Before the Minnesota Public Utilities Commission

State of Minnesota

In the Matter of the Application of Minnesota Power
For Authority to Increase Rates for Electric Utility
Service in Minnesota

Docket No. E015/GR-19-442

Exhibit ________

LARGE POWER CUSTOMER OUTLOOK

November 1, 2019
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. INTRODUCTION AND QUALIFICATIONS</td>
<td>1</td>
</tr>
<tr>
<td>II. LARGE POWER CUSTOMER OVERVIEW</td>
<td>3</td>
</tr>
<tr>
<td>III. LARGE POWER CUSTOMER SALES FORECASTING</td>
<td>11</td>
</tr>
<tr>
<td>A. Data Gathering Process</td>
<td>11</td>
</tr>
<tr>
<td>B. Industry Data</td>
<td>13</td>
</tr>
<tr>
<td>C. Customer Electric Service Agreements and Data</td>
<td>16</td>
</tr>
<tr>
<td>D. Large Customer Forecast Information</td>
<td>23</td>
</tr>
<tr>
<td>1. Metals and Mining</td>
<td>23</td>
</tr>
<tr>
<td>2. Pulp and Paper</td>
<td>34</td>
</tr>
<tr>
<td>E. 2020 Large Power Forecast</td>
<td>39</td>
</tr>
<tr>
<td>IV. CONCLUSION</td>
<td>40</td>
</tr>
</tbody>
</table>
I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.
A. My name is Frank L. Frederickson and my business address is 30 West Superior Street, Duluth, Minnesota, 55802.

Q. By whom are you employed and in what position?
A. I am employed by ALLETE, Inc., doing business as Minnesota Power (“Minnesota Power” or the “Company”). My current position is Vice President – Customer Experience.

Q. Please summarize your qualifications and experience.
A. I have been with Minnesota Power for over eleven years and have experience in the electric industry that includes customer program development, delivery and operations, strategic account management, regional economic development, renewable power generation project development and construction management, power generation business management, general management of generation reliability and projects engineering, and marketing.

In my current position with Minnesota Power, I am responsible for several areas that were consolidated during our 2018 downsizing that now includes all customer accounts and relationships for Minnesota Power’s residential, commercial, wholesale, and industrial customers. I lead a team that focuses on: strategic account management; customer business analytics; customer system transformation, conservation, and renewable program development and delivery; customer billing and cash collection; customer care and support center; and economic and regional development.

Prior to my current role, I held the position of Vice President – Minnesota Power Marketing. In that role, I was responsible for the relationships with our large industrial, commercial, and wholesale customers, delivery of our conservation improvement programs, and regional economic development activities.
I previously held the position of general manager, Minnesota Power hydro and biomass renewable operations, and worked out of our generation operations office in Cohasset, Minnesota. In that role, I was responsible for the general management of our hydro and biomass operations, generation reliability, and projects engineering, and was tasked with leadership of Minnesota Power’s evaluation team for the natural gas-fired capacity and unit-contingent energy request for proposal process.

Previous to this experience I managed the renewable business operation at Rapids Energy Center, developed and constructed wind generation facilities, and participated in overall planning activities for Minnesota Power’s renewable energy expansion. Before joining Minnesota Power, I was employed for seven years as a senior process development engineer for 3M Company, where I have been a named inventor on 16 granted US patents in various technologies. I graduated from the University of Minnesota with bachelor and master degrees in mechanical engineering. I am originally from International Falls, MN, and have been a lifelong Minnesota resident.

Q. What testimony do you provide in this proceeding?
A. I provide both an overview of the Company’s initial filing and rate increase request in this proceeding, and a discussion of the economics surrounding Minnesota Power’s large power (“LP”) customer group from both industry and individual business perspectives. To facilitate review of the different subjects, my Rate Case Overview testimony (“Case Overview Testimony”) is filed under separate cover.

Q. What is the purpose of this Large Power Customer Outlook testimony (“LP Testimony”)?
A. In my LP Testimony, I discuss Minnesota Power’s forecasting work with respect to LP industry and customer trends, as well as the global forces that can affect these customers’ operations. More specifically, I describe the Company’s data gathering process from these customers and industries, and provide forecast information for Minnesota Power’s mining, pulp and paper, and other large power customers. The Direct Testimony of Company witness Mr. Benjamin Levine discusses the large power
forecasting process in more detail, including: (i) the delineation between when the
Company utilizes data from the Company’s Annual Forecast Report ("AFR") to develop
its sales forecasts for certain customer classes and when more specific customer data is
needed; (ii) an identification of broader industry trends affecting large power customers;
and (iii) a detailed discussion of the forecast.

II. LARGE POWER CUSTOMER OVERVIEW

Q. How much of Minnesota Power’s retail sales are attributed to LP customers?
A. As I describe in more detail in my Case Overview Testimony, Minnesota Power has one
of the most unique load profiles in the region and country, with industrial customers
currently representing approximately 74 percent of retail kWh energy sales. Minnesota
Power’s LP customers comprise an overwhelming majority of industrial customer sales
and account for approximately 66 percent of the Company’s retail kWh energy sales.

Q. What industries are represented by Minnesota Power’s large industrial
customers?
A. These customers primarily consist of taconite producers and graphic paper producers in
northern Minnesota, as depicted in Figure 1 below. These industries, like Minnesota
Power itself, are a significant component of the regional economy.
Q. **Who are Minnesota Power’s Large Power (LP) customers?**

A. Minnesota Power has eight LP customer contracts, each serving at least 10 megawatts ("MW") of load. These contracts define our electric service for six taconite producing facilities served through four LP customer contracts, and four paper and pulp mills. Table 1 below summarizes these LP customers and the status of their contracts.
**Table 1. Minnesota Power Firm Retail LP Customer Contracts**

<table>
<thead>
<tr>
<th>Customer</th>
<th>Industry</th>
<th>Ownership</th>
<th>Earliest Termination Date as of November 1, 2019</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArcelorMittal - Minorca Mine</td>
<td>Taconite</td>
<td>ArcelorMittal S.A.</td>
<td>December 31, 2025</td>
<td>Operating</td>
</tr>
<tr>
<td>Hibbing Taconite Co.</td>
<td>Taconite</td>
<td>62.3% ArcelorMittal S.A. 23.0% Cleveland-Cliffs 14.7% USS Corporation</td>
<td>November 30, 2023</td>
<td>Operating</td>
</tr>
<tr>
<td>United Taconite and Northshore Mining Babbitt Mine Operations</td>
<td>Taconite</td>
<td>Cleveland-Cliffs</td>
<td>December 31, 2026</td>
<td>Operating</td>
</tr>
<tr>
<td>USS Corporation (USS - Minnesota Ore)</td>
<td>Taconite</td>
<td>USS Corporation</td>
<td>November 30, 2023</td>
<td>Operating</td>
</tr>
<tr>
<td>Boise, Inc.</td>
<td>Paper</td>
<td>Packaging Corporation of America</td>
<td>November 30, 2023</td>
<td>Operating</td>
</tr>
<tr>
<td>UPM Blandin</td>
<td>Paper</td>
<td>UPM-Kymmene Corporation</td>
<td>December 31, 2029</td>
<td>Operating</td>
</tr>
<tr>
<td>Verso Duluth Mill</td>
<td>Paper and Pulp</td>
<td>Verso Corporation</td>
<td>December 31, 2024</td>
<td>Operating</td>
</tr>
<tr>
<td>Sappi Cloquet LLC</td>
<td>Paper and Pulp</td>
<td>Sappi Limited</td>
<td>November 30, 2023</td>
<td>Operating</td>
</tr>
</tbody>
</table>

