

## Staff Briefing Papers

Meeting Date July 9, 2020 Agenda Item \*\*3

Company Otter Tail Power Company (Otter Tail or the Company)


Docket No. **E017/M-19-693**

### In the Matter of Otter Tail Power's 2019 Integrated Distribution Plan

- Issues
1. Should the Commission accept or reject Otter Tail Power's Integrated Distribution Plan (IDP)?
  2. Should the Commission adjust any of the IDP filing requirements for Otter Tail Power's next IDP?

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 <b>Relevant Documents</b>	<b>Date</b>
Commission Order Adopting Integrated Distribution Plan Filing Requirements, Docket No. E-017/CI-18-253	February 20, 2019
Otter Tail Power, <i>Initial Filing - Integrated Distribution Plan</i>	November 1, 2019
Otter Tail Power, <i>Initial Filing – Appendices A-B (Public and Non-Public)</i>	November 1, 2019
Rakon Energy, <i>Public Comment (Parts 1-3)</i>	January 10, 2020
Department of Commerce, <i>Comments</i>	January 22, 2020
Office of the Attorney General, <i>Comments</i>	January 22, 2020
Clean Energy Economy Minnesota, <i>Comments</i>	January 22, 2020

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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.

✓ **Relevant Documents**

**Date**

Department of Commerce, *Reply Comments*

February 12, 2020

Office of the Attorney General, *Reply Comments*

February 12, 2020

Otter Tail Power, *Reply Comments*

February 12, 2020

**Table of Acronyms**

<b>Acronym</b>	<b>Definition</b>
AMI	Advanced Metering Infrastructure
CAIDI	Customer Average Interruption Duration Index
CIP	Conservation Improvement Program
CIS	Customer Information System
CVR	Conservation Voltage Reduction
DER	Distributed energy resources
DG	Distributed generation
EV	Electric vehicle
EE	Energy efficiency
ESS	Energy storage system (e.g. battery storage)
GIS	Geographic Information System
IDP	Integrated Distribution Plan
IEEE	Institute of Electrical and Electronics Engineers
IMS	Interruption Monitoring System
IRP	Integrated Resource Plan
LMS	Load Management System
MAIFI	Momentary average interruption frequency index
MISO	Midcontinent Independent System Operator
NWA	Non-wires alternative
OH	Overhead (as in overhead lines)
SAIDI	System Average Interruption Duration Index
SIRI	System Infrastructure and Reliability Improvements
UG	Underground (as in underground cable)

## I. Statement of the Issues

Should the Commission accept or reject Otter Tail Power Company's (Otter Tail or the Company) Integrated Distribution Plan (IDP)?

Should the Commission adjust any of the IDP filing requirements for Otter Tail's next IDP?

## II. Background

### A. Procedural Background

On November 1, 2019, Otter Tail filed its first IDP, which is the result of input from stakeholders and the Commission's February 20, 2019 *Order Adopting Integrated Distribution Plan Filing Requirements* in Docket No. E015/CI-18-253.

The Commission's filing requirements, established in the February 20, 2019 Order, intended to facilitate a utility's IDP filing that would meet the following planning objectives:<sup>1</sup>

- 1) 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;
- 2) Enable greater customer engagement, empowerment, and options for energy services;
- 3) Move toward the creation of efficient, cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies;
- 4) Ensure optimized utilization of electricity grid assets and resources to minimize total system costs; and
- 5) 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.

On November 19, 2019, the Commission issued its *Notice of Comment Period*, which sought input on the following topics:

- Should the Commission accept or reject Otter Tail's IDP?
- Does Otter Tail's IDP achieve the planning objectives in the filing requirements approved in the Commission's February 20, 2019 Order?
- What IDP filing requirements provided the most value to the process and why?

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<sup>1</sup> Docket No. 18-253, *Order Adopting Integrated Distribution Plan Filing Requirements* (February 20, 2019), p. 2.

- Are there filing requirements that are not informative and/or should be deleted or modified, and why?

On January 15, 2020, the Department of Commerce-Division of Energy Resources (Department), the Office of Attorney General-Residential Utilities Division (OAG), and Clean Energy Economy Minnesota (CEEM) filed Initial Comments. Rakon Energy submitted a public comment on January 10, 2020.

By February 12, 2020, Otter Tail, the Department, and the OAG filed Reply Comments.

*B. “Checklist of Requirements”*

The Commission’s February 20, 2019 Order established the following categories of filing requirements: baseline distribution data and financial data, preliminary hosting capacity data, a distributed energy resources (DER) scenario analysis, a long-term distribution system modernization and infrastructure investment plan, and a non-wires alternative analysis.

At the end of its IDP, on pages 43-44, Otter Tail includes a “Checklist of Requirements,” which lists the Company’s filing requirements and the section of the IDP where the information is discussed. Staff provides this table below both to familiarize the Commission with Otter Tail’s requirements as well as to provide a general idea of the topics covered in the report:

<b>Filing Requirement</b>	<b>Description</b>	<b>Report Section</b>
3.A.1	Modeling Software	3
3.A.2	Percentage of substations and feeders with monitor & control	5
3.A.3	Summary of M&V and planned improvements	5
3.A.4	Number of customers with AMI/Smart Meters	5
3.A.5	Discussion of IRP and IDP relationship	5.A
3.A.6	Discuss how DER is considered in load forecasting	5.B
3.A.7	IEEE 1547-2018 impacts	3
3.A.8	Distribution system loss percentages	5.E
3.A.9	Coincident load at distribution interface	5
3.A.10	Substation capacity	5
3.A.11	See 3.10 – same answer	5
3.A.12	Total miles OH	5
3.A.13	Total miles of UG	5

3.A.14	Total number of distribution customers	5
3.A.15	Costs spent on DER gen installations	5.B
3.A.16	Total charges to customers for DER	5.B
3.A.17	DER nameplate gen installations	5.B
3.A.18	DER count installations	5.B
3.A.19	Existing DER	5.B
3.A.20	Queued DER	5.B
3.A.21	EVs in MN	5.A
3.A.22	Number and capacity of EV chargers	5.A
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3.A.24	Savings and demand savings from EE	5.A
3.A.25	Amount of Controllable Demand	5.A
<b>Financial Information</b>		
3.A.26	Historical spends in categories	6
3.A.27	Investments on the system not by OTP	6
3.A.28	Projected spends 5-years into the future	6
3.A.29	Projected capital project spends	6/Appendix
3.A.30	Non-wires alternatives ben./cost	8
<b>DER Deployment</b>		
3.A.31	Current DER deployment and geographical dispersion	5.B
3.A.32	Areas of high DER penetration	5.B
3.A.33	Information where advanced inverters are needed	5.B
<b>Prelim Hosting Capacity Data</b>		
3.B.1	Excel spreadsheet of minimum load by feeder	5.D
<b>DER Scenario Discussion</b>		
3.C.1	DER scenario recommendations	5.C
3.C.2	Methodology of DER scenario creation	5.C
3.C.3	Tools needed for higher DERs	5.C
3.C.4	Impacts of FERC Order 841	Other

<b>Long Term Distribution Grid Mod Plan</b>		
3.D.3	Advanced Metering Infrastructure	7
	Network Plans	7
	Load management	7
	Conservation Voltage Reduction	7
	Outage Management System	7
	SIRI Initiative	7
	LED Street Lighting	7
	Water Heater Storage Pilot	7
	Distribution grid evolution	3 & 7
<b>Non-Wire Alternatives</b>		
3.E.1	Non-wire alternative screening	8

### C. Company Background

Throughout the IDP, Otter Tail emphasizes two key aspects about its service territory that make it a unique utility in the broader Minnesota IDP process. First, Otter Tail is a multi-jurisdictional utility serving customers in Minnesota, North Dakota, and South Dakota. (About 50% of Otter Tail's load is in Minnesota, 40% is in North Dakota, and South Dakota comprises the remaining 10%.) Figure B below displays the location of communities Otter Tail serves across the Company's three-state service territory, many of which are outside of Minnesota (155 of the 422 communities Otter Tail serves are in Minnesota).

