



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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May 16, 2016

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

VIA ELECTRONIC SERVICE

Re: *In the Matter of the Further Investigation into Environmental and Socioeconomic Costs Under Minnesota Statute 216B.2422, Subd. 3 PUC Docket No. E-999/CI-14-643 OAH Docket No. 80-2500-31888*

Dear Mr. Wolf:

In connection to Phase I or the Social Cost of Carbon portion of the above-referenced docket, please find enclosed Clean Energy Organizations' Reply to Exceptions to the Findings of Fact, Conclusions, and Recommendations filed on April 15, 2016. Also attached is an Affidavit of Service.

Please do not hesitate to contact me should you have any questions or concerns.

Sincerely,

/s/ Leigh Currie
Leigh Currie
Staff Attorney

LC/em

Enclosure

cc: Attached service list

**STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION**

**In the Matter of the Investigation into the Environmental and Socioeconomic Costs
Under Minn. Stat. § 216B.2422, Subd. 3**

MPUC Docket No. E-999/CI-14-643, E-999/CI-00-1636

OAHDocket No. 80-2500-31888

**PHASE I—SOCIAL COST OF CARBON
REPLY TO EXCEPTIONS TO FINDINGS OF FACT, CONCLUSIONS,
AND RECOMMENDATIONS: CARBON DIOXIDE VALUES**

of

CLEAN ENERGY ORGANIZATIONS

MAY 16, 2016

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Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.

Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.

- IPCC, Fifth Assessment Report, 2014

The urgent challenge to protect our common home includes a concern to bring the whole human family together to seek a sustainable and integral development, for we know that things can change.

Young people demand change. They wonder how anyone can claim to be building a better future without thinking of the environmental crisis and the sufferings of the excluded.

- Pope Francis, Climate Encyclical, 2015

Anything over 2 degrees is a death warrant for us. It means the sea level will rise above . . . our level of the islands. It means the islands go under.¹

- Tony de Brum, foreign minister of the Marshall Islands, 2015

We are a society that has inadvertently chosen the double-black diamond run without having learned to ski first. It will be a bumpy ride.²

- Dr. Gavin Schmidt, NASA Climatologist and climate modeler

It is unfathomable why the State and this Commission would want to increase the environmental cost value of CO₂.

- Minnesota Large Industrial Group, 2016

INTRODUCTION

The Clean Energy Organizations (CEOs) Reply to the Exceptions raised by Xcel Energy (Xcel), the Minnesota Large Industrial Group (MLIG), and Otter Tail Power, Great River Energy, and Minnesota Power (collectively, the Utilities). The arguments raised by these Parties

¹ <http://www.npr.org/sections/parallels/2015/12/09/459053208/for-the-marshall-islands-the-climate-goal-is-1-5-to-stay-alive>.

² <http://climate.nasa.gov/400ppmquotes/>

in their Exceptions were already briefed by the Parties, and CEOs will not repeat all of what has been submitted, but will point the Commission to where in the Briefs additional responses can be found.

ARGUMENT

The ALJ concluded that CEOs and the Agencies proved by a preponderance of the evidence that the federal social cost of carbon (SCC) is reasonable and the best available measure to determine the environmental cost of CO₂, with the modification to the time horizon and without the 95th percentile value—modifications to which CEOs took exception. Xcel, MLIG, and the Utilities take exception to this conclusion from several angles: Xcel argues that the ALJ incorrectly concluded that Xcel failed to demonstrate that its alternative calculation was reasonable; Xcel, MLIG, and the Utilities all argue that the SCC is too speculative and therefore not reasonable; MLIG argues that, if adopted, certain modifications must be made to the SCC, including to the discount rate; and all of these Parties make arguments about how the SCC should be used in resource planning. CEOs respond to these specific exceptions below, and reiterate why the SCC is reasonable and the best available measure to determine the environmental cost of CO₂.

I. The ALJ Properly Concluded That Xcel Failed To Demonstrate That Its Proposal Was Reasonable.³

Xcel takes Exception to the ALJ's Recommendation because she did not find Xcel's alternative proposed range to be reasonable.⁴ These exceptions highlight the fact that Xcel continues to ignore why it is important to include the high-damage low-probability estimates in

³ CEOs' full response to Xcel's alternative proposal is at CEOs' Initial Brief at 25–29.

