

March 26, 2025

Will Seuffert  
Minnesota Public Utilities Commission  
121 7th Place East, Suite 350  
St. Paul, Minnesota 55101-2147

RE: Comments of the Minnesota Department of Commerce  
Docket No. ET9/RP-24-356

Dear Mr. Seuffert:

Attached are the comments of the Minnesota Department of Commerce (Department) in the following matter:

*In the Matter of Southern Minnesota Municipal Power Agency's 2025-2039  
Resource Plan.*

The Petition was filed by Southern Minnesota Municipal Power Agency on November 27, 2024.

The Department recommends **SMMPA provide additional information in reply comment** and is available to answer any questions the Minnesota Public Utilities Commission may have.

Sincerely,

/s/ Sydnie Lieb, Ph.D.  
Assistant Commissioner, Department of Regulatory Affairs

SR/ad  
Attachment

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## Acronyms and Abbreviations

<b>AU</b>	Austin Utilities
<b>Aurora</b>	AURORAxmp Electric Market Model
<b>CAGR</b>	Compound Average Growth Rate
<b>CIP</b>	Conservation Improvement Program
<b>Commission</b>	Minnesota Public Utilities Commission
<b>COU</b>	Consumer-owned Utility
<b>CROD</b>	Contract Rates of Delivery
<b>Department</b>	Minnesota Department of Commerce
<b>DLOL</b>	Direct Loss-of-Load Method
<b>DRG</b>	Distributed and Renewable Generation
<b>DSM</b>	Demand-side Management
<b>ECO</b>	Energy Conservation and Optimization
<b>ECO Act</b>	Energy Conservation and Optimization Act of 2021
<b>EIA</b>	U.S. Energy Information Administration
<b>EV</b>	Electric Vehicles
<b>IMS</b>	Inlet to Member Systems
<b>IRP</b>	Integrated Resource Plan
<b>LEED</b>	Leadership in Energy and Environmental Design
<b>LMP</b>	Locational Marginal Prices
<b>MISO</b>	Midcontinent Independent System Operator, Inc.
<b>MW</b>	Megawatts
<b>MWh</b>	Megawatt Hours
<b>NPV</b>	Net Present Value
<b>RECs</b>	Renewable Energy Credits
<b>Sherco 3</b>	Sherburne County Coal Unit 3
<b>SMMPA or the Agency</b>	Southern Minnesota Municipal Power Agency
<b>RPU</b>	Rochester Public Utilities
<b>UCAP</b>	Unforced Capacity Rating
<b>WAPA</b>	Western Area Power Administration



## Before the Minnesota Public Utilities Commission

### Comments of the Minnesota Department of Commerce

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Docket No. ET9/RP-24-356

#### I. INTRODUCTION

Southern Minnesota Municipal Power Agency (SMMPA or the Agency) is a municipal joint action agency serving 17 municipal utilities in Minnesota. The Agency filed an integrated resource plan (IRP) that demonstrates how SMMPA will provide for the capacity and energy needs of its municipal utility members for the period 2025 through 2039. SMMPA plans to retire the Sherburne County Coal Unit 3 (Sherco 3) generator by the end of 2030.

For the action plan, SMMPA plans to:

- add 225 megawatts (MW) of new solar generation;
- add 50 MW of new wind generation;
- add 55 MW of new conventional dual fuel generation;
- add approximately 14 MW of new diesel generators in member communities; and
- continue the Agency's demand-side management (DSM) efforts.

SMMPA notes one significant complication encountered while preparing the Petition:

During the bulk of compiling this IRP, we operated with the assumption that the expiration of the Agency's power sales contracts with the cities of Austin, MN, and Rochester, MN, would coincide with Sherco 3 retirement, which means SMMPA would only need to replace approximately 70 megawatts (MW) of its 360 MW share of Sherco 3. In August 2024, Austin elected to renew their contract, adding 70 MW into SMMPA's resource obligation, leaving little time for the Agency to start the complex IRP process over with all the necessary model analysis to meet requirements. For this reason, SMMPA continued with the original assumptions but accounted for the additional load within the sensitivity analyses.

#### II. PROCEDURAL BACKGROUND

November 27, 2024      SMMPA filed the Agency's 2025-2039 *Integrated Resource Plan*.<sup>1</sup>

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<sup>1</sup> In the Matter of Southern Minnesota Municipal Power Agency's 2025-2039 *Integrated Resource Plan*, November 27, 2024, Petition, Docket No. E002/M-24-356, (eDockets), [202410-211316-01](#). (Hereinafter, "Petition").

### III. DEPARTMENT ANALYSIS

#### A. BACKGROUND ON SMMPA

According to the Petition, SMMPA provides electricity to approximately 110,000 residential customers through its 17 member-owner municipal utilities. The municipal utilities provide services to their communities on a not-for-profit basis.

SMMPA's portfolio of resources as of 2023 is summarized in Charts 4-1 and 4-2 of the Petition:

- Coal—40 percent of capacity and 36 percent of energy;
- Renewables—24 percent of capacity and 18 percent of energy;
- Natural Gas—16 percent of capacity and 2 percent of energy;
- DSM—11 percent of capacity and 17 percent of energy;
- Fuel Oil—9 percent of capacity and minimal energy; and
- Market Purchases—no capacity and 27 percent of energy.

#### B. RESOURCE NEED AND ACTION PLAN

In SMMPA's preferred case small capacity deficits (20 to 25 MW) appear in the summer of 2025 to 2027.<sup>2</sup> In 2028 the first new resources appear, and they eliminate the deficit. The Petition's Exhibit 6b (Demand and Resource Balance—Summer) illustrates this situation. This near-term deficit means that SMMPA will need to either sign short-term capacity purchases to cover the deficit or pay the market price in the Midcontinent Independent System Operator, Inc. (MISO) annual capacity market. SMMPA's winter demand and resource balance (See the Petition's Exhibit 6a) does not show a near term deficit and thus is not an issue.

SMMPA proposed the following five-year action plan:

- add 14 MW of emergency diesel generation and 49 MW to 70 MW of natural gas-fired dispatchable resources;
- continue to operate and maintain the Agency's existing fleet of generation resources;
- offer DSM and energy efficiency programs; and
- watch for opportunities to expand the existing fleet of carbon-free resources.<sup>3</sup>

The capacity additions under SMMPA's preferred plan that are beyond the five-year action plan occur in 2031 involve solar and wind resources.<sup>4</sup>

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<sup>2</sup> The small deficits may be due to the fact that SMMPA plans for the Agency's peak rather than peak coincident with MISO. See the forecasting and modeling sections below.

<sup>3</sup> SMMPA states that any near-term additions would most likely be solar.

<sup>4</sup> See the Petition at page 8-4.

C. *APPLICABLE STATUTES AND RULES*

The Minnesota Public Utilities Commission's (Commission) IRP process is governed by Minnesota Rules 7843. The decision criteria are provided in Minnesota Rules 7843.0500, which states, in part:

subp. 3. Factors to consider. In issuing its findings of fact and conclusions, the Commission shall consider the characteristics of the available resource options and of the proposed plan as a whole. Resource options and resource plans must be evaluated on their ability to:

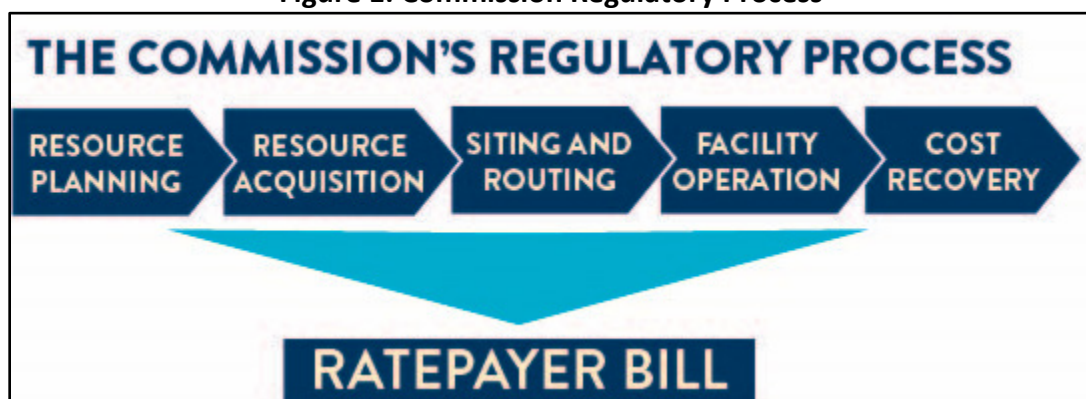
- A. maintain or improve the adequacy and reliability of utility service;
- B. keep the customers' bills and the utility's rates as low as practicable, given regulatory and other constraints;
- C. minimize adverse socioeconomic effects and adverse effects upon the environment;
- D. enhance the utility's ability to respond to changes in the financial, social, and technological factors affecting its operations; and
- E. limit the risk of adverse effects on the utility and its customers from financial, social, and technological factors that the utility cannot control.

In summary, the Commission evaluates a proposed IRP based upon its ability to create a reliable, low cost, low environmental and socioeconomic impact system that manages risk. In weighing these factors, the Commission considers various statutory requirements such as the preference for renewable energy facilities.

D. *OVERVIEW OF DEPARTMENT ANALYSIS*

An IRP is the first step in the Commission's overall regulatory process. The Commission's regulatory process as applied to generation units is illustrated in Figure 1 below. The Department notes that, for SMMPA, the cost recovery step shown in Figure 1 does not apply. In addition, the Commission's order in IRPs for municipal joint action agencies such as SMMPA is advisory in nature.

**Figure 1: Commission Regulatory Process**



For SMMPA's IRP, the Department:

- reviewed the Agency's energy and demand forecast process;
- reviewed the Agency's resource plan modeling;<sup>5</sup>
- reviewed the status of SMMPA's compliance with various Minnesota Statutory goals such as the carbon free and renewable energy standards; and
- reviewed the status of SMMPA's energy efficiency and demand response programs.

Given the advisory nature of SMMPA's IRP, the Department did not attempt to create an alternative preferred plan. In addition, the Department did not address SMMPA's near-term capacity deficit since it could not be filled by new unit construction and SMMPA already plans to bring new units on-line as fast as possible.

Lastly, the Department notes that under Minnesota Rules 7843.0600, subp. 2 the consequences of the Commission's order in this proceeding are clear:

the findings of fact and conclusions from the Commission's decision in a resource plan proceeding may be officially noticed or introduced into evidence in related Commission proceedings [...] In those proceedings, the Commission's resource plan decision constitutes prima facie evidence of the facts stated in the decision.

The most likely place for the Commission's order to be introduced as evidence would be in a future certificate of need proceeding.