**Q. Earlier you mentioned the Company’s LP customers play a significant role in the regional economy. Please explain.**

**A.** In addition to Minnesota Power, the Company’s customers provide a large portion of the Gross Regional Product, jobs, and wages in Northeastern Minnesota. Specifically, the Company’s LP customers’ products and induced business activity represent approximately 40 percent of the Northeastern Minnesota’s gross domestic product. For production year 2017, Minnesota’s iron mining industry directly employed 3,944 individuals and directly paid $93.8 million in production taxes in 2018. Of this total, $30.8 million was distributed to the Iron Range Resources and Rehabilitation Board, $20.4 million was distributed to local school districts, $11.9 million was distributed to counties, $11 million was distributed to cities and townships, $11 million was distributed to property tax relief, and $8.6 million went to other sources like the Taconite Economic Development Fund and Range Association of Municipalities and Schools. In

---

1 Minnesota Power also has a non-firm retail power supply contract with Silver Bay Power Company, which supplies the Northshore Mining Processing Facility in Silver Bay, MN, and Minnesota Power serves Mesabi Metallics via a wholesale agreement with Nashwauk Public Utilities.
addition to $93.8 million in production taxes, mining customers also paid $13.1 million in Occupational Tax, which is dispersed to the State General Fund (50 percent), Elementary and Secondary Education (40 percent), and the University of Minnesota (10 percent). Mining customers also paid $4.9 million in Sales and Use Taxes, which go to the State General Fund in their entirety. $1 million in various Ad Valorem and Property Taxes were also paid for production year 2017.

In the region more broadly, the forest products industry in Minnesota has demonstrated a $9.1 billion impact throughout the state according to Minnesota Forest Industries. Each year, the industry pays more than $50 million for wood harvested on public lands alone and another $450 million in state and local taxes. Minnesota’s pulp, paper, and board plants employ 2,500 individuals and pay wages totaling over $237 million.

Q. What have been the trends in Minnesota Power’s energy sales and associated revenues to LP customers in recent years?

A. Since 2017, when Keetac restarted, Minnesota Power’s MWh sales to its LP customers have remained relatively steady, but decreasing slightly, which is currently predicted to continue through the 2020 test year, as illustrated in Figure 2 below.

---


3 Source: https://www.minnesotaforests.com/economy-of-forests
Q. Why are the 2020 test year’s LP sales levels lower than in the years prior to the 2015-2016 downturn, despite recovery from the downturn?

A. Minnesota Power’s industrial customers face marketplace challenges, even in a good economy. For example, the secular decline in the printing and writing paper market continues as shown in Figure 3 below.
Year to date through the second quarter of 2019, the market has experienced more than a 12 percent drop in magazine ad pages, which is now 70 percent lower than 1982. Further, one billion fewer catalogs are mailed today than in 2010. Total U.S. Printing & Writing demand is expected to drop 7.4 percent in 2019 which is a sharp downward acceleration from the 1.7 percent slide in 2018. For coated papers, the demand statistics continue to show performance that rivals the Great Recession of 2008/2009, not to mention the decline of newsprint or directory paper. Demand for uncoated groundwood (“UGW”) papers is posting one of its worst declines ever in 2019 due to the collapse of newspaper inserts, the near demise of printed directories, a crash in sales of mass-market paperback books and the loss of market share to cheaper newsprint grades of paper. In the case of supercalendared ("SC") paper specifically, prices are lower today than 2008 and lower than when the Duluth mill opened in 1986.

---

4 Paper Trader, Fastmarkets RISI, September 2019
Challenges for the graphic paper market are expected to continue. On October 10, 2019, the Postal Service filed notice with the Postal Regulatory Commission that they will be changing rates for its market dominant products on January 26, 2020. This will result in a price increase of 1.9 percent with slight variation across the market dominant products. Increased postage rates have a direct and negative impact on the printing and mailing of catalogues, magazines and direct mail, quickly translating into a decline in the demand for the paper used in the production of these publications. Such changes in the paper and writing industry are illustrated in Figure 3 above.

Q. What is your assessment of the domestic steel industry?
A. Despite steel tariffs that provided some relief in recent years against record levels of steel imports, domestic steelmakers are also facing headwinds due to weak demand and oversupply issues. U.S. Steel announced on June 18, 2019, the idling of two blast furnaces in the Great Lakes region due to weak demand. In mid-October 2019, U.S. Steel announced that it would idle its number three line (“line three”) at Minntac for the remainder of 2019, so the apparent weakness in the domestic steel market is already having a material effect on Minnesota taconite production.

Additionally, in July 2019 ArcelorMittal USA, the largest consumer of Minnesota taconite, asked its suppliers to work with them on cutting costs during a “difficult period driven by oversupply, uncertainty in the markets and continuing inventory reductions….” The letter, signed by Curtis Geissler, vice president of procurement at ArcelorMittal USA, noted the company would implement “a 10% price reduction on all existing price agreements for all purchases issued after July 31, 2019.” Cleveland-Cliffs also reported reduced pellet nominations from their domestic blast furnace.
customers and the planned mitigation of that loss with increased seaborne pellet sales, later updating this announcement with a reduction in seaborne sales due to challenging economics, highlighting the volatility of their end markets and corresponding production volumes. In summary, market conditions are likely to be challenging for our LP mining customers, and likely to result in lower customer energy requirements compared to 2018 actuals or the period before the 2015-16 downturn.

Q. Did Minnesota Power provide information in its last rate case in Docket No. E015/GR-16-664 (“2016 Rate Case”) regarding LP customer energy usage for the 2017 test year?

A. Yes. Minnesota Power utilizes specific customer information to develop programs and revise electric service agreements to better meet the needs of their evolving businesses. After adjusting for the Keetac reopening, we forecasted total retail sales for the 2017 test year of 9,212,383 MWh. We considered this to be a reasonable forecast based on typical utilization rates of our customers. In particular, the 2017 test year forecast initially proposed by the Company assumed a 90.2 percent utilization rate for its mining and metals sector, which correlates well with recent average production rates since 2001. The Commission-approved 2017 test year forecast equated to an exceptionally high mine facility utilization rate of 95.4 percent, which is a level only reached twice since 2001. Company witness Mr. Levine describes reasonable forecast assumptions in greater detail in his Direct Testimony.

Q. How did 2017 actual LP customer MWh energy sales compare with the test year MWh energy sales forecast approved in the 2016 Rate Case?

A. As indicated in Table 2 below, the 2017 test year sales forecast approved by the Commission was higher than actual 2017 retail energy sales by about 5.2 percent. As described by Company witness Mr. Levine, the largest difference between the approved

---

12 Minnesota Power also overestimated retail sales for the 2017 test year, but only by approximately two percent.
test year sales forecast and actual sales was due to the projection of Minnesota Power’s LP customers, which accounted for nearly half of the over-prediction. The remaining over-prediction was predominantly in Large Light and Power and Residential MWh energy sales.

Table 2. 2017 Actual MWh Sales versus Commission Approved Test Year Forecast.

