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National Association of Regulatory Utility Commissioners

**Commission Approaches to Calculating the Social Cost of Greenhouse Gas Emissions**

On December 13, 2021, NARUC facilitated a state commission staff "surge" call on commission approaches to calculating the social cost of greenhouse gases (SC of GHGs). SC of GHGs is an estimate of the damages resulting from the emissions of GHGs such as carbon dioxide, methane, and nitrous oxide into the atmosphere. The SC of GHGs – and social cost of carbon (SCC), in particular – has been used across local, state, and federal governments to inform decision-making, including by state public utility commissions for issues such as resource planning and energy efficiency and demand response programs. Legislation in several states requires that commissions and utilities adopt an SCC, and several states currently use an SCC derived by the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG). On this call, commission staff from Colorado, New York, and Washington described various approaches to adopting an SCC / SC of GHGs and incorporating it into decision-making processes.

**Colorado**

In 2019, the Colorado General Assembly passed Senate Bill 236, which was the first statute to establish a SCC of $46 per short ton starting in 2020 for electric public utilities. This SCC is specifically used when determining the cost, benefit, or net present value of any plan or proposal related to electric resource planning, electric demand-side management (DSM), transportation electrification, or other forms of beneficial electrification. The staffer added that in their own work, they used the SCC value of $46 per short ton for Xcel Energy when litigating their 2020 – 2021 electric DSM plan.

In 2021, the SCC value was updated in House Bill 1238, which concerned the modernization of gas energy efficiency (EE) programs. Whereas the 2019 bill applied the SCC to electric utilities, the 2021 bill applied the cost to all electric and gas utilities subject to commission jurisdiction. The SCC was increased to $68 per short ton with this bill. Further, the bill states that the commission shall base the SCC on the most recent assessment developed by the federal government using a discount rate of 2.5 percent or less. The discount rate cannot exceed the lesser of 2.5 percent or any lower value established by the most recent successor to the federal technical support document. The IWG's SCC for 2020 is $76 per metric ton at a 2.5 percent discount rate. The difference between these values is due to Colorado's use of short ton as a unit while the IWG uses metrics tons.

House Bill 1238 also established the first social cost of methane for gas DSM, stating that the commission shall use a social cost of methane of not less than $1,756 per short ton using a discount rate of 2.5 percent. For DSM, this bill seems to contemplate using both the social costs of carbon and methane when calculating the cost-effectiveness of a DSM plan. This means that the valuation of avoided GHGs feed into the total resource cost test of a DSM plan.

**New York**

In 2016, the New York Public Service Commission (NY PSC) reviewed the benefit-cost analysis format, which had been around for many years primarily for EE and DSM programs. For electric utilities, the commission ordered the use of the IWG's SCC of $51 per metric ton with a 3 percent discount rate until the Tier 1 large-scale renewable energy credit (REC) program was up and running. This was later substituted with the latest procurement price for a REC, which is more of an abatement cost approach. While some abatement cost approaches are hypothetical using a supply curve from modeling, this one was based on auction results. However, the abatement costs generally tended to be in the same range per megawatt-hour (MWh) because as the grid decarbonizing, the emissions on the margin become lower.

Because New York participates in the Regional Greenhouse Gas Initiative (RGGI) carbon market, a carbon price is already applied to emissions. Therefore, when applying the SCC, it is necessary to subtract the RGGI carbon price. The cost of carbon went for about $13 per short ton in the last RGGI auction, and Tier 1 REC prices are generally around $0.02 per kilowatt-hour (kWh). These values are starting to diverge as the SCC increases over the long term. This is due to a number of reasons including technological innovation and improvements in the supply chain.

For natural gas utilities, the state does not have an equivalent to a REC procurement program, however, natural gas utilities are included in the RGGI market. The NY PSC is investigating a model marginal abatement cost for natural gas utilities, but for now, they use the SCC from the IWG multiplied by 0.053 metric tons per million British thermal units (MMBtu) for benefit-cost analyses. This cost would apply to EE, non-wires alternatives, non-pipe alternatives, and advanced metering infrastructure. The SCC is also used to compensate distributed electric generators, mostly for solar energy. Community solar and large customers (anyone with a demand charge) will be compensated the higher of either the SCC minus RGGI or the Tier 1 REC. Currently, the SCC net present value for a 20-year commitment is around $0.031 per kWh. This reflects the NY PSC's value of distributed energy resources (VDER) tariff. New York is also still paying a version of the marginal abatement cost because $0.031 per kWh is not economical for distributed solar projects, which operate at a 14 percent capacity factor. To incentivize solar, New York pays upfront incentives on top of the $0.031 per kWh SCC.

