront costs. The proposal for their EV rate will allow the Company to perform demand control on an installed level two charger while supporting customers in avoiding additional installation upfront costs of a second meter.

Otter Tail continues to collaborate with school districts as they take advantage of Minnesota Pollution Control Agency (MPCA) electric school bus grant opportunities. The Company also has rebate proposals in their ECO filing for electric school buses, commercial push and rider mowers, and forklifts. The Company continues to evaluate their own fleet vehicles for electrification as they come to their end of useful life. The Company has added two EVs to their own fleet since their last TEP.¹⁸

¹⁴ Docket 23-380, Initial Filing on 11/1/23, pp. 55-56

¹⁵ Docket 23-380, Initial Filing on 11/1/23, pp.56-57

¹⁶ In Docket E017/M-20-181

¹⁷ In Section 14.01 of the Company's tariff book

¹⁸ Docket 23-380, Initial Filing on 11/1/23, pp.57-58

The Company hopes to leverage their AMI project once fully deployed in 2025 via their Residential Time of Day pilot to encourage customers to move EV charging to low-cost time periods.¹⁹

The Company continues to engage on the topic of EV education by attending ride and drive events. The Company will also work with the Minnesota Automobile Dealers Association (MADA) to provide resources and educate dealerships on OTP's off-peak charging options for customers.²⁰

The Company currently has 144 customer-owned EVs in their service territory with 84 battery-electric vehicles (BEVs) and 60 plug-in hybrid electric vehicles (PHEVs). The Company noted they have seen little adoption in the medium and heavy-duty sectors, serving several electric school buses. Two school buses at one location produced the most load added while the load of other additions has not been substantial enough to warrant capacity upgrades. These locations are being monitored by the utility for information on future forecasting needs.²¹

The Company included forecasts of EV adoption, and hour-by-hour load growth rates caused by the adoption. The Company highlighted a report from the Alliance of Automotive Innovation that broke down vehicle registrations by vehicle type and noted that 10 percent of the vehicles in the states OTP operates in are cars while 90% fall into the light truck segment which includes crossovers, sport utility vehicles, pickups, and vans. These vehicles consume more energy on average than cars, highlighting the need of utilities to consider not just number of vehicles electrifying or average energy consumption of EVs but the fleet mix of vehicles as well.²²

The Company noted they do not have any EV proposals or pilots in their North or South Dakota jurisdictions at this time.²³

ii. DOC Comment

The Department reviewed OTP's filing and concluded that the Company had sufficiently addressed each of the filing requirements and Commission Orders.²⁴ The Department highlighted the ten criteria established in Minn. Stat. § 216B.1615, subd. 3, and evaluated OTP's TEP filing based on these criteria.²⁵

The Department highlighted that of the 144 total EVs in OTP's service territory the Company has provided level two charging rebates to 27 customers, and that OTP's ECO triennial plan

¹⁹ Docket 23-380, Initial Filing on 11/1/23, p. 58

²⁰ Docket 23-380, Initial Filing on 11/1/23, p. 59

²¹ Docket 23-380, Initial Filing on 11/1/23, p. 61

²² Docket 23-380, Initial Filing on 11/1/23, pp. 62-64

²³ Docket 23-380, Initial Filing on 11/1/23, p. 60

²⁴ Docket 23-380, Dept Comment, p. 28

²⁵ Docket 23-380, Dept Comment, pp. 30-31

includes rebates for PHEVs and BEVs ranging from \$750 to \$3,000.^{26,27} While not currently offering a MDU program, the Department encouraged OTP to develop such a proposal as soon as reasonably possible. The Department also noted the unique role that PHEVs may play in transportation electrification of OTP's service territory, noting that PHEVs comprise a larger share of the total EV market in rural areas. The Department continued to then highlight OTP is confronting this issue via their ECO triennial by including PHEV rebates.²⁸

