April 10, 2020

Before the Public Utilities Commission of the State of Colorado

Proceeding No. 19R-0096E

In the Matter of the Proposed Amendments to Rules Regulating Electric Utilities, 4 Code of Colorado Regulations 723-3, relating to Electric Resource Planning, the Renewable Energy Standard, Net Metering, Community Solar Gardens, Qualifying Facilities, and Interconnection Procedures and Standards

Comments from the Institute for Policy Integrity on the Interim Decision Proposing Additional Rule Revisions on the Social Cost of Greenhouse Gases

The Institute for Policy Integrity at New York University School of Law[1] submits these supplemental comments on the Commission's additional rule revisions regarding the social cost of greenhouse gases. These comments build on, and incorporate, Policy Integrity's previous comments to the Commission on the social cost of greenhouse gases.[2] Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decisionmaking through advocacy and scholarship in the fields of administrative law, economics, and public policy.

Express the Minimum Value of $46 per Short Ton in 2018$, Not in 2020$

While we appreciate that the Commission took our advice to specify a dollar-year for the base value, setting the minimum social cost of carbon estimate at $46 per short ton in 2020 dollars is inconsistent with the statute and with the best available economics. The minimum value of $46 per short ton should be in 2018$.

The $46 per short ton minimum value was set by statute in 40.3.2-106(4) C.R.S., as added by SB 19-236. The relevant language from SB 19-236 was first proposed on April 9, 2019, was signed into law on May 30, 2019, and also became effective May 30, 2019.[3] There is no reason to think that, when drafting the law in early 2019, the legislature was trying to guess what inflation rates would be in the future and so try to express their minimum value in terms of inflation rates that could not be known until nearly two years into the future. Indeed, we will not know the value of 2020$ until around February 2021: calculations of inflation rates provided by the Bureau of Labor Statistics usually trail about two months behind, and the values for 2020$ cannot be calculated until the full year of data is in for year 2020.[4]

Given that the legislature was so focused on using the federal Interagency Working Group's 2016 technical support document to set minimum values,[5] it makes sense to assume a dollar-year such that $46 per short ton will approximate the Working Group's central estimate for the social cost of carbon for year 2020 emissions.

The Interagency Working Group's central estimate for year 2020 emissions is $42 per metric ton in 2007$.[6] On a per-short-ton basis, that equals $38.1 per short ton in 2007$.[7] Converting from 2007$ to

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[1] No part of these comments purports to present the views, if any, of New York University. Note that while Policy Integrity is based at New York University, our legal director, Jason Schwartz, lives and works in Denver, Colorado.

[2] See especially Policy Integrity's October 21, 2019 Comments, https://policyintegrity.org/documents/Colo_PUC_Additional_Revisions_on_SCC_Comments_2019.10.21-final.pdf and March 29, 2019 Comments, https://policyintegrity.org/documents/Electric_Rule_NOPR_Initial_Comments_on_SCC_2019.3.29.pdf.

[3] https://leg.colorado.gov/bills/sb19-236.

[4] *See* BLS, CPI for all Urban Consumers, https://data.bls.gov/timeseries/CUUR0000SA0 (providing, as of April 9, 2020, monthly data through February 2020, and calculating annual averages only through 2019).

[5] *See* 40.3.2-106(6)(b) C.R.S. (referencing the 2016 technical update).

[6] IWG, Technical Update of the Social Cost of Carbon at App. A (Aug. 2016), https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/scc_tsd_final_clean_8_26_16.pdf.

[7] $42/metric ton * 1 metric ton/2204.62 pounds = $0.019051/pound * 2000 pounds/short ton = $38.10/short ton. Alternatively, you can divide the social cost of carbon per metric ton by 1.10231 to convert to a per-short ton figure.

