



414 Nicollet Mall
Minneapolis, MN 55401

November 30, 2023

—Via Electronic Filing—

Will Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE: COMPLIANCE FILING
PROGRESS REPORT
DOCKET NO. E002/M-21-590

Dear Mr. Seuffert:

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy, submits to the Minnesota Public Utilities Commission this Compliance Filing in accordance with the Commission's January 24, 2022 Order in the above-referenced docket and Minnesota Statute § 216B.2424, subd. 5c(e), which requires that:

216B.2424, subd. 5c:

Subd. 5c. New power purchase agreement. (a) No later than August 1, 2021, a public utility subject to subdivision 5 and the cogeneration facility may file a proposal with the commission to enter into a power purchase agreement that governs the public utility's purchase of electricity generated by the cogeneration facility. The power purchase agreement may extend no later than December 31, 2024, and must not be extended beyond that date except as provided in paragraph (f).

5c(e). Upon approval of the new power purchase agreement, the commission must require periodic reporting regarding progress toward development of a proposal for an electrification project.

During the 2023 legislative session, Minn Stat. 216b.2424 was modified to permit extension of the existing PPA, independent of approval of an electrification project (see HF2310 Fourth Engrossment, Sec. 8. Minnesota Statutes 2022, section 216B.2424, subdivision 5c). However, St. Paul Cogeneration, LLC (SPC) and the Company continue to work on an engineering study to develop an electrification

proposal that includes an electrode boiler to provide heat to the District Energy system and will submit that study by March of 2024 in accordance with Commission Order dated January 24, 2022, Ordering Point 4. The study has identified a 30MW boiler together with thermal storage as the most cost-effective option. A 30MW electrode boiler would offset natural gas use that is currently used to supplement the heat supply from the cogeneration facility. The use of biomass, and therefore the amount of wood waste processed by SPC, would be unaffected by the addition of a 30MW electrode boiler. The study will identify the costs and investments necessary to implement the electrification proposal.

In addition, the Company, SPC, the Minnesota Pollution Control Agency, and the Minnesota Department of Commerce have met to discuss the development of a societal cost-benefit analysis (CBA) as required by the Commission's Order. The societal CBA will include consideration of the impacts of alternative disposal of wood waste and an alternative heating source for District Energy's customers, in the event SPC discontinues operation if there were no electrification project. SPC will follow this filing with an additional update detailing the stakeholder work that has occurred since February of 2022 to identify alternatives to reduce the cost of biomass fuel used by SPC to generate electricity sold to the Company.

The Company has partially completed the societal CBA. The full CBA will require additional EnCompass modeling, including the negotiated price of the PPA, which will be completed in 2024. However we were able to conduct, outside EnCompass, portions of the CBA estimating societal impacts of alternative wood waste disposal and increased natural gas use for heating in a scenario where the SPC facility closes. To do this we compared two scenarios:

- *Base Case:* with no electrification project approved, the SPC PPA terminates at the end of 2024 and without these revenues, SPC closes. Xcel Energy must find replacement power for 153,500 MWh/year currently purchased from SPC. Because biomass operations of SPC cease, approximately 254,000 tons/year of wood waste must find alternate disposal; this leads to an increase in open burning of wood waste. Natural gas use increases to replace the heat provided to the District Energy system by biomass.
- *Electrification Case:* a 30MW electrode boiler displaces natural gas at District Energy. SPC continues to use biomass for ~90 percent heat input, so wood waste operations are largely unaffected by the electrification project. Xcel Energy continues to purchase electricity under PPA, approximately

153,500 MWh per year. The new 30MW of electrical load operates largely off-peak, and a new renewable resource or tariff is needed to power this load.

To do this analysis, we estimated the MMBtu of natural gas needed to replace heat input from biomass,¹ and used EPA emission factors for natural gas combustion in an efficient low-NO_x boiler (NO_x, CO₂, methane, nitrous oxide, volatile organic compounds, SO₂, and particulate matter).² We multiplied the calculated emissions by the Commission's externality values for each pollutant, using the High value for an *Urban* location for the criteria pollutants (since SPC is located in downtown Saint Paul), and the High values for greenhouse gases, consistent with the Company's base assumptions in our most recent resource plan modeling.³ This portion of the analysis estimates the societal damages from increased natural gas combusted to replace the heat input currently coming from biomass.

For the second portion of the analysis, we needed to assume what happens to 254,000 tons/year of wood waste that is currently burned at SPC. In consultation with MPCA, we decided on an assumption that 100 percent of this wood waste is diverted to open burning, since State law prohibits disposal of brush and tree waste in landfills or solid waste facilities and mulch markets for wood waste are relatively saturated, especially with the growing spread and impact of emerald ash borer. We used EPA emission factors for open burning of wood waste (particulate matter, carbon monoxide, methane, and NO_x)⁴ to estimate emissions from open burning of 254,000 tons/year. In this case we used the High criteria pollutant damage values for a *Metropolitan Fringe* location, since we assumed wood waste would be transported outside the Metro area for burning. This portion of the analysis estimates the societal damages from alternate disposal of wood waste currently disposed at SPC.