⁴ ALJ Conclusion ¶ 49 finding Xcel's range unreasonable); Xcel Exceptions at 15–18.

the CO₂ damage value and how the SCC incorporates these estimates while Xcel's range does not.

Xcel claims that the ALJ should have adopted its 25th–75th percentile range⁵ and that the ALJ incorrectly concluded that Xcel “unreasonably excluded information about the magnitude, as well as the likelihood of significant damages, as reflected in the higher end tails of the distribution.”⁶ CEOs disagree. To support this exception, Xcel claims that it was proper to treat the high-damage values in the same way that it treated the low-damage values—by ignoring 25 percent of each.⁷ But because of the skewed distribution, treating the high-damage side of the distribution equally to the low-damage side has the effect of ignoring the potential for catastrophic damages and thereby unreasonably lowering the SCC value.

The distribution of potential climate-change outcomes is not a normal distribution. As Xcel describes, the distribution is “a skewed, non-normal distribution with a long right tail of high cost damage estimates.”⁸ The long right tail is a graphic depiction of the fact that damages from climate change—as predicted by the models—could be extremely high. The left side of the distribution does not have a “long tail.” This is because we know that there will be some damages from climate change. The question is how to account for the long tail. Xcel chopped off 25 percent of the high damage values, which were spread out over the long tail, and 25 percent of the low damage values, which were clustered at the left side of the distribution. The Interagency Working Group (IWG), in contrast, took the average of all of the values within the distribution.

⁵ Xcel Exceptions at 15–17.

⁶ ALJ Conclusion ¶ 49.

⁷ Xcel Exceptions at 16.

⁸ Xcel Exceptions at 15.

Using a mean value—as the IWG did—incorporates the full extent of the risk that the future damages from climate change could be catastrophic.⁹ The mean is higher than the median because of the numerous and potentially very high high-damage scenarios that are part of the SCC distribution. Xcel’s percentile approach truncates the distribution at the 75th percentile and thereby ignores a large section of the low-probability but high-damage outcomes. The ALJ therefore correctly concludes that Xcel’s approach unreasonably limits the information contained in the SCC.

It is not in dispute that Xcel’s range is ultimately lower because it ignores (more than the IAMs already do) the modeled potential that the damages from climate change could be extreme. The question for the Commission is whether it intends for the values it adopts to account for potential high damages predicted by the science. CEOs assert that the values must account for that potential because the goal in requiring consideration of environmental costs of electricity generation is to account for the fact that our actions today are causing drastic—and potentially irreversible—damages that will not be fully realized for centuries. The implication of Xcel’s approach is that we would not allow the Commission even the opportunity to consider the possibility that the damages from climate change could be catastrophic. We agree with the ALJ that Xcel failed to demonstrate that such an approach would be reasonable.

II. The ALJ Properly Concluded That The SCC Is Reasonable And The Best Available Measure Of The Environmental Cost Of CO₂, Despite Uncertainty.¹⁰

Uncertainty is part of estimating the potential future damages from additional emissions’ impacts on climate change. Acknowledging uncertainty is not “an explicit admission that there is

⁹ See ex. 101 at 37, quoting schedule 1 at 26.

¹⁰ CEOs also responded to arguments about uncertainty at CEOs Reply Brief at 6–8.

not a preponderance of the evidence to support the FSCC,” as MLIG claims,¹¹ but is instead an admission that there will always be uncertainty around future projections. The question is not whether uncertainty exists, but whether the IWG accounted for uncertainty in a reasonable way. The ALJ concluded that the SCC partially accounts for uncertainty and that “given the increased scientific certainty of the link between CO₂ emissions and climate change, uncertainties such as the potential damage of a ‘tipping point’ catastrophe reasonably require an initially high SCC until more is known about such uncertainties.”¹² We agree.

Xcel, MLIG, and the Utilities take exception to the ALJ’s conclusion that the SCC adequately accounts for the relative uncertainty of whether damages from climate change could be catastrophic or whether the damages could be avoided through some future technological or policy initiative; and MLIG takes exception to the ALJ’s reliance on the Equilibrium Climate Sensitivity used by the IWG, and further claims that how our planet will react to continued CO₂ emissions is too uncertain to plan for the damages that flow from increased warming. Neither of these exceptions has merit.

A. The ALJ properly concluded that Xcel, MLIG, and the Utilities failed to demonstrate that the SCC fails to reasonably account for uncertainty around mitigation, adaption, and the potential for high damages.