Figure B – Otter Tail Communities



Otter Tail further explained that its capital budgets for distribution planning are applied system-wide:

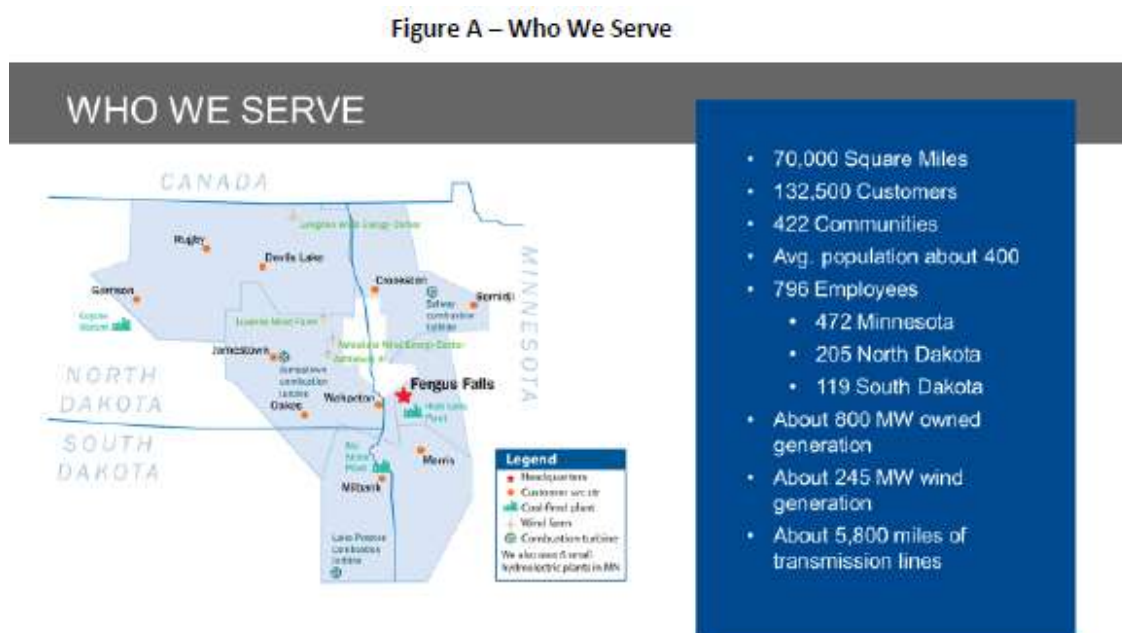
Though distribution systems typically do not have multi-state impacts, the general processes and budgets for the Company are applied on a system-wide basis, including rate making, which spans all three states. For example, rate making is completed based on system-wide spends and allocated pro-rata to each state based on usage.<sup>2</sup>

Staff notes that the IDP includes a number of tables showing historical and forecasted distribution system spending. All costs shown in these tables are specific to Minnesota. They were derived by applying a 50% allocator, which was used because, as noted above, approximately half of the Company's energy and demand use is in Minnesota.

A second important aspect to consider is demographics, particularly the rural nature of its service territory. Otter Tail explained:

The average population of the communities served is approximately 400, and over one-half of the communities served have populations of fewer than 200. Only three of Otter Tail's communities have populations exceeding 10,000: Fergus Falls, Minnesota (pop. 13,138), Bemidji, Minnesota (pop. 13,431), and Jamestown, North Dakota (pop. 15,427).<sup>3</sup>

Figure A of the IDP highlights a few relevant attributes of Otter Tail's system:



<sup>2</sup> IDP, p. 1.

<sup>3</sup> IDP, p. 4.



#### D. Stakeholder Input

On October 4, 2019, Otter Tail hosted a stakeholder meeting to review the current state of its distribution planning and describe how the Company plans to integrate new technologies, such as DER, into the distribution grid. (Otter Tail issued a public notice on September 13, 2019.) Otter Tail noted that meeting attendance was minimal, but the presentation was filed in Docket No. 18-253 on October 10, 2019 for those who wish to view it.

### III. Otter Tail's 2019 IDP

#### A. System Details

##### 1. Visibility

According to the Company, it has "limited visibility of distribution facilities throughout system on a real-time basis."<sup>4</sup> In Minnesota, about 55% of its substations have metering, and only 3% have control capabilities. System-wide, about 67% of its substations have metering and 2% have control capabilities.<sup>5</sup>

As shown in Table 1, Otter Tail has 565 distribution substations, 11 of which have control/monitoring capability (the 2% mentioned above), and Otter Tail currently meters 383 of these 565 distribution substations (the 67% mentioned above):

Table 1 – Substation and Feeder Statistics

Distribution Substation	Minnesota	North Dakota	South Dakota	Total
Substation Count	217	273	75	565
Control/Monitoring	6	4	1	11
Metering	120	217	46	383
Substation/Transformer Capacity (MVA)	710	780	170	1,660
Max Substation Load (MVA) <sup>8</sup>	425	550	105	1,080

Distribution Feeder	Minnesota	North Dakota	South Dakota	Total
Feeder Count	282	352	90	724
Control/Monitoring	24	9	4	37

Even though Otter Tail only meters 67% of its distribution substations, this covers more than 90% of its delivered energy. Otter Tail explained that adding metering capabilities to the remaining substations would cost between \$5,000 and \$10,000, depending on the site, which means that full metering capability at all substations would range from \$900,000 to \$1,800,000.<sup>6</sup> Otter Tail does not believe these costs justify full metering capability at this time.

<sup>4</sup> IDP, p. 15.

<sup>5</sup> Otter Tail Informational Letter, October 4, 2019 Presentation.

<sup>6</sup> IDP, p. 16.

The IDP then discusses Otter Tail’s four main distribution system assets: primary distribution lines, secondary distribution lines, distribution poles, and service transformers. The functions of these assets are explained below:

- Primary distribution lines are the main lines from substations to the high side of service transformers.
- Secondary distribution lines are the lines used for streetlight circuits and the lines from the low side of service transformers to individual customer service lines.
- Distribution poles attach the primary and secondary distribution lines for overhead circuits.
- Service transformers are used to transform the voltage from primary to secondary levels.

Table 2 provides the number of miles of primary and secondary distribution lines and the number of distribution poles and service transformers by state:

**Table 2 – Distribution System Asset Statistics**

<b>Primary Distribution</b>				
<b>Line (miles)</b>	<b>Minnesota</b>	<b>North Dakota</b>	<b>South Dakota</b>	<b>Total</b>
Overhead	2,037	1,902	475	4,414
Underground	669	586	103	1,358
<b>Total</b>	<b>2,706</b>	<b>2,488</b>	<b>578</b>	<b>5,772</b>
<b>Secondary Distribution</b>				
<b>Line (miles)</b>	<b>Minnesota</b>	<b>North Dakota</b>	<b>South Dakota</b>	<b>Total</b>
Overhead	951	1,008	240	2,199
Underground	192	217	36	445
<b>Total</b>	<b>1,143</b>	<b>1,225</b>	<b>276</b>	<b>2,644</b>
<b>Distribution Poles</b>				
<b>Total</b>	<b>Minnesota</b>	<b>North Dakota</b>	<b>South Dakota</b>	<b>Total</b>
	79,972	81,278	17,958	179,208
<b>Service Transformers</b>				
	<b>Minnesota</b>	<b>North Dakota</b>	<b>South Dakota</b>	<b>Total</b>
Overhead	12,250	10,544	2,678	25,472
Pad-mount	5,703	4,687	810	11,200
<b>Total</b>	<b>17,953</b>	<b>15,231</b>	<b>3,488</b>	<b>36,672</b>

Otter Tail noted that while not all of its distribution substations are metered, it does meter all customer accounts, and nearly all of Otter Tail’s billing meters are read manually. (It does, however, have some industrial meters and Interruption Monitoring System cellular AMI meters.) Table 3 summarizes Otter Tail’s meter counts in Minnesota, which are used to bill just over 62,000 Otter Tail customers in Minnesota. (The total number of meters is higher than the number of customers because some customers have more than one meter—for example, time-of-use customers.)

Table 3 – Minnesota Service Territory Metering

	Manually Read	AMR	AMI	Total
Minnesota Meters	84,363	244	491	85,098

## 2. System Losses

Based on an analysis it conducted in 2010, Otter Tail estimates energy losses on the distribution system to be about 4.34%. This estimate was derived by taking the difference between customer metering data and distribution substation metering data. Otter Tail explained that metering constraints and manually-intensive analytical efforts present challenges to calculate energy losses on Otter Tail's distribution system with more precision. Starting in 2020, Otter Tail will begin to develop automated processes to improve data set quality in order to better analyze system losses in the future.

