

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

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In the Matter of Minnesota Power's 2016–2030
Integrated Resource Plan

ISSUE DATE: July 18, 2016

DOCKET NO. E-015/RP-15-690

ORDER APPROVING RESOURCE PLAN
WITH MODIFICATIONS

PROCEDURAL HISTORY

On September 1, 2015, Minnesota Power filed its 2015 Integrated Resource Plan under Minnesota Statutes section 216B.2422 and Minnesota Rules chapter 7843. The Company supplemented the plan on November 4.

On January 4, 2016, the following parties filed comments on Minnesota Power's resource plan:

- Minnesota Department of Commerce (the Department)
- Clean Energy Organizations¹
- Large Power Intervenors²

The Department recommended that the Commission approve the plan with modifications. The Clean Energy Organizations criticized aspects of the Company's forecast and modeling and recommended several modifications to its plan. The Large Power Intervenors largely supported the plan but requested that the Company provide further information on the plan's rate impacts.

On March 4, the following parties filed reply comments:

- The Department
- Clean Energy Organizations
- Large Power Intervenors

¹ The following organizations filed jointly as the Clean Energy Organizations: Fresh Energy, Minnesota Center for Environmental Advocacy, Sierra Club, and Wind on the Wires.

² The following companies filed jointly as the Large Power Intervenors: ArcelorMittal USA (Minorca Mine); Blandin Paper Company; Boise Paper, a Packaging Corporation of America company; Enbridge Energy, LP; Hibbing Taconite Company; Mesabi Nugget Delaware, LLC; PolyMet Mining, Inc.; Sappi Cloquet, LLC; USG Interiors, LLC; United States Steel Corporation (Keewatin Taconite and Minntac Mine); United Taconite, LLC; and Verso Corporation.

- Minnesota Power

The Commission also received comments from some 1,700 members of the public. Most of these commenters voiced support for a resource plan that would hasten Minnesota Power's transition away from coal-fired generation and toward renewable resources and energy efficiency. A large number of commenters specifically supported maximizing community solar generation and ensuring that all ratepayers have the opportunity to participate in community solar.

On June 9, 2016, the Commission met to consider the matter.

FINDINGS AND CONCLUSIONS

I. Background

A. The Resource-Planning Process

The resource-planning statute and rules are detailed, but basically they require a utility to file biennial reports on (1) the projected energy needs of its service area over the next 15 years; (2) its plans for meeting projected need; (3) the analytical process it used to develop its plans for meeting projected need; and (4) its reasons for adopting the specific resource mix proposed to meet projected need.³

These requirements are designed to strengthen utilities' long-term planning processes by providing input from the public, other regulatory agencies, and the Commission. They are also designed to ensure that utilities give adequate consideration to factors whose public policy importance has grown in recent years, such as the environmental and socioeconomic impact of different resource mixes. For example, the statute requires utilities to develop plans for meeting 50% and 75% of new and refurbished capacity needs with conservation and renewable energy.⁴ It also requires them to factor into resource decisions the environmental costs, or externalities, of different generation technologies.⁵

Although the Commission must approve, reject, or modify the resource plans of investor-owned utilities, the resource-planning process is largely collaborative and iterative.

The process is collaborative because there are few hard facts dictating resource choices or deployment timetables. The facts on which resource decisions depend—how quickly an area and its need for electricity will grow, how much electricity will cost over the lifetime of a generating facility or a purchased-power contract, how much conservation potential the service area holds and at what cost—all require the kind of careful judgment that sharpens with exposure to the views of engaged and knowledgeable stakeholders.

The process is iterative because analyzing future energy needs and preparing to meet them is not a static process; strategies for meeting future needs are always evolving in response to changes in

³ See Minn. Stat. § 216B.2422; Minn. R. ch. 7843.

⁴ Minn. Stat. § 216B.2422, subd. 2.

⁵ *Id.*, subd. 3.

actual conditions in the service area. When demographics, economics, technologies, or environmental regulations change, so do a utility's resource needs and its strategies for meeting them.

B. Minnesota Power's Electric System

Minnesota Power, a division of ALLETE, Inc., serves about 144,000 retail electric customers and 16 municipal systems across a 26,000-square-mile service area in central and northeastern Minnesota.

In 2014, 54 percent of the Company's sales went to large power customers, primarily in the taconite mining, iron concentrate, paper, pulp, refining, and pipeline industries. Many of these industrial customers operate 24 hours a day, 7 days a week, contributing to the Company's 80-percent system load factor.

