Minnesota Public Utilities Commission

Staff Briefing Papers

Meeting Date: **May 21, 2015** .....*Agenda Item #3

Company: Minnkota Power Cooperative, Inc. (Minnkota) and Northern Municipal Power Agency (NMPA) (Joint System)

Docket No. ET6, ET-6132/RP-14-526

In the Matter of Minnkota Power Cooperative, Inc.'s 2014 Resource Plan

Issues: What action should the Commission take on Minnkota's filing?

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Relevant Documents

Commission Order Accepting 2009-2024 Resource Plan
ET-9, ET-6132/RP-10-782 ..... June 9, 2011

Initial Filing Minnkota Power Cooperative
And Northern Municipal Power Agency (Joint System)..... June 26, 2014

Comments of the Minnesota Department of Commerce
Division of Energy Resources. .....October 27, 2014

Reply Comments Minnkota. ..... February 4, 2015

Reply Comments Minnesota Department of Commerce
Division of Energy Resources. ..... February 18, 2015

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Statement of the Issues

What action should the Commission take on Minnkota's resource plan?

Background

Minn. Stat. §216B.2422, subd. 1 requires any entity serving at least 10,000 customers and capable of generating 100,000 kilowatts of electricity file an integrated resource plan. Pursuant to Minn. Stat. § 216B.2422, subd. 2, municipal utilities, cooperatives, or wholesalers, however, Commission resource plan orders are merely advisory. 216B.2422, subd. 2 is as follows:

> **Subd. 2.Resource plan filing and approval.** A utility shall file a resource plan with the commission periodically in accordance with rules adopted by the commission. The commission shall approve, reject, or modify the plan of a public utility, as defined in section 216B.02, subdivision 4, consistent with the public interest. In the resource plan proceedings of all other 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. With respect to utilities other than those defined in section 216B.02, subdivision 4, the commission shall consider the filing requirements and decisions in any comparable proceedings in another jurisdiction. As a part of its resource plan filing, a utility shall include the least cost plan for meeting 50 and 75 percent of all new and refurbished capacity needs through a combination of conservation and renewable energy resources.

Minnkota Power Cooperative, Inc. filed its resource plan with the Commission on June 26, 2014.

Listed below is some background information about Minnkota:

Number of Members	11 retail distribution cooperatives
Number of Minnesota retail customers served through MMPA's members	125,000[1]
Record peak load	946 MW (January 24, 2013)
Primary resources	Milton R. Young 1 and 2 Base Load 205 MW Coyote Plant 128.1 MW Member generation 140 MW Intermediate Load Peaking facilities internal combustion engines (diesels) Cass County Electric Cooperative 18.28 MW Cass County customer owned 3.7 MW Thief River Falls, Grafton, and Halstad 13.536 MW WAPA Firm Power Allocation to Minnkota and

[1] In its previous resource plan, Minnkota stated it served approximately 125,000 retail customers.

	NMPA Municipals 106.27 MW Renewable Resources: Thief River Falls Hydro Plant .500 MW NextEra PPA 99 MW Fargo Landfill Gas Facility 0.925 MW Fosston Municipal Solid Waste Facility 0.40 MW

For comparison, below are the numbers of retail customers served by some municipal power agencies and investor owned utilities serving Minnesota:

Minnesota Power: 143,000
SMMPA 114,707
MMPA: 69,000
Otter Tail Power Company: 60,700

Initial Filing

Both the public and trade secret versions of Minnkota's resource plan totaled 162 pages. Minnkota included the following in its IRP:

- **Introduction** provides an overview of Minnkota's Organization. (Introduction pages 7 to 9);

- **Resource Plan Summary:** The IRP demonstrate how a utility plans to meet the electrical needs of its end-use consumers over the next 15 years. The resource plan includes the resource and demand side options that best fit the utility's forecasted energy requirements. Resource plans must consider how to maintain or improve electric service to customers, maintain low electric rates, minimize environmental impacts and minimize the risk of adverse effects from financial, social and technological impacts. (Resource Plan Summary Pages 10 to 12);

- **Demand Response Program:** Beginning in 1973, Minnkota and the member systems instituted a comprehensive and effective Demand Response (DR) program. Currently about 55,000 end-use consumers participate in this important program. Due to the large amount of electric heating loads, Minnkota's DR program started with dual heating systems as the main focus of its effort. (Demand Response Program Pages 13 to 14);