<table>
<thead>
<tr>
<th>MWh Sales</th>
<th>Actual 2017 Sales</th>
<th>PUC-Approved 2017 Test Year</th>
<th>Difference (MWh)</th>
<th>% Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>920,155</td>
<td>985,494</td>
<td>65,339</td>
<td>7.1%</td>
</tr>
<tr>
<td>General Service</td>
<td>632,453</td>
<td>641,438</td>
<td>8,985</td>
<td>1.4%</td>
</tr>
<tr>
<td>Large Light &amp; Power</td>
<td>1,339,361</td>
<td>1,494,916</td>
<td>155,555</td>
<td>11.6%</td>
</tr>
<tr>
<td>Large Power</td>
<td>5,955,092</td>
<td>6,178,291</td>
<td>223,199</td>
<td>3.7%</td>
</tr>
<tr>
<td>Municipal Pumping</td>
<td>12,816</td>
<td>17,074</td>
<td>4,258</td>
<td>33.2%</td>
</tr>
<tr>
<td>Lighting</td>
<td>20,275</td>
<td>22,464</td>
<td>2,189</td>
<td>10.8%</td>
</tr>
<tr>
<td><strong>Subtotal (By Rate Class)</strong></td>
<td><strong>8,880,151</strong></td>
<td><strong>9,339,677</strong></td>
<td><strong>459,526</strong></td>
<td><strong>5.2%</strong></td>
</tr>
<tr>
<td>Dual Fuel (Interruptible)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>88,374</td>
<td>101,014</td>
<td>12,640</td>
<td>14.3%</td>
</tr>
<tr>
<td>Commercial/Industrial</td>
<td>26,428</td>
<td>27,854</td>
<td>1,426</td>
<td>5.4%</td>
</tr>
<tr>
<td><strong>Subtotal Dual Fuel</strong></td>
<td><strong>114,802</strong></td>
<td><strong>128,868</strong></td>
<td><strong>14,066</strong></td>
<td><strong>12.3%</strong></td>
</tr>
<tr>
<td>Unbilled</td>
<td></td>
<td></td>
<td>2,399</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8,997,352</strong></td>
<td><strong>9,468,545</strong></td>
<td><strong>471,193</strong></td>
<td><strong>5.2%</strong></td>
</tr>
</tbody>
</table>

III. LARGE POWER CUSTOMER SALES FORECASTING

A. Data Gathering Process

Q. Please describe the Company’s data gathering process for its large power customers.

A. Minnesota Power gathers customer, industry, and economic information from a variety of sources. Approximately 10 percent of my Customer Experience team is dedicated to serving the LP customer class, which represents approximately 66 percent of the Company’s retail kWh energy sales. The Strategic Accounts and Customer Business Analytics teams continually gather information about our LP customers and their industries, as well as global, state, and local economic outlooks.

13 The remaining 90 percent of my Customer Experience team is focused on residential, commercial, large light & power programs, billing, and operations for the remaining approximately 34 percent of the Company’s kWh energy sales.
Our strategic account management professionals are in direct contact with our customers. As part of these interactions, we frequently discuss the state of the industry as well as the customers’ future production plans. Through these discussions, the Company can effectively gauge the operational and strategic plans that our customers have and how Minnesota Power can serve their energy needs to encourage and foster growth, efficiency, sustainability, and mutual success.

Several Minnesota Power employees are also actively involved and embedded in our LP customers’ trade organizations, providing yet another source of LP customer data and information. By way of example, I serve on the Board of Directors of Minnesota Forest Industries and the Iron Mining Association of Minnesota and engage as an associate member with the American Iron and Steel Institute. David Chura, Manager of Strategic Accounts, serves on the board of Mining Minnesota. In addition, several others from Minnesota Power actively participate and contribute time, talent, and effort in sub-committees of these organizations. We use our interactions in these organizations to identify issues, trends, opportunities, and challenges that the industries face and to further our understanding of their energy needs.

Q. Do these LP customers develop their own energy use forecasts?
A. Some LP customers develop their own energy forecasts based on their projected levels of production, but most of them work with Minnesota Power to either develop the energy use forecasts together or have us develop the forecasts for them. Our detailed historical data and knowledge of customers’ operations help both the Company and our customers accurately forecast energy requirements.

Q. Does Minnesota Power use the energy usage forecasts developed by its customers?
A. While customer forecasts are certainly considered as a part of our sales forecasting process, they do not necessarily form the sole basis for our sales forecast, for several reasons. First, the timing of Minnesota Power’s need for sales forecast information does not directly align with our customers’ budget development timing. Second, our
planning timeline extends further into the future than our customers’ planning horizons typically provide. Third, our experience through the years is that our customers’ forecasts, particularly at the local level, have had inaccuracies due to failure to consider macro business trends that are outside of local purview and control. To prepare a more accurate sales forecast, we meld our customers’ direct information with our own external information and our analysis of macro business trends.

Q. Are statistical methods like econometric modeling by themselves sufficient to understand the LP customers’ likely test year energy usage?

A. No. Econometric modeling is adept at identifying “macro” industry trends and useful in long-term forecasting. But a purely econometric approach does not incorporate information regarding specific customers, such as whether a local plant may be idled or, conversely, if a customer is planning a capital project addition. As a result, a macro industry metric may infer strong customer operations but a specific local customer operation may be weak, or vice versa.

The econometric modeling approach documented in the Company’s AFR only produces estimates for whole industrial sectors (Mining, Paper, and Other Industrial) and does not produce estimates for individual customers that are necessary for detailed short-term budgeting. As a result, the Company uses both econometric modeling data and specific local LP customer information to develop a more accurate and detailed forecast for LP customers’ energy usage.

B. Industry Data

Q. What are your sources of industry data pertinent to your LP customers’ future energy needs?

A. In addition to specific customer input, we utilize a wide range of industry data, publications, metrics, and government data. For example, our Customer Experience team tracks several relevant industry metrics, including, but not limited to, raw steel capacity utilization rates, blast furnace versus electric arc furnace production percentages, steel and iron ore pricing levels, steel imports and exports, drill rig counts,
iron ore and steel inventory levels, Lake Superior boat traffic, pricing levels for various
grades of paper, and business analyst reports of our customers, their industries, their
corporate parents, and their competitors.

We also subscribe to numerous industry periodicals and track industry news on a macro
level to supplement our knowledge of our customers’ industries. For the mining
industry, we subscribe and/or review information from Steel Market Update, American
Metal Markets, Steel Business Briefing, Skillings Mining Review, and several others.
For the paper industry, we obtain and review market information from the American
Forest and Paper Association (“AF&PA”), PaperAge Magazine, and pulp and paper
industry intelligence with Fastmarkets RISI including Paper Trader and Paper
Packaging Monitor.

Q. Do you also utilize broader data about global, state, or local economic trends?
A. Yes, we also use publicly available information from the U.S. Securities and Exchange
Commission, the U.S. Census Bureau, American Iron and Steel Institute, World Steel
Association, the United States Geological Survey, and other sources to provide the
information we need for our load forecasting purposes. This includes Institute of Supply
Management Manufacturing Indices, consumer spending, exchange rates, savings rates,
capital investment rates, Federal Reserve Business Outlook surveys, Industrial
Production Indices for steel and paper, the Chicago Index of Activity, and more.

Q. Do historic trends for an LP customer’s industry or markets factor into your
analysis as well?
A. Yes. Historic and projected industry trends are considered in the development of short
and long-term energy requirements forecasts.

Take for instance paper. Since the launch of enhanced mobile devices like the iPhone
in 2007, there has been a continued proliferation of mobile electronic devices, and more
than 50 percent of market demand for graphic paper has evaporated and is not coming
back. Additionally, the paper grades produced by Minnesota Power’s largest paper
customers, Verso Duluth and Blandin, have experienced a market decline of over 60 percent during this same time period. There has been some reinvestment to transition facilities to production of more in-demand products, as demonstrated by Sappi’s conversion into cellulosic pulp production at its Cloquet mill. However, it should be noted that paper mill conversions and product transitions often result in a sizable reduction in the amount of electricity purchased. We consider these trends in our own modeling and it partially accounts for the reduced paper load we have included in our sales budget and AFR.