#### E. *FORECAST*

##### *E.1. Forecast Approach*

SMMPA developed this IRP load forecast with nFront Consulting, LLC, using the same methodology as in previous IRP filings. The following steps described how SMMPA forecasted its energy requirements for 2024-2039:

- a. The forecast for annual retail load across SMMPA members starts with econometric models that estimate residential customer counts and average energy usage. These residential estimates are then combined with similar forecasts for commercial, industrial, and other customer classes, including lighting and government facilities.
- b. To account for the influence of DSM conservation programs, the forecasts of total retail sales are adjusted upward to include the

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<sup>5</sup> The Agency used the AURORAxmp Electric Market Model to evaluate resource needs and alternatives in this IRP. The Department does not have access to this model.



historical effects of these programs on reducing the growth rates originally projected by the models.

- c. After adjusting the total retail sales for distribution losses, the forecast provides an estimate of the total energy delivered to all SMMPA members. This adjustment ensures the forecast reflects the actual energy requirements at the point of delivery.
- d. The total energy delivered is then distributed among individual members using a separate econometric forecast called the "Ratio Forecasts," which allocates the shared load based on each member's specific energy needs and characteristics.
- e. Each member's contribution to SMMPA's overall peak demand, referred to as "coincident peak," is calculated by combining their forecasted energy needs with an econometric model of load factors. This approach accounts for variations in demand patterns across members and reflects SMMPA's combined peak load. Notably, the coincident peak includes the loads of SMMPA's 17 current members and part of the load for a former member now served by Great River Energy, which still sources energy from SMMPA.<sup>6</sup>

#### *E.2. Data Sources and Assumptions*

SMMPA's forecast input data came mainly from four parts:

- a. Utility System Data: Historical retail billing data by customer classification, system energy requirements, system peak demands (by member and SMMPA), and DSM impacts were provided by SMMPA and its members.
- b. Economic and Demographic Data: Data from Woods & Poole Economics and Minnesota Management and Budget were blended by averaging annual growth rates to create consensus projections, with adjustments for conservative growth assumptions.
- c. Energy Costs: Historical retail electricity costs were sourced from SMMPA's member data, adjusted for inflation. Competing fuel cost projections were based on the U.S. Energy Information Administration's (EIA) *Annual Energy Outlook 2023*.
- d. Weather Data: Historical weather data for members was sourced from the U.S. National Oceanic and Atmospheric Administration (Duluth, Rochester, Saint Cloud), with peak demand analyses based on Rochester's data. Future weather conditions reflect averages for 1991–2020 (monthly) and 1995–2023 (peak day).

SMMPA's forecast was based on additional assumptions as follows:

- a. The future influence on energy sales of the economic, demographic, and weather factors was assumed to be similar to that estimated from 1980 through 2023.

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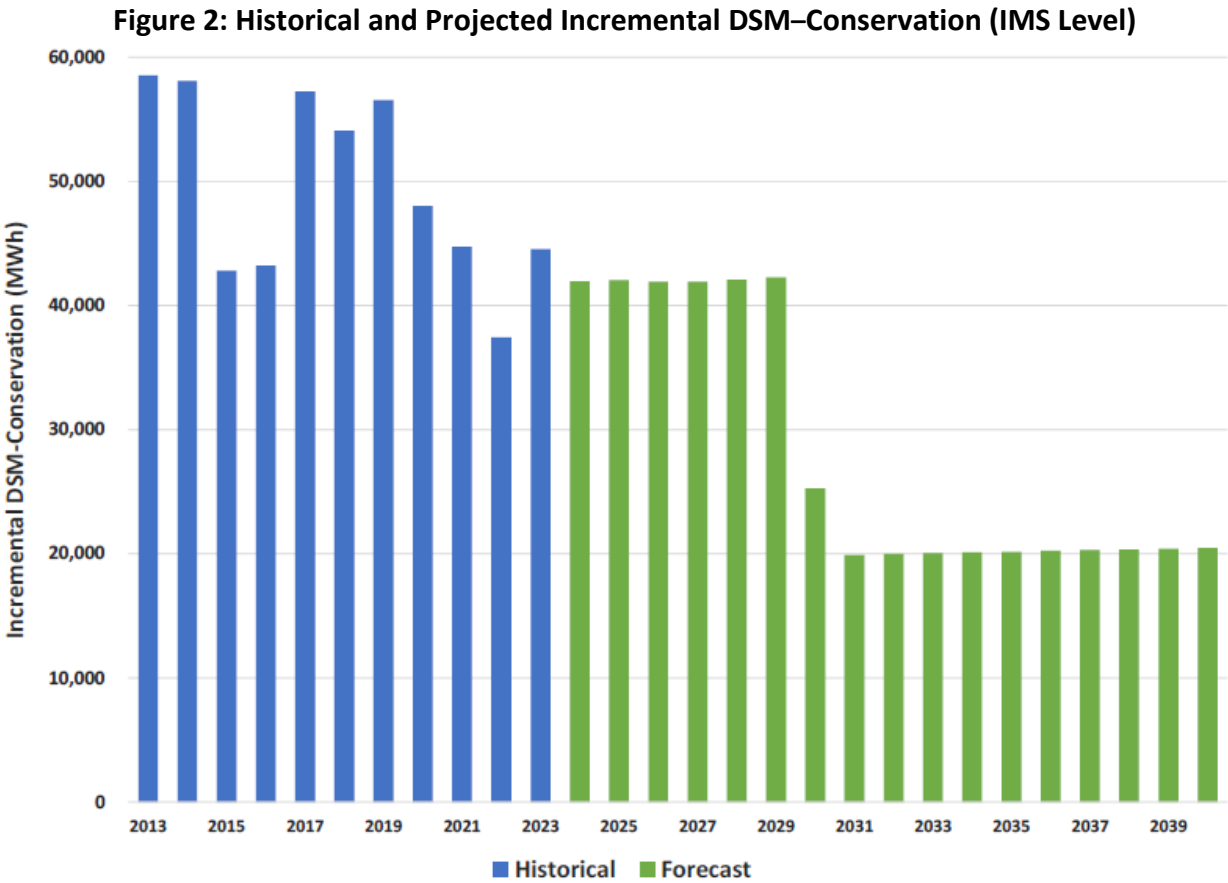
<sup>6</sup> These terms do not refer to SMMPA's peak load coincident with the MISO total system peak load.

- b. The future influence on load factors of weather variables, electricity prices, and seasonal factors was assumed to be similar to that estimated from 1995 through 2023.
- c. The load forecast does not explicitly reflect potential future effects of increases in appliance design efficiency or building insulation standards, development of substitute energy sources, or load-side generation, consumers switching to traditional or new types of electrical end-uses from other alternatives, consumers switching from electrical appliances to other alternatives, and variations in load that might result from legal, legislative, or regulatory actions.
- d. Recent hourly load patterns for the members were assumed to be reasonable representations of future load patterns.

### *E.3. Adjustments*

#### *E.3.1 DSM Conservation*

SMMPA adjusted its load forecast by adding the average change in DSM savings from 2005-2023 to historical growth rates for residential, commercial, and industrial classes to reflect incremental conservation efforts, with cumulative DSM savings totaling approximately 41,000 GWh at the retail meter from 2008-2022. The base load forecast was adjusted upward to estimate potential aggregate retail sales if no further DSM conservation activity occurs. Meanwhile, the Inlet to Member Systems (IMS) energy requirements and peak demand forecasts were adjusted downward to account for projected DSM savings. Historical and forecasted DSM savings are shown in Figure 2 below.



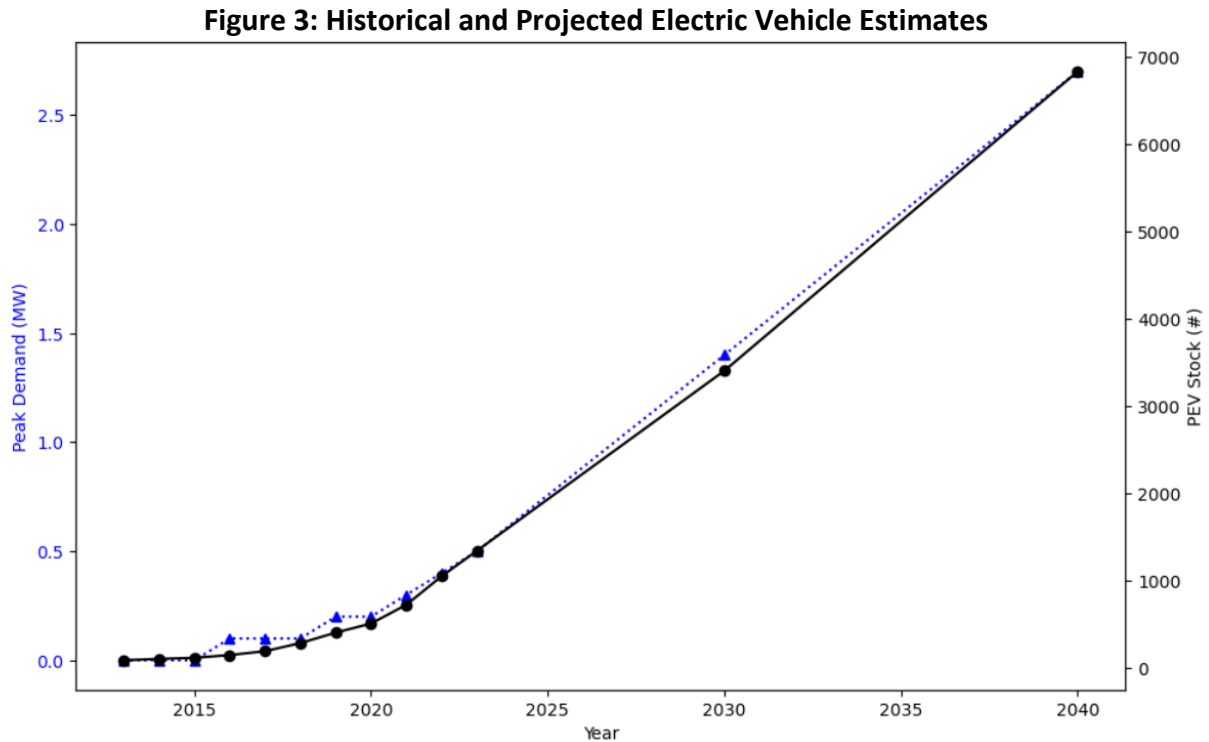
Future DSM impacts are based on 1.5 percent of average IMS energy over a rolling three-year period, which aligns with state Energy Conservation and Optimization (ECO) goals, with peak demand reductions derived from historical load factors. SMMPA expects the effectiveness of DSM savings to decline gradually due to saturation in energy efficiency measures and shifting DSM impacts to lower load factor end uses. A sharp decline in projected DSM savings after 2030 arises from the departure of Austin Utilities (AU) and Rochester Public Utilities (RPU) from SMMPA. AU has since decided to remain, which will require adjustments in future IRPs.