Minnesota Power procures most of its electricity from coal-fired generators, although it is working to rebalance its generation mix to be one-third coal, one-third natural gas, and one-third renewables.

The Company repowered its coal-fired Laskin Energy Center plant to run on natural gas in early 2015. In June 2015, the Company also shut down a coal-fired generator (Unit 3) at its Taconite Harbor Energy Center. In the current resource plan, it proposes to idle the two remaining units at Taconite Harbor (Units 1 and 2) by 2017, beginning their transition away from coal-fired generation.

Over the past decade, Minnesota Power has constructed or contracted to purchase more than 600 megawatts (MW) of wind generation. It has signed long-term agreements with Manitoba Hydro to purchase 383 MW of hydroelectricity beginning in 2020. And it has begun adding solar power to its generation fleet with a 10 MW project at the Camp Ripley National Guard base near Little Falls and a proposed community-solar pilot program.

C. Minnesota Power's Resource Plan

Minnesota Power anticipates minimal power-supply needs in the near term but projects a capacity deficit starting in the mid 2020s. Below are the basic outlines of the Company's preferred plan for addressing this deficit while continuing to rebalance its generation mix:

- Idle Taconite Harbor Units 1 and 2, using them for reliability when market conditions are favorable, and cease coal operations at Taconite Harbor by 2020;
- Reduce the sulfur-dioxide (SO₂) emissions of Boswell Energy Center Units 1 and 2 by routing their exhaust through Unit 3's pollution-control equipment;
- Use bilateral contracts to supply capacity needs between 2016 and 2019;
- Prepare its transmission system for the addition of the Manitoba Hydro purchased power in 2020; and
- Begin a competitive procurement process for 200–300 MW of natural gas combined-cycle generation for implementation by 2024.

III. Load Forecast

A utility's forecast of anticipated load is the foundation of a resource plan, informing decisions about the timing and magnitude of energy and capacity additions. In this resource plan, Minnesota Power used its 2014 Annual Electric Utility Forecast Report, which was the latest load outlook available in early 2015 when the Company began its resource-planning analysis.

The Company completed its 2015 forecast in mid-2015. In general, the 2015 forecast predicts lower load growth than the 2014 forecast. At hearing, Minnesota Power stated that it expected its forthcoming 2016 forecast to show a similar low-growth trend.

The Clean Energy Organizations argued that there were several flaws in the Company's load forecast, causing it to overestimate future demand. In particular, they argued that the forecast overstates industrial demand based on overly optimistic assumptions about when or whether several major proposed projects, including Polymet's copper-nickel mine, Enbridge's Sandpiper oil pipeline, and Essar Steel's taconite plant, would come to fruition.

The Department disagreed with most of the Clean Energy Organizations' criticisms of Minnesota Power's forecast. It saw less significance in an overstated load forecast, arguing that lower demand would support adding less renewable generation but would not affect the timing of coal-plant retirements. And it maintained that the Company had evaluated a reasonable range of forecasts in developing its resource plan.

The Commission concurs with the Department that Minnesota Power's range of load forecasting used for its 2015 resource plan is reasonable for planning purposes. However, the Clean Energy Organizations' comments serve to highlight the economic trends that have led to lower demand projections in recent forecasts. In light of these trends, Minnesota Power's load forecast scenarios used in its 2015 resource plan may overstate the size or timing of future needs. The Commission bears this fact in mind as it evaluates the Company's preferred plan in the following sections.

IV. Taconite Harbor Energy Center Units 1 and 2

A. Introduction

Minnesota Power's Taconite Harbor Energy Center currently has two operating coal-fired units with a combined capacity of 150 MW. In its last resource-plan order, the Commission directed the Company to analyze the effects of retiring Taconite Harbor Units 1 and 2 or of repowering them to run on different fuel.⁶

Minnesota Power's analysis found that shutting the plant down would create transmission-reliability concerns, requiring upgrades to ensure that electric service is maintained. One set of local transmission upgrades, costing approximately \$8 million, would be required at the time of shutdown. A second set, costing approximately \$30 million, would be required later if predicted

⁶ *In the Matter of Minnesota Power's 2013–2027 Integrated Resource Plan*, Docket No. E-015/RP-13-53, Order Approving Resource Plan, Requiring Filings, and Setting Date for Next Resource Plan, at 8 (November 12, 2013) (hereafter "2013 Resource Plan Order").

load growth in the area materializes.