There is also a historical correlation between domestic steel production and Minnesota taconite production. As such, it is important to examine trends in the domestic steel industry to determine how they will impact future Minnesota taconite production. For example, the domestic steel industry continues to shift away from the traditional integrated steel model utilizing blast furnaces towards Electric Arc Furnaces (“EAFs”). EAFs utilize scrap steel and high content iron units such as pig iron and Hot Briquetted Iron (“HBI”) as inputs versus blast furnaces that utilize iron ore pellets, largely sourced from Minnesota’s Iron Range for the U.S. steel industry. According to the World Steel Association,14 steel production by blast furnace has declined from over half of North American production to less than one-third over the past 20 years. Inversely, North American steel production by EAF has grown from less than half to over two-thirds of production as overall North American production capacity has remained relatively constant.

The taconite produced in Minnesota is primarily used in the traditional blast furnace steel production, so Minnesota Power must take this shift into consideration when analyzing steel customer energy demand. Until recent investments were made at Northshore mining to produce direct-reduced iron grade (“DR-Grade”) pellets15, 100 percent of taconite production from Minnesota was tied to the declining blast furnace

---

steel production segment. The Northshore mining investment is a promising transition for the region as approximately 10 percent of Minnesota taconite production will be able to serve the growing EAF segment through Cleveland-Cliffs’ new HBI production facility in Toledo, Ohio. Looking forward, I expect more of these product differentiations will be necessary for Minnesota Power’s mining customers to be remain viable, and this will likely require substantial investment and facility upgrades.

Q. How does the Company utilize industry and economic data to develop expectations for LP customer sales in any given year?

A. Industry and economic data is factored in with the customers’ historical operating rates and their anticipated future production levels in a combination of micro and macro views to attempt to both validate the sales outlooks and to attempt to anticipate industry cycles. In the next section, as well as in the Direct Testimony of Mr. Levine, we describe how these two views are melded into a single sales forecast.

C. Customer Electric Service Agreements and Data

Q. Please describe, in general, how Large Power electric service agreements (ESA) supplement standard tariff rates.

A. LP ESAs, which are considered to be tariffs themselves upon approval, supplement the standard LP tariff rate by specifically outlining connection points, voltage levels, a methodology to determine billing demand, an Incremental Production Service Threshold, a confidentiality agreement, and any terms or conditions that differ from or are additional to the terms and conditions specified in the LP Service Schedule or in any rider or tariff applicable to Large Power Service. Each of these terms are specifically tailored to customer operating characteristics.

Q. Please describe the methodology in which LP ESAs determine customer billing demand.

A. LP customers nominate their firm demand levels based on the electric load expectations for each calendar month. Nomination frequency varies between monthly and three times
per year, with varying advance notice requirements depending on the customer ESA. These nominations must be equal to or above the Minimum Service Requirement set forth in each customer’s ESA. If a customer is operating at full production, their billing demand will be equal to their nominated demand. Periodically, as a part of the normal course of business, customers need to take maintenance downtime. In anticipation, a customer must notify Minnesota Power a minimum time set in the ESA ahead of the maintenance period. In exchange, the customer’s billing demand will be reduced by the amount of time and level in which they were below their nominated demand level. Each LP customer has an allowance for scheduled maintenance set in their ESA, which sets the maximum amount their billing demand can be reduced below their nominated demand.

Q. Do Large Power ESAs provide benefits to residential and other non-LP customers?
A. Yes. The ability to customize the general features of the LP tariff to the unique and individual characteristics of each customer is crucial for them to most efficiently align their electric service with their operations. As stated previously, and by way of example, many LP customers would pay higher demand charges when down for scheduled reasons if they were not able to use the provision for scheduled maintenance, leading to an increased overall rate for the same periods of time in which they are not producing a saleable product.

Moreover, in addition to providing valuable jobs to northern Minnesota residents and providing a larger base over which to spread the utility’s cost of service, one of the most significant benefits that our Large Power customers provide to all of Minnesota Power’s customers is the long-term commitments they make to purchase a minimum of 182 MW of demand each month or 28 percent of full production electric needs from Minnesota Power. The Minimum Service Requirement set in each ESA provides a minimum level of contribution, regardless of whether or not a customer is operating. These Electric Service Agreements, which often exceed 10 years in length and are a minimum of 4-year term, currently provide a guaranteed approximately $55 million in long-term
revenue certainty that helps the utility to effectively plan for and make long term capital investments.

Finally, capital markets carefully monitor the status of our Large Power Electric Service Agreements. Industrial loads form the backbone of Northeast Minnesota’s economy, either directly or indirectly supporting major elements of the regional economy, including Duluth’s growing health care and higher education service industries. Long-term agreements with Large Power customers provide assurance to residential and commercial customers that these large industrial facilities will continue their contributions to Minnesota Power’s affordable electric rates for the foreseeable future. And clearly, if the Large Power customers were not a prevalent part of Minnesota Power’s customer profile, with their high utilization factors I pointed out in my Case Overview testimony, other rate classes would have to pay higher rates due to the need to spread fixed costs over the remaining customer classes.

Q. Please describe, in general, how the Company works with LP customers to anticipate their energy demands for each year.

A. Minnesota Power works closely with LP customers on an ongoing basis to plan for their future energy needs and to ensure their electric service remains reliable. We devote a great deal of attention to understanding near-term customer operating plans because changes in our customers’ operating rates or load additions/subtractions at any LP customer site can have a large impact on our Company. Any significant changes in a LP customer’s energy demand will have a material effect on Minnesota Power because this class represents nearly three quarters of the Company’s energy sales. As a comparison (and as discussed in my Case Overview Testimony), the average utility’s industrial load represents approximately one-quarter of its energy sales.

Minnesota Power’s Strategic Accounts team works with our customers early in the year to understand their energy needs for the next year. In some cases, we work directly with our LP customers to calculate their internal energy budget based on production estimates they provide to us. In other cases, we provide customers with historic energy
consumption and pricing information at various production levels for use in their budgeting process. In still other cases, we work with customers to identify the amount of power that they will need to purchase from Minnesota Power to supplement their own self-generation. In every case, we are either embedded or aligned at some level with our customers in the preparation of their operating plans and energy needs for the following year. In some circumstances, our timelines and needs require us to forecast or project customers’ load in advance of their normal budget and estimate processes for the upcoming year. In those instances, our processes are very similar, and we typically use the summary information that we derive as the first step in working with customers on their budgeting processes later in the year.

Q. Does Minnesota Power collect information that may be relevant to a customer’s energy needs that is not provided directly by the customer?
A. Yes. As I noted earlier, the Company collects press releases, SEC documents, articles, industry group data, and other information regarding our customers that may be helpful in the forecasting process.

Q. Does Minnesota Power adjust its forecast of LP customer needs throughout a given year?
A. Yes. Throughout the year, we adjust our estimates with more granular commitments from our customers as to their short-term operating plans. Most commonly, this is accomplished through a LP customer’s written submittal of demand nominations, which indicate the amount of increased power demand requirements above the Minimum Service Requirement or take-or-pay levels specified in the individual LP customer’s contract, as indicated earlier in my testimony.

Q. To what extent does Minnesota Power use formal demand nominations to prepare its annual sales budgets?
A. The Company’s sales budget for the upcoming year is typically completed by late summer of the prior year. As a result, our sales budgets are completed well ahead of the nomination deadlines for any of the various nomination periods in the next year. In
addition, these formal nominations would be of limited use because our sales budgets are annual budgets, whereas the formal demand nominations cover shorter periods. However, we do use the historical nominations that customers have provided for various seasons and under various business conditions as tools to help us anticipate their future operating levels and energy requirements.