We calculated societal damages over the period 2025 to 2054 (i.e., the assumed closure of SPC, through the assumed 30-year life of an electrode boiler). The high-level result was that increased natural gas use causes incremental societal damages with a net

¹ 712,473 MMBtu of thermal energy delivered by SPC to the District Energy system on average in 2014-2021, replaced with 838,204 MMBtu of natural gas (assumed natural gas boiler efficiency of 85%).

² See https://www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf.

³ Note that, because we conducted this CBA in 2022, we used the externality values in the Commission's January 3, 2018 Order *In the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minnesota Statutes Section 216B.2422, Subdivision 3* (Docket No. E-999/CI-14-643). The significantly higher greenhouse gas externality values cited in 2023 legislation would increase the estimated societal damages from natural gas use.

⁴ See <https://www.epa.gov/sites/production/files/2020-10/documents/c02s05.pdf>, Table 2.5-5. We used the values for "Forest Residues – Unspecified."

present value of \$57 million, and open burning of wood waste causes incremental societal damages with a net present value of \$787 million, over the 30-year analysis period. By far the greatest damages come from particulate emissions from open burning: \$686 million of the total NPV damages. This is because particulate emissions are high in uncontrolled burning, and the Commission's externality values for particulate matter are quite high, reflecting its impacts to public health. Again, we emphasize this CBA is partial at this time because it does not include EnCompass modeling of the societal costs of continuing the PPA at the price yet to be negotiated, which will partially offset the estimated societal damages.

Xcel Energy and SPC will continue to develop the electrification proposal and analysis of impacts over the coming months. Once we have completed the necessary analysis, we expect to continue to work with SPC towards submittal of a proposal to the Commission for consideration.

We have electronically filed this document with the Commission, and copies have been served on the parties on the attached service list. Please contact me at 612-330-6270 or allen.d.krug@xcelenergy.com or Pamela Gibbs at 612-330-2889 or pamela.k.gibbs@xcelenergy.com if you have any questions regarding this filing.

Sincerely,

/s/

ALLEN D. KRUG
AVP, STATE REGULATORY POLICY

c: Service List

c: Rep. Rick Hansen
Rep. Josh Heintzeman
Rep. Chris Swedzinski
Rep. Patty Acomb
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CERTIFICATE OF SERVICE

I, Joshua DePauw, hereby certify that I have this day served copies of the foregoing document on the attached list of persons.

xx by depositing a true and correct copy thereof, properly enveloped with postage paid in the United States mail at Minneapolis, Minnesota

xx electronic filing

DOCKET No. E002/M-21-590

Dated this 30th day of November 2023

/s/

Joshua DePauw
Regulatory Administrator

| First Name | Last Name | Email | Company Name | Address | Delivery Method | View Trade Secret | Service List Name |
|----------------|--------------------|-----------------------------------|------------------------------------|---|--------------------|-------------------|------------------------|
| Mara | Ascheman | mara.k.ascheman@xcenergy.com | Xcel Energy | 414 Nicollet Mall Fl 5 Minneapolis, MN 55401 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| James J. | Bertrand | james.bertrand@stinson.com | STINSON LLP | 50 S 6th St Ste 2600 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| James | Canaday | james.canaday@ag.state.mn.us | Office of the Attorney General-RUD | Suite 1400 445 Minnesota St. St. Paul, MN 55101 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| John | Coffman | john@johncoffman.net | AARP | 871 Tuxedo Blvd. St. Louis, MO 63119-2044 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Generic Notice | Commerce Attorneys | commerce.attorneys@ag.state.mn.us | Office of the Attorney General-DOC | 445 Minnesota Street Suite 1400 St. Paul, MN 55101 | Electronic Service | Yes | OFF_SL_21-590_M-21-590 |
| George | Crocker | gwillc@nawo.org | North American Water Office | 5093 Keats Avenue Lake Elmo, MN 55042 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| John | Farrell | jfarrell@ilsr.org | Institute for Local Self-Reliance | 2720 E. 22nd St Institute for Local Self-Reliance Minneapolis, MN 55406 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Sharon | Ferguson | sharon.ferguson@state.mn.us | Department of Commerce | 85 7th Place E Ste 280 Saint Paul, MN 551012198 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Edward | Garvey | edward.garvey@AESLconsulting.com | AESL Consulting | 32 Lawton St Saint Paul, MN 55102-2617 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Adam | Heinen | aheinen@dakotaelectric.com | Dakota Electric Association | 4300 220th St W Farmington, MN 55024 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| | | | | | | | |

