

UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

**Carbon Pricing in Organized)
Wholesale Electricity Markets) Docket No. AD20-14-000**

Regarding the October 15, 2020 Notice of Proposed Policy Statement

**Comments of
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The Federal Energy Regulatory Commission (FERC) is proposing to issue a policy statement to encourage efforts to incorporate a state-determined carbon price in organized wholesale electricity markets. On September 30, 2020, FERC convened a technical conference on state-determined carbon pricing in organized wholesale electricity markets operated by regional transmission organizations (RTOs) and independent system operators (ISOs). FERC claims that “the record of that conference identified numerous potential benefits from incorporating a carbon price set by one or more states into RTO/ISO markets”. The proposed policy statement was issued to clarify the Commission’s jurisdiction over RTO/ISO market rules that incorporate a state-determined carbon price and to encourage RTO/ISO efforts to explore and consider the benefits of potential Federal Power Act (FPA) section 2051 filings to establish such rules.

I have prepared these personal comments that do not represent the opinions of any organization because I believe the rationale used to justify the policy statement is fundamentally defective. In particular, the technical conference was flawed because there was no discussion whether practical carbon-pricing is an “efficient” market-based tool. In my opinion the first rule of efficient policy is that it works. I define a working carbon policy as one that reduces carbon dioxide emissions at a cost below the social cost of carbon dioxide and does not distort the market. Nobody asked whether these policies have worked and no one addressed, much less proved, that they work in the real world. I believe that those who support carbon pricing on theoretical economic grounds are overlooking or are unaware of the practical issues I will describe in these comments. As a result, I don’t think RTO/ISO market rules that incorporate a state-determined carbon price in RTO/ISO markets can be just and reasonable for the rate payers whatever the value to the RTO/ISO market operators.

Background

I am motivated to submit these comments because there is another side of the story of carbon pricing that received no attention at the Carbon Pricing Technical Conference; the practical limitations of future carbon pricing policies and the observed results of existing programs. I am a retired electric utility meteorologist with nearly 40-years of experience analyzing the effects of environmental regulations on electric and gas operations. I started working with market-based pollution programs in 1990 and the Regional Greenhouse Gas Initiative (RGGI) since discussion started on it sometime in early 2004. I base my comments primarily on my involvement in the RGGI program process. I have evaluated many aspects of the [RGGI program](#) from the relatively unsung viewpoint of a compliance entity and the completely ignored viewpoint of a ratepaying consumer. I also have extensive experience with air pollution control theory and implementation having worked every cap and trade program affecting electric generating facilities in New York including the Acid Rain Program and several Nitrogen Oxide programs. Note that my experience is exclusively on the industry side. There are important ramifications between the difference in perspective of affected sources trying to comply with the rules and economists opining about how the programs are doing.

The opinions expressed in these comments do not reflect the position of any of my previous employers or any other company I have been associated with, these comments are mine alone.

Social Cost of Carbon

In order to determine whether any carbon pricing proposal will affect the justness and reasonableness of rates the Commission must consider whether the proposal will reduce carbon dioxide emissions at a cost below some standard of reasonableness. There is a cost where the abatement costs exceed any estimates of the cost impacts of CO₂ on the climate.

The [Social Cost of Carbon](#) (SCC) is the present-day value of projected future net damages from emitting a ton of CO₂ today and is a widely used metric to establish a reasonable value.

My primary climate policy related interest is New York's Climate Leadership and Community Protection Act (CLCPA). In section [§75-0113, Value of Carbon](#) the CLCPA states that the "social cost of carbon shall serve as a monetary estimate of the value of not emitting a ton of greenhouse gas emissions". The law states that New York State Department of Environmental Conservation (DEC) "shall consider prior or existing estimates of the social cost of carbon issued or adopted by the federal government, appropriate international bodies, or other appropriate and reputable scientific organizations." At this time the DEC is developing a [guidance document that establishes the value of carbon for the CLCPA](#). In the draft guidance DEC "specifically recommends that State entities provide an assessment based on a range of discount rates from 1 to 3 percent to represent the range of potential impacts to society or alternatively, using only a central value that is estimated at the 2 or 2.5 percent discount rate." They propose using the [Interagency Working Group 2016 estimates](#) that translate into a 2020 value of carbon dioxide of \$53-421 per ton, with a central value of \$79-125 per ton".