Via the Department's Information Requests, the Department also highlighted that the planned OTP Make-Ready program would further their focus on level two charging access and encouraged the Company to ensure that its TEPs include such discussions.²⁹

The Department provided positive feedback to the Company regarding their partnerships with Electric School Bus fleet managers through coordination and partnership. Not only does the Company provide a \$5,000 rebate for electric buses but encourages stacking of funding through other grants such as the MPCA. The Department encouraged the Company to consider how electric school buses and their associated infrastructure will be integrated into their future Make-Ready offering.³⁰

In a discussion regarding OTP's encouragement of off-peak charging and their renewable energy program integration into charging and transportation electrification, the Department noted OTP retires RECs for all energy consumption at public EV chargers. The Department also highlighted the work OTP is completing through the ECO filings to address air pollutants from small motor and industrial sectors such as lawn care and industrial forklifts.³¹

The Department believes OTP will play an outsized roll within the community with regards to stimulating nonutility investment and the creation of high-quality jobs for local workers, specifically through the additional demand for electrical contractors needed assuming an approval of a Make Ready Program.³²

The Department discussed how OTP's current EV education is important for greater transportation electrification in rural communities as the Company is considered a trustworthy educator in this space. The Department also noted that with the implementation of the Clean Cars Minnesota rule on model year 2025 cars, which will begin sales in the second half of 2024, OTP's partnership with MADA will play an important role in their communities.³³

²⁶ OTP Response to Department IR 11.b., Docket 23-380, Dept Comment, Attachment B, p. 17

²⁷ OTP Response to Department IR 12.g., Docket 23-380, Dept Comment, Attachment B, pp. 20-21

²⁸ Docket 23-380, Dept Comment, p. 32

²⁹ Docket 23-380, Dept Comment, p. 33

³⁰ Docket 23-380, Dept Comment, p. 34

³¹ Docket 23-380, Dept Comment, p. 35

³² Docket 23-380, Dept Comment, p. 36

³³ Docket 23-380, Dept Comment, pp. 36-37

The Department discussed OTP's planned investments in transportation electrification and noted that there are large cost ranges for components of OTP's forecasted spending, particularly in their NEVI support, which is based on two specific scenarios: providing limited make-ready investments on the low end (\$50,000), or upgrading their existing DCFC pilot site into full NEVI compliance on the high end (\$750,000). OTP also had large cost ranges for O&M costs associated with their DCFC project ranging from \$50,000 to \$500,000 due to uncertainty with the required levels of spending for parts replacement and repair due to limited experience and the rapidly evolving technology landscape. Due to these broad ranges and limited information from the Company on potential impacts of the investments, the Department forwent making a determination regarding OTP's TEP under the criterion of whether the TEP's programs, investments and expenditures are reasonably expected to "be transparent and incorporate reasonable public reporting of program activities, consistent with existing technology and data capabilities to inform program design and Commission policy with respect to electric vehicles."^{34,35}

The Department also forwent a determination on whether the TEP's programs, investments, and expenditures are expected to "reasonably balance the benefits of ratepayer funded investments in transportation electrification and impacts on utility rates" due to the same challenges with uncertainty in the rapidly evolving market and broad cost ranges provided.^{36,37}

Below are OTP's past 5 years historical spend and expected future 5 years spend that the Department examined when forgoing their determinations.

Table 7: 5-Year Historical Spending³⁸

Budget Category (Distribution, IT, Transmission, etc.)	Capital	O&M
MN EV DCFC Pilot service extension upgrades, test site installation	\$222,395	
MN EV DCFC Pilot, Test Site	\$784,052	
5-year O&M service as part of MN DCFC pilot project package, Test site service until end of 2024		\$0
Marketing and Communications: Ride & Drive Events, Flyers, Education Outreach, off peak charging, training, level 2 charging donations.		\$285,942
Sub Total:	\$1,006,447	\$285,942
Total Capital and Expense:	\$1,292,389	

³⁴ Minn. Stat. § 216B.1615, Subd. 3(8)

