PUBLIC DOCUMENT
NON-PUBLIC DATA EXCISED

Direct Testimony and Schedules
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-21-355

Exhibit _____

CUSTOMER OVERVIEW

November 1, 2021

TABLE OF CONTENTS

Page

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 approximately 14 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 include 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 call 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 I was tasked with leadership of Minnesota Power's evaluation team for the natural gas-fired capacity and unit-contingent energy request for proposal process.

Prior 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, Minnesota and have been a lifelong Minnesota resident.

Q. What is the purpose of your testimony?

A. The purpose of this testimony is to provide an overview of Minnesota Power's customer base and its impacts upon sales, revenues, and the overall health and risk profile of our utility. I discuss the programs and services Minnesota Power provides to its customers and the enhancements made to the customer experience. Further, I provide an overview of Minnesota Power's energy sales trends and economics surrounding the Large Power ("LP") customer group from both industry and individual business perspectives and the need for a sales true-up mechanism to balance the impacts these customers have on the system during economic cycles. I discuss changes to Minnesota Power's wholesale customer sales that serve to offset Federal Energy Regulatory Commission ("FERC") Jurisdictional Revenue Requirements from Minnesota Power's system. Finally, I describe the efforts Minnesota Power undergoes to promote economic development to facilitate customer and job growth — especially to support a Just Transition in host communities where employment in Minnesota Power's coal fired generating facilities is declining as the state of Minnesota transitions away from fossil fuel generation.

Q. How is your testimony organized?

A. My testimony is organized as follows:

- In Section II, I provide an overview of our customers;
- In Section III, I discuss customer programs and services;
- In Section IV, I describe the LP customer outlook;
- In Section V, I introduce and explain the proposed sales true-up mechanism;
- In Section VI, I describe the wholesale customer outlook;
- In Section VII, I discuss the Company's regional economic development efforts and focus; and
- In Section VIII, I conclude my testimony.

Q. Are you sponsoring any exhibits in this proceeding?

A. Yes. I am sponsoring the following schedules to my Direct Testimony:

- MP Exhibit ___ (Frederickson), Direct Schedule 1 – Jimmy Lovrien, *US Steel Will Idle Keetac, Lay Off 375 Employees*, DULUTH NEWS TRIBUNE (Apr. 16, 2020);
- MP Exhibit ___ (Frederickson), Direct Schedule 2 – Jimmy Lovrien, *US Steel Will Restart Keetac Next Month*, DULUTH NEWS TRIBUNE (Nov. 5, 2020);
- MP Exhibit ___ (Frederickson), Direct Schedule 3 – Jimmy Lovrien, *Judge Clears Sale of Former Magnetation Plant 4 to Prairie River Minerals*, DULUTH NEWS TRIBUNE (Sep. 26, 2020); and
- MP Exhibit ___ (Frederickson), Direct Schedule 4 – Peter Passi, *ST Paper Moves Ahead with Plans to Acquire, Convert Duluth's Former Verso Mill*, DULUTH NEWS TRIBUNE (May 14, 2021).

II. CUSTOMER OVERVIEW

Q. What is the purpose of this section of your testimony?

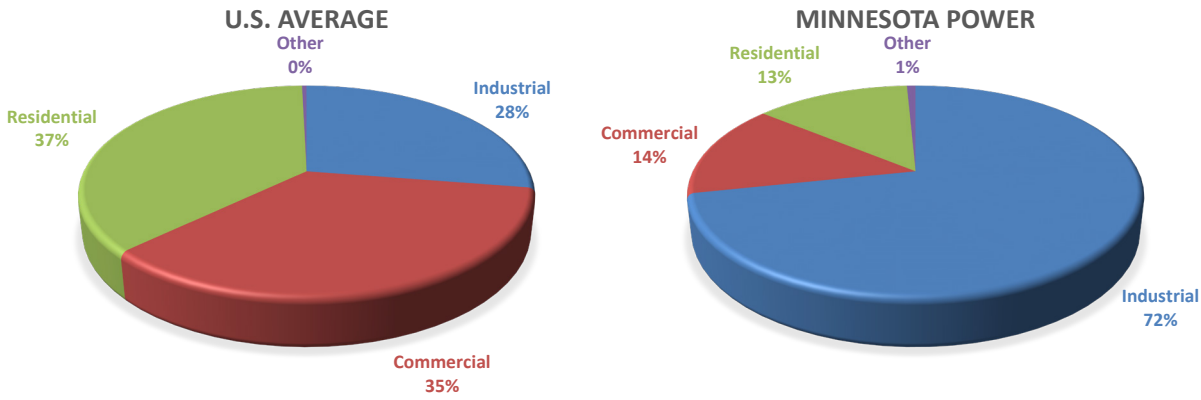
A. In this section, I provide an overview of Minnesota Power's unique customer mix and its impacts on the overall health and risk profile of our utility and region.

A. Minnesota Power's Customers

Q. Please provide an overview of Minnesota Power's customer mix.

A. Minnesota Power serves approximately 123,600 residential, 23,300 commercial, and 400 industrial customers. Minnesota Power's system is, however, dominated by large industrial customers with approximately 72 percent of retail kilowatt-hours ("kWh") energy sales to this customer class in 2020 and only 13 percent and 14 percent of sales to residential and commercial customers, respectively. For comparison, the average utility in the United States sells just 28 percent of its retail kWh energy sales to industrial customers and sells 37 percent and 35 percent of retail kWh energy sales to residential and commercial customers, respectively, as shown in Figure 1 below.

Figure 1. Minnesota Power's Customer Concentration is Unique



1. Industrial Customers

Q. Who are Minnesota Power's Industrial customers?

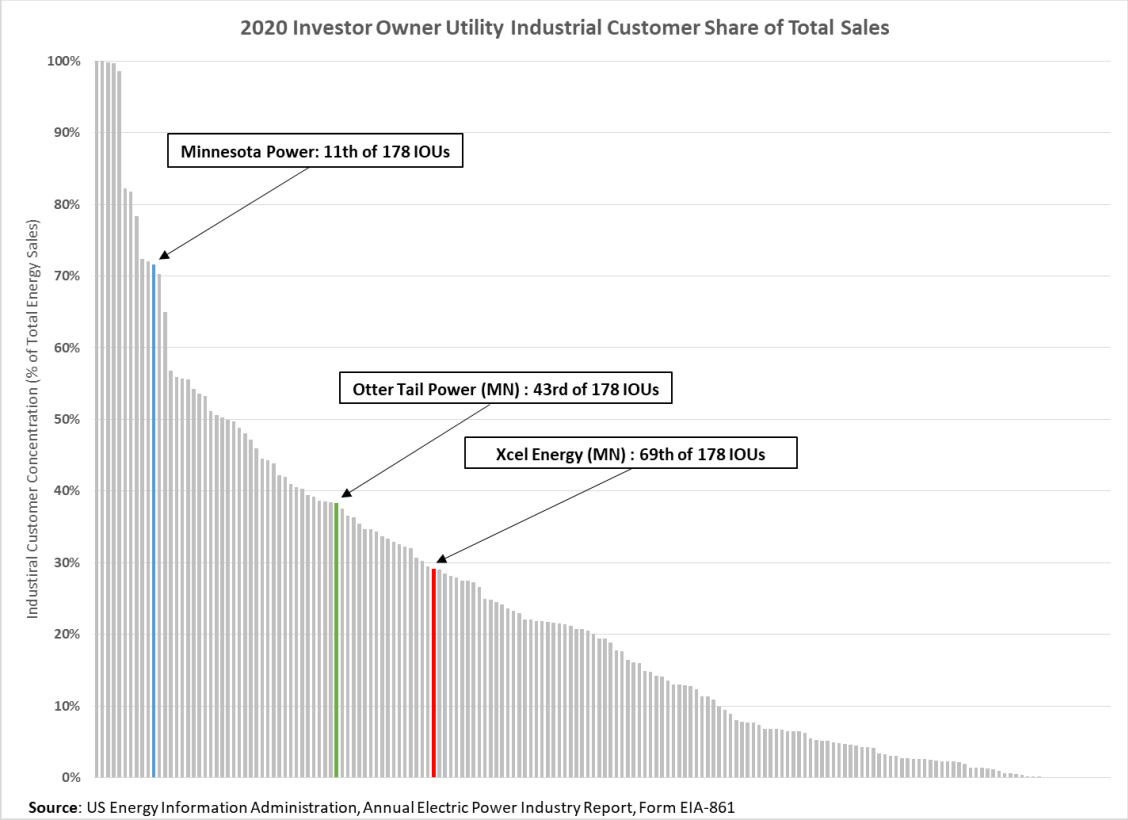
A. Minnesota Power has approximately 400 industrial customers that are served under the Company's Large Light & Power ("LLP") and LP rate schedules. Amongst the industrial customers are seven active LP customer contracts, each serving at least ten megawatts ("MW") of load. Four LP customers manage six taconite-producing

facilities, and the three LP customers manage paper and pulp mills, which constitute the majority of the industry customer sales. These customers are among the largest industrial operations in the nation.

Q. How does Minnesota Power's industrial concentration compare to other utilities?

A. Minnesota Power has one of the highest industrial customer concentrations of any utility in the United States, and this concentration is significantly higher than any other utility in Minnesota. According to 2020 energy consumption data from the Energy Information Administration ("EIA"), Minnesota Power had the 11th highest industrial customer energy usage concentration out of 178 investor owned utilities, including related subsidiaries, with industrial customers representing approximately 72 percent of retail kWh energy sales during that year. This industrial concentration is considerably different than other utilities in the state and most of the nation as illustrated by Figure 2 below.

Figure 2. Industrial Customer Concentrations of Investor Owned Utilities in the United States



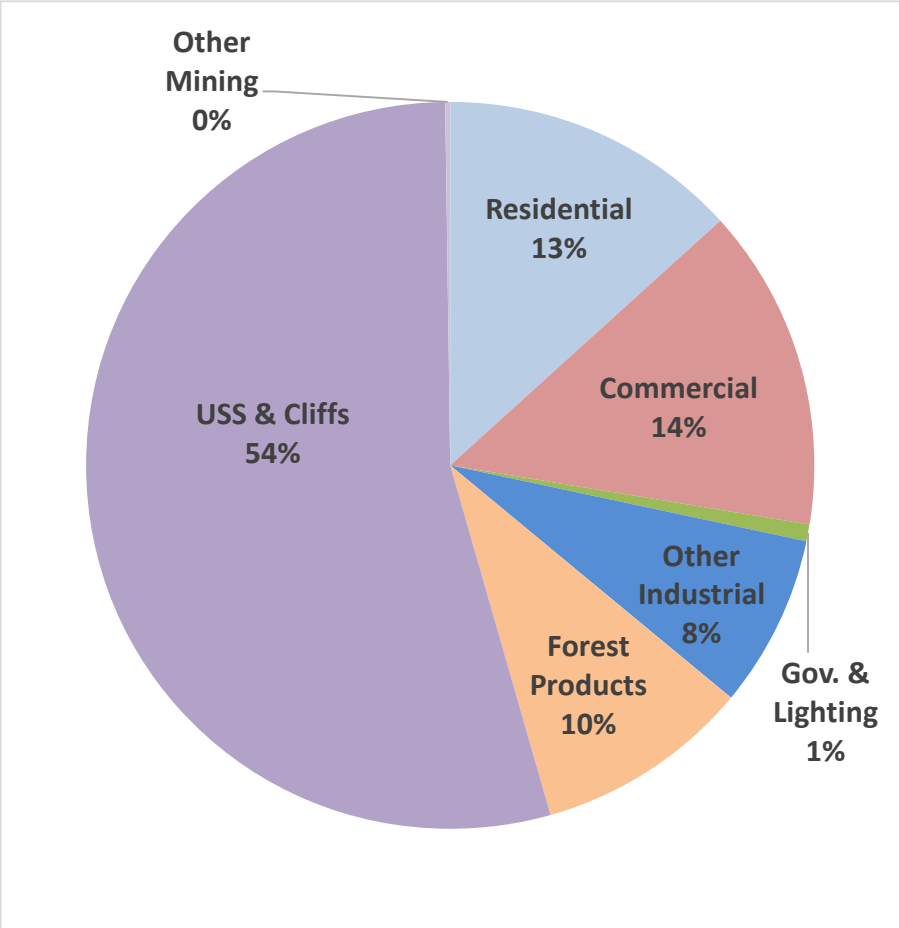
Minnesota Power's large industrial customers are also unique in their size relative to the utility. Figure 3 below shows that just two companies (i.e., Cleveland-Cliffs and United States Steel) now[1] account for 54 percent of all Minnesota Power retail kWh energy sales. The forest products category, which accounts for ten percent of retail kWh energy sales, is now composed of just three customers. The remaining approximately 370 other industrial customers account for eight percent of retail kWh energy sales.

This uniqueness is rooted in the abundant natural resources of northern Minnesota that serve as the starting point for steel and forest products. As a result, Minnesota Power's large industrial customers primarily consist of taconite, graphic paper, and pulp

[1] In December 2020, Cleveland-Cliffs acquired the Minorca facility from ArcelorMittal and ArcelorMittal's share of the Hibtac facility.

producers in northern Minnesota. These industries, like Minnesota Power itself, are a significant component of the regional economy.

Figure 3. Minnesota Power Retail Energy Sales by Customer Class (2020)



2. Residential Customers

Q. Please describe Minnesota Power's residential customers.

A. Minnesota Power's residential customers take service under the Company's Residential rate schedules. Minnesota Power's residential customers generally use less energy than the Minnesota average, primarily due to lower cooling load in the summer months due to the cooler northern climate. Minnesota Power's residential customers also tend to have lower incomes than the rest of the state, and the Company has focused on providing affordability programs and rate designs to support the segment of its customer base that is low income, as I describe later in this testimony. From a system-level perspective,

the most unique aspect of Minnesota Power's residential class is how small it is relative to the typical utility; Minnesota Power's residential sales account for just 13 percent of retail sales and 18 percent of retail revenues. For the typical U.S. utility, the residential class is generally the largest class of customers as measured by both revenue and kWh energy sales.

3. Commercial Customers

Q. Please describe Minnesota Power's commercial customers

A. Minnesota Power's commercial customers take service under the Company's General Service rate schedules and differ from the Minnesota average due to a higher concentration of customers in retail and healthcare related business segments. Minnesota Power's commercial customers also use about 30 percent less electricity than the average Minnesota commercial customer according to the EIA. Minnesota Power's commercial class is relatively small compared to the typical U.S. utility; the Company's sales to commercial customers account for just 14 percent of retail sales and 18 percent of retail revenues. The commercial class in a typical utility represents the second largest class of customers as measured by both revenue and kWh energy sales.

B. Service Requirements for Minnesota Power's Customers

Q. Please describe the systems required to serve residential and commercial customers.

A. Residential and commercial customers rely on all of Minnesota Power's systems and resources to retain reliable electric service. Since residential and commercial customers are served at lower voltage levels, the energy and capacity must be delivered from the generating resource through the transmission system and onto the distribution system before being individually fed to the meter on the home or business.

Q. How do the residential and commercial customer requirements compare to the industrial customer requirements?

A. Industrial customers have larger loads at their service points, and the Company's LP customers typically take service directly from Minnesota Power's transmission system.

As a result, most of the energy delivered to the Company's industrial customers is done from the transmission system, and these customers generally do not utilize the Company's distribution system and the corresponding resources required to service and maintain the distribution system.

Q. Are there other unique requirements to serve Minnesota Power's customers?

A. Yes. Residential and commercial customers represent the majority of customers on Minnesota Power's system and, as a result, require the majority of the Company's customer service and field operation resources to serve these customer classes. For example, a majority of the calls received by Minnesota Power's Customer Care and Support Representatives are in response to residential customer billing and service questions. Commercial customers also engage in these channels, but their total demand on these Company resources is less due to there being fewer commercial customers than residential customers. As a high-level comparison of the staffing needs required to meet the needs of these different customer classes, I offer the following information for the composition of the Customer Experience department, which I lead. Of the nearly 80 employees in the Customer Experience department, over 60 employees are dedicated to fielding calls, managing billing systems, and creating and maintaining programs and services while managing regulatory compliance for the residential and commercial classes — which together comprise 27.6 percent of retail revenues. Less than ten employees, primarily in the Strategic Accounts team, are dedicated to serve LP and wholesale customers, which account for 54 percent of retail revenue and 100 percent of required resale, respectively.

Q. How does Minnesota Power develop and support systems to serve its customers?

A. Minnesota Power invests in numerous systems to meet its customers' expectations for service using a combination of traditional channels and online options to ensure customers can get the information and assistance they need in a way that best fits their preference. As described above, Minnesota Power maintains a Call Center staffed with Customer Care and Support Representatives to take calls from residential and commercial customers with a Strategic Accounts team to serve industrial customers.

Minnesota Power also maintains digital communication and billing systems to serve its customers. These systems include the Minnesota Power website, app, and MyAccount portal. I describe the customer experience enhancements Minnesota Power has made through these systems later in this testimony.

C. System Impacts of Minnesota Power's Customers

Q. Please describe the general operational characteristics of Minnesota Power's customers by class.

A. Each of Minnesota Power's customer classes utilizes the system in a unique way. As mentioned previously, residential and commercial customers take service at lower voltage levels and are the predominant users of the distribution system. These customers also have more variable demand and energy use profiles than the larger industrial customers, which I describe below.

Q. What are the typical energy usage characteristics of the residential customer class?

A. Residential customer energy usage varies from season to season depending upon the weather and the corresponding heating and cooling demand in the home. Overall energy usage tends to be highest during winter months; usage is only slightly higher on weekends than during weekdays, and the class' demand will typically peak in the evening, regardless of season or day of the week, when most customers are active in the home. The longer-term trend of energy consumption by this class shows fairly steady decreases year-to-year due to energy efficiency and conservation measures combined with stagnant or low levels of new customer growth. Weather-normalized sales to Minnesota Power's residential customers rarely show notable year-to-year change.

Q. Was there any change in energy usage of the residential customer class due to the COVID-19 Pandemic?

A. Yes. Minnesota Power's analysis suggests the residential class consumed about 30,000 megawatt-hours ("MWh") (2.8 percent) more in 2020 due to many customers spending more time in their home; however, the increase was small relative to Minnesota Power's

overall energy sales lost in other customer classes due to the pandemic, which I describe later in this testimony.

Q. What are the typical energy usage characteristics of the commercial customer class?

A. Commercial customer energy usage also varies by season and is highest in winter and summer months. Sales to the commercial class vary by one or two percent from year-to-year depending on weather and economic conditions, so I would characterize sales to this class as relatively stable. Hourly demands of the commercial class tend to align closely with typical business hours; usage will be higher on weekdays than weekends, and demand will tend to peak mid-day to early afternoon.

Q. Was there any change in energy usage of the commercial customer class due to the COVID-19 pandemic?

A. Yes. Commercial energy sales contracted by 5.3 percent (approximately 63,000 MWh) in 2020 from 2019 on a weather-normalized basis, and most of this decrease is attributable to businesses closing or operating at reduced hours. The decrease in energy usage was small relative to Minnesota Power's overall energy demand or the class as a whole, but is more than double of the gain in residential sales due to COVID-19 (approximately 30,000 MWh).

Q. What is the typical energy usage pattern of the industrial customer class?

A. Minnesota Power's industrial customers use large quantities of energy and typically operate around-the-clock every day of the year, show little seasonality, and are not weather-sensitive like residential or commercial customers. This around-the-clock, stable usage results in a very high load factor for the utility and the consumption of more energy in off-peak hours relative to other customer classes, which is typically lower cost energy.

However, Minnesota Power's industrial customers are also subject to economic cycles of growth and recession, as well as the industry-specific impacts of global trade,

technology evolution, and evolving consumer preferences. These industrial customers often respond to recessions and industry downturns by idling or shutting down production, and as a result, the energy usage by the industrial customer class can vary widely from year-to-year.

