COMMERCE DEPARTMENT

MINNESOTA POLLUTION CONTROL AGENCY

February 28, 2018

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

RE: **Errata from the Minnesota Department of Commerce and Minnesota Pollution Control Agency in the Matter of Establishing an Updated 2018 Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. § 216H.06.**

Dear Mr. Wolf:

Please find attached the corrected *Analysis and Recommendations* originally filed on January 19, 2018. Attachment 1 was inadvertently omitted from the original submittal.

Sincerely,

/s/ KATE O'CONNELL
Manager, Energy Planning & Advocacy
Commerce Department

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

KO/FK/ja
Attachment

COMMERCE DEPARTMENT

MINNESOTA POLLUTION CONTROL AGENCY

January 19, 2018

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

RE: **In the Matter of Establishing an Updated 2018 Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. § 216H.06.**
Docket No. E999/CI-07-1199
Docket No. E999/CI-17-53

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 2018 update to the range of cost estimates for the future cost of carbon dioxide (CO_2) regulation on electricity generation, as required by Minn. State. § 216BH.06.

As detailed in the attached Analysis and Recommendations, the Agencies recommend that the Minnesota Public Utilities Commission (Commission) establish the 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/ KATE O'CONNELL
Manager, Energy Planning & Advocacy
Commerce Department

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

KO/FK/lt
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.

The Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Commerce, Division of Energy Resources (Commerce) (collectively, the Agencies) requested comments on the likely cost range, the date the costs are expected to be incurred, and the relationship between the regulatory cost range and the externality cost values most recently established in Docket No. E999/CI-14-643. Comments were received from the following stakeholders:

- Minnesota Power (MP)
- Otter Tail Power (OTP)
- Xcel Energy
- Minnesota Large Industrial Group (MLIG)
- Clean Energy Organizations (CEO)

A copy of the comments received is included in Attachment 1.

II. MOST RECENT COMMISSION ORDER

In its August 5, 2016 *Order Establishing 2016 and 2017 Estimate of Future Carbon Dioxide Regulation Costs*, the Commission reaffirmed its prior estimate of the cost of carbon regulation ($9 - $34 per ton emitted), and found that utilities would likely not bear those costs before 2022.

As to the estimated range, the Commission stated:

> Based on the best information in the record and the recommendations of the parties, the Commission reaffirms its estimate that the likely range of costs of future CO_2 regulation on electricity generation is between $9 and $34 per ton of CO_2 emitted.

As to timing, the Commission stated:

> Minnesota statute does not restrict the Commission to considering only the EPA's new rules for purposes of estimating the cost of CO_2 regulation on electricity generation. Nonetheless, the EPA's rules are the most developed and comprehensive policy governing CO_2 emissions from generators available. As a result, the Commission will rely on the schedule for implementing these rules as a proxy for when CO_2 regulation in general would be likely to take effect.

The Commission declined to reassess the relationship between the future cost of carbon and the externality values.

III. AGENCIES' ANALYSIS

A. REGULATORY COST RANGE

In our request for comments, the Agencies noted that recent developments in the carbon market may no longer support the current range of $9 to $34 per ton of CO_2. The two carbon markets in the U.S., the Regional Greenhouse Gas Initiative (RGGI) and the California Cap and Trade program, have recently seen declines in their auction prices to less than three dollars per ton CO_2e for RGGI (June 2017) and 14 dollars per ton CO_2e for California (May 2017). The RGGI price is the lowest it has been over the past four years.

In response, the electric utilities suggested that third-party vendor forecast data that included only United States or North American markets could be used to develop the estimated cost range. Also, the range could be based on or validated by carbon trading markets (North American or European Union). Synapse Energy Economics, Inc. is one such provider of research, analysis and regulatory support that regularly produces a carbon price forecast. Its most recent forecast (March 2016) projects carbon prices beginning in 2022 with a range of $15 to $25 per ton of CO_2, and increasing gradually in each subsequent year.

The CEO also suggested using externality values until regulation is again imminent.[1]

The MLIG recommended that the Commission defer re-evaluation for at least one year.

The Agencies note 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. However, carbon price forecasts from private energy consulting firms can be costly, and while Synapse offers its forecasts for free, at this time the most recent forecast is from March 2016, which was prior to the most recent federal regulatory developments (i.e., Synapse's March 2016 forecast may be high).

[1] Minn. Stat. § 216H.06 states that the likely cost range of future CO_2 regulation "must be used in all electricity generation resource acquisition proceedings." Therefore, applying only the externality values until regulation is imminent would not comply with the statute.

Synapse has indicated the intention to produce a new forecast within the next few months that reflects more recent developments in current and future expected carbon emissions regulation.

Basing 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). However, carbon market costs are current costs and do not reflect likely future values.

The Agencies conclude that a blended approach to setting the cost range is appropriate, given the advantages and drawbacks of using only current or only forecasted carbon market prices. A blended approach would yield a range of around $5 (average of recent RGGI prices, the lower of the two carbon markets) to $25 (the upper end of the most recent Synapse forecast) per ton of CO_2. This is a broad range that reflects the current uncertainty in the federal regulatory landscape. If this uncertainty diminishes in the coming years, the Agencies would expect to revise and narrow this range in future recommendations.

B. DATE OF APPLICATION

The Agencies asked that stakeholders discuss how the Commission should address regulatory uncertainty, particularly in terms of the expected date that utilities should reflect the cost of CO_2 regulation in their analyses. The U.S. Supreme Court's stay of the Clean Power Plan, blocking its implementation for the time being, brings high uncertainty as to whether and when the Clean Power Plan would be put into effect. Moreover, on March 28, 2017 the Presidential Executive Order of Promoting Energy Independence and Economic Growth called for the repeal of the Clean Power Plan (Section 111(d) of the Clean Air Act), further indicating that its implementation is not expected, at least in the foreseeable future. Shortly thereafter, the U.S. Environmental Protection Agency (EPA) declared its intention to review the Clean Power Plan as well as Section 111(b) new source performance standards with the potential to suspend, revise or rescind these regulations. On October 10, 2017, the EPA issued its proposed repeal of the Clean Power Plan without a proposed alternative to regulate CO_2 emissions from existing power plants. There may be changes to EPA's proposal in response to comments and the repeal may face legal challenges. Given the uncertainty of the outcome, the Agencies anticipate that the earliest electric utilities will be required by federal regulations to reduce their CO_2 emissions is starting in 2025, and potentially even later.

The Agencies also noted that Minnesota's Next Generation Energy Act has established ambitious statewide greenhouse gas (GHG) emissions reduction goals.[2] While the electricity generation sector appears to be on track to meet those goals, the state as a whole is struggling to achieve the emissions reduction goals.

In response, stakeholders suggested effective dates set at years as early as 2022 (consistent with the GHG reduction goal) and as late as 2035. The CEO noted that there would be no need to set a date if

[2] The goals are to reduce such emissions to 30% below 2005 emissions by 2025 and 80% below the 2005 baseline by 2050.

externality values (rather than regulatory cost values) are were applied during the entire planning horizon.

The earliest the Agencies anticipate that federal CO_2 regulations would create enforceable regulatory requirements on electric generation from fossil fuel generators (the Clean Power Plan or a replacement) is 2025, and potentially even later. While the state's GHG emissions reduction goals can be seen as a factor, they are goals and not requirements. Therefore, the Agencies recommend that the Commission extend the initial application date from 2022 to 2025.

C. RELATIONSHIP WITH ENVIRONMENTAL COST OF CO_2

In the proceeding used to establish the current effective date and cost of carbon regulation, a stakeholder requested that the Commission re-examine the relationship between the regulatory cost of CO_2 established under Minn. Stat. § 216H.06 and the environmental cost of CO_2 established under Minn. Stat. § 216B.2422, subd. 3. In response, the Commission stated the following in its August 5, 2016 Order:

> . . . the Commission sees no advantage in attempting to reconcile its estimate of CO_2 regulatory costs and its estimate of CO_2 environmental costs before it has clarified its method of calculating environmental costs under Minn. Stat. § 216B.2422, subd. 3.