Xcel takes exception to the ALJ’s conclusions regarding uncertainties as they relate to the potential for high damages, tipping points, mitigation, and endogenous technological change.¹³ Specifically, Xcel claims that because we cannot quantify all of the known ways in which the IAMs underestimate damages and we cannot yet know the ways in which the IAMs could potentially overestimate damages, there is no way to “balance out” the known underestimations

¹¹ MLIG Exceptions at 15.

¹² ALJ Conclusions at ¶¶ 42–43.

¹³ Xcel Exceptions at 19–20; taking exception to ALJ Conclusions at ¶¶ 13, 43, 44.

and the potential overestimations and the ALJ's conclusion is therefore unsupported. We disagree.

There are many ways in which we know the IAMs underestimate damages. Dr. Hanemann testified that the models underestimate damages because of the literature they draw from.¹⁴ Dr. Polasky explained that the models place minimal weight on catastrophic damages and incompletely account for several processes that are difficult to quantitatively assess, including ocean acidification, species loss, increased precipitation, and extreme weather.¹⁵ Dr. Polasky also explained how the models assess Gross Domestic Product effects as contemporaneous rather than continuing, i.e., the damage functions to not assess the damages' impact on growth *rate*.¹⁶ All of these result in identified underestimations of the SCC.

Despite these many ways in which the SCC is known to undervalue the true damages from climate change, Xcel claims the ALJ erred in finding that the SCC, on balance, underestimates damages. Xcel points to the fact that "80 percent of the damage estimates affecting where the FSCC values land are built on the assumption of no coordinated global governmental action on CO₂ mitigation."¹⁷ Xcel notes that this seems "contrary to recent international developments."¹⁸ It is true that the Paris Agreement represents an attempt at coordinated global governmental action on CO₂ mitigation. But even the Paris Agreement, including the U.S. Clean Power Plan (currently under attack in the courts), is insufficient to

¹⁴ Ex. 801 at 48.

¹⁵ Ex. 101 at 19–20, 23; ex. 801 at 55.

¹⁶ Ex. 100 at 20; ex. 801 at 55–56.

¹⁷ Xcel Exceptions at 21.

¹⁸ Excel Exceptions at 21.

avoid climate-related damages,¹⁹ and there are no other state, regional, national, or international initiatives to limit carbon emissions. The fact that 20 percent of the scenarios assume climate stabilization at 550 parts per million therefore seems reasonable in the face of the current state of (in)action to address climate change. Moreover, even if it turns out the IWG underestimated both the ability to stem carbon emissions globally and the reversibility of damages predetermined by past emissions, no Party has explained how utilities will be harmed by planning ahead for the inevitable need to reduce carbon.²⁰ The consequences of underestimating damages are dire; the consequence if we have overestimated damages is a head start toward a future of energy independence, a clean-energy economy, and improved public health.

MLIG similarly takes exception to the ALJ recommending the SCC, arguing that the uncertainties surrounding the potential for high damages are so great we should do nothing. Despite the fact that the models all show that if we continue on our current path there is the potential for catastrophic, irreversible damage from climate change, MLIG claims that because we lack “empirical” evidence of damages beyond three degrees Celsius we should take a do-nothing approach.²¹ But we will only get “empirical”²² evidence of the damage caused by high temptations once the Earth has warmed beyond 3 degrees Celsius. MLIG would have us continue to emit carbon unabated until we have warmed the planet to a point where we can measure the economic impact of the catastrophe we have created. At that point, it will be too late to reverse

¹⁹ <http://actclimate.eu/paris-climate-agreement/>. (“One thing is certain, this deal will not be enough to limit global warming average temperature to 2°C and even less to the 1.5°C the agreement itself says is necessary.”)

²⁰ Indeed, Minnesota’s past planning has led to being in a position to comply with the Clean Power Plan following what is essentially a “business as usual” approach, undermining any argument that planning ahead is harmful.

²¹ MLIG Exceptions at 20–21.

²² MLIG similarly criticizes the “feverish and unempirical pleas to preserve the welfare of future generations,” but seems to miss the point that there can be no “empirical” argument about how to best protect future generations. They are, by definition, in the future.

course.²³ You cannot take a “wait and see” approach to determine whether catastrophic damages and tipping points are inevitable. We think the appropriate way to account for the potentially high damage from climate change is to include it in the environmental cost values that the Commission is required to consider, which the SCC does.