## 3. Observed Trends

Otter Tail discussed a few recent trends it is observing on its distribution system. Regarding the demographics of its service territory, many of the small, rural communities Otter Tail serves are (1) increasing in age and (2) decreasing in population. Some areas have little to no energy growth, or its substations are well within system limits. Within the Minnesota distribution system, less than 20% of the substations are currently growing in demand or are above 75% of their existing capacity. This means that, strictly in terms of Otter Tail's ability to serve demand, there is no near-term reliability concern with its existing infrastructure (which is not to say reliability cannot be improved).

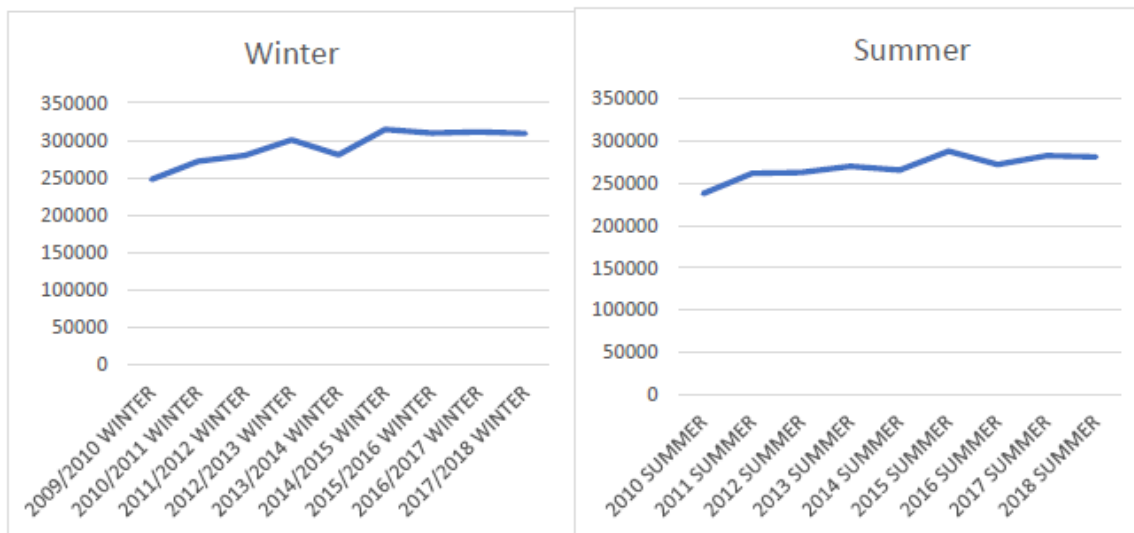
However, weather is important factor to consider in distribution planning due to the significant impact it can have on system demand. For instance, existing capacity at Otter Tail's substations can vary by 20% in the winter months and slightly under 10% in the summer months.<sup>7</sup>

Figures E and F below show the demand and energy growth trends, respectively, for the Company's Minnesota distribution system since 2010. Both figures illustrate that Otter Tail has seen minimal system growth over the past five years:

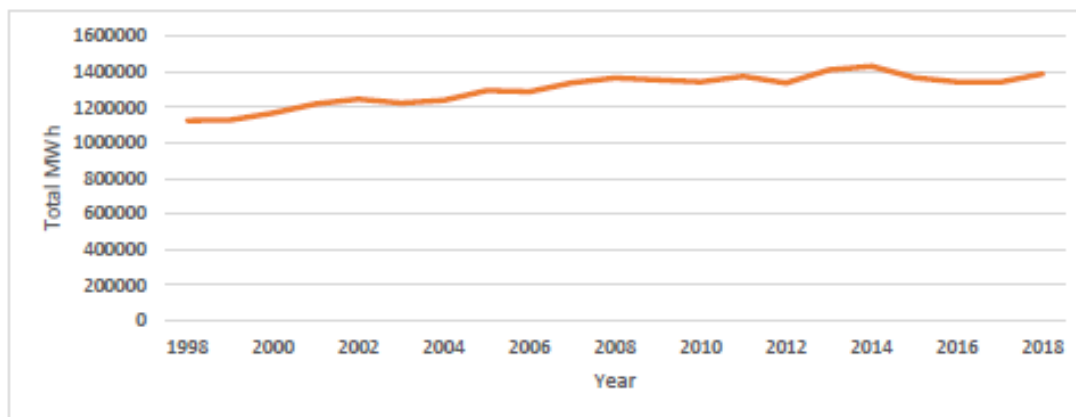
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<sup>7</sup> IDP, p. 7.

**Figure E – MN Distribution System Demand Growth Trends (kW)**



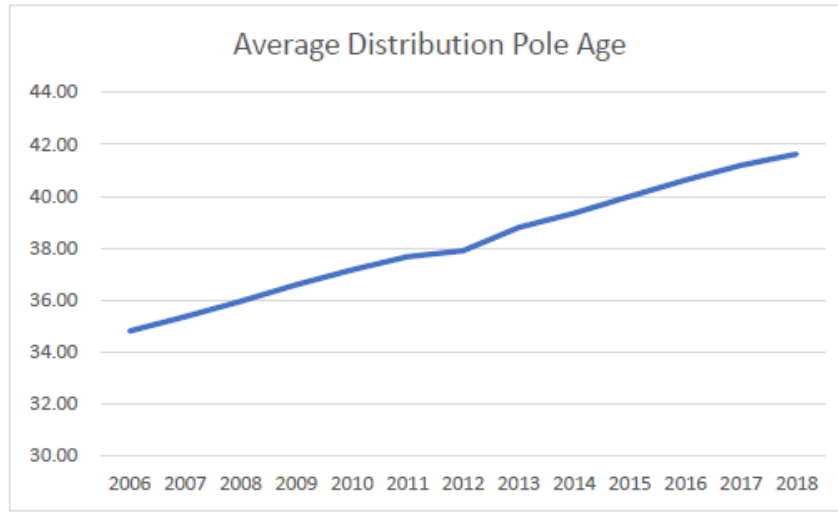
**Figure F – MN Distribution System Energy Growth Trends**



Of course, load growth is only one of several factors Otter Tail considers for distribution planning. Other factors include reliability, performance, and the age of its assets. For example, Otter Tail’s transmission and distribution poles are more than 40 years old, on average. Table 16 shows the average age of the Company’s distribution poles,<sup>8</sup> and Otter Tail’s long-term distribution system modernization and infrastructure investment plan includes reversing the age trend of its existing assets:

<sup>8</sup> IDP, p. 40.

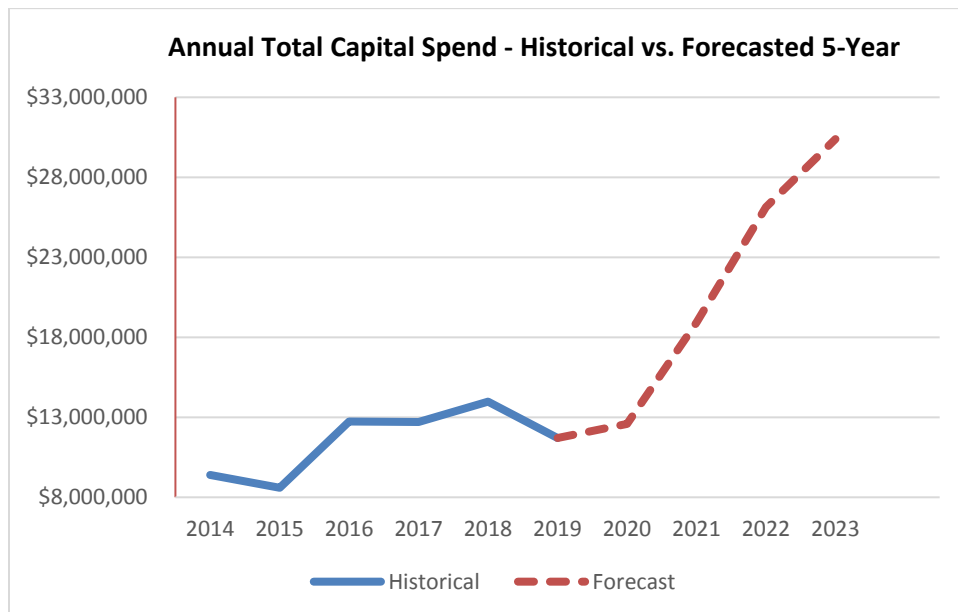
**Table 16 – Average Distribution Pole Age**



In addition, Otter Tail emphasized that customer experience and satisfaction are among its top priorities. Distribution system planning is unique because demand growth and community demographics may vary significantly across different areas of its service territory. As a result, Otter Tail continually examines specific areas needing improvement in order to enhance customer communications during outages and reduce the number of interruptions.