The Commission made its determination regarding environmental costs at three agenda meetings in July 2016.[3] Therefore, the Agencies requested stakeholders to indicate whether there is a basis for the Commission to re-assess how the regulatory cost value and externality cost value ranges are applied, and if so, what application options should be considered.

As a reminder, in its December 21, 2007 *Order Establishing Estimate of Future Carbon Dioxide Regulation Costs*, the Commission stated the following:

> While the calculation of externality values under § 216B.2422 is not directly comparable to the estimate of regulatory costs under § 216H.06, they both reflect steps to account for the burdens that CO_2 emissions impose on third parties. When a utility calculates the cost of emitting another ton of CO_2 in any given year, therefore, it would be inappropriate to use both the CO_2 externality value and the CO_2 regulatory cost estimate. But utilities should continue to apply the Commission's CO_2 externality values otherwise.

Further, Order Point 3 states:

[3] The Order was issued January 3, 2018.

> In estimating costs associated with CO_2 emissions for the purpose of analyzing electricity generation resources, a utility need not apply CO_2 externality costs derived pursuant to § 216B.2422, subdivision 3, to CO_2 emitted in any year to which the utility applies the CO_2 regulation costs derived pursuant to Minnesota Statutes § 216H.06.

While utilities have interpreted the Commission's guidance in different ways, an accepted practice has been to apply the externality value range in the years prior to the year in which the Commission has determined that the regulatory cost value range should start being applied, with only the regulatory cost value range applied in the remaining years of the planning period.

In response to the Agencies' request for a basis to change how the value ranges are applied, the CEO indicated that "our understanding of the damages of climate change and the Commission's recently-updated externality values together warrant a new approach to utility planning for reducing carbon emissions." The CEO offered two options: (1) apply only the externality values in all planning years, or (2) continue to assume regulatory costs begin to be incurred in 2022, applying the regulatory cost range established according to the Synapse carbon pricing forecast.

The Agencies note that Minnesota Statutes § 216H.06 states, "The estimate ... must be used in all electricity generation resource acquisition proceedings." Additionally, Minnesota Statutes § 216B.2422, subdivision 3, states "… A utility shall use the values established by the commission … when evaluating and selecting resource options in all proceedings before the commission, including resource plan …." Therefore, it appears that the CEO's first option would not comply with statutory requirements of Minnesota Statutes § 216H.06 because only the externality value ranges established under Minnesota Statutes § 216B.2422, subdivision 3, would be used. The second option offered by the CEO is not a methodological change in how the two cost ranges are currently applied.

No other stakeholder identified a basis for a re-assessment for the application of the value ranges. The MLIG, MP, OTP, and Xcel recommended no change to how the values are applied. However, Xcel did suggest the following:

> Options the Commission may want to consider for the high and low sensitivities in the regulatory cost period include: (1) the high and low externality values for each respective year; (2) the high and low of the regulatory cost range that the Commission establishes; or (3) the single highest CO_2 cost/value and the single lowest CO_2 cost/value low, without regard to whether it is a regulatory cost or externality value. [Footnote omitted]

Again, the Agencies note that Xcel's option 1, as a stand-alone option, would meet the requirement for Minnesota Statutes § 216B.2422, subdivision 3, but not comply with Minnesota Statutes § 216H.06. Applying both options 1 and 2 would comply with both Minnesota Statutes §§ 216H.06 and 216B.2422, and would not conflict with the Commission's guidance in its December 21, 2007 Order. The Agencies

would not object to a utility conducting the four modeling runs in options 1 and 2, but note that the differences between the two runs in option 1 and the two runs in option 2 may not be significant enough to warrant the extra time and effort.

As to Xcel's option 3, mixing the cost ranges is not theoretically sound. As the Commission noted in its December 21, 2007 Order, while both ranges are intended to "reflect steps to account for the burdens that CO_2 emissions impose," each measures different things. The externality value range reflects third-party damages, while the regulatory cost of carbon range is intended to capture the expected cost to the utility to comply with future emissions regulations (expected internal cost). How the two value ranges are modeled in resource planning and acquisition proceedings reflects this difference. The cost of future carbon regulation is modeled as an internal cost (on an ex ante basis), and therefore impacts the resources the model selects to be added or retired. In contrast, the externality value range is applied on an ex post basis once the model selects the resource package, and therefore impacts the estimated cost of the various resource portfolios, but does not influence which resources the model selects to include in the portfolios. Therefore, the Agencies do not support using a blended range consisting of both external and future internal costs.

IV. CONCLUSIONS AND RECOMMENDATIONS

The Agencies recommend that the Commission establish the 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 recommend no change to the way the value ranges established under Minn. Stat. §§ 216B.2422 and 216H.06 are applied.

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-17-53

Dated this 19th day of January 2018

/s/Sharon Ferguson

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STATE OF MINNESOTA
BEFORE THE PUBLIC UTILITIES COMMISSION

In the Matter of Establishing an Updated 2016 Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. §216H.06	Docket No. E999/DI-17-53 Related Docket No. E999/CI-07-1199

CLEAN ENERGY ORGANIZATIONS' COMMENTS

On Behalf Of

Fresh Energy
Minnesota Center for Environmental Advocacy
Sierra Club
Wind on the Wires

September 22, 2017

TABLE OF CONTENTS

I. BACKGROUND

Minnesota Statute Section 216H.06 states:

> 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.

The Commission's August 5, 2016 *Order Establishing 2016 and 2017 Estimate of Future Carbon Dioxide Regulation Costs* determined that for 2016 and 2017 the range of costs would remain between $9 and $34 per ton of CO_2, and that utilities would begin applying the values in 2022. The current regulatory cost estimates are based on cap and trade programs that seemed likely in 2007 and 2009.[1] Those costs began being incorporated in 2016, which was based on Clean Power Plan implementation.[2]

[1] *See In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06*, "Joint Comments of the Izaak Walton League of America – Midwest Office, Fresh Energy, The Union of Concerned Scientists, and Minn. Ctr. for Envt'l Advoc., PUB. UTIL. COMM'N, E999/CI-07-1199, 8, 13 (Oct. 8, 2007) (proposing a high estimate value of $30.20, which is very close to the current value, based on a 2005 Synapse report that examined cap and trade programs that had been suggested in Congress); *In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minn. Stat. § 216H.06*, Letter from Paul Eger, Comm'r, MPCA, & William Glahn, Dir., Off. of Energy Security, to Dr. Burl W. Haar, Exec. Sec'y, Minn. Pub. Util. Comm'n, MINN. PUB. UTIL. COMM'N, E999/CI-07-1199, 3 (Mar. 27, 2009) (supporting the now-adopted regulatory values with a proposed Presidential budget that noted a cap and trade program).

[2] *In the Matter of Establishing an Updated 2016 Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. § 216H.06*, "Analysis and Recommendations of the Minn. Dep't of Comm. and the Minn. Pollution Control Agency", E999/DI-15-708, E999/CI-07-1199, 3 (March 29, 2016).

At this time, however, federal legislative cap and trade program does not appear imminent. Moreover, there is significant uncertainty surrounding the implementation of the Clean Power Plan.[3] As such, the Agencies have requested comments on the following topics:

- What approaches could be used within the next few months to develop updated regulatory cost value ranges for CO_2 emissions?
    - If existing carbon trading markets are used as a reference, should only markets located in the U.S./North America be considered or should all global values be considered?
- Given the United States Supreme Court's stay of the Clean Power Plan implementation and the United States Environmental Protection Agency's (USEPA) stated intention to replace the Clean Power Plan as well as other considerations, what is a reasonable date (year) in which utilities can be expected to incur regulatory CO_2 emission costs?
- Is there a basis for the Commission to re-assess its decision to apply only the regulatory cost value or the externality value, but not both, to emissions in a given planning year? If so, please provide the basis.
- If there is a basis for the Commission to re-assess how the regulatory cost value and the externality value ranges are applied, what options should the Commission consider?

In response to this request, the Minnesota Center for Environmental Advocacy, Fresh Energy, Sierra Club, and Wind on the Wires (collectively, the Clean Energy Organizations) provide the following comments.

