COMMERCE DEPARTMENT MINNESOTA POLLUTION CONTROL AGENCY

December 17, 2019

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

RE: **In the Matter of Establishing an Updated 2020 Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. § 216H.06.**
Docket Nos. E999/CI-07-1199 and E999/DI-19-406

Dear Mr. Wolf:

Attached are the Analysis and Recommendations of the Minnesota Pollution Control Agency and the Minnesota Department of Commerce, Division of Energy Resources (collectively, the Agencies) regarding the 2020 update to the range of cost estimates for the future cost of carbon dioxide (CO_2) regulation on electricity generation, as required by Minn. Stat. § 216BH.06.

As detailed in the attached Analysis and Recommendations, the Agencies recommend that the Minnesota Public Utilities Commission (Commission) continue to use the existing range of likely costs of CO_2 regulation at $5 to $25 per ton of CO_2 emitted, to be used in electric resource acquisition proceedings for planning year 2025 and beyond.

The Agencies are available to answer any questions in this matter that the Commission may have.

Sincerely,

/s/ JESSICA BURDETTE
Manager, Energy Planning & Advocacy
Commerce Department

/s/ FRANK KOHLASCH
Manager, Environmental Analysis & Outcomes
Pollution Control Agency

JB/FK/ar
Attachment

I. BACKGROUND

Minnesota Statute Section 216H.06 states:

> **216H.06 EMISSIONS CONSIDERATION IN RESOURCE PLANNING.**
>
> By January 1, 2008, the Public Utilities Commission shall establish an estimate of the likely range of costs of future carbon dioxide regulation on electricity generation. The estimate, which may be made in a commission order, must be used in all electricity generation resource acquisition proceedings. The estimates, and annual updates, must be made following informal proceedings conducted by the commissioners of commerce and pollution control that allow interested parties to submit comments.

In its June 11, 2018 *Order Establishing 2016 and 2017 Estimate of Future Carbon Dioxide Regulation Costs*, the Commission established a range of regulatory costs of $5 to $25 per short ton of carbon dioxide (CO_2) emitted, effective 2025 and thereafter. Utilities were to be apply these costs in all electricity generation resource acquisition proceedings during 2018 and 2019. Furthermore, the Commission addressed the manner in which both the environmental cost values established in Docket No. E-999/CI-14-643 and the regulatory cost values were to be applied. The Commission ordered that the following planning scenarios be undertaken to apply the two cost ranges:[1]

1. Incorporate the low end of the environmental cost range for all years.
2. Incorporate the high end of the environmental cost range for all years.
3. Incorporate the low end of the environmental cost range through 2024, but then substitute in the low end of the regulatory cost range starting in 2025 and thereafter.
4. Incorporate the high end of the environmental cost range through 2024, but then substitute in the high end of the regulatory cost range starting in 2025 and thereafter.

On July 9, 2019, the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Commerce, Division of Energy Resources (Commerce) (collectively, the Agencies) requested comments from interested stakeholders on whether the regulatory cost range established by the Commission ($5 to $25 per short ton) remains reasonable, and if not, what the range should be; whether 2025 is still the appropriate threshold year for the application of regulatory cost values; whether the application scenarios from the Commission's 2018 Order (listed above) remain reasonable and appropriate; and whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only, or in both 2020 and 2021. Comments were received from the following stakeholders:

- Clean Energy Organizations (CEOs)
- Xcel Energy (Xcel)

[1] In addition to these scenarios, Order Point 3 of the Commission's January 3, 2018 *Order Updating Environmental Cost Values* in Docket No. E999/CI-14-643, and Order Point 2 of the Commission's June 11, 2018 *Order Establishing 2018 and 2019 Estimate of Future Carbon Dioxide Regulation Costs* in Docket Nos. E999/CI-07-1199 and E999/DI-17-53 require utilities to analyze at least one scenario that excludes consideration of environmental externality costs of CO_2.

- Minnesota Power (MP)
- Otter Tail Power (OTP)
- Great River Energy (GRE)
- Minnesota Large Industrial Group (MLIG)
- Institute for Policy Integrity

For ease of reference, a copy of the comments received is included in Attachment 1.

II. AGENCIES' ANALYSIS

A. REGULATORY COST RANGE

Most commenters stated that the current $5-$25 per ton regulatory cost range remains reasonable. Only the CEOs asserted that this range is unreasonably low given the potential for a dramatically different political landscape which could lead to the enactment of significant carbon emissions prices in the near future, resulting in the costs of these regulations to be directly passed through to electricity consumers. The CEOs referred to changes in the federal political landscape that could lead to carbon pricing laws as well as the potential for the state of Minnesota to impose its own carbon regulations.

The CEOs also pointed out that using static values that remain constant in future planning years does not reflect the expectations that regulatory costs will increase over time. The CEOs recommended that current and forecasted carbon prices in existing carbon emissions markets – the Regional Greenhouse Gas Initiative (RGGI) and the Western Climate Initiative (WCI) – should be used to inform Minnesota's regulatory cost range. Although there is no way to anticipate the future carbon prices in either of these markets, both have price floors and ceilings that do increase from year to year. The CEOs suggested setting Minnesota's cost range at the average of the price floors (for the low end of the range) and the price ceilings (for the high end of the range) of these two markets. They pointed out that this would lead to a range of approximately $14-$45 per ton in 2023 and steadily increasing thereafter. The CEOs maintained that basing the range on the average price floors and ceilings of existing markets is an objective, accessible, and conservative method, especially compared to current congressional bills for pricing carbon emissions that are being considered.

Should the range continue to be set at the average of RGGI prices and the most recent Synapse forecast, the CEOs offered an alternative recommendation, which would be to base the low end of the range on the RGGI Emissions Containment Reserve trigger price for each relevant year, and to base the high end of the range on the most recent Synapse price forecast.

Minnesota Power maintained that while $5-$25 per ton is still a reasonable range, it would be more reasonable and appropriate to base these values on third-party forecasts that utilities use for resource planning purposes. MP did not indicate the value ranges of these third-party forecasts.

While we acknowledge that the CEOs have made some very good points,[2] the Agencies conclude that there is not sufficient objective basis for revising the current cost range of $5-$25 per ton. The Agencies agree with comments from Xcel that enough remains uncertain about the shape and timing of federal and state carbon regulation that makes it reasonable to retain the current cost range. Presently, there is no concrete federal or state legislative or regulatory framework on which to base carbon emissions regulatory costs. A few of the commenters pointed out that compliance with the Affordable Clean Energy (ACE) Rule should be taken into consideration. The Agencies' analysis of ACE compliance costs, however, indicate that quantifying these costs is difficult due to their plant–specific nature, and are highly uncertain; again, the Agencies agree with Xcel that potential ACE compliance costs are not particularly helpful in determining future regulatory cost values.

Given the current level of uncertainty and the lack of significant developments since the Commission set the current values in June 2018, the Agencies recommend that the Commission maintain the current cost range of $5 to $25 per ton of CO_2 emissions.

B. DATE OF APPLICATION

The views of the commenters on when the regulatory cost values should be applied fell along similar lines to their views on what these values should be. Several of the utilities and the MLIG maintained that the current 2025 threshold year is too soon while the CEOs asserted that 2025 is overly conservative given their assertion that potential implementation of carbon regulation will occur prior to 2025. Xcel, again, took more of a middle ground, stating that while state or federal carbon regulations are unlikely by 2025, they cannot be ruled out and thus there is not significant evidence to change the current threshold year already determined by the Commission.

The recommended starting years of the utilities and MLIG varied. Several of the utilities asserted that the third-party forecasts should also be used to inform the threshold year of application. Both GRE and OTP recommended a starting year of 2028, based on Wood Mackenzie energy price forecasts and the unlikely prospect of having any carbon pricing legislation effective by 2025. MP recommended that 2030 is an appropriate starting year given the repeal of the Clean Power Plan and anticipated legal challenges to ACE. The MLIG maintained that an appropriate threshold year should be 2037 or later based on the current federal regulatory landscape and the assertion that federal regulatory developments proceed very slowly. The CEOs suggested that 2023 is a more reasonable threshold year given the timeline of potential implementation of carbon regulation.

Again, the Agencies agree with Xcel that there is not sufficient objective basis for revising the current 2025 threshold year already decided by the Commission in 2018. All commenters seem to agree that there is significant uncertainty in the future of regulatory carbon emission costs, just as there was when the Commission ruled on this in June 2018. The Agencies believe that this uncertainty weighs in

[2] The Agencies reiterate our response to the CEO's recommendations made in their 2019 comments as well as their comments in Docket No. E999/DI-17-53 regarding basing the cost range on RGGI Emissions Containment Reserve trigger prices (see page 3 of the Agencies' March 5, 2018 Reply Comments in Docket No. E999/CI-17-53). The trigger prices referenced by the CEO are not carbon dioxide trading prices, but only tools used by the regulators to influence the allowance market should the actual prices go too high or too low. The Commission declined to adopt the CEO's recommendations on the cost range in the last cost of future carbon regulation update proceeding.

favor of keeping current decisions in place rather than overturning them. The Agencies agree with Xcel that state or federal carbon regulations are unlikely by 2025, but cannot be ruled out, and that carbon regulations implemented significantly prior 2025 are very unlikely. Thus, the Agencies recommend that the current threshold year to apply regulatory cost values of 2025 should remain in effect.

C. APPLICATION OF REGULATORY AND ENVIRONMENTAL COST RANGES

Most commenters either stated that the current Commission decision about how to apply regulatory and environmental cost ranges (described above) is reasonable or did not weigh in on the issue.

Some commenters expressed minor objections to the complexity or lack of clarity as to how these values should be applied in integrated resource plans (IRPs). The MLIG stated that the Commission's required planning scenarios are overly complex and should be simplified. GRE stated that the Commission should provide a more formal outline of what costs should be included in which IRP runs. The CEOs objected to how these values are generally applied in various planning scenarios; specifically, they maintained that the regulatory and environmental cost values should be applied in reference or base-case planning scenarios and not just as "sensitivity" scenarios. Xcel, again, expressed a middle ground, saying that the current scenarios required by the Commission are reasonable, and, in fact, have already been applied by Xcel in its currently pending IRP (Docket No. E002/RP-19-368).

The Agencies recommend no changes to the Commission's current decision for how to apply these value ranges in resource planning and acquisition proceedings. The Agencies think it is valuable to require utilities to provide the same basic scenarios in such proceedings, and note that the utilities and other stakeholders are not precluded from providing or requesting additional scenarios/sensitivities. The Agencies also note that whether a particular set of assumptions is included in the base case/reference case, or in a separate run is irrelevant, since the different modeling runs are used to test the impact, or importance, of the assumption to the modeling results. That is the purpose of the modeling exercise. Importantly, the Commission's scenarios requirements are consistent with Minnesota Statutes §§ 216H.06 and 216B.2422, subd. 3, to consider future regulatory cost of carbon regulation and environmental externality values in resource planning and acquisition proceedings.

D. APPLICABILITY TO PROCEEDINGS IN ONLY 2020 OR IN 2020-2021

All commenters who weighed in on this topic thought it was reasonable for the decision of the Commission at this point to apply to resource proceedings in both 2020 and 2021. The Agencies agree with these commenters. It is unlikely that there will be substantial new information over the next year that will affect 2021 proceedings, and if that changes the Commission can always elect to re-open this question in 2020 and solicit input and recommendations from the Agencies at that time. Meanwhile, the Agencies will continue to monitor developments in carbon regulations and if we conclude that there is significant cause to reconsider the decision for 2021, we will raise this with the Commission.

III. CONCLUSIONS AND RECOMMENDATIONS

The Agencies recommend that the Commission not change any of the decisions made in its June 2018 Order, other than to update the years for which this decision applies. Specifically, the Agencies recommend that the Commission:

1. Quantify and establish the range of regulatory costs of carbon dioxide emissions as $5 to $25 per short ton effective 2025 and after.

2. Require that, in all electricity generation resource acquisition proceedings during 2020 and 2021, utilities shall analyze potential resources under a range of assumptions about environmental values, including scenarios that:

   A. Incorporate, for all years, the low end of the range of environmental costs for carbon dioxide as approved by the Commission in its January 3, 2018 Order Updating Environmental Costs in Docket No. E999/CI-14-643.

   B. Incorporate, for all years, the high end of the range of environmental costs for CO_2 as approved by the Commission in its January 3, 2018 Order.

   C. Incorporate the low end of the range of environmental costs for CO_2 but substituting, for planning years after 2024, the low end of the range of regulatory costs for CO_2 emissions, in lieu of environmental costs.

   D. Incorporate the high end of the range of environmental costs for CO_2 but substituting, for planning years after 2024, the high end of the range of regulatory costs for CO_2 emissions, in lieu of environmental costs.

Consistent with the Commission's decision in the Order Updating Environmental Costs, utilities shall include at least one scenario that excludes consideration of CO_2 costs.

Attachment 1:

Comments from Stakeholders in Response to the Agencies' July 9, 2019 Request for Comment

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. §216H.06	Docket No. E999/DI-19-406 Docket No. E999/CI-07-1199

COMMENTS OF GREAT RIVER ENERGY

Great River Energy (GRE) appreciates the opportunity to provide comments in this matter as requested by Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Commerce, Division of Energy Resources (DOC) in their Request for Comments letter dated July 9, 2019. GRE provides its comments on the range of cost estimates for the future cost of carbon dioxide (CO_2) regulation on electricity generation.