2018$, that equals $46.14 per short ton in 2018$.[8] Thus, it is most likely that the $46 per short ton minimum value for year 2020 emissions provided by the legislature was meant to be in 2018$.[9]

Depending on the exact economic trajectory for 2020 (which is very uncertain given the current pandemic), it is likely that the equivalent value expressed in 2020$ will end up being higher than $46. The most recent available data from BLS is for February 2020, and converting $46 per short ton in 2018$ to Feb.-2020$ gives a value of $47.39, meaning the proposed rules undercount the statutory minimum for year 2020 emissions expressed in Feb.-2020$ by $1.39 per short ton. Though a difference of $1.39 per short ton may not seem huge (and again, the actual difference will change depending on the course of inflation rates over the rest of 2020), any discrepancy will be magnified over time as the Commission applies its "escalation rate" to calculate values for emissions that will occur over the next 40 years. Thus, the difference matters, and the dollar-years for the minimum value should be specified as 2018$.

Redline of Rule 3552(a)

(I) The cost of carbon dioxide emissions shall not be less than $46.00 per short ton in ~~2020~~ 2018 dollars.

Base Values on Best Economic Practices, Not the "Most Recent" Federal Developments

We renew our prior comments that it would be preferable to base standards on the best available science and economics, using the federal government's 2016 technical support document as an example and as a source for minimum estimates, rather than tying Colorado's estimates exclusively to "the most recent social cost of carbon dioxide developed by the federal government." Read literally, the "most recent" estimates of the social cost of carbon dioxide "developed by the federal government" are the so-called "interim" values developed during the Trump Administration.[10] While the minimum values set by the Commission's rules will at least supplant the irrationally low calculations estimated by the Trump administration's most recent efforts (including just $1 per metric ton for year 2020 emissions), a reference in the rules to "the most recent . . . federal [estimates]" could still implicitly sanction some of the Trump administration's troubling and arbitrary choices, like its application of a 7% discount rate to climate effects. The exclusive focus on past federal estimates could also make it more difficult for the

[8] Our October 2019 comments used BLS's CPI Inflation Calculator, https://data.bls.gov/cgi-bin/cpicalc.pl, which is a shortcut method that requires the selection of specific months rather than yearlong average values. This calculation instead uses BLS's inflation tables, https://data.bls.gov/timeseries/CUUR0000SA0 (showing a ratio of 207.342 for 2007$, to 251.107 for 2018$), and so is more accurate. $38.1 * 251.107/207.342 = $46.14.

[9] Whether by coincidence or not, $46 per short ton could also be derived by mis-converting the units from $42 per metric ton in 2007$. A metric ton consists of 2204.62 pounds, while a short ton is 2000 pounds. To convert from $42 per metric tons to a value per short ton, you first divide by 2204.62 pounds to get a per-pound figure of $0.01905, and then multiply by 2000 pounds for a per-short-ton figure of $38.1. But if rather than *dividing* by 2204.62/2000 you instead were to *multiply* by 2204.62/2000, you would get a figure of $46.29. If that mis-conversion were the source of the legislature's $46 figure, then their figure would be in 2007$. Regardless, the legislature's intent was clearly to base figures on the IWG's 2016 technical support document, and so the ultimate goal should be to adopt minimum estimates that are closest to the IWG's estimates.

[10] *See, e.g.*, U.S. Environmental Protection Agency & U.S. Dept. of Transportation, *Final Regulatory Impact Analysis for the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Year 2021-2026 Passenger Cars and Light Trucks* at 1058, 1063-64 (Mar. 30, 2020) (reaffirming and finalizing the use of a so-called "domestic"-only, "interim" social cost of carbon estimate for year 2020 emissions of $1 or $8 (in 2016$) using either a 7% or 3% discount rate, respectively; those values rise to just $2 and $10 by year 2050 emissions); *see also, e.g.*, Institute for Policy Integrity et al., Comments on Quantifying and Monetizing Greenhouse Gas Emissions in the Safer Affordable Fuel-Efficient Vehicles Proposed Rule (Oct. 26, 2018), https://policyintegrity.org/documents/Emissions_Standards_PRIA_SCC_Comments_Oct2018.pdf (criticizing the Trump administration's domestic-only, "interim" social cost of carbon estimates as arbitrary, biased, inconsistent with legal requirements, and inconsistent with the best available science and economics).

Commission to follow future developments in the best estimates of the social cost of greenhouse gases that may occur outside the federal government, such as through a collaboration of state governments and academics.