II. APPROACHES TO UPDATE REGULATORY COST VALUE RANGES FOR CO_2 EMISSIONS.

Carbon pricing can take many forms, all of which represent an attempt to correct what is fundamentally a market failure. When external costs are not included in the price of production,

[3] As discussed below, we believe that until the Clean Power Plan is replaced or the uncertainty surrounding its implementation is resolved through likely litigation, the rule should still be considered as a helpful and relevant data point for the Agencies.

overconsumption is the usual result. Calculating a damage-cost estimate, and adding that to the price of generating electricity from fossil fuels, is one way to correct for this market failure.[4] Cap-and-trade markets are another.[5]

Consistent with our 2016 recommendations in this proceeding, a better approach to using existing cap-and-trade markets would be to adopt a regulatory cost that is based on up-to-date carbon pricing forecasts. If the agencies were to adopt this approach, we would recommend either the mid-case or range of forecasts reflected in Synapse Energy Economics' most recent CO_2 Price Forecasts. The Synapse forecast is based upon a comprehensive assessment of existing carbon markets throughout the country, state and federal policies, modeling, and forecasts that utilities across the country are using in their resource planning.[6] The Synapse forecast reflects a reasonable range of expectations regarding future efforts to limit greenhouse gas emissions and is updated regularly to include the Clean Power Plan and other relevant regulations. The Synapse forecasts also includes low, mid, and high case projections for CO_2 prices out to 2040 based on thorough analysis of proposed federal regulatory measures, ongoing state and regional policies, the price of CO_2 already being factored into federal rulemakings, recent CO_2 price forecasts from utility IRPs, and policy analysis and modeling from the research community.

While the adoption of a forecast like the Synapse carbon price forecast is consistent with resource planning around the country and is supported by extensive analysis, the Clean Energy

[4] Frank Ackerman & Elizabeth A. Stanton, *The Social Cost of Carbon*,53 REAL-WORLD ECON. REV. 132 (2010), http://www.paecon.net/PAEReview/issue53/AckermanStanton53.pdf.
[5] *Id.* Although the use of actual prices from existing carbon trading markets is an option, there are significant shortcomings with such an approach. In particular, existing carbon trading prices are based only on current and historic values, and do not typically predict what the price is going to be in the future as carbon regulation becomes more stringent. This limitation can be avoided by using carbon price forecasts.
[6] *Synapse Carbon Dioxide Price Forecast*, SYNAPSE ENERGY ECON., INC. (2016), http://www.synapse-energy.com/project/synapse-carbon-dioxide-price-forecast.

Organizations recommend that—at least until regulation of carbon dioxide emissions is again imminent at either a state or federal level—the Agencies consider using the newly updated cost values under section 216B.2422 as an appropriate reflection of Minnesota's "likely range of costs of future carbon dioxide regulation on electricity generation." Although Minnesota has historically used different values for the "environmental cost" of electricity generation under Minnesota Statute § 216B.2422, subdivision 3 and Minnesota Statute § 216H.06, there is support for using the newly updated externality cost under section 216B.2422 as a proxy for the regulatory cost under section 216H.06.

The Agencies recently participated in the Commission update of Minnesota's "externality" cost of carbon in electricity generation,[7] which resulted in a per-ton dollar figure for each ton of CO_2 emitted by regulated utilities. The Minnesota Public Utilities Commission explicitly considered its role as *economic regulators* when updating the environmental cost values and adjusted the damage-cost values developed by the Federal Interagency Working Group in ways it found better reflected its role as economic regulators. Given this understanding of what the values adopted under section 216B.2422 are intended to represent, one relatively straight-forward option, which already has substantial analytical support, would be to use the newly updated "externality values" as reasonable regulatory cost value ranges for CO_2.

If the Agencies prefer to use carbon trading markets as a reference in lieu of the recently updated environmental cost values, however, the Clean Energy Organizations take no position on whether regional or global markets should be considered. There are at least 17 active cap-and-trade systems in place worldwide.[8] On the one hand, because CO_2 is a global pollutant, it seems

[7] *In the Matter of the Further Investigation into Environmental and Socioeconomic Costs*, MINN. PUB. UTIL. COMM'N, E-999/CI-14-643.
[8] Camille Serre, et al., Emissions Trading Worldwide: International Carbon Action Partnership (ICAP) Status Report 2015, INT'L CARBON ACTION P'SHIP (2015),

reasonable to use all global values to create a reasonable range. On the other hand, market conditions in any region will not accurately reflect market conditions if a cap-and-trade system existed in Minnesota or the U.S., and it is possible that global markets are less similar than North American markets are to what market system in Minnesota would produce.

The Clean Energy Organizations therefore recommend that, until regulation of carbon dioxide emissions is again imminent at either a state or federal level, the newly updated cost values under section 216B.2422 are an appropriate reflection of Minnesota's "likely range of costs of future carbon dioxide regulation on electricity generation." Alternatively, we recommend that the Agencies adopt either the Synapse mid-range carbon price forecast, or a range of prices corresponding with Synapse's range of projections.

III. 2022 IS A REASONABLE YEAR IN WHICH UTILITIES CAN BE EXPECTED TO INCUR REGULATORY COSTS TO FURTHER REDUCE CO_2 EMISSIONS

If the likely range of the cost of carbon dioxide regulation were set at the same dollar figures as the recently updated environmental costs (adjusted to reflect economic considerations), there would be no need to determine in which future year regulatory costs might first be incurred. In fact, there is no reason the Minnesota PUC's recently-adopted externality values cannot be implemented immediately. Indeed, utilities are already incorporating those externality costs into utility planning decisions.

If alternate values are recommended, however, it will be necessary to determine in what year utilities will begin incurring regulatory costs. Although the Clean Power Plan is currently stayed by the U.S. Supreme Court and set to be revised by the Environmental Protection Agency, Minnesota has state Greenhouse Gas Emission Reduction goals with specific years as goal posts.

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https://icapcarbonaction.com/images/StatusReport2015/ICAP_Report_2015_02_10_online_version.pdf.

Specifically, Minnesota aims to reduce greenhouse gas emissions across all sectors to a level at least:

- 15 percent below 2005 levels by 2015,
- 30 percent below 2005 levels by 2025,and
- 80 percent below 2005 by 2050.[9]

According to this statutory scheme, 2025 is the next goal-post year. To reach those goals, utilities would begin incurring costs well before 2025, as they ramp up to meet that target. Accordingly, it would be reasonable year to assume that utilities will begin to incur costs to reduce CO_2 emissions in or about 2022. This corresponds to first year of compliance with the Clean Power Plan.[10] Although there is significant uncertainty about the implementation of the Clean Power Plan, it remains on the books. And regardless of whether the rule is ultimately replaced, there is a nonzero chance that compliance with some kind of federal CO_2 regulation will be required within a comparable timeframe.

IV. THERE IS A BASIS FOR THE COMMISSION TO RE-ASSESS ITS DECISION REGARDING HOW TO APPLY THE REGULATORY COST VALUE AND THE EXTERNALITY VALUE IN A GIVEN PLANNING YEAR.

The Commission's 2007 Order ruled that external cost estimates would not apply to years to which regulatory cost estimates applied.[11] But the decision to not require utilities to calculate external costs of CO_2 in years that they calculate regulatory costs assumes that regulations eliminate external costs of CO_2. This will not be the case. There have been no regulations

[9] Minn. Stat. § 216H.02, subd. 1.
[10] The Synapse Carbon Price forecasts assume that costs begin to be incurred in 2022, beginning with the Clean Power Plan, and increasing through 2040.
[11] *In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minnesota Statutes §216H.0*6, "Order Establishing Estimate of Future Carbon Dioxide Regulation Costs", MINN. PUB. UTIL. COMM'N, E-999/CI-07-1199, 4 (Dec. 21, 2007).

proposed to date that eliminate CO_2 emissions entirely and therefore fully internalize the external costs of CO_2. In 2016, the Clean Energy Organizations argued that:

> When a utility calculates the costs of emitting a given ton of CO_2 in a year, it would be inappropriate to use both the CO_2 externality value and the CO_2 regulatory cost estimate *for that ton*. That is, a given ton of CO_2 should be covered by the regulatory cost *or* the externality value. But that does not mean that in a given year, all CO_2 emitted by a utility would only have a regulatory cost or an external cost. Utilities and the Commission should assess the external costs of CO_2 emissions that will not be mitigated by carbon regulations.