It is difficult to comprehend how Xcel, MLIG, and the Utilities can argue that we should assume future mitigation and policies will solve climate change while simultaneously arguing that we must not consider the possibility of high-damage outcomes or the full, global, damages caused by our emissions.²⁴ This contradiction begs the question of how mitigation or policy reform is supposed to occur if we continue to ignore the consequences of our actions. Regardless, ignoring these consequences would be inconsistent with Minnesota law and this entire proceeding.

B. The ALJ properly concluded that MLIG failed to prove that the ECS used in the SCC is unreasonable.

MLIG takes exception to the ALJ’s support of the SCC by claiming that the SCC is too uncertain because the IWG used Roe and Baker distribution consistent with the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) findings rather than a distribution consistent with IPCC Fifth Assessment Report (AR5) findings.²⁵ MLIG also argues for the first time that an ECS value of 2.5°C would be a better representation of the climate’s sensitivity to increased concentration of CO₂.²⁶ These exceptions have no merit.

²³ See Tr. Vol. 2B at 115:12–15.

²⁴ MLIG continues to assert that the Commission should only consider a “local damages scope” for damages caused by CO₂ emissions. MLIG Exceptions at 83–93.

²⁵ MLIG Exceptions at 34–36 (discussing how reversible and irreversible consequences must be treated differently and how we cannot “keep burning coal now and then 80 years from now suddenly pull down carbon”).

²⁶ MLIG Exceptions at 45–47.

The question of whether the distribution used by the IWG was no longer valid after the IPCC issued its AR5 with slightly modified findings was addressed by the IWG in its response to public comments raising the same issue, by CEOs' witness Andrew Dessler, and most recently by the National Academy of Sciences (NAS). The ALJ's conclusion that MLIG and Peabody Energy failed to prove that the ECS was invalid is therefore well supported by the record.

The IWG addressed the fact that IPCC modified its findings slightly after the most recent 2013 update to the SCC.²⁷ The IWG concluded that future updates to the SCC should consider changes to this input. But as found by the ALJ, Dr. Dessler testified that if the IPCC were reviewing the current literature on climate sensitivity, it would return to the findings of AR4 rather than the AR5 findings.²⁸ So it is not clear that the next update to the SCC by the IWG will necessarily modify the Roe and Baker distribution despite the modified findings in AR5.

Support for the fact that the distribution might not change can also be found in the National Academy of Sciences Report on the IWG's SCC. The NAS Report states:

The committee concludes that there *would not be sufficient benefit of modifying the estimates to merit a near-term update* that would be based on revising a specific parameter in the existing framework used by the IWG to reflect the most recent scientific consensus on how global mean temperature is, in equilibrium, affected by CO₂ emissions. Furthermore, the committee does not recommend changing the distributional form used to capture uncertainty in the equilibrium CO₂ emissions-temperature relationship.²⁹

There is no merit to the contention that the use of the AR4 findings invalidates the SCC.

²⁷ Ex. 101, schedule 1 at 12. CEOs also address this issue in CEOs' Reply Brief at 4–5.

²⁸ ALJ Report at Findings of Fact ¶ 242.

²⁹ National Academies Press, Assessment of Approaches to Updating the Social Cost of Carbon: Phase 1 Report on a Near-Term Update (2016), *available at* <http://www.nap.edu/catalog/21898/assessment-of-approaches-to-updating-the-social-cost-of-carbon> (emphasis added).

Similarly, there is no support for the contention that an ECS of 2.5 is a better measure of climate sensitivity than the Roe and Baker distribution used by the IWG. A distribution—as opposed to a single value—better captures the uncertainty inherent in predicting how our planet will react to continued increased concentration of carbon dioxide.³⁰ The Roe and Baker distribution used by IWG contains both low values representing the possibility (as argued by Peabody Energy witnesses) that our planet will not warm much at all in response to a doubling of CO₂, as well as high values representing the possibility that we will experience a high degree of warming when our atmospheric CO₂ concentration is doubled.