**B. Financial Information**

The figure below shows Otter Tail’s historical (solid line) and forecasted (dotted line) capital spending per year on its distribution system. Total capital spending is expected to increase substantially in the later years of the five-year forecast, largely due to age-related replacements and the Company’s planned AMI investment in 2022-2023:



Tables 8 and 9 provide the Company’s itemized historical (2014-2018) and five-year forecasted (2019-2023) distribution spends. As shown in Table 8, the “New Load or Reliability” category, which includes investments such as building/installing new facilities and serving growing load pockets, has typically accounted for 55-60% of total capital spends. Grid modernization, conversely, has generally accounted for very little investment, which is partially due to the fact that grid modernization is not a current category in Otter Tail’s budgeting system. (Otter Tail noted there could be projects on its system that might meet the Commission’s definition of grid modernization, but they are not included in Table 8.)

**Table 8 – Historical Distribution Spend for MN**

Category <sup>9</sup>	Year				
	2014	2015	2016	2017	2018
New Load or Reliability	\$5,691,854	\$5,759,672	\$5,756,953	\$6,736,132	\$7,486,374
Replace	\$3,021,808	\$2,013,023	\$5,421,753	\$4,281,649	\$4,099,947
Relocate	\$84,924	\$82,655	\$589,784	\$416,079	\$268,539
Metering	\$596,050	\$641,249	\$673,124	\$869,316	\$788,318
Grid Modernization or Pilot Projects	\$0	\$97,818	\$297,006	\$400,094	\$1,334,832
Total Capital Costs	\$9,394,637	\$8,594,417	\$12,738,619	\$12,703,271	\$13,978,010

Table 9 shows the five-year forecasted distribution expenditures, which, as mentioned above, illustrates that Otter Tail expects substantially higher spending on age-related replacements and AMI in 2022-2023:

**Table 9 - Forecasted 5-year Distribution Spend for MN**

Category	Forecast Year <sup>10</sup>				
	2019	2020	2021	2022	2023
New Customer Projects and New Revenue	\$5,742,164	\$5,783,058	\$6,306,805	\$6,283,565	\$8,412,912
System Expansion or Upgrades for Reliability and Power Quality	\$299,986	\$470,674	\$531,534	\$440,967	\$327,967
System Expansion or Upgrades for Capacity	\$355,850	\$503,783	\$328,420	\$142,312	\$409,081
Age-Related Replacements and Asset Renewal	\$3,848,089	\$3,949,514	\$5,014,436	\$8,747,961	\$9,417,647
Projects Related to local (or other) Government Requirements	\$259,981	\$308,783	\$137,689	\$142,312	\$146,581
Metering	\$550,000	\$592,500	\$611,500	\$630,000	\$625,000
Grid Modernization or Pilot Projects	\$650,000	\$575,000	\$1,150,000	\$9,150,000	\$11,050,000
Total	\$11,706,071	\$12,583,312	\$14,930,383	\$26,137,117	\$30,389,187

The figures below also illustrate the share of distribution system spending by category.<sup>9</sup> The costs from these figures are the same as those in Tables 8 and 9, but their different presentation highlights the increase in spending on asset replacement and grid modernization in the five-year forecast as compared to historical spending in those categories:



Appendix B of the IDP provides a full list of distribution projects planned for the next five years, with costs shown company-wide as opposed to Minnesota-only (i.e. costs in Appendix B do not apply the 50% allocator). It includes, for example, the Company's forecasted spending, on a system-wide basis, of approximately \$17 million in 2022 and \$22 million in 2023 on AMI (meaning that the \$9 million and \$11 million in 2022-23 as shown in Table 9 is what Otter Tail plans to recover from Minnesota ratepayers).<sup>10</sup>

### C. DER Scenarios

As Table 7 shows, in developing its "DER scenarios" (filings requirements 3.C.1 - 3.C.4), Otter Tail created a baseline scenario that begins with a system-wide load forecast. This incorporates assumptions for EV adoption, energy efficiency and demand response, and DER penetration. A second scenario, the "High DER Penetration Future," assumed higher growth rates for DER and EVs, as well as greater energy savings. Otter Tail uses both scenarios to calculate the overall effect on demand and determine whether or not there is a direct impact on distribution planning.

To briefly summarize the two scenarios—all of their assumptions will be discussed in greater detail in the following sections—the baseline scenario used the load forecast from its most recent, 2016 Integrated Resource Plan (IRP). This was adjusted downward for the IDP to reflect the Company's lowered growth projections during the forecast period. The baseline scenario also assumed: a 1.6% energy savings level, which is also from the 2016 IRP; an EV penetration of less than 0.1%; and 7 DG installations per year, which is Otter Tail's average DG installations per year since 2013. Note that the DG assumptions, like energy conservation, are already incorporated into the load forecast.

<sup>9</sup> These figures are from Otter Tail's October 4, 2019 stakeholder presentation, which was filed in Docket No. 18-253 on October 10, 2019.

<sup>10</sup> IDP, Appendix B, pp. 7-8.

Table 7 – Scenario Summary

DER Component	Baseline Scenario	High DER Penetration Future
Demand Growth	+0.92%	+1.0%
Energy Efficiency and Demand Response Effect on Demand	-0.90%	-1.5%
Electric Vehicle Adoption Effect on Demand	0% (Negligible)	+0.15%
Distributed Generation Effect on Demand	0% (Negligible)	-0.2%
<b>TOTAL Annual Net Load Modeled</b>	<b>+0%</b>	<b>-0.55%</b>

Overall, after taking into account energy efficiency and demand response, EV adoption, and DER penetration at baseline and high levels, Otter Tail expects a minimal or negligible impact to net annual load. The Company stated, “Otter Tail’s existing processes and tools are capable of handling” both levels of DER penetration.<sup>11</sup> Having said that, Otter Tail acknowledged that as DER reaches higher penetration levels, minimum demand levels will need to be studied for system impacts.<sup>12</sup> In addition, Otter Tail noted the importance of being aware of areas of the system where DER could be masking potential load growth.<sup>13</sup>

The remainder of this section will further discuss the four areas of the DER scenarios shown in Table 7—the load forecast, energy efficiency and demand response, EV adoption, and DER penetration.

### 1. Load Forecasting

Otter Tail’s process for developing a demand forecast begins with economic data from its last IRP. Notably, as shown in Table 7 above, Otter Tail’s baseline system-wide demand growth is expected to be 0.92% over the next 15 years, which is lower than the 1.25% demand growth rate assumed in the Company’s last IRP.<sup>14</sup>

An importance distinction, however, is that IRP only gives a general sense of system-wide demand growth; it does not show potential growth or decline in specific locations or communities. As a result, Otter Tail examines community-specific growth patterns, and areas with noted demand growth are studied more frequently and proactively than other areas of the system to ensure the system is adequate for the increasing load. This means areas of the system with different growth rates must be accounted for in a distribution plan.<sup>15</sup>

### 2. Energy Efficiency and Demand Response

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<sup>11</sup> IDP, p. 25.

<sup>12</sup> IDP, p. 19.

<sup>13</sup> IDP, p. 20.

<sup>14</sup> Docket No. E017/RP-16-386

<sup>15</sup> The following areas of Otter Tail’s Minnesota system, listed in alphabetical order, have experienced the most demand and growth activity over the past few years: Bemidji, Fergus Falls, Morris, Pelican Rapids, and Perham.