The mere fact that the statute references "the most recent assessment . . . developed by the federal government" does not mean that the rules have to repeat that phrase verbatim. The Commission is not bound to adopt a literal reading of the statute in its regulations,[11] given that doing so would be at odds with the legislature's clear intent to rely on the 2016 Interagency Working Group's approach as an example of appropriate methodology.[12] The rules can follow a path that, while grounded in the methodological principles and goals of the 2016 Interagency Working Group numbers (i.e., "base[d] . . . on," as required by statute[13]), remains free to follow future best practices and developments.

Redline of Rule 3552

(a) ~~The cost of carbon dioxide emissions shall be equal to the social cost of carbon dioxide emissions developed by the federal government.~~ Utilities and the Commission shall use the best available estimates of the global social cost of greenhouse gases, consistent with the best available science and economics, such as the methodology developed by the federal Interagency Working Group on the Social Cost of Greenhouse Gases in its August 2016 Technical Support Documents.

Specify the Applicable Discount Rate

The Commission's interim decision does not directly address our prior comments on the need to specify the applicable discount rate. We renew those comments here.

Specifying the discount rate is crucial. For example, if an alternative resource portfolio will reduce emissions, relative to a baseline portfolio, by 1 million short tons of carbon dioxide in the year 2035, to monetize the benefits of those emissions reductions, the first step is to multiply 1 million short tons by the social cost of carbon dioxide for year 2035 emissions: for example, based on the Commission's proposed methodology of applying an escalation rate to the minimum value, the figure for year 2035 emissions will be about $62 per short ton in 2018$.[14] The resulting product—roughly $62 million—represents the real-world contribution to the reduced risk of agricultural damage, property damage, human health impacts, and so forth, that those 1 million short tons would have caused over the

[11] *See* AviComm, Inc. v. Colorado Pub. Utilities Comm'n, 955 P.2d 1023, 1031 (Colo. 1998) ("[A] statutory interpretation that defeats the legislative intent or leads to an absurd result will not be followed. A statute must be read and considered as a whole and should be construed to give consistent, harmonious, and sensible effect to all of its parts. Finally, although we must give effect to the statute's plain and ordinary meaning, the intention of the legislature will prevail over a literal interpretation of the statute that leads to an absurd result.") (internal citations omitted).

[12] *See* 40.3.2-106(4)-(6)(b) C.R.S. (referencing the 2016 technical update and relying on it for minimum values for annual growth rates).

[13] 40.3.2-106(4) C.R.S.

[14] Starting with a value for year 2020 emissions of $46 per short ton in 2018$, we first multiply by 1.021 per year for the years 2021-2029, and then by 1.019 per year for the years 2030-2035, as per the Commission's decision to apply a minimum "escalation rate" based on the Interagency Working Group's "average annual growth rates" for the 3%-central value estimates published in the 2016 technical update. $46 * 1.021^9 * 1.019^6 = $62.09. Note that the Interagency Working Group's 2016 technical update is unclear on which growth rate would apply to year 2030 emissions, as it lists an average growth rate of 2.1% for "2020-2030" and then an average rate of 1.9% for "2030-2040," with the year 2030 appearing in both ranges. This calculation conservatively starts applying the lower rate of 1.9% in the year 2030. Again, Policy Integrity repeats its previous preference for simply adopting the full set of estimates calculated by the Working Group in Appendix A of the 2016 technical update, rather than applying average growth rates that were backed out of that set of calculations in the first place.

centuries following their emission in the year 2035. By the nature of the Interagency Working Group's central estimate of the social cost of carbon dioxide, those future forgone damages have been discounted back to the year of emissions, in 2035, using a 3% discount rate. However, if the analysis of alternative resource portfolios is being carried out in the year 2020, the future benefits that will occur in the year 2035 still need to be discounted back to the present value, as of the year 2020. That will allow for comparison against other costs and benefits as of the time of analysis. Therefore, those $62 million in future benefits should be discounted back, also at the 3% discount rate, to the present value in year 2020—which is roughly $39.7 million.