Minnesota Power compared three alternative timing options for ceasing coal operations at Taconite Harbor—shut down by 2026, shut down by 2019, and idle by 2017. The Company's analysis found the idle-by-2017 option to be the most cost-effective. Under this scenario, Minnesota Power would idle Units 1 and 2 and purchase lower-cost replacement energy on the wholesale market, while the units would remain available to restart if needed for system reliability.

Minnesota Power identified 2020 as the optimal time to either retire or repower the units, coinciding with the expected availability of purchased power from Manitoba Hydro.

B. Positions of the Parties

The Department recommended that Minnesota Power shut down Taconite Harbor Units 1 and 2 in 2017. The Department modeled several shutdown scenarios and found retiring the units early to be more cost-effective than shutting them down at a later date.

The Clean Energy Organizations recommended that Taconite Harbor Units 1 and 2 be immediately retired. They argued that the units are not economic to operate, and that there is significant risk that continued operation of Taconite Harbor will violate air-quality standards for sulfur dioxide (SO₂). And they argued that Minnesota Power's modeling methodology biased the results against shutting down its small coal units, including the Taconite Harbor units, sooner.

The Large Power Intervenors supported Minnesota Power's plan to idle Taconite Harbor Units 1 and 2 in the near term, arguing that this course of action would allow the Company flexibility in the face of uncertainty over the timing and details of anticipated carbon-dioxide (CO₂) emissions regulations.

C. Commission Action

The Commission concurs with Minnesota Power and the Large Power Intervenors that idling Taconite Harbor Units 1 and 2 will provide the Company with needed flexibility to call the units back to service for reliability purposes as it transitions away from coal-fired operations. Idling these units will also allow the Company to take advantage of inexpensive replacement energy offered in the wholesale market.

The Commission will require Minnesota Power to idle Taconite Harbor Units 1 and 2 in 2016, retaining the ability to restart them to address reliability or emergency needs on the transmission system, and cease coal-fired operation by the end of 2020. The Commission will consider future refueling and re-missioning opportunities for these units in the context of the Company's next resource plan, which will be filed on February 1, 2018.

The Commission will also direct Minnesota Power to remedy the local transmission-system issues identified in its analysis of retiring Taconite Harbor Units 1 and 2. These transmission upgrades will pave the way for the eventual retirement or re-missioning of Taconite Harbor; at hearing, the Company acknowledged that it planned to make these local upgrades in any case. Minnesota Power will be allowed to recover the reasonable costs of the upgrades, consistent with the estimate listed on page 16 of Appendix F of its resource plan.

Finally, questions remain as to how idling Taconite Harbor Units 1 and 2 will affect their operation. Minnesota Power plans to offer the units into the Midcontinent Independent System Operator's (MISO's) capacity auction each year they are idled. If the units are not selected through this process, the Company still plans to keep a modest fuel supply available onsite so that the units can be restarted to provide reliability or address system emergencies. To monitor costs and operations during idling, the Commission will require Minnesota Power to submit an annual report that includes the following information:

- Whether Taconite Harbor Energy Center Units 1 and 2 were selected in MISO's annual capacity auction;
- Whether the units will receive capacity accreditation in each MISO planning year;
- How often the units were dispatched in the previous planning year;
- For the previous and upcoming planning year, how much fuel was and will be delivered to the Taconite Harbor Energy Center site; and
- Quantification and demonstration of how and why the economic idling of the units is in ratepayers' interests.

V. Boswell Energy Center Units 1 and 2

A. Introduction

Boswell Energy Center is Minnesota Power's largest coal-fired power plant, with four generating units and a capacity of just over 1,000 MW. Units 1 and 2 are the smallest units, with a combined capacity of approximately 130 MW.

Under the terms of an agreement between Minnesota Power and the United States Environmental Protection Agency (U.S. EPA), Units 1 and 2 would require additional SO₂ emission controls to continue operating on coal past 2019. The Company proposes to take advantage of Unit 3's existing pollution-control equipment by rerouting the exhaust from Units 1 and 2 through the Unit 3 equipment, at an anticipated cost of \$30 million. The Company's plan assumes that Units 1 and 2 would cease operation in 2024, the end of their useful lives for accounting purposes.

