

Direct Testimony  
Frank L. Frederickson

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

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. Please state your name and business address.**

3 A. My name is Frank L. Frederickson and my business address is 30 West Superior Street,  
4 Duluth, Minnesota, 55802.

5  
6 **Q. By whom are you employed and in what position?**

7 A. I am employed by ALLETE, Inc., doing business as Minnesota Power (“Minnesota  
8 Power” or the “Company”). My current position is Vice President – Customer  
9 Experience.

10  
11 **Q. Please summarize your qualifications and experience.**

12 A. I have been with Minnesota Power for over eleven years and have experience in the  
13 electric industry that includes customer program development, delivery and operations,  
14 strategic account management, regional economic development, renewable power  
15 generation project development and construction management, power generation  
16 business management, general management of generation reliability and projects  
17 engineering, and marketing.

18  
19 In my current position with Minnesota Power, I am responsible for several areas that  
20 were consolidated during our 2018 downsizing that now includes all customer accounts  
21 and relationships for Minnesota Power’s residential, commercial, wholesale, and  
22 industrial customers. I lead a team that focuses on: strategic account management;  
23 customer business analytics; customer system transformation, conservation, and  
24 renewable program development and delivery; customer billing and cash collection;  
25 customer care and support center; and economic and regional development.

26  
27 Prior to my current role, I held the position of Vice President – Minnesota Power  
28 Marketing. In that role, I was responsible for the relationships with our large industrial,  
29 commercial, and wholesale customers, delivery of our conservation improvement  
30 programs, and regional economic development activities.

1 I previously held the position of general manager, Minnesota Power hydro and biomass  
2 renewable operations, and worked out of our generation operations office in Cohasset,  
3 Minnesota. In that role, I was responsible for the general management of our hydro and  
4 biomass operations, generation reliability, and projects engineering, and was tasked  
5 with leadership of Minnesota Power’s evaluation team for the natural gas-fired capacity  
6 and unit-contingent energy request for proposal process.

7  
8 Previous to this experience I managed the renewable business operation at Rapids  
9 Energy Center, developed and constructed wind generation facilities, and participated  
10 in overall planning activities for Minnesota Power’s renewable energy expansion.  
11 Before joining Minnesota Power, I was employed for seven years as a senior process  
12 development engineer for 3M Company, where I have been a named inventor on 16  
13 granted US patents in various technologies. I graduated from the University of  
14 Minnesota with bachelor and master degrees in mechanical engineering. I am originally  
15 from International Falls, MN, and have been a lifelong Minnesota resident.

16  
17 **Q. What testimony do you provide in this proceeding?**

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

23  
24 **Q. What is the purpose of this Large Power Customer Outlook testimony (“LP  
25 Testimony”)?**

26 A. In my LP Testimony, I discuss Minnesota Power’s forecasting work with respect to LP  
27 industry and customer trends, as well as the global forces that can affect these  
28 customers’ operations. More specifically, I describe the Company’s data gathering  
29 process from these customers and industries, and provide forecast information for  
30 Minnesota Power’s mining, pulp and paper, and other large power customers. The  
31 Direct Testimony of Company witness Mr. Benjamin Levine discusses the large power

1 forecasting process in more detail, including: (i) the delineation between when the  
2 Company utilizes data from the Company's Annual Forecast Report ("AFR") to develop  
3 its sales forecasts for certain customer classes and when more specific customer data is  
4 needed; (ii) an identification of broader industry trends affecting large power customers;  
5 and (iii) a detailed discussion of the forecast.

6  
7 **II. LARGE POWER CUSTOMER OVERVIEW**

8 **Q. How much of Minnesota Power's retail sales are attributed to LP customers?**

9 A. As I describe in more detail in my Case Overview Testimony, Minnesota Power has one  
10 of the most unique load profiles in the region and country, with industrial customers  
11 currently representing approximately 74 percent of retail kWh energy sales. Minnesota  
12 Power's LP customers comprise an overwhelming majority of industrial customer sales  
13 and account for approximately 66 percent of the Company's retail kWh energy sales.

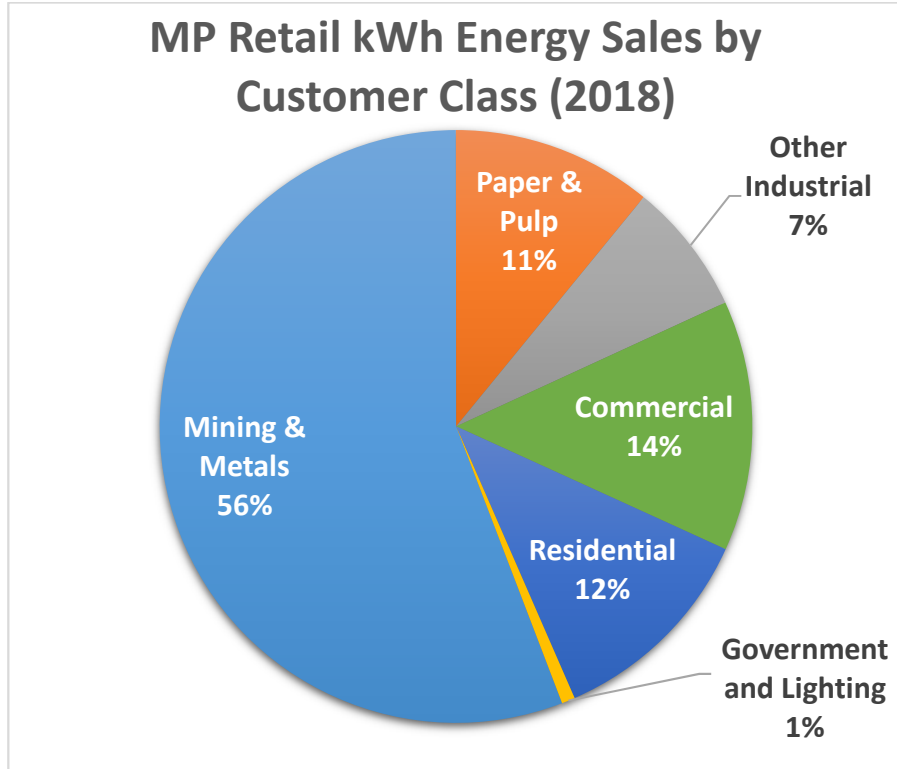
14  
15 **Q. What industries are represented by Minnesota Power's large industrial  
16 customers?**

17 A. These customers primarily consist of taconite producers and graphic paper producers in  
18 northern Minnesota, as depicted in Figure 1 below. These industries, like Minnesota  
19 Power itself, are a significant component of the regional economy.

20

1

**Figure 1. Minnesota Power 2018 Retail kWh Energy Sales by Customer Class.**



2

3

4 **Q. Who are Minnesota Power’s Large Power (LP) customers?**

5 A. Minnesota Power has eight LP customer contracts, each serving at least 10 megawatts  
 6 (“MW”) of load. These contracts define our electric service for six taconite producing  
 7 facilities served through four LP customer contracts, and four paper and pulp mills.  
 8 Table 1 below summarizes these LP customers and the status of their contracts.