The downward trend in Otter Tail's load forecast is partially due to the success of the Company's energy savings programs in recent years (although declining economic growth has also been a factor). Otter Tail highlighted its achievements in its Conservation Improvement Program (CIP), noting the Company's 2.75% energy savings in 2016, 3.01% savings in 2017, and a Company-high 4.21% savings in 2018.

The IDP also discussed a few of its demand-side management programs. For example, Otter Tail is in the process of changing all illumination services provided in Minnesota to LED fixtures, as approved in Docket No. 17-152. Otter Tail is also developing a "next-generation water heater control program," which is a pilot that will incorporate multiple technology vendors, differing control strategies, and two technologies selected for deployment. The program is included in the Company's April 1, 2019 CIP Status Report filing.<sup>16</sup>

Moving forward, Otter Tail cautioned that it is possible there could be some market saturation for energy savings programs, so it could be challenging to continue these savings levels in future years.

In its baseline scenario, Otter Tail assumed the 1.6% energy savings, taken from its last IRP, will have a 0.9% coincident effect on demand. This could change in the future depending on whether the Company will be able to continue to achieve recent energy savings levels.

For demand response, most of Otter Tail's load management capability is in the winter. During the winter months, Otter Tail has the ability to control 100-120 MW, or roughly 15% of its peak, with about one-third of total customers participating in load control programs. In the summer, however, Otter Tail can only curtail about 15-30 MW. Otter Tail explains that more developed load management will be a major focus of its grid modernization plans:

As Otter Tail modernizes the grid, both advancements in metering and load management will be essential. As described above, there is an obsolescence need to put in a new load management system (both hardware and software) as the existing system is no longer supported and will not be able to offer the new rates and services that new systems can provide. While at this time Otter Tail does not have a concrete plan on what future metering and load management systems will look like, one of the guiding principles moving forward is for both of those systems to share a common communication infrastructure. For this to be a reality, selection of future AMI and [Load Management System, or LMS] infrastructure will be coordinated to ensure interoperability.<sup>17</sup>

### 3. Electric Vehicles

Otter Tail reported there are currently 44 EVs within its Minnesota service territory. Five of those are on the Company's off-peak charging rate. Otter Tail has also partnered with customers to install ten Level 2 charging stations.

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<sup>16</sup> Docket No. 16-116.

<sup>17</sup> IDP, p. 32.

As noted above, the baseline scenario assumes EV penetration of less than 0.1% in its service territory, which results in a 0.03% increase in annual demand due to EVs. In the high DER scenario, Otter Tail estimates EV penetration rates of 2.6% in 2025 (with a demand impact of 6.2 MW of non-coincident demand), 5.3% in 2030 (12.6 MW of non-coincident demand), and 6.8% in 2035 (15.8 MW of non-coincident demand).<sup>18</sup>

According to Otter Tail's analysis, the baseline EV adoption rate has a negligible effect on demand, whereas the high EV penetration scenario has a 0.15% impact on demand.<sup>19</sup> Due in part to the fact that its service territory is mostly rural, Otter Tail considers the high EV scenario unlikely:

Despite the company's proactive efforts to facilitate and encourage EV adoption, it is likely that Otter Tail will see less penetration than this forecast due to the rural nature of its large service territory. Legislative and regulatory policies, as well as technological changes, over this time frame can significantly change these projections.<sup>20</sup>

#### **4. Distributed Energy Resources**

##### Interconnection

Otter Tail emphasized that its current DER penetration is very low, with "less than 0.14 percent of the DER MW installed in Minnesota interconnected to the electrical system."<sup>21</sup> Over the last five years, Otter Tail has averaged seven DG projects per year interconnected to its Minnesota distribution system, which equates to approximately 89 kW per year of total nameplate DG capacity.

Due to such low DER penetration, Otter Tail does not measure the exact effect of each DER facility on demand growth—the amount of DER capacity is simply netted into the Company's load forecast. Additionally, from a distribution planning perspective, the peak demand reduction of existing DER is negligible, although Otter Tail acknowledges the role of DER and does not discount the importance of being aware of DER on the system.

##### Filing Requirements

Since several of the Commission's filing requirements pertain to DER, staff provides a table listing some of these requirements and summarizing the information Otter Tail provided in its IDP, as well as where it is located (note that some of this information has already been discussed above):

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<sup>18</sup> IDP, p. 21.

<sup>19</sup> IDP, Table 7, p. 25.

<sup>20</sup> IDP, p. 21.

<sup>21</sup> IDP, p. 10.

**Filing Requirement****IDP Report****System**

How DER is considered in load forecasting

Netted into current load forecasts.

IEEE 1547-2018 impacts<sup>22</sup>

Given Otter Tail's current level of DER penetration, and the current activity in the interconnection queue, does not yet rise to a level of concern for when more detailed studies would be required. (Page 10)

Costs spent on DER gen installations

While Otter Tail does not keep detailed records to track and review the cost to install each DER, Otter Tail estimates that it costs about \$1,400 per application.<sup>23</sup> (Table 6 on page 24.)

Existing DER

35 projects (34 solar) totaling 444.5 kW in 2013-18 timeframe (Table 4 of IDP, page 23)

Queued DER

4 projects totaling 146 kW, including a 112 kW project in Bemidji (Table 5 of IDP, page 24)

**DER Deployment**

Current DER deployment and geographical dispersion

Mostly in the southern portion of its MN service territory (Page 22)

Areas of high DER penetration

Fergus Falls (14 installations), Morris (11 installations) (Table 4)

**DER Scenarios**

DER scenario recommendations

- Baseline: 7 DG installations/year, 0% net affect to demand growth.  
- High scenario: DG installations triple, and there is a 0.2% effect on annual demand growth (0.55% overall effect on demand). (Page 22)

***D. Hosting Capacity (Available Interconnection Capacity)***

The Commission's February 20, 2019 Order required Otter Tail to include "preliminary hosting capacity data" as part of its IDP.<sup>24</sup> More specifically, the Order stated Otter Tail shall:

Provide an excel spreadsheet (or other equivalent format) by feeder of either daytime minimum load (daily, if available) or, if daytime minimum load is not available, peak load (time granularity should be specified).<sup>25</sup>

<sup>22</sup> The IEEE 1547 Standard intended to apply a uniform standard for the interconnection and interoperability of DER with electric power systems.

<sup>23</sup> The \$1,400 estimate includes putting into place the necessary agreements, the meter is installed, testing, and incorporating the new DER into the system.

<sup>24</sup> Staff notes that Otter Tail was not required to conduct a "hosting capacity analysis," as Xcel Energy was required to develop under Minn. Stat. § 216B.2425, subd. 8.

<sup>25</sup> Docket No. 18-253, *Order Adopting IDP Filing Requirements*, Filing requirement B.1 (February 20, 2019).

Appendix A provides the data required by the Commission's Order; it includes daily "non-zero"<sup>26</sup> minimum loads (in MW) at its distribution substations, using 2018 data, presented by month, day, and substation name.

Section 5.D of the IDP provides a discussion of the system's hosting capacity, or "available interconnection capacity." Otter Tail explained that it approximates available interconnection capacity by reviewing minimum feeder loading levels, but metering constraints present limitations on how frequently the Company can compile such data. For example, metering data is collected in 15-minute intervals, and feeder-level metering is not available. Some substations have cellular communication capability, but most require an on-site visit.<sup>27</sup>

### *E. Long-Term Grid Modernization Plan*

#### **1. SIRI Initiative**

Otter Tail is currently in the initial stages of its "SIRI Initiative," which stands for System Infrastructure and Reliability Improvements. One aspect of the SIRI Initiative includes identifying the highest-value projects to meet the Initiative's goals of improving reliability, safety, efficiency, and customer engagement. Another is creating a better understanding of the overall health of existing assets and replacement programs put in place for those assets.

As discussed previously, Otter Tail's five-year forecasted budget expects increased spending on age-related replacement, and as shown in Table 9 on page 13 of the briefing paper, age-related replacements and asset renewal increase in each subsequent year of the five-year forecasted budget. Otter Tail's investments in existing asset health programs has already begun, and the IDP provides some examples of where the Company is targeting its spending.