Minnesota Power considered other alternatives to comply with the SO₂ limits, including refueling Units 1 and 2 with natural gas or retiring them by 2019. According to Minnesota Power, because the units provide black-start capability for Units 3 and 4, a new system-restoration plan would need to be developed for the region if they are retired. In addition, the Company stated that shutting down the units would trigger a need for transmission upgrades of approximately \$10 million.

B. Positions of the Parties

The Department recommended that Minnesota Power procure replacement generation for Boswell Units 1 and 2, including 200 MW of combined-cycle natural gas generation, and shut down the units once the natural gas generation is online, which the Department believed could happen by 2022.

The Department's modeling did not find a substantial cost difference between early and late retirement of these units; the main difference it found was that early shutdown required the Company to rely on substantial short-term baseload capacity for another three years. To avoid the need to rely on short-term market capacity and energy, the Department recommended that Minnesota Power retire the units coincident with the addition of natural gas capacity.

The Clean Energy Organizations agreed with the Department that Boswell Units 1 and 2 should be shut down as soon as replacement capacity is available, although they argued that this could occur sooner than 2022. They also questioned the need for a natural gas resource, arguing that Minnesota Power had failed to make the demonstration required by statute that a renewable energy facility is not in the public interest,⁷ and asserting that a combination of renewable energy and conservation measures could offset the capacity lost by retiring the units.

Finally, the Clean Energy Organizations questioned the prudence of investing \$30 million in SO₂-control measures, especially since, in their view, continued operation would likely result in additional costs to comply with EPA regulations on coal combustion residuals⁸ and power-plant discharges to surface waters.⁹ In light of these costs, the Clean Energy Organizations argued that retiring Boswell Units 1 and 2 in the near term would be the most prudent alternative.

The Large Power Intervenors supported Minnesota Power's plan to continue operating Boswell Units 1 and 2, maintaining that it would preserve flexibility to make prudent decisions for ratepayers. They argued that the Department and the Clean Energy Organizations had not addressed how retiring the units in the near term would affect the reliability and operation of the Company's system.

C. Commission Action

The Commission concurs with the Department and the Clean Energy Organizations that the most reasonable course of action on this record is to retire Boswell Units 1 and 2 when sufficient replacement energy and capacity are available, but no later than 2022.

The Department's analysis showed that the timing of Boswell Units 1 and 2's retirement had little impact on the overall cost of the Company's resource plan. The Department therefore recommended that the units be retired as soon as capacity and energy are available to replace the electricity provided by the units. The Department believed that replacement generation could be in place by 2022. In light of the Department's analysis, the Commission sees no reason to delay these units' retirement beyond 2022.

Units 1 and 2 will require additional pollution controls if they continue to operate using coal between 2019 and 2022. The Commission leaves to Minnesota Power the decision of how to address the emissions limits established in its agreement with the U.S. EPA. However, the Company has not demonstrated at this time that its proposed \$30 million investment in SO₂ reduction is a reasonable investment to allow the units to run for three years. This is especially

⁷ See Minn. Stat. § 216B.2422, subd. 4.

⁸ See 40 C.F.R. pt. 257.

⁹ See 80 Fed. Reg. 67,838 (Nov. 3, 2015).

true in light of the relatively modest cost of the transmission upgrades required to retire the units.

In the following sections, the Commission discusses resources that could replace Minnesota Power's retiring coal-fired generators and address forecasted load growth.

VI. Natural Gas Additions

A. Introduction

Minnesota Power proposes to add 200–300 MW of natural gas combined-cycle generation by 2024. The Company has already begun a competitive-bidding process to procure natural gas generation and intends to present the results of this process in its next resource plan.

Minnesota Power projects that, with the near-term idling of Taconite Harbor Units 1 and 2, it will need approximately 200 MW of new capacity from 2017–2019. In 2020, the Manitoba Hydro contracts are expected to begin filling much of this need, but the Company again forecasts a need for 200–300 MW of capacity in 2025 after the planned retirement or re-missioning of Boswell Units 1 and 2.

The Company's preferred plan relies on bilateral contracts to meet the capacity need before 2020; in the longer term, the Company's modeling found a natural gas resource of 200–300 MW to be a cost-effective addition to meet capacity needs.

B. Positions of the Parties

The Department recommended that Minnesota Power procure 200 MW of combined-cycle natural gas generation. The Department's modeling suggested that 200 MW of combined-cycle generation, in combination with renewable resources and energy conservation measures, could cost-effectively replace the capacity and energy of the Company's coal-based units.