While we continue to think the approach we advocated for in 2016 is theoretically sound, our understanding of the damages caused by climate change and the Commission's recently-updated externality values together warrant a new approach to utility planning for reducing carbon emissions. Indeed, the Commission, the Department of Commerce, regulated utilities, and numerous industry and public intervenors invested extensive resources and nearly four years evaluating the costs associated with continuing to emit. The Commission's recently-updated environmental costs are based on extensive record evidence and better capture the full cost of pollution to society of electricity production than do potential values from carbon trading markets that are untethered to actual impacts. At the same time, the prospect of an immediate legislative carbon tax or cap-and-trade program have diminished somewhat.[12] Accordingly, at this time, we believe that there is a basis for reevaluating the regulatory cost of CO_2 pollution for the short- and mid-term.

[12] Although there is uncertainty surrounding the Clean Power Plan and any carbon legislation, prudent utility regulation requires the Agencies to revisit the potential for new or updated regulatory CO_2 costs based on a continuing analysis of proposed federal regulatory measures, ongoing state and regional policies, the price of CO_2 already being factored into federal rulemakings, recent CO_2 price forecasts from utility IRPs, and policy analysis and modeling from the research community.

V. IF THERE IS A BASIS TO RE-ASSESS HOW THE REGULATORY COST VALUE AND THE EXTERNALITY VALUE RANGES ARE APPLIED, WHAT OPTIONS SHOULD THE COMMISSION CONSIDER?

Absent a specific regulatory value for CO_2 that is established through a trading or tax program, we believe that the Agencies should adopt one of two options. First, as discussed, we believe that the Agencies can and should use Commission's externality values as a surrogate for any regulatory value to reflect these true costs to society associated with CO_2 emissions. Minnesota Statute § 216B.2422 is broad enough to support the use of those the newly updated externality cost under as a proxy for the regulatory cost under section 216H.06. Moreover, the Agencies each participated in the Commission update of Minnesota's "externality" cost of carbon in electricity generation,[13] which resulted in a per-ton dollar figure for each ton of CO_2 emitted by regulated utilities. Using the newly updated "externality values" as reasonable regulatory cost value ranges for CO_2 represents a straight-forward option, which already has substantial analytical support, and could be implemented immediately.

Second, and in alternative, the Agencies should adopt a regulatory cost that is based on up-to-date carbon pricing forecasts, like the Synapse carbon price forecasts. The Synapse forecast is a comprehensive assessment of existing carbon markets throughout the country, state and federal policies, modeling, and forecasts that is used by utilities and public service commissions across the country. The Synapse forecast reflects a reasonable range of expectations regarding future efforts to limit greenhouse gas. If the Agencies prefer to use such a carbon price forecast in lieu of the recently updated environmental cost values, we recommend that the Agencies assume that those regulatory costs begin to be incurred in 2022, which

[13] *In the Matter of the Further Investigation into Environmental and Socioeconomic Costs*, MINN. PUB. UTIL. COMM'N, E-999/CI-14-643.

corresponds to the still-existing compliance dates for the Clean Power Plan and the other utility forecasts, including Synapse, which assume carbon costs are incurred in that same timeframe.

Respectfully submitted,

/s/ Leigh Currie
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Minnesota Center for Environmental Advocacy
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(651) 287-4873

Attorney for Fresh Energy, Minnesota Center for Environmental Advocacy, Sierra Club, and Wind on the Wires

Minnesota Center for Environmental Advocacy

Using law, science, and research to protect Minnesota's environment, its natural resources, and the health of its people.

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September 26, 2017

Daniel Wolf
Executive Secretary **VIA ELECTRONIC SERVICE**
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

Re: September 25, 2017 Comments of Clean Energy Organizations submitted *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. E999/DI-17-53
Related Docket No. E999/CI-07-1199

Dear Mr. Wolf:

Due to an inadvertent omission, Clean Energy Organizations' ("CEOs") Comments e-filed on September 22, 2017 neglected to identify that Union of Concerned Scientists joined with CEOs and were a party to that filing. The signature block of CEOs' Comments should have included:

Steve Clemmer
Director of Energy Research & Analysis
Climate & Energy Program
Union of Concerned Scientists
2 Brattle Square
Cambridge, MA 02138-3780
(207) 847-3258

Sincerely,

/s/Leigh Currie
Leigh Currie
Energy Program Director

LC/el

cc: 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-17-53

MINNESOTA LARGE INDUSTRIAL GROUP COMMENT

I. INTRODUCTION

On February August 22, 2017, the Minnesota Pollution Control Agency ("MPCA") and the Minnesota Department of Commerce, Division of Energy Resources ("DOC", together with the MPCA, the "Agencies") issued a request for comments (the "Request") on the range of cost estimates for the future cost of carbon dioxide ("CO_2") regulation on electricity generation. The Request seeks comments on the following topics:

1. What approaches could be used within the next few months to develop updated regulatory cost value ranges for CO_2 emissions?

2. What is a reasonable date (year) in which utilities can be expected to incur regulatory CO_2 emission costs?

3. Is there a basis for the Minnesota Public Utilities Commission ("Commission") to re-assess its decision to apply only the regulatory cost value or the externality value, but not both, to emissions in a given planning year?

4. If there is a basis for the Commission to re-assess how the regulatory cost value and the externality value ranges are applied, what options should the Commission consider?

The Minnesota Large Industrial Group ("MLIG") has been an active participant in the preceding docket, 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. 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 and pay in excess of $350 million for electricity each year. The companies comprising MLIG are: 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; Mesabi Nugget Delaware, LLC; 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. MLIG respectfully requests that the Agencies and Commission refrain from requiring parties to expend additional resources to develop updated regulatory cost value ranges for CO_2 emissions and an updated timeframe to expect those potential costs, because the answer to the 3rd question in the Request is "no."

II. COMMENT

Per the request of the Department, the Center for Energy and Economic Development, the Environmental Intervenors (comprised of Fresh Energy, the Isaak Walton League of America - Midwest Office, Minnesota Center for Environmental Advocacy, and the Union of Concerned Scientists), and the Municipal Group (Central Minnesota Municipal Power Agency, Heartland Consumers Power District, and Missouri River Energy Services), the Commission previously determined that it would not apply the externalities values established under section 216B.2422 of the Minnesota Statutes in addition to the values established under section 216H.06 of the Minnesota Statutes.[1] In its December 2007 Order, the Commission stated:

> CEED, the Department, the Environmental Intervenors and the Municipal Group asked the Commission to clarify that whatever estimates of CO_2 regulation costs the Commission may adopt in this docket would not apply in addition to the existing estimates of CO_2 externality costs.

[1] *In the Matter of Establishing an Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation Under Minnesota Statutes § 216H.06*, Commission Docket No. E-999/CI-07-1199, ORDER ESTABLISHING ESTIMATE OF FUTURE CARBON DIOXIDE REGULATION COSTS, at 4 (December 21, 2007) ("December 2007 Order").

> The Commission finds merit in this clarification. While the calculation of externality values under § 216B.2422 is not directly comparable to the estimate of regulatory costs under § 216H.06, *they both reflect steps to account for the burdens that CO_2 emissions impose on third parties. When a utility calculates the cost of emitting another ton of CO_2 in any given year, therefore, it would be inappropriate to use both the CO2 externality value and the CO_2 regulatory cost estimate.* But utilities should continue to apply the Commission's CO_2 externality values otherwise.[2]

Despite the December 2007 Order, MLIG expressed concern in a comment filed on June 26, 2014, regarding the potential combination of applying both the environmental cost values for CO_2 emissions and the regulatory cost values for CO_2 emissions to resource planning. MLIG noted that if such combination were to occur, "the price/ton for CO_2 emissions by 2019 could be in excess of $75/ton. MLIG does not believe it would be prudent or fair to accept such a high value without further discussion and analysis in a contested case proceeding."[3] In briefing papers, Commission Staff rebutted MLIG's concerns, claiming that the Commission has already determined that only one (but not both) values would be applied, citing the December 2007 Order.[4] The Commission ultimately did not address the issue as requested by MLIG. And as the Agencies note in the Request, "on July 27, 2017, the Commission decided to significantly increase CO_2 environmental cost values."[5] For the Agencies to now assert, before the written order reflecting that decision has even been issued, that the issue of double-application of costs associated with CO_2 emissions should be revisited outside of a contested case setting is disappointing. There is simply no basis to revisit the Commission's decision in the December 2007 Order.

