

December 4, 2025

PUBLIC DOCUMENT

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

RE: **PUBLIC** Comments of the Minnesota Department of Commerce
Docket No. ET6133/RP-25-302

Dear Ms. Bergman,

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

*In the Matter of Minnesota Municipal Power Agency's Application for
Approval of its 2025-2039 Integrated Resource Plan*

The Petition was filed by Minnesota Municipal Power Agency (MMPA) on July 31, 2025.

The Department recommends that the Minnesota Public Utilities Commission (Commission) approve MMPA's IRP and is available to answer any questions the Commission may have.

Sincerely,

/s/ Dr. SYDNIE LIEB
Assistant Commissioner of Regulatory Analysis

TW/SR/ar
Attachment

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Acronyms and Abbreviations

Acronyms and Abbreviations

Agency	Minnesota Municipal Power Agency
CDD	Cooling Degree Day
CFS	Carbon Free Standard
CIP	Conservation Improvement Program
Commission	Minnesota Public Utilities Commission
CP	Coincident Peak
Department	Minnesota Department of Commerce
ECO	Energy Conservation and Optimization
EV	Electric Vehicle
FEP	Faribault Energy Park
GHG	Greenhouse Gas
HDD	Heating Degree Day
IRP	Integrated Resource Plan
MHEB	Manitoba Hydro-Electric Board
MISO	Midcontinent Independent System Operator
MMPA	Minnesota Municipal Power Agency
NCP	Non-coincident Peak
NREL	National Renewable Energy Laboratory
O&M	Operations and Maintenance
PRMR	Project Reserve Margin Requirements
RES	Renewable Energy Standard
RNG	Renewable Natural Gas
SAC	Seasonal Accredited Capacity
WAPA	Western Area Power Administration



Before the Minnesota Public Utilities Commission

PUBLIC Comments of the Minnesota Department of Commerce

Docket No. ET6133/RP-25-302

I. INTRODUCTION

A. BACKGROUND ON MMPA

Minnesota Municipal Power Agency (MMPA or the Agency) is a municipal joint action agency serving 12 member-owned municipal utilities in Minnesota. Through wholesale sales to its member utilities, MMPA provides electricity to approximately 83,000 residential customers with a combined population of approximately 170,000. In 2024, MMPA sold 1.9 million MWh of electricity to its member utilities, with a peak summer load of 422 MW. The Agency is a registered transmission owner and member of the Midcontinent Independent System Operator (MISO).

B. OVERVIEW OF MMPA'S FILING

Since MMPA meets the Minn. Stat. § 216B.2422, subdivision 1 definition of a utility,¹ it is required by Minn. R. parts 7843.0100-7843.0600 to file a proposed integrated resource plan (IRP).² The Petition is MMPA's fifth IRP and demonstrates how the Agency will provide for the capacity and energy needs of its municipal utility members for the period 2025 through 2039. The Agency filed its previous IRP, in Docket No. ET-6133/RP-18-524, in 2018. Given that MMPA identified in its 2018 IRP no additional capacity needs until 2029-2030, the Commission required that MMPA file its next resource plan no later than August 1, 2025.³ This decision was conditioned upon MMPA filing various status updates by August 1, 2022. In MMPA's compliance filing, the Agency noted the cancellation of a wind project included in the previous IRP and a new replacement wind project projected to be in service by the end of 2022. The Agency also compared energy projections from the 2018 IRP to actual energy usage since the filing and noted variances including those attributable to COVID-19.⁴

C. MMPA'S PLANNING APPROACH

MMPA applied the following steps when developing its 2025-2039 resource plan:

- i. Forecasted customer energy and capacity needs for the 2025-2039 period.
- ii. Assessed existing and committed new resources and how these resources will meet the projected need.

¹ [Minn. Stat. § 216B.2422, subd. 1](#) (2025).

² [Minn.R. 7843.0100-0600](#).

³ *In the Matter of Minnesota Municipal Power Agency's (MMPA) 2018 – 2033 Integrated Resource Plan (IRP)*, Order, May 28, 2019, Docket No. ET-6133/RP-18-524, (eDockets) [20195-153183-01](#).

⁴ *In the Matter of Minnesota Municipal Power Agency's (MMPA) 2018 – 2033 Integrated Resource Plan (IRP)*, Minnesota Municipal Power Agency, Compliance Filing, July 29, 2022, Docket No. ET-6133/RP-18-524, (eDockets) [20227-187937-01](#).

- iii. Estimated additional capacity requirements based on evaluating steps (i) and (ii) as well as additional energy requirements needed to meet Minnesota’s carbon-free standard (CFS).
- iv. Assessed potential resource options to meet the need identified in step (iii).
- v. Developed a preferred plan using resource options evaluated in step (iv) and demonstrated how the plan complies with regulatory requirements and is in the public interest.

MMPA identified a need for additional capacity requirements in both the summer and winter. Projected summer capacity requirements start at 10 MW in 2036 and increase to 20 MW in 2039, while projected winter capacity requirements start in 2030 and end in 2035, ranging from 29 MW to 43 MW. In addition to these capacity requirements, MMPA identified a need for 435 MW of carbon-free capacity over the next ten years to meet Minnesota’s CFS.

D. MMPA’S PREFERRED PLAN

MMPA plans to continue operating all of its existing resources through the planning period. The Agency’s preferred plan includes adding 50 MW of short-duration battery storage to meet capacity requirements and 435 MW of solar generation to meet carbon-free energy requirements.