Q. Were industrial customers impacted by the COVID-19 pandemic?

A. Yes. Industrial customers' 2020 operations demonstrate the inherent sales volatility and revenue risk exposure from this customer class. The recession triggered by the COVID-19 pandemic resulted in most of Minnesota Power's large industrial mining and paper customers operating at reduced loads or completely idling in the spring and summer months of 2020. Two customers, Verso's Duluth Mill and United States Steel's Keewatin Taconite Mine, which together utilize as much energy as Minnesota Power's entire residential customer class, were idled for most of the year. Overall sales to the industrial class in 2020 decreased by over 1,050,000 MWh (15.7 percent) from 2019, which is roughly equivalent to sales to the entire residential class in 2020 (approximately 1,047,000 MWh).

Lost industrial sales and revenue in 2020 could not be offset by increased sales to other retail customers, increased off-system sales, or through expense management. In fact, the modest increase in Minnesota Power's residential sales due to COVID-19 (approximately 30,000 MWh) was only enough to offset about 2.5 percent of the combined industrial and commercial sales loss. By contrast, EIA data shows the average U.S. investor-owned utility was able to offset nearly one-third of the industrial and commercial sales losses with increased sales to the residential sector. This illustrates that economic events have drastically larger impacts on Minnesota Power's revenue than a typical utility would experience due to the Company's uniquely high industrial customer concentration.

Q. Can you provide more information regarding how the significantly high concentration of industrial customer load and sales affects Minnesota Power's rates and revenues?

A. The high concentration of industrial customer sales and corresponding industry cycles creates a high-risk situation for Minnesota Power. Under relatively good economic conditions when larger mining and forest product customers are operating at full production levels, these customers' high load factors and high energy consumption contribute to overall efficient use of Minnesota Power's system assets, which maintains low electric rates for all customers. However, during recessions or industry downturns, the idling of large industrial facilities results in a parallel loss of energy sales and overall system efficiency, both of which contribute to substantial revenue shortfalls. Under this arrangement, the benefits of Minnesota Power's industrial concentration accrue to customers through low rates regardless of economic conditions, and Minnesota Power is subject to the risk of substantial loss of revenue during less favorable economic conditions.

The high concentration of industrial customer sales dramatically increases the risk profile of Minnesota Power compared to other electric utilities in the state and across the nation. This increased risk and volatility has an adverse impact on Minnesota Power's business and its ability to maintain lower rates for all customers, as discussed by Company witness Patrick L. Cutshall.

Q. How does the Company's significantly high concentration of industrial customer load and sales affect the overall efficiency and cost effectiveness of the Company's system?

A. Minnesota Power's customer composition impacts the Company in a variety of complex ways, and two of the more significant and straightforward factors are described below.

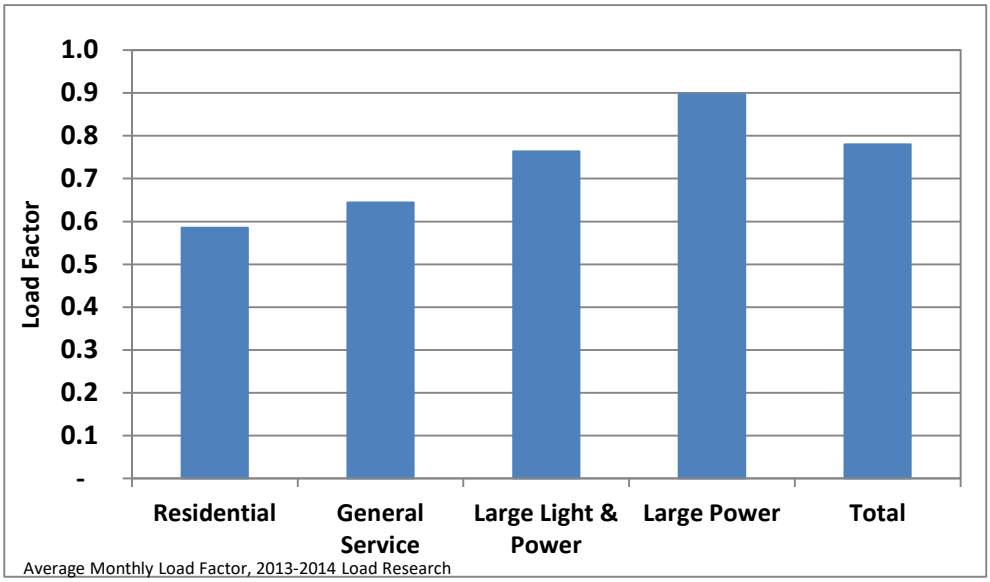
First, LP industrial customers' demand is delivered almost exclusively via an efficient high voltage transmission system. The high concentration of industrial customers on Minnesota Power's system means a significant share of total energy is delivered

efficiently with minimal energy loss since their energy is metered and billed at the high voltage delivery point without any further losses associated with transformation and delivery to customers at lower voltage levels from the distribution system.

Second, the Company's LP industrial customer demand for energy when they are operating is extremely consistent. These customers operate 24 hours per day, seven days per week, and 365 days per year, which makes very efficient use of generation and transmission assets. By contrast, residential and commercial customers have extremely variable demand for energy that leaves generation, transmission, and distribution assets under or unutilized during periods of low demand. This variability of demand is measured using a metric called "load factor." A high load factor is less variable and more efficient, while a low load factor is more variable and less efficient. The high concentration of these high load factor industrial customers on Minnesota Power's system raises the system's overall load factor. Minnesota Power's load factor by rate class is shown in Figure 4 below. Note the significantly higher load factor by the LP class compared to residential and general service (i.e., commercial customers), which increases the total load factor on Minnesota Power's system.

The industrial customers' high load factor and use of the transmission system for delivery allows Minnesota Power to spread its total fixed costs over a larger quantity of sales when they are running, benefiting all customers with lower average electric rates — independent of any type of specific class rate design and allocation factor.

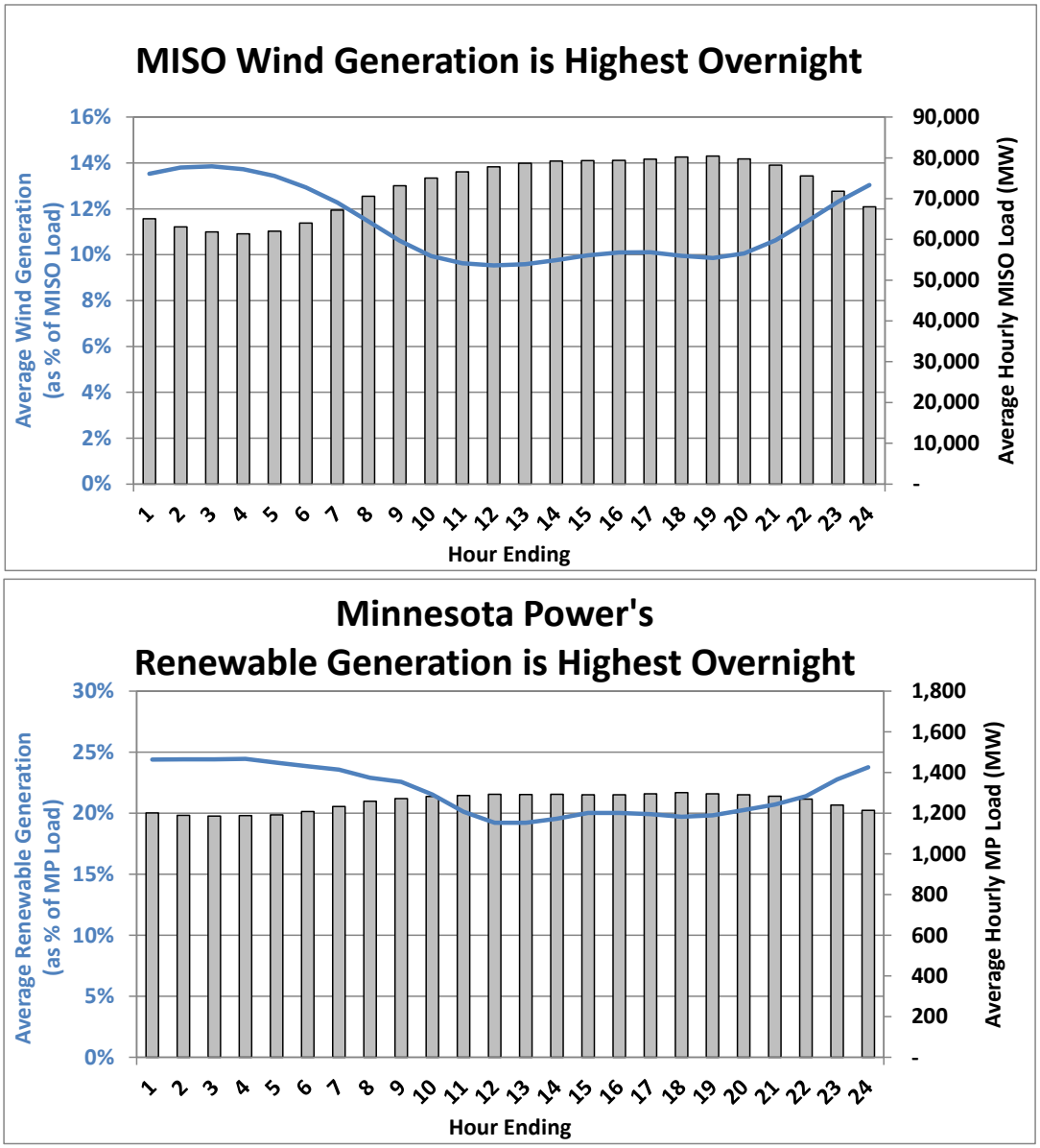
Figure 4. Load Factor by Rate Class



Q. Does Minnesota Power's unique customer mix and high load factor affect the Company's ability to utilize renewable generation?

A. Yes, in a positive way. Minnesota Power's high load factor and around-the-clock industrial demand works well with the characteristics of wind generation, which is typically more abundant during overnight hours when electricity demand and prices are low. Large industrial customers can make use of large quantities of low-cost, renewable energy that might otherwise go underutilized by residential or commercial customers, which typically demand more energy during the daytime hours when wind is less abundant, as shown in Figure 5 below. All of Minnesota Power's customers benefit from this ability to consume lower cost energy in the off-peak hours and the carbon benefits of this more efficient utilization of renewable energy.

Figure 5. Minnesota Power's High Load Factor Industrial Customer Concentration Utilizes Wind Energy Effectively



This high load factor also enables pricing that encourages efficient use of renewable resources. As described in the Direct Testimony of Company witness Leah N. Peterson, Minnesota Power is proposing changes to the Rider for Large Power Incremental Production Service to take advantage of the LP customers' ability to respond to pricing signals by moving production from higher priced, low renewable, or on-peak hours to lower priced, high renewable, or off-peak hours when mutually beneficial to do so.

Q. How does Minnesota Power's unique customer mix affect the Company's ability to manage its capacity needs?

A. As the energy supply shifts from baseload resources to increasingly variable renewable resources, the Company must maintain a robust transmission network to reliably deliver energy from increasingly remote and diverse generating locations. The Company must also employ increasing quantities of dispatchable capacity and demand response resources to maintain grid reliability for all its customers, particularly in times of high customer load and low renewable energy production. Minnesota Power's recent capital investments, customer programs, and rate designs have been aimed at achieving these customer needs while also meeting or exceeding Minnesota's renewable energy standards and carbon reduction goals.

Q. Does the Company have other opportunities to work with industrial customers to manage energy and capacity needs?

A. Yes. The Company also maintains contractual relationships with its industrial customers to deliver some of the largest quantities of demand response for a utility of its size at approximately 260 MW, or approximately 16 percent of the peak load. This is the highest percentage of industrial demand response in the state and represents a unique benefit that Minnesota Power's largest customers provide to the system. Industrial customers sign contracts to provide this capacity for Minnesota Power's system on an annual basis through its Demand Response Product A program, and with the recently approved Demand Response Product C, industrial customers have made longer-term commitments to provide emergency capacity to the regional grid over a period as long as six years. This important progression of demand response products from single-year commitments to longer-term commitments will aid in the ability for Minnesota Power and regional grid participants to plan for and rely upon this emergency capacity product for years into the future. Longer-term demand response products also provide economic signals for customers to invest in their operations so they can safely adjust production in order to provide emergency capacity to the energy grid, which is an important customer participation in maintaining a reliable energy grid that continues to evolve towards a lower carbon, higher renewable energy mix. Minnesota Power

designs its industrial demand response products to align with the requirements of the Midcontinent Independent System Operator ("MISO") for load modifying resources, and Minnesota Power proposes some adjustments to these industrial demand response products in this rate case as described by Company witness Ms. Peterson.

Q. Does the Company also provide residential and commercial customers with opportunities to support Minnesota Power's efficient management of energy and capacity?

A. Yes. Minnesota Power also has established dual fuel and controlled access programs with its residential and commercial customers to deliver demand response of approximately 30 MW, or approximately two percent of the peak load, primarily during winter heating months, but increasingly during summer cooling months. This dual fuel system is not only an important contribution to the Company's demand response program; it is also an important platform for decarbonizing home and business heating and cooling. The dual fuel program favors the use of energy when variable energy prices are lowest, which not only correlates with lower system load, but increasingly correlates with periods of high renewable generation. Minnesota Power is proposing a modification to its dual fuel program in this rate case to differentiate the value provided by customers that agree to interrupt service for longer durations versus those that are willing to accept shorter duration interruptions as described by Company witness Ms. Peterson.

III. CUSTOMER PROGRAMS AND SERVICES

Q. What is the purpose of this section of your testimony?

A. In this section, I provide an overview of the various programs and services Minnesota Power provides to its customers as it strives to continually enhance the customer experience for all of its customers. In the context of this rate case, these Company efforts underscore the value of our services to customers and all the ways we put customers first.

A. Customer Service Quality

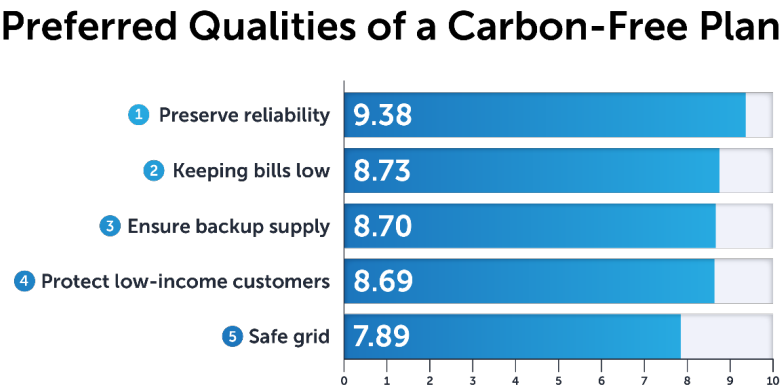
Q. How does Minnesota Power determine how well it is providing high quality customer service?

A. Minnesota Power engages with industry groups, such as the Edison Electric Institute and the Association of Edison Illuminating Companies, to leverage industry best practices and deploy the practices that make the most sense for our customers. Minnesota Power also utilizes surveys of its customers to assess how well it is serving its customers under current circumstances and to help support which best practices from the Company's national engagement are most applicable to its customers.

Q. What does the Company's survey data indicate about customers' key "wants" from their utility?

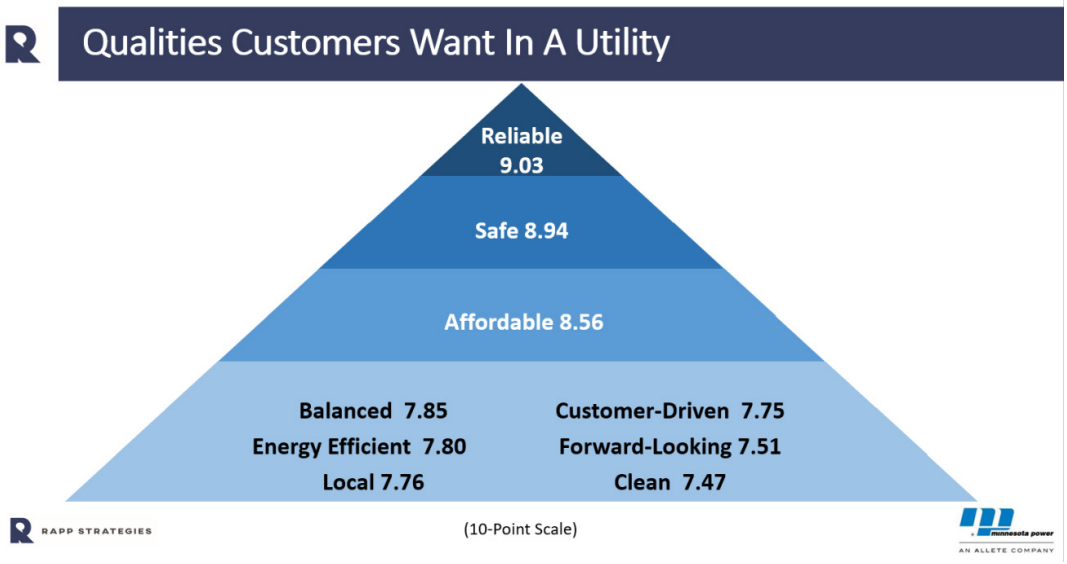
A. Rapp Strategies recently managed a customer survey project for Minnesota Power. They contracted with Morris Leatherman Company to survey a demographic and socioeconomically representative sample of 800 residential customers. When asked about Minnesota Power's plan to achieve 100 percent carbon-free energy by 2050, 77 percent of respondents believed this is "the right kind of plan for Minnesota Power customers," with only 11 percent believing it is the "wrong plan" (most critics preferred a lower carbon-free goal by 2050). Respondents were then asked to use a ten-point scale, with a ten being the highest importance, to rate their preferred qualities of a carbon-free plan. The five leading qualities are summarized in Figure 6 below.

Figure 6. Preferred Qualities of a Carbon Free Plan[2]



In a 2019 survey, customers were asked about the importance of different words that could be used to describe their electric utility. Residential customers ranked "reliable" and "safe" the highest, followed by "affordable." Six other attributes were tested, each receiving measurably lower scores than the top three, including balanced, energy efficient, local, customer-driven, forward-looking, and clean. Figure 7 below highlights the high level results from this survey.

Figure 7. Qualities Customers Want in a Utility[3]



[2] *Minn. Power Customer Experience and Preferences Survey of Residential Customers*, RAPP STRATEGIES (2021).
[3] *Minn. Power Residential Customer Survey – Reputation*, RAPP STRATEGIES (2019).

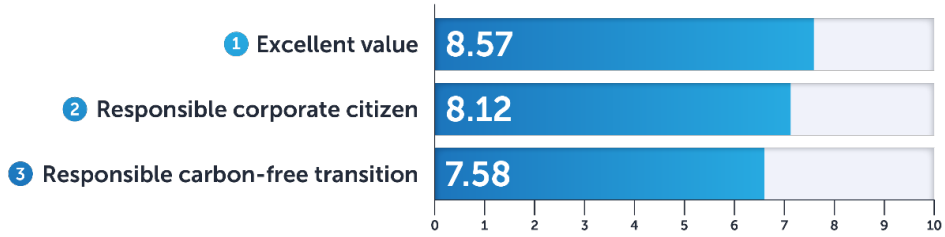
Q. Does Minnesota Power rely on other survey data to determine focus areas for its programs and services?

A. Yes. Our recent survey work examined programs and services in three ways. First, we tested satisfaction with basic service needs; 86 percent of customers gave Minnesota Power's customer service a positive rating with 30 percent providing a rating of "excellent." In the area of response to power outages, 88 percent gave a positive rating with 29 percent providing a rating of "excellent." We also asked customers whether "Minnesota Power does a good job of providing information and programs" to "have more control over their energy decisions;" 83 percent of respondents agreed that Minnesota Power does a "good job," with 14 percent agreeing strongly with that opinion. Finally, we asked customers about the overall value they receive from Minnesota Power. Using a ten-point scale, customers rated the following statements:

- Considering the price I pay and the quality of service I receive, the electricity from Minnesota Power is an excellent value;
- Minnesota Power is a responsible corporate citizen that makes a major contribution to the well-being of my community; and
- Minnesota Power is making the transition to using more renewable and carbon-free energy in a responsible way.