9

1

**Table 1. Minnesota Power Firm Retail LP Customer Contracts<sup>1</sup>**

Customer	Industry	Ownership	Earliest Termination Date as of November 1, 2019	Status
ArcelorMittal - Minorca Mine	Taconite	ArcelorMittal S.A.	December 31, 2025	Operating
Hibbing Taconite Co.	Taconite	62.3% ArcelorMittal S.A. 23.0% Cleveland-Cliffs 14.7% USS Corporation	November 30, 2023	Operating
United Taconite and Northshore Mining Babbitt Mine Operations	Taconite	Cleveland-Cliffs	December 31, 2026	Operating
USS Corporation (USS - Minnesota Ore)	Taconite	USS Corporation	November 30, 2023	Operating
Boise, Inc.	Paper	Packaging Corporation of America	November 30, 2023	Operating
UPM Blandin	Paper	UPM-Kymmene Corporation	December 31, 2029	Operating
Verso Duluth Mill	Paper and Pulp	Verso Corporation	December 31, 2024	Operating
Sappi Cloquet LLC	Paper and Pulp	Sappi Limited	November 30, 2023	Operating
ERP Iron Ore, LLC	Iron concentrate	Plant 2: MJM Minerals Plant 4: N/A	Contract Rejected	Contract Rejected

2

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

5 A. In addition to Minnesota Power, the Company's customers provide a large portion of  
6 the Gross Regional Product, jobs, and wages in Northeastern Minnesota. Specifically,  
7 the Company's LP customers' products and induced business activity represent  
8 approximately 40 percent of the Northeastern Minnesota's gross domestic product. For  
9 production year 2017, Minnesota's iron mining industry directly employed 3,944  
10 individuals and directly paid \$93.8 million in production taxes in 2018. Of this total,  
11 \$30.8 million was distributed to the Iron Range Resources and Rehabilitation Board,  
12 \$20.4 million was distributed to local school districts, \$11.9 million was distributed to  
13 counties, \$11 million was distributed to cities and townships, \$11 million was  
14 distributed to property tax relief, and \$8.6 million went to other sources like the Taconite  
15 Economic Development Fund and Range Association of Municipalities and Schools. In

<sup>1</sup> 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 Nashauk Public Utilities.

1 addition to \$93.8 million in production taxes, mining customers also paid \$13.1 million  
2 in Occupational Tax, which is dispersed to the State General Fund (50 percent),  
3 Elementary and Secondary Education (40 percent), and the University of Minnesota (10  
4 percent). Mining customers also paid \$4.9 million in Sales and Use Taxes, which go to  
5 the State General Fund in their entirety. \$1 million in various Ad Valorem and Property  
6 Taxes were also paid for production year 2017<sup>2</sup>.

7  
8 In the region more broadly, the forest products industry in Minnesota has demonstrated  
9 a \$9.1 billion impact throughout the state according to Minnesota Forest Industries.  
10 Each year, the industry pays more than \$50 million for wood harvested on public lands  
11 alone and another \$450 million in state and local taxes. Minnesota's pulp, paper, and  
12 board plants employ 2,500 individuals and pay wages totaling over \$237 million.<sup>3</sup>

13  
14 **Q. What have been the trends in Minnesota Power's energy sales and associated**  
15 **revenues to LP customers in recent years?**

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

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<sup>2</sup> Sources:

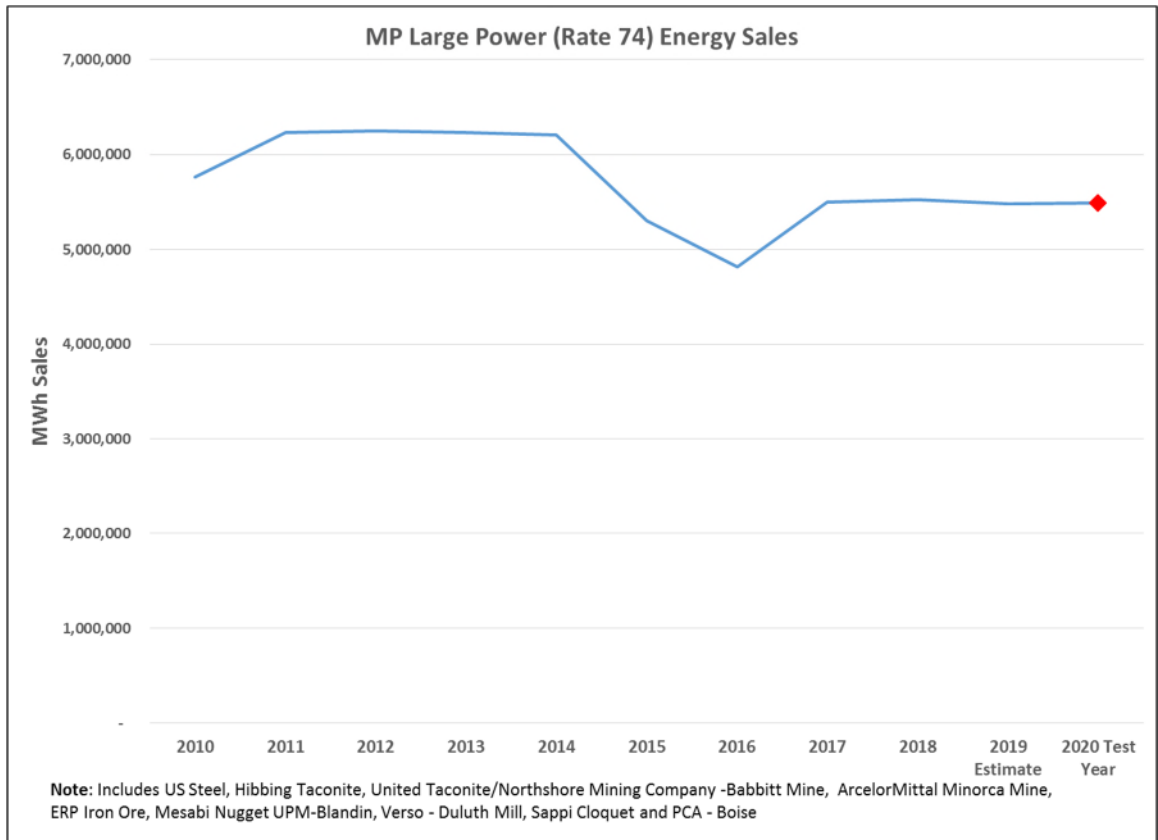
[https://www.taconite.org/\\_site\\_components/files/IMA%20Booklet%202017%2060820%20no%20crops%20web.pdf](https://www.taconite.org/_site_components/files/IMA%20Booklet%202017%2060820%20no%20crops%20web.pdf); <https://www.leg.state.mn.us/docs/2017/other/171214.pdf>

<sup>3</sup> Source: <https://www.minnesotaforests.com/economy-of-forests>



1  
2

**Figure 2. Minnesota Power Historic and Forecasted Firm Large Power MWh Energy Sales**



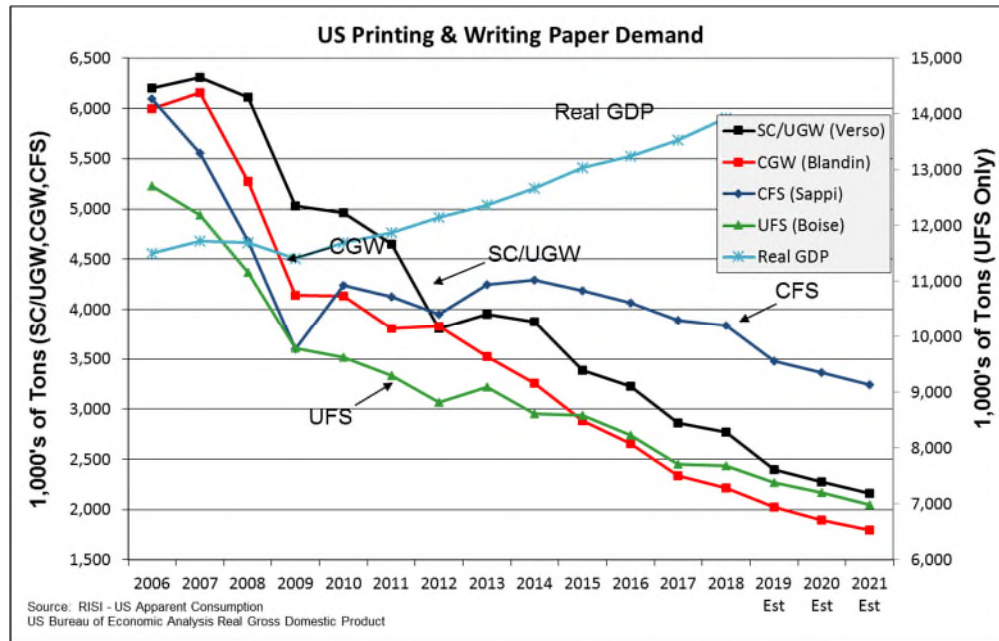
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**Q. Why are the 2020 test year’s LP sales levels lower than in the years prior to the 2015-2016 downturn, despite recovery from the downturn?**

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.