Furthermore, the Agencies note in the Request that "the electricity generation sector appears to be on track" to meet the State greenhouse gas reduction goals.[6] Indeed, according to

[2] December 2007 Order at 3.
[3] *In the Matter of the Investigation into Environmental and Socioeconomic Costs Under Minn. Stat. §216B.2422, subd. 3,* Commission Docket No. E-999/CI-00-1636, MLIG COMMENT, at 9 (June 26, 2004).
[4] *In the Matter of the Investigation into Environmental and Socioeconomic Costs Under Minn. Stat. §216B.2422, subd. 3,* Commission Docket No. E-999/CI-00-1636, *In the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minn. Stat. §216B.2422 subd. 3,* Commission Docket No. E-999/CI-14-643, STAFF BRIEFING PAPERS, at 15 (September 4, 2014).
[5] The Request, pg. 4.
[6] The Request, pg. 3.

the MPCA, CO_2 emissions from the electric sector decreased by approximately 17% over the 2005 to 2014 timeframe.[7] To ignore this "on track" progress and nonetheless request stakeholders in the electric sector to expend significant resources in the near future updating the regulatory cost of CO_2 emissions is inappropriate. Nor is it prudent given the Agencies' concession that the Supreme Court stayed application of the Clean Power Plan and President Trump issued an executive order rescinding the Clean Power Plan.[8] Although discussions may continue regarding a Clean Power Plan replacement, jumping in front of this process in an attempt to update values for CO_2 emissions that should not be additive to environmental costs is an inappropriate use of stakeholder resources.

III. CONCLUSION

In light of the Commission's prior decisions (on both combination of regulatory and environmental costs associated with CO_2 emissions and updated environmental costs), and the electric sector's significant progress made to date in reducing CO_2 emissions, MLIG respectfully requests the Commission take the following action:

1. Defer re-evaluation of the current values for regulatory costs associated with CO_2 emissions for at least one year;

2. Postpone application of the currently established regulatory costs associated with CO_2 emissions until 2035, which would be outside a utility planning period for integrated resource plans filed within the next two years, but would allow application of the newly established environmental costs associated with CO_2 emissions;

3. Not re-assess the decision to apply only the regulatory cost value or the externality value, but not both, to emissions in a given planning year; and

4. Re-evaluate these decisions on an annual basis, consistent with section 216H.06 of the Minnesota Statutes, to make appropriate modifications to account for developments at the federal level.

[7] https://www.pca.state.mn.us/greenhouse-gas-emissions-data
[8] The Report, pg. 3.

Dated: September 22, 2017

Respectfully submitted,

STOEL RIVES LLP

/s/ Andrew P. Moratzka
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ATTORNEYS FOR MINNESOTA LARGE INDUSTRIAL GROUP

94123036.3 0064592-00005

David Moeller
Senior Attorney
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dmoeller@allete.com

September 22, 2017

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 Estimate of the Costs of Future Carbon Dioxide Regulation on Electricity Generation under Minn. Stat. § 216H.06
Docket No.: E999/CI-17-53

Dear Mr. Wolf:

Please find enclosed Minnesota Power's Comments in the above-referenced Docket. Please contact me at the number provided above with any questions or concerns.

Yours truly,

David R. Moeller

David Moeller

DRM:sr
Attach.
cc: Official Service List

STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION

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/CI-17-53 **MINNESOTA POWER'S COMMENTS**

Minnesota Power files these Comments in response to the Minnesota Pollution Control Agency ("MPCA") and the Minnesota Department of Commerce, Division of Energy Resources' ("Department") August 22, 2017 Request for Comments ("Request") in Docket No. E999/CI-17-53, and Docket No. E-999/CI-07-1199. The Request invites Comments on the range of cost estimates for the future cost of carbon dioxide ("CO_2") regulation on electricity generation. Minnesota Power provides the following responses to the topics open for comment.

- **What approaches could be used within the next few months to develop updated regulatory cost value ranges for CO2 emissions?**

  Use third-party vendor forecast data that Minnesota utilities use for resource planning purposes (such as IHS or Wood Mackenzie) to develop an updated cost of future CO_2 regulation. Averaging data from different independent forecasts has a good 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 CO2 regulation can be updated periodically as third-party vendors revise their forecasts.

- **If existing carbon trading markets are used as a reference, should only markets located in the U.S./North America be considered or should all global values be considered?**

  Only markets in the U.S./North America should be considered because the U.S./North America markets best represent the cost to reduce carbon within the region. There could

be other factors (i.e., reliance on foreign gas supply, other regulatory policies, key differences in generation resource mixes or limited availability of land for development) present in foreign markets that do not impact US power supply, which result in higher or lower carbon prices.

- **Given the United States Supreme Court's stay of the Clean Power Plan and stated EPA intentions to replace the Clean Power Plan as well as other considerations, what is a reasonable date (year) in which utilities can be expected to incur regulatory CO2 emission costs?**

  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 2026.

- **Is there a basis for the Commission to re-assess its decision to apply only the regulatory cost value or the externality value, but not both to emissions in a given planning year? If so, please provide the basis.**

  No, there is no basis for the Commission to re-assess its decision. The current legislation provides a mechanism for accounting for the impact of CO_2 emissions when making resource planning decisions. Externality values will be applied until such time a CO_2 regulation is implemented. Once a CO_2 regulation is implemented, it will account for the impact of CO_2 emissions when making resource planning decisions. Nothing has occurred that would warrant duplicate accounting through application of a regulatory cost value and an externality value for the impact of CO_2 emissions in the resource planning process.

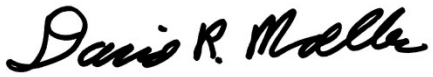
- **If there is a basis for the Commission to re-assess how the regulatory cost value and the externality value ranges are applied, what options should the Commission consider?**

  Not applicable based on response to prior question. Minnesota Power strongly believes that the regulatory cost value and externality values should be used to inform a resource decision, but a resource decision should not be made based solely on the regulatory cost value and externality values.

Minnesota Power appreciates the MPCA and Department offering utilities and other stakeholders the opportunity to provided comments in the above referenced Docket.

Dated: September 22, 2017

Respectfully submitted,



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STATE OF MINNESOTA	)	AFFIDAVIT OF SERVICE VIA
	) ss	E-FILING AND
COUNTY OF ST. LOUIS	)	FIRST CLASS MAIL

Susan Romans, of the City of Duluth, County of St. Louis, State of Minnesota, says that on the **22nd day of September**, **2017**, she filed Minnesota Power's Comments in **Docket No. E999/CI-17-53** on the Minnesota Public Utilities Commission and the Minnesota Department of Commerce via electronic filing. The remaining parties on the attached Official Service List were served as indicated.

Susan Romans

First Name	Last Name	Email	Company Name	Address	Delivery Method	View Trade Secret	Service List Name
Julia	Anderson	Julia.Anderson@ag.state.mn.us	Office of the Attorney General-DOC	1800 BRM Tower 445 Minnesota St St. Paul, MN 551012134	Electronic Service	No	OFF_SL_17-53_17-53
Ian	Dobson	Residential.Utilities@ag.state.mn.us	Office of the Attorney General-RUD	1400 BRM Tower 445 Minnesota St St. Paul, MN 551012130	Electronic Service	No	OFF_SL_17-53_17-53
Sharon	Ferguson	sharon.ferguson@state.mn.us	Department of Commerce	85 7th Place E Ste 280 Saint Paul, MN 551012198	Electronic Service	No	OFF_SL_17-53_17-53
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_17-53_17-53

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September 22, 2017

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-17-53, 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-17-53 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 Pollution Control Agency (MPCA) and the Minnesota Department of Commerce, Division of Energy Resources (DOC) (together, the Agencies) Request for Comments dated August 22, 2017, in the above captioned matter. The Agencies' 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

Request:

What approaches could be used within the next few months to develop updates regulatory cost value ranges for CO_2 emissions?

