MINNESOTA
PUBLIC UTILITIES COMMISSION

Staff Briefing Papers

Meeting Date	December 16, 2021		Agenda Item **3
Company	Xcel Energy (Xcel or the Company)		
Docket No.	**E002/M-21-590**		
	In the Matter of Xcel Energy's Petition for Approval of a Power Purchase Agreement with Saint Paul Cogeneration, LLC		
Issue	Should the Commission approve the two-year Power Purchase Agreement (PPA) with Saint Paul Cogeneration, LLC (SPC) under Minn. Stat. § 216B.2424 subd. 5c? Should the Commission find that Xcel may recover the purchased energy costs from its Minnesota customers through the Fuel Clause Rider (FCR)?		
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✓ **Relevant Documents**	**Date**
Xcel Energy, *Petition (Public and Non-Public)*	July 30, 2021
Department of Commerce, *Comments (Public and Non-Public)*	September 7, 2021
Partnership on Waste and Energy, *Reply Comments*	October 1, 2021
St. Paul Cogeneration, LLC, *Reply Comments*	October 4, 2021
Xcel Energy, *Reply Comments (Public and Non-Public)*	October 4, 2021
Xcel Energy, *Revised Redactions (Public and Non-Public)*	October 4, 2021
Minnesota Inter-County Association, *Public Comment*	October 7, 2021
Minnesota Pollution Control Agency, *Supplemental Comments*	November 2, 2021
Department of Commerce, *Supplemental Comments*	November 3, 2021
Alan Muller, *Public Comment*	November 4, 2021

I. Statement of the Issues

Should the Commission approve the two-year Power Purchase Agreement (PPA) with Saint Paul Cogeneration, LLC (SPC) under Minn. Stat. § 216B.2424 subd. 5c?

Should the Commission find that Xcel may recover the purchased energy costs from its Minnesota customers through the Fuel Clause Rider (FCR)?

II. Background

A. Biomass Power Mandate and Past Commission Orders

Minn. Stat. § 216B.2424 (the Biomass Mandate) was originally part of broader legislation that allows Xcel to store spent fuel at the Prairie Island Nuclear Generating Plant. The mandate specifies that a public utility that operates a nuclear-powered electric generating plant within the state must either construct, operate, purchase, or contract for the construction of 125 MW of biomass-generated power.

The Biomass Mandate required Xcel to enter into a power purchase agreement (PPA) for qualifying biomass by December 31, 1998. On December 23, 1998, Xcel executed a PPA with Saint Paul Cogeneration, LLC (SPC), an affiliate of District Energy St. Paul, Inc., to partially satisfy Xcel's statutory mandate. Under the PPA, Xcel agreed to purchase the capacity and energy for 25 MW of accredited capacity from a biomass generation station to be developed and operated by the District Energy Project in Saint Paul.

On January 11, 1999, in Docket No. E002/M-96-1405, Xcel filed for Commission approval of the PPA. On August 5, 1999, the Commission issued an Order deferring a decision on the PPA due to project cost concerns. The Commission encouraged further price negotiations between the Company and District Energy. As a result, significant cost reductions were achieved.

The Commission approved a revised PPA on January 11, 2000. While the PPA established an initial operation date of no later than December 31, 2002 – per the statutory requirement – the project encountered several delays, and commercial operation status was not achieved until May 2003. Unless extended, the scheduled termination date of the PPA is December 31, 2022.

On March 1, 2000, the Company and SPC executed Amendment No. 1 to the PPA, which converted the anticipated energy and capacity payments to a "Pay for Production" agreement that provides only for energy payments based on project output. As a result, there are no annual capacity costs associated with the project as originally anticipated in the Commission's January 11, 2000 Order.

On June 29, 2012, in Docket No. E002/M-12-726, Xcel filed a petition to amend its PPA with SPC (Amendment No. 2). In its April 3, 2013 Order, the Commission approved Amendment No. 2 with added language. The approved amendment assigned to Xcel all renewable energy credits associated with the project; deleted the requirement for a biennial engineering compliance audit; and clarified the contract language regarding project production, establishing that in any year of the contract, Xcel may not purchase more than the amount of production necessary to achieve the cumulative annual average of 153,300 MWh.[1] The Commission also accepted the Company's proposal to refund $1,253,845 to ratepayers for excess energy purchased between 2006 and 2010.

B. Project Background

SPC owns and operates the 33 MW wood and natural gas-fired combined heat and power (CHP) facility located in downtown Saint Paul. Since 2003, SPC has served heating load in downtown Saint Paul and power to Xcel through the repurposing of tree waste. The waste wood used at the cogeneration facility comes from a variety of sources, including storm damage, Emerald Ash Borer (EAB) infestation, yard waste and tree-management services, and habitat restoration.

When only producing electricity, the facility's electric capacity is 33 MW. When also producing steam for heating purposes (in full cogeneration mode), the facility's electric capacity is reduced to 25 MW because the steam for heating is extracted partway through the turbine. As a result, the facility's accredited capacity is 25 MW.[2]

Annually, the SPC facility turns approximately 225,000 tons of tree waste into renewable energy. SPC also combusts some natural gas; in recent years, its fuel source has been about 75 percent biomass and 25 percent natural gas.

C. Minn. Stat. § 216B.2424, Subdivision 5c

The newly added Subdivision 5c of the Biomass Mandate has several requirements, many of which are referenced numerous times throughout various filings; thus, staff provided Subdivision 5c in its entirety as Attachment 1 of these briefing papers. The remainder of this section will summarize some of the key aspects of the legislation that pertain to Xcel's petition and the Department of Commerce (Department) comments.

Subdivision 5c(a) requires that a new PPA between Xcel and SPC must be filed by August 1, 2021, with the term extended to December 31, 2024. Xcel filed the PPA on July 30, 2021, and the term expires on December 31, 2024.

Subdivision 5c(b)(1) is essentially a compliance requirement for SPC; it requires SPC to demonstrate and certify that the transport of biomass fuel from processed waste wood from ash trees to the SPC facility complies with the regulatory requirements under the Minnesota State Formal Quarantine for Emerald Ash Borer (EAB).