³⁵ Docket 23-380, Dept Comment, p. 37

³⁶ Minn. Stat. § 216B.1615, Subd. 3(9)

³⁷ Docket 23-380, Dept Comment, p. 38

³⁸ Docket 23-380, Initial Filing on 11/1/23, p.60

Table 8: 5-Year Future Spending³⁹

Budget Category (Distribution, IT, Transmission, etc.)	Capital	O&M
MN EV DCFC Pilot – Completed DCFC network installation	\$1,311,040	
Marketing and Communications:		\$250,000-\$750,000
NEVI Support	\$50,000-\$750,000	
O&M Charging infrastructure - Test site 5-year service agreement ends end of 2024. Pilot network service ends 2028-2029		\$50,000-\$500,000
ECO Rebates – off peak charging, electric vehicles, electric school buses		\$100,000-\$500,000

The Department also noted a mis-ordering of subsections in OTP's initial filing and recommended the correction listed as **Decision Option 6**, which OTP supported in reply comments.⁴⁰

iii. Staff Analysis

Staff looks forward to reviewing OTP's new programs such as the expected Make Ready Program. Staff notes that continued efforts to lower cost barriers for residential managed charging programs and exploring options to include MDU programming in future TEPs will be important to ensuring equitable charging access within Otter Tail's service territory. Staff looks forward to the Company bringing forward solutions to improving the number of EVs on the Company's managed charging programs and the learnings from their DCFC network.

Staff understand why the Department forwent determinations on Minn. Stat. § 216B.1615, Subd. 3(9) and Minn. Stat. § 216B.1615, Subd. 3(10) and believe this not to be a detriment to OTP's TEP nor should it hinder the approval of the TEP by the Commission. OTP has not proposed any new programming via this TEP, instead waiting until they have a better understanding of the programs they hope to submit in the future. Staff notes that including more detailed budgets with specific line items with future program filings will enable more efficient stakeholder and Commission review. Staff recommends the Commission require Otter Tail to file its next TEP on November 1, 2025 (**Decision Option 15**).

F. Resiliency

i. OTP Initial Filing

Otter Tail Power approaches resiliency of the distribution system through asset health and technology investments. These types of projects allow OTP to better assess the distribution

³⁹ Docket 23-380, Initial Filing on 11/1/23, p. 61

⁴⁰ Docket 23-380, Dept Comment, p. 39

system and restore power after interruptions. The Company's Outage Management System project will improve both resilience and reliability of the distribution system by allowing the Company to respond more efficiently to interruptions. The two tables below summarize the asset health and technology projects highlighted in OTP's initial filing.

Table 10: Asset Health Type Projects in Section 9.E

Type of Asset Health Project	Description
General Distribution Replacement	Replacement of aging equipment
Underground (UG) Asset Replacement	Replacement of existing underground cables
Distribution Substation Replacement	Replacement of aging substation equipment
Distribution Overhead (OH) Replacement	Replacement of overhead cables
Strategic OH to UG projects	Proactively converting OH to UG using the following criteria - Safety concerns - Limited access for outage restoration - Limited access for routine vegetation management and maintenance - Historical outage history - Number of customers impacts priority on higher number of customers impacted - Ability to install new UG infrastructure from back lot lines, to front of lot or road
Porcelain Cut-out Replacement Program	Replace distribution class porcelain cutouts to polymer cutouts, installing wildfire protection on poles and distribution equipment, and inspecting electrical equipment connections along selected distribution feeders.
Distribution Pole Replacement Program	Testing and replacing distribution poles which do not meet strength tests.

Table 11: Technology Projects

Type of Technology Project	Description
S&C Trip Savers and Siemens Compact Modular Reclosers	Technology to reduce momentary interruptions to customers while the Company conducts distribution system repairs.
Electronic Reclosers	This technology provides the Company with more real-time and accurate information to plan and assess the health of the distribution system.
Line Sensors	Line sensors can be used to locate fault and can provide additional information to the Company for troubleshoot and root cause analysis.