| First Name | Last Name | Email | Company Name | Address | Delivery Method | View Trade Secret | Service List Name |
|------------|------------------|--------------------------------|--------------------------------------|---|--------------------|-------------------|------------------------|
| Michael | Hoppe | lu23@ibew23.org | Local Union 23, I.B.E.W. | 445 Etna Street Ste. 61 St. Paul, MN 55106 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Alan | Jenkins | aj@jenkinsatlaw.com | Jenkins at Law | 2950 Yellowtail Ave. Marathon, FL 33050 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Richard | Johnson | Rick.Johnson@lawmoss.com | Moss & Barnett | 150 S. 5th Street Suite 1200 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Sarah | Johnson Phillips | sarah.phillips@stoel.com | Stoel Rives LLP | 33 South Sixth Street Suite 4200 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Frank | Kohlasch | frank.kohlasch@state.mn.us | MN Pollution Control Agency | 520 Lafayette Rd N. St. Paul, MN 55155 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Kirk | Koudelka | Kirk.Koudelka@state.mn.us | MN Pollution Control Agency | 520 Lafayette Rd N Saint Paul, MN 55155 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Peder | Larson | plarson@larkinhoffman.com | Larkin Hoffman Daly & Lindgren, Ltd. | 8300 Norman Center Drive Suite 1000 Bloomington, MN 55437 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Kavita | Maini | kmains@wi.rr.com | KM Energy Consulting, LLC | 961 N Lost Woods Rd Oconomowoc, WI 53066 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Pam | Marshall | pam@energycents.org | Energy CENTS Coalition | 823 E 7th St St Paul, MN 55106 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Stacy | Miller | stacy.miller@minneapolismn.gov | City of Minneapolis | 350 S. 5th Street Room M 301 Minneapolis, MN 55415 | Electronic Service | No | OFF_SL_21-590_M-21-590 |

| First Name | Last Name | Email | Company Name | Address | Delivery Method | View Trade Secret | Service List Name |
|----------------|--------------------------------|--------------------------------------|--------------------------------------|---|--------------------|-------------------|------------------------|
| David | Moeller | dmoeller@allete.com | Minnesota Power | 30 W Superior St Duluth, MN 558022093 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Andrew | Moratzka | andrew.moratzka@stoel.com | Stoel Rives LLP | 33 South Sixth St Ste 4200 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| David | Niles | david.niles@avantenergy.com | Minnesota Municipal Power Agency | 220 South Sixth Street Suite 1300 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Carol A. | Overland | overland@legalectric.org | Legalelectric - Overland Law Office | 1110 West Avenue Red Wing, MN 55066 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Generic Notice | Residential Utilities Division | residential.utilities@ag.state.mn.us | Office of the Attorney General-RUD | 1400 BRM Tower 445 Minnesota St St. Paul, MN 551012131 | Electronic Service | Yes | OFF_SL_21-590_M-21-590 |
| Kevin | Reuther | kreuther@mncenter.org | MN Center for Environmental Advocacy | 26 E Exchange St, Ste 206 St. Paul, MN 551011667 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Peter | Scholtz | peter.scholtz@ag.state.mn.us | Office of the Attorney General-RUD | Suite 1400 445 Minnesota Street St. Paul, MN 55101-2131 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Christine | Schwartz | Regulatory.records@xcelenergy.com | Xcel Energy | 414 Nicollet Mall FL 7 Minneapolis, MN 554011993 | Electronic Service | Yes | OFF_SL_21-590_M-21-590 |
| Will | Seuffert | Will.Seuffert@state.mn.us | Public Utilities Commission | 121 7th PI E Ste 350 Saint Paul, MN 55101 | Electronic Service | Yes | OFF_SL_21-590_M-21-590 |
| Ken | Smith | ken.smith@districtenergy.com | District Energy St. Paul Inc. | 76 W Kellogg Blvd St. Paul, MN 55102 | Electronic Service | No | OFF_SL_21-590_M-21-590 |

| First Name | Last Name | Email | Company Name | Address | Delivery Method | View Trade Secret | Service List Name |
|------------|-----------|------------------------------|--------------------------------|---|--------------------|-------------------|------------------------|
| Byron E. | Starns | byron.starns@stinson.com | STINSON LLP | 50 S 6th St Ste 2600 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| James M | Strommen | jstrommen@kennedy-graven.com | Kennedy & Graven, Chartered | 150 S 5th St Ste 700 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Eric | Swanson | eswanson@winthrop.com | Winthrop & Weinstine | 225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Joseph | Windler | jwindler@winthrop.com | Winthrop & Weinstine | 225 South Sixth Street, Suite 3500 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Kurt | Zimmerman | kwz@ibew160.org | Local Union #160, IBEW | 2909 Anthony Ln St Anthony Village, MN 55418-3238 | Electronic Service | No | OFF_SL_21-590_M-21-590 |
| Patrick | Zomer | Pat.Zomer@lawmoss.com | Moss & Barnett PA | 150 S 5th St #1200 Minneapolis, MN 55402 | Electronic Service | No | OFF_SL_21-590_M-21-590 |