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[1] According to Xcel's most recent annual report for the SPC PPA, filed on August 21, 2021, the total cumulative annual average for the life of contract is 153,279 MWh.

[2] Department comments, p. 1.

Subdivision 5c(b)(2) requires that the PPA price cannot exceed $98 per megawatt-hour (MWh), and the price must demonstrate "significant savings" relative to the existing PPA. The PPA price is $98/MWh, and it reduces cost by about 30 percent relative to the existing PPA.

Subdivision 5c(b)(3) requires that the PPA include a proposal for one or more electrification projects that result in the downtown Saint Paul district energy system producing thermal energy for its customers using electricity generated from renewable sources. Xcel's petition did not include a specific proposal but discussed three different options for electrifying the thermal loads. Xcel stated it will file an electrification proposal to the Commission for approval no later than September 2024.

Subdivision 5c(b)(4) requires that the PPA provides "net benefit to the utility customers or the state."

Subdivision 5c(d) states that SPC must attempt to obtain funding to reduce the cost of generating electricity and enable the facility to continue to operate beyond the agreement period to address the removal of ash trees, without any subsidy or contribution from any PPA after December 31, 2024. SPC must submit periodic reports to the Commission regarding these efforts.

Subdivision 5c(h) states that the Commission may allow Xcel to recover prudently incurred costs net of revenues resulting from the electrification project through an automatic cost recovery mechanism that allows for cost recovery outside of a general rate case. The cost recovery mechanism must (1) allow a reasonable return on the capital invested in the electrification project and (2) recover costs only from Minnesota electric service customers only.

III. Xcel Petition

A. PPA Price and Estimated Electricity Production

As noted above, Minn. Stat. § 216B.2424 Subd. 5c(b)(2) requires that the PPA must not exceed $98/MWh. Table 1 below shows that the energy payment rate of the PPA equals the maximum allowable price.[3] The PPA price is based on a financial analysis of the cost of operating the facility using its primary fuel of wood residuals from the Twin Cities metro area for 75 percent of energy production. The energy payment is lower than the current PPA price, which amounts to an approximately 30 percent cost reduction. The cost reduction results primarily from the initial costs of construction being eliminated from the financial model, along with efficiencies developed in the operation of the facility over time. Xcel estimates that annual electricity production will be about 153,300 MWh per year, which is consistent with the Commission's April 3, 2013 Order in Docket No. 12-726 requiring that Xcel may not purchase more than the amount of production necessary to achieve the cumulative annual average of 153,300 MWh.

[3] Table 1 was originally designated as trade secret information, but on October 4, Xcel filed a petition with revised redactions; the redline strikethrough indicates that the information below was made public.

Table 1: Comparison to Existing PPA

~~[NOT PUBLIC DATA BEGINS…~~

St. Paul Cogeneration, LLC Power Purchase Agreement Electricity Charge Comparison			
	Contract Years 1/01/22 - 12/31/22 1/01/23 - 12/31/23	Contract Year 5/01/20-4/30/21	Difference 2022/2023 (-) 5/01/20-4/30/21
Electricity Production (MWh)	153,300	154,321	(1,021)
Total Electricity Charges to Xcel Energy	$15,023,400	$21,927,331	($6,903,931)
% Change			-31.5%
Totla Electricity Charge ($/MWh)	$98.00	$142.09	($44.09)
% Change			-31.0%
Biomass % (Minimum 75%)	75.00%	79.53%	-4.53%

B. Cost Recovery

Consistent with Subdivision 5c(h)(2), Xcel requests approval of recovery of the costs of the PPA from Minnesota electric customers only through the Fuel Clause Rider. Staff notes that the Department's interpretation was that Subdivision 5c(h)(2) refers only to prudently incurred costs *from the electrification project*. Xcel replied that its cost recovery request should be considered in the context of the entirety of Minn Stat. § 216B.2424 subd. 5c, which contemplates a new short-term PPA; the development of an electrification proposal; and the potential for a longer-term PPA. Also, Minn. Stat. § 216B.1645 allows recovery of costs related to the Biomass Mandate.

C. Net Benefits to the State

Subdivision 5c(b)(3) requires the PPA to provide "net benefit to the utility customers or the state." Xcel stated that while some of the benefits are difficult to quantify, the qualitative benefits outweigh the costs of the proposed PPA.

One of these benefits is the management of the EAB infestation. Tree residuals pose significant disposal issues, and there are currently no other options for managing the massive influx of tree residuals from EAB management activities by local municipalities and counties. The SPC facility collects and processes wood residuals in accordance with Minnesota Department of Agriculture requirements, including policies related to the management and handling of EAB, and the PPA helps manage wood residuals in the Twin Cities area during the recent surge in EAB. SPC has committed to achieve at least 75 percent wood fuel input for the duration of the new contract.

Second, SPC has served heating load in downtown Saint Paul since 2003, and the CHP facility takes advantage of the efficiencies of using both the electricity for Xcel's customers and the heat for downtown Saint Paul. By capturing waste heat from the electric production process and using it to provide thermal energy, seasonal efficiency is nearly twice that of an electric-only dispatchable resource.

Third, Xcel is finalizing an electrification proposal to power a portion of the load at the downtown Saint Paul district heating and cooling facility with renewable energy. Electrification is expected to allow the serving of heating load and continued management of the waste wood while also reducing greenhouse gas emissions. In addition, the electrification load can be flexible, allowing for heating while using off-peak electricity.