To support this new argument, MLIG takes a sentence out of context from AR5 to support its position for a 2.5 degree Celsius ECS.³¹ “The preponderance of the evidence shows that the likely ECS is in ‘the lower part of the range from 1.5°C to 4.5°C,’ which would equate to a conservative average or central ECS of 2.5°C if one were to use one number for computational purposes.”³² The paragraph from which this quote is lifted begins: “Based on the combined evidence from observed climate change including the 20th century warming, climate models, feedback analysis and paleoclimate, *ECS is likely in the range 1.5°C to 4.5°C with high confidence.*”³³ This clearly contradicts MLIG’s position. The paragraph then goes on to discuss the change from the AR4 likely range of 2°C to 4.5°C to the AR5 likely range of 1.5°C to 4.5°C. The IPCC notes that “[t]his change reflects the evidence from new studies.”³⁴ The IPCC then explains that “[t]hese studies suggest a best fit to the observed surface and ocean warming for

³⁰ See, e.g., MLIG Exceptions at 37 (citing a table showing the range of possible climate sensitivities included in the Roe and Baker distribution).

³¹ MLIG Exceptions at 47 ¶ 24.

³² Ex. 405 part 36 at 1111.

³³ Ex. 405 part 36 at 1111 (emphasis added).

³⁴ *Id.*

ECS values in the lower part of the *likely* range.”³⁵ This is the sentence MLIG partially quote to try to claim that the likely range is lower than what IPCC AR5 states. But there is *nothing* in this paragraph that endorses a 2.5°C ECS.³⁶ Instead, after explaining the shift in the range from AR4 to AR5, IPCC concludes by stating:

Confidence today is much higher as a result of high quality and longer observational records with a clearer anthropogenic signal, better process understanding, more and better understood evidence from paleoclimate reconstructions, and better climate models with higher resolution that captures many more processes more realistically. Box 12.2 Figure 1 illustrates that *all these lines of evidence individually support the assessed likely range of 1.5°C to 4.5°C.*³⁷

It is worth emphasizing that when read in its entirety, this paragraph from AR5 says nothing to support an ECS of 2.5°C. Nor does it say that the likely ECS is in the lower part of the range from 1.5°C to 4.5°C. This paragraph merely explains the shift from AR4 to AR5 based on studies that the IPCC warns should not be given undue weight.³⁸ MLIG misrepresents the findings of AR5 with its partial quote.

MLIG also claims for the first time in its Exceptions that the Roe and Baker distribution was “misapplied” by the IWG, even based on AR4 data.³⁹ MLIG claims in its Exceptions that “the IWG included far fewer probabilities below 1.5°C than it should have based on AR4.”⁴⁰ There were 19 experts who provided testimony in this proceeding. Not one expert raised this issue. There is therefore no evidentiary basis on which to conclude that the IWG misapplied the Roe and Baker distribution. Moreover, even if the distribution did not match AR4 or AR5

³⁵ *Id.* (emphasis added to “these studies”).

³⁶ Moreover, as Dr. Dessler testified, “if IPCC were written today, 2 degrees would be the lower bound.” Tr. Vol. 3A at 112:6–7.

³⁷ *Id.* (emphasis added).

³⁸ The IPCC cautions against “giv[ing] undue weight to any short time period.”

³⁹ MLIG Exceptions at 33–36.

⁴⁰ MLIG Exceptions at 34.

findings precisely, there is no evidence or argument presented by MLIG of the change in SCC that would result from this slight change in range. This exception therefore has no merit.

III. The ALJ’s Conclusion That The IWG Properly Excluded The 7 Percent Discount Rate And Included The 2.5 Percent Discount Rate Is Supported By A Preponderance Of The Evidence.⁴¹

MLIG takes exception to the ALJ’s decision to adopt SCC values at the three discount rates used by the IWG.⁴² MLIG’s position with respect to discount rates remains confusing. MLIG states that it “has at all times been clear that a discount rate of 7 percent is appropriate when a regulation will affect private sector capital spending,” but in the same paragraph states that “MLIG has respectfully submitted, and maintains here, that it is appropriate to consider a discount rate of 5.66%.”⁴³ CEOs are therefore not clear what discount rate(s) MLIG believes should be used by the Commission.

