

November 29, 2017

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, Minnesota 55101

RE: **Comments of the Minnesota Department of Commerce, Division of Energy Resources**
Docket No. E002/M-17-773

Dear Mr. Wolf:

Attached are the comments of the Minnesota Department of Commerce, Division of Energy Resources (Department) in the following matter:

Petition for Approval of an Interconnection Agreement with Flint Hills Resources
Pine Bend, LLC

The petition was filed on October 30, 2017 by:

Bria E. Shea
Director, Regulatory & Strategic Analysis
Northern States Power Company, LLC d/b/a Xcel Energy
414 Nicollet Mall
Minneapolis, MN 55401

The Department recommends that the Minnesota Public Utilities Commission (Commission) **approve** the petition, and is available to respond to any questions the Commission may have on this matter.

Sincerely,

/s/ Matthew Landi
Rates Analyst

ML/ja
Attachment



Before the Minnesota Public Utilities Commission

Comments of the Minnesota Department of Commerce Division of Energy Resources

Docket No. E002/M-17-773

I. SUMMARY OF PETITION

On October 30, 2017, Northern States Power Company, a Minnesota corporation d/b/a Xcel Energy (Xcel or the Company) submitted a petition requesting approval from the Minnesota Public Utilities Commission (Commission) of a proposed Interconnection Agreement (Agreement) with Flint Hills Resources Pine Bend, LLC (the Customer or Flint Hills) regarding a combined heat and power (CHP) system with a combined nameplate capacity of 78.4 MW and an operating output not to exceed 49.9 MW. The CHP system is to be constructed at the Customer's refinery in Rosemount, Minnesota and operated in parallel with the Company's electrical system, serving the Customer's on-site electrical energy and steam requirements (Project). The CHP system consists of a gas generator with a nameplate capacity of 65.4 MW, and a steam generator with a nameplate capacity of 13 MW. The Company and Customer both explained that the system will be unable to operate above 49.9 MW due to the installation of a remote operational controller, which will ensure that the operational output will remain below 49.9 MW.¹ The project's cost is estimated to be \$700,000, which the Customer will finance.

The proposed Agreement is based on the "State of Minnesota Proposed Interconnection Agreement" (Agreement) contained in Appendix E of Section 10 of the Company's Minnesota Electric Rate Book, but modified because portions of the standard interconnection agreement are not compatible with certain aspects of the Project, namely that the Project is not easily classifiable under Minnesota Statutes and Rules governing the development of electric power generating plants in the state of Minnesota, particularly in terms of system size, and due to the unique, technical arrangement of the infrastructure necessary for the Project.

The changes to the Agreement relate generally to adapting the language of the Agreement to the Project's specific and unique characteristics. Specifically, the Company proposes to make the following changes to the standard interconnection agreement:

¹ Information Request Response No. 1, page 4, included in Attachment 1 to these comments. "The CHP system includes a sophisticated and customized Emerson remote operational controller...which cannot be modified or over-ridden by the customer's operations personally...The sole purpose of the ROC is to ensure [the] CHP system[s] operational output does not exceed 49.9 MW, which it achieves through automatic adjustment of the natural gas (fuel) flow to the natural gas combustion turbine and/or steam flow to the steam turbine."

- New language allowing the Agreement to apply to the proposed CHP system's size and operational output;
- New definitions of "Material Modification" and "Operational Output"
- New language in Sections V.A.1 and 2 regarding the financial responsibilities of the Customers and the Company;
- New language modifying Section XII.B of the Agreement regarding confidential information handling and disclosure to third-parties;
- Amended the Agreement's effective date in Section VII.A

The Company states that the Customer will remain a retail customer and the Customer's resulting power factor will be calculated by the Company each month through the use of the applicable tariff and rider terms.