TOPICS FOR COMMENT

Whether the currently established range of regulatory costs of CO2 emissions of $5 to $25 per short ton remains reasonable, and if not, what range should be established and why?

GRE is in favor of the continued use of $5 to $25 per short ton, with a midpoint of $15 per short ton. This range of costs is reasonable and aligns with industry estimates that GRE consults for potential carbon costs.

Whether 2025 is the appropriate threshold year for the application of the value range?

GRE uses Wood Mackenzie (WoodMac) for industry information and cost analysis. WoodMac estimates that 2028 is the first year in which federal carbon pricing would come into effect. This is absent any dynamics with potential state policy, and only considers the potential future cost of carbon regulation from the federal level. GRE agrees with this estimate and considers any date before 2028 to be problematic from a policy and implementation standpoint. GRE recommends 2028 as the first year for the application of the value range.

Whether the application scenarios listed in the Commission's June 11, 2018 Order remain reasonable and appropriate?

GRE finds the scenarios outlined in the June 11, 2018 Order to still hold value and make sense from an analytical perspective, although the volume of duplicative runs required by the scenarios across all cases modeled could prove to be onerous and create a very large number of results for interpretation and analysis. GRE requests the DOC provide a formal outline of what costs are expected to be imputed on the runs for the IRP. It matters whether GRE is expected to use all costs on all runs, or some costs on all runs and the full range of costs on a few cases.

Whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only or in both 2020 and 2021?

GRE recommends that the Commission apply the update to proceedings initiated in 2020 and 2021. GRE is filing its next integrated resource plan on April 1, 2021 and our modeling requires certainty in pricing for our scenarios over a year in advance. Applying these values to 2021 filings allows GRE to make appropriate assumptions in a timely manner that would not require any re-runs either partial or fully for the cases we develop through the stakeholder process.

CONCLUSION

GRE's recommendations are as follow:

- $5-$25 per short ton for CO2 emissions remains an acceptable range for analysis

- 2028 is the appropriate threshold year for application of the value range

- The Commission's application scenarios are reasonable, but could create an excessive number of scenarios for analysis

- The value range and application year should be used for both 2020 and 2021 in resource planning and acquisition proceedings

If you have any questions, please contact me at gpadden@grenergy.com or at 763-445-6114.

Sincerely,

/s/ Greg Padden

Greg Padden
Director, Resource Planning and Markets
Great River Energy
c: Service List

FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION

121 Seventh Place East, Suite 350
St. Paul, Minnesota 55101-2147

In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06	PUC Docket No. E-999/CI-07-1199 PUC Docket No. E-999/DI-19-406 **MINNESOTA LARGE INDUSTRIAL GROUP COMMENT**

I. INTRODUCTION/BACKGROUND

In January 2018, the Minnesota Public Utilities Commission (the "Commission") issued a request for comments in response to the initial recommendations made by the Minnesota Pollution Control Agency ("MPCA") and the Minnesota Department of Commerce, Division of Energy Resources ("DOC" together with the MPCA, the "Agencies") on January 19, 2018, regarding the range of estimates for the future cost of carbon dioxide ("CO_2") regulation on electricity generation. Following rounds of comments from the parties and a Commission hearing, the Commission issued its Order on June 11, 2018.[1] For resource acquisition proceedings in 2018 and 2019, the 2018 Order directs public utilities to analyze resource options under the following CO_2 emissions cost scenarios: (1) for all years, the low end of the range of environmental costs for CO_2 emissions pursuant to the environmental cost docket; (2) for all years, the high end of the range of environmental costs for CO_2 emissions pursuant to the environmental cost docket; (3) the low end of the range of environmental costs for CO_2 emissions but after 2024 substituting the low end of the range of regulatory costs for CO_2 emissions (lowered to $5 per short ton); and (4) the high end of the range of environmental costs for CO_2 but after 2024 substituting the high end of the range of regulatory costs for CO_2

[1] Order Establishing 2018 and 2019 Estimate of Future Carbon Dioxide Regulation Costs (June 11, 2018) (eDocket No. 20186-143706-01) (the "2018 Order").

emissions (lowered to $25 per short ton).[2] Utilities are also required to evaluate resource options by using at least one scenario that excludes the consideration of CO_2 costs.[3]

Minn. Stat. § 216H.06 allows for annual updates to be made following informal proceedings conducted by the commissioners of commerce and pollution control allowing parties to submit comments. Pursuant to Minn. Stat. § 216H.06, the Agencies submitted a request for comments on July 9, 2019.[4] The Request solicits comments on the following four items (this comment addresses the first three):

> Whether the currently established range of regulatory costs of CO_2 emissions of $5 to $25 per short ton remains reasonable, and if not, what range should be established and why;
>
> Whether 2025 is the appropriate threshold year for the application of the value range;
>
> Whether the application scenarios listed in the Commission's June 11, 2018 Order remain reasonable and appropriate; and
>
> Whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only, or in both 2020 and 2021.[5]

The Request seeks comments by September 6, 2019.[6]

The Minnesota Large Industrial Group ("MLIG" or the "Group") has been an active participant in this matter, including Commission Docket No. E-999/CI-07-1199, as well as the related docket on environmental cost values, Commission Docket No. E-999/CI-14-643, consistently advocating for modeling that reflects accuracy over speculation in resource planning. MLIG is an *ad hoc* consortium of large industrial customers in Minnesota spanning multiple utilities that together consume more than 6 billion kWh of electricity paying in excess

[2] 2018 Order at 2.
[3] *Id.* at 3.
[4] Agencies' Request for Comments (July 9, 2019) (eDocket No. 20197-154255-01) (the "Request").
[5] *Id.*
[6] *Id.*

of $350 million each year.[7] In response to the Agencies' Request, MLIG respectfully requests that the Agencies recommend that the Commission apply the value ranges under Minn. Stat. § 216B.2422 through the current planning period and wait to apply the regulatory value of carbon emissions pursuant to Minn. Stat. § 216H.06 until after 2037.

II. ANALYSIS

A. While MLIG Believes the Current $5 to $25 Regulatory Cost of CO_2 Estimate Is Potentially Reasonable, the Passage of a Regulatory Cost of CO_2 Emissions Remains Speculative.

As a threshold matter, MLIG does not necessarily take issue with the current regulatory cost estimate range of $5 to $25, and the Group appreciates the Commission's recognition of market forecasts in its determination to lower the regulatory cost of carbon emissions range in the 2018 Order.[8] But, as MLIG has continuously stressed in this docket, it is still extremely speculative as to when a regulatory cost of carbon emissions will be imposed. And a set of market-based cost assumptions do not necessarily reflect the eventual regulatory reality. Therefore, the Agencies should be mindful of recommending the inclusion of such a speculative set of values in utility resource planning dockets.

B. 2025 Is Not the Appropriate Threshold Year to Begin Applying the Regulatory Cost Range; Due to the Speculative Nature of Regulatory Costs It Should Be Moved to 2037 or Later, Beyond the Current Resource Planning Periods.

To account for the extremely speculative nature of this cost, as well as reflect the fact that developments on the federal regulatory front are proceeding very slowly, MLIG maintains its position that after the current planning periods or later is the appropriate timeframe in which to begin applying the regulatory cost of carbon emissions.[9] As noted in the Agencies' 2017 request for comments, the United States Supreme Court previously stayed the Clean Power Plan, which

[7] MLIG is composed of the following companies: ArcelorMittal USA (Minorca Mine); Blandin Paper Company; Boise Paper, a Packaging Corporation of America company, formerly known as Boise, Inc.; Enbridge Energy, Limited Partnership; Gerdau Ameristeel US Inc. (St. Paul facility); Hibbing Taconite Company; Sappi Cloquet, LLC; United States Steel Corporation (Keetac and Minntac Mine); United Taconite, LLC; USG Interiors, LLC (Cloquet and Red Wing facilities); and Verso Corporation.

[8] 2018 Order at 12.

[9] Comments by the Minnesota Large Industrial Group (Sept. 22, 2017) (eDocket No. 20179-135739-03) ("MLIG 2017 Comment").

was further eroded by President Trump's Executive Order in March 2017.[10] Earlier this year, the EPA also issued the Affordable Clean Energy Rule effectively replacing the previous Clean Power Plan.[11] This development further demonstrates that a regulatory cost of carbon emissions mandate is not likely in the foreseeable future.

Therefore, MLIG continues to believe that the proper threshold for implementing regulatory values is beyond the current planning period. By postponing the application of regulatory costs associated with CO_2 emissions until at least 2037, the application of such values is moved beyond utility planning periods for pending or soon-to-be-filed integrated resource plans. Additionally, while the regulatory cost of CO_2 emissions would be moved beyond the planning period, utilities may still model CO_2 emissions using the Commission-established environmental CO_2 emissions value in the interim.

C. The Commission's Scenarios Are Not Appropriate.

MLIG remains opposed to the unnecessarily complex CO_2 emissions cost planning scenarios the Commission outlined in the 2018 Order.[12] As described above and outlined in Table 1 below, the scenarios ordered by the Commission create a challenging and illogical set of modeling assumptions for utilities to model.

[10] Agencies' Request for Comments (Aug. 22, 2017) (eDocket No. 20178-134924-02).

[11] *See* EPA Finalizes Affordable Clean Energy Rule, Ensuring Reliable, Diversified Energy Resource While Protecting Our Environment (June 19, 2019), https://www.epa.gov/newsreleases/epa-finalizes-affordable-clean-energy-rule-ensuring-reliable-diversified-energy.

[12] *See* 2018 Order at 11.

TABLE 1: Commission Modeling Scenarios[13]

Scenarios:	Before 2025		2025 and Thereafter	
	Environmental Cost	Regulatory Cost	Environmental Cost	Regulatory Cost
Low Environmental Cost	Low End	-	Low End	-
High Environmental Cost	High End	-	High End	-
Low Environmental/ Regulatory Costs	Low End	-		$5/Ton
High Environmental/ Regulatory Costs	High End	-	-	$25/Ton
Omitting CO_2 Cost Considerations	-	-	-	-

MLIG has expressed and remains concerned with using a combination of both environmental cost values for CO_2 emissions and the regulatory cost values for CO_2 emissions.[14] Particularly as noted above in Table 1, it is not clear what benefit the low and high environmental/regulatory cost combination assumptions add to any analysis. It would appear to be more efficient to simply assume, for compliance with Minn. Stat. § 216H.06, there is no regulatory cost until 2037, with low and high values utilized going forward after 2037.

III. CONCLUSION

In light of ongoing political developments and market conditions associated with CO_2 emissions, MLIG respectfully requests the Agencies recommend the Commission revise the 2018 Order and direct utilities to model the cost of CO_2 emissions according to MLIG's updated table below.

[13] *Id.*
[14] MLIG 2017 Comment at 3.

TABLE 2: MLIG Recommended Modeling Scenarios

Scenarios:	Before 2037		2037 and Thereafter	
	Environmental Cost	Regulatory Cost	Environmental Cost	Regulatory Cost
Low Environmental Cost	Low End	-	Low End	-
High Environmental Cost	High End	-	High End	-
Low Regulatory Cost	-	-	-	$5/Ton
High Regulatory Cost	-	-	-	$25/Ton
Omitting CO_2 Cost Considerations	-	-	-	-

Dated: September 6, 2019

Respectfully submitted,

STOEL RIVES LLP

/s/ Andrew P. Moratzka
Andrew P. Moratzka
Riley A. Conlin
33 South Sixth Street, Suite 4200
Minneapolis, MN 55402
Tele: 612-373-8822
Fax: 612-373-8881

ATTORNEYS FOR MINNESOTA LARGE INDUSTRIAL GROUP

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215 South Cascade Street
PO Box 496
Fergus Falls, Minnesota 56538-0496
218 739-8200
www.otpco.com (web site)

August 22, 2019

Mr. Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. §216H.06
Docket No. E999/DI-19-406, Docket No. E999/CI-07-1199
Comments

Dear Mr. Wolf,

Enclosed are Otter Tail Power Company's (Otter Tail's) Comments in the matter referenced above. These Comments have been electronically filed with the Minnesota Public Utilities Commission and copies have been served on all parties on the attached service lists. A Certificate of Service is also enclosed.

Please contact me at 218-739-8417 or bhdraxten@otpco.com with any questions you may have.

Sincerely,

/s/ BRIAN DRAXTEN
Brian Draxten
Manager, Resource Planning

kaw
Enclosures
By electronic filing
c: Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. §216H.06	Docket No. E999/DI-19-406 Docket No. E999/CI-07-1199

COMMENTS OF OTTER TAIL POWER COMPANY

Otter Tail Power Company (Otter Tail) submits these Comments in response to the Minnesota Public Utilities Commission (Commission) Notice of Comment Period dated July 9, 2019, in the above captioned matter. The Commission's Request for Comments invited comments on the range of cost estimates for the future cost of carbon dioxide (CO_2) regulation on electricity generation.

I. TOPICS OPEN FOR COMMENT

- **Whether the currently established range of regulatory costs of CO_2 emissions of $5 to $25 per short ton remains reasonable, and if not, what range should be established and why?**

Otter Tail believes that the current range of $5 to $25 with a midpoint of $15 is reasonable and would favor continued application of this range by the Commission.

- **Whether 2025 is the appropriate threshold year for the application of the value range?**

Otter Tail uses the Wood Makenzie energy price forecasts as the basis for our resource plan modeling. Wood Makenzie assumes that a cost of carbon will begin in 2028. It is our opinion that using a start date of 2028 is more appropriate than 2025. There is currently no legislation pending for any type of carbon tax. Having such legislation in place to become effective by 2025 would be nearly impossible.