While MMPA anticipates complying with the CFS in 2039 by meeting over 90% of its members’ energy requirements with wind and solar resources, it also proposes adopting renewable natural gas (RNG), hydrogen, or a combination of the two beginning in 2040 to reach the 2040 100% carbon-free requirement. MMPA notes that RNG has not yet been designated as a carbon-free resource by the Commission but that the Agency will be prepared to adapt its approach in future IRPs based on the outcome of proceedings regarding RNG’s classification.⁵

II. PROCEDURAL BACKGROUND

- | | |
|-----------------|--|
| July 31, 2025 | MMPA filed the Petition which requests the Minnesota Public Utilities Commission (Commission) approve the Agency’s 2025-2039 IRP. ⁶ |
| August 15, 2025 | The Commission posted a notice of comment period for the petition. ⁷ |

Topic(s) open for comment:

- Should the Commission accept MMPA’s Integrated Resource Plan?
- Should the Commission accept MMPA’s energy and demand forecast?

⁵The eligibility of RNG as a carbon-free resource is being discussed primarily in *In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota’s Carbon-Free Standard*, Docket No. E999/CI-24-352.

⁶ *In the Matter of Minnesota Municipal Power Agency’s Application for Approval of Its 2025-2039 Integrated Resource Plan*, Minnesota Municipal Power Agency, Initial Filing, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-02](#) (hereinafter “Petition”).

⁷ *In the Matter of Minnesota Municipal Power Agency’s Application for Approval of Its 2025-2039 Integrated Resource Plan*, Minnesota Public Utilities Commission, Notice of Comment Period, August 15, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20258-222153-01](#).

- Should the Commission accept MMPA’s economic modeling?
- Has MMPA proposed a reasonable path to meet the State’s Carbon-Free Standard?
- Are there other issues or concerns related to this matter?

III. DEPARTMENT ANALYSIS

A. OVERVIEW OF DEPARTMENT ANALYSIS

Minn. Stat. § 216B.2422, subd. 2 states:

A utility shall file a resource plan with the commission periodically in accordance with rules adopted by the commission.⁸

MMPA meets the definition of a utility in subd. 1 of the same statute and is therefore required to file a resource plan.⁹ However, subd. 2 further states that, for municipal power agencies like MMPA, which are not classified as *public* utilities:

[...] the commission’s order shall be advisory and the order’s findings and conclusions shall constitute prima facie evidence which may be rebutted by substantial evidence in all other proceedings.¹⁰

The Minnesota Department of Commerce (Department) reviewed MMPA’s IRP in accordance with the resource planning requirements listed in Minn. R. 7843.0400, and other relevant statutes and Commission Orders. The Department conducted this analysis with the understanding that the Commission’s role was advisory in this proceeding, but that the analysis in the IRP would have significant bearing on MMPA’s reliability and future regulatory proceedings.

For this resource plan, the Department reviewed MMPA’s:

- energy and demand forecast,
- economic modeling and expansion plan, and
- regulatory compliance with Minnesota’s energy conservation goals, CFS, renewable energy standard, and greenhouse gas reduction goal.

⁸ [Minn. Stat. § 216B.2422, subd. 2](#) (2025).

⁹ [Minn. Stat. § 216B.2422, subd. 1](#) (2025).

¹⁰ [Minn. Stat. § 216B.2422, subd. 2](#) (2025).

B. ENERGY AND DEMAND FORECAST

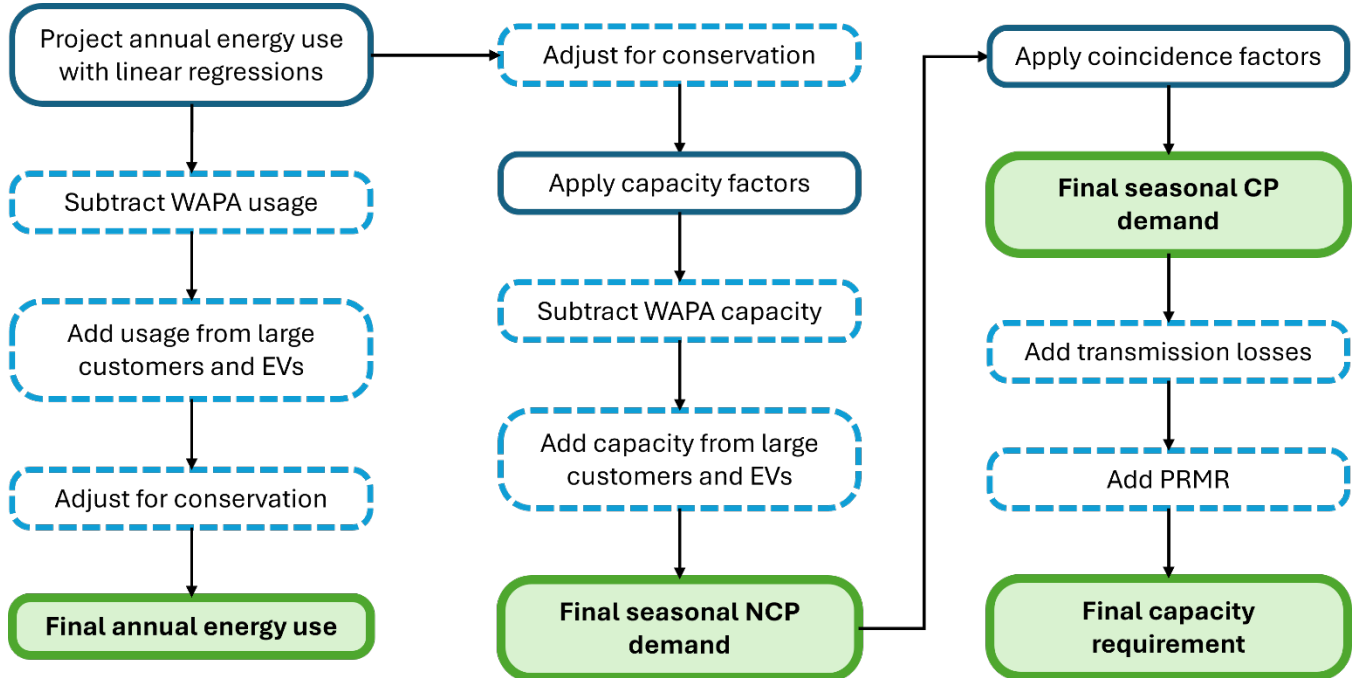
B.1. Forecast approach

MMPA applied the following steps when forecasting energy usage and demand over the planning period.¹¹ See Figure 1 for a graphic representation of the Agency's approach.