The Company also states that a power purchase agreement (PPA) is not needed between the Customer and the Company, as the Customer has no intent, and will be technically unable, to export any energy to the Company.² Further, the Company states that the inability to export energy generated by the CHP system means that the Midcontinent Independent System Operator (MISO) Open Access Transmission, Energy and Operating Reserve Tariff does not apply.

Xcel requests that the Commission approve the proposed revisions to the standard interconnection agreement contained in Section 10 of the Company's Minnesota Electric Rate Book for the purposes of the Flint Hills Project.

II. BACKGROUND

In Docket No. E999/CI-01-1023, the Commission issued its September 28, 2004 *Order Establishing Standards* (September 28 Order) that established the guidelines for utility Distributed Generation (DG) tariffs. These guidelines are applicable to DG projects of up to 10 megawatts (MW). The September 28 Order directed electric public utilities to file a distribution tariff consistent with the approved guidelines. On December 27, 2004, Xcel filed a petition with the Commission requesting that the Commission approve the Company's DG Tariff (Docket No. E002/M-04- 2055).

² Petition, page 1, 3-4. The Company states that all power generated by the CHP system will be used exclusively by the Customer on site, and further, the Customer's existing internal distribution system will be modified slightly to prevent the export of any energy to the Company's electric facilities.

In Docket No. E002/M-04-2055, the Commission issued its July 14, 2006 *Order Approving Distributed Generation Tariff and Standby Service Rider as Modified and Requiring Filings*. Xcel's approved DG Tariff includes the standard interconnection agreement that the Company is now proposing to alter to accommodate specific aspects of the Project.

III. DEPARTMENT ANALYSIS

The Minnesota Department of Commerce, Division of Energy Resources (Department) offers the following analysis of the Company's filing and the proposed revisions to the Company's standard interconnection agreement.

A. STATUTORY ANALYSIS

The Department reviewed relevant Minnesota Statutes and Rules to determine the appropriateness of filing this petition under Minn. Stat. §216B.05, subd. 2a. The Department notes that there are a number of Minnesota Statutes that govern the development of electric power generating plants in Minnesota as they relate to the characteristics of the Project:

- Minn. Stat. §216B.1611 et seq., which governs the interconnection of on-site distributed generation facilities in Minnesota;
- Minn. Stat. §216B.164 et seq., which governs cogeneration and small power production facilities in Minnesota; and
- Minn. Stat. §216B.243 et seq., which governs electric power generating plants larger than 50 MW in size.

After reviewing these statutes, the Department found several reasons why the Project does not comport to these statutes.

First, the Project does not comport to Minn. Stat. §216B.1611 due to the nameplate capacities of the gas and steam generators. This statute only applies to distributed generation systems that are "no more than ten megawatts of interconnected capacity."³ While the characteristics of the Project suggest this statute is relevant, as the Company states that the Project is intended to operate in parallel with the Company's electrical system, the nameplate capacities exceed the statutory threshold of 10 MW and therefore are not appropriately governed by this statute.

³ Minn. Stat. §216B.1611, subd. 2(a).

Second, the Project does not comport to Minn. Stat. §216B.164 due to its technical configuration: it is designed to prohibit the export of any energy it generates to Xcel's system. While the Project is a cogeneration facility as defined by Minn. Stat. §216B.164, subd. 2a(d), most of the statute governs cogeneration facilities in the context of generating energy for sale.

Third, while the Project meets the definition of a "large energy facility" as defined by Minn. Stat. 216B.2421, subd. 2(a), it is exempted from the Certificate of Need (CN) process per Minn. Stat. §216B.243, subd. 8(1). The proposed CHP system seems to meet the statutory definition of a "cogeneration facility" as defined by the Federal Power Act (16 U.S.C. 796(18)(a)), which would qualify it for the exemption from the CN process under Minn. Stat. §216B.243, subd. 8(1).

