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).

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[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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