Carbon Pricing Practical Problems

The notice of the proposed policy statement on Carbon Pricing in Organized Wholesale Electric Markets states that "We agree that proposals to incorporate a state-determined carbon price in RTO/ISO markets could, if properly designed and implemented, significantly improve the efficiency of those markets". In this section I argue that there are practical reasons why it is impossible to properly design and implement a carbon pricing scheme that will affect efficiency of those markets in the best interests of the public.

Carbon pricing is a climate policy approach that charges sources for the tons of carbon dioxide that they emit. A [Resources for the Future \(RFF\) summary](#) lists several attributes that they claim makes carbon pricing more attractive than other potential policies to reduce carbon dioxide emissions:

- Carbon pricing allows emitters to choose the most efficient method to reduce emissions.
- An economy-wide carbon price applies a uniform price on CO₂ emissions regardless of the source.

- A carbon price encourages individuals and businesses to reduce their carbon emissions more than conventional regulations.
- A carbon price creates a new revenue stream that can be used in a number of ways.

I will compare those attributes to the real-world of carbon pricing.

RFF states that “carbon pricing allows emitters to choose the most efficient method to reduce emissions”. In the context of power plants under FERC jurisdiction this is mostly irrelevant. In the first place, there are no cost-effective add-on controls for CO2 reductions, so fossil-fired electrical generators only have limited options. For an individual power plant operator, the only effective approach is to switch to a lower emitting fuel. Power plants can also be replaced in whole or part by alternative generation, but the business model of most de-regulated generating companies precludes the option to develop replacement generation. I have shown that in RGGI the [market participants don't behave as expected by economic market theory](#) so the markets don't necessarily behave as the economists think they should. As a result, all the modeling and laboratory testing economic results “proving” market efficiency should be viewed cynically. I believe that even though carbon pricing advocates have convinced themselves that somehow carbon pricing is different than a tax, the reality is that because of the limited options for compliance any carbon price is treated just like a tax by electric generating operators. Because energy taxes are inherently regressive, the carbon price result is not in the best interest of low-income ratepayers.

There is another aspect to carbon emissions reductions that is relevant to FERC. In order to replace firm, dispatchable fossil-fired capacity the total costs to make in-kind replacement with renewable wind and solar have to be included. No one at the technical conference addressed how a carbon price signal for generators would lead to the development of the transmission and ancillary grid support services necessary to support intermittent and diffuse wind and solar generation. In this context, consider an electric system carbon price. In this approach any generator that emits CO2 will have to include a carbon price in their bid which serves to provide the non-emitting generators with more revenue. However, solar and wind generators are not paying the full cost to get the power from the generator to consumers when and where it is needed. Because solar and wind are intermittent, as renewables become a larger share of electric production energy storage now provided by traditional generating sources will be needed but there is no carbon price revenue stream for that resource. Because solar and wind are diffuse, transmission resources are needed but solar and wind do not directly provide grid services like traditional electric generating stations. Energy storage systems could provide that support but they are not subsidized by the increased cost to emitting generators. When the carbon pricing proposal simply increases the cost of the energy generated, I think that approach will lead to [cost shifting](#) where the total costs of fossil fuel alternatives have to be directly or indirectly subsidized by the public. This result is not in the best interests of low-income ratepayers.