It seems reasonable that the Company would consequently file its petition under Minn. Stat. §216B.05, subd. 2a, which provides:

"[A] contract for electric service entered into between a public utility and one of its customers, in which the public utility and the customer agree to customer-specific rates, terms, or service conditions not already contained in the approved schedule, tariff or rules of the utility must be filed for approval by the commission pursuant to the commission's rules of practice. Contracts between public utilities and customers that are necessitated by specific statutes in this chapter must be filed for approval under those statutes and any rules adopted by the commission pursuant to those statutes."

This statute allows a utility and its customer to negotiate a separate agreement outside of existing statutory construction and the utility's electric rate book, if desired. However, given the technical arrangement of the Project, it could be considered a distributed generation facility, albeit outside of the statutory 10 MW threshold. It seems reasonable that the Company and the Customer would simply amend the "State of Minnesota Proposed Interconnection Agreement" (Agreement) contained in Appendix E of Section 10 of the Company's Minnesota Electric Rate Book.

The Department concludes that the Agreement reached between the Company and the Customer is a reasonable approach to obtaining regulatory approval for the Project.

B. REVISIONS TO THE STANDARD INTERCONNECTION AGREEMENT

The Company and the Customer negotiated several modifications to the standard Distributed Generation Interconnection Agreement. The Department's analysis of these modifications focuses on their compatibility with the public interest.

i. Operational Output vs. Nameplate Capacity

The proposed Agreement relies on characterizing the CHP system in terms of its operational output of 49.9 MW instead of its nameplate capacity of 78.4 MW. This characterization is atypical of proposals to construct various electric power generating plants, and seems to be divergent from the spirit of Minnesota Statutes and Rules governing the development of electric power generating plants in the state of Minnesota. While the Department agrees that the definition of "capacity" under Minn. Stat. §216B.164, subd. 2a(c)⁴ is not instructive on how to characterize cogeneration and small power facilities in terms of operational output or nameplate capacity, the broader context of the statutes in Minnesota governing the development of electric power generating plants suggests an intent to characterize systems in terms of their nameplate capacity. Further, the definition of "capacity" is applicable only to Minn. Stat. §216B.164, and so this definition is not controlling in other statutes related to the development of electric power generating plants.

This does not mean, however, that it would be impermissible to characterize a system in terms of its operational output instead of its nameplate capacity in all instances. The Department would be indifferent to such a characterization so long as such characterization is not done to avoid statutory and regulatory requirements and is found to be consistent with the public interest. Such a determination should be made on a case-by-case basis.

To illustrate, let us assume that the proposed CHP system does not meet the definition of a "cogeneration facility" as defined by 16 U.S.C. §796(18)(a), and would therefore not be exempt from the CN process as stipulated by Minn. Stat. §216B.243, subd. 8(1). In this instance, characterization of the CHP system in terms of its operational output of 49.9 MW would not be reasonable, as such a characterization would allow the Customer to evade the statutory definition of a "large energy facility," as it would be less than the 50 MW threshold as defined by Minn. Stat. §216B.2421, subd. 2(1). Such a characterization would allow the Customer to evade the CN process for a large energy facility found in Minn. Stat. §216B.243, despite having a nameplate capacity that would otherwise require the CHP system to obtain regulatory approval through the CN process.

⁴ Minn. Stat. §216B.164, subd. 2a(c) states "'Capacity' means the number of megawatts alternating current (AC) at the point of interconnection between a distributed generation facility and a utility's electric system."

In this instance, however, the characterization of the proposed CHP system in terms of its operational output seems to be benign. The Company and the Customer explain that the use of the proposed CHP system's operational output instead of its nameplate capacity in the modified standard interconnection agreement is a result of the engineering constraints of the CHP system and the preclusion of the CHP system to export energy to Xcel's electric facilities.^{5,6} Further, the Customer explains that the theoretical range of operating capability of the CHP system is between 40 and 60 MW due to various technical constraints, which is below the system's nameplate capacity, and further, that the system could not produce 78.4 MW of electrical energy "under any circumstances."⁷