Customer ratings on the overall value they receive from Minnesota Power are summarized in Figure 8 below.

Figure 8. Customer Value Ratings of Minnesota Power



Q. What is the opinion of Minnesota Power customers with regards to the digital engagement tools its provides?

A. Our recent survey identified that approximately one-third of our customers engage with the Minnesota Power website and approximately 20 percent utilize the Minnesota Power app. Amongst the customers that use these communication and engagement channels, there was a very high level of satisfaction with over 95 percent rating them good or excellent, and most were utilizing the platforms to engage in billing and payment. These digital platforms are important for customers to access their bill, make payments, review energy use, and to report and monitor outage communications.

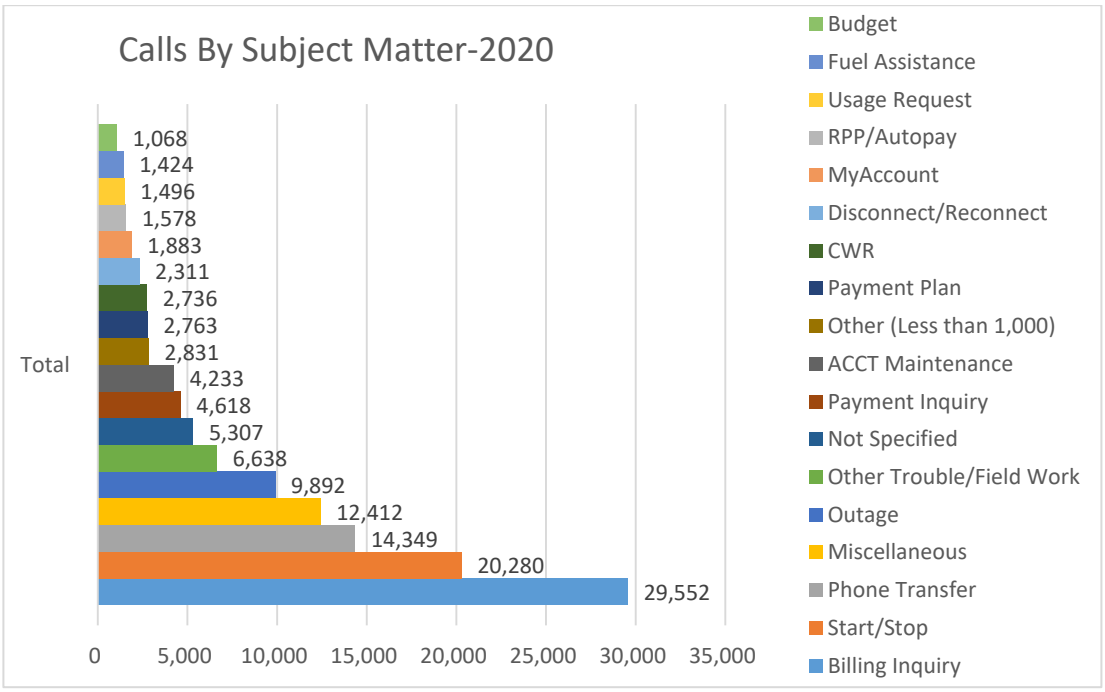
Q. Were these results a surprise to Minnesota Power?

A. No. As a result of the Company's consistent engagement directly with customers and in other industry forums, Minnesota Power was aware that it is above average with respect to overall customer satisfaction and the importance customers place upon digital channels for billing, payment, energy usage, and outage communication. We have therefore taken steps to improve payment options and enhance digital platforms for customer interaction. Minnesota Power has made significant progress in digital platforms for customers that prefer digital channels, whether through our MyAccount portal, mobile app, or launching of our no-fee credit or debit card bill pay option, as approved in our 2016 Rate Case.

Q. What other information does Minnesota Power use to determine customer service needs ?

A. Minnesota Power reviews call volume and calls by subject matter for timely insights regarding customer needs and to identify the greatest opportunities for improvement to the customer experience. Figure 9 provides a breakdown of calls received in 2020 by subject matter category. This breakdown is based on the wrap codes that are used by Customer Care and Support Representatives when closing and documenting a call and shows that the top two reasons customers contact the Call Center are for billing inquiries and to start, stop, or transfer service.

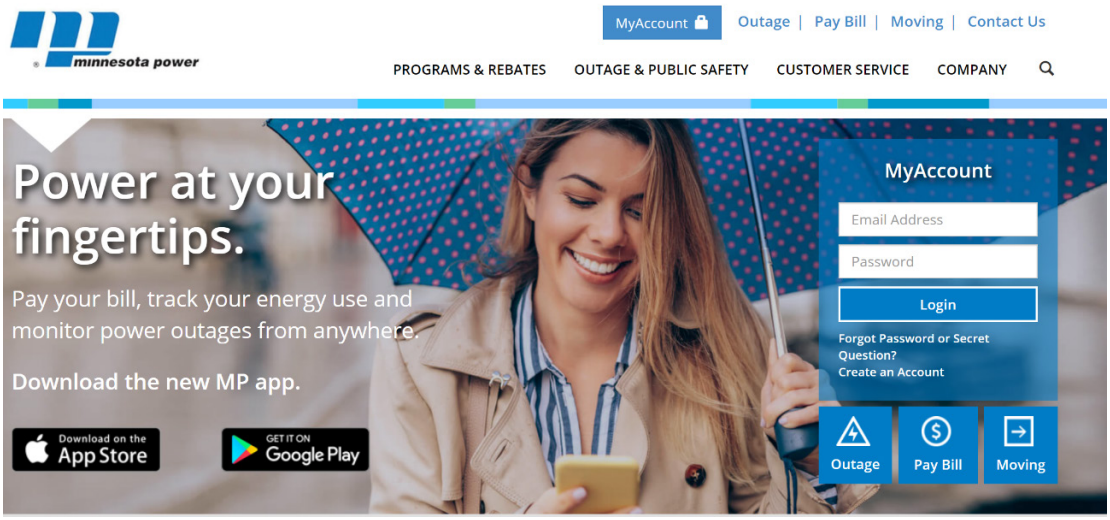
Figure 9. Customer Calls by Subject Matter

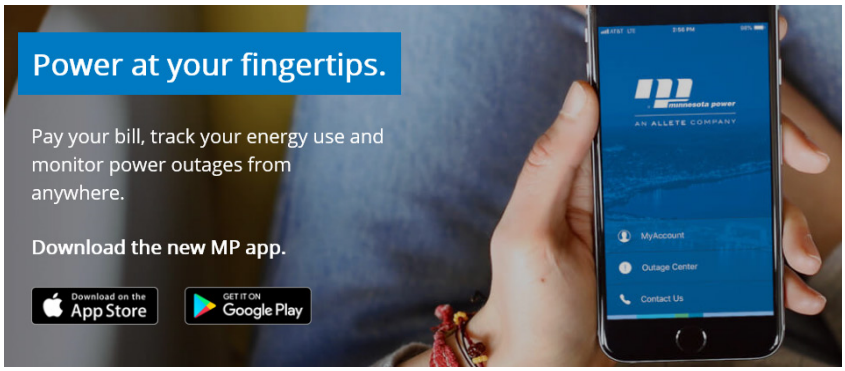


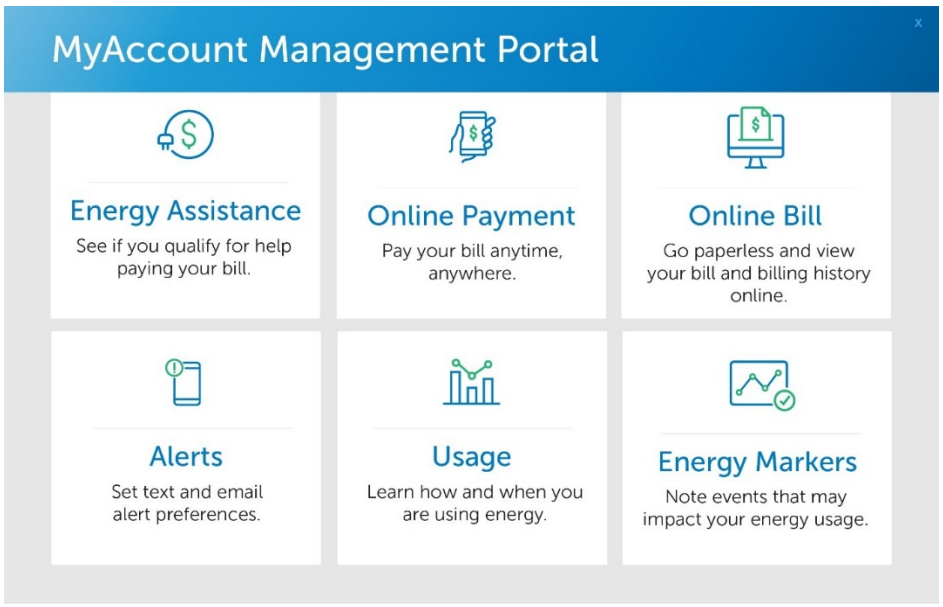
Q. Can you provide more detail regarding the efforts Minnesota Power has undertaken to improve customer service since its 2016 Rate Case?

A. Yes. The Company has added several programs since its 2016 Rate Case. Specifically, Minnesota Power has upgraded its mobile app to include both outage notification and reporting in addition to MyAccount billing and usage monitoring. The Company also launched a start, stop, or transfer feature to allow new and existing customers to handle service requests, transfers, and voluntary disconnections from the convenience of our website and mobile app. Examples of Minnesota Power's website, MyAccount, and MP app features are portrayed in Figure 10 below.

Figure 10. Customer-Facing Information about New Functionality and Optionality







Thanks to the Commission's approval of the Company's request for no-fee credit/debit card payments in the 2016 Rate Case, Minnesota Power was able to eliminate the customer charge for paying bills by credit/debit card. This change was implemented following the final rate order, and customers have increased adoption of this feature.

The Company also launched Renewable Source following the 2016 Rate Case, which allows customers to select the amount of renewable energy they want to meet their

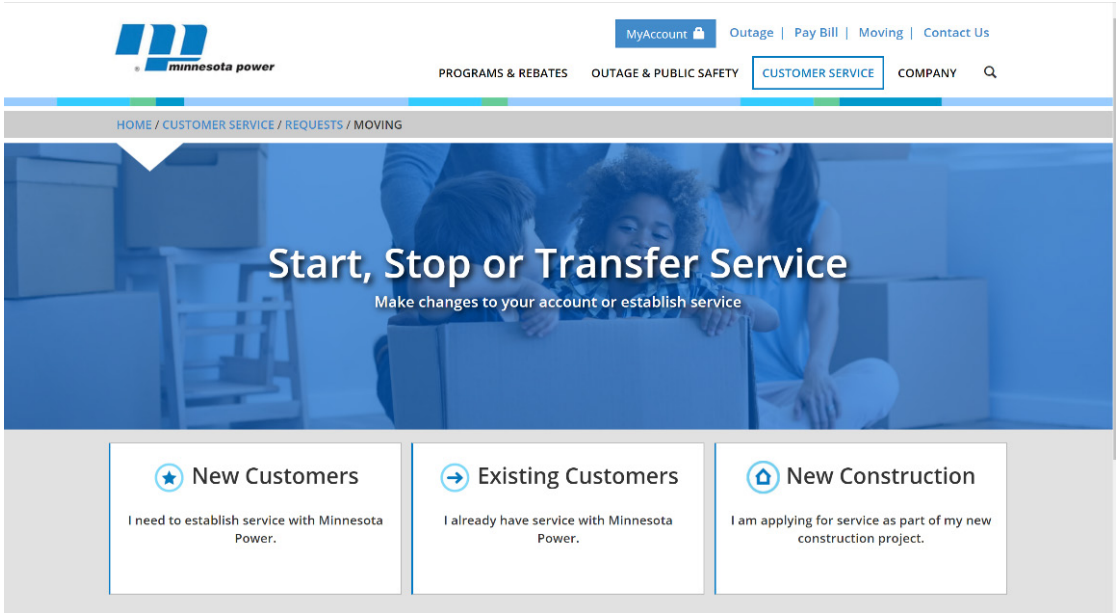
individual needs, beyond Minnesota Power's State-leading renewable percentage of 50 percent included in their base energy supply.

All of these features were developed, launched, and enhanced, in addition to Minnesota Power's continued leadership in delivery of State-leading conservation programs and renewable energy to customers.

Q. Please explain the start/stop/transfer functionality added to the Company's online portal.

A. Prior to mid-2019, customers would request a stop, start, or transfer service by calling Minnesota Power during business hours, or by completing an online form. Both methods required manual entry of the request into our customer information system ("CIS") by a Minnesota Power representative and made up the second highest reason for customers contacting Minnesota Power. In June of 2019, Minnesota Power introduced a fully integrated process for new customers to apply online for service, as well as for existing customers to request changes to service such as a stop service or a transfer to a new service location within our service territory. The new process allows customers to request these types of changes at any time and updates their account real time, expanding the ability for customers to manage their utility services using a variety of communication channels. The web and mobile interface for our new start, stop, or transfer service is displayed in Figure 11 below.

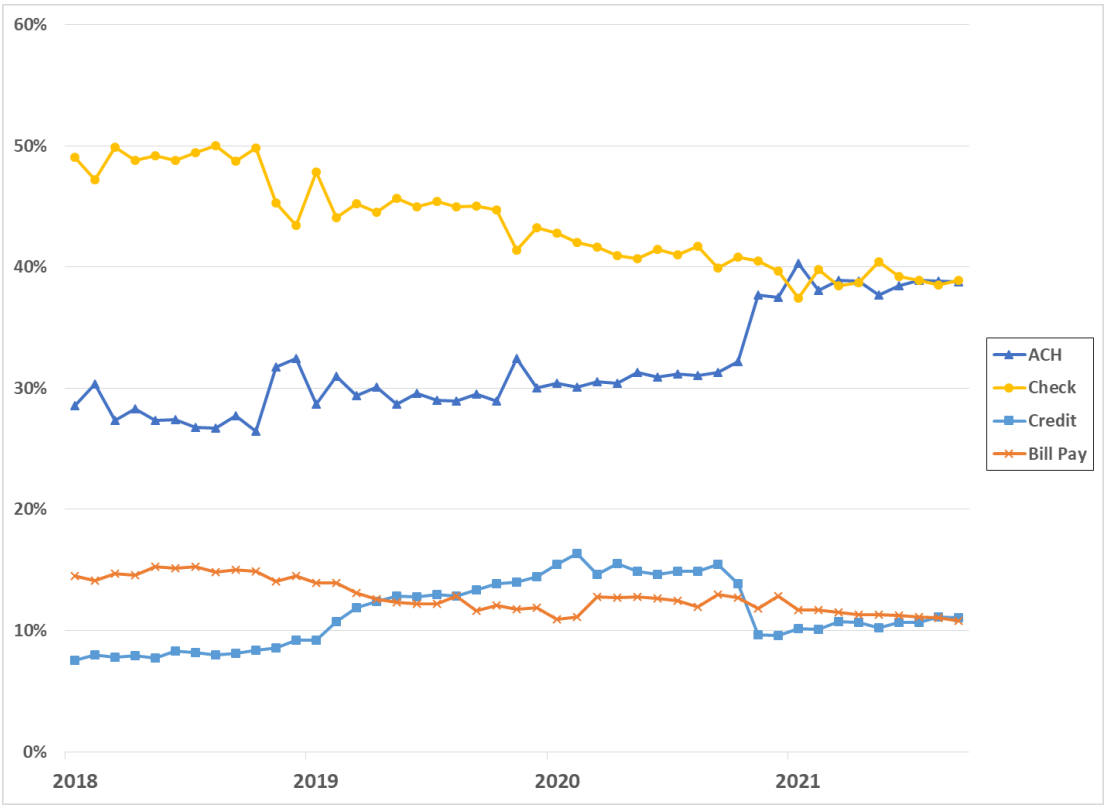
Figure 11. Web and Mobile Interfaces for Start/Stop/Transfer Service



Q. Please provide more information about customer adoption of Minnesota Power's new credit card payment program.

A. Through September 2018, payments made via credit/debit card were assessed a $2.75 fee per transaction, which was paid directly to the payment vendor by the customer. This was a source of frustration for customers. In response to customer feedback, and once the Company had a final order with Commission approval in the Company's 2016 Rate Case, Minnesota Power eliminated the fee for credit/debit card transactions and now accepts payments from checking or savings accounts or credit, debit, or ATM cards with no directly-assessed convenience fee. Figure 12 below shows the increased adoption of the credit/debit card payment option after Minnesota Power was able to launch the no fee credit/debit card payment option in late 2018.

Figure 12. January 2018 through September 2021 Payment Trends by Type



Q. Why did credit card usage decline in late 2020?

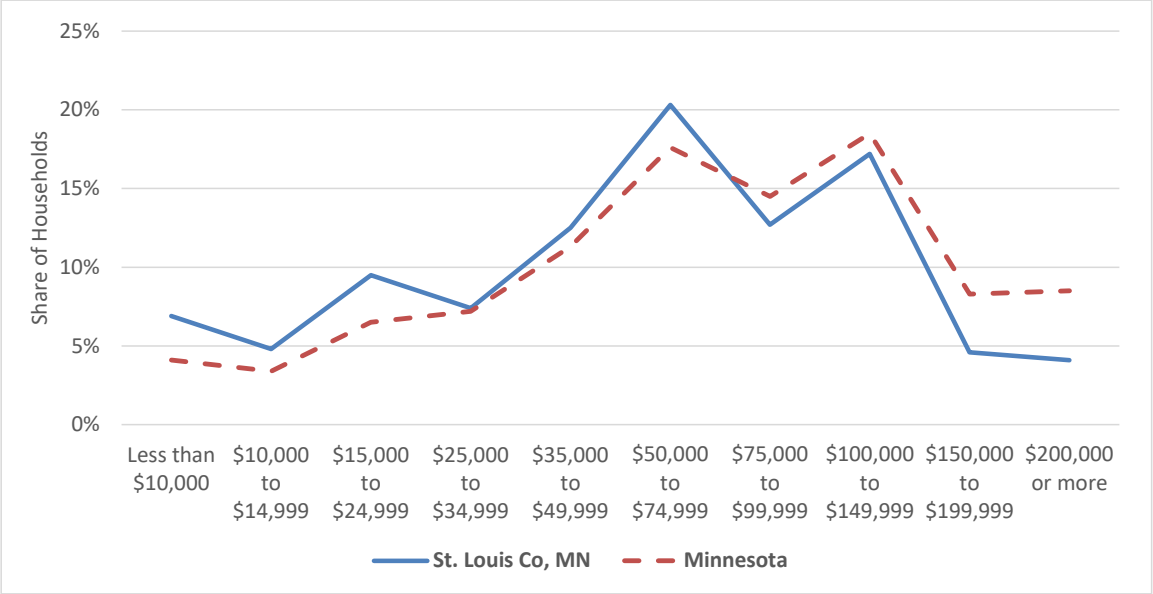
A. In late 2020, there was a reduction in customers using credit card payments and a corresponding increase in customers paying their bills using Automated Clearing House ("ACH"), as shown in Figure 12 above. This change is likely due to a payment system upgrade, which included the listing of the ACH payment method as the default for customers, as it is a lower cost payment option than the credit card and would therefore represent lower payment processing costs for the Company. Customers are still able to select the credit card payment method; however, it appears that several customers adopted the default ACH payment method following the implementation of the payment system upgrade. Company witness Amanda L. Turner describes the ratemaking adjustment associated with this program in her Direct Testimony.