The NY PSC does not have an explicit charge to monetize the benefits of avoiding methane and other GHG emissions. However, the commission is looking into this for electric utilities and has conducted studies that seem to suggest that the upstream quantity of reduced emissions and climate benefits are not very large. Additionally, legislation in New York has mandated reductions in GHG emissions, requiring 70 percent of electricity from renewable sources by 2030 and 100 percent emissions-free generation by 2040. The NY PSC is focused on minimizing the marginal abatement costs to achieve these state goals. For gas utilities, safety issues alone are enough to justify the commission's accelerated leak-prone pipe replacement program, although reducing stray methane emissions is certainly a side benefit.

**Washington**

In 2019, the Washington state legislature passed a suite of bills including the Clean Energy Transformation Act (CETA), which set an ambitious multi-decade energy policy agenda. The CETA set the following targets: 1) by 2025, all electric utilities must eliminate coal-fired generation; 2) by 2030, all electric utilities must be GHG-neutral, meaning that the remining carbon emissions are offset by renewable energy, energy efficiency, carbon-reduction project investments, or funding for low-income customer assistance; and 3) by 2045, all electric utilities must generate all power from renewable or zero-carbon resources. Washington's new law include methane as part of the definition of GHGs, and the Washington Utilities and Transportation Commission (UTC) adopted this definition into rules in 2020. These new rules are in dockets UE-191023 for planning, and UE-190837 for new purchases of electricity and acquisition rules.

In 2021, regulated utilities were working to develop their first clean energy action plans. This includes evaluating intermediate- and long-term resource options that comply with the UTC's 2020 rules. One of the requirements is that electric utilities must incorporate the SCC using the IWG's August 2016 guidance. The statute requires utilities to use this as a cost adder, factoring in a 2.5 percent discount rate and annual inflation adjustment, in resource planning. 2021, Washington currently sets the value range from $84 to

$117 per metric ton from 2020 to 2050. These values are published on the commission website and are updated annually to adjust for inflation.

The commission staff is currently continuing to review the 2021 Integrated Resource Plans (IRPs) and the 2022 Clean Energy Implementation Plans (CEIP) for the first time under these new rules. In these plans, utilities provide data related to the modeling of the SC of GHGs and impacts on retirements, generation builds, and demand-side resources. One challenge in implementing the statute involves multistate utilities subject to different state rules about SC of GHGs, and the UTC recently responded to a multistate utility petition related to the CEIP and the inclusion of the SC of GHGs in their resource acquisition decision. Additionally, there are revised rules for electric utilities in 2021 related to reporting. Electric utilities are now required to annually report their GHG content calculation as well as energy and emissions intensity metrics.

On the gas side, the new law requires that gas utilities include an upstream natural gas emissions in the calculation for cost effective conservation. In 2021, gas utilities began incorporating estimates of upstream emissions in their IRP processes. However, UTC staff raised some questions about the assumptions gas utilities made in these estimates. This is an ongoing conversation and challenge. The new laws also require utilities to offer renewable natural gas (RNG) to their customers to reduce the emissions from the natural gas supply chain, and two out of the four gas utilities in Washington introduced tariffs to allow customers to voluntarily purchase blocks of RNG. At this point in time, the commission is not requiring a specific level of emissions reductions from these RNG programs.

**Discussion**

A question was asked about whether the SC of methane would be considered for the repair or modernization of gas distribution pipelines in Colorado. The Colorado staffer responded that the House Bill 1238 includes consideration of the social cost of methane and may also be referenced in other climate and energy legislation.

Another staffer initiated a discussion about using the marginal cost of abatement versus the social cost of carbon. While there is a lot of talk about what the right number is for benefit-cost and cost-effectiveness tests, it is challenging to come up with a consistent baseline for different investments and implementing a consistent point of view in benefit-cost tests. The staffer focused on the latter part of the question, asking presenters whether they had dealt with expanding the societal point of view beyond just the social cost of carbon when valuating benefits and costs. New York uses a societal cost test which is essentially a total resource cost plus carbon price. They use, for example, discount rates that reflect the utility cost of capital and not a lower social discount rate.

**Conclusion**

Recent legislation in Colorado, New York, and Washington has either implemented or updated the SC of GHGs for electric and gas utilities. While all the presenting states had SCC values derived from the IWG, a SC of methane is explicit only in Colorado and Washington. Challenges and considerations currently facing commissions regarding the SC of GHGs include questions about modeling social costs, the implementation of rules for multistate utilities, and consistent application of the societal point of view across cost tests.

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