D. Electrification Options

Xcel and SPC have partnered to explore three different options for electrifying the thermal loads. Electrification Options 1 and 2 are 20 MW and 30 MW boiler options. The 20 MW boiler would be electrification of 11.5 percent of thermal load, and the 30 MW boiler would be electrification of 17 percent of thermal load. As Xcel explained, Options 1 and 2 are similar:

> Either option would be connected to existing infrastructure, including thermal energy storage, which would allow for load shifting of the carbon-free electric sources to match the thermal load. There is adequate electric feeder capacity to support these options while reducing the use of the existing carbon fuel-based boilers. The remaining need for thermal energy would be met with these existing boilers. This strategy would be relatively straightforward to implement and would provide a good study opportunity on how the boiler would operate in conjunction with thermal energy storage. A number of boiler/heat sources are being considered, including conventional electric boiler and more advanced electrode-type electric boilers.[4]

Option 3 is electrification of 100 percent of thermal load, or 175 MW. The 175 MW plant would be located at Xcel's High Bridge facility. Xcel estimated that installation would take approximately three years, which would be longer than the 20 MW or 30 MW options. Also, the estimated cost is significantly higher than the other options, and Xcel stated it is "difficult to justify financially." Therefore, Xcel is focusing on the 20 MW and 30 MW options. Xcel explained Option 3 as follows:

> The 175 MW plant was studied and would be located at Xcel Energy's High Bridge facility in Saint Paul. This site was modeled to have a full complement of boilers and infrastructure to provide a full supply of hot water for SPC customers in Saint Paul. It also included piping, building and connections to the electricity supply to support the electric load. The interconnection would be from a pipeline from this

[4] Xcel Petition, p. 10.

location to the SPC facility to supply water and take in return water. There was also a provision to supply cold water for cooling.[5]

Xcel examined the greenhouse gas (GHG) emissions associated with District Energy for the three electrification options. Xcel assumed that the boilers will be powered by renewable energy, so there would be no offsetting increased GHG emissions from electricity use. If the electric boilers are assumed to displace 11.5 percent (20 MW boiler), 17 percent (30 MW), and 100 percent (175 MW) of the energy provided by the existing boilers, the avoided GHG emissions from heat/steam production would be proportional to the displaced energy.

As mentioned previously, Xcel will finalize its electrification proposal and file for Commission approval no later than September 2024, and it will be implemented by December 31, 2027. Based on this timeline, Xcel offers to provide the Commission with annual reports on the development of the electrification proposal.

IV. Department Comments

The Department recommends that the Commission approve the PPA *if* the Commission finds that Xcel's petition has complied with Subdivision 5c. However, as the following sections will explain, the Department identified several reasons that could justify a finding that Xcel has not complied with Subdivision 5c. Regarding cost recovery, if the Commission approves the PPA, the Department recommends allowing Xcel to recover the Minnesota jurisdictional costs net of revenues through the FCR, not recovery from Minnesota customers only.

A. PPA Approval

The Department explained that "in order for the Commission to approve the PPA, Xcel's petition and the PPA must comply with the requirements of Minnesota Statutes section 216B.2424, subdivision 5c as well be in the public interest."[6] There are at least three statutes informing the question of whether the PPA is in the public interest.

- First, one of the requirements in Minn. Stat. § 216B.2424 Subd. 5c(b) is that "the power purchase agreement provides a net benefit to the utility customers or the state."
- Second, Minn. Stat. § 216B.16, subd. 4 states: "The burden of proof to show that the rate change is just and reasonable shall be upon the public utility seeking the change."
- Third, Minn. Stat. § 216B.03 states: "Any doubt as to reasonableness should be resolved in favor of the consumer."

[5] Xcel Petition, p. 10.

[6] Department supplemental comments, p. 1.

The Department concluded that the effect of the PPA on ratepayers is that customers will pay more for electricity than they would otherwise.[7] The Department explained:

> Essentially, for Xcel and its customers, the PPA is merely a financial transaction in which instead of SPC LLC selling the electricity at a loss into the market, Xcel sells it at a loss, which it would pass on to customers through the FCR. In other words, strictly from an Xcel customer standpoint, the PPA is a pure negative.[8]

However, the Department concluded that it is possible that this increase in costs is outweighed by reducing costs in other areas, which would result in a net benefit to the State. The Department emphasized that the net benefit to the State should be reasonably clear, as required by Minn. Stat. § 216B.03 referenced above.

B. Compliance with Minn. Stat. § 216B.2424 subd. 5c

Subdivision 5c has many requirements, and the Department's analysis reviewed each requirement in the order in which the requirements are listed. Staff provides an outline of the Department's analysis below:

1. Filing Date - Paragraph (a)
2. PPA Termination Date – Paragraphs (a) and (f)
3. Waste Wood from Ash Trees - Paragraph (b)(1)
4. Maximum Price Requirements - Paragraph (b)(2)
5. Boiler Electrification with Renewable Energy – 216B.2424, subd. 5c, paragraphs (b)(3), (c), (e), (g), and (h)
    a. Summary of Preliminary Proposal
    b. Compliance with 216B.2424, subd. 5c, paragraph (b)(3)
    c. Compliance with 216B.2424, subd. 5c, paragraphs (c), (e), (g), and (h)
    d. Xcel's Request to File a Full Proposal No Later than September 2024
6. Net Benefit to Xcel's Customers or Minnesota - Paragraph (b)(4)
    a. Net Benefit to the Utility Customers
    b. Net Benefit to the State
7. Attempt to Obtain non-PPA Funding to Reduce Facility Costs - Paragraph (d)

<u>Using the list above, the Department determined that Xcel complied with numbers 1, 2, and 4. This is because Xcel filed the PPA on July 30, 2021 (#1); the proposed PPA ends on December 31, 2024 (#2); and the PPA price does not exceed the $98/MWh threshold and complies with the significant savings requirement (#4).</u>

[7] On page 2 of its supplemental comments, the Department calculated that Xcel's customers pay about $11 million more for electricity per year, which was based on a calculation comparing the PPA price to MISO market energy.

[8] Department supplemental comments, pp. 2-3.

The remainder of this section will discuss waste wood (#3 above), boiler electrification (#5), net benefits (#6), and non-PPA funding (#7). The summary below incorporates Department's initial comments, Xcel's replies, and the Department's response to Xcel's replies.

Waste Wood from Ash Trees (#3)

Under Subdivision 5c(b)(1), the Commission is prohibited from approving the PPA unless SPC provides evidence:

> (i) demonstrating that the transport of biomass fuel from processed waste wood from ash trees to the cogeneration facility complies with the department's regulatory requirements under the Minnesota State Formal Quarantine for Emerald Ash Borer, which may consist of:
>
> > (A) a certificate authorized or prepared by the commissioner of agriculture or an employee of the Animal and Plant Health Inspection Service of the United States Department of Agriculture verifying compliance; or
> >
> > (B) shipping documents demonstrating compliance; or
>
> (ii) certifying that the waste wood from ash trees has been chipped to one inch or less in two dimensions, and was chipped within the county from which the ash trees were originally removed.