RFF and the economists at the FERC Technical Conference all agree that an economy-wide carbon price that applies a uniform price on CO₂ emissions, regardless of the source, is the ideal solution. On the other hand, speakers at the conference admitted that this ideal implementation was unlikely. Pollution leakage refers to the situation where a pollution reduction policy simply moves the pollution around the globe rather than actually reducing it. Economic leakage is a problem where the increased costs inside the control area leads to business leaving for non-affected areas. There also is an [economic leakage](#) effect in electric systems where a carbon policy in one jurisdiction may affect the dispatch order and increase costs to consumers in another jurisdiction. As a result, work arounds are necessary to address these different forms of leakage which complicates the implementation and may lead to unintended consequences that are not in the best interests of the public.

RFF's third attribute stated that 'A carbon price encourages individuals and businesses to reduce their carbon emissions more than conventional regulations'. There are several problems with this ideal. In a situation where there is a specific target like New York's CLCPA 2040 target for zero emissions from the electric sector, it is necessary to consider the total costs and then the necessary carbon price. In order for a carbon price to effectuate change the carbon price would equal the cost of the conversion divided by the total tons emitted over the implementation period. I conservatively [estimated the cost for New York](#) to meet the state's goal of a zero-emissions electric sector by 2040 as \$620 per ton. The cost for converting the country by 2035 as has been proposed would be much higher because the number of years in the implementation period is shorter and the reduction costs themselves would be higher because New York's starting point for emissions is relatively lower. Recall that the highest social cost of carbon value that New York is considering is no more than \$421 per ton.

The second problem is that individuals and businesses also have limited opportunities to reduce carbon emissions. One commentator [points out](#) that "The only logical reason for a carbon tax is to reduce emissions. Such a tax might help to reduce energy consumption, but only at punitive levels, because energy demand is so inelastic. Therefore, the real intention is to make fossil fuels so expensive that renewables can eventually become competitive, along with carbon capture and sequestration, hydrogen heating etc." Again, this is not in the best interests of low-income consumers because it is regressive.

In order for a carbon price to be more effective than conventional regulation the funds received will have to be spent effectively. I have evaluated the results of the investments made by regulatory agencies to date in RGGI measured as the cost per ton reduced. The RGGI states have been [investing investments of RGGI proceeds](#) since 2008 but their investments to date are only directly responsible for [less than 5% of the total observed reductions](#). Furthermore, from the start of the program in 2009 through 2017, RGGI has invested \$2,527,635,414 and reduced annual CO₂

emissions 2,818,775 tons. The resulting cost efficiency, \$897 per ton reduced, far exceeds the range of SCC values representing the value of reducing CO2 today to prevent damages in the future.

Theory says that the carbon price alone can incentivize lower emitting energy production and that the market choices will be more efficient than government-mandated choices. Ultimately the market signal question is whether the SCC value is sufficient to incentivize the market to invest in zero GHG emitting generation resources. There is [no sign](#) that RGGI motivated the market to act and it is not clear that the carbon pricing schemes proposed under the purview of FERC will provide enough incentive either.

The final RFF attribute stated that “A carbon price creates a new revenue stream that can be used in a number of ways.” This attribute is more of a concern on the value of the approach than a direct impact on the electric generation sector. The revenue stream from a carbon pricing stream could be very large. In the classical theory of carbon pricing those revenues are re-distributed to offset other taxes so that the consumers come out whole. In practice all or part of the revenues have usually been diverted away from direct consumer rebates to fund carbon reduction programs. If carbon reduction programs are dependent upon a continuing revenue stream there is a fundamental problem. As CO2 is reduced revenues decrease and eventually either the carbon price has to increase to a very high level or the revenues used to fund mitigation programs will be insufficient to make further reductions.

RFF did not address any implementation problems in its recommendations but these should be considered and understood by FERC. I am particularly concerned about measuring CO2 emissions for pricing. For the price to work correctly in the electric sector real-time emissions are needed. At first glance, the electric sector seems well positioned to provide that information because of the widespread use of continuous emissions monitoring systems. However, even though the emissions are monitored continuously, the extensive quality assurance and reporting requirements mean that real-time data are provisional. Reconciliation of the official compliance CO2 emissions and the values used for carbon pricing will always require a time lag and resulting confusion over the mass of CO2 emitted. Furthermore, for single state programs border considerations make this even more complicated and more likely to provide inconsistent numbers.