The Clean Energy Organizations questioned the need for 200–300 MW of natural gas capacity by 2024, citing concerns with Minnesota Power's load forecast. They questioned why the Company was already soliciting bids despite the need being nearly eight years in the future. And they argued that solicitations for new capacity should be fuel-neutral rather than fuel-specific, so that consideration is given to renewable resources.

The Large Power Intervenors also questioned the need for and timing of Minnesota's request for proposals (RFP) for natural gas generation. And they queried whether the Company had considered potentially less expensive alternatives, such as demand-response measures or customer-owned generation. They recommended that Minnesota Power's RFP be withdrawn and revised to reflect the Company's Commission-approved resource plan and to allow for customer-owned generation.

C. Commission Action

The Commission agrees with the Clean Energy Organizations and the Large Power Intervenors that Minnesota Power's evaluation of replacement generation should not be limited to one resource. At the same time, the Commission does not wish to foreclose the Company's exploration of efficient combined-cycle generation as part of a portfolio of resources to replace

its small coal-fired generators. The Commission will therefore allow Minnesota Power to continue pursuing its RFP to investigate the possible procurement of combined-cycle natural gas generation to meet its energy and capacity needs in the absence of Boswell 1 and 2 and Taconite Harbor 1 and 2.

Acceptance of the RFP establishes no presumption that any or all of the generation identified in that bidding process will ultimately be approved. Moreover, to ensure that a wide variety of replacement options is considered in the next resource plan, the Commission will require that the plan include a full analysis of all alternatives to natural gas, including renewables, energy efficiency, distributed generation, and demand response, for providing the energy and capacity sufficient to meet the Company's needs.

VII. Wind Additions

A. Introduction

Minnesota Power did not recommend adding new wind generation in its 2015 resource plan. The Company stated that its modeling did not show wind additions to be a cost-effective capacity addition unless a significant carbon-emissions penalty was assumed.

B. Positions of the Parties

The Department's analysis found that procuring 300 MW of wind generation in about 2018 would be a cost-effective resource addition under its recommended small-coal retirement scenario. Longer term, it recommended procuring approximately 100 MW of wind (along with 200 MW of natural gas and 50 MW of solar) to help replace Boswell Units 1 and 2.

The Clean Energy Organizations supported the Department's recommendations. They argued that Minnesota Power's modeling disfavored the selection of wind by pricing it too high, failing to assign it any accredited capacity, and placing artificial limits on the number of units that could be selected for each year.

In reply comments, Minnesota Power acknowledged that the current favorable tax treatment of wind farms provided an opportunity to procure low-cost wind resources that could serve as an energy-price hedge for ratepayers. The Company suggested that adding 100 MW of new wind in 2018 could prove cost-effective; however, it argued that adding 300 MW of wind in that timeframe would likely create an energy surplus in the near term.

C. Commission Action

The Commission concurs with the parties that procuring additional wind generation in the near term, while it would not provide significant capacity, would benefit Minnesota Power's system by supplying low-cost energy at a fixed price.

The parties, however, disagree on how much wind to procure. The Department's modeling found 300 MW to be cost-effective under numerous scenarios, while Minnesota Power recommended 100 MW, cautioning that acquiring too much wind generation would cause an energy surplus. This scenario could result in a net cost if the Company is unable to generate sufficient revenue by selling the surplus energy on the wholesale market.

The Commission concludes that Minnesota Power should begin a competitive acquisition process, by the end of 2017, to procure 100–300 MW of installed wind capacity. This range reflects the positions of both parties; the final amount can be resolved in a future resource-acquisition proceeding with the benefit of specific proposals.

VIII. Solar Additions

A. Introduction

Minnesota’s Solar Energy Standard (SES) requires a public utility to generate or procure sufficient electricity from solar energy so that by the end of 2020, at least 1.5 percent of the utility’s total retail electric sales in Minnesota is generated by solar energy.¹⁰

Minnesota Power calculated that it would need to acquire 33 MW of solar generation during the planning period to meet and sustain the 1.5-percent-by-2020 requirement. The Company plans to acquire 11 MW of solar in 2016, 12 MW in 2020, and 10 MW in 2025.