Regardless, it is clear that the record shows by a preponderance of the evidence that a 7 percent discount rate is not appropriate to determine the damage cost of CO₂ and that a 2.5 percent discount rate is appropriate, as found by the ALJ. MLIG claims that the 7 percent discount rate is appropriate because the SCC values will ultimately be used in resource planning decisions—among other proceedings at the Commission.⁴⁴ Because resource planning involves decisions about how to spend capital—MLIG’s argument goes—a discount rate designed to mirror the real rate of return on capital is appropriate. But this argument conflates the purpose of a discount rate in quantifying the social cost of carbon and the purpose of a discount rate that might actually be used in a utility proceeding in front of the Commission where the utility is

⁴¹ CEOs’ arguments with respect to discount rates can also be found at CEOs Initial Brief at 18–19; 32–33; CEOs’ Reply Brief at 8–9.

⁴² MLIG Exceptions at 47–76.

⁴³ MLIG Exceptions at 48–49.

⁴⁴ MLIG Exceptions at 50–55.

making decisions about spending capital. The purposes are very different and there is no “one size fits all” discount rate.

As utilities determine how to spend capital, such as in a resource planning proceeding, it might be appropriate for the Commission to apply a real rate of return discount rate, as the Commission did in the Xcel docket highlighted by MLIG.⁴⁵ But when determining how to discount the expenditures that future generations must make to undo the damages caused by our actions today, such a high discount rate is inappropriate.

The record contains testimony from Dr. Stephen Polasky, a regents professor at the University of Minnesota, and testimony from the Agencies’ expert, Dr. Hanemann, describing in detail why a 7 percent discount rate is inappropriate and why a 2.5 percent discount rate is reasonable in the context of developing the SCC.⁴⁶ The ALJ was justified in relying on this testimony and MLIG’s exceptions should be dismissed.

IV. Xcel’s, MLIG’s, and the Utilities’ Focus On How These Values Can And Should Be Used Is Not Necessary Or Appropriate At This Stage.

Xcel, MLIG, and the Utilities all take exception to adopting the IWG’s proposed SCC values based on various arguments about how these values can or should be used in integrated resource planning.⁴⁷ But determining *how* these values should be used is not necessary when determining the values themselves. More importantly, the ultimate application of the values does not change the numeric values.

Xcel argues that its “range” is more useful in resource planning proceedings than four point values.⁴⁸ This argument is without merit. Utilities are supposed to model the carbon

⁴⁵ MLIG Exceptions at 49 n. 140.

⁴⁶ Ex. 100 at 11–12; ex. 101 at 20–21; ex. 104 at 8–9; ex. 800 at 53–54, 68; ex. 801 at 86–87.

⁴⁷ Xcel Exceptions at 5–10; MLIG Exceptions at 50–54; Utilities Exceptions at 15, n. 58.

⁴⁸ Xcel Exceptions at 19.

externality value until the carbon regulatory value applies in later years. Both the carbon externality values and the carbon regulatory values are currently expressed as ranges, but as a practical matter, they are modeled as single values, or high/low values.⁴⁹ It is not clear that there is any way to model a “range” without effectively choosing a finite set of point estimates to model.

If the Commission adopts the federal SCC values, it has flexibility in determining which value(s) a utility must consider in a particular proceeding. It is conceivable, for example, that the Commission (or intervening parties) would ask utilities to model possible expansion plans using the 95th percentile value and a mid-point value to represent how the expansion plan compares if we take a risk-averse approach vs. a risk-tolerant approach using the same discount rate. Or in a different proceeding, or at a different point in time, the Commission (or intervening parties) could ask a utility to compare expansion plans if we apply a 2.5 percent discount rate vs. a 5 percent discount rate. Adopting all four SCC values gives the Commission maximum flexibility. There is nothing about adopting a “range” that makes it more practical to use in resource planning.

MLIG argues that whether the SCC is being used in a cost/benefit analysis or whether it is being used to guide future resource decisions matters.⁵⁰ But how SCC is used does not change what it represents—the damage or benefit from a marginal ton increase or decrease in emissions of CO₂.⁵¹ The damage caused by a marginal ton increase in emissions of CO₂ does not change

⁴⁹ See, e.g., App. J to 2015 Xcel IRP (Docket No. 15-21) at 5–6. Xcel does not model a CO₂ externality value as required by statute in the years before 2019, and only models three point estimates for the CO₂ regulatory value in years 2019 and later.

⁵⁰ MLIG Exceptions at 50–54.