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**Figure 3. Actual Historical and Estimated Future US Printing and Writing Paper Demand**



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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.<sup>4</sup> 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.<sup>5</sup>

<sup>4</sup> Paper Trader, Fastmarkets RISI, September 2019

<sup>5</sup> Sutton, Verle. The Reel Time Report, Industry Intelligence, Inc., February 2016

1 Challenges for the graphic paper market are expected to continue. On October 10, 2019,  
2 the Postal Service filed notice with the Postal Regulatory Commission that they will be  
3 changing rates for its market dominant products on January 26, 2020<sup>6</sup>. This will result  
4 in a price increase of 1.9 percent with slight variation across the market dominant  
5 products. Increased postage rates have a direct and negative impact on the printing and  
6 mailing of catalogues, magazines and direct mail, quickly translating into a decline in  
7 the demand for the paper used in the production of these publications. Such changes in  
8 the paper and writing industry are illustrated in Figure 3 above.

9  
10 **Q. What is your assessment of the domestic steel industry?**

11 A. Despite steel tariffs that provided some relief in recent years against record levels of  
12 steel imports, domestic steelmakers are also facing headwinds due to weak demand and  
13 oversupply issues. U.S. Steel announced on June 18, 2019, the idling of two blast  
14 furnaces in the Great Lakes region due to weak demand.<sup>7</sup> In mid-October 2019, U.S.  
15 Steel announced that it would idle its number three line (“line three”) at Minntac for the  
16 remainder of 2019, so the apparent weakness in the domestic steel market is already  
17 having a material effect on Minnesota taconite production.<sup>8</sup>

18  
19 Additionally, in July 2019 ArcelorMittal USA, the largest consumer of Minnesota  
20 taconite, asked its suppliers to work with them on cutting costs during a “difficult period  
21 driven by oversupply, uncertainty in the markets and continuing inventory  
22 reductions....” The letter, signed by Curtis Geissler, vice president of procurement at  
23 ArcelorMittal USA, noted the company would implement “a 10% price reduction on all  
24 existing price agreements for all purchases issued after July 31, 2019.”<sup>9</sup> Cleveland-  
25 Cliffs also reported reduced pellet nominations from their domestic blast furnace

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<sup>6</sup> <https://www.prc.gov/docs/110/110623/Notice%20and%20Attach%20ACD.pdf>

<sup>7</sup> <https://ussteel.com/newsroom/united-states-steel-corporation-provides-second-quarter-2019-guidance>

<sup>8</sup> <http://www.startribune.com/u-s-steel-will-idle-a-production-line-at-minntac-in-mountain-iron-minn-due-to-softer-markets/563383992/>

<sup>9</sup> <https://www.spglobal.com/platts/en/market-insights/latest-news/metals/071619-arcelormittal-usa-seeking-cost-efficiencies-from-suppliers-during-difficult-steel-market>

1 customers and the planned mitigation of that loss with increased seaborne pellet sales,<sup>10</sup>  
2 later updating this announcement with a reduction in seaborne sales due to challenging  
3 economics,<sup>11</sup> highlighting the volatility of their end markets and corresponding  
4 production volumes. In summary, market conditions are likely to be challenging for our  
5 LP mining customers, and likely to result in lower customer energy requirements  
6 compared to 2018 actuals or the period before the 2015-16 downturn.

7  
8 **Q. Did Minnesota Power provide information in its last rate case in Docket No.**  
9 **E015/GR-16-664 (“2016 Rate Case”) regarding LP customer energy usage for the**  
10 **2017 test year?**

11 A. Yes. Minnesota Power utilizes specific customer information to develop programs and  
12 revise electric service agreements to better meet the needs of their evolving businesses.  
13 After adjusting for the Keetac reopening, we forecasted total retail sales for the 2017  
14 test year of 9,212,383 MWh. We considered this to be a reasonable forecast based on  
15 typical utilization rates of our customers. In particular, the 2017 test year forecast  
16 initially proposed by the Company assumed a 90.2 percent utilization rate for its mining  
17 and metals sector, which correlates well with recent average production rates since  
18 2001. The Commission-approved 2017 test year forecast equated to an exceptionally  
19 high mine facility utilization rate of 95.4 percent, which is a level only reached twice  
20 since 2001. Company witness Mr. Levine describes reasonable forecast assumptions in  
21 greater detail in his Direct Testimony.

22  
23 **Q. How did 2017 actual LP customer MWh energy sales compare with the test year**  
24 **MWh energy sales forecast approved in the 2016 Rate Case?**

25 A. As indicated in Table 2 below, the 2017 test year sales forecast approved by the  
26 Commission was higher than actual 2017 retail energy sales by about 5.2 percent.<sup>12</sup> As  
27 described by Company witness Mr. Levine, the largest difference between the approved

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<sup>10</sup> <https://seekingalpha.com/article/4276128-cleveland-cliffs-inc-clf-ceo-lourenco-goncalves-q2-2019-results-earnings-call-transcript?part=single>

<sup>11</sup> <https://seekingalpha.com/article/4298300-cleveland-cliffs-inc-clf-ceo-lourenco-goncalves-q3-2019-results-earnings-call-transcript?part=single>

<sup>12</sup> 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.**

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

**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.<sup>13</sup> 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.

<sup>13</sup> 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.

1  
2 Our strategic account management professionals are in direct contact with our  
3 customers. As part of these interactions, we frequently discuss the state of the industry  
4 as well as the customers' future production plans. Through these discussions, the  
5 Company can effectively gauge the operational and strategic plans that our customers  
6 have and how Minnesota Power can serve their energy needs to encourage and foster  
7 growth, efficiency, sustainability, and mutual success.

8  
9 Several Minnesota Power employees are also actively involved and embedded in our  
10 LP customers' trade organizations, providing yet another source of LP customer data  
11 and information. By way of example, I serve on the Board of Directors of Minnesota  
12 Forest Industries and the Iron Mining Association of Minnesota and engage as an  
13 associate member with the American Iron and Steel Institute. David Chura, Manager of  
14 Strategic Accounts, serves on the board of Mining Minnesota. In addition, several  
15 others from Minnesota Power actively participate and contribute time, talent, and effort  
16 in sub-committees of these organizations. We use our interactions in these  
17 organizations to identify issues, trends, opportunities, and challenges that the industries  
18 face and to further our understanding of their energy needs.

19  
20 **Q. Do these LP customers develop their own energy use forecasts?**

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

26  
27 **Q. Does Minnesota Power use the energy usage forecasts developed by its customers?**

28 A. While customer forecasts are certainly considered as a part of our sales forecasting  
29 process, they do not necessarily form the sole basis for our sales forecast, for several  
30 reasons. First, the timing of Minnesota Power's need for sales forecast information does  
31 not directly align with our customers' budget development timing. Second, our

1 planning timeline extends further into the future than our customers' planning horizons  
2 typically provide. Third, our experience through the years is that our customers'  
3 forecasts, particularly at the local level have had inaccuracies due to failure to consider  
4 macro business trends that are outside of local purview and control. To prepare a more  
5 accurate sales forecast, we meld our customers' direct information with our own  
6 external information and our analysis of macro business trends.