- Existing Resources, Purchases, and Sales: The Joint System has a variety of existing resources that economically and reliably fulfill the energy requirements of the end-use customers of its member systems and the NMPA municipals. Existing resources consist of baseload, diesel, hydro allocations, biomass, and wind generation. Minnkota and eight of the NMPA municipals have firm power allocations from WAPA. These firm power

allocations supply varying amounts of capacity and energy throughout the year. The Joint System has a variety of existing resources that economically and reliably fulfill the energy requirements of the end-use customers of its member systems and the NMPA municipals. Existing resources consist of baseload, diesel, hydro allocations, biomass, and wind generation. Minnkota and eight of the NMPA municipals have firm power allocations from WAPA. These firm power allocations supply varying amounts of capacity and energy throughout the year. (Existing Resources, Purchases, and Sales Pages 15 to 18);

- **Load Forecast:** The primary function of the IRP is to demonstrate how a utility plans on supplying the energy requirements of its end-use consumers over the next 15 years. The IRP documents the resource and demand side options that best fit the utility's forecasted energy requirements. This is the sixth IRP that Minnkota Power Cooperative, Inc. and NMPA have filed jointly with the Minnesota Public Utilities Commission under MN Statute 216B.2422 and MN Rules Part 7843. (Load Forecast Page 19 to 22);

- **Resource Adequacy:** Minnkota is a load serving entity within the MISO area of operations. As such, Minnkota is obligated to conform to MISO's Resource Adequacy requirements. A reliable bulk electric system requires, among other things, that generation capacity exceeds customer demand by an adequate margin. The margins necessary to insure adequate reliability are assessed on a near-term (operational) basis and on a longer-term (planning) basis. (Resource Adequacy page 23);

- **Energy Requirement Considerations:** Another important consideration in generation planning is the degree to which the Joint System will be dependent on market-based resources to meet its load requirements. The Joint System has the Young 1, Young 2, and Coyote coal-fired generators, NMPA WAPA allocations, Minnkota's WAPA allocation, and power purchase agreements for wind energy from the Langdon and Ashtabula wind projects to fulfill its energy requirements. (Energy Requirement Considerations pages 24 to 26);

- **Minnesota Renewable Energy Standard:** The Joint System purchases from renewable energy resources are significantly greater than its requirements. The purchases are 6.19 times the RES & REO requirement in 2014 and are 1.64 times the RES & REO requirement in 2028.(Minnesota Renewable Energy Standard pages 27 to 29);

- **Energy Efficiency and Conservation Program:** In order to meet the state's requirements, the PowerSavers program was designed to help business and residential consumers become more efficient energy users and to also improve Minnkota's own efficiency as an energy provider. The program offers incentives to both residential and business end-use customers. The residential program includes several incentives for electric heating, ventilation and air conditioning (HVAC), lighting and ENERGYSTAR® appliances. The business program offers several incentives for HVAC, lighting, motors, adjustable speed drives, refrigeration and compressed air technologies commonly used by businesses. It is estimated that PowerSavers saved 25,872,370 kWh in 2010, 25,050,178 kWh in 2011, 26,700,330 kWh in 2012, and 27,079,360 kWh in 2013. The Joint System

has met the MN energy efficiency and conservation requirements for 2011, 2012, and 2013. (Energy Efficiency and Conservation Program pages 30 to 32);

- **Region Transmission Owner (RTO) Participation:** For a number of years, Minnkota has been analyzing the advantages and disadvantages of joining the MISO as a transmission owning member. Minnkota is already a MISO market participant, which allows the purchase or sale of energy with the MISO energy market. The decision of whether or not to join an RTO such as MISO is not an easy matter. There are many issues and concerns to consider and the analysis is complicated. At this time, Minnkota does not believe that joining an RTO such as MISO will be cost-effective. However, Minnkota will continue to evaluate membership in MISO. (Region Transmission Owner (RTO) Participation page 33);

- **Transmission Planning:** Because the construction of transmission lines is driven by different needs, transmission planning occurs in various venues. Minnkota is responsible for the transmission planning of its 345 kV, 230 kV, 115 kV, and 69 kV transmission facilities required to maintain reliable and economical service to its member systems' customers. In some instances this planning effort is done entirely by Minnkota. At other times potential transmission additions will have impacts on other area utilities. When this is the case, Minnkota works with those utilities in a joint transmission planning process to ensure that its transmission projects do not cause problems for others. Joint planning with other area utilities also helps minimize future facility additions. By incorporating the various needs of the utilities into joint planning studies, the resultant project may be an integrated solution that is less costly and more reliable than the individual additions that would have been built absent joint planning. (Transmission Planning Pages 34 to 35);