B. Program Support for Low Income Customers

Q. Are Minnesota Power's residential customers unique in their need for low income support?

A. In some ways, yes. Households served by Minnesota Power have an income distribution that tends to skew lower than Minnesota as a whole, as shown in Figure 13 below. As a result, Minnesota Power customers are more likely to be low-income and may require assistance in maintaining affordable electric service. For example, St. Louis County's family poverty rate was 6.3 percent in 2019,[4] whereas the poverty rate for Minnesota as a whole was 5.2 percent.[5]

Figure 13. Comparison of Household Incomes



[4] United States Census Bureau, *Poverty Status in the Past 12 Months of Families,* AMERICAN COMMUNITY SURVEY (last visited Oct. 27, 2021), https://data.census.gov/cedsci/table?q=St.Louis%20Minnesota%20poverty&tid=ACSST1Y2019.S1702.

[5] United States Census Bureau, *Poverty Status in the Past 12 Months of Families*, AMERICAN COMMUNITY SURVEY (last visited Oct. 27, 2021), https://data.census.gov/cedsci/table?q=Minnesota%20poverty&tid=ACSST1Y2019.S1702.

Q. Is Minnesota Power offering other programs to enhance the customer experience in this space?

A. Yes, in a number of ways. In consultation with state low-income advocates, Minnesota Power updated our Customer Affordability of Residential Electricity ("CARE") program to increase customer support and optionality, as well as continuing to advance energy efficiency options specifically for our low-income customers. I will describe each of these in turn below.

Q. Please discuss recent changes to the CARE program and any proposals in this case related to energy affordability.

A. Minnesota Power has offered its CARE Program to its residential customers since November 1, 2011. This was the outcome of a 2010 Order in Minnesota Power's general rate case under Docket No. E015/GR-09-1151. Annual reporting and any program modifications related to CARE have since been handled through a separately assigned CARE docket. [6] Under CARE, those who qualify under the federally funded Low Income Home Energy Assistance Program, as determined by application through Energy Assistance Program Service Providers, are eligible. Minnesota Power received approval of its proposed program modifications in the Commission's October 30, 2019 Order,[7] including nearly doubling the CARE budget from $1 million to $1.75 million. These consensus-driven program modifications were developed collaboratively through a robust stakeholder engagement process and are intended to provide additional relief to low income customers in northern Minnesota. The modifications, which became effective on January 1, 2020, use a combination of a low barrier, automated discount through the flat discount component and a targeted energy burden discount that is more meaningful for higher usage low-income customers. This targeted discount is offered on a first-come, first-served basis.

[6] *In the Matter of Minn. Power's Petition for Approval of a Rider for Customer Affordability of Residential Elec.*, Docket No. E015/M-11-409, COMPLIANCE FILING (Dec. 10, 2012).

[7] *In the Matter of Minn. Power's Petition for Approval of a Rider for Customer Affordability of Residential Elec.*, Docket No. E015/M-11-409, ORDER ACCEPTING REPORT AND APPROVING PROGRAM CHANGES (Oct. 30, 2019).

Q. Please describe Minnesota Power's energy conservation programs that are specifically designed for its low-income customers.

A. Minnesota Power's Energy Partners program focuses on empowering income-qualified customers to save energy through educational resources, home energy analysis, direct installation of energy-efficient products, and replacement of inefficient appliances. Through the Energy Partners program, Minnesota Power is able to help income-qualified customers reduce their energy usage, thereby reducing their energy burden and monthly bill.

Q. Is Minnesota Power reaching out to support its low income and economically challenged customers in any other ways?

A. Yes. Utilities across Minnesota have resumed normal procedures for customer nonpayment following the temporary suspension of disconnections and late fees during the COVID-19 pandemic.[8] Prior to and while resuming these activities, Minnesota Power has made concerted efforts to connect its customers with energy assistance funding from state and federal agencies and establish payment plans to help customers get back on track with their energy bills and avoid disconnection. Minnesota Power has added outbound calling to customers and prioritized energy assistance links on its app and website so customers see them first upon accessing these channels. A website communication example is shown in Figure 14 below.

[8] *In the Matter of an Inquiry into Actions by Elec. and Nat. Gas Util. in Light of the COVID-19 Pandemic Emergency*, Docket No. E,G-999/CI-20-375, RESIDENTIAL CUSTOMER STATUS REPORT (Oct. 20, 2021).

Figure 14. Minnesota Power Website Communication for Energy Assistance.

C. Conservation Improvement Program

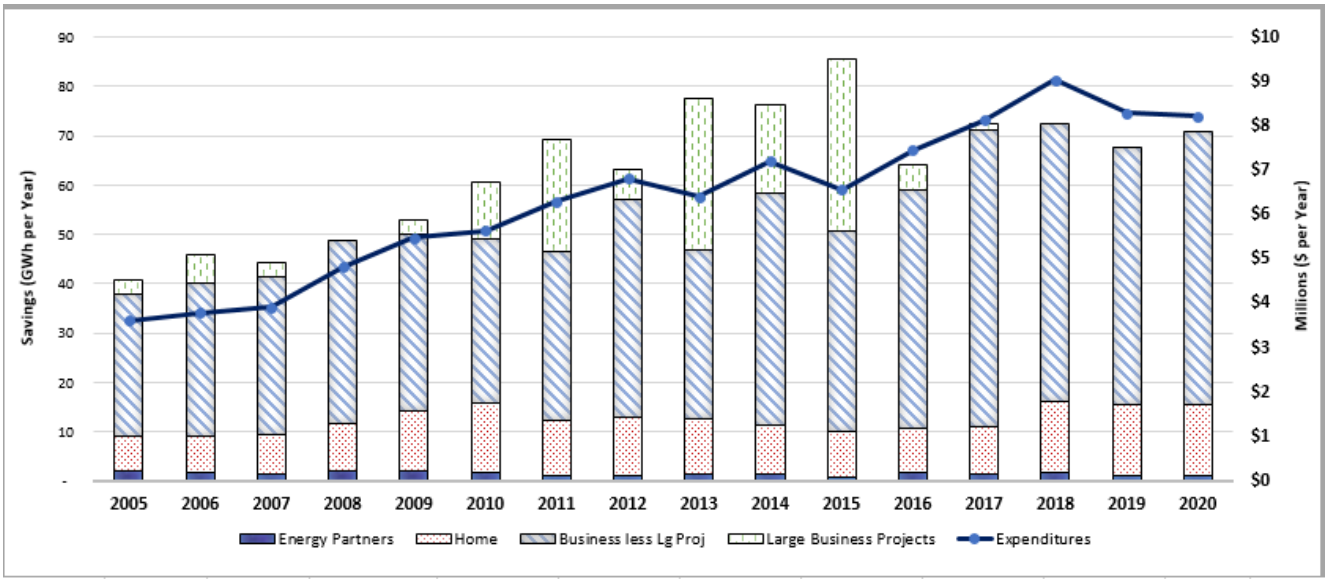
Q. How is Minnesota Power performing with respect to its Conservation Improvement Program ("CIP") goals?

A. Minnesota Power has consistently met or exceeded its CIP goals, including in 2020. The Next Generation Energy Act of 2007 established an annual energy savings goal for utilities equal to 1.5 percent of (CIP eligible or non-CIP-exempt) gross annual retail sales. The approved energy savings goal is calculated based upon the most recent three-year weather normalized average, excluding sales to CIP-exempt customers. For Minnesota Power, the 2020 approved kWh savings goal equates to 2.09 percent of CIP eligible retail sales. Minnesota Power exceeded its savings goals for 2020 by achieving 2.57 percent savings as a percentage of adjusted sales despite several significant challenges related to the COVID-19 pandemic.

This is an ongoing success story for Minnesota Power and our customers; the Company has exceeded CIP goals every year since 2010, when the 1.5 percent energy-savings goal went into effect, and continued to expand energy savings as shown in Figure 15 below. This strong performance with energy conservation programs has helped keep customers' total bills lower in a rising rate environment. That said, while Minnesota Power remains committed to providing sustainable energy-efficiency programs, cost-

effective savings opportunities are diminishing due to market saturation and changing baselines, making it more challenging and costly to continue meeting conservation goals for the foreseeable future.

Figure 15. Minnesota Power CIP Energy Savings 2005-2020



Q. Is Minnesota Power taking any other steps to promote conservation, demand side management, and beneficial electrification?

A. Yes. The Company has undertaken a broad array of resource management efforts, conservation promotion programs, pricing tools, and education and outreach efforts consistent with the State's interest in environmental protection. Minnesota Power is proposing to redesign the dual fuel program to support beneficial electrification through improved interruptible service. Evolving this demand response program and investing in customer-focused infrastructure that enables complex rate designs that support increased integration of renewable energy generation and customer participation in smart energy management. For example, the Company is leading the State with deployment of advanced metering infrastructure by: 1) advancing a plan to transition virtually all residential customers to a first-in-Minnesota time of day rate design,[9] 2)

[9] *In the Matter of the Petition for Approval of Changes to Minn. Power's Residential Rate Design*, Docket No. E015/M-20-850, PETITION FOR APPROVAL (Dec. 1, 2020).

upgrading the existing CIS system to a holistic Customer to Meter solution to manage advanced meter billing and rates, 3) implementing a meter data management system, 4) delivering a smart grid gateway, and 5) developing both a meter asset management and service order management program. These investments in customer-focused infrastructure are described in more detail in the Direct Testimony of Company witness Daniel W. Gunderson.

Q. Does the Company also use time of day rates to promote changes in customer energy consumption behavior?

A. Yes. Minnesota Power currently has a residential time of day pilot program and is the first utility in the State to have a plan to transition its entire residential class to a default time of day rate structure (Docket No. E015/20-850). The time of day rate provides customers with more control over their energy bills and encourages customers to shift their energy use from periods of high energy demand and high prices to overnight hours or weekends when electricity demand and prices are low. Additionally, Minnesota Power is also proposing to revise its Incremental Production Service rider to allow LP customers to further shift energy usage to periods of low system loads and high renewable energy production.

D. Transportation Electrification

Q. Please describe Minnesota Power's Transportation Electrification programs.

A. Minnesota Power offers several programs designed to reduce the barriers to electric vehicle ("EV") adoption while optimizing system benefits. Specifically, the Company offers rates for residential and commercial customers, a smart charge rewards program to incentivize off-peak charging for residential customers, rebates to reduce the upfront cost of purchasing EV chargers, and an EV education and outreach program to provide customers with tools and resources to increase general awareness and acceptance of EVs.

Q. Does Minnesota Power have plans to propose additional programs to support Transportation Electrification?

A. Minnesota Power recognizes that access to reliable EV charging infrastructure is a major barrier to electric vehicle adoption in northern Minnesota and as such, the Company submitted a proposal to install 16 direct current fast charging stations throughout its service territory on April 8, 2021.[10] This proposal was approved by the Commission at its September 23, 2021 Agenda Meeting. The Company aims to advance an equitable distribution of these charging stations in order to provide access to EV charging in rural population centers and travel corridors throughout the Minnesota Power service area. Additionally, these programs and offerings all include components intended to encourage efficient charging behaviors through time-based rate/incentive structures or promotion of enabling technology like smart chargers.

Q. How is Minnesota Power proposing to recover EV program expenses?

A. In a separate docket, Minnesota Power requested the ability to track project costs related to its transportation electrification programs in a deferred account and seek recovery of these expenses in a future rate case or appropriate rider recovery mechanism.[11] This currently includes costs related to the Company's EV Program Portfolio as approved in Docket No. E015/M-20-638 and its EV Charging Infrastructure Investment as approved in Docket No. E015/M-21-257.

Q. Is Minnesota Power requesting cost recovery of EV-related expenses in this rate case?

A. No. Instead, the Company will track project costs related to Commission-approved EV programs in a deferred account for inclusion in a future rate case or appropriate rider recovery mechanism as described by Company witness Stewart J. Shimmin in his Direct Testimony.

[10] *In the Matter of Minn. Power's Elec. Vehicle Charging Infrastructure Inv.*, Docket No. E015/M-21-257, Petition for Approval of Elec. Vehicle Charging Infrastructure Inv. (Apr. 8, 2021).

[11] *In the Matter of a Petition of Minn. Power for the Approval of Deferred Acct. Treatment for Approved Program Costs*, Docket No. E015/M-21-349, PETITION FOR APPROVAL (May 21, 2021).

E. Large Power Customer Service Quality

Q. What steps has Minnesota Power taken to continually enhance quality electric service to its LP customers?

A. Minnesota Power has worked diligently with our LP customers to support their needs as their markets change, and one of the primary methods to improve the service for these customers is through the customer specific Electric Service Agreements ("ESA").

For example, after Blandin Paper Company announced the permanent closure of Paper Machine No. 5 and experienced reduced load, Minnesota Power partnered with Blandin on a renegotiation of the ESA (Docket No. E015/M-19-37) to better tailor operations and costs associated with the challenges of operating a single paper machine competitively. This also resulted in increased contract length to support both Blandin's operation and the rest of the Company's customers through their longer-term commitment to purchase power and support costs of the system.

Additionally, the work we conducted with Silver Bay Power Company and Northshore Mining allowed them to focus more on their core processes of making specialized iron pellets while simultaneously giving Minnesota Power the opportunity for marginally increased electric sales, supporting costs of the total system and reducing the need to increase revenues from other customers. The Company's non-firm retail energy supply agreement with Silver Bay Power Company also facilitated the idling of an additional 130 MW of coal-fired generation capacity in the region, further advancing the energy policy goals of the State.

Huber Engineered Woods ("HEW") announced plans to construct a $439 million wood products manufacturing facility in Cohasset, Minnesota. Minnesota Power's engagement with regional partners, including Iron Range Resources and Rehabilitation, the Minnesota Department of Employment and Economic Development, Itasca County Economic Development Corporation, Itasca County, and the City of Cohasset, helped leverage more than $75 million in public incentives to attract this new industrial customer to the region. However, and as discussed further in Section IV(D)(2)(d) of

my testimony, this load is not anticipated to substantially impact Minnesota Power's sales forecast until 2024.[12] The HEW facility will be located in Minnesota Power's service territory and the Company is in discussions with HEW to execute an ESA for service to the operation. This plant will be located near Boswell Energy Center, and the 150 people HEW anticipates employing will bring needed jobs and assist with Just Transition in this host community.[13]

Even where a customer departed the system, as with the Verso paper mill, the Company partnered with ST Paper and is in discussions to execute a new ESA that matches the converted facility's operational and electric needs. This new ESA is expected to leverage the Business Expansion Incentive Rider, which upon customer application and Commission approval, will help to support the significant reinvestment required to convert the facility to a tissue manufacturing operation for a potential start-up in 2023, as I describe later in this testimony.

Q. What other ways does Minnesota Power support the customer service quality for LP Customers?

A. Minnesota Power is proposing to revise its Rider for Large Power Incremental Production Service Rider to reflect the evolving electric grid and industrial customer expectations. The revision will give LP customers access to better price signals, along with opportunities to operate more during times of higher renewables and lower system loads. In exchange, Minnesota Power will have a more defined process for curtailment and the ability to re-price the energy during times of high or volatile MISO market prices. As mentioned earlier in my testimony, Minnesota Power's industrial customers utilize increased quantities of lower cost wind energy during the overnight and off-peak time periods, benefitting customers. The revision of the Incremental Production Service Rider will incentivize customers to increase the usage during these hours even further. Company witness Ms. Peterson discusses this revision in more detail.

[12] Brooks Johnson, *New $440 Million Wood Plant Planned on Iron Range,* STAR TRIBUNE (June 21, 2021) https://www.startribune.com/new-440-million-wood-plant-planned-on-iron-range/600070455/?refresh=true.
[13] Office of Gov. Tim Walz & Lt. Gov. Peggy Flanagan, STATE OF MINN. (June 21, 2021), https://mn.gov/governor/news/?id=1055-486163.

IV. LARGE POWER CUSTOMER OUTLOOK

Q. What is the purpose of this section?

A. In this section, I provide a general overview of Minnesota Power's energy sales trends, followed by more detailed information about the Company's LP customers and their industries. As previously discussed, industrial customers represent the majority of energy sales for Minnesota Power and changes in these customers' operations have the greatest impact on the overall revenue and health of Minnesota Power. 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 LP customers. The Direct Testimony of Company witness Benjamin S. Levine discusses the customer 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 LP customers; and (iii) a detailed discussion of the forecast.

A. Energy Sales Trends

Q. Please describe the general trend in Minnesota Power's customer sales.

A. Over the last decade, Minnesota Power's energy sales have declined, which puts upward pressure on the cost per kWh of delivered energy to customers, as there are fewer kWh energy sales over which the fixed costs of the energy system can be spread.

Residential and commercial customer sales have stagnated or declined since the 2007-2009 Great Recession. Residential and commercial customer account growth stagnated in the last decade due to demographic factors like low population growth, in particular in the rural regions of Northeastern Minnesota. The stagnation of population growth, coupled with the reduction in average customer energy use due in part to Minnesota Power delivering energy savings through its successful Conservation Improvement Program that have exceeded the 1.5 percent energy-savings goal every year during the last decade, has resulted in lower energy sales.

Minnesota Power's industrial sector is predominantly natural resource based, and energy sales are largely driven by the global economic conditions that determine demand for iron, steel, and paper. Demand for iron and steel is highly cyclical; the Great Recession (2007-2009), the steel industry-specific downturn (2015-2016), and the COVID-19 Recession (2020) each resulted in the temporary idling of large taconite producing facilities and caused dramatic reductions in Minnesota Power's overall retail sales. North American demand for taconite is also gradually declining as steel producers shift steel production away from traditional blast furnaces that use taconite as a key input and towards less capital intensive and more efficient Electric Arc Furnaces ("EAF") that primarily leverage scrap steel, as I discuss in more detail later in my testimony. Demand for printing and writing paper has been in systemic decline since the proliferation of digital communication over the past 20 years.

Minnesota Power's sales to wholesale customers have also declined. Independent municipal electric utilities, which are not required to align with Minnesota's Renewable Energy Standard, have either chosen to purchase power supply at the marginal cost from the wholesale power markets or threatened to do so in contract negotiations with the Company. Brainerd Public Utilities' contract with Minnesota Power expired on July 1, 2019, when the municipality accepted a wholesale power supply offer from American Electric Power instead of renewing its contract with Minnesota Power. Additionally, Cenovus's (formerly Husky) refinery in Superior, Wisconsin, temporarily closed following the explosion at the facility on April 26, 2018, resulting in a reduction of resale sales through Minnesota Power's contract with Superior Water Light & Power that will continue until 2023.

Q. Are energy sales to residential and commercial customers generally more stable than to industrial customers?

A. Yes. While Minnesota Power has observed a clear downward trend in sales to residential and commercial classes, it is fair to say that any year-to-year changes in sales are small relative to the industrial class. Historically, it has been exceedingly rare for residential or commercial sales to increase or decrease by more than five percent in any

year, whereas a decrease of ten percent or more in industrial sales would not be unusual for Minnesota Power. Company witness Mr. Levine describes residential, commercial, and industrial sales history and volatility in greater detail in his Direct Testimony.

B. Large Power Sales Trends

Q. Earlier you discussed the Company's LP customers at a high level. Can you provide more detail regarding their individual status?

A. Yes. Table 1 below identifies our contracts for electric service for six taconite-producing facilities served through four LP customer contracts and three paper and pulp mills.