7  
8 **Q. Are statistical methods like econometric modeling by themselves sufficient to  
9 understand the LP customers' likely test year energy usage?**

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

16  
17 The econometric modeling approach documented in the Company's AFR only produces  
18 estimates for whole industrial sectors (Mining, Paper, and Other Industrial) and does  
19 not produce estimates for individual customers that are necessary for detailed short-term  
20 budgeting. As a result, the Company uses both econometric modeling data and specific  
21 local LP customer information to develop a more accurate and detailed forecast for LP  
22 customers' energy usage.

23  
24 **B. Industry Data**

25 **Q. What are your sources of industry data pertinent to your LP customers' future  
26 energy needs?**

27 A. In addition to specific customer input, we utilize a wide range of industry data,  
28 publications, metrics, and government data. For example, our Customer Experience  
29 team tracks several relevant industry metrics, including, but not limited to, raw steel  
30 capacity utilization rates, blast furnace versus electric arc furnace production  
31 percentages, steel and iron ore pricing levels, steel imports and exports, drill rig counts,

1 iron ore and steel inventory levels, Lake Superior boat traffic, pricing levels for various  
2 grades of paper, and business analyst reports of our customers, their industries, their  
3 corporate parents, and their competitors.

4  
5 We also subscribe to numerous industry periodicals and track industry news on a macro  
6 level to supplement our knowledge of our customers' industries. For the mining  
7 industry, we subscribe and/or review information from Steel Market Update, American  
8 Metal Markets, Steel Business Briefing, Skillings Mining Review, and several others.  
9 For the paper industry, we obtain and review market information from the American  
10 Forest and Paper Association ("AF&PA"), PaperAge Magazine, and pulp and paper  
11 industry intelligence with Fastmarkets RISI including Paper Trader and Paper  
12 Packaging Monitor.

13  
14 **Q. Do you also utilize broader data about global, state, or local economic trends?**

15 A. Yes, we also use publicly available information from the U.S. Securities and Exchange  
16 Commission, the U.S. Census Bureau, American Iron and Steel Institute, World Steel  
17 Association, the United States Geological Survey, and other sources to provide the  
18 information we need for our load forecasting purposes. This includes Institute of Supply  
19 Management Manufacturing Indices, consumer spending, exchange rates, savings rates,  
20 capital investment rates, Federal Reserve Business Outlook surveys, Industrial  
21 Production Indices for steel and paper, the Chicago Index of Activity, and more.

22  
23 **Q. Do historic trends for an LP customer's industry or markets factor into your  
24 analysis as well?**

25 A. Yes. Historic and projected industry trends are considered in the development of short  
26 and long-term energy requirements forecasts.

27  
28 Take for instance paper. Since the launch of enhanced mobile devices like the iPhone  
29 in 2007, there has been a continued proliferation of mobile electronic devices, and more  
30 than 50 percent of market demand for graphic paper has evaporated and is not coming  
31 back. Additionally, the paper grades produced by Minnesota Power's largest paper



1 customers, Verso Duluth and Blandin, have experienced a market decline of over 60  
2 percent during this same time period. There has been some reinvestment to transition  
3 facilities to production of more in-demand products, as demonstrated by Sappi's  
4 conversion into cellulosic pulp production at its Cloquet mill. However, it should be  
5 noted that paper mill conversions and product transitions often result in a sizable  
6 reduction in the amount of electricity purchased. We consider these trends in our own  
7 modeling and it partially accounts for the reduced paper load we have included in our  
8 sales budget and AFR.

9  
10 There is also a historical correlation between domestic steel production and Minnesota  
11 taconite production. As such, it is important to examine trends in the domestic steel  
12 industry to determine how they will impact future Minnesota taconite production. For  
13 example, the domestic steel industry continues to shift away from the traditional  
14 integrated steel model utilizing blast furnaces towards Electric Arc Furnaces ("EAFs").  
15 EAFs utilize scrap steel and high content iron units such as pig iron and Hot Briquetted  
16 Iron ("HBI") as inputs versus blast furnaces that utilize iron ore pellets, largely sourced  
17 from Minnesota's Iron Range for the U.S. steel industry. According to the World Steel  
18 Association,<sup>14</sup> steel production by blast furnace has declined from over half of North  
19 American production to less than one-third over the past 20 years. Inversely, North  
20 American steel production by EAF has grown from less than half to over two-thirds of  
21 production as overall North American production capacity has remained relatively  
22 constant.

23  
24 The taconite produced in Minnesota is primarily used in the traditional blast furnace  
25 steel production, so Minnesota Power must take this shift into consideration when  
26 analyzing steel customer energy demand. Until recent investments were made at  
27 Northshore mining to produce direct-reduced iron grade ("DR-Grade") pellets<sup>15</sup>, 100  
28 percent of taconite production from Minnesota was tied to the declining blast furnace

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<sup>14</sup> <https://www.worldsteel.org/steel-by-topic/statistics/steel-statistical-yearbook.html>

<sup>15</sup> <https://www.duluthnewstribune.com/business/energy-and-mining/4045444-In-Silver-Bay-a-new-pellet-points-toward-Cliffs-future>

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

7  
8 **Q. How does the Company utilize industry and economic data to develop expectations**  
9 **for LP customer sales in any given year?**

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

15  
16 **C. Customer Electric Service Agreements and Data**

17  
18 **Q. Please describe, in general, how Large Power electric service agreements (ESA)**  
19 **supplement standard tariff rates.**

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

27  
28 **Q. Please describe the methodology in which LP ESAs determine customer billing**  
29 **demand.**

30 A. LP customers nominate their firm demand levels based on the electric load expectations  
31 for each calendar month. Nomination frequency varies between monthly and three times

1 per year, with varying advance notice requirements depending on the customer ESA.  
2 These nominations must be equal to or above the Minimum Service Requirement set  
3 forth in each customer's ESA. If a customer is operating at full production, their billing  
4 demand will be equal to their nominated demand. Periodically, as a part of the normal  
5 course of business, customers need to take maintenance downtime. In anticipation, a  
6 customer must notify Minnesota Power a minimum time set in the ESA ahead of the  
7 maintenance period. In exchange, the customer's billing demand will be reduced by the  
8 amount of time and level in which they were below their nominated demand level. Each  
9 LP customer has an allowance for scheduled maintenance set in their ESA, which sets  
10 the maximum amount their billing demand can be reduced below their nominated  
11 demand.

12  
13 **Q. Do Large Power ESAs provide benefits to residential and other non-LP customers?**

14 A. Yes. The ability to customize the general features of the LP tariff to the unique and  
15 individual characteristics of each customer is crucial for them to most efficiently align  
16 their electric service with their operations. As stated previously, and by way of example,  
17 many LP customers would pay higher demand charges when down for scheduled  
18 reasons if they were not able to use the provision for scheduled maintenance, leading to  
19 an increased overall rate for the same periods of time in which they are not producing a  
20 saleable product.

21  
22 Moreover, in addition to providing valuable jobs to northern Minnesota residents and  
23 providing a larger base over which to spread the utility's cost of service, one of the most  
24 significant benefits that our Large Power customers provide to all of Minnesota Power's  
25 customers is the long-term commitments they make to purchase a minimum of 182 MW  
26 of demand each month or 28 percent of full production electric needs from Minnesota  
27 Power. The Minimum Service Requirement set in each ESA provides a minimum level  
28 of contribution, regardless of whether or not a customer is operating. These Electric  
29 Service Agreements, which often exceed 10 years in length and are a minimum of 4-  
30 year term, currently provide a guaranteed approximately \$55 million in long-term

1 revenue certainty that helps the utility to effectively plan for and make long term capital  
2 investments.

3  
4 Finally, capital markets carefully monitor the status of our Large Power Electric Service  
5 Agreements. Industrial loads form the backbone of Northeast Minnesota's economy,  
6 either directly or indirectly supporting major elements of the regional economy,  
7 including Duluth's growing health care and higher education service industries. Long-  
8 term agreements with Large Power customers provide assurance to residential and  
9 commercial customers that these large industrial facilities will continue their  
10 contributions to Minnesota Power's affordable electric rates for the foreseeable future.  
11 And clearly, if the Large Power customers were not a prevalent part of Minnesota  
12 Power's customer profile, with their high utilization factors I pointed out in my Case  
13 Overview testimony, other rate classes would have to pay higher rates due to the need  
14 to spread fixed costs over the remaining customer classes.