- **Whether the application scenarios listed in the Commission's June 11, 2018 Order remain reasonable and appropriate?**

The five application scenarios listed in the Commissions June 11, 2018 order are still reasonable and appropriate. These scenarios explore the outer bounds of CO_2 costs and provides all parties adequate information to evaluate company resource plans. These five scenarios do not limit parties from providing additional scenarios should they wish.

- **Whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only or in both 2020 and 2021?**

Otter Tail recommends that the Commission apply applying the updated values and threshold year for both 2020 and 2021. There is currently no indication of any events that will significantly change the results of the Commission decision in this case. If any such events do occur, the Commission does have the authority to revise the values set in this proceeding.

II. CONCLUSION

Otter Tail's recommendations are as follows:

- Continue to use the established range of $5-$25 per short ton for CO_2 emissions;
- Use 2028 as the appropriate threshold year for application of the value range;
- The Commission's application scenarios remain reasonable and appropriate;
- The Commission's decision on value range and application year should be used for both 2020 and 2021 in resource planning and acquisition proceedings.

If you have any questions regarding these comments, please feel free to contact Brian Draxten at bhdraxten@otpco.com or 218-739-8417.

Dated: August 22, 2019

Respectfully submitted,

OTTER TAIL POWER COMPANY

By: */s/ BRIAN DRAXTEN*

Brian Draxten
Manager, Resource Planning
215 South Cascade Street
P. O. Box 496
Fergus Falls, MN 56538-0496
(218) 739-8417
bhdraxten@otpco.com

CERTIFICATE OF SERVICE

RE: In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. §216H.06
Docket No. E999/DI-19-406, Docket No. E999/CI-07-1199

I, Kim Ward, hereby certify that I have this day served a copy of the following, or a summary thereof, on Daniel P. Wolf and Sharon Ferguson by e-filing, and to all other persons on the attached service list by electronic service or by First Class Mail.

Otter Tail Power Company
Comments

Dated this **22nd** day of **August, 2019.**

/s/ Kim Ward
Kim Ward, Regulatory Filing Coordinator
Otter Tail Power Company
215 South Cascade Street
Fergus Falls MN 56537
(218) 739-8268

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
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STATE OF MINNESOTA
DEPARTMENT OF COMMERCE AND POLLUTION CONTROL AGENCY

September 6, 2019

In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06

Docket No. E999/DI-19-406
Docket No. E999/CI-07-1199

CLEAN ENERGY ORGANIZATIONS' COMMENTS

Clean Grid Alliance, Fresh Energy, Minnesota Center for Environmental Advocacy, the Sierra Club, and the Union of Concerned Scientists (together the "Clean Energy Organizations") submit these initial comments in response to the Minnesota Department of Commerce's and Pollution Control Agency's ("the Agencies") July 9, 2019 Request for Comments.

The current range of regulatory CO_2 costs is unreasonably low and does not account for the risk faced by Minnesota's electricity customers. Moreover, given the potential for a dramatically different political landscape and the timeframe within which carbon regulation can be implemented, the current threshold year of 2025 is overly conservative. We recommend increasing the regulatory CO_2 cost values and changing the threshold year for the application of CO_2 regulatory costs to 2023. Finally, in light of the considerable variation in the application of CO_2 regulatory costs and the tremendous potential costs faced by customers, we recommend requiring utilities to include CO_2 costs in their base or reference case in all resource acquisition and planning proceedings.

1) The current range of regulatory CO_2 costs is unreasonably low and does not account for the risk faced by Minnesota's electricity customers

In its 2009 Order in this docket, the Commission explained the importance of considering CO_2 regulatory costs in resource planning and acquisitions:

> Minnesota Statutes §216H.06 reflects the Legislature's conclusion that it is likely that eventually laws will govern the emission of CO_2 and that utilities and their ratepayers will need to bear these costs. The statute's chief requirement is to compel utilities to plan accordingly. A utility's failure to correctly forecast the magnitude of CO_2 regulation costs may result in the utility's making choices that prove to be costly in retrospect.[1]

As the Commission noted, CO_2 emissions are an economic liability, and many of the state's utilities have exposed their customers to substantial expenses if a carbon price is enacted at the state or federal level. As CEOs demonstrated in our March 5, 2018 comments in this docket, Xcel Energy (Xcel) projects significant CO_2 emissions reductions in the coming years, but Great River Energy (GRE), Minnesota Power (MP), and Otter Tail Power (OTP) have not committed to significantly reduce their CO_2 emissions in the next decade.[2] These CO_2 emissions are a massive liability, which could end up costing Minnesota's electricity customers *billions* of dollars.[3] Since these costs will likely be passed through directly to customers, it is imperative the Agencies and the Commission set appropriate values for potential CO_2 regulatory costs.

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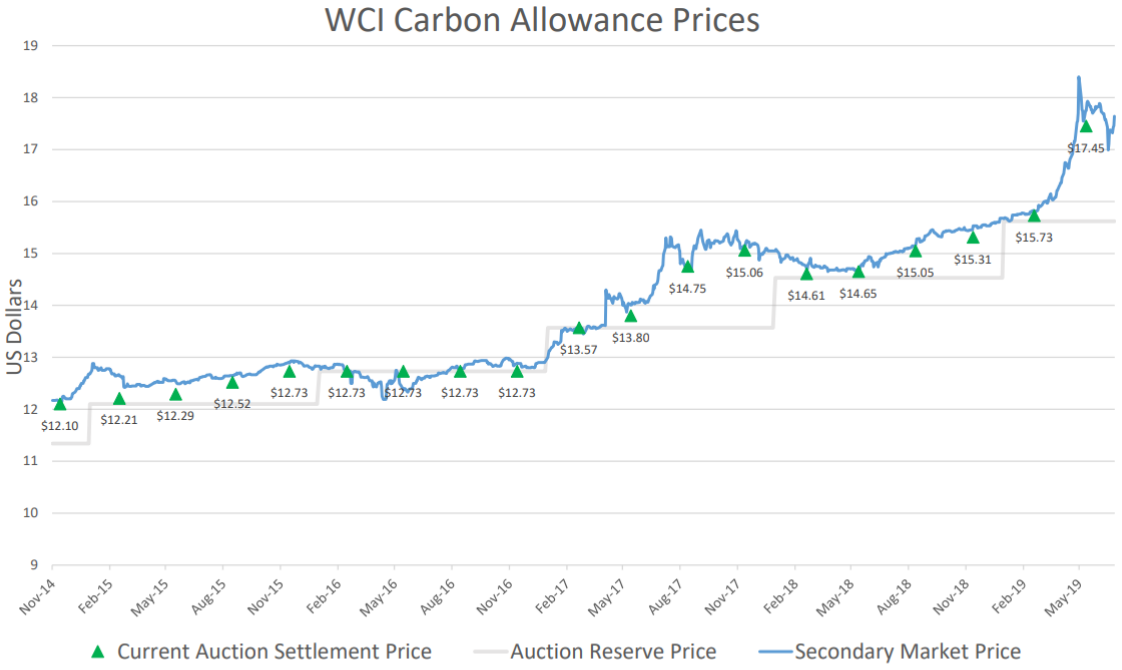
[1] Minnesota Public Utilities Commission, "Order Establishing 2009 and 2010 Estimate of Future Carbon Dioxide Regulation Costs," filed October 8, 2009 in Docket 07-1199, at page 2 (link).
[2] Clean Energy Organizations, "Reply Comments," filed March 5, 2018 in Docket 07-1199, at pages 5-6 (link).
[3] *Id.*, at Figure 2, pages 6-7.

1.1 The current regulatory CO_2 cost range is unreasonably low and should be increased

Both the current low and high regulatory CO_2 cost values are unreasonably low, in light of existing carbon pricing programs in the U.S. and throughout the world, as well as potential federal legislation that would place a cost on CO_2 emissions.

To develop their CO_2 regulatory cost range for their 2018 recommendations to the Commission, the Agencies looked to the two extant carbon markets in the U.S., the Regional Greenhouse Gas Initiative (RGGI) and the Western Climate Initiative (WCI). At the time, the Agencies raised concerns that these markets "have recently seen declines in their auction prices," and that "the RGGI price is the lowest it has been over the past four years."[4] In the ensuing years, however, auction clearing prices have increased in both markets: the clearing price in the June 2019 RGGI auction ($5.62/ton) was more than double the price cited by the Agencies ($2.53 in June 2017).[5] As shown in the chart below, WCI allowance prices have increased steadily, and in the most recent WCI auction, the clearing price was $17.45/ton, or 12 percent above the current price floor ($15.62).[6]



Notes:

1. California and Québec held their first joint auction in November 2014.
2. Current Auction Settlement Price is the price at which current vintage allowances sold at auction.
3. Auction Reserve Price is the minimum price at which allowances can be sold at auction.
4. Secondary Market Prices are a composite of commodity exchange futures contract prices for near month delivery and a survey of OTC brokered transactions for California Carbon Allowances. Secondary market prices are provided with permission of Argus Media Inc.

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The underlying program design in these markets will lead to further clearing price increases moving forward. RGGI and WCI are "cap and trade" programs rather than carbon taxes, meaning the price per ton of CO_2 will vary depending on the supply of and demand for credits. Notably, each program requires the rate of CO_2 reductions to accelerate over time, meaning utilities will need to make larger reductions in the 2020s than were required in the 2010s. Further, the design of RGGI and the WCI cap and trade programs limits the range

[4] Minnesota Department of Commerce and Minnesota Pollution Control Agency, "Corrected Analysis and Recommendations," filed February 28, 2018 in Docket 07-1199, at page 3 (link).
[5] Regional Greenhouse Gas Initiative, "Allowance Prices and Volumes," accessed August 27, 2019, from https://www.rggi.org/Auctions/Auction-Results/Prices-Volumes
[6] California Air Resources Board, "WCI Carbon Allowance Prices," July 5, 2019, accessed August 27, 2019 from https://ww3.arb.ca.gov/cc/capandtrade/wcicarbonallowanceprices.pdf

of CO_2 prices within a given year. Each of these programs includes both a "price floor" (or minimum price per ton) and a "price ceiling" (or maximum price per ton). As displayed in Table 1, the price floors for both programs will be even higher in the 2020s than current auction prices.[7]

Table 1, RGGI and WCI price floors and ceilings

	Price floor		Price ceiling	
	RGGI	WCI	RGGI	WCI
2022	$6.42	$19.14	$13.91	$69.55
2023	$6.87	$20.47	$14.88	$74.42
2024	$7.35	$21.91	$15.92	$79.63
2025	$7.86	$23.44	$17.03	$85.20
2026	$8.41	$25.08	$18.22	$91.17
2027	$9.00	$26.84	$19.50	$97.55
2028	$9.63	$28.72	$20.87	$104.38
2029	$10.30	$30.73	$22.33	$111.68
2030	$11.02	$32.88	$23.89	$119.50

While we agree with the Agencies that it is relevant to review existing market prices when developing regulatory CO_2 values, it is inappropriate to base them solely on the prices today. Minn. Stat. §216H.06 requires "an estimate of the likely range of costs of ***future*** carbon dioxide regulation" (emphasis added). As the Agencies noted in their 2018 recommendation, "carbon market costs are current costs and do not reflect likely future values."[8] As Table 1 above shows, auction prices will increase over time, as the requirements become more stringent and the price floors and ceilings rise. Thus, it would be inappropriate to set the values for future regulations at today's prices, much less the prices from 2017 auctions.

Rather, we recommend the Agencies set the values as the average of the floor and ceiling allowance prices in RGGI and WCI for the relevant future years. This would be consistent with the Agencies' criteria of "being objective, easily accessible and provid[ing] true regulatory costs (prices reflecting the direct costs that emitters need to pay today for their emissions)."[9] We recommend the Agencies set the low range as the average of the two price floors for a given year and set the high range as the average of the two price ceilings for a given year. Table 2 displays the resulting regulatory value range for 2022- 2030. For use in long-term modeling this table could be extended using the applicable escalation rate for each program.

Table 2, CEO Recommendation

	Low	Mid	High
2022	$12.78	$27.25	$41.73
2023	$13.67	$29.16	$44.65
2024	$14.63	$31.20	$47.77
2025	$15.65	$33.38	$51.12
2026	$16.75	$35.72	$54.69
2027	$17.92	$38.22	$58.52
2028	$19.17	$40.90	$62.62
2029	$20.51	$43.76	$67.01
2030	$21.95	$46.82	$71.69

[7] RGGI prices come from its Revised 2017 Model Rule, pages 6 and 7 (link). WCI price floor calculated using the 2019 Minimum Price escalated at 7 percent annually (5% plus the Federal Reserve Bank's inflation target of 2%) (*see*: California Air Resources Board, "Final Regulation Order: Article 5: California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms" §95911(c) "Method for Setting the Auction Reserve Price," at page 237 (link). WCI price ceiling calculated using a ceiling amount of $65 in 2021, escalated at 7 percent annually (5% plus the Federal Reserve Bank's inflation target of 2%) (*see*: California Air Resources Board, "Final Regulation Order: Article 5: California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms" §95915(f) "Price Ceiling Sales Procedure," at page 260 (link).

[8] Minnesota Department of Commerce and Minnesota Pollution Control Agency, "Corrected Analysis and Recommendations," filed February 28, 2018 in Docket 07-1199, at page 4 (link).