SMMPA responded to Department Information Request No. 4 by explaining that, due to timing constraints, AU’s renewal of its power sales contract with SMMPA in August 2024 was not included in the 2024 load and DSM forecasts. However, SMMPA will incorporate this renewal into future forecasts to reflect AU’s continued membership beyond 2030, which will contribute approximately 5,000,000 kWh annually to SMMPA’s aggregated savings goals during the 2030–2040 forecast period.

*E.3.2. Electric Vehicles (EV)*

SMMPA adjusted its load forecast to reflect the increasing adoption of EVs. The Agency incorporated historical and projected EV penetration rates based on data from the Minnesota Department of Transportation and the EIA’s *Annual Energy Outlook 2023*. The forecast assumes an annual charging energy consumption of approximately 3,500 kWh per EV and a coincident peak demand contribution of 0.4 kW per EV. This forecast of EV adoption leads to a projected increase in energy demand from

5,376 megawatt hours (MWh) in 2023 to 27,331 MWh in 2040. Peak demand rises from 0.5 MW to 2.7 MW during that period. Figure 3 below shows the resulting estimated EV counts and annual coincident peak demand impacts.<sup>7</sup>



*E.3.3. Wholesale Forecast*

SMMPA’s wholesale forecast considers various resources, such as conservation, direct load control, interruptible load, Western Area Power Administration (WAPA) allocations, and behind-the-meter generation. Two members, AU and RPU, operate under partial requirements arrangements with Contract Rates of Delivery (CROD) of 70 MW and 216 MW, respectively. These CRODs limit SMMPA’s load requirements. Any load growth above these limits is not served by SMMPA. The wholesale forecast is based on net IMS forecasts, with the capacity and generation from these resources subtracted, and adjusted for the impacts of WAPA allocations.

*E.4. Forecast Results*

Table 1 below shows SMMPA’s Base Case IMS energy and peak demand forecasts after netting away projected impacts of future DSM activity.

<sup>7</sup> Figure 3 is a summary of the data presented in Table 3-1 of SMMPA’s Petition.

**Table 1: SMMPA Base Case Net IMS<sup>8</sup> Energy and Peak Demand**

Year	Energy (MWh)	Peak Demand (MW)
2024	2,918,185	561.5
2025	2,917,574	563.1
2026	2,926,402	564.2
2027	2,937,258	565.5
2028	2,954,947	566.4
2029	2,961,304	568.1
2030	1,774,431	285.7
2031	1,409,102	286.7
2032	1,415,510	287.2
2033	1,417,272	288.5
2034	1,421,227	289.4
2035	1,425,067	290.2
2036	1,430,781	290.3
2037	1,432,315	291.7
2038	1,435,723	292.5
<b>Compound Avg. Growth Rates</b>		
2024-2029	0.3%	0.2%
2031-2038	0.3%	0.3%

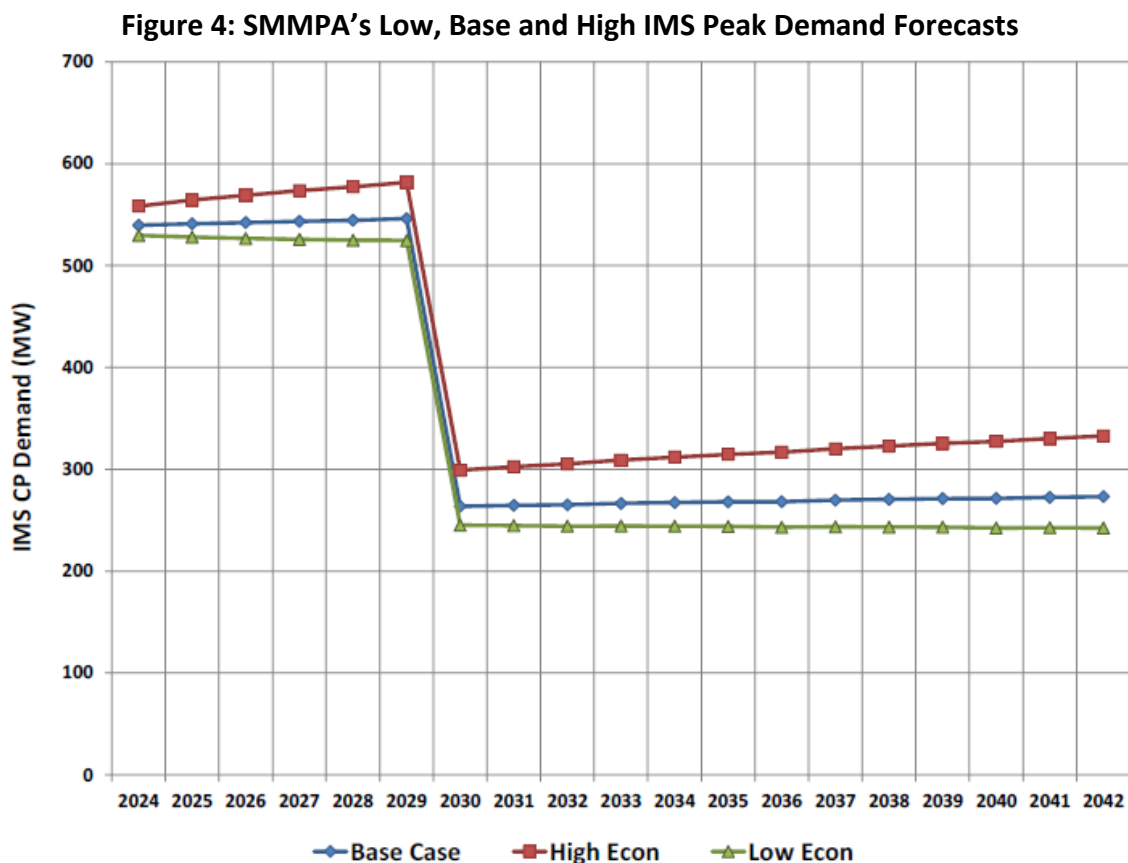
As shown in Table 1, SMMPA anticipates a compound average growth rate (CAGR) of 0.3 percent for energy and 0.2 percent for peak demand between 2022 and 2029, while AU and RPU remain members. And from 2031 through 2038, SMMPA projects a CAGR of approximately 0.3 percent for both energy and peak demand.

Figure 4 below shows SMMPA's Low, Base and High Economic IMS peak demand forecasts. The High and Low forecasts differ from the Base Case by approximately positive 45 MW and negative 23 MW by 2034, with adjustments reflecting the departure of two SMMPA members in 2030.<sup>9</sup> These variations arise from differing economic and demographic growth projections, with the Base Case assuming less optimistic growth.

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<sup>8</sup> Inlet to Member System. IMS is the energy delivered to SMMPA's member communities and does not include the Agency's transmission line losses.

<sup>9</sup> As noted above, the impact of AU signing a new contract with SMMPA will be addressed in future forecasts.



#### *E.1.1. Department Review*

#### *E.5.1. Department Analysis*

Given the relatively small (40 MW) near term capacity needs<sup>10</sup> and the late change caused by AU re-signing a contract with SMMPA, the Department did not conduct a formal review of the Agency's demand and energy forecasts. However, based upon past experience, the Department concludes that the Agency's range of forecasts should cover any issues that the Department would have discovered in SMMPA's forecast. In addition, any significant forecast errors can be addressed in future IRPs. Therefore, the Department concludes that SMMPA's forecast is reasonable for planning purposes.

#### *E.5.2. Department Recommendation*

The Department recommends that the Commission accept SMMPA's energy and demand forecast for this IRP.

<sup>10</sup> See page 8-8 of the Petition.

F. *MODELING AND EXPANSION PLAN*

SMMPA uses a capacity expansion model called AURORAxmp Electric Market Model (Aurora). SMMPA used the following assumptions in the Agency's Aurora modeling in its petition:<sup>11</sup>

- a. Retirement of Sherco 3, the coal fired generator that SMMPA co-owns with Xcel Energy, at the end of 2030.
- b. Expiration of the 100.5 MW power purchase agreement with the Wapsipinicon wind farm in 2029.
- c. Retirement of the six wind turbines owned by the Agency in 2025 (8.6 MW).
- d. Expiration of the contract for output from the Olmsted County Waste to Energy Facility in 2030.
- e. Retirement of the 1.6 MW Mora landfill gas generator in 2032.
- f. Continuation of the contracts SMMPA has with its members for use of member-owned natural gas, diesel, and dual fuel generating units.
- g. A capacity reserve margin of 9.0 percent for the summer season, 14.2 percent for fall season, 27.4 percent for the winter season, and 26.7 percent for spring season based on MISO's 2024/25 Planning Year requirements.
- h. The study period includes the 15 years from 2025 through 2039. The AURORA optimization analysis evaluates options through 2050 to account for end-effects.
- i. Total present-worth costs are expressed in 2024 dollars and are calculated by discounting annual costs with SMMPA's cost of money.
- j. Projected future demand and energy forecasts were developed by nFront Consulting.
- k. As required by Minn. Stat. § 216B.2422 subd.3, AURORA includes the cost of environmental externalities issued by the Commission on June 16, 2017, when optimizing future resource options.
- l. The model uses the Agency's peak demand for determining resource requirements, not its demand coincident with the MISO peak.<sup>12</sup>
- m. The model reflects the expiration of the power sales contracts of RPU and AU with the Agency on March 31, 2030.
- n. The MISO Unforced Capacity rating (UCAP), which is generation capacity after considering forced outage rate for each generator, was

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<sup>11</sup> See page 2-2 of the Petition.

<sup>12</sup> This choice means the model acquires more capacity than needed strictly to meet MISO reliability requirements but ensures that SMMPA's planning hedges all of the Agency's load against MISO market volatility.

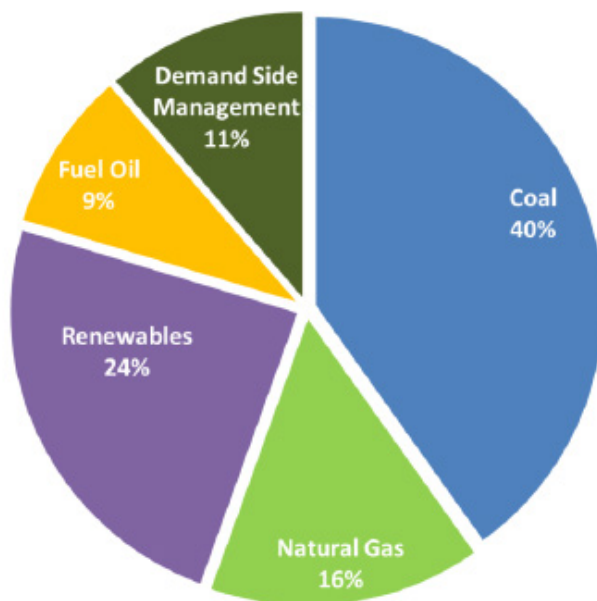
adjusted downward in 2028 to estimate the impact of MISO's change in accreditation to a Direct Loss-of-Load (DLOL) method.