15  
16 **Q. Please describe, in general, how the Company works with LP customers to**  
17 **anticipate their energy demands for each year.**

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

27  
28 Minnesota Power's Strategic Accounts team works with our customers early in the year  
29 to understand their energy needs for the next year. In some cases, we work directly with  
30 our LP customers to calculate their internal energy budget based on production estimates  
31 they provide to us. In other cases, we provide customers with historic energy

1 consumption and pricing information at various production levels for use in their  
2 budgeting process. In still other cases, we work with customers to identify the amount  
3 of power that they will need to purchase from Minnesota Power to supplement their  
4 own self-generation. In every case, we are either embedded or aligned at some level  
5 with our customers in the preparation of their operating plans and energy needs for the  
6 following year. In some circumstances, our timelines and needs require us to forecast  
7 or project customers' load in advance of their normal budget and estimate processes for  
8 the upcoming year. In those instances, our processes are very similar, and we typically  
9 use the summary information that we derive as the first step in working with customers  
10 on their budgeting processes later in the year.

11  
12 **Q. Does Minnesota Power collect information that may be relevant to a customer's**  
13 **energy needs that is not provided directly by the customer?**

14 A. Yes. As I noted earlier, the Company collects press releases, SEC documents, articles,  
15 industry group data, and other information regarding our customers that may be helpful  
16 in the forecasting process.

17  
18 **Q. Does Minnesota Power adjust its forecast of LP customer needs throughout a given**  
19 **year?**

20 A. Yes. Throughout the year, we adjust our estimates with more granular commitments  
21 from our customers as to their short-term operating plans. Most commonly, this is  
22 accomplished through a LP customer's written submittal of demand nominations, which  
23 indicate the amount of increased power demand requirements above the Minimum  
24 Service Requirement or take-or-pay levels specified in the individual LP customer's  
25 contract, as indicated earlier in my testimony.

26  
27 **Q. To what extent does Minnesota Power use formal demand nominations to prepare**  
28 **its annual sales budgets?**

29 A. The Company's sales budget for the upcoming year is typically completed by late  
30 summer of the prior year. As a result, our sales budgets are completed well ahead of  
31 the nomination deadlines for any of the various nomination periods in the next year. In

1 addition, these formal nominations would be of limited use because our sales budgets  
2 are annual budgets, whereas the formal demand nominations cover shorter periods.  
3 However, we do use the historical nominations that customers have provided for various  
4 seasons and under various business conditions as tools to help us anticipate their future  
5 operating levels and energy requirements.

6  
7 **Q. Does Minnesota Power also receive energy usage information from LP customers**  
8 **outside of formal nominations?**

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

17  
18 **Q. Does Minnesota Power also receive information from LP customers other than**  
19 **energy usage?**

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

27  
28 **Q. How much do historic trends in a specific LP customer's business factor into your**  
29 **analysis, overall?**

30 A. Minnesota Power uses all of the LP customer data at our disposal—including historical  
31 energy usage, formal budgets, historical demand nominations, periodic customer

1 updates, pre-nomination predictions, and updated customer production estimates—as  
2 tools to help us anticipate customers’ future operating levels and energy requirements.  
3 This information is combined with the industry information and trends I discussed above  
4 to develop the overall projection of a specific LP customer’s annual energy  
5 requirements.

6  
7 **Q. Did the Company follow these same processes described above to develop its LP**  
8 **customer sales forecasts for the 2020 test year in this case?**

9 A. Yes.

10  
11 **Q. What data did the Company have in hand for the 2020 test year as it was**  
12 **developing this rate case filing?**

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

22  
23 **Q. How is pre-nomination data gathered for the test year budget?**

24 A. For the 2020 test year, we considered the most recent 2019 business plan estimates that  
25 we developed with and for our customers as the base level of sales for the 2020 test  
26 year. Our account professionals worked with customers when possible to validate that  
27 approach. Most changes or variances between the 2019 current estimates and 2020 test  
28 year sales budget levels are due to changes in circumstance driven by operational or  
29 contractual changes at customers like Blandin, Verso, and Silver Bay Power Company.

30

1 **Q. How is this information used in the LP forecasting process?**

2 A. This information is utilized to derive taconite MWh sales and nomination levels in the  
3 2020 forecast, as 2020 taconite production is expected to be similar to 2019 at current  
4 macroeconomic conditions. For LP paper customers, similar operating rates were  
5 assumed for 2020 using 2019 data and assuming full implementation of the new Blandin  
6 and Verso Electric Service Agreements approved in Docket Nos. E015/M-19-37 and  
7 Docket No. E015/M-18-603, respectively.

8  
9 **Q. Did you make any adjustments to the data received directly from your LP  
10 customers in order to develop an accurate test year budget?**

11 A. No. We used customer data in conjunction with the aforementioned tools at our disposal  
12 to develop the 2020 test year budget.

13  
14 **Q. Are these test year budgets subject to change as the actual test year progresses?**

15 A. Yes. Take for example Keetac and Blandin in our prior rate proceeding. During our  
16 2016 rate case, Keetac restarted in February of the 2017 test year, and the Company  
17 adjusted its test year sales forecast with the recommendation to consider nine months of  
18 Keetac energy sales to account for the uncertainty associated with our LP customer  
19 operations. The Commission ultimately determined that 12 months of Keetac energy  
20 sales should be included in the 2017 test year. Conversely, Blandin announced the  
21 closure of Paper Machine #5 in October of 2017, which occurred late in the test year  
22 during deliberations of the 2016 rate case and was not allowed for consideration in the  
23 2017 test year. As a result of the 12-month inclusion of Keetac and non-admittance of  
24 Blandin Paper Machine #5 closure impacts, the actual energy sales to large power  
25 customers during the 2017 test year were 223,199 MWh, or 3.7 percent, below the  
26 Commission-approved 2017 test year sales budget, as previously shown in Table 2  
27 above.

28  
29 Due to the significant impact that changes in energy demand at any of the LP customers  
30 can have on Minnesota Power's overall energy sales, it is important to take into account  
31 actual changes to LP customers' energy needs during the test year. If test year budgets



1 are not adjusted to reflect significant changes in LP customer energy demand, the test  
2 year budget will not accurately predict Minnesota Power’s future level of energy sales,  
3 and rate outcomes will not accurately reflect actual sales. Overall, this emphasizes the  
4 additional risk associated with Minnesota Power’s significant concentration of LP  
5 customers, as a few industrial customers have the capability of impacting the  
6 Company’s revenues by a larger amount than its entire residential customer class.

7  
8 **Q. How are changes in the budget factored into the Company’s analysis during the**  
9 **rate case?**

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

20  
21 **D. Large Customer Forecast Information**

22 1. Metals and Mining

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

24 A. Minnesota Power provides electric service to all six of Minnesota’s taconite plants.  
25 These six taconite plants are owned by three principal corporate owners: United States  
26 Steel Corporation (“U.S. Steel”), Cleveland-Cliffs (“Cliffs”), and ArcelorMittal Steel-  
27 USA. Minnesota Power also provides electric service to PolyMet, a non-ferrous mining  
28 and processing operation that has completed its environmental review, obtained  
29 necessary permits and is finalizing the financing needed to construct and operate an  
30 open-pit mining and processing facility.