Table 1. Minnesota Power Firm Retail LP Customer Contracts[14]

Customer	Industry	Ownership	Earliest Termination Date as of November 1, 2021	Status
Cleveland-Cliffs - Minorca Mine	Taconite	Cleveland-Cliffs.	December 31, 2025	Operating
United Taconite and Northshore Mining Babbitt Mine Operations	Taconite	Cleveland-Cliffs	December 31, 2026	Operating
Hibbing Taconite Co.	Taconite	85.3% Cleveland-Cliffs 14.7% USS Corporation	November 30, 2025	Operating
USS Corporation (USS - Minnesota Ore)	Taconite	USS Corporation	November 30, 2025	Operating
Boise, Inc.	Paper	Packaging Corporation of America	December 31, 2023	Operating
UPM Blandin	Paper	UPM-Kymmene Corporation	December 31, 2029	Operating
Sappi Cloquet LLC	Paper and Pulp	Sappi Limited	November 30, 2025	Operating

Q. Do the Company's LP customers play a significant role in the regional economy?

A. Yes. In addition to Minnesota Power's significant economic and employment presence in the region, the Company's LP customers provide a significant portion of the Gross

[14] 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.

Regional Product, jobs, and wages in northeastern Minnesota. Specifically, the Company's LP customers' products and induced business activity represent a significant component of northeastern Minnesota's gross domestic product. For production year 2019, Minnesota's iron mining industry directly employed 4,105 individuals and directly paid $115.1 million in production taxes in 2019. Of this total, $44.5 million was distributed to the Iron Range Resources and Rehabilitation, $20 million was distributed to local school districts, $12.2 million was distributed to counties, $14.1 million was distributed to cities and townships, $14.0 million was distributed to property tax relief, and $10.4 million went to other sources like the Taconite Economic Development Fund and Range Association of Municipalities and Schools. In addition to $115.1 million in production taxes, mining customers also paid $15.4 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 $9.3 million in Sales and Use Taxes, which go to the State General Fund in their entirety. Various Ad Valorem and Property Taxes of $1 million were also paid for production year 2019.[15]

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.[16]

Q. What is the overall trend in energy sales to LP customers and associated revenues in recent years?

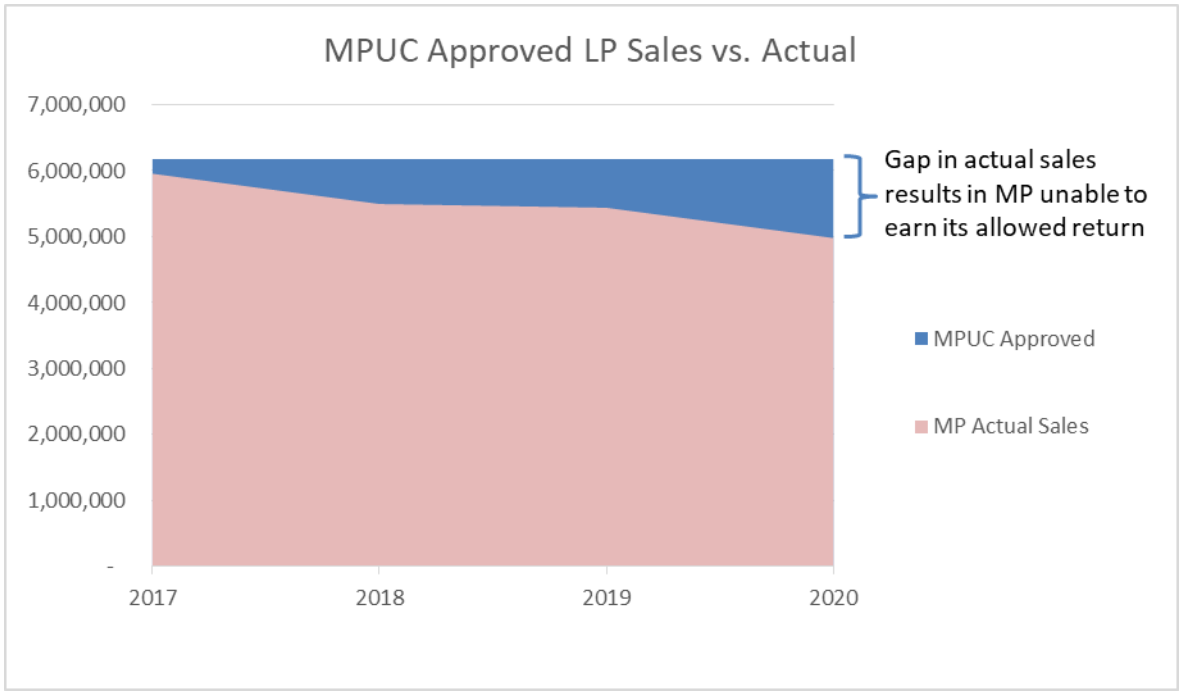
A. Since 2017, which is the test year of Minnesota Power's last completed rate case, Minnesota Power's MWh sales to its LP customers have decreased. The sales to this

[15]Minn. Dept. of Rev., *2020 Mining Tax Guide,* MINN. DEPT. OF REV. (2020), https://www.revenue.state.mn.us/sites/default/files/2020-09/2020_mining_guide.pdf.

[16]Minn. Forest Indus., *Forestry Drives Our Econ.*, ECON. OF FORESTS (last visited Oct. 28, 2021), https://www.minnesotaforests.com/economy-of-forests.

customer class has also significantly lagged the level of the sales forecast that was approved in the 2016 Rate Case, as illustrated in Figure 16 below.

Figure 16. 2017 Test Year MPUC Approved LP Sales versus Actual



Q. Why are the 2022 test year's LP sales levels lower than in recent years?

A. There are two key reasons. First, as I discuss in more detail later in my testimony, the Verso Duluth mill was indefinitely idled in June 2020 and permanently closed in January 2021. This customer, alone, accounted for 4.3 percent of 2019 retail sales, and the lost sales to this customer have a notable downward impact on the 2022 test year forecast for LP sales. Second, the Company's assumed 2022 taconite production of 34 million tons ("MT") is lower than full production years like 2017, 2018, or 2019; higher than low production years like 2015, 2016, or 2020; but entirely consistent with longer-term historical averages as further described in Section IV.E of this testimony. The 34 MT assumption reflects recent reductions in operating blast furnace capacity and the limited potential for seaborne exports.

Additionally, the lower LP test year sales reflect the overall downward trends in the paper and steel industries, which I discuss in more detail below.

Q. Did Minnesota Power provide information in its 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 ESAs to better meet the needs of their evolving businesses. After adjusting for the Keetac reopening in 2017, 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 at that time. In particular, the 2017 test year sales forecast initially proposed by the Company equated to a 92 percent utilization rate for its mining and metals sector, which correlated well with recent average production rates at that time. The Commission-approved 2017 test year forecast equated to an exceptionally high mine facility utilization rate of 97 percent, which is a level only reached three times since the Great Recession in 2009. Overall, as indicated in Table 2 below, the 2017 approved test year sales forecast was higher than actual 2017 retail energy sales by about 5.2 percent.[17]

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

MWh Sales	Actual 2017 Sales	PUC-Approved 2017 Test Year	Difference (MWh)	% Difference
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%
Subtotal (By Rate Class)	**8,880,151**	**9,339,677**	**459,526**	**5.2%**
Dual Fuel (Interruptible)				
Residential	88,374	101,014	12,640	14.3%
Commercial/Industrial	26,428	27,854	1,426	5.4%
Subtotal Dual Fuel	**114,802**	**128,868**	**14,066**	**12.3%**
Unbilled	2,399			
TOTAL	**8,997,352**	**9,468,545**	**471,193**	**5.2%**

[17] Minnesota Power also overestimated retail sales for the 2017 test year, but only by approximately two percent.

Q. Does Minnesota Power rely on historical sales trend information in developing its customer sales forecast?

A. While historical trends of LP customer sales are taken into account, they are only one of many sources of information that the Company uses to develop a sales forecast that is as accurate and realistic as possible. Below, I describe the various sources of information gathered by Minnesota Power and how we use them in creating our LP customer sales forecast.

C. Large Power Customer Data Gathering Process

Q. Please describe the Company's data gathering process for its LP customers.

A. Minnesota Power gathers customer, industry, and economic information from a variety of sources. As described earlier in this testimony, approximately ten percent of my Customer Experience team is dedicated to serving the LP customer class, which represents approximately 63 percent of the Company's retail kWh energy sales.[18] The Strategic Accounts team and some members of the Customer Business Analytics team continually gather information about our LP customers and their industries, as well as global, state, and local economic outlooks.

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 in our LP customers' trade organizations, providing yet another source of LP customer data and information. By way of example, I have served on the Board of Directors of Minnesota Forest Industries, currently serve on the board for the Iron Mining Association of Minnesota,

[18] The remaining 90 percent of my Customer Experience team is focused on residential, commercial, LLP programs, billing, and operations for the remaining approximately 37 percent of the Company's kWh energy sales.

and engage as an associate member with the American Iron and Steel Institute. David Chura, Manager of Strategic Accounts, serves on the boards of Mining Minnesota and Jobs for Minnesotans. In addition, several others from Minnesota Power actively participate and contribute time, talent, and effort in sub-committees of these organizations. Our interactions in these organizations enable us to identify issues, trends, opportunities, and challenges that the industries face and to further our understanding of their energy needs.

Q. To what extent do LP customers develop their own energy use forecasts?

A. In our experience, LP customers look to Minnesota Power to provide annual energy use forecasts based on the facility production levels they provide my Strategic Accounts team. 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 and decisions 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 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. However, a purely econometric approach does not incorporate information regarding specific customers, such as a customer's contracts for seaborne exports, 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.

1. Large Power Customer 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 use 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, domestic steel demand, raw steel capacity utilization rates, blast furnace versus EAF 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, CRU,

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 from Fastmarkets RISI.

Q. Do you also use 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. I discuss the historic trends for the forest products and metals and mining industries in Section IV.D.

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 my testimony below, as well as in the Direct Testimony of Mr. Levine, we describe how these two views are melded into a single sales forecast.

2. Large Power Customer ESAs and Data

Q. Please describe, in general, how LP ESAs 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 LP 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's 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. What other benefits do LP ESAs provide to LP and non-LP customers?

A. 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.

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 LP customers provide to all of Minnesota Power's customers is their long-term commitment to purchase a minimum of 172 MW of demand each month or 28 percent of their full production electric needs. The Minimum Service Requirement set in each ESA provides a minimum level of contribution, regardless of whether or not a customer is operating. These ESAs, which can be ten or more years in length and are a minimum of four-year term, currently provide approximately $52 million in guaranteed long-term annual 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 LP ESAs. 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 LP customers provide assurance of affordable residential and commercial electric rates for the foreseeable future. Clearly, if the LP customers were not a prevalent part of Minnesota Power's customer profile, with their high utilization factors, customers in other rate classes would pay higher rates as fixed costs would be spread 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 retail 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 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, and industry group data. Minnesota Power also gathers and analyzes public economic data from Bureau of Economic Analysis and the Federal Reserve, for example, as well as any 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 2022 test year in this case?

A. Yes.

Q. What data did the Company have in hand for the 2022 test year as it was developing this rate case filing?

A. We used historic trends, industry data, and other customer information, as described above, to develop our test year forecast. We did not receive 2022 nominations from LP customers in time for preparation of the 2022 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 from its four-month nominating customers on or before December 1, 2021, for the first four months of the 2022 test year. Nominations for the remaining two, four-month nominating periods of the test year are received on or before March 1, 2022 and August 1, 2022, respectively.

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, which was reflected in the test year as a full year of sales. Conversely, Blandin announced the closure of Paper Machine No. 5 in October of 2017, which occurred later in the process and was not included in the 2017 test year. As a further example, after the Company proposed to resolve its 2019 rate case, both Keetac and Verso submitted nominations indicating their intentions to remain idled indefinitely. While Keetac restarted in December 2020, the Verso Duluth Mill was permanently closed in January 2021. Although the Duluth Mill was ultimately sold to a new owner in May 2021, it remains idled while the new owner converts the mill to a new use. Once converted, the mill's annual energy requirement is expected to be substantially lower than the Verso operation.

Due to the significant impact that any of the LP customers can have on Minnesota Power's overall energy sales, it is important to take these changes into account in a test year. Changes in operation of one or two large industrial customers have the capability to impact 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. The Company and parties can only make updates that are known during the course of the proceeding, and even then, the long-term ramifications of a change in the status of a customer or plant changes cannot always be discerned before the proceeding ends. While Minnesota Power is able to choose when to file rate cases, it does not have control over the timing of its customers' business decisions, despite the significant consequences for the utility.

Q. Is there a more effective way address the issue of LP volatility in company revenue and customer rates?

A. Yes. As I describe in Section V of this testimony, the Company is proposing a LP customer sales true up mechanism to address these fluctuations in a manner that balances revenue requirements for the Company and rates for all customers.

D. Large Power 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 two principal corporate owners: United States Steel Corporation ("U.S. Steel") and Cleveland-Cliffs. Minnesota Power also provides electric service to PolyMet, a non-ferrous mining and processing operation that has completed its environmental review and obtained necessary permits (subject to ongoing litigation) to construct and operate the mine.

Q. What does the global and regional economic data indicate about the iron mining industry for 2021 and beyond?

A. Iron ore, particularly in the form of iron ore pellets, has been in temporary short supply on a global basis, primarily as result of capacity shutdowns in Brazil and increased pellet usage abroad to curb emissions.[19]

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 Chief Executive Officer Lourenco Goncalves has highlighted the high levels of pollutants emitted in China

[19] Diana Kinch, *Higher iron ore pellet premiums needed to ensure seaborne availability: consultant*, S&P GLOBAL (Apr. 21, 2021), https://www.spglobal.com/platts/en/market-insights/latest-news/metals/042121-higher-iron-ore-pellet-premiums-needed-to-ensure-seaborne-availability-consultant.

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.[20] 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.

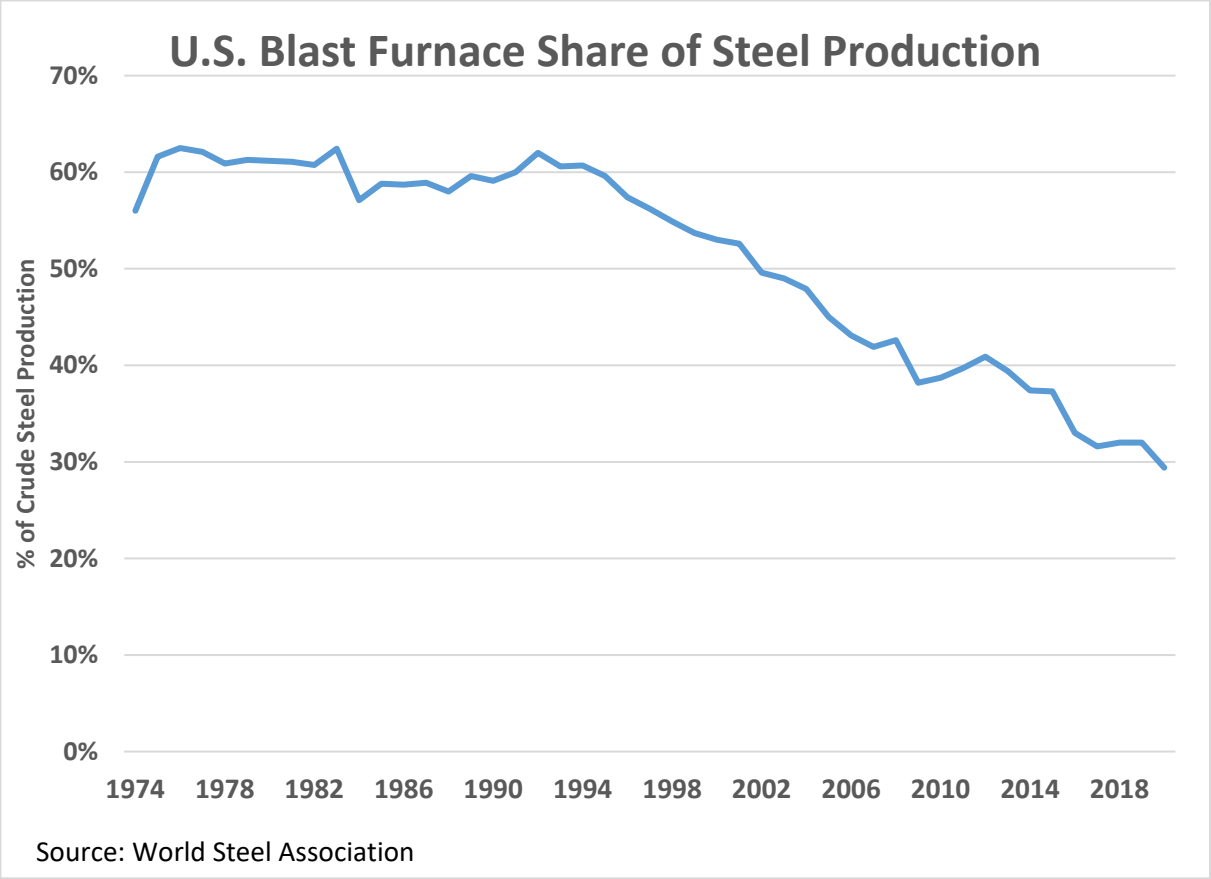
However, policymakers are discussing the modification of the Section 232 actions as part of broader discussion with trade partners. While it is difficult to predict the outcome of governmental action and intervention in trade policies, any change can have significant impacts on demand for the domestic steel industry, which typically correlates with Minnesota Power's taconite customer energy sales.

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. Figure 17 below shows the trend in domestic steel production is increasing towards EAF production, which uses fewer iron ore pellets than traditional blast furnace production. Company Witness Mr. Levine also explains this trend in more detail.

[20] https://www.steel.org/2018/11/new-study-shows-lower-ghg-na-steel-vs-china-construction/.

Figure 17. United States Blast Furnace Share of Steel Production



Source: World Steel Association

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 base of blast furnace production.

This trend toward EAF production is expected to continue in 2022 and beyond as steelmakers like Nucor and Steel Dynamics have announced several new capacity additions and steel projects this year. Some of these projects are directly targeting the

markets of integrated steelmakers, including automotive.[21] Even U.S. Steel, a steelmaker whose entire U.S. footprint was traditionally comprised of integrated steelmaking with blast furnaces, has completed an EAF project at its Fairfield, Alabama steelmaking facility.

Additionally, in 2021, U.S. Steel closed on its acquisition of 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."[22] U.S. Steel also announced the site selection process for a new three-million ton EAF to be constructed in the United States.[23] These investments by U.S. Steel highlight how the domestic steel market continues to move towards EAF steel production, even by long-time proponents of traditional integrated steelmakers. Cleveland-Cliffs CEO Lourenco Goncalves has also acknowledged this trend and that the company will be shifting towards EAFs in the future, especially if automotive market share is lost.[24] Cleveland-Cliffs also completed the construction of its Hot-Briquette Iron ("HBI") facility in Toledo, Ohio. HBI is a raw material input utilized to supplement scrap steel in the EAF steelmaking process. Canadian steelmaker, Algoma Steel, an iron ore pellet customer of U.S. Steel,[25] announced plans to begin transitioning towards EAF steelmaking and likely reducing their iron ore pellet requirements beginning in 2024.[26]

---

[21] https://www.nucor.com/news-release/#item=18306..

[22] John O. Ambler, *U.S. Steel Corp. Completes Big River Steel Acquisition*, U.S. STEEL (last visited Oct. 28, 2021), https://www.ussteel.com/media/newsroom/-/blogs/united-states-steel-corporation-completes-big-river-steel-acquisition-1?_com_liferay_blogs_web_portlet_BlogsPortlet_redirect=https%3A%2F%2Fwww.ussteel.com%3A443%2Fmedia%2Fnewsroom%3Fp_p_id%3Dcom_liferay_blogs_web_portlet_BlogsPortlet%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26_com_liferay_blogs_web_portlet_BlogsPortlet_cur%3D6%26_com_liferay_blogs_web_portlet_BlogsPortlet_delta%3D5%26p_r_p_resetCur%3Dfalse.

[23] John O. Ambler, *U.S. Steel Corp. Announces a Site Selection Process to Expand its Mini Mill Steelmaking Advantage*, U.S. STEEL (Sept. 16, 2021), https://investors.ussteel.com/news/news-details/2021/United-States-Steel-Corporation-Announces-a-Site-Selection-Process-to-Expand-its-Mini-Mill-Steelmaking-Advantage/default.aspx.