- i. Forecasted energy usage using the following steps:
 - a. used linear regression models to project energy requirements based on heating degree days (HDD), cooling degree days (CDD), population, and income per capita;
 - b. subtracted energy expected to be provided by the Western Area Power Administration (WAPA) to two of MMPA's member communities;
 - c. added incremental energy to account for anticipated energy usage of future large customers such as data centers and increasing electric vehicle (EV) penetration; and
 - d. incorporated projected conservation energy savings by applying an assumed savings rate of 1.3% to the lagging three-year rolling average of projected energy usage.
- ii. Forecasted non-coincident peak (NCP) demand using the following steps:
 - a. started with the unadjusted energy requirements calculated in step i(a);
 - b. incorporated conservation savings using the methodology described in step i(d);
 - c. subtracted capacity expected to be provided by WAPA;
 - d. applied estimated seasonal load factors to project NCP demand in each season; and
 - e. adjusted seasonal NCP demand to account for demand from large customers and EVs.
- iii. Forecasted coincident peak (CP) demand by applying estimated coincidence factors to the NCP demand calculated in step ii.
- iv. Forecasted capacity requirements by adjusting CP demand calculated in step iii to account for expected transmission losses and project reserve margin requirements (PRMR).

¹¹ Petition at A-1 – A-4.

Figure 1. Department summary of MMPA’s energy and load forecast methodology.¹²



B.1.1. Data sources

In step i(a), MMPA used HDD, CDD, population, and income per capita as independent variables in its linear regression models of energy requirements.¹³ Data sources for the explanatory variables included:

- historical monthly HDD and CDD from the National Oceanic and Atmospheric Administration’s Minneapolis-St. Paul International Airport and Grand Forks International Airport weather stations;
- projected monthly HDD and CDD based on the 30-year average monthly HDD and CDD (1991-2020) from the same weather stations as above;
- historical population from Minnesota State Demographic Center and Metropolitan Council;
- projected population based on historical data above and future growth rates from Woods and Poole Economics’ population projections; and
- historical and projected income per capita from Woods and Poole Economics.

MMPA developed three separate linear regression models representing three of its member communities (East Grand Forks, Buffalo, and Elk River) and a fourth model representing the remaining

¹² *Ibid.*

¹³ Petition at A-1 – A-2.

of 4 MWh/EV/year based on Department calculations²⁴ and added the resulting total EV energy usage to its energy projection in step i(c). In step ii(e), MMPA assumed a 39% diversified load factor, based on estimates from the Electric Power Research Institute,²⁵ to derive the contribution of EVs to NCP.

MMPA estimated energy conservation savings based on the historical performance of its conservation improvement program, which it manages for seven of its member communities. MMPA's program offers various rebates to residential and commercial customers to incentivize efficient equipment and appliances. MMPA notes that, while its program met the Energy Conservation and Optimization (ECO) Act goal of 0.95% energy savings from conservation improvements²⁶ in 2023 and 2024, it performed slightly below the goal of 1.5% total energy savings²⁷ for 2019-2024.²⁸ In this IRP, MMPA assumed a continued ECO savings rate of 1.3% in the base case since it anticipates continued challenges to meeting the goal. However, MMPA also analyzed sensitivity cases with 1.0% and 1.5% savings rates. To incorporate conservation into the energy projections in steps i(d) and ii(b), MMPA decreased the annual energy in each year by 1.3% of the three-year rolling average energy usage, **[TRADE SECRET DATA HAS BEEN EXCISED]**

B.2. Forecast results

Table 1 below shows MMPA's projected Base Case energy, NCP demand, CP demand, and capacity requirement over the planning period. NCP demand, CP demand, and capacity requirement are given for the summer season, which coincides with the annual peak demand and capacity requirement in all projected years.

²⁴ Minnesota Department of Commerce. *Charging Minnesota's Electric Vehicles: Strategies that Work for the Electric Grid and Consumers*. (2024). Available at: <https://mn.gov/commerce/energy/policy-data-reports/?id=17-665641>.

²⁵ Electric Power Research Institute (EPRI). *Electric Vehicle Load Shape Development for Electric Utility Planning*. (2020). Available at: <https://www.epri.com/research/products/000000003002016175>.

²⁶ [Laws of Minn. 2021, ch. 29, sec. 4.](#)

²⁷ *Ibid.*

²⁸ Petition at 15.

Table 1. Department summary of MMPA Base case energy, peak demand, and capacity requirement²⁹

Year	Energy (MWh)	Summer NCP demand (MW)	Summer CP demand (MW)	Capacity requirement (MW)
2025	1,933,801	415.1	387.9	441.1
2026	1,942,952	416.5	389.2	442.5
2027	1,951,888	416.8	389.5	442.8
2028	1,961,614	419.3	391.9	423.1
2029	1,976,713	422.0	394.4	425.8
2030	1,980,491	422.3	394.7	426.1
2031	1,989,847	422.7	395.1	426.5
2032	2,000,280	425.4	397.6	429.2
2033	2,018,589	429.1	401.0	432.9
2034	2,025,513	430.3	402.1	434.2
2035	2,038,242	431.7	403.5	435.6
2036	2,052,251	435.4	406.8	439.2
2037	2,074,172	440.2	411.3	444.1
2038	2,084,498	442.4	413.4	446.3
2039	2,100,784	444.8	415.7	448.8
Growth Rate:	0.6%	0.5%	0.5%	0.1%

Figure 2 shows the breakdown of projected energy (MWh) and capacity requirement (MW) in the Base case, high conservation case, and low conservation case. The base forecast component includes the energy, and corresponding capacity requirement, derived from MMPA’s linear regressions. Energy and capacity additions include EVs, large customers, and for the capacity requirement, transmission losses and PRMR. Energy and capacity subtractions include the adjustment for energy supplied by WAPA and the three levels of energy conservation savings. In all three conservation cases, additions from EVs and large customers comprise a growing portion of energy and demand, at 16-17% of total energy and 12-13% of total capacity requirement by 2040.