Q. Does Minnesota Power also receive energy usage information from LP customers outside of formal nominations?

A. Yes. Minnesota Power receives information from LP customers via pre-nomination predictions that can take several forms. For example, LP customers can provide energy usage information during their budget development process or in response to changes in business plans or projections. This information is received on an ad hoc or as-needed basis and does not follow a strict calendar. Oftentimes, these predictions encompass widely varying timeframes. Since the predictions are not binding on the customer, they are sometimes informal and may represent the customer’s most optimistic view of their future energy demand.

Q. Does Minnesota Power also receive information from LP customers other than energy usage?

A. Yes. We obtain LP customers’ most current production estimates and we use those production estimates to aid us in our sales budget updates. Minnesota Power also provides our customers with periodic updates on their energy usage and cost for their use in updating their operating budgets, which allows for information sharing. We have some customers who prepare current estimates on a monthly basis for the balance of the year; others who prepare quarterly updates for the balance of the year; and yet others who prepare rolling two-year forecasts.

Q. How much do historic trends in a specific LP customer’s business factor into your analysis, overall?

A. Minnesota Power uses all of the LP customer data at our disposal—including historical energy usage, formal budgets, historical demand nominations, periodic customer...
updates, pre-nomination predictions, and updated customer production estimates—as tools to help us anticipate customers’ future operating levels and energy requirements. This information is combined with the industry information and trends I discussed above to develop the overall projection of a specific LP customer’s annual energy requirements.

Q. **Did the Company follow these same processes described above to develop its LP customer sales forecasts for the 2020 test year in this case?**

A. Yes.

Q. **What data did the Company have in hand for the 2020 test year as it was developing this rate case filing?**

A. Production estimates from 2019 were the latest information received from LP customers at the time the 2020 test year forecast was prepared. We also used pre-nomination data, historic trends, industry data, and other customer information, as described above, to develop our test year forecast. We did not receive 2020 nominations from LP customers in time for preparation of the 2020 test year LP sales forecast, which is consistent with the usual timing of LP nominations in relation to an initial rate case filing. Minnesota Power anticipates receiving its nominations for the 2020 test year in the fourth quarter of 2019, with most nominations for the first months of 2020 received by the end of November 2019.

Q. **How is pre-nomination data gathered for the test year budget?**

A. For the 2020 test year, we considered the most recent 2019 business plan estimates that we developed with and for our customers as the base level of sales for the 2020 test year. Our account professionals worked with customers when possible to validate that approach. Most changes or variances between the 2019 current estimates and 2020 test year sales budget levels are due to changes in circumstance driven by operational or contractual changes at customers like Blandin, Verso, and Silver Bay Power Company.
Q. How is this information used in the LP forecasting process?
A. This information is utilized to derive taconite MWh sales and nomination levels in the 2020 forecast, as 2020 taconite production is expected to be similar to 2019 at current macroeconomic conditions. For LP paper customers, similar operating rates were assumed for 2020 using 2019 data and assuming full implementation of the new Blandin and Verso Electric Service Agreements approved in Docket Nos. E015/M-19-37 and Docket No. E015/M-18-603, respectively.

Q. Did you make any adjustments to the data received directly from your LP customers in order to develop an accurate test year budget?
A. No. We used customer data in conjunction with the aforementioned tools at our disposal to develop the 2020 test year budget.

Q. Are these test year budgets subject to change as the actual test year progresses?
A. Yes. Take for example Keetac and Blandin in our prior rate proceeding. During our 2016 rate case, Keetac restarted in February of the 2017 test year, and the Company adjusted its test year sales forecast with the recommendation to consider nine months of Keetac energy sales to account for the uncertainty associated with our LP customer operations. The Commission ultimately determined that 12 months of Keetac energy sales should be included in the 2017 test year. Conversely, Blandin announced the closure of Paper Machine #5 in October of 2017, which occurred late in the test year during deliberations of the 2016 rate case and was not allowed for consideration in the 2017 test year. As a result of the 12-month inclusion of Keetac and non-admittance of Blandin Paper Machine #5 closure impacts, the actual energy sales to large power customers during the 2017 test year were 223,199 MWh, or 3.7 percent, below the Commission-approved 2017 test year sales budget, as previously shown in Table 2 above.

Due to the significant impact that changes in energy demand at any of the LP customers can have on Minnesota Power’s overall energy sales, it is important to take into account actual changes to LP customers’ energy needs during the test year. If test year budgets
are not adjusted to reflect significant changes in LP customer energy demand, the test
year budget will not accurately predict Minnesota Power’s future level of energy sales,
and rate outcomes will not accurately reflect actual sales. Overall, this emphasizes the
additional risk associated with Minnesota Power’s significant concentration of LP
customers, as a few industrial customers have the capability of impacting the
Company’s revenues by a larger amount than its entire residential customer class.

Q. How are changes in the budget factored into the Company’s analysis during the
rate case?

A. Typically, Minnesota Power updates its test year sales information during discovery or
in rebuttal testimony, depending on the timing of the change in LP customer energy
demand. If a sufficiently significant change occurs after rebuttal but before the record
is closed, the Company may submit a filing seeking to update test year sales information.
For example, as a result of the Keetac restart in February of the 2017 test year, that was
announced in late 2016 after Minnesota Power’s 2016 Rate Case initial filing, Minnesota Power updated the test year sales information and the interim rate increase
was reduced from 8.01 percent to 5.07 percent. Had the Blandin paper closure
announcement occurred earlier in the rate case proceeding, the Company would have
sought to adjust the rate request accordingly.

D. Large Customer Forecast Information

1. Metals and Mining

Q. Please describe Minnesota Power’s retail mining customers.

A. Minnesota Power provides electric service to all six of Minnesota’s taconite plants.
These six taconite plants are owned by three principal corporate owners: United States
Steel Corporation (“U.S. Steel”), Cleveland-Cliffs (“Cliffs”), and ArcelorMittal Steel-
USA. Minnesota Power also provides electric service to PolyMet, a non-ferrous mining
and processing operation that has completed its environmental review, obtained
necessary permits and is finalizing the financing needed to construct and operate an
open-pit mining and processing facility.
Q. What does the global and regional economic data indicate about the iron mining industry for 2020 and beyond?

A. Iron ore, particularly in the form of iron ore pellets, is in temporary short supply on a global basis, primarily as a result of capacity shutdowns in Brazil. These shutdowns have created a global supply shortage that Cleveland-Cliffs CEO Lourenco Goncalves has anticipated will last for several years and will sustain periods of high global pellet prices.

Additionally, federal trade action has been taken against China and other steel producing nations to limit the amount of steel dumping in the United States through Section 232 Tariffs. Domestic steel companies have highlighted China’s unfair trade practices, subsidization of its industry, and general lack of environmental controls on its industry as the cause for its unfair cost advantages. Cleveland-Cliffs CEO Lourenco Goncalves has highlighted the high levels of pollutants emitted in China compared to the United States, and American Iron and Steel Institute has produced studies that indicate Chinese steel is produced with approximately 50 percent more carbon intensity than American steel. These numerous reasons have been used to support the federal trade action, which has resulted in a reduction of steel imports to the United States from record high levels of nearly 30 percent in January, 2018, to a level that is still historically above average, but more moderate at approximately 20 percent presently. During this same period, North American steelmaking capacity utilization rose consistently to levels above 80 percent for the first time in over a decade, supporting strong operating rates of our existing taconite customers. As such, governmental action has helped to limit imports, and that action has served to solidify some domestic steel production.

However, macro-economic activity has slowed recently, and North American steel production has also slowed down. U.S. Steel idled two North American blast furnaces.

---

and idled line three at Minntac; and other steel manufacturers have slowed production at their facilities. Further, it is important to note that Section 232 actions are for steel products and do not protect against imports of iron ore, pig iron, or other materials used in blast furnaces.