Xcel stated that Exhibit J of the PPA, shown below, was established to monitor compliance with these requirements.

Annual Fuel Certification

Pursuant to Section 5.5(C), Seller shall provide a written Fuel Certification Report to Company no more than sixty (60) days after the completion of each Contract Year. The Fuel Certification Report shall include the following information:

1 A summary listing each of the specific fuels consumed at the Facility during the most recently completed Contract Year and a listing of all of the specific fuel types consumed on a contract-to-date basis.

2. A fuel consumption summary table that identifies: (1) the quantity of each fuel types burned; (2) the typical heating value of each of those fuels, in MMBtu/lb. lower heating value, (3) a calculation of the total heat input provided by each of those fuels, in MMBtu, and includes a calculation of the percentage of heat input provided by each of those fuels out of the total heat input provided by all fuels. The summary table shall provide such information for the most recently completed contract year as well as on a contract-to-date basis.

3. A report by an independent, third party testing laboratory acceptable to Company certifying that the test methods for heating values, for fuels other than natural gas set forth above are accurate for the samples tested.

4. The report set forth in (2) shall be based on results from fuel samples taken for each of the listed fuels once during each quarter of the most recently completed Contract Year. Copies of scale and/or meter certification reports for each instrument used to measure the quantities of fuels consumed by the Seller's Facility during the most recently completed Contract Year.

5. Copies of receipt and/or bills of lading for all fuel delivered to the Seller's Facility during the most recent contract year will be available for review at Seller's Facility with copies saved for the most recent three (3) years.

The Fuel Certification Report shall be certified by an individual or individuals authorized to bind the Seller.

To the Department, it was unclear how the Fuel Certification Report is agreement by SPC to comply with Subd. 5c(b)(1). In response, Xcel stated that Exhibit J is an annual fuel certification process contemplated by Section 5.5(C) of the proposed PPA, which specifically references the statute and makes clear that parties expect SPC to comply with the requirements of "the above referenced Minnesota Statutes, all Applicable Laws, and all Permits." Exhibit J has since been expanded to cover additional requirements and will require detailed receipts or bills of lading for every load of wood waste. SPC's process will include certification of compliance with all Department of Agriculture EAB management requirements on each bill of lading.

In Supplemental Comments, the Department maintained that "it is still not clear to the Department how Exhibit J and section 5.5(C) ensure compliance with the 5(c)(b)(1) requirements." Section 5.5(C) refers to an agreement between parties regarding use of *nonbiomass* fuel,[9] and Exhibit J does not refer to the 5(c)(b)(1) requirements. Therefore, to ensure compliance, the Department concludes that Xcel and SPC LLC need to update the contract to include language explicitly ensuring compliance with 5(c)(b)(1).

Boiler Electrification with Renewable Energy (#5)

Subdivision 5c(b)(3) requires Xcel's electrification proposal to evaluate electrification at three or more levels from 10 to 100 percent, including 100 percent of the energy used by the Saint Paul district heating and cooling system, to be implemented by December 31, 2027. Among other things, each level of electrification must contain a description of the alternative electrification technologies evaluated, cost estimates, and GHG reduction estimates. In Initial Comments, the Department requested additional information on the electrification proposals, including alternative electrification technologies evaluated.

Xcel's response referred to its description of three options from the Petition and reiterated that the Company is not requesting approval of a specific electrification proposal at this time. Xcel will describe the alternatives considered and rejected when it files for approval in 2024.

In Supplemental Comments, the Department maintained that Xcel has still not provided a description of alternative electrification technologies evaluated. This information is required in order to comply with Subdivision 5c(b)(3)(i).

Attempt to Obtain non-PPA Funding to Reduce Facility Costs (#7)

In Initial Comments, the Department requested Xcel to describe whether the Company believes the PPA needs to be modified to ensure compliance with Subd. 5c(d), given potentially limited direct regulatory authority over the cogeneration facility.

Xcel responded that it understands SPC has committed to seeking funding to reduce the cost of generation to comply with the subsection and will submit reports to the Commission, but Xcel does not believe any modification to the proposed PPA is necessary.

[9] Section 5.5(C) states, "The Parties agree that Seller may use nonbiomass fuel in any amount so long as Seller complies with the requirements of the above referenced Minnesota Statutes, all Applicable Laws, and all Permits."

In Supplemental Comments, the Department stated that since there is no PPA language enforcing this requirement, the Commission has no legal assurance that SPC will comply with Subdivision 5c(d).

<u>Net Benefit to the State (#6)</u>

Subdivision 5c(b)(4) prohibits the Commission from approving the PPA if it does not provide a net benefit to the utility customers or the State. To address this question, the Department explained:

> A common standard for determining whether a PPA's price is reasonable is the cost the utility would incur (and charge to ratepayers) if it acquired energy and capacity from a different resource. If the price of the PPA is less than or equal to these avoided costs, then customers benefit or are at least as well off, and if the price of the PPA is greater than these avoided costs, then customers are worse off. In other words, the option with the lower cost (present value of revenue requirements, or PVRR) provides a net benefit to Xcel's customers.

Xcel has a qualifying facility (QF) tariff, which contains estimated avoided energy costs and avoided capacity costs. The PPA price of $98/MWh is greater than Xcel's avoided costs as estimated in the Company's annual QF filings. Based on these estimates, the Department concluded that the PPA does not provide a net benefit to Xcel's customers in terms of electricity costs.

However, analyzing the net benefit to the State requires also analyzing whether the PPA results in any indirect benefits or costs to Minnesotans at large. The Department suggested using the present value societal costs (PVSC) framework, which the Commission, Xcel, and other parties commonly use to evaluate resources from a societal perspective. The Department identified three services SPC provides to the State: electricity, heating, and waste wood management. There are also environmental costs from burning wood and natural gas, and the emissions incurred to bring natural gas and wood waste to the boiler room.