[9] *Ibid.*

1.2 These values are consistent with existing international carbon fees and proposed federal legislation

Our recommended values fall well within the range of current prices for existing international carbon pricing programs. According to the World Bank, worldwide there are 57 carbon pricing initiatives implemented or scheduled for implementation in 2019, ranging in price from <$1/ton (Poland) to $127/ton (Sweden).[10] The average of the 10 lowest-value international carbon pricing programs is $2.78/ton, while the average of the 10 highest-value programs is $56.15/ton. This produces a midpoint of $29.47, which is nearly identical to the midpoint of our recommended 2023 values but roughly double the midpoint of the existing values.

Comparing the CEO recommendation to recently introduced federal legislation also confirms its reasonableness. Notably, the current high value that was used from 2009-2018 was originally set based on modeled costs of proposed federal legislation.[11] In the current Congress, there are at least four active bills with bipartisan sponsorship that would place a price on CO_2.[12] Of those four bills, the *lowest* value in 2022 would be higher than our midpoint value, and three of the four bills would set a price above our high value in 2022. Thus, if anything the CEO's recommended range is conservative when compared to other indicators of the likely regulatory costs of CO_2 emissions.

1.3 If the Agencies prefer to continue using a "blended approach" to set regulatory cost values, a revised methodology would produce a more reasonable range of values

In making their 2018 recommendation to the Commission, the Agencies employed a "blended approach to setting the cost range," basing the low value on RGGI prices at the time and the high value on the upper end of the most recent Synapse forecast in 2022.[13] As described above, we believe basing the high and low values on a blend of the RGGI and WCI price ranges is the most objective, easily accessible estimate of true regulatory costs. However, if the Agencies prefer to continue to use a blended approach, two simple revisions to their methodology would produce a regulatory cost range that is more consistent with the governing statute and utility planning horizons.

The Agencies based their 2018 recommendation for the low CO_2 cost value on the RGGI auction prices at the time. The Agencies argued that "[b]asing the regulatory cost range on current prices of existing carbon markets has the advantage of being objective, easily accessible and provides true regulatory costs (prices reflecting the direct costs that emitters need to pay today for their emissions)."[14] We agree with the Agencies that basing values on existing carbon markets has many advantages. However, as the Agencies note, basing values on past auction results "do not reflect likely future values."[15] This is a fatal flaw, in light of Minn. Stat. §216H.06's requirement for "an estimate of the likely range of costs of ***future*** carbon dioxide regulation"

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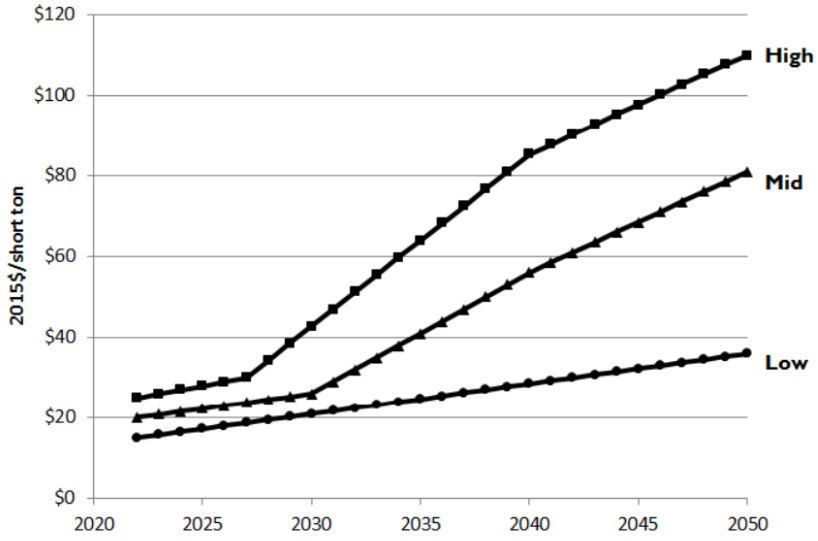
[10] World Bank Group, "State and Trends of Carbon Pricing 2019," June 2019 (link).
[11] Minnesota Pollution Control Agency and Office of Energy Security, "Other-Letter," filed March 27, 2009 in Docket 07-1199, at pages 3-4 (link).
[12] *See*: the Energy Innovation and Carbon Dividend Act, H.R. 763, 116th Congress 2019; the Raise Wages, Cut Carbon Act, H.R. 3966, 116th Congress 2019; the Climate Action Rebate Act H.R. 4051/S.2284, 116th Congress 2019; and the Stemming Warming and Augmenting Pay (SWAP) Act H.R. 4058, 116th Congress 2019.
[13] Minnesota Department of Commerce and Minnesota Pollution Control Agency, "Corrected Analysis and Recommendations," filed February 28, 2018 in Docket 07-1199, at pages 3-4 (link).
[14] *Id.*, at page 4.
[15] *Ibid.*

(emphasis added). The limitation of this approach can already be seen: the clearing price in each of the last three RGGI auctions has been higher than Minnesota's current minimum value *for 2025 and beyond*.[16]

Fortunately, this is easily rectified. RGGI's Revised 2017 Model Rule sets the price floor for 2021 and beyond.[17] Rather than basing *future* CO_2 regulatory cost values on *current* RGGI prices, the low value should be set as the RGGI Emissions Containment Reserve trigger price for the relevant year. This would maintain the objectivity, accessibility, and authenticity of the Agencies approach, while being more theoretically sound and consistent with statue.

For the high CO_2 cost value, the Agencies used the high value (for 2022) of the most recent Synapse national CO_2 price forecast, arguing that "basing the regulatory cost range on carbon price forecasts has the advantage of projecting regulatory costs into the future, which corresponds to electric utility planning horizons."[18] However, the Agencies did not recommend using the high end of the Synapse forecast *throughout the planning period*, but simply the high value from 2022 (even though the values begin to be applied in 2025). As shown in the chart to the right, Synapse's forecasted high CO_2 price does not freeze at $25 from 2022 and beyond. Rather, it escalates throughout the forecast period.

Figure 1: Synapse 2016 CO_2 national price forecasts



Source: Synapse Energy Economics, Inc. 2016.

If the Agencies decide to continue using their blended approach, it would be more reasonable to use the high price in the Synapse forecast for each year throughout the planning horizon. This would better fulfill the Agencies' objective of aligning forecasts with electric utility planning horizons. It would also be more in line with existing carbon pricing programs. WCI's price *floor* will be higher than Minnesota's existing high value beginning in roughly 2026 and will then continue to escalate at 5 percent above inflation. Further, of the four carbon pricing bills with bipartisan sponsorship in the 116th Congress, the *lowest* price would be roughly $40/ton in 2025, or *60 percent higher* than Minnesota's current high value. We also note that, while the current CO_2 values stay flat throughout the planning period, both extant North American carbon pricing programs[19] and virtually all of the federal legislation proposed in recent years[20] would escalate over time at a rate above inflation.

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[16] Regional Greenhouse Gas Initiative, "Allowance Prices and Volumes," accessed August 27, 2019, from https://www.rggi.org/Auctions/Auction-Results/Prices-Volumes

[17] Regional Greenhouse Gas Initiative, "2017 Model Rule (revised)," December 14, 2018, at page 6 ("The ECR trigger price in calendar year 2021 shall be $6.00. Each calendar year thereafter, the ECR trigger price shall be 1.07 multiplied by the ECR trigger price from the previous calendar year, rounded to the nearest whole cent.") (link).

[18] Minnesota Department of Commerce and Minnesota Pollution Control Agency, "Corrected Analysis and Recommendations," filed February 28, 2018 in Docket 07-1199, at page 3 (link).

[19] RGGI's price floors and ceilings escalate at a fixed 7% per year, and WCI price floors and ceilings escalate at "5% above inflation" which would total 7% when combined with the Federal Reserve's target inflation rate of 2%.

[20] *See, e.g.*: Center for Climate and Energy Solutions' "Carbon Pricing Proposals of the 113th Congress" (link), "Carbon Pricing Proposals in the 115th Congress" (link), "Carbon Pricing Proposals in the 116th Congress" (link); Baker et al., "The Conservative Case for Carbon

2) The threshold year for the application of the value range should be 2023

Though there is considerable uncertainty regarding the timing of future CO_2 regulations, the current effective date of 2025 is overly conservative. Policy changes at the state or federal level could require generators to begin incurring regulatory costs for CO_2 emissions starting as early as 2021. This possibility should be considered in planning to prevent electricity customers from being exposed to unnecessary regulatory risk. Based on the potential for federal or state action regulating greenhouse gas emissions, CEOs recommend an effective date of 2023. This is a more reasonable estimate of when generators could be required to comply with carbon regulations.

Pursuant to the 2007 *Mass v. EPA* Supreme Court ruling and the subsequent U.S. Environmental Protection Agency "Endangerment Finding" that greenhouse gas emissions threaten human health and welfare, the Clean Air Act requires the federal government to regulate carbon dioxide and other heat-trapping pollutants.[21] While the Trump administration's Clean Power Plan replacement, the Affordable Clean Energy Rule, does not require meaningful emissions reductions from fossil fuel-fired energy generators, a coalition of states and cities are suing to ensure stricter protections that would fulfil the government's obligation.[22] The 2020 presidential election will likely also influence the status of this federal rule.

In addition to federal regulatory action, there is also the potential for federal legislation to regulate greenhouse gas emissions. As described above, there are at least four active bills in Congress with bipartisan sponsorship that would establish a federal carbon tax, each of which would take effect within two years of passage.[23] Other recent proposals for federal carbon pricing measures have similar timelines.[24]

The political landscape has the potential to change dramatically over the next several years, with two Presidential elections and three Congressional elections between now and 2025. Depending on the outcome of these elections, the likelihood of implementing a federal carbon pricing program could increase significantly. This is particularly true given the increasing support for greenhouse gas regulation in the United States, with 82 percent of registered voters expressing support for regulating CO_2 as a pollutant and 72 percent supporting requiring fossil fuel companies to pay a carbon tax.[25] In addition, over 3,500 leaders from across the country have signed on to the We Are Still In declaration to uphold the Paris Agreement, including governors, mayors, county executives, tribal leaders, college and university leaders, businesses, faith groups, and investors.[26] The state of Minnesota; the cities of Duluth, Eden Prairie, Minneapolis, and Saint Paul; and businesses such as Aveda and Target have all signed on to the declaration.[27]

Dividends," *Climate Leadership Council*, February 2017 (finding "A carbon tax should increase steadily and predictably over time so that companies and consumers can plan accordingly, and the previously mentioned economic stimulatory effects can be harnessed.") (link)

[21] Massachusetts v. EPA, 549 U.S. 497 (2007). Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Final Rule, 74 Fed. Reg. 66,496 (December 15, 2009).

[22] Lisa Friedman, "States Sue Trump Administration Over Rollback of Obama-Era Climate Rule," *New York Times*, August 13, 2019 (link).

[23] Energy Innovation and Carbon Dividend Act, H.R. 763, 116th Congress 2019; the Raise Wages, Cut Carbon Act, H.R. 3966, 116th Congress 2019; the Climate Action Rebate Act H.R. 4051/S.2284, 116th Congress 2019; and the Stemming Warming and Augmenting Pay (SWAP) Act H.R. 4058, 116th Congress 2019.

[24] *See:* American Opportunity Carbon Free Act of 2019, S.1128, 116th Congress 2019; America Wins Act, H.R.4142, 116th Congress 2019; and Healthy Climate and Family Security Act of 2019, S.940, 116th Congress, 2019

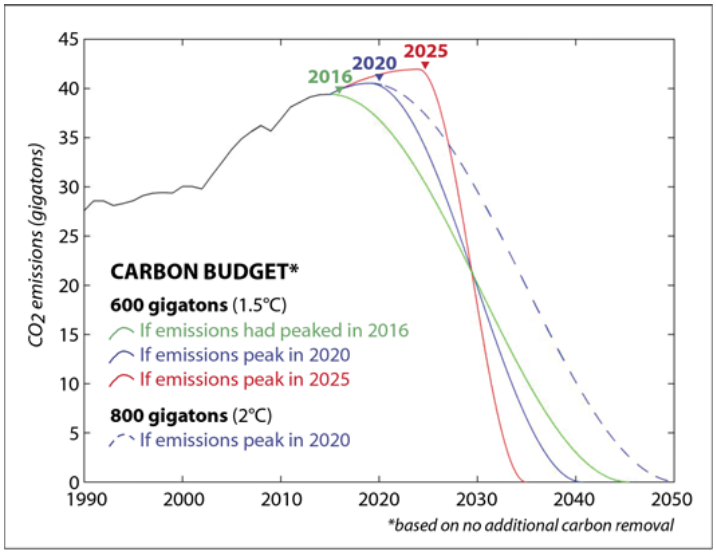
[25] Anthony Lieserowitz, Edward Maiboch, Connie Roser-Renouf, Seth Rosenthal, Matthew Cutler and John Kotcher, "Politics & Global Warming, April 2019," *Yale Program on Climate Change Communication*, May 16, 2019 (link).