- **Environmental Information:** Minnkota operates the Milton R. Young (MRYS) near Center, North Dakota. Unit 1 of the station is owned by Minnkota and has a rating of 250 MW. Unit 2, which is owned by Square Butte Electric Cooperative (affiliated with Minnkota by common ownership), has a rating of 455 MW. Unit 1 went online in 1970, while Unit 2 began operations in 1977. Both units are fired on lignite obtained from BNI Coal Ltd's (Allete) Center Mine, which is adjacent to the MRYS. Within the last few years, Minnkota has completed construction of $425 million in environmental upgrades at the MRYS. (Environmental Information pages 36 to 38);

- **Two-Year Action Plan:** Discussions and meetings will continue to take place between the member systems, the NMPA municipals and Minnkota. These meetings will focus on strategies to reduce energy costs to the end-use customers. (Two-Year Action Plan page 39);

- **Five Year Action Plan:** A Load Forecast Study (LFS) will be completed for each of the 11 member systems and Minnkota in 2017 and 2019. These studies will track the growth in the demand and energy requirements of the member systems. The LFS forecasts will be an important and ongoing part of the Integrated Resource Planning process. (Five Year Action Plan page 40);

- **Contingencies:** The sudden unexpected appearance of a new large load is a situation that many utilities face. If this were to occur in the Joint System service territory, Minnkota would most likely arrange the purchase of short-term generation capacity to serve the new load. The purchase would allow Minnkota the necessary time to complete an analysis of the alternatives or options for long-term capacity commitments. Minnkota would utilize short-term capacity purchases rather than prematurely commit to a long-term obligation without having completed a detailed analysis.

  In the event of a sudden loss of a large load, Minnkota would market the energy that normally would have been sold to the large load into the MISO energy market or to other MAPP utilities.

  Minnkota would have a limited number of resource options available in the event that it was forced to shut down its lignite generation facilities. Minnkota currently has no surplus generation resources standing idle and ready to be placed into service other than costly standby diesel generators. Minnkota's options, upon loss of an existing resource, would be similar to what other utilities have available to them. (Contingencies pages 41-42);

- **Environmental Costs:** Currently, the Joint System has no plans for adding gemeration capacity. In the future, when additional generation is needed, Minnkota will complete an analysis of its capacity options considering the MN PUC's adopted environmental externality values. (Environmental Costs page 43);

- **Renewable Resource Scenarios – 50% and 75%:** The conclusion is that any resource option requiring either 50% or 75% renewable resources will be significantly more costly than the base case option because of the low availability of wind resources and the fact that backup generation such as a gas turbine will be needed to serve firm load when the wind resources are not producing any energy. The Joint System does not believe that the 50% and 75% renewable resource options represent a viable or cost-effective method of meeting its future energy and generation capacity needs (Renewable Resource Scenarios page 44);

- **Public Participation:** Public participation in the integrated resource planning process was provided by the governing boards of the member systems, which represent end-use customers. Their ideas and concerns were solicited as part of the overall resource planning process. (Public Participation page 45);

- **Plan is in the Public Interest:** The IRP fulfills the requirements of Minnesota statutes and rules. It presents a clear and concise picture of how the Joint System intends to satisfy the electrical requirements of its customers in a cost-effective and reliable manner while meeting federal and state environmental requirements. (Public Interest page 46); and
- **Plan Cross Reference Guide:** The resource plan is intended to satisfy the requirements from three sources: prior resource plans, prior Commission Orders, and Minnesota Statutes (Plan Cross-Reference pages 47 to 48).

Minnkota also included Appendix A: Minnesota Electric Utility Annual Report, Appendix B: Minnesota Service Area Maps, Appendix C: Minnkota Power Cooperative Inc. Wholesale Power Rate, Appendix D: Form EIA-861, Appendix E: RUS Form 12, Appendix F: Minnesota Electric Utility Information Reporting-Forecast Section, Appendix G: Minnkota Power Cooperative's 2013 Load Forecast Study, and Appendix H: Governing Board's Resolutions Approving IRP.

Party Comments

The Department of Commerce (DOC) was the only party to file comments on the main resource plan components.