Q. What domestic factors are affecting Minnesota Power’s mining customers?

A. On the domestic level, there are increased pressures and headwinds for the type of steelmaking that uses Minnesota iron pellets, as the trend in domestic steel production is the use of fewer iron ore pellets as steelmaking capacity moves more toward electric arc furnace production, as illustrated in Figure 4 below.

**Figure 4. United States Blast Furnace Share of Steel Production**

Currently less than 30 percent of all steel produced in the United States is produced by processes that use Minnesota’s iron ore pellets. One iron pellet producer, Cleveland-
Cliffs, has moved to differentiate some of its product from standard iron ore pellets to products that can be accepted in EAFs. No other customers have announced such changes at present, with the result being that the rest of Minnesota Power’s mining customers, or about 90 percent of Minnesota’s taconite mining capacity, are limited to supplying a declining customer base. This trend toward EAF production is expected to continue in 2020 and beyond as steelmakers have announced several new capacity additions with new steel projects being announced this year by large domestic steelmakers like Nucor and Steel Dynamics. Even U.S. Steel, a steelmaker whose entire U.S. footprint is comprised of integrated steelmaking with blast furnaces, has announced an EAF project at its Fairfield, Alabama steelmaking facility. Additionally, in October, U.S. Steel announced its investment to acquire a 49.9 percent stake in EAF steelmaker Big River Steel in Arkansas as a part of their new “Best of Both” strategy that will be “bringing together the capabilities of integrated and mini mill steel production.” Both of these investments by U.S. Steel highlight the domestic steel market’s continued movement towards EAF steel production, even by long-time proponents of traditional integrated steelmakers.\(^{19}\)

Another factor impacting Minnesota Power’s mining customers is Hibbing Taconite’s efforts to secure additional mineable ore to extend its mine life. Without securing additional ore, Hibbing Taconite will run out of mine life by 2024.\(^{20}\)

**Q. How are these trends impacting Minnesota Power’s iron mining customers?**

**A.** Currently, Minnesota Power’s mining customers are all running at fairly high operating levels. Some, like Cleveland-Cliffs, are moving into new products to address some of the changes in domestic steel production trends, such as its transition to DR-Grade pellet production at Northshore mining and downstream HBI production in Toledo, Ohio. As discussed earlier in this testimony, U.S. Steel recently announced the temporary idling of blast furnaces at its Great Lakes and Gary facilities in response to declining pricing


and reduced market demand, and subsequent idling of line three at Minntac. Accordingly, some of Minnesota Power’s mining customers are selling some of their iron pellets into seaborne markets in greater quantity than before, taking advantage of greater pellet premiums and softer domestic markets to overcome the added transportation costs to justify the sales.

Q. To what extent do you expect these trends to continue into 2020?

A. We expect these trends to continue in 2020 as domestic steelmakers continue to transition towards EAF steelmaking even further and Minnesota taconite producers mitigate lost sales by differentiating products and taking advantage of high seaborne iron ore pellet premiums. It is unclear at this time if Minntac’s line three will stay idle beyond 2019, but it is conceivable that the idle will continue into 2020. The idling of line three points to potential weakness in seaborne markets where Minnesota Power customers have sent excess iron ore pellet capacity over the past few years. These trends of reduced domestic demand for traditional iron ore pellets and potentially shipping to the seaborne iron ore pellet market will subject Minnesota Power’s customers, and, in turn, Minnesota Power’s energy sales, to increased volatility associated with global markets. This provides a further consideration for the increased risk profile of Minnesota Power compared to the average electric utility.

Q. What does the global and regional economic data indicate about steel and other precious metal mining industry for 2020 and beyond?

A. The clean energy economy, through expansion of wind and solar generation, battery storage, and electric vehicles, is anticipated to require significant amounts of steel and precious metals beyond current global demand. This expansion in raw material and precious metal extraction is needed to meet the growing demand. In 2017, The World Bank released a report on “The Growing Role of Minerals and Metals for a Low-Carbon Future.”21 The report highlighted the substantial increase in demand for several key minerals and metals to manufacture cleaner energy technologies, effectively stating the

---

clean energy transition will be significantly mineral intensive. Northeastern Minnesota’s existing and future mining industry is positioned well to support the clean energy mineral demand with existing infrastructure and a safe, talented workforce. Accordingly, the Company believes it is important to have competitive industrial rate structures to support extraction and supply of these minerals from this region where it can be done in a more environmentally sustainable manner.

Below, I walk through each LP mining customer in turn.

a. U.S. Steel

Q. Please describe U.S. Steel’s operations in Minnesota Power’s service territory.
A. U.S. Steel wholly owns both the Minntac and Keetac facilities and owns 14.7 percent of Hibbing Taconite. These facilities produce iron ore pellets for use in U.S. Steel owned blast furnaces in and, in recent years, for third party sales.

Q. Have there been any notable changes to U.S. Steel’s business since the Company’s last rate case?
A. Keetac resumed operations in February 2017 after a 22-month idling and has since run at full production.

Q. What type of agreement does the Company have with U.S. Steel?
A. Minnesota Power has an electric service agreement (Docket No. E-015/M-16-836) for Minntac and Keetac. As of November 1, 2019, the earliest termination date for the contract is November 30, 2023.

Q. What sources of information have been relevant to Minnesota Power’s determination of a reasonable 2020 forecast of sales to U.S. Steel?
A. The Company has used U.S. Steel’s quarterly and annual reports as well as the aforementioned industry data, customer nominations, and conversations with U.S. Steel.
Q. How do these assumptions align with broader industry and economic trends affecting the mining business?

A. The Company’s test year forecast assumptions for U.S. Steel are generally consistent with the mining industry economic trends discussed earlier; however, the assumptions do not include any lost sales from the Minntac line three idle announced in mid-October 2019.

b. Cleveland-Cliffs

Q. Please describe Cleveland-Cliffs operations in Minnesota Power’s service territory.

A. Cleveland-Cliffs wholly owns Northshore Mining Company and United Taconite LLC. Cleveland-Cliffs also owns 23 percent of Hibbing Taconite Company. The facilities produce iron ore pellets that are sold on the merchant market. Northshore Mining Company has also began producing DR-Grade iron ore pellets for further processing at its Hot Briquette Iron facility in Toledo, Ohio.

Q. Have there been any notable changes to Cleveland-Cliffs’ business since the Company’s last rate case?

A. Cleveland-Cliffs has recently completed a project at its Northshore Mining facility to allow it to produce a different grade of iron pellets for sale to different steel making customers, in particular, those that operate EAFs. Additionally, Northshore Mining’s wholly owned subsidiary, Silver Bay Power Company, has ceased operations of its two coal-fired generating units and increased energy purchases from Minnesota Power. Lastly, Cleveland-Cliffs transitioned management of Hibbing Taconite Company to ArcelorMittal in August, 2019.

Q. What type of agreement does the Company have with Cleveland-Cliffs?

A. The Company has an Electric Service Agreement with United Taconite LLC and with Northshore Mining’s Babbitt mine operations. As of November 1, 2019, the earliest termination date for this ESA is December 31, 2026. The Company also has a non-firm retail power supply agreement with Silver Bay Power Company.
Q. What are the key assumptions included in forecasts of Minnesota Power sales to Cleveland-Cliffs for the 2020 test year?
A. Minnesota Power’s electric sales to Cleveland-Cliffs will increase by a similar amount as their reduction in generation from Silver Bay Power Company in 2019. These additional energy sales account for nearly all the energy sales growth in the Company’s mining sector as described in more detail by Company witness Mr. Levine.