- o. The model assumes a 36 percent solar accreditation for the summer season and two percent for the winter season.
- p. The model assumes 12 percent accreditation for wind generation during the summer season and 14 percent for winter season.

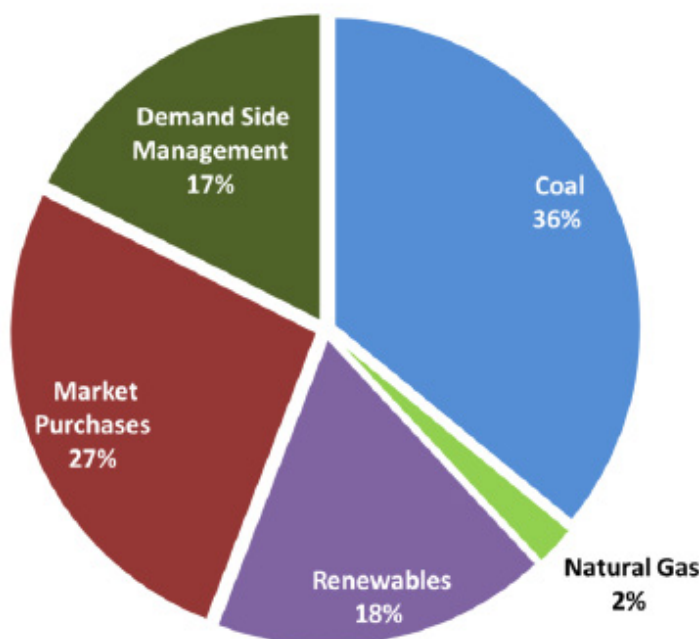
*F.1. Existing Units*

SMMPA operates entirely within MISO, where it must own or control enough generating capacity to meet its forecasted load coincident with MISO's peak plus MISO's reserve requirements. However, SMMPA does not directly run its generation to serve its load. Instead, all its resources are offered into the MISO market, which dispatches generation based on system-wide economics and operational needs. SMMPA then purchases the energy required to serve its member from the MISO market. Figure 5 below shows SMMPA's 2023 resource capacity mix and Figure 6 illustrates SMMPA's 2023 energy mix.

**Figure 5: SMMPA's 2023 Capacity Mix**





**Figure 6: SMMPA's 2023 Energy Mix**

The largest resource in SMMPA's fleet is its 41 percent ownership share in Sherco 3, co-owned with Xcel Energy. Sherco 3 has been a critical resource for SMMPA, and it is planned to retire in 2030. To complement its baseload capacity, SMMPA has two natural gas reciprocating engine plants: the Fairmont Energy Station, with a capacity of 26 MW installed in 2013, and the Owatonna Energy Station, with a capacity of 38.8 MW installed in 2018. These intermediate load facilities offer flexible generation.<sup>13</sup>

For peaking needs, SMMPA maintains 161.1 MW of capacity, including dual-fuel units such as a 12 MW facility at Fairmont, along with additional peaking units owned by SMMPA members that utilize natural gas, oil, and dual-fuel technologies. This capacity is detailed in Table 2 below. SMMPA's renewable energy portfolio includes over 217 MW of capacity, featuring 8.5 MW of SMMPA-owned wind turbines, 1.6 MW of landfill gas generation, and additional solar and wind projects secured through power purchase agreements.

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<sup>13</sup> On page 4-4 of the Petition SMMPA explains why it considers these units to be intermediate units as follows: "Although internal combustion generating plants are generally considered as peaking resources, these high-efficiency units are up to 20 percent more efficient than traditional internal combustion engines or combustion turbines and are therefore dispatched by MISO as intermediate load units."

**Table 2: SMMPA Generating Capacity – Peaking Resources**

Station	Fuel Type	Plant Total (MW)
Blooming Prairie	Oil	6.8
Fairmont (SMMPA-owned)	Dual Fuel	12.0
Grand Marais	Oil	6.0
Litchfield	Dual Fuel	4.2
	Oil	15.8
Mora	Dual Fuel	6.1
	Oil	6.8
New Prague	Dual Fuel	18.0
North Branch	Oil	10.0
Owatonna	Natural Gas	16.5
Preston	Oil	4.1
Princeton	Oil	12.1
Redwood Falls	Dual Fuel	6.1
	Oil	8.3
Saint Peter	Oil	12.0
Spring Valley	Dual Fuel	3.3
	Oil	4.0
Wells	Dual Fuel	7.2
	Oil	1.8
<b>Total Peaking Capacity</b>		<b>161.1</b>

**Table 3: SMMPA Generating Capacity – Renewable Resources**

Station & Unit Number	Type	Structure	Year Installed	Unit Capacity (MW)
Fairmont Phase I	Wind	Owned	2003	1.9
Fairmont Phase II	Wind	Owned	2004/2005	3.3
Redwood Falls Phase II	Wind	Owned	2004/2005	3.3
Redwood Falls Hydro	Hydro	Member	N/A	0.5
OWEF	Biomass	PPA	2006	1.0
Wapsipinicon	Wind	PPA	2009	100.5
Mora Landfill Gas	Biomass	Owned	2012	1.6
Bio-diesel Fuel	Biomass	Members	N/A	N/A
Lemond Solar	Solar	PPA	2017	5.0
Stoneray	Wind	PPA	2020	100.0
<b>Total</b>				<b>217.1</b>

### *F.2. Scenarios and Contingencies*

SMMPA employed the Aurora modeling framework to evaluate seven different scenarios representing percentages of carbon-free energy penetration ranging from 60 percent to 166 percent. SMMPA conducted sensitivity analyses of the seven alternative base cases, including evaluating:

- Load forecast – 5% low, 5% high, 25% high (New Member Scenario);
- Externality costs – high;
- RECs – 50% higher, 50% lower;
- Locational marginal prices (LMP) – 50% high, 50% low;
- Natural gas prices – 50% high with 50% high LMP, 50% low with 50% low LMP; and
- Renewable contract prices – high, low.

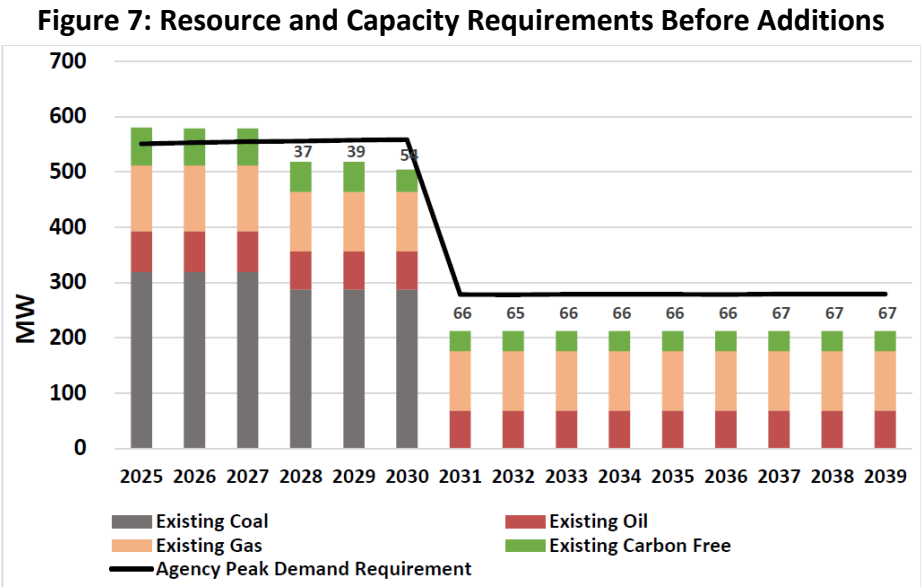
### *F.3. Other Model Inputs*

To analyze the scenarios, SMMPA allowed the Aurora model to choose between the following supply-side resource options:

- Short-term market capacity purchases in 1 MW increments.
- 2 MW quick-start diesel generators for localized peaking support.
- 25 MW aggregated installations of small quick-start diesel generators to address reliability needs.
- 25 MW installations of high-efficiency natural gas reciprocating engines, designed for intermediate and peaking loads.
- 25 MW increments of new solar installations to increase renewable capacity.
- 25 MW increments of new wind installations, emphasizing carbon-free energy.
- 5 MW battery storage installations, tested as an alternative to conventional generation.

### *F.4. SMMPA's Preferred Plan*

Figure 7 below compares SMMPA's forecasted demand requirements (Base Load Forecast) to its current generation resources and illustrates a 37 MW capacity shortfall in 2028, which results from MISO's change in the DLOL process for determining generator capacity accreditation. After Sherco 3's retirement in 2030, SMMPA will only need to replace 66 MW of capacity, rather than the approximately 360 MW share of Sherco 3. The demand requirements include a two percent surplus to account for uncertainties in MISO's reserve calculation process, which is based on factors like generator performance, transmission losses, and load forecasts. SMMPA intentionally includes this surplus to mitigate these uncertainties.



SMMPA developed seven base case alternatives, labeled P1 through P7, for this analysis, as detailed in Tables 3 and 4 below.<sup>14</sup> These tables present the new resources added under each alternative, along with the cumulative net present value (NPV) of each case under various sensitivities. The NPV for each option is compared to the P1 “Optimized Case.” All cases assume the retirement of Sherco 3 at the end of 2030, which will result in a loss of approximately 365 MW of MISO-accredited capacity. Additionally, SMMPA anticipated a loss of more than 280 MW of load due to the departure of RPU and AU in 2030.<sup>15</sup>

<sup>14</sup> Gold Boxes in the tables represent lowest cost option.  
<sup>15</sup> As explained above, after the development of these base case alternatives, AU and SMMPA reached an agreement to extend the power sales contract.