For example, much of its underground cable assets were installed in the late 1970s, and not only has Otter Tail recently experienced underground cable failures, but this vintage of cable is approaching the end of its useful life. In addition, Otter Tail's transmission and distribution poles are more than 40 years old, and Otter Tail aims to reverse the age trend of these assets.

#### **2. Advanced Metering Infrastructure (AMI)**

Otter Tail's plans for AMI investment are discussed on pages 30-31 of the IDP and in the excerpt below. In short, Otter Tail is planning a substantial investment in AMI by 2022, although the Company is still in the initial stages of that process. Otter Tail emphasized that a more detailed plan and cost-benefit analysis will be brought before the Commission prior to any AMI investment:

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<sup>26</sup> Otter Tail noted that when it reviewed the minimum feeder or substation loading reports, many reported a loading of 0 MWs, which can be due to outages and normal maintenance switching where the substation or feeder monitoring device may have been out of service. Because of this, the table in Appendix A shows the minimum "non-zero" loading level.

<sup>27</sup> IDP, pp. 25-26.

Otter Tail's business case for deployment of AMI is expected to be favorable. One factor supporting AMI deployment is that Otter Tail is not moving from an Automated Meter Reading (AMR) system to an AMI system. The Company's service representatives will be more efficient and more capable of providing real time information to customers if a customer does call with an electric use question.

An AMI system will affect many existing systems and departments. Because of these impacts, Otter Tail is currently completing a review of the implementation of a new Customer Information System (CIS) and the new staking system described earlier. The expectation is that the knowledge from these system improvements will help improve the execution of an AMI deployment.

Other possible benefits for AMI include: 1) development of new rates; 2) providing customers with enhanced services and choices; 3) improved efficiencies for field personnel and customer service personnel; 4) reduced meter related expenses; 5) improved outage assessment and restoration; 6) improved customer relationships by providing real-time data to customers; 7) reduced safety incidents due to meter reading; and 8) other related benefits. One key item that Otter Tail is assessing is the best use of all the new data that will be available. There is a recognition that more data does not always provide better information. The approach the Company will intend to take will be to develop a prioritized list of desired improvements and consider the least amount of data needed to meet those desired improvements.

At this time for planning purposes, Otter Tail has included costs for deploying an AMI system starting in the 2022 timeframe within Table 9 of forecasted costs. Prior to any substantial capital spends on an AMI project, a detailed cost to benefit analysis will be brought forth to customers and the Commission. Currently, however, Otter Tail is refining this analysis to further understand impacts to customers.<sup>28</sup>

### **3. Conservation Voltage Reduction (CVR)**

Conservation Voltage Reduction (CVR) operates the distribution system in a way that lowers the voltage profile along a feeder in order to reduce demand and delivered energy. Otter Tail has not leveraged this technology yet because it can control demand through its existing LMS, and because of challenges posed by its limited monitoring and control capability. Otter Tail is still considering implementing CVR and Volt/VAR Optimization, especially on larger residential/noncommercial or industrial feeders, in future years.

Since Otter Tail is currently investigating the costs and benefits of deploying CVR, there are no CVR costs within the 5- or 10-year grid modernization action plan.

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<sup>28</sup> IDP, pp. 30-31.

#### 4. Outage Process and Plans

As discussed previously, Otter Tail currently has limited visibility of distribution facilities, which is isolated to its largest distribution substations. In addition, Otter Tail does not have a formal outage management system. Otter Tail is currently investigating how to improve customer service, response time, reliability, and organizational efficiency by evaluating tools to automate these processes. The costs for such improvements are not included in this IDP because, like CVR, outage management is still in the investigational phase.

##### *F. Non-Wire Alternative Analysis*

The Commission's February 20, 2019 Order requires Otter Tail to include a non-wires alternative analysis for planned distribution system projects expected to cost more than \$2 million:

##### **E. Non-Wires (Non-Traditional) Alternatives Analysis**

1. Otter Tail shall provide a detailed discussion of all distribution system projects in the filing year and the subsequent five years that are anticipated to have a total cost of greater than two million dollars. For any forthcoming project or project in the filing year, which cost two million dollars or more, provide an analysis on how non-wires alternatives compare in terms of viability, price, and long-term value.<sup>29</sup>

Otter Tail does not have any projects in the five-year forecasted budget that are above the \$2 million threshold for non-wires alternative evaluation. Otter Tail has, however, recently explored the function and pricing for an energy storage system (ESS) as an alternative to a transmission improvement, but for that particular reliability issue the Company determined an ESS was cost-prohibitive. In fact, Otter Tail noted the non-wires alternative (i.e. the ESS) was nearly eight times more expensive than the transmission rebuild:

Comparing the budgetary cost for the ESS at \$5.3M (plus additional distribution facilities) to \$675,000 for the four-mile transmission rebuild clearly indicates that the transmission upgrade was a much cheaper alternative to mitigate the momentary interruptions.<sup>30</sup>

Otter Tail will continue to explore ESS, stating, "As technology matures and costs decline, it is likely the technology will gain acceptance and usability. However, at this time our review of available batteries as non-wire alternatives has not been cost justifiable."<sup>31</sup>

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<sup>29</sup> Commission Order, Filing Requirements, p. 6 (February 20, 2019).

<sup>30</sup> IDP, p. 41.

<sup>31</sup> IDP, p. 41.

#### IV. Parties' Comments

##### A. Department of Commerce (Department)

The Department recommends the Commission accept Otter Tail's IDP. In making this recommendation, however, the Department is not suggesting that each planning objective has been already achieved, but instead, the IDP furthers the Commission's objectives. As the Department explained, the IDP process is iterative and will necessarily evolve over time, and moreover, the Department recognized that this is Otter Tail's first IDP:

[T]he first IDP Report should be generally viewed as the nascent attempt at an iterative process that will yield greater insight and transparency into the Company's distribution system planning and operations processes.<sup>32</sup>

...

[G]iven that that the IDP process is designed to be iterative and will necessarily evolve over time, the question of whether the planning objectives were achieved by the IDP Report is somewhat premature. Establishing the IDP Report as a baseline understanding of OTP's internal distribution system planning and operations processes will enable stakeholders to build off of the knowledge gained, and, with each successive report, a better qualitative assessment of whether the planning objectives are achieved can be conducted.

Accordingly, the Department's review of the IDP Report focuses mainly on whether the Company provided information relevant to the planning objectives listed above such that future analyses can more qualitatively determine whether the outcomes that the planning objectives articulate can materialize over time with the information contained in the IDP report.<sup>33</sup>

Pages 4-7 of the Department's Initial Comments discuss how Otter Tail's IDP addressed each of the five Commission's planning objectives. Below, staff lists each objective and provides the Department's conclusion regarding whether it was adequately addressed in the IDP:

- 1) 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;

**Department:** "Overall the Department notes that the Company's IDP Report discussed each of the topics listed in the first planning objective: safety, security, reliability, resilience, fair and reasonable costs, and consistency with state energy policies ... the Department concludes that the Company addressed each of the topics in the first planning objective in some substantive way."<sup>34</sup>

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<sup>32</sup> Department comments, p. 2.

<sup>33</sup> Department comments, p. 3-4.

<sup>34</sup> Department comments, p. 4.

- 2) Enable greater customer engagement, empowerment, and options for energy services;

**Department:** “On pages 4 through 15, OTP provided an overview of its distribution system planning and operations. The Company stated that ‘customer experience (including service reliability) and satisfaction are among the Company’s top priorities.’

On page 12 of the IDP Report, OTP discussed its recently deployed Customer Information System, which enables OTP to dispatch service orders and helps the Company maintain service quality. The Company also discussed its investigation into Advanced Metering Infrastructure (AMI) deployment options and indicated that it was developing a business case for possible implementation.

...

The Department concludes that the Company provided extensive information and discussion of items related to the second planning objective.”<sup>35</sup>

- 3) Move toward the creation of efficient, cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies;

**Department:** “The Department analyzed OTP’s IDP Report to see whether the information presented was related to and in sufficient detail to assess the IDP Report’s ability to actualize the third planning objective. Overall, the Department notes that the Company’s IDP Report provided information and discussion related to the third planning objective.”<sup>36</sup>

- 4) Ensure optimized utilization of electricity grid assets and resources to minimize total system costs;

**Department:** “On pages 36 through 40, the Company detailed its plans to deliver on three strategic objectives, which are: (1) improve reliability and safety, (2) improve customer engagement, and improve business efficiency while looking forward to the future ... The Department concludes that the Company provided extensive information and discussion of items related to the fourth planning objective.”<sup>37</sup>

- 5) 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.