Q. How do these assumptions align with broader industry and economic trends affecting the mining business?
A. Minnesota Power is forecasting greater growth from Cleveland-Cliffs than is predicted for the overall mining industry due almost entirely to the additional electric sales from Minnesota Power to make up for the idling of Silver Bay Power Company’s coal-fired generating units. Outside of this customer-specific circumstance, our assumptions are consistent with the mining industry and economic trends.

c. ArcelorMittal

Q. Please describe the ArcelorMittal’s operations in Minnesota Power’s service territory.
A. ArcelorMittal Minorca Mine (“Minorca”) is wholly owned by ArcelorMittal USA, which itself is wholly owned by ArcelorMittal, the world’s largest steelmaking company. Minorca produces iron ore pellets for use at ArcelorMittal’s flagship Indiana Harbor #7 blast furnace. ArcelorMittal also owns 62.3 percent of Hibbing Taconite Company.

Q. Have there been any notable changes to ArcelorMittal’s business since the Company’s last rate case?
A. In August, 2018, the managing agent of Hibbing Taconite Company, Cleveland-Cliffs, submitted a notice of resignation of its managing agent responsibilities. Beginning in August, 2019, the management of Hibbing Taconite transitioned to ArcelorMittal. As previously stated in this testimony, Hibbing Taconite is actively pursuing efforts to
secure additional mineable ore to extend its mine life. Without securing additional ore, Hibbing Taconite will run out of mine life by 2024.

Q. Can you provide a summary of the Company’s electric service agreement terms with ArcelorMittal?
A. The Company has Large Power ESAs with Minorca and Hibbing Taconite Company, containing terms and conditions consistent with other LP taconite customers. As of November 1, 2019, the earliest termination date for the ESA with Minorca is December 31, 2025, and November 30, 2023, for the ESA with Hibbing Taconite.

Q. What are the key assumptions included in forecasts of Minnesota Power sales to Minorca for the 2020 test year?
A. For purposes of the 2020 test year, Minnesota Power assumed that Minorca and Hibbing Taconite’s sales remain in 2020 at about the same levels as in 2019.

Q. How do these assumptions align with broader industry and economic trends affecting the mining business?
A. The Company’s assumptions for Minorca and Hibbing Taconite sales are generally consistent with the mining industry economic trends discussed earlier in my testimony.

d. PolyMet

Q. How long has the PolyMet mine been pursued in Minnesota?
Q. Please describe PolyMet’s current activities in Minnesota Power’s service territory.

A. The PolyMet NorthMet project, which is located near the community of Hoyt Lakes, Minnesota, is a non-ferrous mining operation focused on the extraction of copper, nickel, and precious metals. PolyMet is working to secure final financing necessary to begin construction. While all permits necessary to begin construction have been received, there continue to be legal challenges and opposition to these permits. For example, on October 24, 2019, the Minnesota Court of Appeals extended a stay pending their written decision on three permits for PolyMet’s proposed copper-nickel mine in northern Minnesota. A PolyMet spokesman has indicated the stays will likely delay the project.\(^\text{22}\)

Q. Have there been any notable changes to PolyMet’s business since the Company’s last rate case?

A. Yes. Since the last rate case, PolyMet has secured the Permit to Mine and other key state and federal permits necessary to build and operate the mine. PolyMet has estimated the construction period to be 24 to 30 months once final financing is in place. Further, PolyMet has indicated production is expected to start ramping up during the latter part of 2022 with full production expected in 2023.

Q. What sources of information have been relevant to understand PolyMet’s plans and status?

A. PolyMet’s Investor Relations website and related disclosures and information continue to provide updates on the NorthMet project and a timeline of milestone activities.\(^\text{23}\) Further, PolyMet representatives have been quoted in publications including the Minneapolis StarTribune and St. Paul Pioneer Press, where they have commented on their plans and project status. In addition, the company regularly provides updates to the community. Finally, Minnesota Power communicates directly with PolyMet during our planning and forecasting processes.


\(^{23}\) [https://polymetmining.com/investors/news/](https://polymetmining.com/investors/news/)
Q. What are the key assumptions included in forecasts of Minnesota Power sales to PolyMet for the 2020 test year?

A. The 2020 test year does not include any PolyMet Mine or Plant load. Once in operation, Minnesota Power will supply power to the PolyMet NorthMet Project via a 10-year ESA that was approved by the Commission in 2007. But this timeline is still several years into the future, even assuming no further permitting delays.

e. Former Magnetation and Essar Sites

Q. What is the status of the former Magnetation iron ore mine and processing project?

A. The former Magnetation sites, specifically Plant 2, Plant 4, and the Jesse Mine Loadout, were purchased out of bankruptcy by ERP Iron Ore LLC (“ERP”). ERP never operated the facilities and declared bankruptcy. In the latest round of bankruptcy, all of the Company’s contracts with ERP were rejected by the bankruptcy court. Minnesota Power disconnected electric service to the ERP facilities in its service territory in the spring of 2018.

Q. What level of sales are assumed for the former Magnetation facilities in the Company’s sales forecast for 2020?

A. All of the services have been disconnected and no sales to the customer are reflected in the 2020 sales budget, nor expected in 2020 or subsequent years.

Q. What is the status of the former Essar iron ore mine and processing project?

A. Mesabi Metallics purchased the Essar project assets out of bankruptcy. To date, no construction has been completed on the site and no operations have commenced. The Company has received no communications from Mesabi Metallics with projected startup dates. The Company regularly corresponds with the Nashwauk Public Utilities Commission, the retail service provider for the Mesabi Metallics plant processing sites, and has learned that they have not had communications from Mesabi Metallics with projected startup dates.
Q. What level of sales is assumed for Mesabi Metallics in the Company’s sales forecast for 2020?

A. Minnesota Power has not assumed any operations on the former Essar iron ore mine during the 2020 test year. As a result, the Company expects 2020 sales to the Nashwauk Public Utilities Commission, which is the retail service provider to Mesabi Metallics and other city customers, to be similar to the Company’s 2019 sales forecast.

2. Pulp and Paper

Q. Who are Minnesota Power’s main pulp and paper customers?

A. Minnesota Power’s LP paper customers operate four pulp and paper mills producing a variety of graphic paper grades and pulps to serve North American and global markets. These four mills are: (1) Blandin Paper in Grand Rapids, Minnesota; (2) Verso in Duluth, Minnesota; (3) Boise/Packaging Corporation of America in International Falls, Minnesota; and (4) Sappi in Cloquet, Minnesota. Minnesota Power serves approximately 53 percent of the full production of energy demand for these facilities with customers’ on-site generation providing the remainder.

Q. What does the data collected and reviewed by the Company indicate about the future of the pulp and paper industry for 2020 and beyond?

A. The company reviews reports from PaperAge, and subscribes to industry data from AF&PA, Pulp and Paper Products Council (“PPPC”), the Minnesota Department of Natural Resources’ monthly Wood Markets Update, and Fastmarkets/RISI. Metrics considered include mill operating rates, demand indicators such as magazine ad pages, catalogs mailed, postage rates, imports, strength of the US dollar, and pricing. In general, graphic paper demand has been in secular decline since the launch of enhanced mobile devices, like the iPhone, in 2007, while packaging paper and certain types of wood pulp have seen stable to growing demand. Approximately half the market demand for graphic paper has evaporated since 2007 and is not expected to return. In order to

---

24 Minnesota Power sells energy to the Nashwauk Public Utilities Commission as a resale municipal customer for its city load.
maintain paper price stability, capacity needs to come offline at a rate of approximately one mill or one large paper machine every 18 months. Some mills are able to convert their operations and repurpose some equipment for production of packaging paper or market pulp; however, more closures than conversions are necessary to balance supply and demand for all pulp and paper products.