⁵¹ CEOs also responded to this argument in CEOs Reply Brief at 1–3.

depending on whether that information is being used to compare expansion plans or whether that information is being used to determine if a particular policy has a net benefit or net cost.⁵²

Lastly, Xcel argues that it is not practical to adopt values that might point in different planning directions.⁵³ This argument is particularly hard to understand. The purpose of running different sensitivities is to understand how planning must change depending on assumptions. Indeed, it would seem to be very useful to understand that if the Commission wants to avoid catastrophic damages from climate change, a utility's future resource mix must look different than if we assume climate change will not be damaging, or if we assume that we can invest enough capital today to simply pay off those damages later rather than avoiding them. Xcel would like to be able to create a scenario for the Commission to approve that does not change across sensitivities by creating such a small range of possible damage values that it predetermines the assumptions the Commission may wish to consider. If different SCC values point in different directions for a utility, it will be up to the utility and intervenors to argue to the Commission why a particular SCC value is more appropriate or why state policies or other considerations (such as rate impact and other socioeconomic considerations) favor one path over another. CEOs trust the resource planning process to address these concerns; we do not need to artificially manipulate the damage values in order to avoid decisions in the first place.

V. Exceptions To The ALJ's Conclusion That CEOs And The Agencies Proved The SCC Is Reasonable And The Best Available Measure For The Environmental Cost Of CO₂ Have No Merit.

The ALJ concluded that CEOs and the Agencies proved by a preponderance of the evidence that the SCC is reasonable and the best available environmental cost value for CO₂.⁵⁴

⁵² CEOs' Reply Brief at 1–2 (quoting ex. 101 at 33).

⁵³ Xcel Exceptions at 8.

⁵⁴ ALJ Conclusion ¶ 56.

MLIG seems to take exception to the fact that the ALJ did not find the witnesses that it, the Utilities, and Peabody Energy hired for this proceeding to be as credible as other witnesses. MLIG claims that the “ALJ did not assess the credentials of the experts,” implying that its witnesses were more credentialed than others and that their testimony should therefore be given more weight.⁵⁵ In particular, MLIG believes that when a scientist of Dr. Tol’s “caliber so testifies, it is untenable to ignore it and not give it substantial weight.”⁵⁶

First, there is no requirement that the ALJ summarize or “assess” the credentials of the various witnesses. The pedigrees of all 19 witnesses are in the record. Second, most of Peabody Energy’s witnesses were testifying about the existence or non-existence of climate change—including Dr. Richard Tol. Specifically Dr. Tol’s testimony was that there is no scientific consensus about climate change.⁵⁷ MLIG claims that our decision not to cross-examine Dr. Tol is a “tacit admission that his credibility is superior and that [we] risked undermining [our] position had [we] attempted to cross examine him.”⁵⁸ Using this logic, one could assume that Peabody Energy’s decision not to take exception to the ALJ’s report is a tacit admission that the ALJ was correct in all her findings and conclusions. Another plausible explanation is that CEOs did not find any of Dr. Tol’s testimony worth the time and effort of cross-examination and the ALJ assessed the credibility of witnesses based on the content of their testimony—not merely on their “credentials.”⁵⁹

Lastly, MLIG suggests that the ALJ erred in concluding that CEOs and the Agencies have met the burden of proof because our academic experts testified as to the process used by the

⁵⁵ MLIG Exceptions at 15.

⁵⁶ MLIG Exceptions at 16.

⁵⁷ Ex. 238 at 9:191–121.

⁵⁸ MLIG Exceptions at 16.

⁵⁹ A complete argument about the lack of credibility of Peabody Energy witnesses can be found at CEOs’ Reply Brief at 17–29; *see also* CEOs Initial Brief at 35–40.

IWG rather than creating our own process.⁶⁰ This misunderstands the purpose of this proceeding. The Commission specifically asked parties to address whether the SCC was reasonable and the best available measure of the damage cost value for CO₂.⁶¹ The Commission did not ask parties to perform their own “damage-cost modeling work.”⁶²

The ALJ properly relied on the record in this proceeding to make her findings and reach her conclusions. Drs. Abraham, Dessler, Hanemann, Gurney, and Rom provided extensive testimony about why the testimony being championed by MLIG was unsupported by the vast majority of peer-reviewed scientific literature and was not credible.⁶³ The ALJ was justified in relying on experts who were well credentialed and who relied on peer-reviewed literature in their relative fields of expertise for support for their testimony and the ALJ was justified in rejecting testimony of witnesses who did not.