Minnkota's Planning Process

In its previous IRP, the Joint System projected that it needed new resources. The DOC previously concluded that the Joint System's IRP failed to evaluate properly what resource options would lead to the least-cost plan of meeting its member customers' future energy needs. However, in the instant IRP the Joint System and DOC agree that the Joint System has no resource needs during the planning period. In fact, the DOC's review of the Joint System's resource needs indicates that Minnkota and NMPA will be able to sell excess capacity and energy throughout the planning period. In the event that the Joint System's member/customer needs grow sufficiently in the future or if existing generation resources need to be retired, the DOC recommends that the Joint System be prepared to conduct capacity expansion modeling that meets Minnesota requirements for a certificate of need, including appropriate modeling to reflect the preference for a renewable facility.

Assessment of Energy and Demand Forecast

The DOC concludes that, considering the Cooperative's forecasted capacity surplus, the forecasts have not differed from actuals in a manner that indicates a detailed forecast analysis is warranted at this time. However, the DOC requests that the Joint System show in reply comments the comparison between forecasted and actual winter demands (energy sales and peak demand) for 2013 and 2014. There is no evidence that the current (2013) forecast has produced a result that is extreme by the standard of recent past forecasts.

Given the lack of evidence of forecasted values being significantly different from actuals, a reasonable level of stability in the forecasts, and lack of evidence of methodological issues, the DOC did not perform a detailed analysis of the Joint System's IRP forecast. The DOC recommends that the Commission accept the Joint System's forecast for planning purposes. However, the DOC also recommends that Joint System show in reply comments the comparison between forecasted and actual winter demands (energy sales and peak demand) for 2013 and 2014.

Resource Needs Assessment

Given that the Joint System does not forecast the need for any new resources during the planning period, the Commission may conclude that this oversight can be remedied in the Joint System's

next IRP. That is, the Commission could put the Joint System on notice that its future IRPs must explain how the Cooperative used the Commission-approved externality values. In future resource plans that require resource additions the DOC recommends that the Cooperative not only use the Commission-approved externality values, but also consider using a capacity expansion model to evaluate the best resource additions.

Minnkota's Response: Minnkota provided a table depicting the 2013 load forecast sales versus actual sales as well as the 2013 forecasted peak demand versus actual peak demand. Minnkota provided the caveat that Minnkota has not received all of the members form 7 worksheets. As such, 2014 actual joint system sales are not available.

Demand-Side Management

The DOC concludes that the Joint System's demand resources are reasonable and encourages the Joint System to continue with its plan to investigate new opportunities.

Compliance with Renewable Energy Standards

The Joint System relies primarily on PPAs for generation from the Langdon and Ashtabula North Dakota wind projects.[2] The Cooperative has contracted for generation from a total of 357 MW wind at these two facilities. Assuming a 40 percent capacity factor for these wind facilities, the Joint System is expected to obtain approximately 1,250,928 MWh in annual renewable generation to use towards its RES obligations in Minnesota and North Dakota. To date, the Cooperative has been selling excess RECs, and consequently does not have a significant REC balance to carry forward for future use. Nonetheless, the Joint System should have sufficient annual renewable generation to meet its RES requirements in both Minnesota and North Dakota throughout the planning period.

Environmental Issues

The DOC requests that the Joint System provide an update on its plans to comply with Mercury and Air Toxics (MATS) in reply comments.

With respect to carbon dioxide, the calculation of CO_2 emissions is a complex issue. Currently, the DOC is working with Minnesota utilities in reaching a consensus on the methodology for measuring CO_2 emissions. As such, this issue is not yet ripe for a Commission determination.

In the near future, the DOC will make a recommendation to the Commission requesting approval of a consistent methodology for all utilities. Once the Commission approves a specific CO2, the Commission could then request utilities to update their calculations within a reasonable period.

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2 Otter Tail Power Company (OTP) is the other utility subject to the RES that has contracted for the remaining output of the Langdon and Ashtabula wind farms. NextEra Resources owns the two projects.

Minnkota Response: One particular difficulty Minnkota faces in meeting the MACT standards is with regard to mercury. Mercury takes several forms, from elemental mercury to oxidized forms. North Dakota lignite predominately contains elemental mercury. Elemental mercury is particularly difficult to remove. To meet this challenge, Minnkota is installing a halogen injection system at the Milton R. Young Station. The halogen oxidizes the elemental mercury, allowing it to be more readily captured by activated carbon. The Milton R Young Station will meet the MACT mercury emission standard of 4 lb/Tbtu (an approximate 55-60 reduction) by the compliance date. Coyote Station will be using an activated carbon system to capture the required amount of mercury necessary for it to meet the MACT standard.