1 **Q. What does the global and regional economic data indicate about the iron mining**  
2 **industry for 2020 and beyond?**

3 A. Iron ore, particularly in the form of iron ore pellets, is in temporary short supply on a  
4 global basis, primarily as result of capacity shutdowns in Brazil.<sup>16</sup> These shutdowns  
5 have created a global supply shortage that Cleveland-Cliffs CEO Lourenco Goncalves  
6 has anticipated will last for several years and will sustain periods of high global pellet  
7 prices.<sup>17</sup>

8  
9 Additionally, federal trade action has been taken against China and other steel producing  
10 nations to limit the amount of steel dumping in the United States through Section 232  
11 Tariffs. Domestic steel companies have highlighted China's unfair trade practices,  
12 subsidization of its industry, and general lack of environmental controls on its industry  
13 as the cause for its unfair cost advantages. Cleveland-Cliffs CEO Lourenco Goncalves  
14 has highlighted the high levels of pollutants emitted in China compared to the United  
15 States, and American Iron and Steel Institute has produced studies that indicate Chinese  
16 steel is produced with approximately 50 percent more carbon intensity than American  
17 steel.<sup>18</sup> These numerous reasons have been used to support the federal trade action,  
18 which has resulted in a reduction of steel imports to the United States from record high  
19 levels of nearly 30 percent in January, 2018, to a level that is still historically above  
20 average, but more moderate at approximately 20 percent presently. During this same  
21 period, North American steelmaking capacity utilization rose consistently to levels  
22 above 80 percent for the first time in over a decade, supporting strong operating rates of  
23 our existing taconite customers. As such, governmental action has helped to limit  
24 imports, and that action has served to solidify some domestic steel production.

25  
26 However, macro-economic activity has slowed recently, and North American steel  
27 production has also slowed down. U.S. Steel idled two North American blast furnaces

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<sup>16</sup> <https://internationalbanker.com/brokerage/iron-ore-prices-hit-five-year-highs-whats-behind-the-rally/>

<sup>17</sup> <https://seekingalpha.com/article/4276128-cleveland-cliffs-inc-clf-ceo-lourenco-goncalves-q2-2019-results-earnings-call-transcript?part=single>

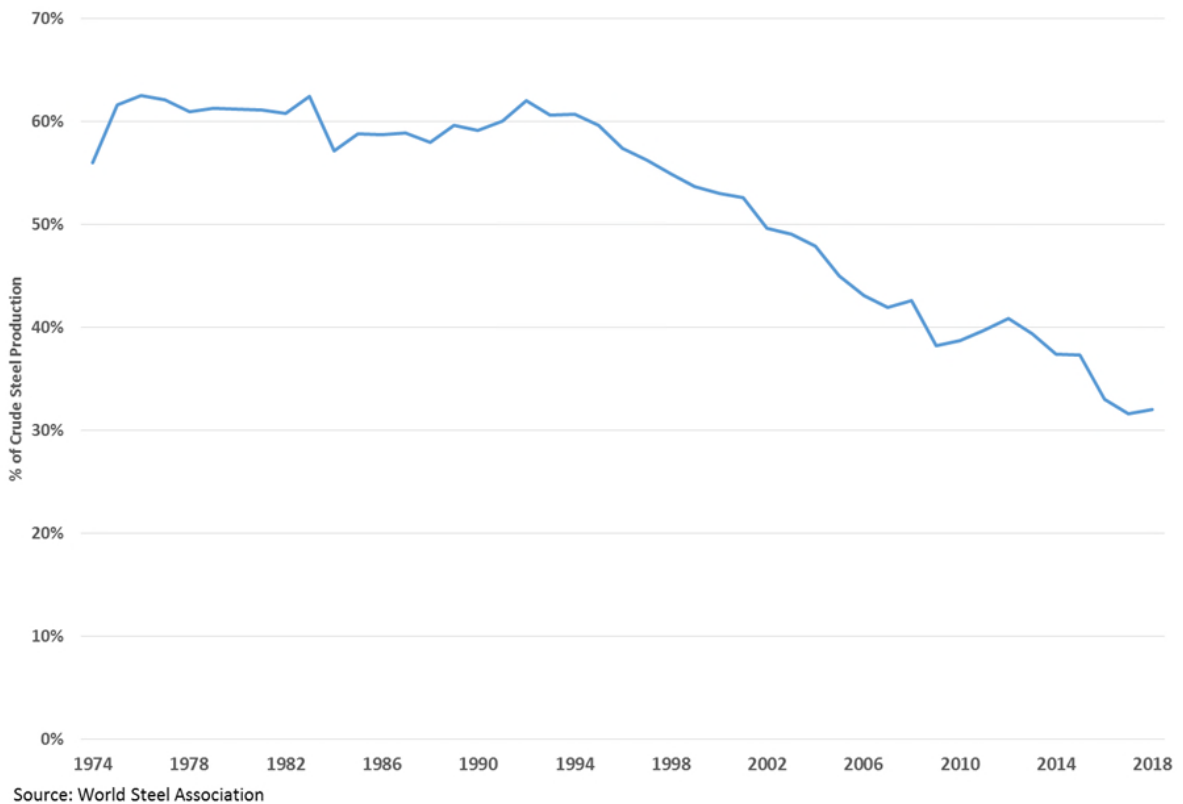
<sup>18</sup> <https://www.steel.org/news/2018/11/new-study-shows-lower-ghg-for-north-american-steel-vs-chinese-steel-for-building-construction>

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

5  
6 **Q. What domestic factors are affecting Minnesota Power’s mining customers?**

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

11  
12 **Figure 4. United States Blast Furnace Share of Steel Production**



13  
14  
15 Currently less than 30 percent of all steel produced in the United States is produced by  
16 processes that use Minnesota’s iron ore pellets. One iron pellet producer, Cleveland-

1 Cliffs, has moved to differentiate some of its product from standard iron ore pellets to  
2 products that can be accepted in EAFs. No other customers have announced such  
3 changes at present, with the result being that the rest of Minnesota Power’s mining  
4 customers, or about 90 percent of Minnesota’s taconite mining capacity, are limited to  
5 supplying a declining customer base. This trend toward EAF production is expected to  
6 continue in 2020 and beyond as steelmakers have announced several new capacity  
7 additions with new steel projects being announced this year by large domestic  
8 steelmakers like Nucor and Steel Dynamics. Even U.S. Steel, a steelmaker whose entire  
9 U.S. footprint is comprised of integrated steelmaking with blast furnaces, has  
10 announced an EAF project at its Fairfield, Alabama steelmaking facility. Additionally,  
11 in October, U.S. Steel announced its investment to acquire a 49.9 percent stake in EAF  
12 steelmaker Big River Steel in Arkansas as a part of their new “Best of Both” strategy  
13 that will be “bringing together the capabilities of integrated and mini mill steel  
14 production.” Both of these investments by U.S. Steel highlight the domestic steel  
15 market’s continued movement towards EAF steel production, even by long-time  
16 proponents of traditional integrated steelmakers.<sup>19</sup>

17  
18 Another factor impacting Minnesota Power’s mining customers is Hibbing Taconite’s  
19 efforts to secure additional mineable ore to extend its mine life. Without securing  
20 additional ore, Hibbing Taconite will run out of mine life by 2024.<sup>20</sup>

21  
22 **Q. How are these trends impacting Minnesota Power’s iron mining customers?**

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

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<sup>19</sup> <https://www.ussteel.com/newsroom/united-states-steel-corporation-acquire-499-interest-big-river-steel-creating-partnership>

<sup>20</sup> <http://www.startribune.com/hibtac-mine-on-iron-range-running-out-of-time/562190732/>

1 and reduced market demand, and subsequent idling of line three at Minntac.  
2 Accordingly, some of Minnesota Power’s mining customers are selling some of their  
3 iron pellets into seaborne markets in greater quantity than before, taking advantage of  
4 greater pellet premiums and softer domestic markets to overcome the added  
5 transportation costs to justify the sales.  
6

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

8 A. We expect these trends to continue in 2020 as domestic steelmakers continue to  
9 transition towards EAF steelmaking even further and Minnesota taconite producers  
10 mitigate lost sales by differentiating products and taking advantage of high seaborne  
11 iron ore pellet premiums. It is unclear at this time if Minntac’s line three will stay idle  
12 beyond 2019, but it is conceivable that the idle will continue into 2020. The idling of  
13 line three points to potential weakness in seaborne markets where Minnesota Power  
14 customers have sent excess iron ore pellet capacity over the past few years. These trends  
15 of reduced domestic demand for traditional iron ore pellets and potentially shipping to  
16 the seaborne iron ore pellet market will subject Minnesota Power’s customers, and, in  
17 turn, Minnesota Power’s energy sales, to increased volatility associated with global  
18 markets. This provides a further consideration for the increased risk profile of  
19 Minnesota Power compared to the average electric utility.  
20

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

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

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<sup>21</sup> <https://www.worldbank.org/en/news/press-release/2017/07/18/clean-energy-transition-will-increase-demand-for-minerals-says-new-world-bank-report>

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

7  
8 Below, I walk through each LP mining customer in turn.