- *If existing carbon trading markets are used as a reference, should only markets located in the U.S./North America be considered or should all global values be considered?*

OTP's Comments:

Two important sources of estimates for future regulatory cost value ranges for CO_2 emissions exist today: carbon trading markets and energy price forecasts.

Carbon trading markets are actual tests of what parties are willing to pay for CO_2 allowances, both currently and in the near-term future, and should be a consideration when setting a range of CO_2 allowance costs.

However, energy price forecasting firms such as Wood Makenzie or Ventyx are more useful when trying to predict cost levels further into the future. The reputable firms that perform such forecasting have done extensive research and use sophisticated integrated models that

analyze the impact of federal and state energy policy, natural gas prices, renewable generation penetration, coal prices, new natural gas generation, and transmission buildouts on CO_2 allowance pricing.

Only U.S. markets and forecasts should be considered when determining updated regulatory cost ranges for CO_2. Widely varying national energy policies and economic strength in other nations make irrelevant those costs when attempting to determine what we should apply in Minnesota. The best comparisons might even be regionally, say MISO North, within the United States.

Request:

Given the United States Supreme Court's stay of the Clean Power Plan implementation and the United States Environmental Protection Agency (USEPA) state intention to replace the Clean Power Plan as well as other considerations, what is a reasonable date (year) in which utilities can be expected to incur regulatory CO_2 emission costs?

OTP's Comments:

The timing of a USEPA replacement rule for the Clean Power Plan is uncertain. The most recent Wood Makenzie forecast assumes that regulatory CO_2 emission costs will begin in 2028. Otter Tail supports this as a reasonable assumption and recommends that 2028 be used as the year to begin modeling the regulatory cost of CO_2.

Request

Is there a basis for the Commission to re-assess its decision to apply only the regulatory cost value or the externality value, but not both, to emissions in a given planning year? If so, please provide the basis.

OTP Comments:

No. While an extensive proceeding addressing the Federal Social Cost of Carbon and criteria pollutants was recently concluded before the Commission, there was no evidence in that proceeding that supported applying both the regulatory cost value and an externality value.

That issue is outside the scope of the proceeding at hand whose sole purpose is to determine "the future cost of carbon dioxide (CO_2) regulation on electricity generation."

Request:

If there is a basis for the Commission to re-assess how the regulatory cost value and the externality value ranges are applied, what options should the Commission consider?

OTP Comments:

Again, that question is outside the scope of this proceeding. No evidence has been presented that would provide a basis for the Commission to re-assess how these costs are applied.

II. Conclusion

The purpose of the current docket is to update the estimate of the cost of future CO_2 regulation and determine when those costs should begin to be applied. There is no basis for the Commission to change how the regulatory costs and externality costs are applied.

Otter Tail recommends that the regulatory cost of CO_2 begin to be applied in 2028 and that the values used come from the averaging of those costs as determined by nationally recognized forecasting services such as Wood Makenzie.

The nation is seeing a significant shift in electric generation from traditional coal generation to natural gas and renewables. CO_2 emissions are declining rapidly in this industry. However, these reductions are being driven by economics, not by federal and state legislation or regulation.

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

Dated: September 22, 2017

Respectfully submitted,

OTTER TAIL POWER COMPANY

By: */s/ BRIAN DRAXTEN*

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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-17-53, 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 **September, 2017.**

/s/ Kim Ward
Kim Ward, Regulatory Filing Coordinator
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September 22, 2017

—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/CI-17-53

Dear Mr. Wolf:

Northern States Power Company, doing business as Xcel Energy, submits these comments in response to the August 22, 2017 Request for Comments by the Minnesota Pollution Control Agency and Minnesota Department of Commerce, Division of Energy Resources (together, the Agencies). Per the Request for Comments, we are filing our Comments in Docket No. E999/CI-17-53 only, but are serving our Comments on both the E999/CI-17-53 and E999/CI-07-1199 service lists.

The Agencies request comment on the following topics:

- Approaches that could be used within the next few months to develop updated regulatory cost value ranges for CO_2 emissions.
    - If existing carbon trading markets are used as a reference, should only markets located in the U.S./North America be considered or should all global values be considered.
- A reasonable year in which utilities can be expected to incur regulatory CO_2 emission costs, given the United States Supreme Court's stay of the Clean Power Plan (CPP) implementation and the US Environmental Protection Agency's (EPA) stated intention to replace the CPP as well as other considerations.
- Whether there is a basis for the Commission to re-assess its decision to apply only the regulatory cost value or the externality value, but not both, to emissions in a given planning year.
- Whether there is a basis for the Commission to re-assess how the regulatory

cost value and the externality value ranges are applied, and what options the Commission should consider.

In summary, we believe we are in a period of particularly significant uncertainty around carbon regulation that makes it difficult to approximate potential future regulatory costs – or the point at which they may take effect. We believe however, the current regulatory cost range of $9 to $34 applied starting in 2022 may no longer be reasonable. If the Commission were to base its regulatory cost range on the North American carbon trading markets, the range would be in the area of approximately $5 to $12. We believe a start year of 2025 may be reasonable, given the current uncertainty around the CPP or its replacement. With respect to the intersection of regulatory costs and externalities values, we believe that the principles that underlie the Commission's determination that regulatory costs and externality values should not be applied additively remain the same – and therefore, the Commission should preserve that foundational concept.

Prior to addressing the Notice questions, we briefly review the statutory context and the Commission's historic treatment of both regulatory and externality costs for CO_2.

A. Statutory Context and History

1. Approach to CO_2 Regulatory Cost Estimation

Minn. Stat. § 216H.06 requires the Commission to "establish an estimate of the likely range of costs of future carbon dioxide regulation on electricity generation." When the CO_2 regulatory cost range was first established in 2007, and in updates since, the range has been conceptually based on estimated carbon abatement costs and/or CO_2 allowance prices in carbon markets then in existence – or anticipated soon to be in existence.

In first establishing the range in 2007, the Commission chose $4 to $30 per ton, based in part on modeled analysis of CO_2 allowance prices under the various national cap-and-trade bills then under consideration in Congress. The Commission cited in its rationale "pending and proposed state and federal legislation for CO_2 regulation, with particular attention to estimates of the likely costs per ton of CO_2 that may result from such legislation and the likely effective dates," as well as the Midwest Governors Association's Midwest Greenhouse Gas Accord.[1] At the time, both federal cap-and-trade legislation and the Midwest Greenhouse Gas Accord envisioned carbon markets

[1] *See* ORDER ESTABLISHING 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,* Docket No. E999/CI-07-1199. (December 21, 2007) (2007 Order).

as the primary compliance mechanism.

Though federal cap-and-trade legislation failed to pass Congress, and the Midwest Greenhouse Gas Accord disbanded soon thereafter, carbon trading remained the carbon regulatory approach most often proposed in the years that followed. This remained the case when the EPA proposed the CPP under section 111(d) of the Clean Air Act. The CPP allowed states to create – and most states, including Minnesota, actively contemplated creating – carbon trading markets operating in mass-based (CO_2 allowance) or rate-based (Emission Rate Credit) terms. Thus in the most recent update of the regulatory cost range in August 2016, the Commission placed its primary focus on the CPP, and maintained the range of $9 to $34 per ton partly in consideration of the CO_2 allowance prices estimated in CPP modeling efforts.[2]

The planning year when the regulatory cost range must be applied has likewise been based on the first compliance year of anticipated CO_2 regulation – the year utilities and their customers are expected to incur compliance costs. When the range was first established, the Commission chose 2012 based on the first compliance year under federal cap-and-trade legislation then under consideration.[3] When the range was last updated, the Commission chose 2022 based on the first compliance year of the CPP.[4]

2. Relationship between CO_2 Regulatory and Externality Costs

Two distinct Minnesota statutes require the Commission to establish both regulatory and externality costs for CO_2, as follows:

- Minn. Stat. § 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.*

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[2] *See* ORDER ESTABLISHING 2016 AND 2017 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,* Docket No. E999/CI-07-1199. (August 5, 2016) (2016 Order).