Table 1 of the Department's Initial Comments provides an example of a societal cost test the Commission could apply when making its decision. The Department acknowledged that calculating the net indirect costs in this case is more complicated than typical resource acquisitions.

Table 1: Societal Cost Test

	PPA Approved	PPA Not Approved	PPA Approved *minus* PPA Not Approved
	[A]	[B]	[A] – [B]
Direct cost to customers of services provided fully or in-part by SPC LLC / District Energy in 2023 and 2024:			
Electricity (153,500 MWh_e)	PPA price	Least-cost option	(Lower)/higher costs to electricity customers
Useful Heat (X MWh_t)	Price paid by District Energy for SPC heat	Least-cost option	(Lower)/higher costs to heating customers
Waste Wood Mgmt (260,000 tons)	Tipping fees + costs paid prior to arrival at EWS[15]	Least-cost option	(Lower)/higher costs to waste wood customers
Net indirect costs to Minnesotans in 2023 and 2024:			
Emissions	Due to "PPA Approved" production/consumption	Due to "PPA Not Approved" production/consumption	(Lower)/higher emissions costs
EAB	Due to "PPA Approved" production/consumption	Due to "PPA Not Approved" production/consumption	(Lower)/higher EAB costs
Total	Total Societal Cost of Approving PPA	Total Societal Cost of Not Approving PPA	(Lower)/Higher Societal Costs

The Department concluded that higher electricity costs to the State must be outweighed by lower societal costs in other areas. Xcel's petition discussed benefits to the State only qualitatively. However, a full analysis of the PPA using the societal cost should be further developed, so the Department requested Xcel to provide evidence that the PPA can pass a societal cost test in Reply Comments.

Xcel's response did not include any cost-benefit analysis of the PPA. Xcel repeated that benefits include the management of EAB, the continued operation and efficiencies of a CHP facility, and the potential to electrify a portion of the downtown Saint Paul heating load. Therefore, the Department had nothing to add on the societal cost test beyond what it had already stated in Initial Comments.

V. Participant Comments

Only the Department filed comments as a formal intervenor. However, after the Department filed Initial Comments, the following participants filed comments in response:

- St. Paul Cogeneration (SPC)
- Partnership on Waste and Energy (PWE)
- Minnesota Inter-County Association (MICA)
- Minnesota Pollution Control Agency (MPCA)
- Alan Muller

A. SPC

SPC's response emphasized four main areas:

- Benefits to Minnesota;
- Rate impacts;

- SPC scenarios; and
- Continued pursuit of funding.

As a CHP facility, SPC efficiently generates electricity while capturing the waste produced in the process and delivering that heat as useful thermal energy. SPC supplies thermal energy to more than 31 million square feet of building space throughout downtown Saint Paul, including the Minnesota State Capitol Complex.

In addition, through its continuous service of disposal and reuse of waste wood, the SPC facility eases burdens on the State and local governments posed by waste created by storms, disease, and tree management. SPC stated that since 2019, 297 entities from the seven-county metro, including multiple cities and small businesses, have used SPC to dispose of tree waste generated from routine tree trimmings and removals, as well as events such as severe storms where significant volumes of tree waste are generated.

More recently, SPC has experienced a significant increase in tree waste volumes due to EAB infestation in the Twin Cities Metro. SPC explained that "absent a PPA with Xcel, a large number of Xcel's customers in the metro would see additional expense elsewhere for waste wood disposal." SPC continued that "there is no other current solution available for the disposal of large volumes of waste wood in the metro," and "[t]he Legislature's passage of Minn. Stat. § 216B.2424, Subd. 5c in the most recent legislative session is a clear recognition of the fact."

SPC recognized the cost impacts associated with the PPA. However, SPC believes the benefits of the PPA outweigh its costs when viewed in the appropriate context. Any above-market costs must be balanced against the benefits of the SPC facility.

SPC discussed possible scenarios if the PPA is not approved, including whether the SPC facility could still be used to provide heating to District Energy. SPC stated that, without electric generation, the facility could not be utilized to provide heating to District Energy without significant additional investment. Additionally, because wholesale market prices are significantly lower than the PPA price, it is unlikely that SPC would find a third-party purchaser for the facility's output because an alternative purchaser is unlikely to look beyond the PPA price to the overall benefits provided to the State. As a result, without a new PPA, SPC would likely shut down at the end of 2022, and District Energy would be forced to move forward with alternative, lowest cost fuel, which currently is natural gas.

For over six years, SPC has spent considerable time informing legislators, agencies, and other stakeholders of the burgeoning tree waste problem. SPC anticipates that this discussion will continue, considering the passage of legislation directly linked to the issue. If the PPA is approved, SPC offered to submit reports to the Commission about the various efforts being made to further reduce the cost of generation to Xcel's customers.

[redacted] Department response to SPC

As noted above, SPC stated that if the PPA is not approved, a shutdown of the facility by the end of 2022 is likely, and District Energy would be forced to operate on natural gas. The Department responded that this assertion assumes disposers would not pay for the cost of disposal of the waste wood that would be needed to make the SPC facility economical. Moreover, if the disposers are unwilling to pay the full cost, then presumably the cost is not worth the benefit.

In response to SPC's discussion of the time it has spent informing legislators and other of the tree waste problem, the Department stated:

> Given the considerable time already spent debating this issue, the Department notes that if the disposers are forced to face the true costs of disposal (instead of being heavily subsidized by Xcel's customers), they'll be much more incentivized to find a better solution.

B. Partnership on Waste and Energy and Minnesota Inter-County Association

The Partnership on Waste and Energy (PWE) is a Joint Powers Board consisting of Hennepin, Ramsey, and Washington counties formed to address waste management and energy issues. The Partnership supports approval of the PPA with one modification. As written, the PPA requires local government entities pay tipping fees to provide the fuel needed to generate power sold to Xcel under the PPA. PWE believes this is a misallocation of costs, and as the ultimate purchaser of the power, Xcel, should pay the price of the fuel for the power it purchases. Here, the PPA would have the local governments subsidize the cost of the fuel for Xcel.