9  
10 a. U.S. Steel

11 **Q. Please describe U.S. Steel's operations in Minnesota Power's service territory.**

12 A. U.S. Steel wholly owns both the Minntac and Keetac facilities and owns 14.7 percent  
13 of Hibbing Taconite. These facilities produce iron ore pellets for use in U.S. Steel  
14 owned blast furnaces in and, in recent years, for third party sales.

15  
16 **Q. Have there been any notable changes to U.S. Steel's business since the Company's  
17 last rate case?**

18 A. Keetac resumed operations in February 2017 after a 22-month idling and has since run  
19 at full production.

20  
21 **Q. What type of agreement does the Company have with U.S. Steel?**

22 A. Minnesota Power has an electric service agreement (Docket No. E-015/M-16-836) for  
23 Minntac and Keetac. As of November 1, 2019, the earliest termination date for the  
24 contract is November 30, 2023.

25  
26 **Q. What sources of information have been relevant to Minnesota Power's  
27 determination of a reasonable 2020 forecast of sales to U.S. Steel?**

28 A. The Company has used U.S. Steel's quarterly and annual reports as well as the  
29 aforementioned industry data, customer nominations, and conversations with U.S. Steel.

30

1 **Q. How do these assumptions align with broader industry and economic trends**  
2 **affecting the mining business?**

3 A. The Company's test year forecast assumptions for U.S. Steel are generally consistent  
4 with the mining industry economic trends discussed earlier; however, the assumptions  
5 do not include any lost sales from the Minntac line three idle announced in mid-October  
6 2019.

7  
8 b. Cleveland-Cliffs

9 **Q. Please describe Cleveland-Cliffs operations in Minnesota Power's service**  
10 **territory.**

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

16  
17 **Q. Have there been any notable changes to Cleveland-Cliffs' business since the**  
18 **Company's last rate case?**

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

26  
27 **Q. What type of agreement does the Company have with Cleveland-Cliffs?**

28 A. The Company has an Electric Service Agreement with United Taconite LLC and with  
29 Northshore Mining's Babbitt mine operations. As of November 1, 2019, the earliest  
30 termination date for this ESA is December 31, 2026. The Company also has a non-firm  
31 retail power supply agreement with Silver Bay Power Company.

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31

**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



1 secure additional mineable ore to extend its mine life. Without securing additional ore,  
2 Hibbing Taconite will run out of mine life by 2024.

3  
4 **Q. Can you provide a summary of the Company's electric service agreement terms  
5 with ArcelorMittal?**

6 A. The Company has Large Power ESAs with Minorca and Hibbing Taconite Company,  
7 containing terms and conditions consistent with other LP taconite customers. As of  
8 November 1, 2019, the earliest termination date for the ESA with Minorca is December  
9 31, 2025, and November 30, 2023, for the ESA with Hibbing Taconite.

10  
11 **Q. What are the key assumptions included in forecasts of Minnesota Power sales to  
12 Minorca for the 2020 test year?**

13 A. For purposes of the 2020 test year, Minnesota Power assumed that Minorca and Hibbing  
14 Taconite's sales remain in 2020 at about the same levels as in 2019.

15  
16 **Q. How do these assumptions align with broader industry and economic trends  
17 affecting the mining business?**

18 A. The Company's assumptions for Minorca and Hibbing Taconite sales are generally  
19 consistent with the mining industry economic trends discussed earlier in my testimony.

20  
21 d. PolyMet

22 **Q. How long has the PolyMet mine been pursued in Minnesota?**

23 A. In 1989, PolyMet leased mineral rights from U.S. Steel. The environmental review  
24 process began in 2004 and PolyMet acquired the Erie Plant near Hoyt Lakes, Minnesota  
25 in 2005. Minnesota Power entered into an Electric Service Agreement with PolyMet in  
26 December of 2006. This ESA was approved by the Commission in 2007 (Docket No.  
27 E-015/M-07-221).

1 **Q. Please describe PolyMet’s current activities in Minnesota Power’s service**  
2 **territory.**

3 A. The PolyMet NorthMet project, which is located near the community of Hoyt Lakes,  
4 Minnesota, is a non-ferrous mining operation focused on the extraction of copper,  
5 nickel, and precious metals. PolyMet is working to secure final financing necessary to  
6 begin construction. While all permits necessary to begin construction have been  
7 received, there continue to be legal challenges and opposition to these permits. For  
8 example, on October 24, 2019, the Minnesota Court of Appeals extended a stay pending  
9 their written decision on three permits for PolyMet’s proposed copper-nickel mine in  
10 northern Minnesota. A PolyMet spokesman has indicated the stays will likely delay the  
11 project.<sup>22</sup>  
12

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

15 A. Yes. Since the last rate case, PolyMet has secured the Permit to Mine and other key  
16 state and federal permits necessary to build and operate the mine. PolyMet has  
17 estimated the construction period to be 24 to 30 months once final financing is in place.  
18 Further, PolyMet has indicated production is expected to start ramping up during the  
19 latter part of 2022 with full production expected in 2023.  
20

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

23 A. PolyMet’s Investor Relations website and related disclosures and information continue  
24 to provide updates on the NorthMet project and a timeline of milestone activities.<sup>23</sup>  
25 Further, PolyMet representatives have been quoted in publications including the  
26 Minneapolis StarTribune and St. Paul Pioneer Press, where they have commented on  
27 their plans and project status. In addition, the company regularly provides updates to  
28 the community. Finally, Minnesota Power communicates directly with PolyMet during  
29 our planning and forecasting processes.

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<sup>22</sup> <http://www.startribune.com/court-of-appeals-keeps-polymet-s-dnr-permits-on-hold/563791642/>

<sup>23</sup> <https://polymetmining.com/investors/news/>

1  
2 **Q. What are the key assumptions included in forecasts of Minnesota Power sales to**  
3 **PolyMet for the 2020 test year?**

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

8  
9 e. Former Magnetation and Essar Sites

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

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

18  
19 **Q. What level of sales are assumed for the former Magnetation facilities in the**  
20 **Company’s sales forecast for 2020?**

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

23  
24 **Q. What is the status of the former Essar iron ore mine and processing project?**

25 A. Mesabi Metallics purchased the Essar project assets out of bankruptcy. To date, no  
26 construction has been completed on the site and no operations have commenced. The  
27 Company has received no communications from Mesabi Metallics with projected  
28 startup dates. The Company regularly corresponds with the Nashwauk Public Utilities  
29 Commission, the retail service provider for the Mesabi Metallics plant processing sites,  
30 and has learned that they have not had communications from Mesabi Metallics with  
31 projected startup dates.

1  
2 **Q. What level of sales is assumed for Mesabi Metallics in the Company’s sales forecast**  
3 **for 2020?**

4 A. Minnesota Power has not assumed any operations on the former Essar iron ore mine  
5 during the 2020 test year. As a result, the Company expects 2020 sales to the Nashwauk  
6 Public Utilities Commission,<sup>24</sup> which is the retail service provider to Mesabi Metallics  
7 and other city customers, to be similar to the Company’s 2019 sales forecast.