Finally, there is a real-world study that indicates a gap between theory and reality. The Regulatory Analysis Project report, [Economic Benefits and Energy Savings through Low-Cost Carbon Management](#), raises additional relevant concerns about carbon pricing implementation. They basically conclude that if you want to reduce carbon emissions it is more effective to target your financing to get the biggest reduction bang for the buck than to set a carbon price.

Questions and Issues

The notice of the proposed policy statement on Carbon Pricing in Organized Wholesale Electric Markets state raises certain questions and issues likely to arise in any such filing. I will use the practical concerns described above to address a few of those specific questions and issues.

Two questions are related to the general issue of using a carbon price on generation to fund a conversion of the energy system to one based primarily on wind and solar resources:

- How will the incorporation of the state-determined carbon price into the RTO/ISO market affect dispatch?
- Will the state-determined carbon price affect how the RTO/ISO co-optimizes energy and ancillary services?

In order for a state-determined carbon price to affect dispatch into the RTO/ISO market it first has to make the intermittent wind and solar energy dispatchable. The proposed policy statement recognizes this when it asks “Will the state-determined carbon price affect how the RTO/ISO co-optimizes energy and ancillary services?” This issue was not addressed at the technical conference. When the carbon pricing proposal simply increases the cost of the energy generated, I think that approach will lead to [cost shifting](#) where ratepayers will end up picking up those costs elsewhere in their bills. It seems to me that is an indirect subsidy and counter to a just and reasonable cost to consumers.

There were also two questions related to leakage:

- Does the proposal result in economic or environmental leakage?
- How does the proposal address any such leakage?

The only way to avoid economic and environmental leakage in a carbon pricing policy is for it to cover the entire world’s economy and all energy sectors. Because that is a clearly unattainable goal then the question boils down to whether state-determined carbon price policies can minimize the inevitable leakage to an acceptable level. As noted in my general description of practical carbon pricing problems, the proposal will result in environmental or pollution leakage and two kinds of economic leakage. In the inter-connected electricity market, it is very difficult to tease out the amount of environmental leakage but wherever there are different constraints affecting costs there will be leakage. Economic leakage is a problem where the increased costs inside the control area leads to business leaving for non-affected areas, but there also is an [economic leakage](#) effect in electric systems where a carbon policy in one jurisdiction may affect the dispatch order and increase costs to consumers in another jurisdiction. Again, I can draw no conclusion how much economic leakage could occur but it surely will occur.

I do not believe the FERC proposal can effectively address leakage. One of the attributes of carbon pricing is supposed to be its simplicity. However, in the real world without a universal carbon price, leakage is inevitable. In order to address it work arounds are necessary that complicate

implementation and may lead to unintended consequences that are not in the best interests of the just and reasonable rates for the public.

Conclusion

I provided an example estimate of New York control costs to meet the state's goal of a zero-emissions electric sector by 2040. It would be instructive for FERC to develop a cost estimate to convert the nation's electric system to zero emissions and combine that with recent emissions to develop a cost per ton for the transition. I believe that the cost for converting the country by 2035 would be much higher than any estimate of the social cost of carbon.

If the estimated emissions reduction cost per ton is higher than the social cost of carbon, then the costs to mitigate climate change effects are greater than the alleged impacts. A rational alternative response would be to invest in research and development to produce cheaper zero emissions electric generating resources and finance adaptation measures until such time that cost-effective zero-emission resources are available. If FERC does not hold the States to this just and reasonable standard then who will?

I conclude that RTO/ISO market rules that incorporate a state-determined carbon price in RTO/ISO markets cannot be just and reasonable for the rate payers whatever the value to the RTO/ISO market operators. I note that among the advocates for carbon pricing at the Technical Conference were RTO/ISO operators who believe that carbon pricing will make their regulatory responsibilities easier. However, a carbon price will have significant impacts on consumers and not cost effectively reduce CO₂ emissions.