PWE emphasized that the Legislature directed the Commission to consider a number of factors in relation to the PPA, including the management of wood waste created by the EAB infestation and the role District Energy plays in managing wood waste. PWE stated:

> The short, two-year extension called for in statute provides critical time needed to evaluate long-term solutions for wood waste resulting from the spread of EAB. Closure of St. Paul Cogeneration as a wood waste management facility would create extreme logistical and financial hardship for many local governments and would exacerbate environmental and public health risks at a time when EAB infestations threaten to significantly increase the volume of wood waste.

PWE further stated that the financial cost to remove and replace ash trees as the EAB infestation grows is overwhelming local government's financial and staffing capabilities. The estimated cost to local governments currently exceeds $8 million per year and is increasing as the problem grows. Also, markets for waste wood are limited and near saturation. Sudden and significant cost increases could seriously disrupt the flow of wood waste, resulting in stockpiling or open burning.

The Minnesota Inter-County Association (MICA), a volunteer, inter-county planning organization, also supports the approval of the PPA. Several of its member counties benefit from and increasingly rely on access to the cogeneration facility in order to dispose their EAB-infested wood. MICA believes this PPA can be used as a stop-gap measure to allow decision-makers more time to develop alternative long-term solutions to the wood waste issue. MICA warns that not approving the PPA may financially overwhelm local management systems and that improper removal, storage, and disposal of the EAB-infested trees may pose environmental and other societal risks.

[redacted] Department response to PWE and MICA

First, the Department stated it is not aware of any part of the PPA that requires local governments to pay tipping fees. Setting that aside, the Department argued that who pays for wood disposal at SPC does not change the overall cost of wood disposal. From an economic efficiency standpoint, it is preferable that those receiving the benefit should pay the full cost, rather than costs being allocated in an arbitrary way through an artificially high PPA price. Therefore, the Department disagrees that Xcel ratepayers should bear the costs of tipping fees.

Also, the Department responded to PWE's comment that the Legislature "determined that $98 per megawatt hour is the price at which the cost of power would exceed the societal benefits of the PPA." The Department stated that "subdivision 5c merely *permits* the Commission to approve the PPA if several conditions are met. One of these conditions is that the price cannot exceed $98/MWh."

C. Minnesota Pollution Control Agency

The Minnesota Pollution Control Agency (MPCA) recommended that the Commission consider the significant benefit SPC provides to the State as a wood waste management strategy. In addition, MPCA stated that not only does the PPA provide a net benefit to the State under Subdivision 5c, but under Minnesota's Waste Management Act (WMA), providing wood waste disposal and recovering energy is a legislative goal and important benefit to the State.

MPCA expressed concerns that an electrification option that eliminates or significantly reduces the amount of wood waste combusted for heat and energy at SPC will lead to adverse environmental and public health impacts. MPCA recommended the Commission require a full accounting and analysis by Xcel of the societal costs and benefits of the electrification options, which includes the environmental and waste management infrastructure impacts that would occur if the heat and energy are not recovered from wood waste at SPC.

MPCA explained that the expiration of the PPA would shift extensive costs to city and county waste management authorities to safely dispose of the growing amount of wood waste. There is no current or future planned alternative to SPC's handling of wood waste for the Metro and other parts of Minnesota. In addition, Minnesota faces significant tree loss of ash trees from the EAB infestation, and SPC is the primary method to address wood waste from various sources now and into the foreseeable future. MPCA continued:

> The amount of wood waste will likely increase in coming years due to more severe storms and invasive pests like EAB. The Minnesota Department of Agriculture

> estimates that it will take 8 to 10 years for 70% of the ash trees to die, but may be slowed with proper management. SPC provides an effective way to minimize the threat from infected trees and prevent spread by destroying the pests through combustion.
>
> If this PPA is not approved, SPC would cease taking wood and use natural gas and oil to meet its heating needs. Because of the lack of any large scale alternative to SPC, it is most likely that the sudden surplus of waste wood would be stockpiled (with risks of spontaneous combustion) and then burned in open heaps (without any air emission controls like those used at SPC). Open burning is the most likely management method, because it is a cheap option despite the large amount of fine particulate air pollution it releases. Open burning was the most common form of wood waste disposal the MPCA observed during the Dutch Elm Disease outbreak in Minnesota.

As noted above, MPCA supports a thorough evaluation of the electrification project required by Subdivision 5(c). MPCA also agreed with the general framework proposed by the Department in Initial Comments. However, MPCA emphasized that "any review of the electrification options must include an environmental and cost analysis of how the wood waste formerly managed by SPC would be handled if not used by SPC for heat and energy recovery."

D. Alan Muller

A member of the public, Alan Muller, does not support approval of the PPA. Mr. Muller is concerned about the air pollutants emitted by burning wood for fuel as well as its climate-forcing effects. Mr. Muller recognizes the importance of the proper EAB waste disposal but believes that it is not up to the Commission to manage its disposal.

Mr. Muller further noted that District Energy/SPC has a record of high emissions and poor environmental compliance, which includes a fine of $55,000 for air permit violations. Also, Xcel has been removing expensive biomass from its energy mix due to the burden on ratepayers and air quality; extending a polluting, expensive biomass PPA is not in the public interest.

VI. Staff Discussion

Staff appreciates the Department's very thorough, well-reasoned analysis on compliance with the legislation and the protection of ratepayer interests. Staff also appreciates participants who provided unique perspectives on issues of critical importance to the State, such as wood waste management, the EAB infestation problem in Minnesota, impacts to local governments, and the potential consequences of not approving the PPA.

A. PPA Price

Staff believes it should be recognized that the SPC PPA is expensive relative to market energy or other sources of renewable energy, which is a point even SPC concedes. Since the scheduled termination date of the PPA is December 31, 2022, a two-year extension (but likely longer with electrification) could be considered a new resource, as it reflects incremental capacity and energy. Therefore, it is fair to compare the PPA price to other potential sources of energy. While Xcel touts the cost reduction relative to the current PPA, at $98/MWh, the PPA would be about three to four times more expensive, on a levelized cost basis, than market energy or other renewable resources such as wind or solar, according to Xcel's assumptions in its current resource plan. It is also telling that the Commission has previously instituted a cap on the amount of energy Xcel can purchase from SPC as a form of ratepayer protection. Having said that, the price does comply with Subdivision 5c, as does the "significant savings compared to the existing [PPA]" requirement in paragraph (b)(2), so the 30 percent cost reduction could be viewed as a savings to customers if considered alongside the current PPA.