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<sup>35</sup> Department comments, p. 5-6.

<sup>36</sup> Department comments, p. 6.

<sup>37</sup> Department comments, p. 7.



**Department:** “The Department notes that the Company’s IDP Report provided information and discussion related to the fifth planning objective, however defers to the Commission as to whether the information provided was sufficiently comprehensive.”<sup>38</sup>

A second part of the Department’s comments offered suggestions for potential improvements to future IDP reports and modifications to the filing requirements. One area the Department discussed was the importance of consistency among utility IDP requirements. Establishing uniform IDP requirements could allow stakeholders to identify best practices, which could in turn lead to more efficient and cost-effective DER integration, as well as avoid disjunctive IDP requirements among utilities.

To this end, the Department provided three recommendations—one additional filing requirement and two modifications—for Otter Tail’s future IDP reports, which mirror the Commission’s Order in Xcel Energy’s 2018 IDP proceeding.<sup>39</sup>

With regard to the additional filing requirement, in its Order accepting Xcel’s 2018 IDP, the Commission required Xcel to perform a self-assessment of whether its IDP met the Commission’s planning objectives. The Commission’s July 16, 2019 Order stated:

Xcel shall discuss in future filings how the IDP meets the Commission’s Planning Objectives, including:

- A. An analysis of how the information presented in the IDP related to each Planning Objective,
- B. The location in the IDP,
- C. Analysis of efforts taken by the Company to improve upon the fulfillment of the Planning Objectives, and
- D. Suggestions as to any refinements to the IDP filing requirements that would enhance Xcel’s ability to meet the Planning Objectives.

The Department recommends adopting the above-referenced Order Point for Otter Tail as well. This recommendation is **Decision Option 2**.

The Department also recommends two modifications to Otter Tail’s filing requirements, which also stem from the Commission’s Order in Xcel’s 2018 IDP proceeding. The first is to amend IDP Requirement 3.D.2 (xi), which adds language to assist future cost-benefit analyses. The amended language is underlined in the excerpt below; the modification substitutes Otter Tail Power for Xcel Energy:

For each grid modernization project in its 5-year Action Plan, require Otter Tail Power to provide a cost-benefit analysis based on the best information it has at the time and include a discussion of non-quantifiable benefits. Otter Tail Power shall provide all information to support its analysis.

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<sup>38</sup> Department comments, p. 7.

<sup>39</sup> Docket No. 18-251, Xcel’s 2018 IDP, *Order Accepting Report and Amending Requirements*, July 16, 2019.

This recommendation is **Decision Option 3**.

The second modification is to merge IDP Requirement 3.D.1 and 3.D.2, since they address similar things. In its Order accepting Xcel's 2018 IDP, the Commission acknowledged there could be confusion and/or redundancies by keeping them separate:

Xcel recommended that the Commission amend and consolidate the IDP reporting requirements contained in Sections 3.D.1 and 3.D.2. The Commission agrees that consolidation of the requirements is reasonable, and eliminates duplication of requirements and potential confusion.<sup>40</sup>

Again, the Department's proposed modification is underlined and substitutes Otter Tail Power for Xcel Energy:

Otter Tail Power shall provide a 5-year Action Plan as part of a 10-year long-term plan for distribution system developments and investments in grid modernization based on internal business plans and considering the insights gained from the DER futures analysis, hosting capacity analysis, and non-wire alternatives analysis. The 5-year Action Plan should include a detailed discussion of the underlying assumptions (including load growth assumptions) and the costs of distribution system investments planned for the next 5-years (expanding on topics and categories listed above). Otter Tail Power should include specifics of the 5-year Action Plan investments. Topics that should be discussed, as appropriate, include at a minimum:

This recommendation is **Decision Option 4**.

## *B. Clean Energy Economy Minnesota (CEEM)*

### **1. Otter Tail's future IDPs should be more detailed**

CEEM recommends the Commission accept Otter Tail's IDP. However, CEEM also recommends the Commission ensure that Otter Tail provide "significantly more information to stakeholders in future filings."<sup>41</sup>

While CEEM acknowledged this is Otter Tail's first report, and the beginning of an ongoing dialogue, at the same time CEEM believes Otter Tail's IDP "falls short of facilitating thorough discussion of how OTP may move toward a modern grid across its operating territory."<sup>42</sup> In addition, CEEM believes some areas of Otter Tail's IDP are vague, noting, for instance, that Otter Tail stated it is "investigating" alternatives and "exploring" technologies, but without

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<sup>40</sup> Docket No. 18-251, Commission Order, p. 9.

<sup>41</sup> CEEM comments, p. 2.

<sup>42</sup> CEEM comments, p. 3.

much detail. Also, CEEM suggests that Otter Tail should discuss in future filings how distribution planning relates to other proceedings, such as rate cases.

According to CEEM, “OTP should work to develop more explicit discussions of grid modernization options.”<sup>43</sup> In addition, while Otter Tail cited its recent achievements in energy efficiency, CEEM contends there is significant opportunity to provide customer benefits along the distribution system that Otter Tail should explore for future filings.

Similarly, CEEM believes there should be more refinement to Otter Tail’s DER adoption forecasts, which CEEM notes is not unique to Otter Tail. For example, Otter Tail’s report is fairly dismissive of high DER penetration, but CEEM does not believe Otter Tail provided sufficient justification for this claim. Again, this does not mean Otter Tail’s IDP should be rejected, but CEEM identifies it as an area to explore in future filings.

The same is true for Otter Tail’s non-wires alternatives (NWA) analysis. CEEM characterized Otter Tail’s NWA analysis as “a relatively light examination” of the issue, and future IDPs “must provide a more refined view of NWA conceptualization and potential application to OTP systems.”<sup>44</sup>

## 2. Filing Requirements

In response to the Commission’s Notice inquiring about which filings requirements provide the most value, CEEM responded that the “Long-Term Distribution System Modernization and Infrastructure Investment Plan” would provide the most opportunity to provide productive comments.<sup>45</sup> CEEM cited Otter Tail’s discussion of potential pilots aimed to help address aging infrastructure and further development of their baseline information as the best ways to meet the Commission’s planning objectives.

Additionally, CEEM identified the cost-benefit framework, which CEEM noted was absent in Otter Tail’s IDP, as a primary area that requires more development.<sup>46</sup> CEEM explained:

Cost-benefit analysis plays a critical role in transparent IDP discussions and decision-making. Future plans should provide stakeholders and the Commission with more explicit information on cost-benefit conceptualization, methodologies and/or calculations.<sup>47</sup>

**Decision Option 5** addresses cost-benefit frameworks for future IDP filings.

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<sup>43</sup> CEEM comments, p. 4.

<sup>44</sup> CEEM comments, p. 4-5.

<sup>45</sup> CEEM comments, p. 5.

<sup>46</sup> CEEM comments, p. 5.

<sup>47</sup> CEEM comments, p. 5.

CEEM expressed confidence that the Commission, Department, and other stakeholders can work with utilities to develop cost-benefit quantification to achieve policy outcomes.

### *C. Office of the Attorney General (OAG)*

The OAG emphasized that approval of Otter Tail's IDP should "expressly note that such approval is not an implicit advanced determination of prudence with regard to the constituent proposals contained within the IDP."<sup>48</sup> (This is incorporated into **Decision Option 1**.) The OAG cited the Commission's February 20, 2019 Order, which stated that the "Commission review of annual distribution system plans . . . [is not] a prudency determination of any proposed system modifications or investments."<sup>49</sup>

Also, the OAG, like the Department and CEEM, acknowledged that Otter Tail's IDP is the beginning of a dialogue, but future IDPs should evolve and become more refined in order to easily assess which IDP requirements are beneficial to ratepayers.

Finally, the OAG provided support for the Department's and CEEM's recommendations. The OAG agreed with the Department's recommendation to establish uniform IDP requirements, as it could expand an IDP's usefulness and ability to inform other Commission dockets. In addition, the OAG stated that CEEM's recommendation to strengthen the cost-benefit framework would provide more transparency and facilitate an informed evaluation of ratepayer cost versus ratepayer value.