[24] Rye Druzin, *Cliffs will move toward EAFs in next decade: Goncalves*, ARGUS (Aug. 24, 2021), https://www.argusmedia.com/en/news/2247248-cliffs-will-move-toward-eafs-in-next-decade-goncalves.

[25] John O. Ambler, *U. S. Steel Signs Long-Term Iron Ore Sales Agreement With Algoma Steel*, GLOBENEWSWIRE (May 18, 2020), https://www.globenewswire.com/news-release/2020/05/18/2034948/0/en/U-S-Steel-Signs-Long-Term-Iron-Ore-Sales-Agreement-With-Algoma-Steel.html.

[26] Rye Druzin, *lgoma gets Canada funds for EAF switch*, ARGUS (July 7, 2021), https://www.argusmedia.com/en/news/2232137-algoma-gets-canada-funds-for-eaf-switch.

Q. Are there any other notable trends among Minnesota Power's mining customers?

A. Yes. In addition to the continued transition towards EAF steelmaking, significant steel industry consolidation ocurred in 2020. Along with the aforementioned U.S. Steel acquisition of Big River Steel, Cleveland-Cliffs acquired both A.K. Steel and its largest customer, ArcelorMittal U.S.A., to transform from an iron ore miner to the largest North American producer of flat-rolled steel.[27] The ArcelorMittal U.S.A. acquisition included the Minorca Mine ("Minorca") and ArcelorMittal U.S.A.'s 62 percent stake in Hibbing Taconite. Following the acquisition, Cleveland-Cliffs announced that the former AK Steel Ashland Works and ArcelorMittal Indiana Harbor #3 blast furnaces will likely be demolished, despite the record steel prices realized as the U.S. economy recovered from the COVID-19 pandemic.[28]

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

A. As of late October 2021, 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 Direct Reduction Grade ("DR-Grade") pellet production at Northshore mining and downstream HBI production in Toledo, Ohio. As discussed earlier in this testimony, U.S. Steel has indefinitely idled its Great Lakes Works blast furnaces and, additionally, one furnace remains idled at its Granite City Works. Also mentioned earlier in this testimony, Cleveland-Cliffs has plans to demolish two of its blast furnaces. Accordingly, some of Minnesota Power's mining customers are selling some of their iron pellets into seaborne markets in greater quantity than before to fill their excess pellet making capacity, taking advantage of recent high global iron ore prices and pellet premiums to overcome the added transportation costs from the Great Lakes region to justify the sales into international markets.

[27] https://www.clevelandcliffs.com/news/news-releases/detail/8/cleveland-cliffs-inc-completes-acquisition-of.

[28] Rye Druzin, *Cliffs shelves plans to sell merchant pig iron*, ARGUS (June 30, 2021), https://www.argusmedia.com/en/news/2229968-cliffs-shelves-plans-to-sell-merchant-pig-iron.

Q. To what extent do you expect these trends to continue into 2022?

A. We expect these trends and factors to continue in 2022 as domestic steelmakers continue to transition towards EAF steelmaking even further. 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 highly volatile global iron ore markets. Additionally, Cleveland-Cliffs recently stated its plans to no longer sell pellets to third parties in the coming years, resulting in Northshore mine becoming a swing operation.[29] This provides a further consideration for the increased risk profile of Minnesota Power compared to the average electric utility and the need for the sales true-up mechanism the Company is proposing in this rate case, which I discuss in more detail in Section V.

Q. What does the global and regional economic data indicate about steel and other precious metal mining industry for 2022 and beyond?

A. The clean energy economy, through expansion of wind and solar generation, battery storage, and EVs, 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."[30] 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.

[29] Motley Fool Transcribing, *Cleveland-Cliffs (CLF) Q3 2021 Earnings Call Transcript*, MOTLEY FOOL (Sept. 30, 2021), https://www.fool.com/earnings/call-transcripts/2021/10/22/cleveland-cliffs-clf-q3-2021-earnings-call-transcr/.

[30] Zubin Bamji, *Clean Energy Transition Will Increase Demand for Minerals, says new World Bank report*, THE WORLD BANK (July 18, 2017), https://www.worldbank.org/en/news/press-release/2017/07/18/clean-energy-transition-will-increase-demand-for-minerals-says-new-world-bank-report.

Q. What information specific to the Company's mining customers is used in forecasting sales?

A. 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. In addition to the acquisitions and idling of facilities undertaken by U.S. Steel that I described earlier in my testimony, Keetac resumed operations in February 2017 after a 22-month idling. Keetac ran at full production until April 16, 2020, when U.S. Steel announced it would idle Keetac and lay off 375 employees. On November 5, 2020, U.S. Steel announced that they would be restarting Keetac in mid-December of 2020.[31] Keetac continues to operate at full production at the time of this writing.

Q. What sources of information have been relevant to Minnesota Power's determination of a reasonable 2022 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.

[31] MP Exhibit ___ (Frederickson), Direct Schedule 1 and MP Exhibit ___ (Frederickson), Direct Schedule 2.

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 and historical average production as discussed earlier.

b. Cleveland-Cliffs

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

A. Cleveland-Cliffs wholly owns Northshore Mining Company, Minorca, and United Taconite LLC. Cleveland-Cliffs also owns 85.3 percent of Hibbing Taconite Company. These facilities produce iron ore pellets for use in Cleveland-Cliffs owned blast furnaces and for third-party sales. Northshore Mining Company also began producing DR-Grade iron ore pellets for further processing at its HBI facility in Toledo, Ohio. Cleveland-Cliffs' acquisition of ArcelorMittal USA on December 9, 2020,[32] included Minorca and Arcelor Mittal's share of Hibbing Taconite Company.

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

A. Yes. Cleveland-Cliffs has recently completed a project at its Northshore Mining facility to allow it to produce a different grade of iron pellets for internal use to increase blast furnace efficiency and lower carbon emissions and 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; however, after acquiring ArcelorMittal USA, management of Hibbing Taconite is now back under Cleveland-Cliffs. Hibbing

[32] https://www.clevelandcliffs.com/news/news-releases/detail/8/cleveland-cliffs-inc-completes-acquisition-of.

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.[33]

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

A. The Company has an ESA with United Taconite LLC and with Northshore Mining's Babbitt mine operations. As of November 1, 2021, 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. Further, the Company has LP ESAs with Minorca and Hibbing Taconite Company, containing terms and conditions consistent with other LP taconite customers. As of November 1, 2021, the earliest termination date for the ESA with Minorca is December 31, 2025 and November 30, 2025, for the ESA with Hibbing Taconite.

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

A. Minnesota Power is forecasting greater sales 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 in 2019. Outside of this customer-specific circumstance, our assumptions are consistent with the mining industry and economic trends and long-term historical average production levels.

c. Mesabi Nugget

Q. How long has the Mesabi Nugget mine been idled?

A. Mesabi Nugget has been idled since February 2015.

[33] Dee DePass, *HibTac mine on Iron Range expected to run out of ore in 5 years*, STAR TRIBUNE (Oct. 6, 2019), http://www.startribune.com/hibtac-mine-on-iron-range-running-out-of-time/562190732/.

Q. Have there been any notable changes to the Electric Service Agreement with Mesabi Nugget since the last rate case?

A. Yes, an Amended and Restated Electric Service Agreement between Mesabi Nugget Delaware, LLC and Mesabi Mining, LLC, and Minnesota Power is before the Commission (Docket No. E-015/M-21-355). If the new Amendment is approved by the Commission, it will supersede the 2014 Agreement effective January 1, 2022.

d. PolyMet

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

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

Q. Please describe PolyMet's current activities in Minnesota Power's service territory and any notable changes to PolyMet's business since the Company's last rate case.

A. The PolyMet NorthMet project is located near the community of Hoyt Lakes, Minnesota. When operational, this non-ferrous mining operation will produce nickel, palladium, and cobalt. While all permits necessary to begin construction have been received, there continue to be legal challenges and opposition to these permits. Of the more than 20 permits issued to build and operate the mine, four permits remain on hold pending active legal or regulatory action. That ongoing litigation is expected to continue into next year. For example, on July 19, 2021, the Minnesota Court of Appeals remanded PolyMet's air permit to the Minnesota Pollution Control Agency for additional explanation supporting its permitting decision.[34] Additionally, the Minnesota Department of Natural Resources ("Minnesota DNR") initiated a contested case hearing on PolyMet's NorthMet mining project, as directed by the Minnesota Supreme Court, on September 24, 2021. Following resolution of these outstanding legal and regulatory

[34] Bruce Richardson, *PolyMet Events and News*, POLYMET (July 19, 2021), https://polymetmining.com/investors/news/polymet-statement-on-todays-minnesota-court-of-appeals-decision/.

challenges and securing final project financing, construction is expected to take 24-30 months, which is well outside the 2022 test year.[35]

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.[36] Further, PolyMet representatives have been quoted in publications including the Minneapolis Star Tribune 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.

Q. What are the key assumptions included in forecasts of Minnesota Power sales to PolyMet for the 2022 test year?

A. The 2022 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 ten-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 or legal challenges.

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

[35] Jennifer Bjorhus, *Minn. Court of Appeals keeps PolyMet's DNR permits on hold*, STAR TRIBUNE (Oct. 24, 2019), http://www.startribune.com/court-of-appeals-keeps-polymet-s-dnr-permits-on-hold/563791642/.
[36] https://polymetmining.com/investors/news/

territory in the spring of 2018. It is our understanding that the bankruptcy trustee has sold the aforementioned assets, that Plant 2 was dismantled, and that a potential purchaser, Prairie River Minerals, has been awarded right to purchase the Plant 4 and Jesse Mine Loadout assets, but Minnesota Power has not received any request for service connection or to begin contract negotiations with them.[37]

Q. What level of sales are assumed for the former Magnetation facilities in the Company's sales forecast for 2022?

A. All of the services have been disconnected and no sales to the customer are reflected in the 2022 sales budget, nor expected in 2022 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. The Minnesota DNR announced in June that they are beginning efforts to revoke Mesabi Metallics' state mineral leases, and in response, Mesabi Metallics has filed lawsuit against the Minnesota DNR. There is no clear timetable for operations.

Q. What level of sales is assumed for Mesabi Metallics in the Company's sales forecast for 2022?

A. Minnesota Power has not assumed any operations on the former Essar iron ore mine during the 2022 test year. As a result, the Company expects 2022 sales to the Nashwauk

[37] MP Exhibit ___ (Frederickson), Direct Schedule 3.

Public Utilities Commission,[38] which is the retail service provider to Mesabi Metallics and other city customers, to be similar to recent sales levels.

2. Forest Products

Q. Who are Minnesota Power's main forest products customers?

A. Minnesota Power's LP paper customers operate three pulp and paper mills producing a variety of graphic paper grades and pulps to serve North American and global markets. In addition, the Company has two prospective customers; one tissue paper mill and one oriented strand board mill are under development. The three pulp and paper mills are: (1) Blandin Paper in Grand Rapids, Minnesota; (2) Boise/Packaging Corporation of America in International Falls, Minnesota; (3) Sappi in Cloquet, Minnesota. Minnesota Power serves approximately 40 percent of the full production energy demand for these pulp and paper facilities, with customers' on-site generation providing the remainder. The two prospective customers include: (1) ST Paper in Duluth, Minnesota and (2) Huber Engineered Woods in Cohasset, Minnesota.

Q. What does the data collected and reviewed by the Company indicate about the future of the pulp and paper industry for 2022 and beyond?

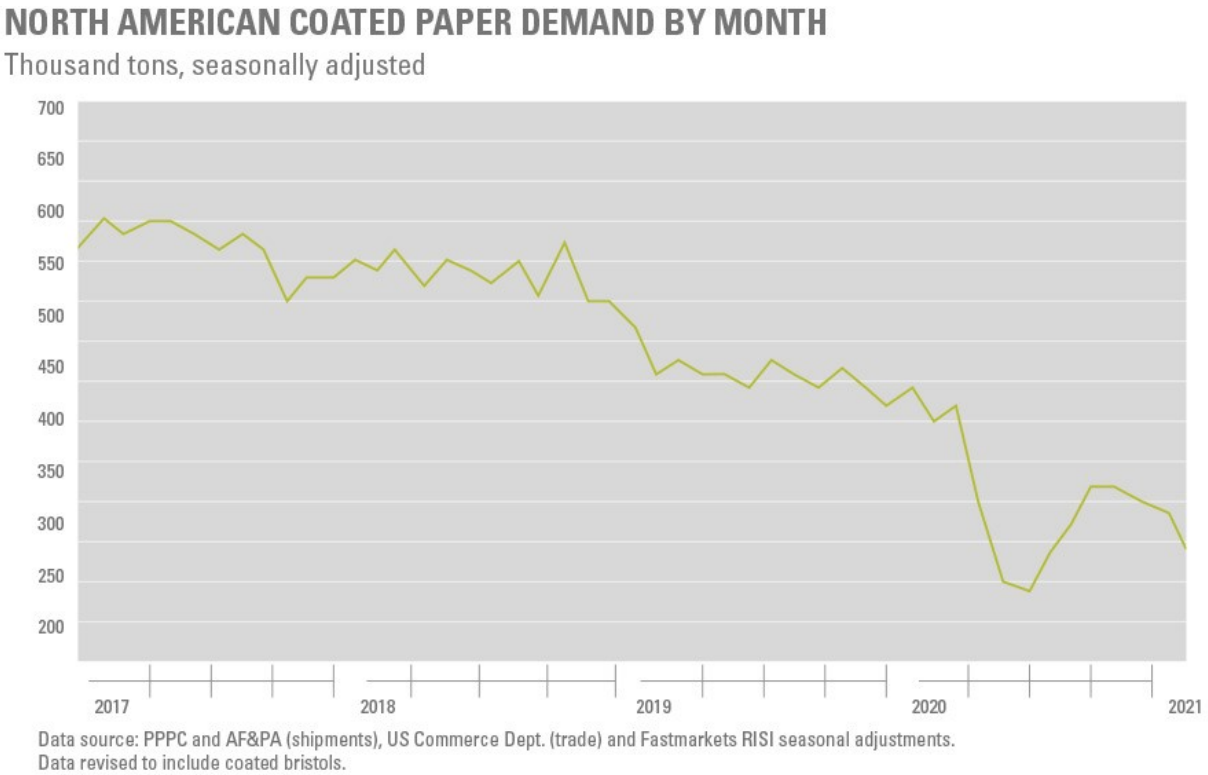
A. The Company reviews reports and data from PaperAge, Quad Paper Services, AF&PA, Pulp and Paper Products Council, the Minnesota DNR's monthly Wood Markets Update, and up until 2020 subscribed to Fastmarkets RISI. Metrics considered include mill operating and capacity rates, demand indicators such as 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, tissue products, and certain types of wood pulp have seen stable to growing demand. More than half the market demand for graphic paper has evaporated since 2007 and is not expected to return given electronic substitution and changing consumer preferences. In order to maintain paper price stability, graphic paper production capacity needs to come offline

[38] Minnesota Power sells energy to the Nashwauk Public Utilities Commission as a resale municipal customer for its city load.

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. The COVID-19 Recession hit the industry hard and pushed many mills to close, causing paper markets to tighten due to reduced capacity and decreased demand. Mill costs have risen significantly (e.g., freight, fuel, energy, and pulp) and are predicted to stay elevated, forcing producers to increase prices across all paper grades and leaving the question of how paper consumers will react in the future.

According to Fastmarkets RISI, total North America Printing & Writing demand declined 12.9 percent in 2019 and 21.8 percent in 2020, respectively. Refer to Figure 18 below to see the recent history of coated paper demand. Demand is expected to see an uptick in 2021 for all graphic paper grades except coated groundwood, which is the grade produced at the UPM Blandin Mill. The 2021 uptick in graphic paper demand is a result of economies reopening after COVID-19 related lockdowns in 2020 and is expected to be short lived as declines in demand across all grades are expected to return in 2022 and 2023. Demand headwinds include increased postal rates and changing consumer preferences. In August 2021, the US Postal Service increased rates for first class mail 5.5 percent for one-ounce letters, 11 percent for postcards, and 16 percent for single-piece flats. 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. The response to decreased demand is capacity reductions through conversions or mill closures.

Figure 18. Coated Paper Demand by Month



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 comparatively 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 closed to balance supply with declining demand.

After 2012, with many of the higher cost mills already closed, Minnesota Power's customers' competitive position narrowed as rising energy costs relative to their competitors 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 **[TRADE SECRET DATA BEGINS** [redacted] **TRADE SECRET DATA ENDS]**. In 2017, Blandin Paper Company announced the permanent closure of Paper Machine No. 5 and the corresponding layoff of 150 employees in Grand Rapids. Due to the drastic decline in demand for the supercalendared ("SC") paper grade the mill produced, Verso indefinitely idled the Duluth Mill at the end of June 2020 and in January 2021 announced it will not reopen the mill, resulting in a loss of approximately **[TRADE SECRET DATA BEGINS** [redacted] **TRADE SECRET DATA ENDS]** of electric load.

Q. To what extent do you expect these trends to continue into 2022?

A. We expect these trends to continue in 2022 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 affects 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 what were Minnesota Power's two largest purchased energy paper customers — Blandin and Verso. With the closure of the Verso Duluth Mill, uncoated groundwood is no longer produced in Minnesota. According to AF&PA, the permanent shutdown of Paper Machine No. 5 at Blandin in 2017 leaves one remaining paper machine producing coated groundwood paper at Blandin.

Q. What information specific to the Company's forest products customers is used in forecasting sales?

A. Below, I walk through each LP forest products customer in turn.

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. As I previously stated, on October 24, 2017, corporate parent UPM announced the permanent closure of Blandin Paper Company's Paper Machine No. 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 of approximately **[TRADE SECRET DATA BEGINS** [redacted] **TRADE SECRET DATA ENDS]**. It should be noted that this change occurred during the 2017 test year of the 2016 Rate Case; however, no change to the 2017 test year sales forecast was allowed. Minnesota Power worked with Blandin to negotiate an Amended and Restated ESA, which supported the reduced operation, for which approval was received from the Commission in June 2019 (Docket E015/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 customers, 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 2022 test year?

A. Blandin's minimum Incremental Production Service Threshold ("IPST") was used to forecast a monthly nomination level for 2022.

Q. What sources of information have been relevant to Minnesota Power's determination of a reasonable 2022 forecast of sales to Blandin?

A. To forecast Blandin's 2022 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 2022 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 forest products business described earlier in my testimony.

b. Verso

Q. Please describe Verso's operations in Minnesota Power's service territory.

A. Verso Duluth was an uncoated groundwood mill with the capacity to produce 270,000 tons of paper annually. The mill made SC paper used for magazines, catalogs, and retail

inserts. However, Verso provided Minnesota Power notice on January 29, 2021 terminating its ESA for the Duluth Mill.[39]

Q. Please provide a summary of the Company's ESA terms with Verso.

A. The 2018 amended and restated ESA requires Verso to purchase its electric service requirements for its Duluth Mills from Minnesota Power through at least December 31, 2024, with a provision stating that if they should decide to permanently shut down the mill, Verso must submit a notice of cancellation of their ESA and they are obligated to pay their minimum firm demand of **[TRADE SECRET DATA BEGINS** [redacted] **TRADE SECRET DATA ENDS]** for a period of two years from their notice of cancellation of their ESA, which occurred on January 29, 2021. However, Verso has not made payments to Minnesota Power since May 13, 2021.