[26] "We Are Still In" Declaration (link)

[27] "We Are Still In" Signatories (link)

Indeed, even without federal action, the state of Minnesota could impose regulations on CO_2 emissions well before 2025. The Minnesota Pollution Control Agency has the obligation to limit CO_2 emissions using its broad statutory authority to "adopt, amend and rescind rules and standards . . . relat[ing] to sources or emissions of air contamination or air pollution" under Minn. Stat. §116.07. Both Governor Walz and the Commissioner Bishop have publicly stated that the agency has the power to regulate carbon directly under this statutory authority. Even without enabling legislation, Minnesota could, for instance, adopt rules joining RGGI or WCI. In recent years, several states have taken steps to join these markets through administrative actions taken under broad statutory authorities similar to our state's.[28] For example, New Jersey, which left RGGI in 2012, began the process of rejoining the market following a January 29, 2018 executive order from Governor Phil Murphy.[29] The state is on track to re-enter the market January 1, 2020, meaning there was *less than two years* between the executive order and the application of a carbon price.[30]

Given the potential for a dramatically different political landscape and the timeframe within which carbon regulation can be implemented, the current threshold year of 2025 is overly conservative. Utilities may be required to comply with greenhouse gas regulations through federal or state legislation or administrative action within a few years. For these reasons, we recommend an effective date of 2023. This approach is also more in keeping with the timeline necessary for policy action to avoid the worst impacts of climate change. As the chart to the right shows, the longer policymakers delay emissions reductions, the more severe those cuts will have to be.[31]



SOURCE: Stefan Rahmstorf, 2017 InsideClimate News

3) All utilities should be required to include CO_2 costs in their base or reference case

While externality and regulatory costs are both used in resource acquisition and planning, they serve different functions and are conceptually distinct. Externalities occur when an economic transaction between two or more parties has an impact on other, unrelated parties. Minnesota Statutes §216B.2422 Subd. 3 contemplates damage costs, or externalities, resulting from the combustion of fossil fuels for electricity generation. The pollution from fossil fuel generation creates economic damages in the form of public health and climate change costs—such as damage to communities from increased flooding or the economic impact of decreased crop yields. The parties to the transaction—the electricity generators and electricity consumers—do not directly pay the full cost of damages, so they will produce (and consume) more than the societally optimal amount of fossil fuel-generated electricity. This is an example of a "market failure," in which the

[28] *See generally,* Janet E. Milne, *Carbon Pricing in the Northeast: Looking Through a Legal Lens*, 70 NAT'L TAX JOURNAL 855, 861 (2017). The Virginia Attorney General, for instance, has concluded that the authority to "abate, control, and prohibit air pollution" includes the authority to regulate carbon, a well-recognized air pollutant. Attorney General Mark R. Herring Advisory Opinion, 17-010 (May 12, 2017), https://www.oag.state.va.us/files/Opinions/2017/17-010-Toscano-carbon-pollution-%20for-issuance.pdf (quoting VA. CODE. § 10.1-1300 (defining air pollution)).
[29] Executive Order No. 7, 2018 (link).
[30] Regional Greenhouse Gas Initiative, "RGGI States Welcome New Jersey as Its CO2 Regulation Is Finalized," June 17, 2019 (link)
[31] Bob Berwyn, "What Does '12 Years to Act on Climate Change' (Now 11 Years) Really Mean?," *Inside Climate News*, August 27, 2019 (link).

private market, on its own, will not maximize economic efficiency. Including externality costs in resource acquisition and planning allows the Commission to determine the societally optimal— i.e., most economically efficient—electricity generation resource mix.

Regulatory costs values, in contrast, account for the cost to a utility (which is ultimately passed through to customers) to comply with future federal or state regulations, such as a carbon tax. These costs are included in resource planning and acquisition to account for the financial risk inherent in CO_2 emissions. As the Commission explained in its 2009 Order in this docket:

> Minnesota Statutes § 216H.06 reflects the Legislature's conclusion that it is likely that eventually laws will govern the emission of CO_2 and that utilities and their ratepayers will need to bear these costs. The statute's chief requirement is to compel utilities to plan accordingly. A utility's failure to correctly forecast the magnitude of CO_2 regulation costs may result in the utility's making choices that prove to be costly in retrospect.[32]

In other words, the regulatory values are predictions of costs that utilities, and ratepayers, will have to pay. They are similar to any other cost prediction, such as the cost of natural gas or coal.

Historically, many of Minnesota's utilities have failed to include these regulatory values in the base or reference case of their Integrated Resource Plans (IRP). For example, in Great River Energy's most recent IRP, its "expected values" case had no externalities and no regulatory cost of carbon included, and it ran those values as sensitivities only.[33] Minnesota Power's Petition for approval of the Nemadji Trail Energy Center analyzed eight "futures," only half of which included a regulatory CO_2 price.[34] Otter Tail Power's last IRP had two sets of 30 different sensitivities: one set of sensitivities included the carbon regulatory value and externality values and the other set included neither.[35] Xcel Energy's last two IRPs, on the other hand, each include the regulatory cost value in the base case.[36]

The Commission's 2018 Order in this docket made progress on this issue by requiring five specific scenarios be included in each resource plan: Low Environmental Costs; High Environmental Costs; Low Environmental/ Regulatory Costs; High Environmental/Regulatory Costs; and Omitting CO_2 Cost Considerations. While these scenarios are reasonable and provide valuable insights into the risks associated with various resource options, it is imperative to note that simply requiring utilities to model these scenarios will be much less impactful than stipulating the values used in the base or reference case. Each resource plan will analyze hundreds of scenarios. A utility could still comply with the Order by running these four scenarios with carbon pricing, and hundreds without any price at all (whereas the base case assumption is typically included in nearly all scenarios). By failing to account for the risk inherent in CO_2 emissions, this type of planning will likely result in the utility (and regulators) making choices that prove to be very costly for its customers.

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[32] Minnesota Public Utilities Commission, "Order Establishing 2009 and 2010 Estimate of Future Carbon Dioxide Regulation Costs," filed October 8, 2009 in Docket 07-1199, at page 2 (link).
[33] Great River Energy, "2018-2032 Integrated Resource Plan," filed April 28, 2017 in Docket 17-286, at page 107, Table 11 (link).
[34] Minnesota Power, "Petition for Approval of the EnergyForward Resource Package," Appendix J, "Table 2: Eight Futures Considered in EnergyForward Resource Package Analysis," page J-9 (link).
[35] Otter Tail Power, "2017-2031 Integrated Resource Plan," filed June 1, 2016 in Docket 16-386, at App. I (link).
[36] Xcel Energy, "2016-2030 Integrated Resource Plan," filed January 2, 2015 in Docket 15-21 at App. J, page 5 (link). Xcel Energy, "2020-2034 Upper Midwest Integrated Resource Plan," filed July 1, 2019 in Docket 19-368, at page 95 (link).

Accordingly, the Agencies should recommend the Commission require—in addition to the scenarios included in the 2018 Order—the inclusion of the midpoint of the CO_2 externality cost in years prior to 2023 and the midpoint of the regulatory CO_2 cost values in 2023 and beyond in the reference or base case in all resource acquisition and planning proceedings.

4) Conclusion and recommendations

We appreciate the opportunity to provide input on these important topics. We urge the Agencies to make the following recommendations to the Commission:

- Calculate the low regulatory CO_2 cost value as the average of RGGI's and WCI's floor prices for the relevant year and calculate the high regulatory CO_2 cost value as the average of RGGI's and WCI's ceiling prices for the relevant year;
- If the Agencies prefer to continue using a "blended approach" to determine values, set the low regulatory CO_2 cost value as RGGI's Emissions Containment Reserve trigger price for the relevant year and calculate the high regulatory CO_2 cost value as the Synapse High CO_2 national price forecast for the relevant year;
- Find that 2023 is the appropriate threshold year for the application of CO_2 regulatory costs; and
- Require that the reference or base case in all resource acquisition and planning proceedings include the midpoint of the CO_2 externality cost in years prior to 2023 and the midpoint of the regulatory CO_2 cost values in 2023 and beyond.

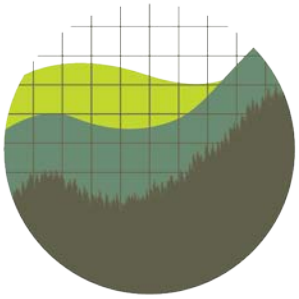
/s/ Peder Mewis
Clean Grid Alliance
570 N Asbury St, Suite 201
St Paul, MN 55104
651.644.3400
pmewis@cleangridalliance.org

/s/ Andrew Twite
Fresh Energy
408 St. Peter Street, Suite 220
St. Paul, MN 55102
651.726.7576
twite@fresh-energy.org

/s/ Carolyn Berninger
Minnesota Center for Environmental Advocacy
1919 University Ave. W., Suite 515
St. Paul, MN 55104
651.287.4878
cberninger@mncenter.org

/s/ Laurie Williams
Sierra Club
1536 Wynkoop St. Suite 200
Denver, CO 80202
303.454.3358
laurie.williams@sierraclub.org

/s/ James Gignac
Union of Concerned Scientists
1 N. LaSalle St., Suite 1904
Chicago, IL 60602
773.941.7916
jgignac@ucsusa.org



Institute *for*
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

September 6, 2019

To: Minnesota Pollution Control Agency, Minnesota Department of Commerce

CC: Minnesota Public Utilities Commission

Re: In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06
Docket No. E999/DI-19-406, Docket No. E999/CI-07-1199

The Institute for Policy Integrity ("Policy Integrity")[1] respectfully submits the following comments to the Minnesota Pollution Control Agency ("MPCA") and the Minnesota Department of Commerce, Division of Energy Resources ("Department) (together, "the Agencies") in response to their July 9, 2019 Request for Comments ("Request") on the range of cost estimates for the future cost of carbon dioxide ("CO_2") regulation on electricity generation.

Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy. Policy Integrity regularly conducts economic and legal analysis on the appropriate use of the social cost of carbon, with an emphasis on electricity decisionmaking.

Among other questions, the Agencies ask for comments on "whether the application scenarios listed in the [Public Utility] Commission's June 11, 2018 Order remain reasonable and appropriate." That Order requires utilities to consider alternative resource planning scenarios using a range of both regulatory costs and environmental costs.

On June 11, 2018, the Minnesota Public Utilities Commission (PUC) issued an order designed to reconcile the regulations under Minn. Stat. § 216B.2422 and Minn. Stat. § 216H.06, both of which require utilities to place a value on greenhouse gas emissions in resource planning proceedings. Minn. Stat. § 216B.2422 subd. 3 requires the PUC to "quantify and establish a range of environmental costs associated with each method of electricity generation," and in turn, requires utilities to "use the values established by the commission . . . when evaluating and selecting resource options in all proceedings before the commission."[2] Minn. Stat. § 216H.06 requires the PUC to "establish an

[1] Policy Integrity is based at New York University School of Law; no part of these comments purports to present the views, if any, of New York University or its School of Law.
[2] Minn. Stat. § 216B.2422 subd. 3(a).

estimate of the likely range of costs of future carbon dioxide regulation on electricity generation," to be used "in all electricity generation resource acquisition proceedings."[3]

Accordingly, the June 2018 order requires utilities to use a range of $5-$25 per short ton for carbon dioxide regulatory costs in their resource planning, and continue to use an environmental carbon dioxide cost, as set by the PUC's January 2018 order. The PUC's environmental externality cost estimates are based on the IWG social cost of greenhouse gases estimates, using the 5-percent and 3-percent discount rates with a shortened time horizon.[4] The environmental cost in year 2025, when the new regulatory cost numbers will take effect, would be between $10.67 and $49.75 (in 2018 dollars) per short ton. Under the June 2018 order, utilities are required to include scenarios with the high and low end values for both the regulatory cost and the environmental cost in their resource acquisition planning.

These comments focus on the proposed scenarios from the June 2018 PUC order. Specifically, Minnesota should continue to require utilities to use environmental externality costs based on the best available science and economics in their resource planning.

Minnesota should continue to require utilities to account for climate damages

As the agencies know, valuing climate damages monetarily is an important tool for state decisionmakers seeking to maximize social welfare. This valuation includes the costs of greenhouse gas emissions, spanning property damage, health impacts, and crop losses, which are not already captured by the market. Using such a damage cost approach is the only way to capture all of the externalities caused by greenhouse gas emissions, which the PUC has indicated is required by Minn. Stat. § 216B.2422 subd. 3.[5]

Incorporating climate change considerations into electricity policy by putting a dollar value on the harms from each additional ton of greenhouse gas pollution can help regulators evaluate which policy options and make rational decisions. Similarly, it can help utilities weigh the relative costs and benefits of different resource mixes that are not accounted for elsewhere.

We applaud Minnesota for continuing to be a leader among states on incorporating environmental externalities into electricity policy, and we encourage the State to rely on the best available science and economics to set the externality price of carbon dioxide. The PUC has already acknowledged that the Interagency Working Group social cost of greenhouse gases estimates meet these conditions. Specifically, on January 3, 2018, the Minnesota Public Utilities Commission's issued its final written order designating the IWG approach to the social cost of greenhouse gases as the "best framework in the record from which to establish a range of environmental costs associated with CO_2 emissions for purposes of Minnesota's Environmental Cost Statute."[6] The Commission explained, "The degree of

[3] Minn. Stat. § 216H.06.
[4] *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, Order Updating Environmental Cost Values, at 31 (January 3, 2018), *available at:* https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPoup
[5] *See id*. at 5 (When an economic activity imposes a cost or benefit on an unrelated third party, the cost or benefit is known as an economic external cost or "externality." In particular, generating electricity by burning fossil fuels imposes costs on society by releasing pollutants—the byproducts of combustion—into the atmosphere… The Environmental Cost Statute requires that the Commission, "to the extent practicable, quantify and establish a range of environmental costs associated with each method of electricity generation." This, in essence, is a requirement to determine the costs imposed on the public by pollution from power plants.").
[6] *Id*.

rigor employed in the development of these cost values, and the timeliness of the underlying data and analyses, far exceeds any other framework in the record . . . . The modeling inputs and parameters relied on the most credible and widely used sources of information in the scientific literature."[7] The Commission adopted the range of IWG values, with some modifications, for evaluating environmental costs as required by state statute.