[3] 2007 Order.

[4] 2016 Order. The CPP was stayed by the U.S. Supreme Court at the time the Commission made this update, and the Commission was aware that if the CPP were upheld by the courts, the Supreme Court stay could result in the start of CPP compliance being pushed back. However, because it was unknown whether or by how much compliance might be delayed, the Commission reasonably used 2022 as the first year utilities could incur CPP compliance costs.

- Minn. Stat. § 216B.2422, subd. 3., Environmental Costs. *The commission shall, to the extent practicable, quantify and establish a range of environmental costs associated with each method of electricity generation. A utility shall use the values established by the commission in conjunction with other external factors, including socioeconomic costs, when evaluating and selecting resource options in all proceedings before the commission, including resource plan and certificate of need proceedings.*

The statutory language, along with past Commission Orders, indicates that the values established under the two Statutes are intended to represent different things. The values established under Minn. Stat. § 216H.06 represent the estimated costs utilities may actually incur to comply with future CO_2 regulations. These potential costs are considered in resource planning and acquisition to guide the selection of resources and prevent the selection of resources that might appear to be least-cost without CO_2 regulation – but may not be if regulation goes into effect. The values established under Minn. Stat. § 216B.2422 are intended to represent estimated societal damages from climate change attributable to an incremental ton of CO_2 emissions. Those damages are assumed to occur regardless of whether CO_2 is regulated.

To-date, the Commission has been clear that regulatory and externality estimates are not to be applied additively. When asked by intervenors in the original regulatory costs proceeding to clarify that the CO_2 regulatory values would not apply in addition to (then already existing) CO_2 externality values, the Commission agreed there was merit in clarifying – stating the following:[5]

> *The Commission finds merit in this clarification. While the calculation of externality values under § 216B.2422 is not directly comparable to the estimate of regulatory costs under § 216H.06, they both reflect steps to account for the burdens that CO_2 emissions impose on third parties. When a utility calculates the cost of emitting another ton of CO_2 in any given year, therefore, it would be inappropriate to use both the CO_2 externality value and the CO_2 regulatory cost estimate. But utilities should continue to apply the Commission's CO_2 externality values otherwise...*
>
> *In estimating costs associated with CO_2 emissions for the purpose of analyzing electricity generation resources, a utility need not apply CO_2 externality costs derived pursuant to § 216B.2422, subdivision 3, to CO_2 emitted in any year to which the utility applies the CO_2 regulation costs derived pursuant to Minnesota Statutes § 216H.06.*

To apply the regulatory and externality values additively would imply that regulation

[5] 2007 Order at pages 4 and 11.

has not internalized any of the externalized damages, which seems contrary to a core principle of environmental economics that environmental regulation is intended to correct market failures (here, by internalizing externalized costs).

Since 2007, the Commission has set both regulatory and externality values and required utilities to only apply one or the other to all CO_2 emissions in a given planning year. With the continued uncertainty of CO_2 regulation, we have complied with this requirement in resource proceedings by applying the CO_2 *externality* values in all planning years until the year we are required to begin applying the CO_2 *regulatory* values. We then apply the CO_2 regulatory values (the midpoint of the range as a base assumption, and sensitivities at the low and high bookends), and cease applying the CO_2 externality values.[6]

B. Questions posed by the Agencies

1. What approaches could be used within the next few months to develop updated regulatory cost value ranges for CO_2 emissions?

As we noted previously, with the CPP under review and likely to be rescinded by the EPA, we are currently in a period of significant uncertainty as to the form of CO_2 regulation that may replace the CPP.[7] Considering these uncertainties, we believe it may no longer be appropriate to use estimated allowance prices or compliance start dates under the CPP as the basis for the Commission's CO_2 regulatory costs.

We believe it is reasonable to assume the power sector will be subject to further CO_2 regulation, so it is appropriate to set the estimate CO_2 regulatory costs at something greater than zero. However, we do not see an obvious alternative basis for estimating CO_2 regulatory costs under the current uncertainty. We agree with the Agencies' suggestion that it may be reasonable to use CO_2 allowance prices in existing carbon markets as an interim proxy – not because we are confident carbon markets will, or will not, be an available compliance option in future regulations, rather simply because there is no obvious alternative. Further, these prices are publicly available and

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[6] *See* for example, Appendix – Strategist Modeling and Outputs Updates, pages 2-3 of the Xcel Energy 2016-2030 *Upper Midwest Resource Plan – Supplement,* Docket No. E002/RP-15-21 (March 16, 2015).

[7] The CPP was stayed by the U.S. Supreme Court on February 9, 2016, and remains stayed. On March 28, 2017 President Trump signed an Executive Order directing EPA to review and, if appropriate, suspend, revise, or rescind the CPP. (Executive Order 13783, 82 Fed. Reg. 16,093, *Promoting Energy Independence and Economic Growth* (Mar. 28, 2017)). The D.C. Circuit Court has granted a request from EPA to hold CPP litigation in indefinite abeyance while EPA reconsiders the rule; EPA has made clear it intends to review, repeal, and may or may not replace the CPP. EPA on April 4, 2017 published a Notice announcing its review of the CPP (82 Fed. Reg. 16,329, 16,330 (Apr. 4, 2017)), and on June 8, 2017 submitted a proposed rule entitled *Review of the Clean Power Plan* to the White House Office of Management and Budget. As of this writing, EPA has not yet released any proposed rule to the public.

frequently updated.

Specifically, the existing markets in North America – California/Quebec and the Regional Greenhouse Gas Initiative (RGGI) – could serve as a guide. CO_2 allowance auction results are published quarterly for both markets. The table below summarizes the auction clearing prices over the last two years.

Market	Auction No.	Date of Auction	Clearing Price $/metric tonne	Clearing Price $/short ton
California/ Quebec[8]	12	8/15/2017	$14.75	$13.38
	11	5/16/2017	$13.80	$12.52
	10	2/22/2017	$13.57	$12.31
	9	11/15/2016	$12.73	$11.55
	8	8/16/2016	$12.73	$11.55
	7	5/18/2016	$12.73	$11.55
	6	2/17/2016	$12.73	$11.55
	5	11/17/2015	$12.73	$11.55
	4	8/18/2015	$12.52	$11.36
			Average over last two years:	**$11.92**
RGGI[9]	37	9/8/2017	*The RGGI Market operates in short tons*	$4.35
	36	6/7/2017		$2.53
	35	3/8/2017		$3.00
	34	12/7/2016		$3.55
	33	9/7/2016		$4.54
	32	6/1/2016		$4.53
	31	3/9/2016		$5.25
	30	12/2/2015		$7.50
	29	9/9/2015		$6.02
			Average over last two years:	**$4.59**

Based on the two-year averages of these markets (i.e. not giving undue weight to any single allowance auction, since various factors cause allowance prices to fluctuate between auctions), we believe the Commission could reasonably set an interim CO_2 regulatory cost range at around **$5 to $12** per short ton. This would imply a new CO_2 regulatory cost midpoint of **$8.50** per short ton. We believe this would be a reasonable interim update of the CO_2 regulatory cost range to use, pending greater clarity on what CO_2 regulatory framework may replace the CPP at the federal, state or

[8] California/Quebec market CO_2 allowance auction results are posted on the California Air Resources Board website at https://www.arb.ca.gov/cc/capandtrade/auction/auction.htm#auction. 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.

[9] 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 (by Auction)."

regional levels.

The world's largest carbon market is the European Union's Emission Trading System, which was originally established in 2005 and is currently in its third phase. European Emission Allowances (EUA) in the latest auction sold at €6.90 per metric tonne according to the European Energy Exchange – or about $7.53 per short ton at current exchange rates.[10] Since this falls solidly in the range for the North American markets outlined above, while we believe it provides some validation, we do not see a need for the Commission to further consider carbon markets outside North America.

While we believe an interim proxy based on the North American carbon trading markets is preferable, given the particular level of present uncertainty, we acknowledge the Commission may prefer to make more of an incremental change. For example, the Commission could "blend" the current $9 to $34 range with the $5 to $12 markets range to derive a range of approximately $7 to $23 per short ton – and a midpoint of $15.