### *D. Rakon Energy*

Rakon Energy's public comments focused on Otter Tail's cost estimates for Energy Storage Systems (ESS), explaining that energy storage costs are lower than what Otter Tail's assumes. Rakon Energy cited a number of sources and provided an independent cost estimate to show that Otter Tail's storage cost estimates are too high. Rakon Energy argued that Otter Tail needs a comprehensive framework to keep track of industry trends and transparently procure cost data.

## **V. Reply Comments**

Otter Tail, the Department, and the OAG filed Reply Comments. Essentially, all parties acknowledged that the IDP is the beginning of an iterative process, and they agreed with the decision options to accept the IDP and include a self-assessment and amended language to the filing requirements in the next IDP. In addition, all parties understand that the acceptance of the IDP does not represent prudency, which was the primary concern raised by the OAG.

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<sup>48</sup> OAG comments, p. 1.

<sup>49</sup> *In the Matter of Distribution System Planning for Otter Tail Power Company*, Docket No. E-15/CI-18-253, Order Adopting Integrated-Distribution-Plan Filing Requirements at Attachment governing Minnesota Integrated Distribution Planning Requirements for Otter Tail Power Company (Feb. 20, 2019).

Otter Tail disagreed with CEEM's advocacy for the high DER penetration scenario, noting that "Otter Tail's DER scenarios will look different than other utilities in the state for a variety of factors including customer demographics."<sup>50</sup> In addition, Otter Tail responded to Rakon Energy's comments on the cost estimates for Energy Storage Systems. Otter Tail noted it based its estimates on a Request for Information (RFI) used to develop planning level storage costs, so the Company's cost estimates were the best information available at the time.

Otter Tail also invited further direction from the Commission, noting that the Company "would be interested in understanding if there are any Grid Modernization projects that were not covered in Otter Tail's initial IDP that the Commission would like discussed."<sup>51</sup>

## VI. Staff Analysis

There is no remaining dispute among the four main areas discussed in the parties' comments and presented in the Decision Options: 1) that the Commission should accept the IDP; 2) that acceptance of the IDP is not a prudency determination; 3) that the Commission should adopt the Department's additional recommendations; and 4) that Otter Tail should incorporate an instructive, transparent cost-benefit framework in its next IDP.

There are, of course, issues the Commission could choose to address in preparation for Otter Tail's next IDP filing. In particular, CEEM identified certain areas of this IDP that lack detail, including: the non-wires alternative analysis, customer empowerment, high DER penetration, and the use of the distribution system for customer benefits. The Commission could specifically address these areas in its Order, although since parties acknowledged this IDP is the beginning of a dialogue, CEEM's concerns can be developed as part of the iterative nature of the process without any additional Commission action at this time.

One area the Commission might wish to formally address is the cost-benefit analysis. According to CEEM, "[t]he cost-benefit framework is absent in the inaugural filing,"<sup>52</sup> which could be problematic moving forward because the cost-benefit analysis will be a focal point of the ongoing dialogue. In addition, the Commission's planning objectives expressly emphasize cost-effective investments as an underpinning of grid modernization. Objective 3, for example, aims "to move toward ... cost-effective, accessible grid platforms for new products, new services, and opportunities for adoption of new distributed technologies." Objective 5 requires "a comprehensive analysis of ratepayer cost and value." Thus, the cost-benefit analysis is central to the IDP process, and a clear and robust discussion of the costs and benefits for specific investments must be part of future IDP filings.

Also, strictly as a matter of meaningfully participating in the IDP process, transparency into the cost-benefit analysis is essential. For instance, Otter Tail mentioned certain technologies were either cost-prohibitive or still in the investigational stage, such as energy storage and CVR. It

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<sup>50</sup> Otter Tail reply comments, p. 2.

<sup>51</sup> Otter Tail reply comments, p. 2.

<sup>52</sup> CEEM comments, p. 5.

would be difficult to participate in an ongoing dialogue if parties like CEEM remain unaware of how Otter Tail determines what is cost-effective and what is not. It should be noted, CEEM disagreed with a number of Otter Tail's conclusions, in particular the Company's claim that higher DER penetration rates are unlikely. But since this is Otter Tail's inaugural report, CEEM did not ultimately recommend that the IDP should be rejected, which might not be the case if the cost-benefit framework continues to be absent from subsequent IDPs. Thus, having more transparency in the cost-benefit analysis could both mitigate the amount of dispute and allow the Commission to make a more well-informed decision in future IDP proceedings.

**Decision Option 5** intends to address the cost benefit framework; the language is from CEEM's comments, which stated:

Future plans should provide stakeholders and the Commission with more explicit information on cost-benefit conceptualization, methodologies and/or calculations.<sup>53</sup>

Otter Tail welcomes the idea to include a new cost-benefit framework as part of its next IDP. In Reply Comments, Otter Tail asks the Commission to determine whether the next IDP should incorporate an "evaluation template" for cost-benefit analyses, or if any other projects should be included:

For clarity, Otter Tail would be interested in understanding if there are any Grid Modernization projects that were not covered in Otter Tail's initial IDP that the Commission would like discussed. Further, an evaluation template to use for cost/benefit evaluations would provide value and consistency as well. A template could also include evaluation and weighting of reliability and non-quantified benefits in addition to any financial evaluations.<sup>54</sup>

Staff agrees that future IDP filings should incorporate a more detailed cost-benefit framework. But it is not entirely clear what Otter Tail has in mind for an evaluation template, nor whether it is necessary to address parties' concerns; it could be satisfactory for Otter Tail to simply provide substantially more detail of its own methodology for cost-benefit analysis in its next filing.

For example, Otter Tail explained in its IDP that it has started to move forward with its SIRI Initiative, which aims to, among other things, "[identify] the highest value projects to meet the initiative's goals of improving reliability, safety, efficiency and customer engagement."<sup>55</sup> It would be beneficial to have more insight into how Otter Tail identifies and prioritizes high-value projects, including the cost-benefit analysis to show what "highest value" means. **Decision Option 5** would require Otter Tail to provide this type of information, which could be applied to other technologies as well, but it would not necessarily require a new evaluation template.

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<sup>53</sup> CEEM comments, p. 5.

<sup>54</sup> Otter Tail reply comments, p. 2.

<sup>55</sup> IDP, p. 37.

## VII. Decision Options

1. Accept Otter Tail Power's 2019 Integrated Distribution Plan. Acceptance is not a prudency determination of any proposed system modifications or investments. (Otter Tail, Department, CEEM, OAG)

### Department Recommendations

(No party objects)

2. Require Otter Tail Power to discuss in future filings how the IDP meets the Commission's Planning Objectives, including:
  - a. An analysis of how the information presented in the IDP related to each Planning Objective,
  - b. The location in the IDP,
  - c. Analysis of efforts taken by the Company to improve upon the fulfillment of the Planning Objectives, and
  - d. Suggestions as to any refinements to the IDP filing requirements that would enhance Xcel's ability to meet the Planning Objectives.

3. Amend IDP Requirement 3.D.2 (xi) of Otter Tail Power's IDP Requirements to read as follows:

For each grid modernization project in its 5-year Action Plan, require Otter Tail Power to provide a cost-benefit analysis based on the best information it has at the time and include a discussion of non-quantifiable benefits. Otter Tail Power shall provide all information to support its analysis.

4. Merge IDP Requirement 3.D.1 and 3.D.2 of Otter Tail Power's IDP Requirements to read as follows:

Otter Tail Power shall provide a 5-year Action Plan as part of a 10-year long-term plan for distribution system developments and investments in grid modernization based on internal business plans and considering the insights gained from the DER futures analysis, hosting capacity analysis, and non-wire alternatives analysis. The 5-year Action Plan should include a detailed discussion of the underlying assumptions (including load growth assumptions ) and the costs of distribution system investments planned for the next 5-years (expanding on topics and categories listed above). Otter Power should include specifics of the 5-year Action Plan investments. Topics that should be discussed, as appropriate, include at a minimum:

### CEEM Recommendation

5. Future plans should provide stakeholders and the Commission with more explicit information on cost-benefit conceptualization, methodologies and/or calculations.