We also remind the agencies and the PUC that, per our July 26, 2017 comments, the 2016 Interagency Working Group social cost of greenhouse gases remain the best available estimates and any "interim" estimates being used by federal agencies are flawed and should not be used.

Other States Are Following Minnesota's Lead

With regard to utility resource planning, a number of states have followed Minnesota's lead and used the IWG social cost of greenhouse gases as the starting point for their carbon dioxide externality values. This growing body of policy points towards best practices for state decisionmakers to account for climate damages in electricity policy.

For example, in August 2018, the Nevada Public Utilities Commission updated its IRP regulations to require utilities to "calculate[e] the present worth of societal costs for each alternative plan" by "estimat[ing] the level of environmental costs resulting from carbon dioxide emissions for that year and the social cost of carbon," using the "best available science and economics," such as the IWG estimates.[8]

Similarly, in May 2018, the Washington State Utilities and Transportation Commission's approval letters for three Integrated Resource Plans recommended that the utilities use the Interagency Working Group estimates of the social cost of carbon in future IRPs.[9] In early 2019, the state enacted a law requiring the use of the social cost of carbon in utility resource planning.[10]

Finally, in March 2017, the Colorado Public Utility Commission required Xcel Energy to use the social cost of carbon in a sensitivity analysis for its Electric Resource Plan.[11] The state legislature passed a bill in early 2019 requiring the utility commission and utilities to evaluate "the cost of carbon dioxide emissions" in resource planning.[12]

A growing number of states continue to use the social cost of carbon in a number of ways to design rational electricity policies that advance the social welfare of their citizens.[13] The Commission should ensure that Minnesota maintains its role among states as a leader on sensible energy and climate

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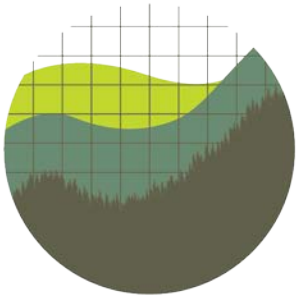
[7] *Id*.
[8] Nev. Pub. Util. Comm'n, Investigation and Rulemaking to Implement Senate Bill 65 of 2017, Docket No. 17-07020 (Aug. 5, 2018), http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2017-7/32153.pdf (recommending the use of the "best available" estimates from the Interagency Working Group on Social Cost of Greenhouse Gases issued in August 2016).
[9] Wash. Util. & Transp. Comm'n, Press Release, Energy Regulators Want Closer Look at Utilities' Coal Plant Costs (May 7, 2018), https://www.utc.wa.gov/aboutUs/Lists/News/DispForm.aspx?ID=527.
[10] Wash. Sen. Bill. 5116 (signed by Gov. Inslee on May 7, 2019).
[11] Colo. Pub. Util. Comm'n, Decision No. C17-0316, In the Matter of the Application of Public Service Company of Colorado for Approval of its 2016 Electric Resource Plan, Proceeding No. 16A-0396E, *available at*: http://coseia.org/wp2016/wp-content/uploads/2017/05/ERP-Decision-C17-0316_16A-0396E-1.pdf
[12] Colo. Sen. Bill 19-236 (passed May 3, 2019).
[13] Further details on state use of the IWG social cost of greenhouse gases can be found at https://costofcarbon.org/states.

policies, and should continue to require the use of the social cost of carbon in its utility resource planning rules.

Respectfully submitted,

Denise Grab, Western Regional Director
Iliana Paul, Policy Analyst

Institute for Policy Integrity at NYU School of Law



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CERTIFICATE OF SERVICE

I, Iliana Paul, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing.

Minnesota Department of Commerce - Request for Comments

Docket No. E999/DI-19-406 and E999/CI-07-1199

Dated this 6th day of September 2019

/s/Iliana Paul

Iliana Paul, Policy Analyst
Institute for Policy Integrity

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_7-1199_1
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
Riley	Conlin	riley.conlin@stoel.com	Stoel Rives LLP	33 S. 6th Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Stacy	Dahl	sdahl@minnkota.com	Minnkota Power Cooperative, Inc.	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_7-1199_1
Curt	Dieren	curt.dieren@dgr.com	L&O Power Cooperative	1302 S Union St Rock Rapids, IA 51246	Electronic Service	No	OFF_SL_7-1199_1
Brian	Draxten	bhdraxten@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380498	Electronic Service	No	OFF_SL_7-1199_1
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_7-1199_1
Karlene	Fine	kfine@nd.gov	Industrial Commission of North Dakota	14th Floor 600 E. Boulevard Avenue, Dept. 405 Bismarck, ND 58505	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_7-1199_1
Bruce	Gerhardson	bgerhardson@otpco.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_7-1199_1
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58501	Electronic Service	No	OFF_SL_7-1199_1
Craig	McDonnell	Craig.McDonnell@state.mn.us	MN Pollution Control Agency	520 Lafayette Road St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_7-1199_1
Dalene	Monsebroten	dalene.monsebroten@nmpagency.com	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_7-1199_1
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Peter	Nelson	peter.nelson@americanexperiment.org	Center of the American Experiment	8441 Wayzata Boulevard Suite 350 Golden Valley, MN 55426	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_7-1199_1
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_7-1199_1
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_7-1199_1
Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_7-1199_1
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_7-1199_1
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_7-1199_1
Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative	P.O. Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_7-1199_1
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_7-1199_1
Kay	Schraeder	kschraeder@minnkota.com	Minnkota Power	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_7-1199_1
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_7-1199_1
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_7-1199_1
Elizabeth	Wefel	eawefel@flaherty-hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470 Saint Paul, MN 55103	Electronic Service	No	OFF_SL_7-1199_1
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_7-1199_1
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	No	SPL_SL_19-406_19-406
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	SPL_SL_19-406_19-406
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	No	SPL_SL_19-406_19-406
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	SPL_SL_19-406_19-406

Analeisha Vang
Public Policy Advisor

218-355-3602
avang@mnpower.com

September 6, 2019

VIA E-FILING

Mr. Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

RE: In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06
Docket No. E999/D1-19-406, E999/CI-07-1199

Dear Mr. Wolf:

Minnesota Power respectfully submits to the Minnesota Public Utilities Commission these comments in response to the Minnesota Pollution Control Agency and Minnesota Department of Commerce, Division of Energy Resources' request for comments regarding the range of cost estimates for the future cost of carbon dioxide (CO2) regulation on electricity generation.

If you have any questions regarding these comments, you may reach me at 218-355-3602 or avang@mnpower.com.

Sincerely,

Analeisha Vang

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06	Docket No. E999/D1-19-406 E999/CI-07-1199 **MINNESOTA POWER'S COMMENTS**

Minnesota Power (or "the Company") submits these Comments in response to the Minnesota Pollution Control Agency and the Minnesota Department of Commerce, Division of Energy Resources' July 9, 2019 Request for Comments ("Request") in Docket Nos. E999/DI-19-406, and E-999/CI-07-1199. The Request identified the topics open for comment which are related to the Minnesota Public Utilities Commission's ("Commission") June 11, 2018 *Order Establishing 2018 and 2019 Estimate of Future Carbon* (Docket Nos. E999/CI-07-1199 and E999/DI-17-53) that determined the range of regulatory costs of carbon dioxide emissions as $5 to $25 per short ton effective 2025; and required utilities to analyze potential resources under a range of assumptions about environmental values using specific scenarios. Minnesota Power's responses to those comments are outlined below.

- **Whether the currently established range of regulatory costs of CO2 emissions of $5 to $25 per short ton remains reasonable?**

  On June 11, 2018, the Commission's Order Establishing 2018 and 2019 Estimate of Future Carbon Dioxide Regulation Costs determined the range of regulatory costs of carbon dioxide emissions as $5 to $25 per short ton effective 2025 and thereafter. Minnesota Power is supportive of the $5 to $25 range as noted in the 2018 order, but continues to advocate for the use of a more appropriate threshold year based on third-party vendor forecast data that Minnesota utilities use for resource planning purposes.

- **If not, what range should be established and why?**

  While Minnesota Power does not object to the current range of regulatory costs of carbon dioxide emissions as $5 to $25 per short ton effective 2025 and thereafter, the Company reiterates it supports using third-party vendor forecast data that Minnesota utilities use for resource planning purposes (such as IHS Markit or Wood Mackenzie) to develop an updated range of costs of future CO_2 regulation. Averaging data from different independent forecasts has a higher probability for resulting in a range that best reflects the estimated cost without disclosing proprietary information. Averaging of data from different vendors also avoids premature favoring of a single vendor estimate in advance of there being a resolute future CO_2 regulation cost. The cost of future CO_2 regulation can continue to be updated periodically as third-party vendors revise their forecasts to reflect on-going regulatory changes at the federal or state level.

- **Whether 2025 is the appropriate threshold year for the application of the value range?**

  Based on proprietary industry resources, as well as the anticipated lead-time required for implementation of a federal regulation for CO_2, application of a CO_2 regulation is not anticipated before 2025.

  With the recent repeal of the Environmental Protection Agency's Clean Power Plan and publication of the Affordable Clean Energy (or ACE) Rule, submittal of State Implementation Plans (SIPs) or Federal Implementation Plans (FIPs) for the ACE Rule are anticipated to occur in the 2022-2023 timeframe. The ACE Rule requires heat-rate improvements at the individual unit and carbon-trading or carbon tax mechanisms are not detailed in the federal Rule.

  The ACE Rule is already being challenged by numerous states, including Minnesota. The associated legal actions and potential appeals, along with a three to four year state or federal implementation plan development and approval could impact the 2025 threshold year. Based on recent legal and regulatory delays for the Clean Power Plan and the "inside the fenceline" approach of the ACE Rule, which does not include carbon trading

or penalties, Minnesota Power notes that 2030 may be a more appropriate threshold year for the application of the value range based on a purchased independent IHS Markit forecast used in Resource Planning. However, while the Company's view is 2030 is a more appropriate threshold year, it does not object to 2025 remaining the threshold year.

- **Whether the application scenarios listed in the Commission's June 11, 2018 Order remain reasonable and appropriate?**
  Minnesota Power does not suggest any changes to the scenarios listed in the Commission's June 11, 2018 order.

- **Whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only, or in both 2020 and 2021?**
  Minnesota Power is supportive of applying updates to electricity generation resource planning and acquisition proceedings initiated in both 2020 and 2021. By applying the updates to both 2020 and 2021, this ensures that inputs do not change during the resource planning processes. Minnesota Power is required to complete an Integrated Resource Plan and Baseload Retirement Study in the fall of 2020.

Minnesota Power is grateful for the ongoing and thoughtful engagement around the issue of the range of regulatory costs of CO_2 emissions, threshold years, scenario planning, and electricity generation resource planning and acquisition proceedings, and looks forward to continued engagement on this topic.

Dated: September 6, 2019

Sincerely,

Analeisha Vang
Minnesota Power
30 West Superior Street
Duluth, MN 55802
(218) 355–3602
avang@mnpower.com

STATE OF MINNESOTA	)	AFFIDAVIT OF SERVICE VIA
	) ss	ELECTRONIC FILING
COUNTY OF ST. LOUIS	)	

Jodi Nash of the City of Duluth, County of St. Louis, State of Minnesota, says that on the **6th** day of **September, 2019**, she served Minnesota Power's Comments in **Docket Nos. E999/DI-19-406** and **E999/CI-07-1199** on the Minnesota Public Utilities Commission and the Energy Resources Division of the Minnesota Department of Commerce via electronic filing. The persons on E-Docket's Official Service Lists for these Dockets were served as requested.