Minnesota Power does not plan any solar additions beyond what is necessary to meet the Solar Energy Standard, but it recognized that solar power may become more cost-effective as the price of generating it decreases.

B. Positions of the Parties

The Department supported Minnesota Power’s SES compliance strategy. Long term, the Department recommended that the Company procure an additional 50 MW of solar, partly to replace Boswell Units 1 and 2. The Department’s modeling suggested a strong preference for 50 MW of solar generation as part of a cost-effective package of resources to replace the retiring coal units.

The Clean Energy Organizations argued that Minnesota Power’s modeling methodology disfavored the selection of solar by overstating its unit cost and allowing the model to accept only one solar farm starting in 2017.

C. Commission Action

The Commission concurs with Minnesota Power and the Department that the Company should acquire 11 MW of solar generation by 2016, 12 MW by 2020, and 10 MW by 2025 to meet its SES obligations. But the Commission also agrees with the Department and the Clean Energy Organizations that additional solar generation is likely a cost-effective resource for Minnesota Power’s system.

The market for solar generation is still evolving; however, under the Department’s modeling, when solar was priced at the median or lower levels—a range of \$80 to \$100 per megawatt hour (MWh)—the model tended to select 100 MW or more of solar in addition to the amount needed

¹⁰ Minn. Stat. § 216B.1691, subd. 2f(a). “Total retail electric sales” excludes sales to iron mining extraction and processing facilities, paper mills, wood products manufacturers, sawmills, and oriented strand board manufacturers. *Id.*, subd. 2f(d).

for SES compliance. Given that the Commission recently approved another utility's 187 MW solar portfolio with a levelized price of \$73.20 per MWh,¹¹ a range of \$80-100 per MWh may overstate the cost of solar generation.

For these reasons, the Commission finds that up to 100 MW of solar by 2022 is likely an economic resource for Minnesota Power's system and will require that the Company account for this finding in any competitive acquisition process.

IX. Energy Conservation

A. Introduction

Minnesota's conservation-improvement-program (CIP) statute sets an annual energy-savings goal of 1.5 percent of gross annual retail sales for each utility, subject to modification by the Department.¹² Minnesota Power's currently approved conservation-improvement program calls for annual energy savings of 46.5 gigawatt hours (GWh), or 1.5% of its gross annual retail sales.¹³

Large customers that face competitive or economic pressures to conserve energy may petition the Department for an exemption from their utility's conservation-improvement program.¹⁴ Sales to CIP-exempt customers are not included in a utility's gross annual retail sales for the purposes of calculating compliance with its energy-savings goal, nor are CIP costs included in exempt customers' rates.

Almost 70 percent of Minnesota Power's load comes from approximately 14 large, CIP-exempt customers. None of this load is subject to the Company's energy-savings goal under its conservation-improvement program.

In Minnesota Power's last resource-plan proceeding, the Commission directed the Company to provide, in its next resource plan, cost assumptions for achieving energy savings beyond 1.5 percent of non-CIP-exempt retail sales.¹⁵ The Commission also required the Company to provide data on embedded energy savings from its CIP-exempt and non-CIP-exempt customers and to evaluate conservation scenarios for achieving greater savings by both groups of customers.¹⁶

In this resource plan, Minnesota Power evaluated four CIP savings scenarios:

¹¹ *In the Matter of Xcel Energy's Petition for Approval of a Solar Portfolio to Meet Initial Solar Energy Standard*, Docket No. E-002/M-14-162, Order Approving Solar Portfolio, at 3 (March 24, 2015).

¹² Minn. Stat. § 216B.241, subd. 1c.

¹³ *See In the Matter of Minnesota Power's 2014–2016 Energy Conservation Improvement Plan*, Docket No. E-015/CIP-13-409.

¹⁴ Minn. Stat. § 216B.241, subd. 1a(b).

¹⁵ 2013 Resource Plan Order, at 8.

¹⁶ *Id.*

Savings Plan	Annual Energy Savings (GWh)	Percent of Sales	Incremental Cost (millions)
Existing	46.5	1.5%	\$0.0
+11 GWh	57.3	1.87%	\$2.7
+15 GWh	61.2	2.0%	\$4.1
+30 GWh	76.5	2.5%	\$10.5

The Company proposed a resource-planning goal of procuring 57.3 GWh in annual energy savings, or 1.87 percent of annual retail sales.