The Department concludes that there is no material issue germane to the public interest preventing the Agreement from characterizing the proposed CHP system in terms of its operational output of 49.9 MW instead of its nameplate capacity of 78.4 MW.

ii. Other Modifications to the Standard Interconnection Agreement

After the Department's analysis of the several proposed modifications to the standard interconnection agreement, the Department concludes that these modifications relate exclusively to adapting the standard interconnection agreement to the specific circumstances of the Project, and do not appear to compromise the protections contained in the standard Distributed Generation Interconnection Agreement. Accordingly, the Department recommends approval of the modifications to the standard interconnection agreement as proposed.

C. OTHER CONSIDERATIONS – POTENTIAL FOR STRANDED ASSETS AND RELIABILITY IMPACTS

The Department's review of the Project included analysis of the potential impact that the Project may have on stranding Company assets currently used to provide the Customer with electricity service, and an analysis of the potential impact that the Project may have on the reliability of the Company's electric power system.

The Project would result in a reduction of the Customer's consumption of Company-supplied electricity. Theoretically, such a scenario can result in utility stranded assets or in impacts to the electricity system's reliability. Stranded assets can result from the Company no longer needing certain aspects of the electric power system in order to meet the Customer's reduced consumption and demand. Reliability impacts can result from the reduction in Customer load.

⁵ Petition, page 4.

⁶ Information Request No. 1 Response, pages 3-4, included in Attachment 1 to these comments.

⁷ *Id.*

If the load reduction is not properly anticipated, it can lead to power quality problems that are deleterious to the electric power system.

In response to the Department's inquiry into these issues, the Company supplied information that assuaged the Department's concerns. The Company does not expect any assets to be stranded, as "[a]ll Company assets located at the substation [at the Customer's business] will be removed and all removals for this project are being 100 percent reimbursed by the customer" at their net book value.⁸ Additionally, the Company conducted a system impact study and facilities study, and anticipated that the proposed CHP system "will not have a negative impact to the transmission system from a reliability or stability standpoint." Xcel further explained that because the proposed CHP system is "located on the distribution side of the electrical system it appears only as load shaving from the transmission system" resulting in only "a reduction in load at the existing Koch 115 kV substation."⁹ The Department concludes that there will be no stranded assets or reliability concerns associated with this Proposal.

IV. DEPARTMENT RECOMMENDATIONS

The Department recommends that the Commission **approve** the proposed Interconnection Agreement between Xcel and the Customer for its proposed 49.9 MW CHP system.

/ja

⁸ Information Request No. 2 Response, pages 1-2, included in Attachment 2 to these comments.

⁹ *Id.* at 2.

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Xcel Energy

Docket No.: E002/M-17-773

Response To: Department of Commerce Information Request No. 1

Requestor: Matthew Landi

Date Received: November 8, 2017

Question:

Topic: Operational Output vs. Rated Output

Reference(s): Petition, page 4; Attachments A & B, page 3

Request:

- a) Given that it is common practice to refer to the capacity of electric generating units (EGUs) in terms of their “rated output,” “nameplate capacity,” or “capacity,” and further, given that statutes governing electricity generation in Minnesota generally refer to the capacity of EGUs in terms of their “nameplate capacity” or “capacity” (see definition of “capacity”, Minn. Stat. §216B.164, subd. 2a(c), and see generally Minn. Stat. §216B.1611 et seq., Minn. Stat. §216B.164 et seq., and Minn. Stat. §216B.2421 et seq.), please provide Xcel’s rationale for why this combined heat and power (CHP) system should be characterized in terms of its operational output of 49.9 MW instead of its combined rated output (nameplate capacity) of 78.4 MW (65.4 MW for the “gas” generator and 13 MW for the “steam” generator).
- b) Please include in this response an explanation of the “system impact study” and “facilities study” referenced in the proposed Interconnection Agreement. What is their significance, if any, to referring to the CHP system in terms of its operational output instead of the rated output (nameplate capacity)?