Jodi Nash

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_7-1199_1
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
Riley	Conlin	riley.conlin@stoel.com	Stoel Rives LLP	33 S. 6th Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Stacy	Dahl	sdahl@minnkota.com	Minnkota Power Cooperative, Inc.	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_7-1199_1
Curt	Dieren	curt.dieren@dgr.com	L&O Power Cooperative	1302 S Union St Rock Rapids, IA 51246	Electronic Service	No	OFF_SL_7-1199_1
Brian	Draxten	bhdraxten@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380498	Electronic Service	No	OFF_SL_7-1199_1
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_7-1199_1
Karlene	Fine	kfine@nd.gov	Industrial Commission of North Dakota	14th Floor 600 E. Boulevard Avenue, Dept. 405 Bismarck, ND 58505	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_7-1199_1
Bruce	Gerhardson	bgerhardson@otpco.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_7-1199_1
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58501	Electronic Service	No	OFF_SL_7-1199_1
Craig	McDonnell	Craig.McDonnell@state.mn.us	MN Pollution Control Agency	520 Lafayette Road St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_7-1199_1
Dalene	Monsebroten	dalene.monsebroten@nmpagency.com	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_7-1199_1
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Peter	Nelson	peter.nelson@americanexperiment.org	Center of the American Experiment	8441 Wayzata Boulevard Suite 350 Golden Valley, MN 55426	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_7-1199_1
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_7-1199_1
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_7-1199_1
Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_7-1199_1
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_7-1199_1
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_7-1199_1
Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative	P.O. Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_7-1199_1
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_7-1199_1
Kay	Schraeder	kschraeder@minnkota.com	Minnkota Power	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_7-1199_1
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_7-1199_1
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_7-1199_1
Elizabeth	Wefel	eawefel@flaherty-hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470 Saint Paul, MN 55103	Electronic Service	No	OFF_SL_7-1199_1
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_7-1199_1
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	OFF_SL_7-1199_1

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Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	SPL_SL_19-406_19-406
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	No	SPL_SL_19-406_19-406
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	SPL_SL_19-406_19-406

Xcel Energy®

401 Nicollet Mall
Minneapolis, MN 55401

September 6, 2019

—Via Electronic Filing—

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

RE: COMMENTS
ESTIMATED COSTS OF FUTURE CARBON DIOXIDE REGULATION ON ELECTRICITY GENERATION
DOCKET NOS. E999/DI-19-406 AND E999/CI-07-1199

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits these comments in response to the July 9, 2019 Request for Comments by the Minnesota Pollution Control Agency and Minnesota Department of Commerce, Division of Energy Resources (together, the Agencies). The Agencies invite comments on the range of cost estimates for the future cost of carbon dioxide (CO_2) regulation on electricity generation – specifically:

- Whether the currently established range of regulatory costs of CO_2 emissions of $5 to $25 per short ton remains reasonable, and if not, what range should be established and why;
- Whether 2025 is the appropriate threshold year for the application of the value range;
- Whether the application scenarios listed in the Commission's June 11, 2018 Order remain reasonable and appropriate; and
- Whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only, or in both 2020 and 2021.

In summary, we believe there is not a sufficient objective basis for revising the cost range or threshold year of application; retaining the current $5 to $25 range beginning in 2025 is reasonable. We further believe it would be reasonable to retain the application scenarios as currently ordered, and that it would be reasonable to apply all

of these parameters to electricity generation resource planning and acquisition proceedings initiated in both 2020 and 2021. In the event the federal or state CO_2 regulatory landscape shifts more quickly than expected, making aspects of these parameters no longer reasonable, the Commission would have discretion to reopen the docket sooner than 2021.

A. Background

Minn. Stat. § 216H.06 requires the Minnesota Public Utilities Commission to "establish an estimate of the likely range of costs of future carbon dioxide regulation on electricity generation." The estimate, which may be made in a Commission Order, must be used in all electricity generation resource acquisition proceedings. The Commission last updated its CO_2 regulatory cost range in January 2018, adopting (for resource planning and acquisition proceedings initiated in both 2018 and 2019) a range of $5 to $25 per short ton of CO_2, applied beginning in 2025.[1]

The CO_2 regulatory cost range is intended as a proxy for regulatory costs that utilities and their customers may face, beginning in the year they are expected to incur these costs, so that resource planning and acquisition decisions can consider the impacts of those costs on long-term capital investments. This cost range is meant to capture regulatory costs only – not societal damages from climate change, which are separately addressed using the CO_2 environmental cost range under Minn. Stat. §216B.2422, subd. 3. The CO_2 regulatory cost range is applied in resource planning models as a cost faced by any fossil generation resource, affecting both the dispatch of resources and expansion plan choices. Use of CO_2 regulatory costs results in a Present Value of Societal Cost (PVSC) ranking of resource plan alternatives that differs from the Present Value of Revenue Requirements (PVRR) ranking. All else equal, a portfolio with more CO_2-emitting generation will have a higher PVSC than one with less CO_2-emitting generation. PVSC is one of the factors utilities and the Commission consider in assessing preferred resource alternatives and portfolios.

When the Commission adopted the range of $5 to $25 per ton in its last update, it considered a variety of factors including actual CO_2 allowance prices at that time in the Western Climate Initiative (WCI) and Regional Greenhouse Gas Initiative (RGGI) carbon markets; modeling of possible CO_2 allowance prices under the EPA's Clean Power Plan (CPP); and the possibility that future regulatory approaches at the federal, regional, or state level might impose greater regulatory costs than the indicative carbon prices in WCI, RGGI, or the CPP.

[1] ORDER ESTABLISHING 2018 AND 2019 ESTIMATE OF FUTURE CARBON DIOXIDE REGULATION COSTS. *In the Matter of Establishing an Updated Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06*. June 11, 2018. Docket Nos. E-999/DI-17-53 and Docket No. E-999/CI-07-1199.

The Commission chose 2025 as the first year to require application of CO_2 regulatory costs, based on the belief that this is a reasonable estimate of when Minnesota utilities might face CO_2 regulatory compliance costs. The CPP had been stayed since February 2016, and EPA had proposed to repeal it. EPA had, at that time, not yet proposed a replacement rule, but it was reasonable to predict that since CPP compliance was required in 2022, any replacement rule promulgated several years after the CPP might give states until around 2025 to comply. The Commission noted its discretion to revise the cost range and start date in subsequent updates, if changed regulatory conditions made a lower or higher range, or sooner or later start date, more reasonable.

Finally, the Commission specified five scenarios that utilities must consider in all electricity generation resource acquisition proceedings during 2018 and 2019, while leaving to utilities which to use as reference assumptions and which as sensitivities:

1. Incorporate, for all years, the low end of the range of environmental costs for CO_2 as approved by the Commission in its January 3, 2018 Order Updating Environmental Costs in Docket No. E-999/CI-14-643;
2. Incorporate, for all years, the high end of the range of environmental costs for CO_2;
3. Incorporate the low end of the range of environmental costs for CO_2 but substituting, for planning years after 2024, the low end of the range of regulatory costs for CO_2 regulations, in lieu of environmental costs;
4. Incorporate the high end of the range of environmental costs for CO_2 but substituting, for planning years after 2024, the high end of the range of regulatory costs for CO_2 regulations, in lieu of environmental costs;
5. Consistent with the Commission decision in the Order Updating Environmental Costs, utilities shall include at least one scenario that excludes consideration of CO_2 costs.

Accordingly, the Company used all five scenarios in our recently filed 2020-2034 Upper Midwest Integrated Resource Plan. We selected option #4 – high CO_2 environmental costs through 2024, high CO_2 regulatory costs thereafter – as our reference assumption and ran the remaining scenarios as sensitivities.[2]

[2] *2020-2034 Upper Midwest Integrated Resource Plan*. Docket No. E002/RP-19-368. See Appendix F2, Strategist Modeling Assumptions and Inputs.

B. Changes in the Planning Landscape

There have been changes in the carbon regulatory landscape since the Commission's last update. We summarize these below, but conclude that enough remains uncertain about the shape and timing of federal and state carbon regulation that it would be reasonable to retain the current range and year of application at this time.

1. Repeal of CPP and promulgation of Affordable Clean Energy rule

EPA in August 2018 proposed, and in July 2019 finalized, a rule to repeal and replace the CPP: *Emission Guidelines for Greenhouse Gas Emissions from Existing Electric Utility Generating Units*, which EPA called the "Affordable Clean Energy" (ACE) rule.[3] The ACE rule differs from the CPP in several key respects. First, it is premised on a much narrower interpretation of EPA's authority under section 111(d) of the Clean Air Act. EPA maintains that in defining the "best system of emission reduction" (BSER) for regulated electricity generating units, EPA can only consider measures implemented at the units themselves – not the much broader array of measures throughout the electricity system on which the CPP was premised. EPA defines BSER as heat rate improvement (HRI) at coal units, for which it lists seven candidate technologies[4] that states must evaluate in setting unit-specific performance standards and drafting ACE compliance plans. Second, the ACE rule only applies to coal units, not natural gas-fired or other units. Third, for compliance timeframes, ACE requires state plans to be submitted by July 8, 2022, and compliance at the regulated coal units by July 2024 – so relative to the CPP, moves back by at least two years the timeframe when regulatory costs, if any, would be incurred.

Most importantly for this docket, the ACE rule provides little flexibility to consider measures other than HRI for reducing carbon emissions; it also explicitly rules out CO_2 trading, which had been a core compliance strategy Minnesota and other states were considering for the CPP. As such, whereas in its last update CO_2 allowance prices – actual in WCI and RGGI, modeled for the CPP – were a reasonable proxy for CO_2 regulatory costs, they are not a reasonable proxy for ACE compliance.

This is not to suggest the ACE rule will impose no costs. Investments in HRI on coal units, if ultimately required, will have a cost. However, the Company is proposing to retire all of its remaining Upper Midwest coal units either before (in the case of Sherco 2) or soon after (in the case of Sherco 1, King and Sherco 3) the year when

[3] 84 *Fed. Reg.* 32,520, July 8, 2019.

[4] Neural network/intelligent sootblowers, boiler feed pumps, air heater and duct leakage control, variable frequency drives, blade path upgrades for steam turbines, redesign/replace economizer, and improved operating and maintenance practices.

ACE compliance could be required. Section 111(d) of the Clean Air Act gives states discretion to consider "among other factors, the remaining useful life of the existing source to which such standard applies"[5] when they establish standards of performance for coal units in ACE compliance plans.

Those "other factors" include reasonable cost, payback period, physical constraints, whether HRI measures have already been implemented, and others. It is possible that consideration of remaining useful life and cost reasonableness would allow a coal unit owner to propose retiring a unit in lieu of implementing HRI. Specifically, the agency responsible for developing the ACE compliance plan (in this case, the Minnesota Pollution Control Agency) would evaluate HRI on all affected coal units, but could conclude that HRI investments on coal units with a remaining useful life of only a few years are not reasonable considering the short timeframe over which those investments would need to be recovered, and/or that requiring HRI would extend the life of those units. The MPCA might propose a committed unit retirement date in lieu of requiring HRI. In this case, the cost of compliance with ACE would not be zero, but would essentially be absorbed within the resource planning process.

Finally, another issue that makes quantifying ACE compliance costs in $/ton terms difficult is that it is possible HRI, while reducing CO_2 rate (pounds per MWh), may not in fact reduce total CO_2. This could be the case if HRI makes coal units more efficient, leading them to be dispatched more (termed the "rebound effect"). If this is the case, $/ton of CO_2 reduced would not be a meaningful metric for the ACE rule.

Considering these uncertainties, we do not propose that the Commission base its $/ton CO_2 regulatory cost range on estimated ACE compliance costs.

2. Federal legislation

No federal framework regulating carbon emissions from the electric sector has passed, or even gained significant traction, since the Commission's last update. There have been carbon tax proposals – proposals to tax CO_2 embedded in carbon-based fuels, upstream at the point these fuels enter the economy, and (in some proposals) return some or all CO_2 tax revenues to households. None has gained sufficient support to advance in Congress. There have also been proposals to establish a federal Clean Energy Standard: this would not impose a direct $/ton cost on CO_2 emissions, but would require retail electric suppliers to provide an increasing share of retail electricity from carbon-free resources.[6] Such proposals have likewise not advanced

[5] See Clean Air Act section 111(d)(1) at https://www.law.cornell.edu/uscode/text/42/7411.
[6] For example S. 1359, the *Clean Energy Standard Act of 2019*, introduced by Senators Tina Smith (D-MN) and Ben Ray Luján (D-NM) in May 2019.

beyond being introduced and referred to committee. At the present time there is no concrete federal legislative framework on which to base CO_2 regulatory costs.

3. State legislation

The 2019 legislative session in Minnesota saw robust discussion of energy policy proposals, including the Walz-Flanagan Administration's "One Minnesota Path to Clean Energy." Proposed legislation to implement this framework included a "Clean Energy First" preference in resource planning and acquisition, a mandate of 100 percent clean electricity by 2050, and energy optimization provisions broadening the existing Conservation Improvement Program. A goal of 100 percent clean (i.e. carbon-free) electricity does not impose a $/ton cost on CO_2 emissions directly, but it would favor non-emitting resources over emitting.

These proposals give an indication of the Administration's energy policy priorities and the approach that may be pursued in future legislative sessions. It is also possible that Minnesota could regulate CO_2 through other means, which could include pricing carbon directly. However, at present there is no concrete state legislative or regulatory framework on which to base an update to the CO_2 regulatory costs range.

4. Update to RGGI and WCI carbon prices

The WCI and RGGI carbon markets have continued to operate since the Commission's last update. Since CO_2 allowance prices in these markets were a factor considered in the last update, we provide an updated summary of the CO_2 allowance auction clearing prices in those markets over the last two years. This illustrates there has not been a significant change in these prices since the last update.[7,8]

[7] WCI market CO_2 allowance auction results are posted on the California Air Resources Board website at https://ww3.arb.ca.gov/cc/capandtrade/auction/auction.htm. The *Summary of Auction Settlement Prices and Results* shows results from all auctions to date. See the "Current Auction Settlement Price" column, which gives the clearing price in that auction for current-vintage allowances. The California market operates in metric tonnes, so we have provided the equivalent $/short ton in the table based on 0.907 metric tons = 1 short ton.

[8] RGGI market CO_2 allowance auction results are posted on the RGGI website at http://rggi.org/market/co2_auctions/results, under "Allowance Prices and Volumes." The RGGI market operates in short tons.