8  
9 2. Pulp and Paper

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

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

18  
19 **Q. What does the data collected and reviewed by the Company indicate about the**  
20 **future of the pulp and paper industry for 2020 and beyond?**

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

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<sup>24</sup> Minnesota Power sells energy to the Nashwauk Public Utilities Commission as a resale municipal customer for its city load.

1 maintain paper price stability, capacity needs to come offline at a rate of approximately  
2 one mill or one large paper machine every 18 months. Some mills are able to convert  
3 their operations and repurpose some equipment for production of packaging paper or  
4 market pulp; however, more closures than conversions are necessary to balance supply  
5 and demand for all pulp and paper products.

6  
7 **Q. How are these trends impacting Minnesota Power's pulp and paper customers?**

8 A. When graphic paper began its initial decline in 2007, Minnesota Power's pulp and paper  
9 customers were in relatively strong, competitive positions as they enjoyed relatively  
10 favorable input costs for wood, energy, and labor. Transportation costs for inputs and  
11 final product within the Midwest market were also relatively low. As a result, none of  
12 Minnesota Power's pulp and paper customers altered operations during the first five  
13 years of the market decline as higher cost mills across the United States, Canada, and  
14 Europe were closed to balance supply with declining demand. After 2012, however,  
15 many of the higher cost mills were closed and Minnesota Power's customers'  
16 competitive position narrowed as rising energy costs pushed against the continued  
17 decline in demand. In 2013, two of the four paper machines at Boise/Packaging  
18 Corporation of America's mill in International Falls were permanently closed and 265  
19 employees were laid off. In 2015, Boise/Packaging Corporation of America installed a  
20 turbine generator to further manage against rising energy costs as it reduced purchases  
21 from Minnesota Power from 35 MW to 10 MW. In 2017, Blandin Paper Company  
22 announced the permanent closure of Paper Machine #5 and the corresponding layoff of  
23 150 employees in Grand Rapids.

24  
25 **Q. To what extent do you expect these trends to continue into 2020?**

26 A. We expect these trends to continue in 2020 as graphic paper markets continue their  
27 secular decline and Minnesota Power's pulp and paper customers work diligently to  
28 maintain competitiveness in these challenging times. Some customers are focusing  
29 efforts on converting to more stable products in packaging and pulp segments; however,  
30 these customers must demonstrate to their corporate boards the long-term  
31 competitiveness of their location in order to attract the capital investment.

1  
2 In turn, Minnesota Power’s kWh energy sales to these customers are subject to global  
3 and regional competitiveness challenges. These market challenges increase the  
4 probability for a sharp and meaningful decline in energy sales that affect our company  
5 more than the average utility due to our small size and industrial customer concentration,  
6 and provide further consideration for the increased risk profile of Minnesota Power  
7 compared to the average electric utility. The paper markets which are declining the  
8 most – coated groundwood and uncoated groundwood – are also the grades produced  
9 by our two largest purchased energy paper customers. Below, I walk through each of  
10 them, Blandin and Verso.

11  
12 a. Blandin

13 **Q. Please describe Blandin’s operations in Minnesota Power’s service territory.**

14 A. Blandin Paper Company is a groundwood pulp and papermaking facility that operates  
15 a single paper machine producing Light Weight Coated papers used for catalogs,  
16 magazines, advertising inserts, direct mail and other commercial products.

17  
18 **Q. Have there been any notable changes to Blandin’s business since the Company’s  
19 last rate case?**

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

27  
28 **Q. Please provide a summary of the Company’s ESA terms with Blandin.**

29 A. First, and critically important to Minnesota Power and its other ratepayers, is Blandin’s  
30 agreement to purchase its electric service requirements for its Grand Rapids facilities  
31 from Minnesota Power through at least 2029. Second, the Agreement modifies

1 Blandin's Large Power Incremental Production Service Threshold to allow more  
2 effective management of electric use at its Grand Rapids facilities. This is helpful for  
3 both energy usage and production efficiency in a very challenging economic  
4 environment for paper facilities. Third, the Agreement provides additional risk  
5 protections for Minnesota Power through customer billing modifications.  
6

7 **Q. How does this ESA help determine a forecast of sales to Blandin during the 2020**  
8 **test year?**

9 A. Blandin's minimum Incremental Production Service Threshold ("IPST") was used to  
10 forecast a monthly nomination level for 2020.  
11

12 **Q. What sources of information have been relevant to Minnesota Power's**  
13 **determination of a reasonable 2020 forecast of sales to Blandin?**

14 A. To forecast Blandin's 2020 energy purchases, the Company relied upon the IPST set  
15 forth in the ESA, UPM's quarterly and annual reports, the aforementioned customer and  
16 industry data, and conversations with the customer.  
17

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

20 A. The Company assumed that Blandin will operate its remaining paper machine and  
21 purchase from Minnesota Power at the revised minimum IPST for single machine  
22 operation.  
23

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

26 A. They are consistent with declines in the pulp and paper business described earlier in my  
27 testimony.  
28

1                                    b.      Verso

2    **Q.      Please describe Verso’s operations in Minnesota Power’s service territory.**

3    A.      Verso Duluth is an uncoated groundwood mill with the capacity to produce 270,000  
4           tons of paper annually. The mill employs 225 full time employees and makes  
5           supercalendared “SC” paper used for magazines, catalogs and retail inserts.

6  
7    **Q.      Have there been any notable changes to Verso’s business since the Company’s last  
8           rate case?**

9    A.      Yes. Responding to continued challenges in the paper industry, Minnesota Power and  
10           Verso negotiated an amended and restated electric service agreement which provides  
11           additional operating flexibility and cost reduction potential. The amended and restated  
12           electric service agreement was approved by the Commission in December of 2018  
13           (Docket E015/M-18-603).

14  
15    **Q.      Please provide a summary of the Company’s ESA terms with Verso.**

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

24  
25    **Q.      How does this ESA help determine a forecast of sales to Verso during the 2020 test  
26           year?**

27    A.      Verso’s minimum IPST was used to forecast a monthly nomination level for 2020.  
28



1 **Q. What sources of information have been relevant to Minnesota Power's**  
2 **determination of a reasonable 2020 forecast of sales to Verso?**

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

6  
7 **Q. What are the key assumptions included in forecasts of Minnesota Power sales to**  
8 **Verso for the 2020 test year?**

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

10  
11 **Q. How do these assumptions align with broader industry and economic trends**  
12 **affecting the paper & pulp business?**

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

16  
17 **E. 2020 Large Power Forecast**

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

20 A. As discussed further by Company witness Mr. Levine, Minnesota Power's 2020 test  
21 year forecast for its Large Power customers is near full production for its Mining and  
22 Metal and remaining Paper & Pulp customer footprint. Mining and Metals sales assume  
23 a 38 million ton level of production, which is 6.5 percent higher than a 2001-2018  
24 average and about 3.4 percent above a historical average that excludes 2009, which was  
25 an exceptionally low production year. Forecasted Paper & Pulp sales assume energy  
26 requirements at all Paper mills remain in line with 2018 levels. The recently idled  
27 Blandin paper machine #5 is assumed to remain offline indefinitely, including the 2020  
28 test year forecast timeframe.

29

1 **Q. Are the conclusions in Minnesota Power’s Large Power Forecast reasonable?**

2 A. Yes. As detailed by Company witness Mr. Levine, Minnesota Power’s Large Power  
3 forecast sets a reasonable level of sales for its forecasted production levels, taking into  
4 account all of the variables and inputs I outlined earlier in my testimony. Even in the  
5 abnormally high taconite production year in 2018, Minnesota Power was unable to reach  
6 2017 test year sales levels. The 2020 test year sales forecast sets a reasonable level of  
7 both energy sales and customer production levels.

8

9

**IV. CONCLUSION**

10 **Q. Does this complete your testimony?**

11 A. Yes.