On August 2, 2021, Minnesota Power filed a Petition (E015/M-21-593) seeking an order from the Commission interpreting the ESA as amended between Minnesota Power and Verso and finding that Verso has tariff obligations and owes minimum "take or pay" payments during the term of the ESA. On October 14, 2021, the MPUC approved a motion that determined that the Commission has jurisdiction to interpret the tariffed section of the ESA and that Verso is required to continue full minimum firm demand payments during the term of the ESA. However, as of this writing, Minnesota Power has not received payments from Verso after it stopped payment following the sale of the mill on May 13, 2021.

c. ST Paper

Q. Please describe ST Paper's proposed operations in Minnesota Power's service territory.

A. ST Paper purchased the Duluth Mill from Verso on May 13, 2021 and intends to convert the mill to produce tissue using recycled fiber instead of the SC paper the facility

[39] *In the Matter of Minn. Power's Petition for Interpretation of Terms and Conditions of Serv. to Verso Minn. Wis. LLC*, Docket No. E015/M-21-593, PETITION (Aug. 2, 2021).

produced from groundwood pulp when owned by Verso.[40] In July 2021, ANDRITZ announced they had received an order from ST Paper to supply a new tissue machine for the Duluth site.[41] Time is necessary to install and commission the new machine and the Company has indicated full production is expected in 2023. As mentioned earlier in my testimony, Minnesota Power is negotiating a new ESA with ST Paper, which once executed, will be filed with the Commission for approval.

d. Huber Engineered Wood Products

Q. Please describe Huber's proposed operations in Minnesota Power's service territory.

A. The planned facility will be located on more than 400 acres in Cohasset, Minnesota. The site is a greenfield location without any preexisting energy infrastructure and will require the construction of a new oriented strand board ("OSB") mill featuring some of the most advanced processes and technologies available for sustainable, manufacturing operations. The mill will be the sixth OSB plant operated by Huber Engineered Woods. Start-up and full production at the facility is expected in 2024.[42]

E. 2022 Large Power Forecast

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

A. As discussed further by Company witness Mr. Levine, Minnesota Power's 2022 test year forecast for its LP customers is near typical levels of production for its Mining and Metal and remaining Paper & Pulp customer footprint. Mining and Metals sales assume a 34 MT level of production. This level of annual production is roughly 85 percent of iron range facilities' dry taxable ton capacity of 39.7 MT and is 3 to 4 MT lower than

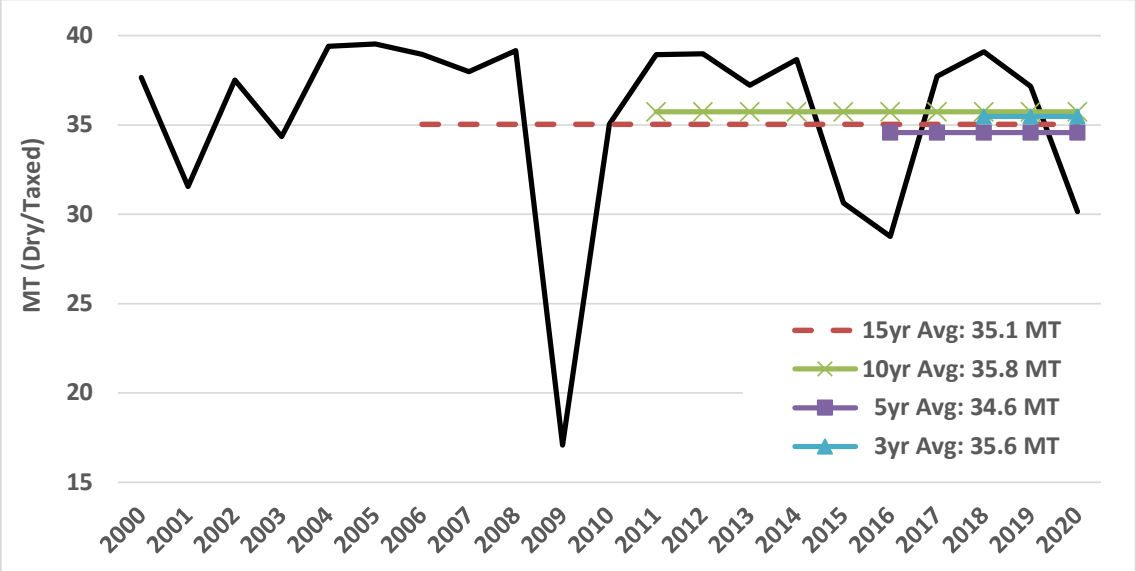
[40] MP Exhibit ___ (Frederickson), Direct Schedule 4; https://www.dailypress.net/news/local-news/2021/05/verso-completes-sale-of-its-mill-in-duluth/#:~:text=MIAMISBURG%2C%20Ohio%20%E2%80%94%20Verso%20Corp.,Randy%20Nebel%2C%20president%20and%20CEO.

[41] Andritz Group, *ANDRITZ to supply high-speed tissue mach. to ST Paper in Duluth, Minn., USA*, ANDRITZ (July 29, 2021), https://www.andritz.com/newsroom-en/pulp-paper/2021-07-29-st-paper-group.

[42] MinnPost Staff, *N.C.-based Huber Eng'r Woods plans $440 million mfg. plant near Cohasset*, MINNPOST (June 21, 2021), https://www.minnpost.com/glean/2021/06/north-carolina-based-huber-engineered-woods-plans-440-million-manufacturing-plant-near-cohasset/.

recent "full" production years (2017, 2018, and 2019), but also 4 to 5 MT higher than recent "downturn" production years (2015, 2016, and 2020). However, this level of production is reflective of the continuously decreasing domestic demand for taconite pellets and the increased reliance on sales into the more volatile seaborne markets. This level of production is also generally in alignment with the long-term average production level for taconite regardless of what period in time is used as an average, with the lowest average being the trailing five-year production average level of 34.6 MT, as shown in Figure 19 below. Forecasted Paper & Pulp sales assume energy requirements at all Paper mills remain in line with current levels experienced after the permanent closure of Blandin Paper Machine No. 5 and Verso's Duluth Mill.

Figure 19. Iron Range Taconite Production Annual and Average



Q. Are the conclusions in Minnesota Power's LP Forecast reasonable?

A. Yes. As detailed by Company witness Mr. Levine, Minnesota Power's LP 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. The 2022 test year sales forecast sets a reasonable level of both energy sales and customer production levels. This is in contrast to the sales levels set in the 2017 test year, which was unreasonably high and was representative of an implausibly high level of taconite production.

V. LARGE POWER SALES TRUE-UP MECHANISM

Q. Does Minnesota Power have a proposal to address and mitigate the financial impacts related to operational volatility of LP customers between rate cases?

A. Yes. The Company is proposing a sales true-up mechanism as a simple and balanced method to align risks and benefits of LP volatility that occur between rate cases with all customer classes.

Q. Please explain at a high-level how the sales true-up proposal would work.

A. Following the conclusion of the current rate case, Minnesota Power would track base rate revenues annually for the entire LP class compared to a baseline level established for the 2022 test year and add to this variance any margins the Company received from sales due to lost LP load. This information would be submitted in annual compliance filings with the Commission.

If the base rate revenue in future years is at least $10 million higher or lower than the 2022 test year baseline level, including any sales due to lost LP load, the Company would request Commission approval to implement (in the first year) or adjust (in subsequent years) a new tariff which would be a rider on all customer bills to credit or charge customers for the amount of the variance compared to the 2022 baseline. The rider amount would apply as an equal percentage to all customer classes. The rider amount would be calculated to be in effect for one year (12 monthly bills) and would then revert to zero once the sales true-up balance reaches zero, unless and until another rider request is approved. If the comparable true-up variance is less than $10 million higher or lower compared to the 2022 baseline, the rider would revert to or remain at zero. The true-up mechanism would continue and be reconsidered in the Company's next general rate case.

Q. What are the components of LP base rate revenues?

A. LP base rate revenues currently include three components: customer charge, demand charges, and firm energy. If the Commission approves any additional base rate

components in this rate case, such as firm demand transmission, this additional component would also be included in LP base rate revenues. These revenues exclude fuel and purchased energy costs, which are already incorporated in Minnesota Power's fuel adjustment clause, and also exclude revenues related to other LP customer programs, such as demand response. The revenues related to these products are not included because they are not factored into base rates and including them would not result in an apples-to-apples comparison to the baseline revenues.

Q. How is the comparable true-up variance determined in the proposed true-up mechanism?

A. First, a variance is calculated comparing LP base rate revenues in the current period to the baseline LP revenue amount. Then, any margins from sales due to loss of customer load attributable to the LP class is added to this variance to determine the comparable true-up variance.

Q. Why does the sales true-up calculation add the margins from sales due to loss of LP load?

A. Sales margins due to loss of LP customer load are added because these are amounts the Company has already captured to help mitigate reductions in customer load between rate cases. These are sales margins that do not flow through the fuel adjustment clause. They need to be added to the sales true-up calculation to reduce the amount of under-recovery the Company experienced due to lost LP sales. Adding these margins ensures there is no double-counting of benefits associated with these margins.

Q. How would the Company determine the LP portion of margins on sales due to the loss of customer load?

A. Minnesota Power tracks margins on sales due to loss of customer load on a monthly basis. Because these types of sales are made in batches and are not directly attributable to a specific customer's load reduction, an allocator is necessary to determine which portion of the sales due to loss of customer load should be attributable to the LP class. The Company proposes to use an LP allocation factor on a monthly basis and apply it

to the total monthly margins on sales due to loss of customer load. The allocation factor would be calculated by taking total LP loss of load (this is the loss of load as compared to the baseline and recorded in MWs) divided by total retail and resale loss of customer load. Table 3 below shows how the LP portion of margins on sales due to loss of customer load would be calculated.

Table 3. Calculation of LP Margins Due to Loss of Sales

Calculation of Annual LP Margins Due to Loss of Sales	
a. Total Margins From Loss of Sales	Calculated monthly: includes total sales due to loss of load (wholesale and retail) less fuel and MISO costs (in dollars)
b. LP reduction in MWs	Monthly MW reduction, if any, for LP class compared to baseline (in MWs)
c. Retail and wholesale reduction in MWs	Monthly MW reduction, if any, for retail (which includes the LP class) and wholesale compared to baseline (in MWs)
d. LP portion of MW reduction	= b / c (in percent)
e. LP Margins from Loss Sales - month	= a * d (in dollars)
f. LP Margins from Loss Sales - annual	= sum of e (January through December)

Q. Can you provide an example of how the sales true-up mechanism would be calculated?

A. Yes. Table 4 below shows how LP base rate revenues would have compared to a baseline if the sales true-up mechanism had been approved prior to the Company's 2017 rate case. In this example, the actual LP base rate revenues were materially lower than the baseline in each year 2018-2020, but the $10 million threshold was only reached in 2020 (as shown in row E – Comparable True-up Variance). The year 2020 reflects the magnitude of lost revenues incurred when Keetac and Verso idled operations due to the COVID-19 global pandemic, which emphasizes the sudden effects of such declines on Minnesota Power as well as the lost sales that Minnesota Power does not recover in rates on a year-over-year basis.

Table 4. Example of Sales True-Up Mechanism

	Example of Sales True-Up Mechanism			
	If it had been approved prior to 2017 Rate Case implementation			
		2018	2019	2020
A	LP Base Rate Revenues 1/	$175,332,566	$229,688,325	$218,628,174
B	Baseline LP Revenues 2/	$177,989,008	$236,237,507	$246,472,856
C	Variance to Baseline LP Revenues (=A-B)	($2,656,443)	($6,549,182)	($27,844,682)
D	Plus LP Margins from Loss Sales	$800,163	$675,441	$355,458
E	Comparable True-up Variance	($1,856,280)	($5,873,741)	($27,489,224)
	Balance Over (Under) Recovered (=C+D)			
	Is the $10 million trigger reached?	no	no	yes
	1/ LP Base Rate Revenues = customer charge + firm demand + firm energy			
	2/ In the future the Baseline LP Revenues will reflect the amounts approved in the current rate case; adjustments were necessary in this example to adjust the baseline for implementation of base rate updates in the 2016 Rate Case (12/18) and the 2019 Rate Case Resolution (7/20)			

If the sales true-up mechanism is approved in this case, the new baseline would be the 2022 test year and the actuals would reflect future years following approval of the sales true-up mechanism. The sales true-up mechanism may be positive or negative on customer bills, depending on how the most recent year of revenues compares to the baseline amount.

Q. How would the sales true-up mechanism be billed or credited to customers?

A. Once the $10 million threshold has been triggered, the Company proposes to apply the amount of the comparable true-up variance (the amount over or under recovered) to base revenues for all customer classes from the projected year's budget (for the upcoming year) to calculate a new Rider for Large Power Sales True-up Adjustment. Applying the variance to base revenues from the projected year's budget would ensure that the true-up mechanism would be consistent with the rate design approved in the most recent

rate case and would utilize the most recent estimate of sales to help ensure the adjustment is zeroed out in 12 months. In the example above, the rider would be calculated by dividing the 2020 comparable true-up variance by base revenues from the 2021 budget.

The new rider would apply to customer bills similar to the Company's Tax Rider that was implemented following the Tax Cut and Jobs Act of 2017.[43] The Rider for Large Power Sales True-up Adjustment tariff sheet is included in Volume 3, Final Rate Tariff Sheets.

Q. Why did the Company choose a $10 million threshold to trigger the sales true-up rather than simply truing up all variances in net revenues each year?

A. The Company intends the proposed sales true-up mechanism to address major volatility in the LP customer class and is not intended to capture every swing in LP operations. The Company determined that a $10 million variance of baseline revenues is a significant amount to both investors and customers and is an amount that, without a true-up mechanism, could trigger a rate case. Having the ability to utilize a true-up mechanism for variances of $10 million or more could help Minnesota Power stay out of a future rate case. The mechanism will also allow customers to be expeditiously credited when LP customers increase operations or when new LP customers are added without waiting for a full general rate case to be completed.

Q. What does the Company propose regarding annual compliance filings?

A. Minnesota Power proposes to make compliance filings annually by March 1, reporting on the variance of net revenues for the previous year compared to the baseline and a proposal for updating the tariff. The updated tariff would need Commission approval before being implemented. If the current rate case is concluded and the true-up mechanism is approved before December, 2022, we would begin to track variances

[43] *In the Matter of a Comm'n Investigation into the Effects on Elec. and Nat. Gas Util. Rates and Serv. of the 2017 Fed. Tax Act*, Docket No. E,G-999/CI-17-895, COMPLIANCE FILING (Jan. 30, 2018).

starting January 2023 and would make the first annual compliance filing by March 1, 2024.

Q. When would the sales true-up mechanism end?

A. The mechanism would be reconsidered in Minnesota Power's next rate case. The Commission would determine then whether to continue or modify its use.

Q. How would the sales true-up mechanism help customers and shareholders of ALLETE?

A. The sales true-up mechanism will help align risks and benefits of LP volatility between rate cases. It will allow customers to benefit when LP operations increase beyond the baseline set in the test year and results in less risk of choosing a test year that is representative of future years. It will help the Company stay out of future rate cases that are triggered solely by LP operations. As discussed in the testimony of Company witness Mr. Cutshall, ALLETE's credit rating agencies and credit ratings would favor the mechanism, as it shares rewards and risks of LP volatility with all customers and more closely aligns Minnesota Power's risk profile with that of other utilities.

VI. WHOLESALE CUSTOMER OUTLOOK

Q. What is Minnesota Power's forecast for its required resale customers?

A. The Company's 2022 test year forecast for the required resale customer class, which includes sales to Superior Water, Light and Power ("SWLP") and Minnesota Power's municipal customers, is 1,418,539 MWh. The forecast accounts for several substantial changes, including: (1) the Husky Oil Refinery explosion and subsequent idling that affects sales to SWLP, (2) the termination of Xcel Energy's agreement with Laurentian Energy Authority and subsequent changes in Hibbing Public Utilities' and Virginia Public Utilities' generation, which has reduced purchases from Minnesota Power, and (3) the expiration of Public Utilities of Brainerd's contract with Minnesota Power on July 1, 2019. The Direct Testimony of Company witness Mr. Levine discusses the test year sales forecast for resale customers in detail, but I would like to address a few key aspects of the wholesale customer outlook.

Q. Please explain why Minnesota Power is no longer able to sell power to Brainerd Public Utilities.

A. As an independent municipal electric utility, Brainerd Public Utilities is not required to purchase energy from Minnesota Power, nor is Brainerd Public Utilities required to align with the State of Minnesota's Renewable Energy Standard.[44] As Minnesota Power has successfully met State energy policy goals to expand renewable generation and decarbonize its energy supply, the Company's total cost of power supply has risen while wholesale power markets, which do not include the renewable attributes, have decreased and remained low in recent years, as further described by Company witness Julie I. Pierce. The wholesale power markets are driven by the marginal production cost of power from the regions' utilities, and utilities are either incentivized or mandated to sell marginal or excess power supply into these markets to capture these marginal benefits for their retail customers. Brainerd Public Utilities chose to purchase its power supply through an out-of-state power marketing company at the marginal cost from the wholesale power markets, which has remained below the Company's total cost of power supply in recent years.

Q. Please explain why Minnesota Power entered into new contracts with 13 other municipal utilities.

A. The conditions that led to Minnesota Power's loss of service to Brainerd Public Utilities has a similar impact on Minnesota Power's ability to continue serving its remaining municipal wholesale customers. Like Brainerd, these customers are independent municipal electric utilities, which are required neither to purchase from Minnesota Power nor to align with the State of Minnesota's Renewable Energy Standard if they are served by a power marketing company. Minnesota Power received notification from these customers in January 2021 of intent to attempt to negotiate contract extensions with Minnesota Power, and to issue proposals for power supply to other providers should the Minnesota Power negotiations prove to be unsuccessful. Minnesota Power

[44] Minn. Stat. 216B.1691 (2020).

is finalizing new agreements with 13 municipal wholesale customers that result in reduced firm demand and firm energy sales to the FERC jurisdiction reflected in this rate case but that extend the terms of the agreements and secure these municipal utilities as customers through the end of this decade. Extending the terms of these municipal customers to maintain FERC Jurisdictional Sales has the same impact on our system as retaining LP customers, specifically the ability to spread fixed costs of the Minnesota Power system over a larger number of customers and quantity of kWh energy sales. As a result, it is more financially advantageous to Minnesota Power's other customers to keep the municipal wholesale customers on the system at the renegotiated rates for a longer term than it would be if the municipal customers had provided notice of termination and procured their energy at the marginal cost from the wholesale markets.

VII. REGIONAL ECONOMIC DEVELOPMENT

Q. How does Company support the economic development in the region?

A. The Company actively supports economic development in the region through partnerships with public and private sector entities to champion technological/research and development advances that one day may help transform the resource-based industries and, in doing so, enables them to expand their markets beyond the paper and integrated steel industries into which they now sell almost all of their products. Membership in organizations like the Itasca Economic Development Corporation and Area Partnership for Economic Expansion are more traditional examples of regional development priorities for the Company.

Q. Can you describe Minnesota Power's economic development efforts in particular?

A. Yes. Minnesota Power has provided economic development support to its communities for nearly three decades and is a respected leader in advancing economic growth in the region. Minnesota Power's economic development focuses on cost-effectively investing in local and regional economic partnerships and initiatives that offer primary services in support of business startups, expansions and locations, and workforce attraction, leveraging substantial dollars from other public and private sector partners.

The Company's professional staff actively engages with its community partners in business expansion projects with several businesses currently evaluating the use of the Business Development Incentive Rider, approved in 2018 by the Commission. Initial estimates indicate these expansions will result in over 12 MW of new load. In partnership with the State of Minnesota, staff is supporting Shovel Ready Site Certification applications to encourage rural communities to have sites prepared for new development. Additionally, by collaborating with economic development partners and funding critical research, the region is implementing mass timber producer and talent recruitment initiatives.

The Company's economic development staff also prepares responses to requests for information ("RFIs") from prospective companies, site selection consultants, and the State of Minnesota. The nature of these RFIs requires substantial staff time and resources to respond to electric service information, site information, and infrastructure maps. In addition, through investments in and engaged leadership positions on local economic development authorities and boards, Minnesota Power's professional staff offers extensive knowledge and experience to advance projects to enrich the communities we serve. It is an essential function of the electric utility to support these requests.