Table 1: CO_2 Allowance Auction Clearing Prices Summary – WCI and RGGI

			Clearing Price	
Market	Auction No.	Date of Auction	$/metric tonne	$/short ton
WCI	20	Aug-19	17.16	$15.57
	19	May-19	17.45	$15.83
	18	Feb-19	15.73	$14.27
	17	Nov-18	15.31	$13.89
	16	Aug-18	15.05	$13.65
	15	May-18	14.65	$13.29
	14	Feb-18	14.61	$13.25
	13	Nov-17	15.06	$13.66
	12	Aug-17	$14.75	$13.38
		Average over last two years:		**$14.09**
RGGI				
	44	Jun-19		$5.62
	43	Mar-19		$5.27
	42	Dec-18		$5.35
	41	Sep-18		$4.50
	40	Jun-18		$4.02
	39	Mar-18		$3.79
	38	Dec-17		$3.80
	37	Sep-17		$4.35
		Average over last two years:		**$4.59**

B. Questions Posed by the Agencies

The Agencies request comment on four specific topics, to which we respond below.

1. *Whether the currently established range of regulatory costs of CO_2 emissions of $5 to $25 per short ton remains reasonable, and if not, what range should be established and why*

The Company believes it would be reasonable to retain the current CO_2 regulatory costs range of $5 to $25 per short ton for the present update. As noted above, it is possible the ACE rule will impose CO_2 regulatory costs, and these could differ from the current range. However, these costs are difficult to quantify in $/ton terms, because (1) the ACE rule does not allow CO_2 pricing via markets, (2) the rule may not actually reduce CO_2 emissions from coal units, and (3) it is possible the rule will not impose a cost that can be attributed to the rule itself. This could be the case if the statutory consideration of remaining useful life allows compliance to be achieved by retiring coal units in lieu of implementing HRI; in that scenario, compliance costs

would not be zero but would essentially be absorbed within the integrated resource planning process.

Other than ACE, no federal legislative framework regulating CO_2 emissions from electricity has been enacted or gained sufficient traction to serve as a basis for estimating CO_2 regulatory costs. And while there is clearly interest in Minnesota in reducing carbon emissions from all sectors of the economy, no state legislative framework regulating CO_2 emissions from electricity has yet been enacted to serve as a basis for estimating CO_2 regulatory costs.

Finally, CO_2 allowance prices in WCI and RGGI remain similar to what they were at the time of the last update. Neither market has seen allowance prices as high as $25 per short ton; however, as with the last update, we cannot rule out the possibility that Minnesota might take a regulatory approach that imposes a higher cost than the CO_2 allowance prices in WCI and RGGI.

Considering these uncertainties, we believe there is not a sufficient objective basis for revising the cost range, and retaining the current range is reasonable.

2. Whether 2025 is the appropriate threshold year for the application of the value range

The threshold year of application is intended to reflect the timeframe when the Commission believes utilities and their customers may begin incurring a CO_2 regulatory compliance cost, which could be under federal and/or state regulation.

The ACE rule requires compliance beginning in 2024. It is possible this could be delayed, due to litigation and a potential stay of the rule during litigation, but that is unknown at this time.[9] It is also possible Minnesota may implement some form of state-level carbon regulation, but the compliance timeframe is speculative at this time. Because we cannot rule out state or federal CO_2 regulatory costs being borne as early as 2025, we believe it would be reasonable to retain the current threshold year. If new approaches to federal or state level carbon regulation are enacted and require compliance sooner or later than 2025, the Commission could reopen this docket.

3. Whether the application scenarios listed in the Commission's June 11, 2018 Order remain reasonable and appropriate

[9] As of now, challenges to the ACE rule have been filed at the U.S. Court of Appeals for the District of Columbia Circuit by the American Lung Association, American Public Health Association, and Clean Air Task Force (*American Lung Ass'n et al. v. EPA*, No. 19-1140); a group of states and cities led by New York, including Minnesota and Wisconsin (*New York et al. v. EPA*, No. 19-1165); and a coalition of environmental groups (*Appalachian Mountain Club et al. v. EPA*, No. 19-1166). Seven organizations have filed motions to intervene in support of the ACE rule.

The Company believes the five application scenarios required in the Commission's June 11, 2018 Order remain reasonable. We have applied these scenarios in our recently filed 2020-2034 Integrated Resource Plan, where we used high CO_2 environmental costs through 2024 and high CO_2 regulatory costs thereafter as our reference assumption, and ran the remaining scenarios as sensitivities.

4. *Whether the Commission's update should apply to electricity generation resource planning and acquisition proceedings initiated in 2020 only, or in both 2020 and 2021.*

We believe it would be reasonable to apply the current update to electricity generation resource planning and acquisition proceedings initiated in both 2020 and 2021. In the event the federal or state CO_2 regulatory landscape shifts more quickly than expected, making either the $5 to $25 cost range or 2025 application year no longer appear reasonable, the Commission would have discretion to reopen the docket sooner than 2021.

We appreciate the opportunity to provide these comments. We have electronically filed this document with the Minnesota Public Utilities Commission, and copied parties on the attached service list. Please contact Nicholas Martin at (612) 330-6255 or Nicholas.F.Martin@xcelenergy.com, or me at (612) 330-6064 or Bria.E.Shea@xcelenergy.com, if you have any questions.

Sincerely,

/s/

BRIA E. SHEA
DIRECTOR, RESOURCE PLANNING AND STRATEGY
NSPM REGULATORY AFFAIRS

Enclosures

c: Service List

CERTIFICATE OF SERVICE

I, Lynnette Sweet, 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. E999/DI-19-406 AND E999/CI-07-1199

Dated this 6th day of September 2019

/s/

_____

Lynnette Sweet

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_7-1199_1
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
Riley	Conlin	riley.conlin@stoel.com	Stoel Rives LLP	33 S. 6th Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Stacy	Dahl	sdahl@minnkota.com	Minnkota Power Cooperative, Inc.	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_7-1199_1
Curt	Dieren	curt.dieren@dgr.com	L&O Power Cooperative	1302 S Union St Rock Rapids, IA 51246	Electronic Service	No	OFF_SL_7-1199_1
Brian	Draxten	bhdraxten@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380498	Electronic Service	No	OFF_SL_7-1199_1
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_7-1199_1
Karlene	Fine	kfine@nd.gov	Industrial Commission of North Dakota	14th Floor 600 E. Boulevard Avenue, Dept. 405 Bismarck, ND 58505	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_7-1199_1
Bruce	Gerhardson	bgerhardson@otpco.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_7-1199_1
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Kimberly	Hellwig	kimberly.hellwig@stoel.com	Stoel Rives LLP	33 South Sixth Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58501	Electronic Service	No	OFF_SL_7-1199_1
Craig	McDonnell	Craig.McDonnell@state.mn.us	MN Pollution Control Agency	520 Lafayette Road St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_7-1199_1
Dalene	Monsebroten	dalene.monsebroten@nmpagency.com	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_7-1199_1
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Peter	Nelson	peter.nelson@americanexperiment.org	Center of the American Experiment	8441 Wayzata Boulevard Suite 350 Golden Valley, MN 55426	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_7-1199_1
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_7-1199_1
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_7-1199_1
Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_7-1199_1
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Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_7-1199_1
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_7-1199_1
Elizabeth	Wefel	eawefel@flaherty-hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470 Saint Paul, MN 55103	Electronic Service	No	OFF_SL_7-1199_1
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_7-1199_1
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Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	SPL_SL_19-406_19-406

CERTIFICATE OF SERVICE

I, Sharon Ferguson, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at St. Paul, Minnesota.

Minnesota Department of Commerce
Analysis and Recommendations

Docket No. E999/CI-07-1199 and E999/DI-19-406

Dated this **17th** day of **December 2019**

/s/Sharon Ferguson

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Jon	Brekke	jbrekke@grenergy.com	Great River Energy	12300 Elm Creek Boulevard Maple Grove, MN 553694718	Electronic Service	No	OFF_SL_7-1199_1
Christina	Brusven	cbrusven@fredlaw.com	Fredrikson Byron	200 S 6th St Ste 4000 Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Generic Notice	Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Office of the Attorney General-DOC	445 Minnesota Street Suite 1800 St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
Riley	Conlin	riley.conlin@stoel.com	Stoel Rives LLP	33 S. 6th Street Suite 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Stacy	Dahl	sdahl@minnkota.com	Minnkota Power Cooperative, Inc.	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1
David	Dahlberg	davedahlberg@nweco.com	Northwestern Wisconsin Electric Company	P.O. Box 9 104 South Pine Street Grantsburg, WI 548400009	Electronic Service	No	OFF_SL_7-1199_1
Curt	Dieren	curt.dieren@dgr.com	L&O Power Cooperative	1302 S Union St Rock Rapids, IA 51246	Electronic Service	No	OFF_SL_7-1199_1
Brian	Draxten	bhdraxten@otpco.com	Otter Tail Power Company	P.O. Box 496 215 South Cascade Street Fergus Falls, MN 565380498	Electronic Service	No	OFF_SL_7-1199_1
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	Yes	OFF_SL_7-1199_1
Karlene	Fine	kfine@nd.gov	Industrial Commission of North Dakota	14th Floor 600 E. Boulevard Avenue, Dept. 405 Bismarck, ND 58505	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Edward	Garvey	garveyed@aol.com	Residence	32 Lawton St Saint Paul, MN 55102	Electronic Service	No	OFF_SL_7-1199_1
Bruce	Gerhardson	bgerhardson@otpco.com	Otter Tail Power Company	PO Box 496 215 S Cascade St Fergus Falls, MN 565380496	Electronic Service	No	OFF_SL_7-1199_1
Todd J.	Guerrero	todd.guerrero@kutakrock.com	Kutak Rock LLP	Suite 1750 220 South Sixth Street Minneapolis, MN 554021425	Electronic Service	No	OFF_SL_7-1199_1
Casey	Jacobson	cjacobson@bepc.com	Basin Electric Power Cooperative	1717 East Interstate Avenue Bismarck, ND 58501	Electronic Service	No	OFF_SL_7-1199_1
Craig	McDonnell	Craig.McDonnell@state.mn.us	MN Pollution Control Agency	520 Lafayette Road St. Paul, MN 55101	Electronic Service	No	OFF_SL_7-1199_1
David	Moeller	dmoeller@allete.com	Minnesota Power	30 W Superior St Duluth, MN 558022093	Electronic Service	No	OFF_SL_7-1199_1
Dalene	Monsebroten	dalene.monsebroten@nmpagency.com	Northern Municipal Power Agency	123 2nd St W Thief River Falls, MN 56701	Electronic Service	No	OFF_SL_7-1199_1
Andrew	Moratzka	andrew.moratzka@stoel.com	Stoel Rives LLP	33 South Sixth St Ste 4200 Minneapolis, MN 55402	Electronic Service	No	OFF_SL_7-1199_1
Peter	Nelson	peter.nelson@americanexperiment.org	Center of the American Experiment	8441 Wayzata Boulevard Suite 350 Golden Valley, MN 55426	Electronic Service	No	OFF_SL_7-1199_1
David	Niles	david.niles@avantenergy.com	Minnesota Municipal Power Agency	220 South Sixth Street Suite 1300 Minneapolis, Minnesota 55402	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Samantha	Norris	samanthanorris@alliantenergy.com	Interstate Power and Light Company	200 1st Street SE PO Box 351 Cedar Rapids, IA 524060351	Electronic Service	No	OFF_SL_7-1199_1
Russell	Olson	rolson@hcpd.com	Heartland Consumers Power District	PO Box 248 Madison, SD 570420248	Electronic Service	No	OFF_SL_7-1199_1
Mary Beth	Peranteau	mperanteau@wheelerlaw.com	Wheeler Van Sickle & Anderson SC	44 E. Mifflin Street, 10th Floor Madison, WI 53703	Electronic Service	No	OFF_SL_7-1199_1
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_7-1199_1
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_7-1199_1
Robert K.	Sahr	bsahr@eastriver.coop	East River Electric Power Cooperative	P.O. Box 227 Madison, SD 57042	Electronic Service	No	OFF_SL_7-1199_1
Christopher	Schoenherr	cp.schoenherr@smmpa.org	SMMPA	500 First Ave SW Rochester, MN 55902-3303	Electronic Service	No	OFF_SL_7-1199_1
Kay	Schraeder	kschraeder@minnkota.com	Minnkota Power	5301 32nd Ave S Grand Forks, ND 58201	Electronic Service	No	OFF_SL_7-1199_1
Eric	Swanson	eswanson@winthrop.com	Winthrop & Weinstine	225 S 6th St Ste 3500 Capella Tower Minneapolis, MN 554024629	Electronic Service	No	OFF_SL_7-1199_1

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Lynnette	Sweet	Regulatory.records@xcelenergy.com	Xcel Energy	414 Nicollet Mall FL 7 Minneapolis, MN 554011993	Electronic Service	No	OFF_SL_7-1199_1
Pat	Treseler	pat.jcplaw@comcast.net	Paulson Law Office LTD	4445 W 77th Street Suite 224 Edina, MN 55435	Electronic Service	No	OFF_SL_7-1199_1
Elizabeth	Wefel	eawefel@flaherty-hood.com	Flaherty & Hood, P.A.	525 Park St Ste 470 Saint Paul, MN 55103	Electronic Service	No	OFF_SL_7-1199_1
Robyn	Woeste	robynwoeste@alliantenergy.com	Interstate Power and Light Company	200 First St SE Cedar Rapids, IA 52401	Electronic Service	No	OFF_SL_7-1199_1
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	OFF_SL_7-1199_1

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Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	SPL_SL_19-406_19-406
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	No	SPL_SL_19-406_19-406
Daniel P	Wolf	dan.wolf@state.mn.us	Public Utilities Commission	121 7th Place East Suite 350 St. Paul, MN 551012147	Electronic Service	No	SPL_SL_19-406_19-406