In addition to System Infrastructure and Reliability Improvement (“SIRI”) and OMS initiatives the Company’s AMI initiative is another way Otter Tail is improving upon the resilience of the distribution system. AMI will provide engineers with more granular information of system performance to better inform system planning activities in regards to reliability and resilience. Specifically, AMI will provide the OMS with power-on and power-off notifications, further improving the resilience of the system.

ii. DOC Comment

The Department defines resiliency as “the ability of the energy system to avoid, withstand, and recover from the impacts of extreme weather and other disruptive events.” The Department also notes OTP’s unique challenge of resilience in the context of its large and rural service territory, requiring a targeted approach to resiliency.

At the moment, the Department finds it challenging to fully assess system resilience due to a lack of existing resilience metrics. The Department views OTP’s IDP discussion of resiliency in tandem with reliability.

To establish resiliency metrics for the Company, the Department notes the Company could utilize non-weather-normalized versions of metrics, including Major Event Days (“MEDs”), in its Minnesota Safety, Reliability, and Service Quality Standards (“SRSQ”) Report. The Department notes that other jurisdictions track System Average Interruption Duration Index (“SAIDI”) and SAIFI with MEDs as resilience metrics.

The Department recommends the Commission direct Otter Tail Power to develop a suite of metrics to track resiliency, including SAIDI and SAIFI, MEDs, and other metrics to the extent warranted. (**Decision Option 7**)

iii. OTP Reply

In response to the Department’s recommendation, OTP noted a lack of established nationwide resiliency reporting standards to measure resiliency effectiveness from, or independently of, projects funded by the U.S. Department of Energy’s Grid Resilience and Innovation Partnerships (GRIP) program. The Company will continue to follow preliminary metric recommendations from the Outage Data Initiative Network. However, at this time, the Company would select the following preliminary metrics to track future resilience performance as already reported through the MN SRSQ:

- SAIFI
- CAIDI
- MED trends

In response to an information request from the Commission regarding the Company’s equipment design standards, the Company broke down each strategy according to the individual extreme weather event.

Extreme Weather Event	Otter Tail Power Strategy
Heat Waves	For new residential service construction, the company standardized the installation of 25 kVA transformers and 4/0 secondary wire. This allows the Company to serve existing and future customer loads, and increased loading capabilities for higher and longer duration heat wave events. When large three phase loads are requesting electric service, the Company will conduct an in-depth engineering study to determine if the existing distribution line and handle load or if it should be upgraded. The Company is looking forward to utilizing loading data from AMI to proactively identify potential overhead issues.
Heavy Rainfall Events	To mitigate damage to distribution pole infrastructure in areas prone to water issues, the Company installs additional pole guy wire support and/or install poles in vertical steel culverts back-filled with crushed rock. If these mitigation strategies cannot be deployed, the Company attempts to reroute the line.
High Winds	Current distribution line construction standards meet the National Electric Safety Code Rule 250B Grade C construction requirements. The Company also installs phase spaces in lines where “galloping” has been observed and/or caused damage to overhead distribution lines.
Ice Storms	Current distribution line construction standards meet the National Electric Safety Code Rule 250B Grade C construction requirements. The Company may also convert poor performing distribution lines to be buried underground.

iv. DOC Reply

In reply comments the Department clarified its original recommendation. The Department recommends the Commission direct Otter Tail Power to develop a suite of metrics to track resiliency, including SAIDI and SAIFI *with* MEDs, and other metrics to the extent warranted (**Decision Option 7**).