DOC Recommendations

The Department recommends that the Commission consider accept the Joint System resource plan for planning purposes, but put the Joint System on notice that its future IRPs must explain how the Cooperative used the Commission-approved externality values.

The Department recommends that the Joint System provide the following in reply comments:

- the comparison between forecasted and actual winter demands (energy sales and peak demand) for 2013 and 2014,
- an update on the Joint System's plans to comply with MATS, and
- any other information that the Joint System believes is important for the Commission to consider.

The DOC indicated that if any material issues surface based on the information in the Joint System's reply comments, the DOC may request the opportunity to provide additional comments. The DOC did not request the opportunity to provide additional comments. As such, it appears that Minnkota in reply comments has addressed the concerns that the DOC expressed.

Staff Analysis

Given Minkota's resource plan and the recommendations of the DOC with the concurrence of Minnkota, Staff recommends that the Commission accepts the 2014-2028 resource plan submitted by Minnkota as meeting the requirements of the applicable statute and rules.

In addition, Minnkota has fulfilled the requirements of its RES obligations through the planning period. In addition, Minnkota has provided the following four items pursuant to the Commission's Order its last resource plan Order:

1. Explore the use of econometric estimation of sales for the large commercial class.

2. Explore the use of alternative regression analyses that will increase the number of observations used in the Joint System's forecast models.

3. Include results of energy savings projects for all years after 2009.

4. If they find that they need to acquire additional supplies of electricity, provide an analysis of how achieving a larger or smaller savings from their Conservation Improvement Programs would alter the need for the new supply.[3]

Also, the resource planning statute does not specify how often resource plans should be filed, leaving that to Commission discretion. The Commission's rules specify biennial filings, but as resource plans have become more complex the Commission has sometimes altered that requirement. The record in this proceeding does not contain a proposed date for Minnkota's next resource plan filing. At this point, Minnkota's next IRP filing would be due on July 1, 2016.[4] As such, the Commission may wish to solicit recommendations from the parties at the Commission's meeting.

Staff notes that for the recently approved SMMPA and MMPA resource plans, the Commission granted a variance to Minn. Rules 7843.0300 and allowed both utilities to file their next plans in 2017, conditioned upon each utility filing interim status reports by August 1, 2016 on:

- Demand side management efforts;
- Distributed generation efforts;
- The effect, if known, of federal environmental regulations.[5]

Because the Minnkota resource plan is advisory like SMMPA and MMPA's plan, it would be consistent for the Commission to set the same filing date and interim status reports. Although some of Minnkota's members may file reports with the Commission on distributed generation, those reports generally focus on numeric data filed in spreadsheets. The purpose of these interim status reports, on the other hand, is to provide a narrative on Minnkota's efforts to date. The Commission also required these reports of MRES, which were filed on June 23, 2014 in Docket ET10/RP-10-735. Staff believes the combination of extending the IRP filing dates but requiring short interim status reports for utilities with a smaller presence in Minnesota strikes a reasonable balance.

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[3] Please see the Commission's June 9, 2011 Order Accepting Resource Plan with Exceptions, Adding Requirements, and Setting Future Filing Requirements in Commission Docket No. ET-6,ET-6132/RP-10-782 (June 9, 2011 Order).

[4] The Commission's June 9, 2011 Order required Minnkota and NMPA to file its next Integrated Resource Plan on or before July 1, 2014.

[5] See the Commission's February 10, 2015 Orders in Docket ET6133/RP-13-1165 and ET9/RP-13-1104.

Commission Options

I. What action should the Commission take on Minnkota's filing?

A. Accept Minnkota's 2014-2028 IRP.

B. Do not accept Minnkota's 2014-2028 IRP.

C. Take no action on Minnkota's 2014-2028 IRP.

II. What date should the Commission designate for the filing of Minnkota's next resource plan?

A. Vary Minn. Rules 7843.300 and Require Minnkota to file its next resource plan no later than July 1, 2019 conditioned upon Minnkota filing the following compliance filings:

a) Minnkota shall file a status update on its demand side management efforts by July 1, 2017;

b) Minnkota shall file a status update on its distributed generation efforts by July 1, 2017;

c) Minnkota shall file a status update on the effect of federal environmental regulations by July 1, 2017.

B. Require Minnkota to file its next resource plan no later than July 1, 2018.

C. Require Minnkota to file its next resource plan no later than July 1, 2017.

D. Require Minnkota to file its next resource plan no later than July 1, 2016.

E. Establish a date based on a consensus of the parties.

Recommendation

Staff recommends that the Commission adopt alternative numbers I.A and II. A.