2. *What is a reasonable date (year) in which utilities can be expected to incur regulatory CO_2 emission costs?*

At the time of the most recent update to the Commission's CO_2 regulatory cost values, it was reasonable to assume the CPP would be the regulatory mechanism, and compliance would begin in 2022. That is no longer the case. The EPA has made clear it intends to review and likely rescind the CPP rule, with or without replacement. This decision is expected to be challenged in the courts; both the litigation and the rulemaking to rescind and/or replace the CPP will likely be lengthy.

Since the CPP is a final rule, the rulemaking process – whether or not EPA promulgates a replacement or merely repeals the CPP – will require publication of a proposed rule, public comment, and finalization of a new rule. This process could take two years or more from when EPA releases a proposed repeal/replacement rule. If EPA elects not to promulgate a replacement, no regulation will go into effect in 2022. If EPA replaces the CPP with a new rule, then provides a similar amount of time for states to develop implementation plans and a similar compliance timeline as was provided in the CPP, the start of compliance will likely be later than 2022.

Although it is not possible today to know exactly when utilities may incur CO_2 regulatory compliance costs, we believe it will likely be later than 2022 – and that **2025** would be a reasonable proxy for the Commission to set as the year to begin applying

[10] https://www.eex.com/en/market-data/environmental-markets/auction-market/european-emission-allowances-auction#!/2017/09/08.

the CO_2 regulatory range. We see this as an interim measure pending greater clarity. As more information becomes available on future federal, state or regional carbon policy, the Commission has an established process to revise the range and/or the start year accordingly.

3. *Should the Commission reassess its decision to apply only the regulatory cost value or the externality value, but not both, to emissions in a given planning year?*

No. The Commission should not reassess its decision to not apply the regulatory costs and externalities values additively. We believe the reasons underlying the Commission's original decision to apply the costs/values separately remain valid and thus should be preserved.

4. *What options should the Commission consider for how the regulatory cost value and the externality value ranges are applied?*

We believe the greatest value comes from considering a range of costs over the planning period – given that the financial modeling aspect of resource decisions is just one of many involved in making long-term resource decisions. Today, utilities apply the regulatory costs and externalities values in *base assumptions* and *sensitivities* in a "pre-regulatory cost" period and a "regulatory cost" period. In terms of base assumptions, we believe utilities should continue the current practice of applying externalities values up to the point at which regulatory costs are expected – then apply the midpoint of the regulatory cost range for the duration of the planning period. During the pre-regulatory cost period, utilities should use the low externalities value as the base assumption, and test it with the high externalities value sensitivity.[11]

Sensitivities are intended to test the robustness of a plan, and can provide valuable information from which to consider a range of potential outcomes. In the post-regulatory cost period, utilities could model all data points as sensitivities – meaning a high and low regulatory cost and the high and low externalities values. We believe however, the greatest decisional value comes from a modeling broad range – or a single high and low bookend – rather than several incremental values within the broad range. This approach would:

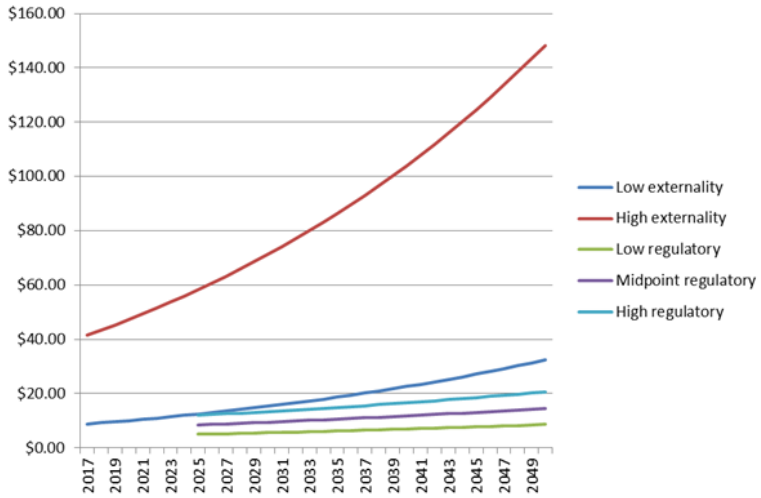
- Provide the widest range of potential impacts for decision-making,
- Preserve the foundational concept that only one of the costs/values applies at a point in time, and

[11] The values as established in Compliance Filing, Fourth Affidavit of Anne E. Smith, Ph.D. with Attachment 1, IN THE MATTER OF THE FURTHER INVESTIGATION INTO ENVIRONMENTAL AND SOCIOECONOMIC COSTS UNDER MINN. STAT. § 216B.2422, SUBD. 3, Docket No. E999-CI-14-643 (August 3, 2017).

- Streamline the modeling.

Options the Commission may want to consider for the high and low sensitivities in the regulatory cost period include: (1) the high and low externality values for each respective year; (2) the high and low of the regulatory cost range that the Commission establishes; or (3) the single highest CO_2 cost/value and the single lowest CO_2 cost/value low, without regard to whether it is a regulatory cost or externality value.[12]

We illustrate the values in the following figure to provide context to these alternatives:



Note: The regulatory cost range values in this illustration are representative of the average North American carbon trading markets discussed in Section B.1 of these comments, starting in 2025 as we have proposed. The Low and High CO_2 externality values are taken from the compliance filing cited in footnote 11, where they are given in 2015 dollars per short ton, and converted to nominal dollars per short ton. Regulatory values are also shown in nominal dollars per short ton. Both externality and regulatory values are escalated at 2.19% annually for inflation.

All of these options would maintain the basic construct that regulatory costs and externality values are not applied additively. However, we believe the greatest informational value would come from Option (3), because it would likely represent the widest range for decision-making purposes – and, unlike the other options, it would also subsume the full regulatory cost range and the full range of externalities values. Modeling each of the data points would be administratively complex, and some of the values will "cluster" within the range, so the differences may not be meaningful for decision-making purposes. However, we recognize that this range could be quite broad, so acknowledge that the Commission may want to require that utilities model a middle point as well.

To illustrate Option (3), we use the average North American markets regulatory cost

[12] All of these options would be in addition to the existing requirement to model zero sensitivities for the regulatory cost and externalities value in each the pre-regulatory and regulatory cost periods.

range (starting in 2025) of $5 to $12 that we propose, and the 2025 high externalities value as an example:

	Pre-Regulatory Cost Period (prior to 2025)		Regulatory Cost Period (2025 and beyond)	
	Regulatory Cost	**Externality Value**	**Regulatory Cost**	**Externality Value**
Base Assumptions	$0	Low	$8.50 (mid)	$0
Sensitivities	None	High	$5	$46.96*

** Escalating annually with established values (2015$ per short ton as reflected in the compliance filing cited in Footnote 11).*

In summary, we propose a regulatory cost range of $5 to $12, which is based on the average of the North American carbon trading markets over the past two years of CO_2 allowance auctions. We believe 2025 is a reasonable starting year for the regulatory costs, given the present uncertainty regarding carbon regulation. The principles that underlie the Commission's previous determination that regulatory costs and externality values should not be applied additively remain the same – and therefore, the Commission should preserve this foundational concept. Modeling the potential future impact of CO_2 associated with resource additions and changes should provide the Commission with a wide range of potential impacts, and be based on established high and low regulatory costs and externalities values. We believe a range based on the lowest regulatory cost and the highest externalities value will provide the greatest decisional value.

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 me at (612) 330-6255 or Nicholas.F.Martin@xcelenergy.com if you have any questions regarding this filing.

Sincerely,

/s/

NICHOLAS MARTIN
MANAGER, ENVIRONMENTAL AFFAIRS

Service List

CERTIFICATE OF SERVICE

I, Jim Erickson, 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/CI-17-53

Dated this 22nd day of September 2017

/s/

_____

Jim Erickson
Regulatory Administrator

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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
Corrected Analysis and Recommendations

Docket No. E999/CI-07-1199 and E999/CI-17-53

Dated this 28th day of February 2018

/s/Sharon Ferguson

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