Q. Has Minnesota Power's economic development targeted specific areas of investment?

A. Yes. Our economic development efforts seek to diversify the regional economy to buffer economic downturns in any one sector. Minnesota Power focuses its efforts supporting growth in manufacturing, value added minerals, nonferrous minerals, biofuel and biochemical production, technology services, and building products. As further noted below, Minnesota Power is also committed to encouraging reinvestment in its host communities, like the siting of an economic recovery solar project near the Laskin Energy Center in Hoyt Lakes, Minnesota and the development of the new manufacturing operation near the Boswell Energy Center in Cohasset, Minnesota. Current projects include a range of industry types, including aviation maintenance and

manufacturing, pet food production, metal fabrication, and biochemical production utilizing waste wood.

Q. Can you offer examples of economic development successes that benefit Minnesota Power customers and the region?

A. Yes. The most recent success is the attraction of a $439 million wood-based manufacturing project to Cohasset, Minnesota on land currently used as buffer for the Boswell Energy Center. The 800,000+ square foot project will create 158 direct jobs, 300-400 construction jobs, and significant tax base for the city, county, school district, and state. This success will help the community balance the future potential loss of tax revenue and jobs from the Boswell Energy Center when it ceases coal operations and enable Minnesota Power to grow electric load. The Company also recently aided in the effort to find a new buyer for the Duluth paper mill, which will be converted to manufacture tissue and preserve over 80 high-paying manufacturing jobs. Past successes continue to reap benefits to the region. Minnesota Power has successfully attracted a 1,000 plus employee aviation manufacturing company, a $20 million co-location data center, a large-scale pet food manufacturing facility, a rotomold plastics facility, and a biotechnology firm. These examples illustrate the proven benefits of Minnesota Power's economic development efforts and investments.

Q. What is the Company's proposal for recovery of economic development expenses?

A. Minnesota Power is seeking 100 percent recovery of its economic development expenses in the 2022 test year. While the Commission's decision in our past rate case and with other cases in which Minnesota utilities have sought recovery of economic development costs has been for 50 percent recovery, the Company believes the focus on Just Transition for the fossil generation host communities in our region warrants a more robust support for economic development.[45]

[45] *In the Matter of the Application of Minn. Power for Auth. to Increase Rates for Elec. Serv. in Minn.*, Docket No. E015/GR-09-1151, FINDINGS OF FACT, CONCLUSIONS, AND ORDER at 36 (Nov. 2, 2010) ("The Commission has often granted partial recovery of economic development costs, recognizing that these costs generally benefit shareholders as much as ratepayers. The Commission finds that here, too, a 50/50 sharing represents the most equitable distribution of these costs, since both Company and ratepayers benefit from them.").

Further, consistent with the Commission's determination in our last rate case, there are a number of customer benefits resulting from the Company's economic development investments. The purpose of Minnesota Power's economic development efforts is to work with key external partners to promote regional economic vitality and diversification through the attraction of new customers, as well as the expansion and retention of existing customers. When businesses are retained, expanded, or attracted to the service area, the economic activity benefits all customers through the creation of jobs, tax base, and spin-off benefits. Further, economic development contributes to creating a broader base of customers over which to spread fixed costs, which helps keep rates from rising higher than they otherwise might. This function is particularly important when a community has lost a major employer, including impacts from Minnesota Power's idling, re-missioning, or retiring of seven of its nine coal-fired generators and is faced with the negative economic impacts resulting from loss of wages, local purchases, and tax revenue.

Q. What do you conclude with respect to Minnesota Power's economic development efforts?

A. We believe Minnesota Power's economic development investments have been valuable to our region, will be increasingly important as the clean energy transition continues, and are appropriate for cost recovery in this proceeding. Consequently, Minnesota Power requests recovery of 100 percent of the Company's economic development costs through rates.

VIII. CONCLUSION

Q. Does this complete your testimony?

A. Yes.

US Steel will idle Keetac

375 employees to be laid off as demand for steel drops

BY JIMMY LOVRIEN JLOVRIEN@DULUTHNEWS.COM

U.S. Steel will idle its Keetac mine and processing facility in Keewatin and lay off 375 of its 423 employees as the COVID-19 pandemic continues to hurt demand for steel.

Keetac is the second Minnesota mine and plant to idle and lay off employees. On Monday, Cleveland Cliffs announced it would idle Northshore Mining in Silver Bay and Babbitt until at least mid- August, laying off 470 of its 570 employees.

U.S. Steel's decision follows "operational adjustments" it announced in March, U.S. Steel spokesperson Meghan Cox said in an email to the News Tribune on Thursday afternoon. Cox would not say if U.S. Steel's other Minnesota facility, Minntac in Mountain Iron, would also be affected.

"After further study of current demand, we must make additional adjustments to our raw materials production and indefinitely idle our Keetac facility to respond to the sudden and dramatic decline in business conditions resulting from the worldwide COVID-19 pandemic," Cox said.

Cox said 75 employees with fewer than three years of experience would be laid off first, but a total of 375 union and non-union employees will be laid off over the next month.

Dan Pierce, United Steelworkers Local 2660 president and a diesel mechanic at Keetac, told the News Tribune on Thursday that layoffs would begin Sunday for people with fewer than three years of experience, and the union sent letters to members Wednesday informing them of the layoffs.

As of Thursday morning, the union continued to negotiate additional layoffs with U.S. Steel.

"We're in the process of negotiating with the company for employees that have three years or more," Pierce said.

Over the last month, U.S. Steel has idled two of its blast furnaces at Gary Works plant in Indiana as demand for steel sunk.

Demand for steel has fallen not only from consumer markets, but also from companies such as General Motors, Ford and Fiat Chrysler voluntarily shuttering plants to help curb the spread of coronavirus.

All three halted production in March. Other factories requiring steel have also closed.

In the last month, capacity utilization of the country's blast furnaces has fallen from 80.5% to 56.1%, according to the Iron and Steel Institute.

Iron ore pellets produced on the Iron Range from mined taconite supply many of those blast furnaces.

Keetac produces about 6 million net tons of pellets each year for U.S. Steel's steelmaking plants.

Reached by phone Thursday, Keewatin Mayor William King summed up the situation for the town of about 1,000 residents: "It sucks."

King, a 40-year resident of Keewatin, said unlike past shutdowns, some of the businesses in town are already closed due to the pandemic.

He's not sure all three of Keewatin's restaurants and bars will survive if the order to halt dine-in service and the mine shutdown last a long time.

"They might have been able to get by a month, maybe two.

But if this continues, then when they open up, there's nobody to come," King said.

"Then it's gonna be really tough for their small businesses."

Ben DeNucci, an Itasca County Commissioner representing the district that includes Keewatin, said he's also worried about area small businesses.

"It's challenging to own and operate a small business.

So with a pandemic, it just makes things even harder," DeNucci said.

"We are very concerned about how this is all going to shake out, how businesses are going to get through it. We have a real level of concern in Itasca County about the current state and the future, and then when you add on a layoff of this nature, it just compounds that."

And, DeNucci said, mining jobs are the area's "good" jobs.

"Those are familysustaining, good-paying jobs," he said.

For now, King said he hopes all the Keetac workers will be able to get by on unemployment.

"Hopefully, these guys, once they start laying them off, won't have any trouble getting into unemployment," King said.

We are very concerned about how this is all going to shake out, how businesses are going to get through it. We have a real level of concern in Itasca County about the

current state and the future, and then when you add on a layoff of this nature, it just compounds that.

BEN DENUCCI

US Steel will restart Keetac after pandemic shutdown

BY JIMMY LOVRIEN
JLOVRIEN@DULUTHNEWS.COM

The only Iron Range mine still shut down due to the pandemic is set to restart.

U.S. Steel announced Thursday that it would be restarting the Keetac iron ore mine and pellet plant in Keewatin, which has been indefinitely idled since May, leaving 375 employees out of work after the pandemic caused the demand for steel to fall.

But next month they'll be back to work.

"We will resume operations in mid-December,"

U.S. Steel spokesperson Amanda Malkowski told the News Tribune. "We're starting to recall workers as soon as today."

In an emailed statement, U.S. Steel said the decision comes as demand for steel improves.

"We are encouraged by the increase in demand and believe this restart will best support our customers," U.S.

Steel said. "This will also ensure that we have sufficient iron ore supply where it is needed to meet that demand. We expect to fill nearly 400 positions as part of this restart and will work with the United Steelworkers to recall employees that may have been affected by the idle."

In a call with investors last week, U.S. Steel CEO David Burritt said the company was considering reopening Keetac to rebuild an inventory of iron ore pellets before locks on the Great Lakes close for winter.

The Soo Locks, which connect Lake Superior to the rest of the Great Lakes, are generally closed mid-January to mid-March due to ice. Ships loaded with ore in Lake Superior pass through the locks to reach steel mills along other Great Lakes.

Dan Pierce, a diesel mechanic at Keetac and president of United Steelworkers Local 2660, which represents workers at Keetac, said Thursday the restart was "awesome news" and a "stress reliever," especially just before the holidays.

"We have a huge amount of new members that lost their insurance at the end of October, and we were slated to have another big bunch lose their insurance at the end

of November,"

Pierce said. "So this is a big relief for a lot of young families and members that have never been through it before."

Pierce said the company will reach out to members today and some people will begin returning to work to get the plant ready for restart soon.

In a statement Thursday evening, Gov. Tim Walz applauded U.S. Steel's decision.

"This is a good day for the Iron Range and for an industry that's a pillar of Minnesota's economy,"

Walz said. "The decision to reopen Keetac will restore hundreds of goodpaying union jobs for Minnesotans in the Northland. I'm excited to see Minnesotans get back to work."

As pandemicinduced restrictions swept the U.S. this spring, demand for steel fell, causing iron ore mines in Minnesota to idle.

At its height, Keetac, Cleveland- Cliffs' Northshore Mining in Babbitt and Silver Bay and ArcelorMittalmanaged Hibbing Taconite had all idled. Additionally, U.S. Steel's Minntac in Mountain Iron lowered production and laid off 260 of its workers.

Layoffs at the three idled facilities and Minntac totaled approximately 1,760 workers, more than onethird of the 4,105 total jobs at the Iron Range's six mines in 2019.

Most of the mines reopened and recalled employees by mid to late summer but Keetac remained idled.

Due to its small size, Keetac is usually the last mine to restart after downturns.

It produced just over 5 million tons of pellets and employed 451 people last year while Minntac produced 13 million tons of pellets and employed 1,460 people.

But its restart is a sign of improving demand for steel and the iron ore pellets used in its production.

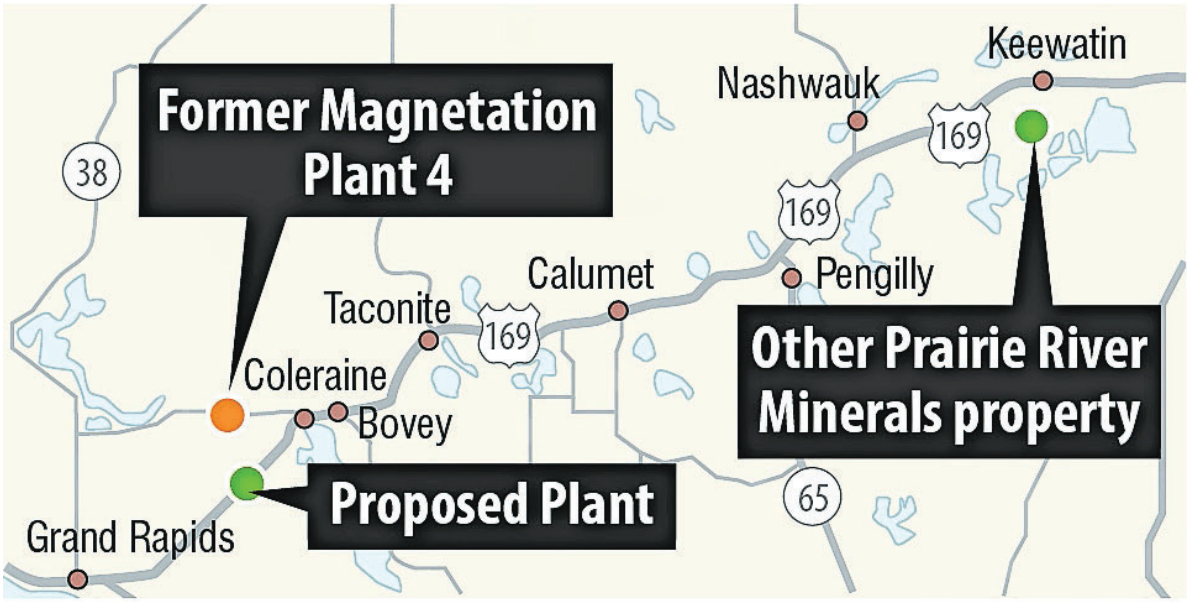
In the spring, the country's blast furnace utilization fell from 81.6% on March 7 to 51.1% on May 2. Last week, it reached 70.4%, according to the American Iron and Steel Institute.

Burritt last week said he was confident demand would remain high.

"We believe today's market demand is sustainable and will continue into next year," Burritt said.

"As vacations, movies, concerts and dining out have been replaced by vehicle and appliance sales and home improvement projects, we have continued to see a noticeable increase in steel demand."

Judge clears sale of former Magnetation Plant 4



NEWS TRIBUNE GRAPHICS

BY JIMMY LOVRIEN JLOVRIEN@DULUTHNEWS.COM

A federal bankruptcy judge has authorized the sale of another former Magnetation/ERP Iron Ore property to Prairie River Minerals, the scram-mining company hoping to process hematite left behind by former mines into marketable lump and sinter ores for the steel industry.

Judge William J. Fischer signed an order Wednesday approving the company's purchase of Plant 4 for $4.5 million. A bankruptcy trustee also approved the sale last month.

The sale of Plant 4 "constitutes the highest and best offer for those assets, and will provide a greater recovery for the debtor's estate than would be provided by any other available alternative,"

Fischer wrote.

The sale will close 30 days after court approval or after the due diligence period, whichever is less, Fischer said.

It's unclear what Prairie River Minerals plans for the Plant 4 property; the company

declined to comment Friday.

Last year, the company bought two former Magnetation and ERP Iron Ore properties — Plant 1 near Keewatin and the Jessie Loadout Facility between Coleraine and Grand Rapids. The company intends on building a demonstration plant at the former Jessie Loadout Facility where it will process 500,000 metric tons of hematite left by old mining companies into 150,000 metric tons of iron lump and sinter feedstock over an expected 3-9 months.

The company then intends on sending the lump and sinter to steel mills for evaluation.

CEO Larry Sutherland told the News Tribune in April that the demonstration plant would start off with about 24 employees. If the steel companies like what they see come out of the demonstration plant, then the plant could expand.

On Thursday, the Minnesota Pollution Control Agency released a draft water-quality permit for the demonstration plant that, if fully approved, would allow it to process that initial 500,000 metric tons of hematite into lump and sinter ores. If the company wishes to produce more than that or ramp up into a fullscale operation, it would need to apply for a major permit modification from the MPCA.

Unlike the other mines and processing facilities on the Iron Range, Prairie River Minerals would not be producing iron ore pellets from mined taconite. Instead, it would be processing waste left over by past mines into lump and sinter ores.

Like pellets, lump ores — rough chunks of iron ore — can be added directly into a blast furnace, while sinter fines — iron ground down into a powder — must first be sintered in combination with other materials at high temperatures before it can be added to a blast furnace and turned into steel.

Prairie River Minerals intends on using a liquid to separate different materials within the rock by density, a process called “Ultra-High Dense Medium Separation.”

Under Magnetation, Plants 1, 2 and 4 and the Jessie Loadout facility employed more than 500 people at its peak in 2014, but closed shortly after and filed for Chapter 11 bankruptcy in 2015 as iron ore prices plummeted.

Magnetation was sold to Tom Clarke, an entrepreneur from the state of Virginia, in 2016.

Clarke pulled it out from bankruptcy as ERP Iron Ore before it also filed for bankruptcy in July 2018.

The bankruptcy court last year approved the sale of Plant 2 for $1.7 million to MJM Minerals, which expressed interest in then reselling it to an operator, the Trustee said.

Earlier this year, the MPCA fined now-shuttered ERP Iron Ore less than $5,000 for air-quality violations at Plant 4.

ST Paper moves to buy, convert mill

Project expected to bring at least 80 jobs back to Duluth plant

BY PETER PASSI
PPASSI@DULUTHNEWS.COM

Even as it awaits the final approval of several pieces of funding, ST Paper LLC announced Friday it will purchase Verso Corp.'s idled Duluth mill and convert it to produce tissue, instead of the super-calendered paper the plant has manufactured in the past.

Sharad Tak, founder and principal partner of ST Paper issued a statement that said: "Working together with the Duluth community, we can reopen the mill and create family-supporting jobs." The converted plant is expected to employ at least 80 people on a full-time basis.

The mill employed more than 220 people before its closure last summer. Verso cited weakened demand for supercalendered paper — a type of stock often used for advertising circulars — in its decision to halt production both in Duluth and at another mill in Wisconsin Rapids.

"While the negotiations have been long and intense, all parties have focused on reopening the mill," Tak said. "Our tissue-manufacturing business has been expanding for the last 15 years, continuing on that path, we hope to refurbish the existing machines in Duluth in two years' time, in addition to installing a new tissue machine now and double the production capacity, resulting in a significant increase in local jobs."

Bill Broydrick, a spokesman for ST Paper, said it will likely take about 18 months to ship and install the equipment needed for the conversion of the Duluth mill. But he said work on the plant is expected to begin very soon.

However, he stressed the importance of financial support the company expects to receive to make the $54 million project come to pass.

Pending approval of state budget bills in St.

Paul, ST Paper appears poised to receive a $3 million forgivable loan, contingent upon the company's continued employment of at least 80 full-time workers for no less than five years.

While District 7A Rep.

Liz Olson, DFL-Duluth, noted that the Legislature has not yet wrapped up its work, she served on the conference committee for the Jobs Bill, and it includes funding for a forgivable loan to support the mill conversion.

As long as the Legislature completes its work, Olson said: “I don’t want to be overly confident.

But I feel like we’re in a really great position right now.”

ST also is in line to receive $1.5 million from the state’s Job Creation Fund.

On top of the state aid, the city of Duluth has agreed to abate $600 in property taxes over the next 10 years, with St.

Louis County expected to follow suit with equal support later this month.

The Duluth City Council also approved a $242,000 loan to ST Paper that could be forgiven if the company creates and maintains at least 80 full-time jobs at its Duluth mill.

“We are pleased about the purchase of the mill,” said Director of Planning and Economic Development Chris Fleege in a statement.

“Our staff has worked diligently with Verso and interested partners to keep as many jobs in Duluth as possible. The City is very supportive of ST Paper and committed to the conversion of the Mill. We will continue to work with ST Paper to secure remaining incentives that will bring the new vision of the plant to fruition.”

ST Paper has already successfully converted mills to produce tissue paper in two other locations, both in Oconto Falls, Wisconsin, and Franklin, Virginia. Tak said the company could have invested in additional equipment at one of those facilities but is instead directing those resources toward Duluth.

He said the purchase and conversion of the Duluth mill would not be possible without the local and state incentives being provided.

“We wish to express our gratitude to the local legislators who on a bipartisan basis introduced the $3 million forgivable loan bill. We also salute the mayor, City Council and city staff who have backed our project,” he said in a written statement.

For her part, Olson said: “It’s good news to hear that the mill is hopefully going to be up and running. I mean, that’s the best possible outcome. It’s not all of the jobs that we had, but it’s a great number of jobs. And, as we’ve talked about before, they’re good-paying jobs. They’re in the district, and it has broader ripples into our energy and our wastewater and our timber industry. So, I think this is very good news, and I’m hopeful it can move forward.”