STATE OF MINNESOTA
DEPARTMENT OF COMMERCE AND POLLUTION CONTROL AGENCY

September 6, 2019

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

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

CLEAN ENERGY ORGANIZATIONS' COMMENTS

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

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

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

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

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

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

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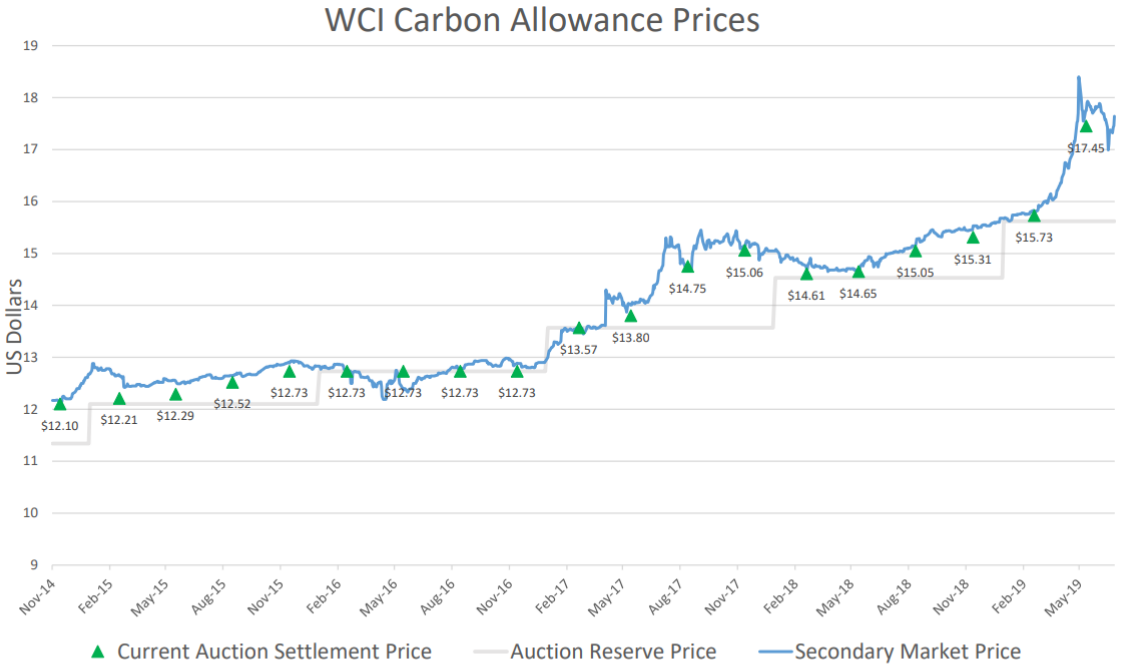
[1] Minnesota Public Utilities Commission, "Order Establishing 2009 and 2010 Estimate of Future Carbon Dioxide Regulation Costs," filed October 8, 2009 in Docket 07-1199, at page 2 (link).
[2] Clean Energy Organizations, "Reply Comments," filed March 5, 2018 in Docket 07-1199, at pages 5-6 (link).
[3]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

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

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

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



Notes:

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

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

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

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

Table 1, RGGI and WCI price floors and ceilings

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

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

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

Table 2, CEO Recommendation

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

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

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

[9] *Ibid.*

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

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

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

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

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

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

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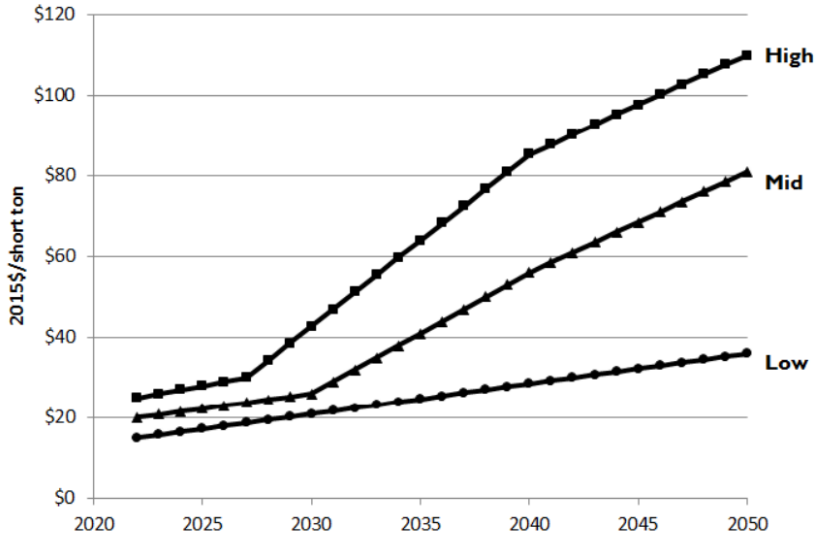
[10] World Bank Group, "State and Trends of Carbon Pricing 2019," June 2019 (link).
[11] Minnesota Pollution Control Agency and Office of Energy Security, "Other-Letter," filed March 27, 2009 in Docket 07-1199, at pages 3-4 (link).
[12] *See*: the Energy Innovation and Carbon Dividend Act, H.R. 763,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

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

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

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

Figure 1: Synapse 2016 CO_2 national price forecasts



Source: Synapse Energy Economics, Inc. 2016.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

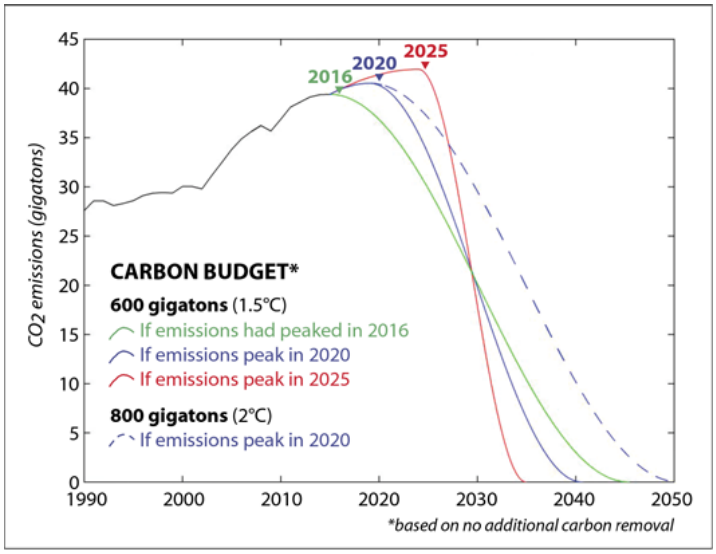
[25] Anthony Lieserowitz, Edward Maiboch, Connie Roser-Renouf, Seth Rosenthal, Matthew Cutler and John Kotcher, "Politics & Global Warming, April 2019," *Yale Program on Climate Change Communication*, May 16, 2019 (link).

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

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

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

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



SOURCE: Stefan Rahmstorf, 2017 InsideClimate News

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

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

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

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

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

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

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

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

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

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

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

4) Conclusion and recommendations

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

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

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