**Table 4: Base Case and Sensitivity Analysis at Normal Loads**

2031 Additions	Optimal Case (Base)	60% Carbon Free in 2031 60 Solar/40 Wind	80% Carbon Free in 2031 60 Solar/40 Wind	Renewable Only Option (166% CF)	80% CF Capacity Only Battery Sherco Site	80% CF Capacity Only Battery Member Site	80% Carbon Free NREL Battery
Case #	P1	P2	P3	P4	P5	P6	P7
New Gas (MW)	70	65	55			49	
New Oil (MW)							
New QS (MW)	14	14	14			14	
New Wind (MW)			50	500	50	50	50
New Solar (MW)		175	225		225	225	225
New Battery (MW)					90	10	90
Base Case	IRP1	IRP2	IRP3	IRP4	IRP5	IRP6	IRP7
Accumulated NPV 2050	1,448,285	1,508,357	1,539,887	1,593,798	1,545,916	1,545,155	1,587,857
(Better)/Worse from "Base"	-	60,072	91,602	145,513	97,631	96,870	139,572
High REC Prices - 50% High	IRP1	IRP2	IRP3	IRP4	IRP5	IRP6	IRP7
Accumulated NPV 2050	1,465,995	1,517,221	1,542,051	1,569,779	1,548,080	1,547,319	1,590,021
(Better)/Worse from "Base"	-	51,226	76,056	103,785	82,085	81,324	124,027
Low REC Prices - 50% Low	IRP1	IRP2	IRP3	IRP4	IRP5	IRP6	IRP7
Accumulated NPV 2050	1,430,576	1,499,493	1,537,724	1,617,816	1,543,753	1,542,992	1,585,694
(Better)/Worse from "Base"	-	68,917	107,148	187,240	113,176	112,415	155,118
High LMPs - 50% High	IRP8	IRP9	IRP10	IRP11	IRP12	IRP13	IRP14
Accumulated NPV 2050	1,511,681	1,507,531	1,510,281	1,540,365	1,562,552	1,520,575	1,584,852
(Better)/Worse from "Base"	-	(4,150)	(1,400)	28,684	50,871	8,894	73,171
Low LMPs - 50% Low	IRP15	IRP16	IRP17	IRP18	IRP19	IRP20	IRP21
Accumulated NPV 2050	1,250,344	1,377,825	1,444,662	1,559,197	1,441,229	1,448,892	1,502,765
(Better)/Worse from "Base"	-	127,481	194,318	308,852	190,885	198,548	252,421
High LMPs & NG - 50% High	IRP22	IRP23	IRP24	IRP25	IRP26	IRP27	IRP28
Accumulated NPV 2050	1,609,226	1,601,560	1,597,285	1,588,524	1,610,706	1,603,340	1,633,033
(Better)/Worse from "Base"	-	(7,666)	(11,941)	(20,702)	1,480	(5,886)	23,807
Low LMPs & NG - 50% Low	IRP29	IRP30	IRP31	IRP32	IRP33	IRP34	IRP35
Accumulated NPV 2050	1,242,218	1,370,130	1,437,542	1,554,781	1,436,759	1,442,071	1,498,236
(Better)/Worse from "Base"	-	127,912	195,324	312,564	194,541	199,853	256,018
High PPA - 25% High	IRP36	IRP37	IRP38	IRP39	IRP40	IRP41	IRP42
Accumulated NPV 2050	1,448,285	1,563,782	1,628,801	1,770,240	1,634,817	1,634,061	1,676,704
(Better)/Worse from "Base"	-	115,497	180,515	321,955	186,532	185,775	228,419
Low PPA - 25% Low	IRP43	IRP44	IRP45	IRP46	IRP47	IRP48	IRP49
Accumulated NPV 2050	1,448,211	1,452,771	1,450,769	1,417,314	1,456,914	1,456,029	1,498,814
(Better)/Worse from "Base"	-	4,560	2,558	(30,897)	8,703	7,818	50,603
High Externality	IRP64	IRP65	IRP66	IRP67	IRP68	IRP69	IRP70
Accumulated NPV 2050	1,528,130	1,587,746	1,618,416	1,667,675	1,619,793	1,623,219	1,661,693
(Better)/Worse from "Base"	-	59,616	90,286	139,544	91,663	95,089	133,562

**Table 5: High and Low Load And No Market Capacity Sensitivity Cases**

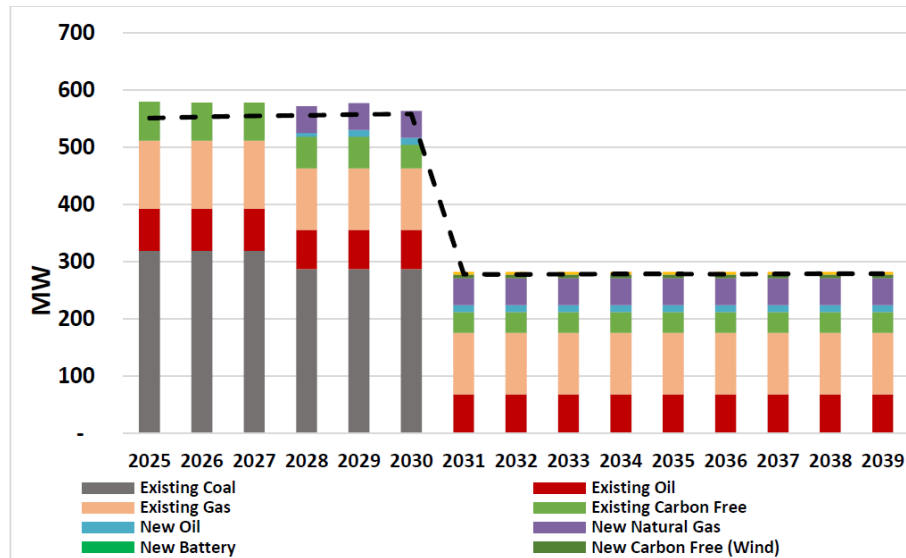
2031 Additions	Optimal Case (Base)	60% Carbon Free in 2031 60 Solar/40 Wind	80% Carbon Free in 2031 60 Solar/40 Wind	Renewable Only Option (166% CF)	80% CF Capacity Only Battery Sherco Site	80% CF Capacity Only Battery Member Site	80% Carbon Free NREL Battery
Case #	P1	P2	P3	P4	P5	P6	P7
High Load - 5% High	IRP50	IRP51	IRP52	IRP53	IRP54	IRP55	IRP56
Accumulated NPV 2050	1,513,023	1,573,088	1,604,609	1,658,557	1,610,673	1,609,861	1,652,573
(Better)/Worse from "Base"	-	60,064	91,585	145,534	97,650	96,838	139,550
Low Load - 5% Low	IRP57	IRP58	IRP59	IRP60	IRP61	IRP62	IRP63
Accumulated NPV 2050	1,383,398	1,443,463	1,474,984	1,528,932	1,481,048	1,480,236	1,522,948
(Better)/Worse from "Base"	-	60,064	91,585	145,534	97,650	96,838	139,550
Large New Member - 25% High Load	IRP71	IRP72	IRP73	IRP74	IRP75	IRP76	IRP77
Accumulated NPV 2050	1,705,997	1,791,191	1,811,056	1,993,168	1,850,081	1,838,631	1,938,503
(Better)/Worse from "Base"	-	85,193	105,059	287,170	144,084	132,634	232,505

SMMA did not choose the least cost scenario (P1) based on its Aurora analysis. Instead, SMMPA chose an alternative case as the preferred plan (P3), which is \$90 million more expensive than the least-cost case P1. SMMPA stated that it chose its preferred plan for three main reasons: first, it supports SMMPA's "2.0" goal of achieving 80 percent carbon-free energy after the retirement of Sherco 3; second, it helps mitigate potential financial risks related to over-reliance on the REC market; third, it offers a physical asset hedge against MISO market price fluctuations. Figure 8 below shows the resource mix of the Preferred Plan, including:

- Retirement of the Agency-owned wind turbines in 2025;
- Expiration of Wapsipinicon wind contract in 2029;
- Retirement of Sherco 3 in 2030;

- Expiration of Olmsted Waste to Energy Facility contract in 2030;
- Retirement of Mora landfill gas generator in 2032;
- All existing gas and oil plants remaining in service through the study period;
- Addition of 14 MW new emergency diesel engines prior to 2030;
- Addition of 49 MW of new natural gas-fired generation in 2028;
- Addition of 225 MW of new solar resources in 2031; and
- Addition of 50 MW of new wind resources in 2031.

**Figure 8: Resource Mix of the Preferred Plan  
(P3: 80 percent Carbon Free)**



SMMPA's five-year action plan outlines a need for approximately 40 MW of additional capacity. This additional capacity need primarily stems from MISO's planned changes to resource planning and accreditation rules in 2028. To meet this need, the Aurora model suggests adding 14 MW of emergency diesel generation and 49 MW to 70 MW of natural gas-fired dispatchable resources. SMMPA also plans to continue operating its existing generation fleet and maintain its DSM and energy efficiency programs to meet Minnesota's 1.5 percent annual energy savings goal. Over the past 15 years, SMMPA has replaced over 100 MW of capacity from older plants with more efficient generation and, beyond units already scheduled for retirement such as Sherco 3, does not foresee the need to retire or replace existing conventional resources in the near term. SMMPA also aims to expand its carbon-free resources, particularly solar, through small regional solar facilities or partnerships with other utilities on larger solar projects.

#### *F.5. Department Review*

##### *F.5.1. Department Analysis*

The Department reviewed SMMPA's modeling results, including the assumptions, resource mix, scenarios and alternatives analyzed and preferred plan for future capacity needs. The preferred plan's cost, which is \$90 million higher than the least-cost case (P1), invites further scrutiny. While SMMPA justifies this choice by citing its goals of achieving 80 percent carbon-free energy, mitigating risks from the REC market, and providing a hedge against MISO price fluctuations, the Department recommends that SMMPA provide in reply comments more detailed justifications for these trade-offs, particularly the significance of the financial implications. Additionally, the Department recommends that Aurora modeling explore potential technological advancements in energy storage or grid flexibility in future IRPs, as these developments could influence the need for additional dispatchable resources.

#### *F.5.2. Department Recommendation*

The Department recommends that the Commission accept SMMPA's expansion modeling and preferred plan for this IRP.

The Department recommends that SMMPA provide in reply comments a more detailed justification for selecting the preferred plan, particularly regarding the \$90 million cost differential compared to the least-cost case, and how the trade-offs align with SMMPA's long-term goals and financial considerations.

The Department recommends that Aurora modeling explore potential technological advancements in energy storage or grid flexibility in future IRPs, as these developments could influence the need for additional dispatchable resources.

### *G. REGULATORY COMPLIANCE*

Several statutes regulate conservation and climate related emissions.<sup>16</sup> Compliance with regulations can be somewhat unique for SMMPA in that it is a generation and transmission joint action agency instead of a vertically integrated, investor-owned utility. But as a utility, SMMPA is still subject to certain statutes. Depending upon SMMPA's and associated parties' future decisions, along with the role of future certificate of need proceedings, future IRPs may change, albeit in conjunction with state and federal regulatory, market and technological changes.