B. Positions of the Parties

1. Energy-Savings Goal

The Department recommended that Minnesota Power procure average annual energy savings of 76.5 GWh, or 2.5 percent of its non-CIP-exempt sales. It stated that the Company has consistently exceeded the statutory 1.5-percent energy-savings goal since 2009 and has met or exceeded 1.87 percent since 2010. And, in 2014, the Company achieved savings of 2.49 percent.

The Department's modeling found that the overall cost-effectiveness of Minnesota Power's resource plan increased with the level of energy efficiency. It concluded that the 76.5-GWh savings scenario would provide a low-cost energy supply and potentially help the Company to defer the need for future resource acquisitions in a time of significant uncertainty with respect to future load.

Minnesota Power opposed a long-term resource-planning assumption of 2.5 percent energy savings. The Company acknowledged that it had achieved comparable savings in previous years, but characterized this achievement as the exception to the rule, dependent on certain large, irregular customer-specific projects. It argued that these projects' contribution skewed past results and that those savings should be normalized before being used for resource planning.

2. CIP-Exempt Customers

The Clean Energy Organizations argued that Minnesota Power had ignored the possibility of obtaining additional energy savings from its CIP-exempt customers. They argued that the Commission's prior order confirmed that sales to CIP-exempt customers must be considered in determining progress toward the statewide energy-savings goals described in Minn. Stat. §§ 216B.2401 and 216C.05. And they recommended that the Commission direct Minnesota Power to proactively seek ways to increase conservation by its CIP-exempt customers.

The Large Power Intervenors argued that Minnesota Power is not required to verify the energy savings of its CIP-exempt customers. According to these intervenors, the CIP statute recognizes that large industrial customers are subject to competitive pressures to reduce costs and improve energy efficiency and allows them to seek CIP exemption on that basis. Thus, CIP-exempt

customers are responsible for planning, financing, and implementing their own energy-conservation and efficiency efforts.

The Department agreed with the Clean Energy Organizations that Minnesota Power should encourage its CIP-exempt customers to be as efficient as possible. However, it stated that because the CIP statute does not allow the Company to charge these customers for providing CIP services, it is not clear how the Company would engage with the customers and document their energy savings.

C. Commission Action

The Commission concurs with the Department that Minnesota Power's average annual energy savings goal should be set at 76.5 GWh for resource-planning purposes. The Department's modeling demonstrated that this level of energy savings would result in the lowest-cost expansion plan for the Company's system. Moreover, planning for a high level of energy savings recognizes that it is Minnesota's preferred energy resource.¹⁷

Minnesota Power expressed concern that it would not be able to achieve historic levels of energy savings. However, the Department's analysis showed that the level of energy savings selected does not affect the recommended supply-side resources. In other words, even if Minnesota Power is unable to achieve the savings goal set in this plan, it will still have enough generation to meet projected demand. And finally, because resource planning is an iterative process, the Commission can revisit the Company's energy-savings goal in its next plan and adjust it if appropriate.

The Commission agrees with the Department and the Large Power Intervenors that verifying the energy savings of Minnesota Power's CIP-exempt customers could present practical and legal challenges. However, the Commission also agrees with the Clean Energy Organizations that the Company should pursue conservation measures in which its CIP-exempt customers may participate voluntarily.

Accordingly, the Commission will require Minnesota Power to (1) propose a demand-response competitive-bidding process within six months of the date of this order and (2) investigate the potential for an energy-efficiency competitive-bidding process and summarize its investigation and findings in the next resource plan. These measures hold the potential both to promote state policy favoring energy savings and to benefit large customers competing in global markets.

X. Bilateral Contracts

In Minnesota Power's last resource-plan proceeding, the Commission approved the Company's plan to pursue cost-effective bilateral market purchases to cover an anticipated generation shortfall between 2014 and 2020.¹⁸ The Commission directed the Company to file the pertinent details of any bilateral contract it entered into.¹⁹

¹⁷ See Minn. Stat. § 216B.2401 ("The legislature finds that energy savings are an energy resource, and that cost-effective energy savings are preferred over all other energy resources.")

¹⁸ 2013 Resource Plan Order, at 7.

¹⁹ *Id.*

In August and September 2014 and March 2015, Minnesota Power made compliance filings detailing bilateral capacity and energy contracts that it had entered into to address resource needs through 2020.