²⁹ *Id.*, at 22, 26, and 29.

Figure 2. Department summary of MMPA’s forecasted energy^{30,31} and capacity requirement^{32,33,34} over the planning period, 2025-2039.

B.3. Department review

MMPA applied three main adjustments to its forecasted energy and demand: savings from conservation, additions from large customers (< 10 MW) such as small data centers, and additions from EV growth. However, MMPA only analyzed sensitivity cases for one of these adjustments (conservation savings). The assumed additions from large customers and EVs contribute a sizeable portion of MMPA’s forecasted energy and demand by the end of the planning period (Figure 2). Further, utilities face inherent uncertainties surrounding the timing and magnitude of large customer entry and EV penetration. Sensitivities that assume higher and lower levels of additions from these two sources would add valuable insights to MMPA’s energy and demand forecast.

The Department recommends that the Commission accept MMPA’s energy and demand forecast for this IRP. In future IRP filings, the Department recommends that MMPA incorporate additional energy and demand projection sensitivities, such as higher and lower assumed additions from large customers and EVs.

The Department also notes that in its energy and demand forecast, MMPA assumes continued noncompliance with the ECO total energy savings goal. The Department reviews MMPA’s plans for compliance with the ECO requirements in other proceedings.³⁵ MMPA’s assumed base case energy savings rate of 1.3% throughout the planning period is reasonable for the purposes of the IRP, given the Agency’s conservation performance in recent years and its anticipated continued challenges to meeting the ECO goal. The Department’s ECO unit will work with MMPA on compliance with the various conservation-related goals.

³⁰ *Id.*, at 22.

³¹ Minnesota Municipal Power Agency, Supporting Documents 5 of 16, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-08](#).

³² Petition at 26.

³³ Minnesota Municipal Power Agency, Supporting Documents 6 of 16, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-09](#).

³⁴ Minnesota Municipal Power Agency, Supporting Documents 7 of 16, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-10](#).

³⁵ *Minnesota Department of Commerce Review of Consumer-Owned Utility 2024 Energy Conservation and Optimization Program Reporting*, Letter, January 15, 2025, Docket No. E,G999/CIP-24-24, (eDockets) [20251-213966-01](#) (hereinafter “Department Review of MMPA’s 2024 ECO Reporting”).

C. ECONOMIC MODELING AND EXPANSION PLAN

C.1. Resource needs

MMPA compared its forecasted capacity requirement with the combined capacity accreditation of its existing and committed resources to determine the need for capacity additions. The Agency accounted for MISO's planned change to its capacity accreditation methodology starting in 2028. The new methodology will use seasonal accredited capacity (SAC) percentages that can change year-to-year depending on the mix of resources in MISO's system. MMPA used its current resource accreditation values for 2025-2027 and new accreditation values starting in 2028 based on MISO's projected SAC percentages³⁶ for PY 2025 (applied in 2028-2029) and PY 2030 (applied in 2030-2039).

Figure 3 shows a summary of MMPA's resulting capacity accreditation estimates compared with projected capacity requirements. Note that MMPA's existing resources include a Power Purchase Agreement (PPA) with the Manitoba Hydro-Electric Board (MHEB). In Figure 3, positive capacity accreditation values for the MHEB PPA represent purchases from MHEB and negative values represent sales to MHEB. MMPA expects to need additional summer capacity ranging from 10 MW in 2036 to 20 MW in 2039, and additional winter capacity ranging from 29 MW in 2030 to 43 MW in 2035. MMPA identified no anticipated capacity needs in fall or spring over the planning period.

³⁶ *LOLE Modeling Enhancements*. MISO presentation to Resource Adequacy Subcommittee, (2025). At 19-20. Available at: <https://cdn.misoenergy.org/20250409%20RASC%20Item%2008%20LOLE%20Modeling%20Enhancements%20Storage%20Modeling689245.pdf>.

Figure 3. Department summary of capacity accreditation of MMPA's existing and committed resources³⁷ compared with its projected capacity requirements.³⁸

[TRADE SECRET DATA HAS BEEN EXCISED]

C.2. Total cost model

MMPA used a total cost model to evaluate alternative options for meeting its demonstrated capacity requirements. This model calculates total resource costs per kW, including capital, operations and maintenance (O&M), fuel, and regulatory costs, over a range of possible capacity factors. MMPA chose to only evaluate natural gas (including both combined-cycle and simple-cycle resources) and short-duration battery storage as capacity options. Table 2 shows MMPA's justifications for excluding other capacity resource options from its analysis.

Table 2. Department summary of MMPA's justifications for excluding resources from its capacity resource analysis³⁹

Resource	Justification for excluding
Solar	MISO projects capacity accreditation values to be small
Wind	
Nuclear	Ongoing nuclear moratorium in Minnesota
Coal	<ul style="list-style-type: none">• Long lead times• Resource size does not align with MMPA's capacity needs• Natural gas available as a cheaper and cleaner alternative
Long-duration battery storage	Still considered an emerging technology

MMPA derived input cost data for its total cost model from the following sources:

- Capital costs: National Renewable Energy Laboratory (NREL) Annual Technology Baseline 2024⁴⁰;
- Fixed and variable O&M costs: NREL Annual Technology Baseline, 2024⁴¹;
- Battery storage fuel costs: Average, forward off-peak power price at MISO's MINN.HUB for May 2025 to April 2026 (based on the assumption that battery storage will charge using the grid);
- Natural gas fuel costs: average fuel forward prices at Henry Hub for May 2025 to April 2026;

³⁷ Petition at 38.

³⁸ *Id.*, at 29.