B. Societal Cost Test

The statute is clear that the Commission is prohibited from approving the PPA unless it "provides a net benefit to the utility customers or the state." First, staff notes that it is a benefit to the State if customers' bills and a utility's rates are as low as practicable. Second, according to the Department's analysis of avoided costs, Xcel's customers do not benefit in terms of the price they pay for electricity. This leaves the Commission with the threshold question of deciding whether there is a net economic benefit to the State that justifies subsidization from Xcel's ratepayers. Unfortunately, the Commission's decision is made difficult by the fact that there is not a cost-benefit analysis in the record. Xcel argued that "[w]hile some of the benefits are difficult to quantify, the qualitative benefits outweigh the costs of the proposed PPA," which is an argument the Commission might find unsatisfactory, especially given the price of the PPA.

In addition, Xcel declined to consider the associated emissions from continuing to operate the facility. Xcel briefly mentioned that electrification would displace emissions by stating "District Energy reported 94,277 tons CO_2-e emissions in 2019 [which] represents fossil CO_2 only, not including biogenic CO_2 from combustion of waste wood."[10] However, this is not equivalent to considering environmental externalities for continuing to operate the facility for either the two-year PPA or partial or full electrification. Arguably, this type of analysis is required under Minn. Stat. § 216B.2422, subd. 3, which states "[a] utility shall use the [environmental cost] values established by the commission in conjunction with other external factors, including socioeconomic costs, **when evaluating and selecting resource options in all proceedings before the commission**, including resource plan and certificate of need proceedings." (Of note, MPCA stated that the Commission's externality values used for electric generating units should not necessarily be applied without adjustments for the SPC facility or alternative forms of wood waste management, which staff believes this is an interesting point that should be explored further.)

The Commission could require Xcel to supplement its petition prior to approving the PPA with a completed, sourced, and more detailed societal cost-benefit analysis, including the use of environmental externalities. If Xcel could even provide a range of estimates on the benefits, this could prove to be useful when deciding to approve the PPA. Since the contract start date is

[10] Xcel reply comments, p. 5.

January 1, 2023 (the first day after the existing PPA expires), staff believes there should be time to supplement the record. Of course, because the legislation simply requires a demonstration of net benefits to utility customers *or the state*, the Commission could determine that a cost-benefit analysis is unnecessary in light of the numerous benefits listed not only by Xcel, but SPC, MPCA, PWE, and MICA.

As a final note, both Xcel and MPCA agreed with the Department that the Commission should consider a cost-benefit analysis from a societal perspective. The difference is that Xcel and MPCA recommend that a societal cost test should apply only to the electrification proposal, not the two-year PPA extension. For example, Xcel's Reply Comments merely repeated benefits listed in the Petition but stated "[a]s we continue to work with SPC to develop an electrification proposal and to determine a longer-term plan, we will be able to better quantify the benefits and provide a more detailed analysis.[11] Similarly, MPCA agreed with the Department on the need for a societal cost test, but MPCA stated "direct and external societal costs should be evaluated when evaluating [an] electrification plan for the SPC facility." To staff, this means that the analysis of net benefits needs to be more robust moving forward. Staff has included a decision option that would require Xcel to work with the Department, MPCA, SPC, and other interested parties to develop a societal cost test to include in Xcel's electrification proposal.

C. Compliance with Subdivision 5c

Remaining issues related to the Department's analysis of compliance with Subdivision 5c include:

- Subdivision 5c(f) prohibits the Commission from approving a PPA after 2024 unless the Commission approves an electrification project. Xcel proposed filing an electrification proposal in September 2024. The Department does not believe an electrification proposal filed by September 2024 is workable, so the Department proposes a March 2024 deadline.
- Xcel has not provided a description of alternative electrification technologies evaluated at each level of electrification analyzed (5c(b)(3)(i) information).
- The Commission has no legal assurance that SPC will attempt to obtain non-PPA funding to reduce facility costs (paragraph 5c(d)).
- Xcel and SPC LLC need to update the contract to include language explicitly ensuring compliance with 5(c)(b)(1), which relates to SPC's certification of compliance with all Department of Agriculture Emerald Ash Boer management requirements.

On the first issue, staff believes the Department's recommendation to move up the deadline to March 2024 for Xcel to file an electrification proposal is reasonable.

Regarding the absence of alternative electrification technologies evaluated at each level of electrification, Xcel's petition described three options for electrification of SPC: a 20 MW Boiler, a 30 MW Boiler, and 175 MW Boiler. Xcel further stated that "the 2024 filing will describe the

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[11] Xcel reply comments, p. 7.

alternatives considered and rejected." The Department did not find that a description of various *sizes* of electrification was acceptable for compliance with 5c(b)(3)(i). If the Commission interprets the legislation to mean that an electrification plan would be a work-in-progress after the two-year PPA extension, then it would be reasonable to expect that Xcel's petition would not include specifics of an electrification project. However, if the Commission interprets the legislation to mean that any proposal to extend the PPA must be accompanied by an electrification proposal, then Xcel's petition would not comply with the requirements in Subdivision 5c(b)(3)(i).

Regarding the other issues, as noted by the Department, there is limited direct regulatory authority over SPC; however, SPC offered to submit reports to the Commission about the various efforts being made to further reduce the cost of generation to Xcel's customers. If the Commission decides not to require Xcel to update the contract to ensure compliance with 5(c)(b)(1), staff believes it would be sufficient if SPC could discuss its certification of compliance in its reports to the Commission.

D. Cost Recovery

Regarding jurisdictional allocation of costs, staff agrees with Xcel that it would be appropriate to recover costs of the PPA from Minnesota electric customers only. The PPA is not a least-cost system resource, and the justifications for approving the PPA are exclusively limited to Minnesota-related benefits and Minnesota legislation. Staff appreciates the fact that the Department's objective is to minimize costs for Minnesota ratepayers; however, Xcel stated it requests recovery from Minnesota customers "due to the unique attributes of SPC and its benefits to Minnesota." Also, Subdivision 5c(h)(2) states that "[t]he cost recovery mechanism approved by the commission must . . . recover costs only from the public utility's Minnesota electric service customers."