SB 19-236 specified that "the commission shall use the same discount rate as that used to develop the federal social cost of carbon dioxide."[15] The rule revisions should include similar language, and specify that future monetized climate effects should be discounted at the same rate as used to calculate the underlying social cost of greenhouse gases. That means for a central estimate based on a social cost of carbon that used a 3% discount rate, future climate effects should also be discounted at a 3% rate; if the Commission also uses the Interagency Working Group's 2.5% rate estimates for sensitivity analysis, the future monetized values associated with that sensitivity analysis should be discounted at a 2.5% rate. It would be inappropriate, however, to discount any future climate effects using a discount rate that might apply to private capital or operating costs, which sometimes is calculated as a high as 7%.[16] To avoid the application of such inappropriate discount rates to future climate effects, the rules should specify the correct discount rates.

Redline of Rule 3552(a)

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(III) Any discount rate applied to calculate the present value of the total costs or benefits of future changes in emissions of greenhouse gases shall be the same as the discount rate used to calculate the underlying estimate of the social cost of greenhouse gases.

Finalize This Year's Calculations Now

We renew our prior comments that the Commission should not wait until August and November 2020 to propose and finalize, respective, a current set of calculations.

Retain the Flexibility to Require Use of the Social Cost of Greenhouse Gases in Additional Proceedings

We renew our comments that the Commission should retain the flexibility to require use of the social cost of greenhouse gases in additional proceedings, by amending 3551(b) to clarify that relevant proceedings include, but are not limited to, the listed proceedings.

Redline of Rule 3551

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(b) All utilities shall consider the cost of ~~carbon dioxide~~ greenhouse gas emissions, as

[15] *See* 40.3.2-106(4) ("When calculating the cost of carbon dioxide emissions for any proceeding listed in subsection (1) of this section, the commission shall use the same discount rate as that used to develop the federal social cost of carbon dioxide, as set forth in the technical support document.").

[16] *See* IWG, 2016 TSD, at 17 ("damages from future emissions should be discounted at the same rate as that used to calculate the SC-CO2 estimates themselves to ensure internal consistency"). *See* Richard L. Revesz et al., Best Cost Estimate of Greenhouse Gases, 357 SCIENCE 6352 (2017) (explaining that a "7% rate based on private capital returns is considered inappropriate because the risk profiles of climate effects differ from private investments.").

determined by the Commission in accordance with rule 3552, when determining the cost, benefit, or net present value of any plan or proposal submitted by the utility in relevant proceedings as specified by the Commission, including but not limited to ~~in one of~~ the following proceedings.

Additional Estimates: Non-Carbon Dioxide Gases and Sensitivity Analyses

We also renew our comments to consider the social cost of methane, though the Commission's interim decision has declined to adopt those proposed revisions.[17] Nevertheless, we appreciate the Commission's reminder that the evaluation and monetization of damages from other, non-carbon greenhouse gas emissions may be warranted in other case-specific adjudications.[18] We note again that the social cost of methane in particular will likely be relevant to the Commission's decisions when assessing, for example, the climate effects of beneficial electrification of heating, or when considering the upstream emissions of electric resource portfolio options.[19]

More generally, as Policy Integrity has commented before, the Commission should treat the requirements of SB 19-236 as a floor and not a ceiling. To that end, the Commission should rely on its broad authorities and more fully adopt the best practices for monetizing climate externalities. Doing so will best allow the Commission first to compare the climate effects of various alternative plans and proposals submitted by utilities against the costs and benefits of other alternative action options, and then to transparently convey the costs and benefits of the Commission's final decisions to the public. For example, the Commission should also require the consideration of the Interagency Working Group's high-impact estimates, in addition to the central estimates, as a sensitivity analysis. Though the Commission has declined to adopt rule language to that effect, we appreciate the Commission's note that nothing in the statute would prohibit "additional analysis for Commission consideration,"[20] and we encourage the Commission to consider sensitivity analyses based on the high-impact social cost of carbon values in future proceedings.

Sincerely,

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Justin Gundlach, Attorney

Institute for Policy Integrity

[17] Decision No. C20-0207-I, Interim Decision in Proceeding No. 19R-0096E (adopted Feb. 27, 2020), at ¶ 30.

[18] *Id.*

[19] More generally, when comparing alternatives that involve natural gas or coal against alternatives that do not, the social cost of methane may be an important and relevant tool for analysis.

[20] Decision No. C20-0207-I at ¶ 35.