³⁹ *Id.*, at 44.

⁴⁰ National Renewable Energy Laboratory (NREL), *Annual Technology Baseline*. Available at: <https://atb.nrel.gov/electricity/2024/data>.

⁴¹ *Id.*

- Regulatory costs: range of values from the December 19, 2023, PUC Order Addressing Environmental and Regulatory Costs in docket E-999/CI-07-1199.⁴²

C.2.1. Scenarios

MMPA analyzed resource costs under a range of scenarios incorporating capital, fuel, and regulatory cost sensitivities.⁴³ MMPA held fixed and variable O&M costs constant across all scenarios.⁴⁴ The above-referenced Commission Order establishes a range of regulatory costs of carbon dioxide for use in IRPs of \$5 to \$75 per short ton.⁴⁵ MMPA used the midpoint of this range, \$40 per short ton, as the base regulatory cost and the endpoints of the range as the low and high regulatory costs.⁴⁶ The Agency applied these regulatory costs to the combined cycle and combustion turbine resources and assumed no regulatory costs associated with the battery resource.⁴⁷ MMPA also derived base, high, and low values for capital costs and fuel costs based on information in their respective sources. MMPA combined these sensitivities to model the following costs cases:

- Base Case: base capital, base fuel, base regulatory;
- Case 1: base capital, base fuel, LOW regulatory;
- Case 2: base capital, base fuel, HIGH regulatory;
- Case 3: base capital, LOW Fuel, base regulatory;
- Base 4: base capital, HIGH fuel, base regulatory;
- Case 5: LOW capital, base fuel, base regulatory;
- Case 6: HIGH capital, base fuel, base regulatory.

C.2.2. Results

MMPA's cost model shows that the combustion turbine was the most cost-competitive option only at low capacity factors **[TRADE SECRET DATA HAS BEEN EXCISED]**. At higher capacity factors, the combined cycle and battery storage options had comparable costs in the Base Case and the remaining cost cases were evenly split between combined cycle and battery storage having lower costs.⁴⁸ Specifically, battery storage had lower costs than combined cycle in the high fuel cost, high regulatory cost, and low capital cost cases, while the combined cycle option was more cost-competitive in the low fuel cost, low regulatory cost, and high capital cost cases.⁴⁹ Figure 4 shows, for each of the sensitivities (Cases 1-6), the difference in total cost of the battery and combined cycle options compared to each

⁴² *In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minnesota Statutes § 216H.06, Order Addressing Environmental and Regulatory Costs*, December 19, 2023, Docket No. E-999/CI-07-1199, (eDockets) [202312-201351-02](#) (hereinafter, "Order Addressing Environmental and Regulatory Costs").

⁴³ Petition at 46.

⁴⁴ *Ibid.*

⁴⁵ Order Addressing Environmental and Regulatory Costs at Order Point 1.

⁴⁶ Petition at 45.

⁴⁷ *Id.*, at 46.

⁴⁸ *Ibid.*

⁴⁹ *Id.*, at 47.

option's base case total cost. Note that these resources have approximately the same total costs in the Base Case.

Figure 4. Department calculations of difference in total cost of battery and combined cycle resources in each of the 6 sensitivity cases compared to the Base Case^{50,51}. Scenario names are abbreviated to include only the cost component that differs from its base value.

[TRADE SECRET DATA HAS BEEN EXCISED]

From the total cost model results, MMPA concluded that the battery resource was the preferred option to fulfill the Agency's capacity requirements throughout the planning period. MMPA notes that, in addition to cost considerations, battery storage provides flexibility to be deployed at different scales and implemented in phases in response to demand growth.⁵²

C.2.3. Environmental cost cases

MMPA also analyzed scenarios incorporating environmental (externality) costs of greenhouse gas emissions in addition to the capital, O&M, fuel, and regulatory costs. The Agency calculated environmental costs for each resource option based on the 2022 EPA Report on the Social Cost of Greenhouse Gases, as required by the December 19, 2023 Commission Order Addressing Environmental and Regulatory Costs in docket E-999/CI-07-199.⁵³ The cost values in this EPA report are specific to each future year; however, MMPA's cost model did not vary over time and instead produced static levelized costs for each resource option. Therefore, as explained in its response to the Department Information Request No. 5, MMPA averaged the time series of environmental costs over the assumed operating lives of the resources.⁵⁴ MMPA applied this methodology to the combustion turbine and combined cycle resources, assumed an operating life of 2028 to 2067 for both, and assumed no environmental costs associated with the battery resource.⁵⁵ MMPA modeled a smaller set of scenarios incorporating these environmental costs:

- Environmental Base Case: base capital, fuel, and environmental costs;
- Low-Cost Case: low capital, fuel, and environmental costs; and
- High-Cost Case: high capital, fuel, and environmental costs.⁵⁶

⁵⁰ *Id.*, at 47-52.

⁵¹ *In the Matter of Minnesota Municipal Power Agency's Application for Approval of Its 2025-2039 Integrated Resource Plan*, Minnesota Municipal Power Agency, Supporting Documents 3 of 16, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-06](#).

⁵² Petition at 52.

⁵³ Order Addressing Environmental and Regulatory Costs at Order Point 5.

⁵⁴ *In the Matter of Minnesota Municipal Power Agency's Application for Approval of Its 2025-2039 Integrated Resource Plan*, Minnesota Municipal Power Agency, Response to IR 4-5, September 12, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20259-222926-02](#) at 2.

⁵⁵ Petition at 53.

⁵⁶ *Ibid.*

Note that, while these scenarios also implicitly incorporated regulatory costs, MMPA adjusted the environmental costs to exclude the regulatory costs as required by the December 19, 2023 Commission Order.⁵⁷ Since the environmental costs were higher than the regulatory costs for all resources, the regulatory and adjusted environmental costs combined were equivalent to the environmental cost itself.