The Department appreciates OTP’s efforts toward developing a set of metrics for tracking resiliency, and is interested in learning more about the Outage Data Initiative resiliency standards that were referenced in the Company’s reply comments.

v. Staff Analysis

Staff is encouraged by OTP’s approach to improve resiliency of the distribution system through targeted investments. Staff is also appreciative of the Department’s comments noting the importance to distinguish resiliency from reliability. In view of the Department’s definition of “resilience,” investments to improve resiliency of the distribution system should equip the

distribution system with the ability to “withstand” and “recover” from impacts of extreme weather and disruptive events. Simply, resiliency investments should improve the distribution system to both withstand high-consequence, low-frequency events, such as extreme weather, to prevent an outage, and, if an outage should occur, rapidly recovery from that outage.

Based on OTP’s asset health and technology investments, the Company’s asset health investments prioritize withstanding extreme weather, or preventing an outage while the Company’s technology investments focus on recovering from an outage caused by extreme weather. The Company’s response to the information request further demonstrates the Company’s tailored appropriate to extreme weather events.

The Department and the Company agree that a lack of nationwide industry standards currently exist to measure the effectiveness of resiliency focused investments. The Company offered a few preliminary metrics to track future resilience performance through the SRSQ reports. While the Department asked the Company to develop a suite of metrics to track resiliency, including SAIDI and SAIFI with Major Event Days to measure the resiliency of the Company’s distribution system.

Staff discusses the Department’s recommendations in the Joint Briefing Papers.

Decision Option 7 implements the Department’s recommendation

4. Decision Options

1. Accept Otter Tail Power's 2023 IDP Report as in compliance with IDP reporting requirements. Acceptance of the 2023 IDP has no bearing on prudence nor certification under Minn. Stat. § 216B.2425, subd. 3. (OTP, Department)

Modifications for Future IDPs

The Commission may select any combination of DO 2-5, or none of the options

2. Direct Otter Tail to file a cost-benefit analysis for DRMS in a supplemental filing, to be provided within 180 days of the Commission's final Order in this proceeding. (Department)
3. Direct Otter Tail to submit a supplemental filing, to be provided within 180 days of the Commission's final Order in this proceeding, with a detailed description of its process for NWA analysis. (Department)
4. Direct Otter Tail to provide in its 2025 IDP an update on the Morris Flow Battery project. (Department)
5. Direct Otter Tail to include in its 2025 IDP an update on the Morris, Minnesota impact study and identify the specific investments included in its budget to mitigate risks identified in the study.

Staff recommends the Commission adopt DO 6.

6. Revise the IDP filing requirements to identify the sub-sections establishing the requirements for Non-Wires (Non-Traditional) Alternatives Analysis and the TEP as sections 3.E and 3.F, respectively. (Department, OTP)

*The Commission may select DO 7 **AND/OR** 8, **OR** DO 9, or none of the options. These decision options are explained the Joint Briefing Papers.*

7. Direct Otter Tail Power to develop a suite of metrics to track resiliency, including SAIDI with MEDs and SAIFI with MEDs, and other metrics to the extent warranted in its 2025 IDP. (Department)

AND/OR

8. Direct Otter Tail Power to provide a proposal for measuring the capacity, reliability, ratepayer impacts, and equity impacts of its distribution grid investments in its next IDP. This proposal shall specifically address the level of granularity at which Otter Tail Power will evaluate these impacts for each budget category, indicating for each category whether Otter Tail Power plans to measure these impacts at the level of the budget category, program, project, or at some other level of resolution, or not at all, and specifically accounting for the impact of any expected changes to IDP budget categories. (Department)

OR

9. Delegate authority to the Executive Secretary work with Otter Tail Power and stakeholders to discuss metrics reported across distribution dockets and delegate authority to the Executive Secretary to approve via notice a stakeholder agreement on metrics reporting if one is reached. At minimum, the proposal and metrics shall include the following components:
 - a. Reliability metrics such as SAIDI, SAIFI, CAIDI, CEMI, and CELI
 - b. Distribution spending by IDP budget categories
 - c. Whether there is available hosting capacity for generation or load at the primary system level
 - d. Demographic data including race and income
 - e. Installed DERs, ECO rebates, DR customers enrolled in programs
 - f. Metrics reported at a feeder and/or census block group level(Staff)