#### *G.1. Minnesota Energy Conservation Goals*

The Department reviews SMMPA's plans for compliance with the ECO requirements in other proceedings.<sup>17</sup> As described below, SMMPA has consistently satisfied the ECO standards. Going

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<sup>16</sup> The ones examined in this section are Minn. Stat. §§ 216B.241, 216B.1691, subd. 2a and 2g, and 216H.02.

<sup>17</sup> In the Matter of the Electric Conservation Improvement Program (CIP) 2022 Results and Energy Conservation and Optimization (ECO) 2024 Plan, Letter, April 1, 2024, Docket No. E,G999/CIP-23-24, (eDockets) [20244-204824-09](#); In the Matter of the Electric Conservation Improvement Program (CIP) 2021 Results and 2023 Plan, Letter, December 7, 2022, Docket No. E,G999/CIP22-24, (eDockets) [202212-191178-07](#); In the Matter of the Electric Conservation Improvement Program (CIP) 2020 Results and 2022 Plans, Letter, November 29, 2021, Docket No. E,G999/CIP-21-24, (eDockets) [202111-](#)

forward, the Department appreciates SMMPA's efforts and anticipates continued compliance with the ECO standards.

In 2007, the Minnesota legislature set an energy savings goal for electric utilities with the Next Generation Energy Act,<sup>18</sup> which requires electric utilities to produce energy savings equal to 1.5 percent of total energy sales.<sup>19</sup> Its successor, the Energy Conservation and Optimization Act of 2021 (ECO Act),<sup>20</sup> modernized the Conservation Improvement Program (CIP) to provide a more holistic approach to energy efficiency programming. The ECO Act allows consumer-owned utilities (COU), such as SMMPA, to include load management and efficient fuel switching programs in ECO plans.<sup>21</sup>

ECO Act goals include:

- Conservation energy savings of 0.9 percent of gross annual retail sales for COUs, rather than the 1 percent goal for public utilities. The ECO Act distinguishes between energy savings from conservation improvements, efficient fuel switching improvements, electrical utility infrastructure projects, and recovery of waste heat.
- Total energy savings of 1.5 percent of gross annual retail sales for COUs, rather than the 1.75 percent goal for public utilities.<sup>22</sup> Prior to the ECO Act, both COUs and public utilities had the same goal of 1.5 percent.<sup>23</sup>
- Spending cap on research and development equal to 10 percent of the total amount spent and invested on energy conservation improvements.
- Spending on energy conservation program for low-income customers of at least 0.2 percent of gross operating revenue from residential customers.<sup>24</sup>
- Spending cap on distributed and renewable generation (DRG) projects equal to up to 5 percent of the total amount spent on energy conservation improvements.<sup>25</sup>
- Green building programs that facilitate professional engineering verification to qualify a building as ENERGY STAR-labeled, Leadership in Energy and Environmental Design (LEED) certified, or Green Globes certified.<sup>26</sup>

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[180173-01](#); In the Matter of the Electric Conservation Improvement Program (CIP) 2019 Results and 2021 Plans, Letter, December 17, 2020, Docket No. E,G999/CIP-20-24, (eDockets) [202012-169110-08](#); and In the Matter of the Electric Conservation Improvement Program (CIP) 2018 Results and 2020 Plans, Letter, January 17, 2020, Docket No. E,G999/CIP-19-24, (eDockets) [20201-159276-01](#).

<sup>18</sup> Prior to 2007 there were conservation spending goals.

<sup>19</sup> Laws of Minn. 2007, Ch. 136, art. 2, sec. 4.

<sup>20</sup> Laws of Minn. 2021, Ch. 29.

<sup>21</sup> Laws of Minn. 2021, Ch. 29, Sec. 2 and 4.

<sup>22</sup> Minn. Stat. §§ 216B.241, subd. 1c, and 216B.2403, subd. 2.

<sup>23</sup> Laws of Minn. 2024, Ch. 127, Sec. 11 amended the statute to now include the savings goal in 2024 Minn. Stat. § 216B.2403, subd. 3. See Laws of Minn. 2021, Ch. 29, Sec. 6 for when public utilities and cooperatives had the same 1.5 percent goal.

<sup>24</sup> Minn. Stat. § 216B.2403, subd. 5.

<sup>25</sup> Minn. Stat. § 216B.2411, subd. 1.

<sup>26</sup> Minn. Stat. § 216B.241, subd. 1f.



The Department reviewed the ECO and CIP review letters from 2019 through 2023 and found only evidence of compliance. Based upon this review the Department has no further conservation-related recommendations for SMMPA.

## G.2. Minnesota Carbon Free Standard

In 2023, Minnesota enacted standards that require zero carbon emissions from electric utilities by 2040. The standards require that a minimum percentage of a utility's retail electricity sales be from technologies that generate electricity without emitting carbon dioxide. Stepped percentages required in statute subject a utility to progressively higher minimum percentages every five years. In the Petition SMMPA describes its compliance plan: "After including the carbon free attributes associated with energy from MISO and with the ability to purchase additional RECs if needed, the Agency should meet the State goals of 90 percent by 2035 and 100 percent by 2040."<sup>27</sup>

SMMPA's preferred plan, for the most part, forecasts compliance with statutory goals, except for one instance of projected noncompliance in 2030. Various risks may contribute to the plan's inaccuracy or noncompliance. The Agency cites these three as particularly salient factors: recent changes in SMMPA's Membership; Commission determinations regarding how to count resources for compliance purposes; and, rules regarding MISO accreditation.<sup>28</sup> SMMPA's current plans imply that the Agency will need to increase the percent carbon-free generation by almost all of the 10 percent step-up in the last year before the standard rises to 100 percent carbon-free in 2040.<sup>29</sup> However, 2040 is beyond the planning period for this IRP.

Table 3 lists the carbon-free standards. The percent standards represent the percent of retail sales that must come from technologies that do not emit carbon-dioxide.<sup>30</sup>

**Table 3: The Carbon-Free Standards—Cooperatives Only<sup>31</sup>**

Year	Percent Carbon-free
2030	60%
2035	90%
2040	100%

### G.2.1. Projected Carbon Emissions Under the Preferred Plan

Figure 9 below portrays Minnesota's Carbon-free Standard and the percent of SMMPA's retail sales from technologies that do not produce carbon dioxide emissions (carbon free technologies). The figure

<sup>27</sup> Petition at 9-5.

<sup>28</sup> Petition at 1-1, Laws of Minn. 2023, Ch. 123 art. 4, sec. 5.

<sup>29</sup> Minn. Stat. § 216B.1691, subd. 2g.

<sup>30</sup> Minn. Stat. § 216B.1691, subd. 1 and subd. 2g.

<sup>31</sup> Minn. Stat. § 216B.1691, subd. 2g.

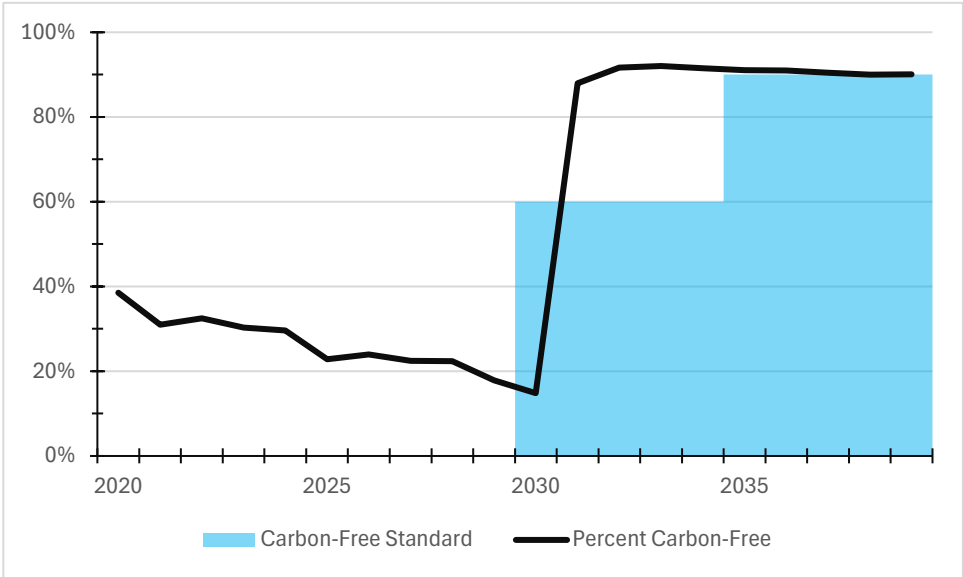
depicts SMMPA’s projections for the years 2020 through 2039.<sup>32</sup> The IRP planning period covers the years 2025 to 2039; the years 2020 to 2024 portray SMMPA’s historical trends before the planning period.

The Department calculated the carbon-free emissions using data from SMMPA’s responses to Department Information Requests. The equation used to calculate the carbon-free percentage is as follows, where “Retail Electric Sales” is defined in Minn. Stat. § 216B.1691, subd. 1:<sup>33</sup>

$$\text{Percent Carbon Free} = 100 \times \frac{\text{Carbon – Free Generation and Procurements} + \text{Renewable Energy Credits}}{\text{Total Retail Electric Sales}}$$

Based upon the Department’s calculations, in the year 2030 SMMPA falls short by approximately 45 percentage points. This one-time shortfall is illustrated in Figure 9 below.

**Figure 9: Carbon-Free Standard and SMMPA Percent of Carbon-Free Emissions (Percent of Total Retail Electric Sales)<sup>34</sup>**



<sup>32</sup> The Commission may order changes to the calculation of the percentage to meet the standard, which is currently being considered in Docket nos. 23-151 and 24-352. See *Notice of Supplemental Comment Period*, February 21, 2025, Docket No. E999/CI-23-151, (eDockets) [20252-215653-01](#); and *Notice of Comment Period*, January 22, 2025, Docket No. E-999/CI-24-352, (eDockets) [20251-214218-01](#).

<sup>33</sup> The definition of Retail Sales is the “kilowatt-hours of electricity sold in a year by an electric utility to retail customers of the electric utility or to a distribution utility for distribution to the retail customers of the distribution utility.”

<sup>34</sup> Data are from *In the Matter of Southern Minnesota Municipal Power Agency’s 2025-2039 Integrated Resource Plan*, Department Information Request Response, February 18, 2025, Docket No. ET9/RP-24-356, (eDockets) [1 20252-215495-02](#)) at Exhibit 1, Tabs Request 1 and Request 3. (Hereinafter “Information Request Response Nos. 1 to 3”) Procurements, Generations and Renewable Energy Credits were in MWH. Since the numerator and denominator both are in MWH, the units cancel when stating the percentage.