In all three scenarios incorporating environmental costs, the battery option had significantly lower costs than the two natural gas options for virtually all capacity factors. MMPA cites this result as further evidence that battery storage is the preferred resource option for capacity additions, especially given that it is already cost-competitive with combined-cycle before considering environmental costs.⁵⁸

C.3. Carbon-free energy resource analysis

In addition to its capacity resource analysis, MMPA considered options to meet Minnesota’s CFS energy requirements. The Agency did not conduct a formal quantitative analysis of these options’ costs; instead, it discussed the overall feasibility of each option and chose options accordingly. Table 3 summarizes the factors included in this discussion.

Table 3. Department summary of MMPA’s determination of feasible carbon-free resource options.⁵⁹

Resource type	Feasibility	Reason
Nuclear	Not feasible	Ongoing moratorium on nuclear in Minnesota
Battery storage	Not feasible	Capacity resource, not energy resource
Wind	Not feasible	Due to transmission constraints, new wind projects would require cost-prohibitive transmission upgrades
Solar	Feasible	Low capital and operating costs; flexible siting; scalability
RNG	Feasible	Can be integrated into existing natural gas infrastructure; flexible and dispatchable
(Green) hydrogen	Feasible in future	

Based on these factors, MMPA chose solar as the primary resource to meet its carbon-free energy requirements through 2039. The Agency also identified RNG and hydrogen as resources offering optionality at the tail end of the planning period as discussed in section C.4 below.

C.4. Preferred plan

MMPA’s preferred plan includes the following capacity additions:

- 50 MW of short-duration battery storage with 35 MW in service by planning year 2030 and the remaining 15 MW in service by planning year 2035;
- 435 MW of solar consisting of four 100 MW projects, four 7.5 MW projects, and one 4.5 MW project with projected in-service years ranging from 2027 to 2034;

⁵⁷ Order Addressing Environmental and Regulatory Costs at Order Point 3.

⁵⁸ Petition at 56.

⁵⁹ *Id.*, at 57.

- The option to phase in RNG and/or hydrogen using MMPA’s existing natural gas assets beginning in 2040.⁶⁰

MMPA notes that RNG and hydrogen can be used to meet the last increment of required carbon-free energy in 2040 to reach the 100% carbon-free requirement, given that solar resources will meet 92% of retail energy requirements at that point.⁶¹

Table 4 summarizes the projects included in MMPA’s five-year action plan. By 2030, MMPA plans to have developed [TRADE SECRET DATA HAS BEEN EXCISED] of transmission-connected solar, 4.5 MW of distributed solar, and 50 MW of battery storage. These projects comprise all of the battery additions included in MMPA’s preferred plan and more than half of the planned solar additions. Over the next five years, the Agency also plans to complete upgrades to the Faribault Energy Park (FEP) natural gas plant, which will increase the plant’s capacity, and to complete a new RNG facility.⁶²

Table 4. Department summary of MMPA’s five-year action plan⁶³

Project	Status/ next steps	Projected in-service date
[TRADE SECRET DATA HAS BEEN EXCISED]		
Upgrade FEP	Next steps include applying for a revised air permit and applying to MISO for additional interconnection capacity via the Expedited Resource Addition Study process	2030
Belle Solar (100 MW)	In 2023 MISO Generation Interconnection queue	2029
Livonia Solar (100 MW)	In 2023 MISO Generation Interconnection queue	2029
Battery storage (50 MW in multiple smaller projects)	Construction anticipated to start in 2029	2030
Elk River distributed solar (4.5 MW)	Development by MMPA in progress	2027
Elk River Landfill RNG facility	Development by MMPA in progress	2026

C.5. Department review

MMPA did not include any environmental or regulatory costs of GHG emissions for batteries in its total cost model. However, the Department notes that the use of battery storage systems can indirectly result in net GHG emissions depending on the battery’s round-trip efficiency and the timing of charging and discharging. A battery storage system’s round-trip efficiency determines the amount of energy lost

⁶⁰ *Id.*, at 59-60.

⁶¹ *Id.*, at 60.

⁶² *Id.*, at 65-66.

⁶³ *Id.*, at 65-66.

during charge-discharge cycles, i.e., the extent to which the energy required to charge the battery exceeds the energy discharged by the battery. Given round trip efficiency losses, if the marginal electricity generating unit at the time of charging emits GHG and is equally or more GHG emissions-intensive compared to the marginal electricity generating unit at the time of discharging, then use of the battery will result in net positive GHG emissions. In other words, the only way for the battery to result in zero GHG emissions is if the marginal unit at the time of charging is sufficiently less emissions-intensive than the marginal unit at the time of discharging to offset round-trip efficiency losses.

The Department notes that most utilities use capacity expansion modeling tools, such as EnCompass, to develop and evaluate their resource plans. In a capacity expansion model, both regulatory costs and environmental costs are allocated to resources that directly emit GHG when dispatched, which is not the case for battery resources. However, the use of battery storage could indirectly cause increased GHG emissions from other resources, as described above. It follows that the use of battery storage could result in additional regulatory and environmental costs attributed to these other resources. These impacts would be reflected in capacity expansion model results. However, since MMPA did not use a capacity expansion model to inform its 2025-2039 IRP, its planning process did not capture these dynamics. The expected regulatory and environmental costs of GHG emissions indirectly resulting from battery resources warrants further discussion and, potentially, inclusion in MMPA's total cost model. Further, the Department recognizes that it is difficult to assess these dynamics without a full capacity expansion scenario analysis. As MMPA's capacity portfolio continues to grow and diversify, it may be helpful for MMPA to incorporate capacity expansion modeling in future IRPs.