Response:

- a) *The response to this part a is set forth in two parts. The first part is sponsored by Xcel Energy. The second part as noted below is sponsored by Flint Hills Resources (FHR).*

Xcel Energy is indifferent as to whether this CHP system is characterized by the term “Operational Output” or by “Nameplate Capacity” because, in the governing interconnection agreement it is clearly above the 10 MW nameplate capacity ceiling of our tariffed Section 10 interconnection agreement and fits within the definition of a qualifying facility. The customer had a preference to use the term “Operational Output.”

The statutes cited in the information request are not determinative on how the size of the generation system must be characterized in a non-tariffed interconnection agreement.

- Minn. Stat. § 216B.164, subd. 2a(c), provides a definition, and states: *"Capacity" means the number of megawatts alternating current (AC) at the point of interconnection between a distributed generation facility and a utility's electric system.* This statute generally sets forth net metering and various other related requirements for distributed generation sized under 1 MW or 10 MW depending on the issue. The system size of the generation system at issue clearly has a capacity greater than 10 MW regardless of how that is defined. We note that the term “capacity” in Minn. Stat. § 216B.164, subd. 2a(c) closely mirrors the definition of “operational output” in the interconnection agreement - as described in detail below, the number of megawatts alternating current (AC) at the point of interconnection between the CHP system and Xcel Energy’s electric system will not exceed 49.9 MW.
- Minn. Stat. § 216B.1611, subd. 2, uses the term “ten megawatts of interconnected capacity” in setting the size limit applicable to the generic standards for distributed generation in utility tariffs. Here, this threshold has been clearly exceeded, so this generation system is not subject to this statute.
- Minn. Stat. § 216B.1611, subd. 3a, sets forth information gathering requirements, including the “nameplate capacity” of the facility. The nameplate capacity of the current facility can still be provided as part of the information gathering (as shown in the IR itself) even though a different term is used in the proposed interconnection agreement.

- Minn. Stat. § 216B.2421 uses the term “combined capacity of 50,000 kilowatts or more” to describe what is a “Large energy facility.” This definition is then used to determine whether a certificate of need is required for construction of a large energy facility. Minn. Stat. § 216B.2421 subd. 1; referencing Minn. Stat. § 216B.2422 and Minn. Stat. § 216B.243. Whether or not this generation facility is a large energy facility, Minn. Stat. § 216B.243, Subd. 8, provides an exemption to a certificate of need for a large energy facility that is a cogeneration or small power production facility having a “combined capacity” at a single site of less than 80,000 kilowatts. We do not believe that this statute requires the use of the term “nameplate capacity” in the interconnection agreement because it is under 80 MW. Also, if the term “combined capacity” in the statute is interpreted to mean “nameplate capacity,” then the “nameplate capacity” of the CHP system would be used for purposes of this statute even if a different term is used in the interconnection agreement.

The Interconnection Application from the customer’s stated maximum combined output of generators would be 49.9 MW. Additionally the Interconnection agreement limits the maximum operational output of 49.9 MW, which was the value applied for by the customer and used by the Company in the studies.

For all the above reasons, Xcel Energy believes the CHP system can be fairly characterized in terms of its operational output of 49.9 MW in the interconnection agreement instead of its combined rated output (nameplate capacity) of 78.4 MW.

Note: The remaining portion of this response to part a as set forth immediately below is sponsored by FHR:

The CHP system cannot produce 78.4 MW (generator nameplate data) of electrical energy (operational output), under any circumstances. The CHP system operational output is set by the combined capability of the “gas” driver and the “steam” driver, which is described in more detail below.