Q. **How are these trends impacting Minnesota Power’s pulp and paper customers?**

A. When graphic paper began its initial decline in 2007, Minnesota Power’s pulp and paper customers were in relatively strong, competitive positions as they enjoyed relatively favorable input costs for wood, energy, and labor. Transportation costs for inputs and final product within the Midwest market were also relatively low. As a result, none of Minnesota Power’s pulp and paper customers altered operations during the first five years of the market decline as higher cost mills across the United States, Canada, and Europe were closed to balance supply with declining demand. After 2012, however, many of the higher cost mills were closed and Minnesota Power’s customers’ competitive position narrowed as rising energy costs pushed against the continued decline in demand. In 2013, two of the four paper machines at Boise/Packaging Corporation of America’s mill in International Falls were permanently closed and 265 employees were laid off. In 2015, Boise/Packaging Corporation of America installed a turbine generator to further manage against rising energy costs as it reduced purchases from Minnesota Power from 35 MW to 10 MW. In 2017, Blandin Paper Company announced the permanent closure of Paper Machine #5 and the corresponding layoff of 150 employees in Grand Rapids.

Q. **To what extent do you expect these trends to continue into 2020?**

A. We expect these trends to continue in 2020 as graphic paper markets continue their secular decline and Minnesota Power’s pulp and paper customers work diligently to maintain competitiveness in these challenging times. Some customers are focusing efforts on converting to more stable products in packaging and pulp segments; however, these customers must demonstrate to their corporate boards the long-term competitiveness of their location in order to attract the capital investment.
In turn, Minnesota Power’s kWh energy sales to these customers are subject to global and regional competitiveness challenges. These market challenges increase the probability for a sharp and meaningful decline in energy sales that affect our company more than the average utility due to our small size and industrial customer concentration, and provide further consideration for the increased risk profile of Minnesota Power compared to the average electric utility. The paper markets which are declining the most – coated groundwood and uncoated groundwood – are also the grades produced by our two largest purchased energy paper customers. Below, I walk through each of them, Blandin and Verso.

   a. Blandin

Q. Please describe Blandin’s operations in Minnesota Power’s service territory.
A. Blandin Paper Company is a groundwood pulp and papermaking facility that operates a single paper machine producing Light Weight Coated papers used for catalogs, magazines, advertising inserts, direct mail and other commercial products.

Q. Have there been any notable changes to Blandin’s business since the Company’s last rate case?
A. Yes. On October 24, 2017, corporate parent UPM announced the permanent closure of Blandin Paper Company’s Paper Machine #5, which had an annual capacity of 128,000 tons of coated magazine paper. This change in Blandin’s operation was completed by the end of 2017 and resulted in a significant reduction in their load. Minnesota Power worked with Blandin to negotiate an Amended and Restated Electric Service Agreement which supported the reduced operation, for which approval was received from the Commission in June 2019 (Docket E-015/M-19-37).

Q. Please provide a summary of the Company’s ESA terms with Blandin.
A. First, and critically important to Minnesota Power and its other ratepayers, is Blandin’s agreement to purchase its electric service requirements for its Grand Rapids facilities from Minnesota Power through at least 2029. Second, the Agreement modifies
Blandin’s Large Power Incremental Production Service Threshold to allow more effective management of electric use at its Grand Rapids facilities. This is helpful for both energy usage and production efficiency in a very challenging economic environment for paper facilities. Third, the Agreement provides additional risk protections for Minnesota Power through customer billing modifications.

Q. How does this ESA help determine a forecast of sales to Blandin during the 2020 test year?
A. Blandin’s minimum Incremental Production Service Threshold (“IPST”) was used to forecast a monthly nomination level for 2020.

Q. What sources of information have been relevant to Minnesota Power’s determination of a reasonable 2020 forecast of sales to Blandin?
A. To forecast Blandin’s 2020 energy purchases, the Company relied upon the IPST set forth in the ESA, UPM’s quarterly and annual reports, the aforementioned customer and industry data, and conversations with the customer.

Q. What are the key assumptions included in forecasts of Minnesota Power sales to Blandin for the 2020 test year?
A. The Company assumed that Blandin will operate its remaining paper machine and purchase from Minnesota Power at the revised minimum IPST for single machine operation.

Q. How do these assumptions align with broader industry and economic trends affecting the pulp & paper business?
A. They are consistent with declines in the pulp and paper business described earlier in my testimony.
b. Verso

Q. Please describe Verso’s operations in Minnesota Power’s service territory.
A. Verso Duluth is an uncoated groundwood mill with the capacity to produce 270,000 tons of paper annually. The mill employs 225 full time employees and makes supercalendared “SC” paper used for magazines, catalogs and retail inserts.

Q. Have there been any notable changes to Verso’s business since the Company’s last rate case?
A. Yes. Responding to continued challenges in the paper industry, Minnesota Power and Verso negotiated an amended and restated electric service agreement which provides additional operating flexibility and cost reduction potential. The amended and restated electric service agreement was approved by the Commission in December of 2018 (Docket E015/M-18-603).

Q. Please provide a summary of the Company’s ESA terms with Verso.
A. First, the amended and restated electric service agreement requires Verso to purchase its electric service requirements for its Duluth Mills from Minnesota Power through at least December 31, 2024. Second, the Agreement modifies Verso’s Large Power Incremental Production Service Threshold to allow more effective management of electric use at its Duluth Mills. This is helpful for both energy usage and production efficiency in a very challenging economic environment for paper facilities. Third, the Amendment provides additional risk protections through weekly billing and a financial corporate guaranty.

Q. How does this ESA help determine a forecast of sales to Verso during the 2020 test year?
A. Verso’s minimum IPST was used to forecast a monthly nomination level for 2020.
Q. What sources of information have been relevant to Minnesota Power’s determination of a reasonable 2020 forecast of sales to Verso?

A. To forecast Verso’s 2020 energy purchases, the Company relied upon the IPST set forth in the ESA, Verso’s quarterly and annual reports, the aforementioned customer and industry data, and conversations with Verso.

Q. What are the key assumptions included in forecasts of Minnesota Power sales to Verso for the 2020 test year?

A. Verso will operate at the revised minimum IPST set forth in the ESA.

Q. How do these assumptions align with broader industry and economic trends affecting the paper & pulp business?

A. They are consistent with overall declines in the industry, as described earlier in my testimony. The revised ESA was designed to take into account industry trends, which have continued to deteriorate since the ESA was approved in late 2018.

E. 2020 Large Power Forecast

Q. Based upon the industry and customer data collected, what is Minnesota Power’s forecast for its Large Power customers?

A. As discussed further by Company witness Mr. Levine, Minnesota Power’s 2020 test year forecast for its Large Power customers is near full production for its Mining and Metal and remaining Paper & Pulp customer footprint. Mining and Metals sales assume a 38 million ton level of production, which is 6.5 percent higher than a 2001-2018 average and about 3.4 percent above a historical average that excludes 2009, which was an exceptionally low production year. Forecasted Paper & Pulp sales assume energy requirements at all Paper mills remain in line with 2018 levels. The recently idled Blandin paper machine #5 is assumed to remain offline indefinitely, including the 2020 test year forecast timeframe.
Q. Are the conclusions in Minnesota Power’s Large Power Forecast reasonable?
A. Yes. As detailed by Company witness Mr. Levine, Minnesota Power’s Large Power forecast sets a reasonable level of sales for its forecasted production levels, taking into account all of the variables and inputs I outlined earlier in my testimony. Even in the abnormally high taconite production year in 2018, Minnesota Power was unable to reach 2017 test year sales levels. The 2020 test year sales forecast sets a reasonable level of both energy sales and customer production levels.

IV. CONCLUSION

Q. Does this complete your testimony?
A. Yes.