Capacity expansion modeling would also allow MMPA to better comply with the Commission's requirements for incorporating regulatory and environmental (externality) costs of GHG emissions into IRP analyses. The Commission's most recent Order in Docket No. CI-07-1199 requires that utilities distinguish between regulatory and environmental costs when analyzing scenarios in a resource plan by modeling these costs in different ways.⁶⁴ Utilities must model regulatory costs in a manner that influences the selection of resource options (i.e., in a capacity expansion model, regulatory costs are added directly as an operating cost for resources that emit GHGs). On the other hand, utilities must model environmental costs as post-processing add-ons. Since MMPA did not use a capacity expansion model and instead modeled the total cost of each resource option individually, its scenario analysis did not distinguish between regulatory and environmental costs; both costs were represented the same way in its total cost model.

The Department also notes that, while MMPA conducted two sensitivity cases in its energy demand forecast (high and low conservation savings cases), it did not address the implications of these sensitivities for resource needs and capacity expansion planning. Instead, MMPA estimated its additional capacity requirements using only the base conservation savings case. While projected demand would not impact the total cost model that MMPA used to select its preferred capacity resource option (section C.2), it would impact the total amount of capacity needed to be added. This impact warrants further discussion.

⁶⁴ Order Addressing Environmental and Regulatory Costs at Order Point 4.

The Department recommends that the Commission accept MMPA's economic modeling and preferred plan for this IRP. However, the Department recommends that in future IRPs, MMPA address whether it anticipates net GHG emissions resulting from the use of battery resources and apply environmental costs to its analysis of these resources accordingly. The Department also recommends that MMPA consider incorporating capacity expansion modeling in future IRPs. Finally, the Department recommends that in future IRPs, MMPA include demand forecast sensitivities, including those recommended in section B.3, in its economic modeling and expansion planning processes.

D. REGULATORY COMPLIANCE

D.1. Minnesota Energy Conservation Goals

Minnesota's Energy Conservation and Optimization (ECO) Act was passed in 2021, with the goal of modernizing the previous Conservation Improvement Program (CIP) and providing a more holistic approach to energy efficiency programming.⁶⁵ Minn. Stat. § 216B.2403 sets the energy savings and investment goals for consumer-owned utilities.⁶⁶ These goals include:

- Total energy savings of 1.5% of gross annual retail sales.
- Energy savings from energy conservation improvements of 0.95% of gross annual retail energy sales.
- Spending on conservation programs for low-income households of at least 0.2% of gross operating revenue from residential customers in Minnesota.

MMPA manages a conservation improvement program for seven of its member communities, including two communities that are exempt from the ECO requirements due to having fewer than 1,000 customers but choose to participate regardless. The remaining five member communities manage their own ECO programs.

The Department reviews MMPA's plans for compliance with the ECO requirements in other proceedings.⁶⁷ The Department serves as the regulating authority in these proceedings. In 2023 and 2024, MMPA met the ECO goal for energy savings from energy conservation improvements but fell short of the total energy savings goal.⁶⁸ MMPA notes this shortfall in the Petition and anticipates challenges to meeting the total energy savings goal moving forward due to decreasing efficiency returns from retrofit lighting rebates, which are integral to the Agency's ECO program. Given these challenges, MMPA assumed in its IRP an ECO savings rate of 1.3% over the planning period, which is just short of the total energy savings goal of 1.5%. However, MMPA also analyzed sensitivity cases with savings rates of 1.0% and 1.5%.⁶⁹

⁶⁵ [Laws of Minn. 2021, ch. 29, sec. 4.](#)

⁶⁶ [Minn. Stat. § 216B.2403](#) (2025).

⁶⁷ Department Review of MMPA's 2024 ECO Reporting.

⁶⁸ *Id.*, at 3.

⁶⁹ Petition at 17.

D.2. Minnesota Carbon Free Standard

In 2023, Minnesota enacted standards that require zero carbon emissions from electric utilities by 2040.⁷⁰ Leading up to 2040, there are requirements for minimum percentages of a utility's retail electricity sales that must be from technologies generating electricity without emitting carbon dioxide. Table 5 lists these CFS as they apply to MMPA.

Table 5. Carbon-Free Standards applicable to MMPA

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

MMPA's preferred plan is expected to meet the CFS in 2030 and 2035 through a combination of existing wind resources, existing solar resources, and proposed new solar resources. In 2040, MMPA projects that these wind and solar resources will meet 92% of the Agency's CFS energy requirements.⁷¹ MMPA plans to phase in the use of RNG and/or hydrogen in its existing natural gas infrastructure to meet the final 8% of required carbon-free energy.⁷² While RNG has not yet been designated as a carbon-free resource by the Commission, MMPA plans to monitor the Commission's actions on this issue⁷³ and is prepared to adapt its approach if needed; the Department also recognizes that MMPA's preferred plan meets the carbon-free standard in all years included in the planning period of this IRP (2025-2039) without the need for RNG or hydrogen. Figure 5 shows MMPA's projected annual net generation by resource type in its preferred plan, compared to the carbon free energy requirement (black line).

Figure 5. Department summary of projected annual net generation by resource type in MMPA's preferred plan. All resources shown in the figure are eligible for the CFS except for natural gas. MMPA's carbon-free energy requirement is shown as a black line.^{74,75,76}

[TRADE SECRET DATA HAS BEEN EXCISED]

⁷⁰ [Minn. Stat. 216B.1691, subd. 2g](#) (2024).

⁷¹ Petition at 60, 62.

⁷² *Id.*, at 60, 63.

⁷³ The eligibility of RNG as a carbon-free resource is being discussed primarily in *In the Matter of a Commission Investigation into a Fuel Life-Cycle Analysis Framework for Utility Compliance with Minnesota's Carbon-Free Standard*, Docket No. E999/CI-24-352.

⁷⁴ Petition at 62.

⁷⁵ Minnesota Municipal Power Agency, Supporting Documents 12 of 16, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-15](#).

⁷⁶ Minnesota Municipal Power Agency, Supporting Documents 13 of 16, July 31, 2025, Docket No. ET6133/RP-25-302, (eDockets) [20257-221603-16](#).

D.3. Renewable Energy Standard

Minnesota's Renewable Energy Standard (RES) sets minimum percentages of utilities' retail electric sales that must be from renewable sources.⁷⁷ The standard began in 2012 at 12% and increases to 55% in 2035. Table 6 below shows the standards for all years in which they apply.