VII. Decision Options

Approve/Deny

1. Approve the two-year PPA with SPC under Minn. Stat. § 216B.2424 Subd. 5c.

    a. Modify the PPA so that local government entities do not have to pay tipping fees. (Partnership on Waste and Energy)

2. Deny the PPA.

Cost Recovery

3. Find that Xcel may recover the purchased energy costs through the Fuel Clause Rider from its Minnesota customers. (Xcel)

4. Allow Xcel to recover the Minnesota jurisdictional costs net of revenues through the Fuel Clause Rider. (Department)

Societal Cost Test

5. Require Xcel to supplement the petition with a completed, sourced, and quantified societal cost-benefit analysis that includes the parameters listed by the Department before the Commission approves or denies the PPA. (Staff option)

Electrification Proposal

6. Require Xcel to supplement the petition with a description of alternative electrification technologies evaluated at each level of electrification analyzed. (Staff note: Staff proposed this option due to the Department's concern that Xcel has not filed adequate information to comply with Subdivision 5c(b)(3)(i). Xcel disagrees.)

7. Xcel shall file its electrification proposal by September 2024. (Xcel) **OR**

8. Xcel shall file its electrification proposal by March 2024. (Department)

9. Require Xcel to file annual reports on the development of the electrification proposal, beginning one year following the Commission's order approving the PPA. (Staff note: In its petition, Xcel offered to make annual filings but did not include this offer as one of the Company's requests.)

10. Require Xcel to work with the Department of Commerce, Minnesota Pollution Control Agency, Saint Paul Cogeneration, LLC, and other interested parties to develop a societal cost test to include in Xcel's electrification proposal. (Staff option)

SPC Reporting

11. Require Xcel and SPC to update the contract to include language explicitly ensuring compliance with Subdivision 5(c)(b)(1). (Department) **OR**

12. Request SPC to submit reports to the Commission explaining the various efforts being made to further reduce the cost of generation to Xcel's customers and how SPC is demonstrating compliance with Subdivision 5(c)(b)(1). (Staff variation of SPC recommendation)

VIII. Attachment 1

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).

(b) The commission is prohibited from approving a new power purchase agreement filed under this subdivision that does not meet all of the following conditions:

(1) the cogeneration facility agrees that any waste wood from ash trees removed from Minnesota counties that have been designated as quarantined areas in Section IV of the Minnesota State Formal Quarantine for Emerald Ash Borer, issued by the commissioner of agriculture under section 18G.06, effective November 14, 2019, as amended, for utilization as biomass fuel by the cogeneration facility must be accompanied by evidence:

(i) demonstrating that the transport of biomass fuel from processed waste wood from ash trees to the cogeneration facility complies with the department's regulatory requirements under the Minnesota State Formal Quarantine for Emerald Ash Borer, which may consist of:

(A) a certificate authorized or prepared by the commissioner of agriculture or an employee of the Animal and Plant Health Inspection Service of the United States Department of Agriculture verifying compliance; or

(B) shipping documents demonstrating compliance; or

(ii) certifying that the waste wood from ash trees has been chipped to one inch or less in two dimensions, and was chipped within the county from which the ash trees were originally removed;

(2) the price per megawatt hour of electricity paid by the public utility demonstrates significant savings compared to the existing power purchase agreement, with a price that does not exceed $98 per megawatt hour;

(3) the proposal includes a proposal to the commission for one or more electrification projects that result in the St. Paul district heating and cooling system being powered by electricity generated from renewable energy technologies. The plan must evaluate electrification at three or more levels from ten to 100 percent, including 100 percent of the energy used by the St. Paul district heating and cooling system to be implemented by December 31, 2027. The proposal may also evaluate alternative dates for implementation. For each level of electrification analyzed, the proposal must contain:

(i) a description of the alternative electrification technologies evaluated and whose implementation is proposed as part of the electrification project;

(ii) an estimate of the cost of the electrification project to the public utility, the impact on the monthly energy bills of the public utility's Minnesota customers, and the impact on the monthly energy bills of St. Paul district heating and cooling system customers;

(iii) an estimate of the reduction in greenhouse gas emissions resulting from the electrification project, including greenhouse gas emissions associated with the transportation of waste wood;

(iv) estimated impacts on the operations of the St. Paul district heating and cooling system; and

(v) a timeline for the electrification project; and

(4) the power purchase agreement provides a net benefit to the utility customers or the state.

(c) The commission may approve, or approve as modified, a proposed electrification project that meets the requirements of this subdivision if it finds the electrification project is in the public interest, or the commission may reject the project if it finds that the project is not in the public interest. When determining whether an electrification project is in the public interest, the commission may consider the effects of the electrification project on air emissions from the St. Paul district heating and cooling system and how the emissions impact the environment and residents of affected neighborhoods.

(d) During the agreement period, the cogeneration facility must attempt to obtain funding to reduce the cost of generating electricity and enable the facility to continue to operate beyond the agreement period to address the removal of ash trees, as described in paragraph (b), clause (1), without any subsidy or contribution from any power purchase agreement after December 31, 2024. The cogeneration facility must submit periodic reports to the commission regarding the efforts made under this paragraph.

(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.

(f) Except as provided in paragraph (a), the commission is prohibited from approving a power purchase agreement after the agreement period unless it approves an electrification project. Nothing in this section shall require any utility to enter into a power purchase agreement with the cogeneration facility after December 31, 2024.

(g) Upon approval of an electrification project, the commission must require periodic reporting regarding the progress toward implementation of the electrification project.

(h) If the commission approves the proposal submitted under paragraph (b), clause (3), the commission may allow the public utility to recover prudently incurred costs net of revenues resulting from the electrification project through an automatic cost recovery mechanism that allows for cost recovery outside of a general rate case. The cost recovery mechanism approved by the commission must:

(1) allow a reasonable return on the capital invested in the electrification project by the public utility, as determined by the commission; and

(2) recover costs only from the public utility's Minnesota electric service customers.