### *G.2.2. Compliance Issues with Minnesota's Carbon-Free Statute*

As explained above, data from SMMPA's responses to Department Information Request Nos. 1 and 3 suggest a potential non-compliance event in 2030 under the preferred plan. The Department notes that the event in 2030 may be because data are not refined enough to show that SMMPA will comply by the end of 2030 as required.<sup>35</sup>

SMMPA's projected percentage of retail electric sales from carbon-free technology falls 45 percentage points short of the 60 percent standard in 2030. However, because of significant changes in 2030, SMMPA's preferred plan then exceeds the standard by 28 percentage points in the following year, 2031. The one-year late increase appears in part because 2030 is a transition year for SMMPA. During the preparation of the preferred plan, SMMPA expected changes in 2031 included:

- Ending of sales contracts with AU and RPU resulting in a loss of needed capacity equivalent to 280 MW;<sup>36</sup>
- Shutdown of Sherco Unit 3 and SMMPA's 41 percent share of the plant in late 2030, which coincides in with a 1,951 GWh loss in generation from carbon-emitting technologies;<sup>37</sup>
- Addition of 492 GWh of solar generation;<sup>38</sup> and
- Addition of 181 GWh of wind generation.<sup>39</sup>

The Department is primarily concerned about the risk that expected events will not be fulfilled until after 2030, the Department recommends that SMMPA explain in reply comments what the Agency plans to do to ensure that the Agency completes enough planned actions to achieve the 60 percent Carbon-free Standard in 2030. The Department further recommends that SMMPA state in reply comments what month or quarter they currently plan to achieve the 2030 Carbon-free Standard.

Figure 10 also shows that, in 2039, SMMPA effectively projects that it will be able to increase the carbon-free percentage by roughly 10 percentage points in 2040. The Carbon-free Standard increases from 90 percent to 100 percent in 2040 and remains at 100 percent thereafter.<sup>40</sup> The Department notes that maintaining sales from carbon-free technology at 90 percent through 2039 effectively requires SMMPA to make significant investments to reach Minnesota's 100 percent standard in a single year. However, SMMPA is not required to provide a plan that meets the 2040 standard until the next IRP; the Department looks forward to reviewing SMMPA's 2040 compliance plans in the next IRP.

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<sup>35</sup> Minn. Stat. § 216B.1691 requires that SMMPA must achieve the 60 percent Carbon-Free Standard "by the end of the year" in 2030.

<sup>36</sup> Petition at 7-1. Note that Table 9.2 titled *Percent Carbon-Free Generation and Load* calculates carbon dioxide emissions differently than required by the Minn. Stat. § 216B.1691. See Petition at 9-5.

<sup>37</sup> Information Request Response Nos. 1 to 3 at Exhibit 1, tab Request 3.

<sup>38</sup> Information Request Response Nos. 1 to 3 at Exhibit 1, tab Request 1.

<sup>39</sup> Information Request Response Nos. 1 to 3 at Exhibit 1, tab Request 1.

<sup>40</sup> Minn. Stat. § 216B.1691, subd. 2g.

### *G.2.3. Alternate Estimates*

The Petition includes Table 9.2, which shows the expected percentages of the utility's load that is served by Agency owned or contract carbon-free resources. The table shows that from 2035-2039, the expected percentages fall 7 to 8 percentage points short of Minnesota's 90 percent Carbon-free Standard. SMMPA notes that after including the carbon free purchases from the external market, and with the ability to purchase RECs, the utility should be able to meet the 90 percent Carbon-free Standard.

Due to on-going proceedings, the Department is uncertain about Commission treatment of RECs and market purchases. Assuming that RECs and market purchases cannot yet be counted, the deficit in meeting the standard appears to be 7 to 8 percentage points from 2035-2039. Because of the discrepancy and the uncertainty regarding the treatment of RECs and market purchases, the Department recommends that in reply comments SMMPA describe the assumption regarding the treatment of RECs and market purchases that were used in calculating the percentage of retail electric sales coming from carbon-free technology, as depicted in Figure 10. SMMPA should include the percentage point contribution from each assumption. When describing the assumptions, SMMPA should explain the use of double-counting of RECs to meet more than one requirement, and the calculation of the carbon-free percentages from market purchases. Furthermore, SMMPA should describe any other assumption and its quantified effect on the carbon-free percentage of retail electric sales.

The Department notes that, with AU's contract extension, SMMPA will need to include AU in its next IRP. Since it SMMPA states AU and RPU combine to represent over 50 percent of the agency's current resource requirements, AU alone may have a significant effect on carbon-free resource needs in SMMPA's preferred plans and the Agency's multiple scenarios. The Department recommends that SMMPA provide further detail in reply comments on whether SMMPA calculated alternative scenarios that include AU in meeting the Carbon-free Standard.

### *G.3. Renewable Energy Standard*

Minn. Stat. § 216B.1691, subd. 2a provides standards for utilities regarding their mix of electricity from renewable energy sources, commonly known as the Renewable Energy Standard (RES). The RES statute sets a timeline for a utility to reach a certain percentage of electricity from renewable sources, where the percentage increases over time. In 2023, the legislature added to the timeline by requiring utilities to produce electricity with at least 55 percent generated from renewable sources by 2035. Allowable renewable sources are defined in Minnesota Statutes as eligible energy technologies and generate electricity from resources like wind, solar and hydroelectric.<sup>41</sup> Table 4 below lists the percentage point standards.

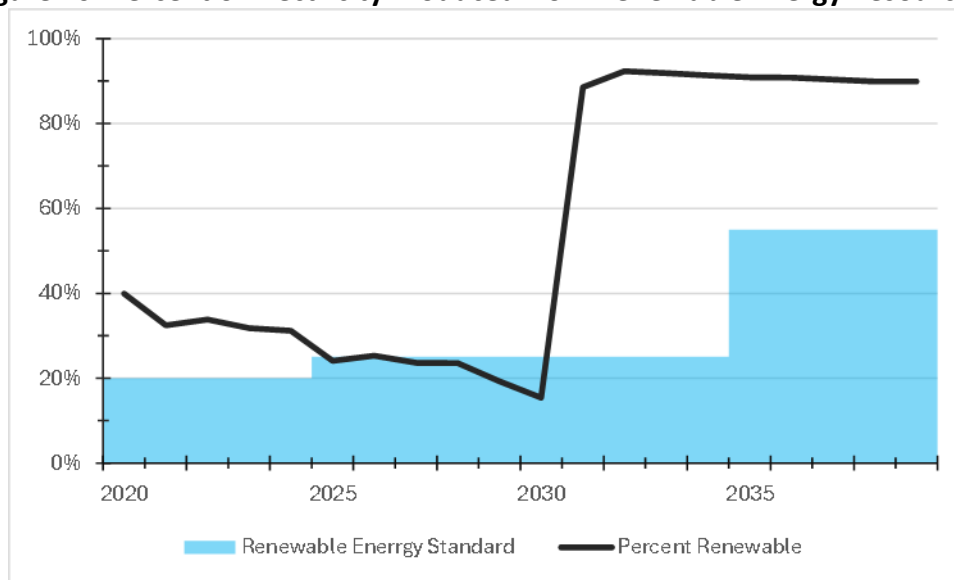
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<sup>41</sup> Minn. Stat. § 216B.1691, subd. 1.

**Table 4: Renewable Energy Standard<sup>42</sup>**

Year	Percent Renewable
2012	12%
2016	17%
2020	20%
2025	25%
2035	55%.

Figure 10 below portrays SMMPA's preferred plan and the resultant percentage point utilization of eligible energy technologies.<sup>43</sup> Utilization is in terms of the percent of electricity generated from allowable renewable resources (eligible electric energy technologies). The percentage relates the proportion of procurements and generation from renewable energy resources by SMMPA. In Figure 10 the percent renewable is calculated similarly to the calculations above in that the percent renewable equals the total of the percent of renewable energy purchases plus eligible energy credits and then divided by total retail electric sales.

**Figure 10: Percent of Electricity Produced from Renewable Energy Resources<sup>44</sup>**

<sup>42</sup> Minn. Stat. § 216B.1691, subd. 2a.

<sup>43</sup> SMMPA uses a portfolio of eligible energy technologies. Included are solar, wind, biomass. See Petition at 6-1 to 6-3.

<sup>44</sup> Sources: Minn. Stat. § 216B.1691, subd. 2a, and Information Request Response Nos. 1 to 3 at Exhibit 1, tab Request 1. Procurements, generation, Renewable Energy Credits and Total Retail Electric Sales are in MWh, where the units cancel when calculating the percent renewable.

Using data provided by SMMPA, the figure shows that SMMPA projects falling short of the renewable energy standard for the next six years. Afterward, SMMPA projects that it will comply with the standard. Within the first six-years, compliance falls short by as much as 10 percentage points. The highest level of non-compliance was in 2030, (the year that Sherco 3 shuts down) when SMMPA projects 15.4 percent renewable energy while the standard is 25 percent. However, for 3 of the 5 years of apparent noncompliance, SMMPA falls short by a small margin, 1 to 2 percentage points.<sup>45</sup>

The Department is somewhat confused by the data in that it shows SMMPA falling short of the renewable energy standard within the 5-year action plan. Therefore, the Department recommends that SMMPA provide in reply comments a discussion of whether the RES data depicted in Figure 10 is correct and, if so, the Agency’s plans to comply with the RES.

G.4. Greenhouse Gas Reduction Goal—Net Zero by 2050

Minn. Stat. § 216H.02, subd. 1 sets a goal for all sectors producing greenhouse gas emissions. As depicted in Table 5 the percentage reductions (from 2005 emissions) increase until reaching net zero emissions in 2050.

Table 5: 2024 Percent Greenhouse Gas Reduction Goals Relative to 2005<sup>46</sup>

Year	Reduction Goal
2015	15%
2025	30%
2030	50%
2050	Net Zero

G.4.1. SMMPA Greenhouse Gas Emissions

The Department examined data from SMMPA on greenhouse gas emissions provided in response to Department Information Request No. 2. Figure 11 shows SMMPA’s projected percent reduction in greenhouse gas emissions and the goals from 2005-2039. In the figure percent reduction is calculated as the percent change in greenhouse gas emissions for each year in comparison to 2005, where the greenhouse gas emissions are the sum of emissions in metric tons from coal, natural gas, fuel oil, and other sources.

<sup>45</sup> Analysis of data in Information Request Response Nos. 1 to 3 at Exhibit 1, tab Request 1.

<sup>46</sup> Source: Minn. Stat. § 216H.02, subd. 1.