Table 6. Renewable Energy Standard⁷⁸

Year	Percent carbon-free
2012	12%
2016	17%
2020	20%
2025	25%
2035	55%

MMPA's preferred plan is expected to meet the RES in both 2025 and 2035. As shown in its response to the Department Information Request No. 4, the Agency projects that 47% and 97% of its retail electric sales will be met by generation from renewable sources (wind and solar) in 2025 and 2035, respectively.

D.4. Greenhouse Gas Reduction Goal

Minn. Stat. § 216H.02, subd. 1 sets a state-wide goal for reducing greenhouse gas (GHG) emissions over the next 25 years.⁷⁹ Specifically, the statute targets emissions reductions from the state's 2005 emissions level of 15% by 2015, 30% by 2025, 50% by 2030, and 100% (net zero GHG emissions) by 2050. Minn. Stat. § 216B.2422, subd. 2c requires each utility to include in its IRP a discussion of its progress towards meeting these targets and its efforts to address associated costs, opportunities, and technical barriers.⁸⁰

MMPA's preferred plan results in projected GHG emissions reductions from the Agency's 2005 levels that exceed the state-wide targets. Specifically, MMPA projects a 62% reduction in CO₂ emissions compared to 2005 levels by 2025 and a 76% reduction by 2030. MMPA states that its plans to meet the 100% carbon-free standard by 2040 will result in net-zero emissions in 2050. The Department notes that compliance with the CFS in 2040 will not necessarily result in net-zero emissions, since the CFS in 2040 requires carbon-free energy sources to make up 100% of a utility's retail sales, but not 100% of the utility's total electric generation. However, the 2050 net-zero target falls outside of the planning period for the current IRP.

⁷⁷ [Minn. Stat. § 216B.1691, subd. 2a](#) (2025).

⁷⁸ *Ibid.*

⁷⁹ [Minn. Stat. § 216H.02, subd. 1](#) (2025).

⁸⁰ [Minn. Stat. § 216B.2422, subd. 2c](#) (2025).

D.5. Department Review

The Department notes that, in its demand forecast, MMPA assumes continued noncompliance with the ECO Act's total energy savings goal. However, as noted in section B.3, the Department reviews MMPA's plans for compliance with the ECO requirements in other proceedings.⁸¹ The Department's ECO unit will work with MMPA on ECO compliance issues. In the IRP, MMPA discussed its increased community outreach efforts to promote its energy conservation program. The Department appreciates this discussion and recommends that MMPA continue reporting on its efforts to improve its energy conservation program, and the impacts of these efforts on projected energy and demand, in future IRP filings.

MMPA demonstrated that its preferred plan complies with the CFS, the RES, and the GHG Reduction Goal as these regulations apply to the IRP's planning period. MMPA has proposed a reasonable path to meet the CFS in compliance years 2030 and 2035 and is considering multiple options to meet the 100% carbon free requirement in 2040. The Department recommends that the Commission accept MMPA's IRP.

IV. DEPARTMENT RECOMMENDATIONS

Based on analysis of the Petition and MMPA'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.

B. ENERGY AND DEMAND FORECAST

- The Department recommends that the Commission accept MMPA's energy and demand forecast for this IRP.
- In future IRP filings, the Department recommends that MMPA incorporate additional energy and demand projection sensitivities, such as higher and lower assumed additions from large customers and EVs.
- The Department recommends that MMPA continue reporting on its efforts to improve its energy conservation program, and the impacts of these efforts on projected energy and demand, in future IRP filings.

C. ECONOMIC MODELING AND EXPANSION PLAN

- The Department recommends that the Commission accept MMPA's economic modeling and preferred plan for this IRP.
- The Department recommends that in future IRPs, MMPA address whether it anticipates net GHG emissions resulting from the use of battery resources and apply environmental costs to its analysis of these resources accordingly.
- The Department recommends that MMPA consider incorporating capacity expansion modeling in future IRPs.

⁸¹ Department Review of MMPA's 2024 ECO Reporting.

D. REGULATORY COMPLIANCE

- The Department recommends that the Commission accept MMPA's IRP.

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
Public Comments**

Docket No. ET6133/RP-25-302

Dated this 4th day of **December 2025**

/s/Sharon Ferguson

#	First Name	Last Name	Email	Organization	Agency	Address	Delivery Method	Alternate Delivery Method	View Trade Secret	Service List Name
1	Sasha	Bergman	sasha.bergman@state.mn.us		Public Utilities Commission	121 7th PI E Ste 350 St. Paul MN, 55101 United States	Electronic Service		Yes	Official 25-302
2	Mike	Bull	mike.bull@state.mn.us		Public Utilities Commission	121 7th Place East, Suite 350 St. Paul MN, 55101 United States	Electronic Service		No	Official 25-302
3	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		No	Official 25-302
4	Brooke	Cunningham	health.review@state.mn.us	Minnesota Department of Health		PO Box 64975 St. Paul MN, 55164-0975 United States	Electronic Service		No	Official 25-302
5	Oncu	Er	oncu.er@avantenergy.com	Avant Energy, Agent for MMPA			Electronic Service		No	Official 25-302
6	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	Official 25-302
7	Thom	Petersen	thom.petersen@state.mn.us		Minnesota Department of Agriculture	625 North Robert St Saint Paul MN, 55155 United States	Electronic Service		No	Official 25-302
8	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		No	Official 25-302
9	Gerald L	Van Amburg	vanambur@cord.edu	Concordia College		4518 5th St S Moorhead MN, 56560 United States	Electronic Service		No	Official 25-302
10	Cynthia	Warzecha	cynthia.warzecha@state.mn.us	Minnesota Department of Natural Resources		500 Lafayette Road Box 25 St. Paul MN, 55155-4040 United States	Electronic Service		No	Official 25-302