In fall 2015, the Company executed three additional bilateral contracts for baseload power to be delivered in 2017–2019. The Company intends that these contracts will replace the energy and capacity lost when it retires Taconite Harbor Units 1 and 2. The Company did not file the details of these contracts until May 2016. At hearing, it stated that it understood the filing requirement in the prior order to refer only to contracts executed to address the specific need identified in its 2013 resource plan.

The Commission will continue to require that Minnesota Power file the pertinent details of its major bilateral contracts, such as the duration, price, and amount of capacity and energy. This requirement will ensure that the Commission, the Department, and other stakeholders have timely information on how the Company is planning for and addressing anticipated resource needs. To avoid creating an undue administrative burden, the Commission will limit the filing requirement to contracts exceeding one year or 50 MW.

XI. Resource-Plan Approval

For all the foregoing reasons, the Commission will approve Minnesota Power's 2015 resource plan as modified by this order.

ORDER

1. The Commission approves Minnesota Power's 2015 Integrated Resource Plan with the modifications below.
2. Minnesota Power's range of load forecasting used for its 2015 resource plan is reasonable for planning purposes; however, in light of updated information, Minnesota Power's load forecast scenarios used in its 2015 resource plan may overstate the size or timing of future needs.
3. Minnesota Power shall idle Taconite Harbor Energy Center Units 1 and 2 in 2016, retain the ability to restart them to address reliability or emergency needs on the transmission system, and cease coal-fired operation by the end of 2020. Future refueling and re-mission opportunities will be considered in planning and optimization of the facility for the next resource plan.
4. Minnesota Power shall remedy the local transmission-system issues identified in its analysis of closing Taconite Harbor Energy Center Units 1 and 2. The Company will be allowed to recover the reasonable costs of the upgrades consistent with the estimate listed on page 16 of Appendix F of its resource plan.
5. Minnesota Power has not demonstrated at this time that its proposed investment in SO₂ reduction at Boswell Units 1 and 2 is reasonable.

6. Minnesota Power shall retire Boswell Energy Center Units 1 and 2 when sufficient energy and capacity are available, but no later than 2022.
7. Minnesota Power may pursue an RFP to investigate the possible procurement of combined-cycle natural gas generation to meet its energy and capacity needs in the absence of Boswell Units 1 and 2 and Taconite Harbor Units 1 and 2, with no presumption that any or all of the generation identified in that bidding process will be approved by the Commission.
8. Minnesota Power's next resource plan shall include a full analysis of all alternatives, including renewables, energy efficiency, distributed generation, and demand response, for providing energy and capacity sufficient to meet its needs.
9. By the end of 2017, Minnesota Power shall initiate a competitive-bidding process to procure 100–300 MW of installed wind capacity.
10. Minnesota Power shall acquire solar units of 11 MW by 2016, 12 MW by 2020, and 10 MW by 2025 to meet its SES obligations.
11. The Commission finds that up to 100 MW of solar by 2022 is likely an economic resource for Minnesota Power's system; the Company shall account for this finding in its request for proposals in any competitive acquisition process.
12. Minnesota Power's average annual energy savings goal is set at 76.5 GWh.
13. Minnesota Power shall propose a demand-response competitive-bidding process within six months of the date of this order.
14. Minnesota Power shall investigate the potential for an energy-efficiency competitive-bidding process to supplement its existing conservation-improvement program, open to both CIP-exempt and non-CIP-exempt customers, and shall summarize its investigation and findings in its next resource plan.
15. Minnesota Power shall submit an annual report by August 1 of each year, to include:
 - a. Whether Taconite Harbor Energy Center Units 1 and 2 were selected in MISO's annual capacity auction;
 - b. Whether Taconite Harbor Energy Center Units 1 and 2 will receive capacity accreditation in each MISO planning year;
 - c. How often the units were dispatched in the previous planning year;
 - d. For the previous and upcoming planning year, how much fuel was and will be delivered to the Taconite Harbor Energy Center site; and
 - e. Quantification and demonstration of how and why the economic idling of Taconite Harbor Energy Center Units 1 and 2 is in the ratepayers' interests.

16. Minnesota Power shall file the pertinent details of its bilateral contracts that exceed one year or 50 MW, such as the duration, price, and amount of capacity and associated energy to be procured, within 30 days after the contracts are signed.
17. Minnesota Power shall file its next resource plan on February 1, 2018.
18. This order shall become effective immediately.

BY ORDER OF THE COMMISSION

Daniel P. Wolf
Executive Secretary



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