In sum, the ALJ properly concluded that CEOs and the Agencies proved by a preponderance of the evidence that the SCC is reasonable and the best available measure of the environmental cost of CO₂.

CONCLUSIONS AND RECOMMENDATIONS

CEOs recommend that the Commission accept the ALJ’s findings of fact and conclusions except as discussed in CEOs exceptions filed May 15, 2016. CEOs took exception to the ALJ’s recommendation to recalculate the SCC with a shortened time horizon and to ignore the 95th percentile value.

⁶⁰ MLIG Exceptions at 16–17.

⁶¹ Notice and Order for Hearing, Pub. Util. Comm’n Dockets No. E-999/CI-00-1636 & E-999/CI-14-643 at 8 (Oct. 15, 2014).

⁶² MLIG Exceptions at 16.

⁶³ Ex. 102 (Abraham Rebuttal); ex. 103 (Dessler Rebuttal); ex. 801 (Hanemann Rebuttal) at 2–13; ex. 803 (Gurney Rebuttal); ex. 500 (Rom Rebuttal); ex. 105 (Abraham Surrebuttal); ex. 106 (Dessler Surrebuttal); ex. 802 (Hanemann Surrebuttal) at 1–31; ex. 804 (Gurney Surrebuttal).

CEOs recommend that the Commission reject the arguments raised by Xcel, MLIIG, and the Utilities with the following exceptions:

- CEOs agree with Xcel that the Commission should not automatically update its CO₂ environmental cost values whenever the IWG updates the SCC. As argued previously by CEOs,⁶⁴ CEOs assert that an update to the SCC by the IWG should create a rebuttable presumption that the update should be reflected in the Minnesota value, but parties are free to provide evidence to rebut that presumption if the update is not warranted.
- CEOs also agree with Xcel that the Commission should not open a docket to investigate development of a generalized method for how to address and measure emission leakage because that is a fact-specific inquiry that would be best conducted in a specific docket.

The Exceptions raised by Xcel, MLIIG, and the Utilities do not legitimately call into question the ALJ's conclusion that the SCC developed by the IWG is reasonable and the best available measure to determine the environmental cost of CO₂. The record is clear: climate change is unequivocal and if we fail to account for the likely consequences of our actions now, those consequences could be catastrophic. While there is inherent uncertainty involved in predicting how the future will unfold, the IWG reasonably accounted for that uncertainty. The SCC incorporates both the possibility that damages from climate change will be high and the possibility that mitigation beyond anything currently contemplated by state, national, or international policies will be successful. The IWG used three different models, five different emission scenarios, a distribution of possible climate sensitivity values, and three different discount rates to incorporate uncertainty into the SCC values. And lastly, the IWG created a fourth value to recognize that despite all of these efforts to account for uncertainty, there remains the very real possibility that we have nevertheless significantly underestimated the potential consequences of climate change.

⁶⁴ CEOs' Comments on Agencies' Recommendations, Docket No. 00-1636, June 26, 2016 at 5–6.

The ALJ did an admirable job sorting through the complex record and her conclusions about the SCC being reasonable and the best available measure to determine the environmental cost of CO₂ are well supported. Based on the foregoing and the entire record in this proceeding, CEOs respectfully request that the Commission adopt the SCC in its entirety, without modification.

Dated: May 16, 2016

Respectfully submitted,

/s/ Leigh Currie

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FOR THE PUBLIC UTILITIES COMMISSION

In the Matter of the Investigation into
Environmental and Socioeconomic Costs
Under Minn. Stat. § 216B.2422, Subd. 3

AFFIDAVIT OF SERVICE

PUC Docket No. E-999/CI-14-643
OAH Docket No. 80-2500-31888

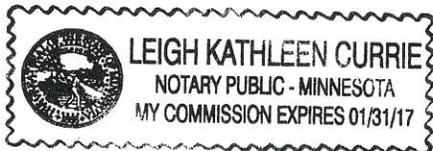
STATE OF MINNESOTA)
)ss.
COUNTY OF RAMSEY)

Erin Mittag being duly sworn says that on the 16th day of May, 2016, she served via electronic service the following:

- Clean Energy Organizations Reply to Exceptions

on the following persons, in this action, by filing through e-dockets:

Attached Service List




Erin Mittag

Subscribed and sworn to before me
this 16th day of May, 2016


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