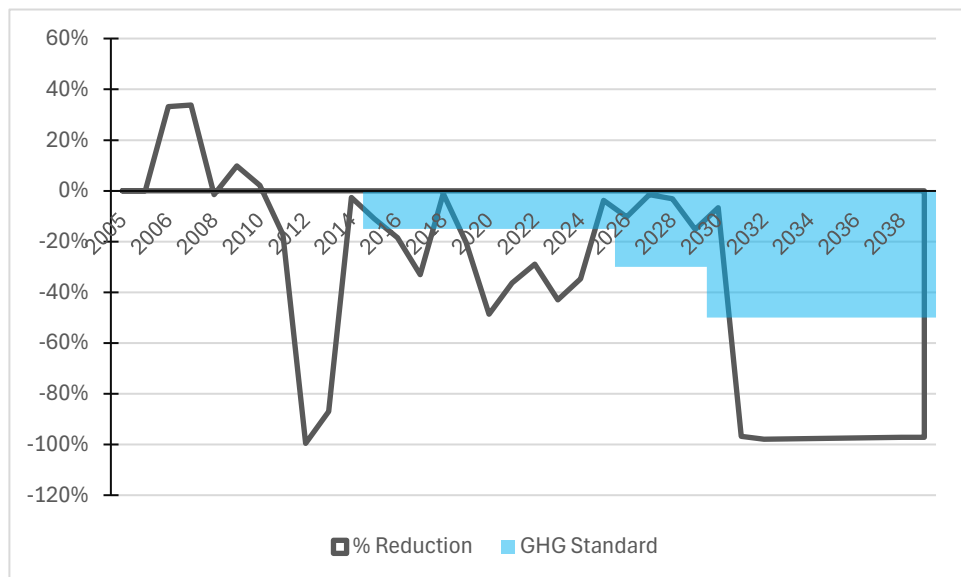
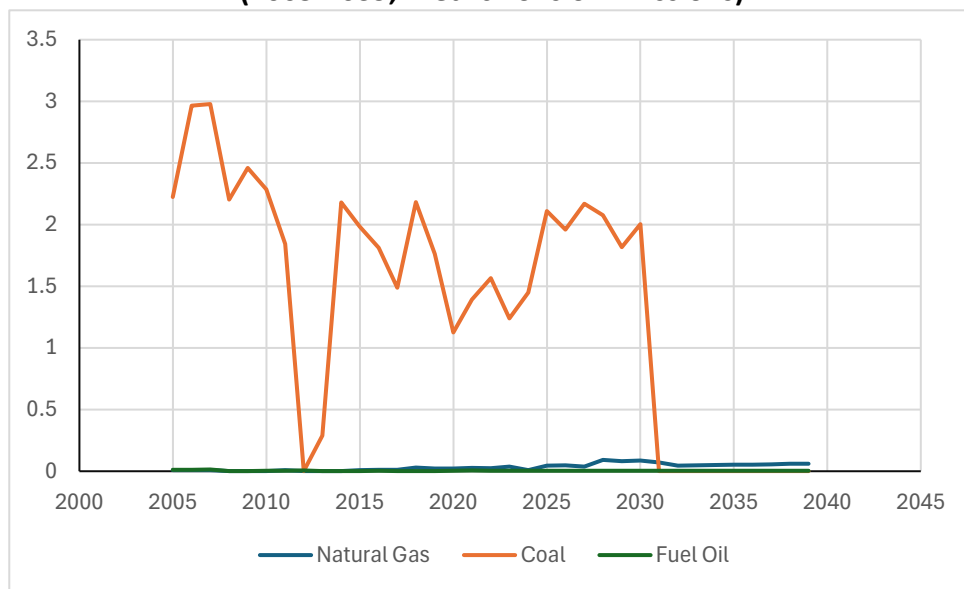
**Figure 11: Percent Reductions in Greenhouse Gas from 2005 With Emissions Goals<sup>47</sup>**

Figure 11 shows that SMMPA does not project to meet the greenhouse gas emissions goals from 2025 through 2030. From 2025-2029, SMMPA's projection falls short of the greenhouse gas goals from 15 percent to 28 percent. In 2030, when Minnesota's goal for reduction increases to 50 percent, SMMPA projects a 43 percent shortfall. SMMPA then exceeds the goal for the remainder of the IRP planning period.

The Department examined the sources of SMMPA's departure from the greenhouse gas goals from 2025-2039. Figure 12 below portrays greenhouse gas emissions by the type of resource used to generate SMMPA's electricity. Note that SMMPA's resources that emit greenhouse gases are coal, fuel oil, and natural gas.

<sup>47</sup> Sources: Minn. Stat. § 216B.1691, subd. 2a, Information Request Response Nos. 1 to 3 at Exhibit 1, tab Request 2, and Minn. Stat. § 216H.02, subd. 1.

**Figure 12: SMMPA's Greenhouse Gas Emissions by Resource Type  
(2005-2039, Metric Tons of Emissions)**



The figure shows three important aspects to SMMPA's greenhouse gas emissions. First, coal currently makes up the vast majority of SMMPA's greenhouse gas emissions. In 2025, SMMPA projects coal to comprise 97 percent of SMMPA's greenhouse gas emissions. Second, from 2023 to when Sherco 3 shuts down in 2030, greenhouse gas emissions increase, a reversal of a long-term downward trend that began in approximately 2007.<sup>48</sup> Third, in 2031, when SMMPA and Xcel retire Sherco unit 3, SMMPA's greenhouse gas production sharply drops sharply, by about 2.0 million metric tons.

#### *G.4.2. Department Analysis*

Although the Department cannot verify the cause for the departure from greenhouse gas goals, SMMPA suggests that the cause is primarily due to the dispatch of Sherco Unit 3.<sup>49</sup> Due to the structure of MISO's regulations and energy market, SMMPA states that it has little control over "how much Sherco 3 is dispatched by MISO to serve MISO load."<sup>50</sup> In any event, issues regarding Sherco unit 3's dispatch will no longer be present after Sherco unit 3 retires in 2030. Besides greenhouse gas emissions, changes to the MISO market may affect carbon emissions and the mix of renewable resources.

Because of the short fall in greenhouse gas emissions reductions over the next six years, the Department recommends that SMMPA state in reply comments further detail on its plans to meet the greenhouse gas emissions goals in the years 2025-2031.

<sup>48</sup> In 2007, Greenhouse Gas Emissions were approximately 3.0 metric tons. In 2023, Greenhouse Gas Emissions were at 1.2 metric tons.

<sup>49</sup> Petition at 9-3.

<sup>50</sup> Petition at 9-3.



#### **IV. DEPARTMENT RECOMMENDATIONS**

Based on analysis of the Petition and SMMPA's responses to Department Information Requests, the Department has prepared recommendations, which are provided below. The recommendations correspond to the subheadings of Section III above.

##### *E. FORECAST*

- E.5.2. The Department recommends that the Commission accept SMMPA's energy and demand forecast for this IRP.

##### *F. MODELING AND EXPANSION PLAN*

- F.5.2. The Department recommends that the Commission accept SMMPA's expansion modeling and preferred plan for this IRP.
- F.5.2. The Department recommends that SMMPA provide in reply comments a more detailed justification for selecting the preferred plan, particularly regarding the \$90 million cost differential compared to the least-cost case, and how the trade-offs align with SMMPA's long-term goals and financial considerations.
- F.5.2. The Department recommends that Aurora modeling explore potential technological advancements in energy storage or grid flexibility in future IRPs, as these developments could influence the need for additional dispatchable resources.

##### *G. REGULATORY COMPLIANCE*

- G.2.2. The Department recommends that SMMPA explain in reply comments what the Agency plans to do to ensure that the utility completes enough planned actions to achieve the 60 percent Carbon-free Standard in 2030.
- G.2.2. The Department further recommends that SMMPA state in reply comments what month or quarter they currently plan to achieve the 2030 Carbon-free Standard.
- G.2.3. The Department recommends that in reply comments SMMPA describe the assumption regarding the treatment of RECs and market purchases that were used in calculating the percentage of retail electric sales coming from carbon-free technology, as depicted in Figure 10.<sup>51</sup>
- G.2.3. The Department recommends that SMMPA provide further detail in reply comments on whether SMMPA calculated alternative scenarios that include AU in meeting the Carbon-free Standard.
- G.3. The Department recommends that SMMPA provide in reply comments a discussion of whether the RES data depicted in Figure 10 is correct and, if so, the Agency's plans to comply with the RES.

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<sup>51</sup> SMMPA should include the percentage point contribution from each assumption. When describing the assumptions, SMMPA should explain the use of double-counting of RECs to meet more than one requirement, and the calculation of the carbon-free percentages from market purchases. Furthermore, SMMPA should describe any other assumption and its quantified effect on the carbon-free percentage of retail electric sales.

- G.4.2. The Department recommends that SMMPA state in reply comments further detail on its plans to meet the greenhouse gas emissions goals in the years 2025-2031.

## **CERTIFICATE OF SERVICE**

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

**Minnesota Department of Commerce**  
**Comments**

**Docket No. ET9/RP-24-356**

Dated this **26<sup>th</sup>** day of **March 2025**

**/s/Sharon Ferguson**

<b>First #</b>	<b>Name</b>	<b>Last Name</b>	<b>Email</b>	<b>Organization</b>	<b>Agency</b>	<b>Address</b>	<b>Delivery Method</b>	<b>Alternate Delivery Method</b>	<b>View Trade Secret</b>	<b>Service List Name</b>
1	Generic	Commerce Attorneys	commerce.attorneys@ag.state.mn.us		Office of the Attorney General - Department of Commerce	445 Minnesota Street Suite 1400 St. Paul MN, 55101 United States	Electronic Service		Yes	24-356RP-24- 356
2	Sharon	Ferguson	sharon.ferguson@state.mn.us		Department of Commerce	85 7th Place E Ste 280 Saint Paul MN, 55101-2198 United States	Electronic Service		No	24-356RP-24- 356
3	Joe	Hoffman	ja.hoffman@smmpa.org	SMPMA		500 First Ave SW Rochester MN, 55902-3303 United States	Electronic Service		No	24-356RP-24- 356
4	Generic Notice	Residential Utilities Division	residential.utilities@ag.state.mn.us		Office of the Attorney General - Residential Utilities Division	1400 BRM Tower 445 Minnesota St St. Paul MN, 55101-2131 United States	Electronic Service		Yes	24-356RP-24- 356
5	Will	Seuffert	will.seuffert@state.mn.us		Public Utilities Commission	121 7th PI E Ste 350 Saint Paul MN, 55101 United States	Electronic Service		Yes	24-356RP-24- 356
6	Jeremy	Sutton	jb.sutton@smmpa.org	Southern MN Municipal Power Agency			Electronic Service		No	24-356RP-24- 356