*The Commission may select either DO 10 **OR** DO 11, or neither. These decision options are explained the Joint Briefing Papers.*

10. Order Otter Tail Power to file a supplemental filing within [180 days] of the Commission's Order in this docket that proposes a plan to accelerate beneficial electrification for its customers, including a discussion of how to incentivize dual fuel adoption for space heating and electrification of water heating, and provide forecasts of expected grid impacts of the same. (Department, Grid Equity Commenters)

OR

11. Delegate authority to the Executive Secretary to work with Otter Tail Power, the Department, and stakeholders to modify the IDP filing requirements to include discussions of the impacts of electrification where appropriate. Delegate authority to the Executive Secretary approve via notice a stakeholder agreement on amended filing requirements if one is reached. (Staff)

The Commission may select DO 12 or DO 13, or neither. These decision options are explained the Joint Briefing Papers.

12. Delegate authority to the Executive Secretary to work with Otter Tail Power and stakeholders on ways to modify the IDP budget categories to allow for comparisons between utilities and comparison of historic to forecasted data. Delegate authority to the Executive Secretary to approve via notice a stakeholder agreement on amended filing requirements if one is reached. (Staff)

OR

13. Modify Otter Tail Power's IDP filing requirements to amend requirement 3.A.26, 3.A.28, and 3.A.29 to remove the requirement that financial information be reported in IDP-specific categories as follows:

3.A.26 Historical distribution system spending for the past 5-years, ~~in each category. Information shall be reflected in categories consistent with the Company's cost recovery proceedings.~~

- ~~a. Age-Related Replacements and Asset Renewal~~
- ~~b. System Expansion or Upgrades for Capacity~~
- ~~c. System Expansion or Upgrades for Reliability and Power Quality~~
- ~~d. New Customer Projects and New Revenue~~
- ~~e. Grid Modernization and Pilot Projects~~
- ~~f. Projects related to local (or other) government requirements~~
- ~~g. Metering~~
- ~~h. Other~~
- ~~i. Electric Vehicle Programs~~
 - ~~1) Capital Costs~~
 - ~~2) O&M Costs~~
 - ~~3) Marketing and Communications~~
 - ~~4) Other (provide explanation of what is in "other")~~

~~The Company may provide in the IDP any 2018 or earlier data in the following rate case categories:~~

- ~~a. Asset Health~~
- ~~b. New Business~~
- ~~c. Capacity~~
- ~~d. Fleet, Tools, and Equipment~~
- ~~e. Grid Modernization~~

For each category, provide a description of what items and investments are included.

3.A.28 Projected distribution system spending for 5 years into the future ~~for the categories listed above in categories consistent with the Company's cost recovery proceedings. itemizing any non-traditional distribution projects.~~

3.A.29 Planned distribution capital projects, including drivers for the project, timeline for improvement, summary of anticipated changes in historic spending. Projects shall be reflected in categories consistent with the Company's cost recovery proceedings. ~~Driver categories should include:~~

- ~~a. Age-Related Replacements and Asset Renewal~~
- ~~b. System Expansion or Upgrades for Capacity~~
- ~~c. System Expansion or Upgrades for Reliability and Power Quality~~
- ~~d. New Customer Projects and New Revenue~~
- ~~e. Grid Modernization and Pilot Projects~~
- ~~f. Projects related to local (or other) government requirements~~

~~g. Metering~~

~~h. Other~~

~~i. Electric Vehicle Programs~~

~~1) Capital Costs~~

~~2) O&M Costs~~

~~3) Marketing and Communications~~

~~4) Other (provide explanation of what is in "other")~~

TEP Decision Options

14. Approve Otter Tail Power's 2023 Transportation Electrification Plan. (OTP, Department)

15. Require Otter Tail Power to file its next TEP by November 1, 2025. (Staff)