- The natural gas combustion turbine (“gas” driver) is a used GE LM 6000 PF-25 DLE model, which the seller has estimated will have an operational output which will range from 28 MW (108F) to 47 MW (20F). The gas generator (used Brush model BDAX 7-290ERJT) has a rated nameplate capacity of 60.5 MW at 60F, and is the best fit model available from this supplier for use with this “gas” driver.
- The steam turbine (new, Elliot Model 2SQNV-7), has a vendor estimated rated capability of 12.7 MW, however a wide range of site steam demand operating

conditions which will cause the steam turbine operational output to vary from 3 to 12.7 MW. The steam generator (new Kato Engineering Model 4P63.5-6000) has a rated nameplate capacity of 13 MW at 104F.

In summary, the CHP system has a theoretical range of operating capability varying from 40 MW to 60 MW, across all possible ambient air conditions. Despite this potential range of operating output capability, FHR has informed Xcel Energy that 49.9 MW was selected by FHR in 2014 as the maximum allowed design operating output. FHR's decision was based upon considerations of numerous subject-related Minnesota Statutes and Rules in place at that time, Flint Hills Pine Bend on-site power distribution system considerations, and overall project economics.

To ensure operating output of the CHP system is in fact limited to 49.9 MW, the CHP system includes a sophisticated and customized Emerson remote operational controller (ROC, Emerson ROC 809 Control Panel), which cannot be modified or over-ridden by the customer's operations personnel. The sole purpose of the ROC is to ensure CHP system operational output does not exceed 49.9 MW, which it achieves through automatic adjustment of the natural gas (fuel) flow to the natural gas combustion turbine and/or steam flow to the steam turbine. Xcel Energy's state of the art metering facilities will continuously monitor the operational output of the CHP system.

b) Xcel Energy is sponsoring this response:

Xcel Energy performed the system impact study using a combined output of the CHP system of 49.9 MWs at the request of the customer. Therefore, the operational output of the customer's CHP system cannot exceed 49.9 MWs regardless of the CHP systems capabilities. The Facilities Study similarly relied on the 49.9 MW limitation.

Preparer: Christopher W. Buboltz / James R. Denniston / Keith Lightfoot
 Title: Project Manager Transmission / Assistant General Counsel / Senior Associate Commercial Development
 Department: Project Mgmt. North / Deputy General Counsel / Flint Hills Resources, LLC
 Telephone: 612-330-1921 / 612-215-4656 / 316-828-8318
 Date: November 20, 2017

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Xcel Energy

Docket No.: E002/M-17-773

Response To: Department of Commerce Information Request No. 2

Requestor: Matthew Landi

Date Received: November 8, 2017

Question:

Topic: Impact on Area Electric Power System

Reference(s): Petition, page 4

Request:

While it seems that the proposal is designed to preclude the possibility of the CHP system to export excess customer generated energy, please provide an explanation of the impact that the proposed CHP system will have on the area's electric power system, specifically with reference to:

1. Any anticipated or possible stranded assets from equipment no longer in service or necessary to meet the area's and/or the customer's electricity demand, and;
2. Any impacts on the reliability of the area's electric power system.

Response:

1. We do not expect any assets to be stranded as a result of the customer's proposed CHP system. The customer's additional CHP generation only accounts for approximately 35 percent of the total peak summer load at the customer's Flint Hills Pine Bend site. In addition there will be times that the customer's CHP system is not available for use and they will have to rely on the existing transmission system to make up the difference in load being served. All Company assets located at the substation will be removed and all removals for this project are being 100 percent reimbursed by the customer. The costs

for the removal value of all Company owned assets will be booked against the net book value of this substation location and adjusted accordingly.

2. Our system impact study determined that the proposed CHP system will not have a negative impact to the transmission system from a reliability or stability standpoint. Since the customer's generation is located on the distribution side of the electrical system it appears only as load shaving from the transmission system. This means that when it is on and generating power we would only see a reduction in load at the existing Koch 115 kV substation.

Preparer: Jason Standing
Title: Principal Transmission Planner
Department: Transmission Planning North XES
Telephone: 612-330-7768
Date: November 20, 2017