RESOURCES *for the* FUTURE

Carbon Pricing in Organized Regional Wholesale Electricity Markets

Comments to the Federal Energy Regulatory Commission

Karen Palmer, Todd Aagard, Kathryne Cleary, and Dallas Burtraw

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RESOURCES for the FUTURE

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

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

COMMENTS OF
RESOURCES FOR THE FUTURE

Pursuant to Rule 211 of the Federal Energy Regulatory Commission's Rules of Practice and Procedure[1], experts from Resources for the Future (RFF) respectfully submit these comments regarding the proposed policy statement to encourage efforts to incorporate state-determined carbon prices into organized wholesale electricity markets.

1. Introduction

RFF is an independent, nonprofit research institution in Washington, DC. Its mission is to improve environmental, energy, and natural resource decisions through impartial economic research and policy engagement. RFF is committed to being the most widely trusted source of research insights and policy solutions leading to a healthy environment and a thriving economy.

While RFF researchers are encouraged to offer their expertise to inform policy decisions, the views expressed here are those of the individual authors and may differ from those of other RFF experts, its officers, or its directors. RFF does not take positions on specific policy proposals.

On October 15, 2020, the Commission issued a proposed policy statement that 1) clarifies FERC's authority over Regional Transmission Organization (RTO) market rules for incorporating carbon pricing into organized wholesale electricity markets, and 2) encourages RTOs to incorporate state carbon

[1] 18 CFR 385.211 (2019).

prices into their wholesale markets under section 205 of the Federal Power Act. In the proposal, the Commission requested comments on information that should be taken into account when considering if incorporating a proposed carbon price is just and reasonable. In section 2, we discuss issues related to FERC's jurisdiction and the value of this policy statement. In section 3, we address the questions on which the Commission requested comments in the policy statement. In section 4, we discuss other issues relevant to this discussion, such as the implications of the proposed policy statement on carbon pricing for states' actions in adopting clean energy or climate policies. Section 5 concludes.

2. FERC Jurisdiction

The Commission's policy statement concludes (p. 7) that the Commission has jurisdiction under the Federal Power Act over "wholesale market rules that incorporate a state-determined carbon price in RTO/ISO markets . . . as a practice affecting wholesale rates." Given recent disputes over whether the Commission had proper Federal Power Act authority to issue its Order 745 regarding demand response, Order 841 regarding energy storage, and Order 2222 regarding distributed energy resource aggregations, we think it wise for the Commission to clarify what it regards as its jurisdiction over state carbon pricing. As the Commission notes, *FERC v. Electric Power Supply Association*, 136 S. Ct. 760 (2016), held that Order 745 falls squarely within the Commission's regulatory authority under the Federal Power Act because Order 745 is a rule directly affecting wholesale electricity rates. *Id.* at 774. The Court also held that Order 745 does not impermissibly regulate retail electricity markets: "When FERC regulates what takes place on the wholesale market, as part of carrying out its charge to improve how that market runs, then no matter the effect on retail rates, § 824(b) imposes no bar." *Id.* at 776. Applying the principles of that case, the D.C. Circuit recently upheld the Commission's authority to issue Order 841 under the Federal Power Act. *Nat'l Ass'n of Regulatory Util. Com'rs v. FERC*, 964 F.3d 1177 (D.C. Cir. 2020). In its Order 2222, the Commission also recently applied the principles of *FERC v. Electric Power Supply Association* to support FERC jurisdiction over electricity sales by distributed energy resource aggregators in organized wholesale electricity markets. *Participation of Distributed Energy Resource*

Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 2222, 172 FERC ¶ 61,247, at P 41 (2020).

Applying this precedent to RTO wholesale market rules incorporating state carbon pricing, the jurisdictional question effectively answers itself. Such rules would "regulate[] what takes place on the wholesale market . . . to improve how that market runs." 136 S. Ct. at 776. Accordingly, they would necessarily fall within the Commission's authority. Of course, if an RTO or the Commission attempted to take actions outside of the wholesale electricity markets, such as by imposing carbon prices directly on a retail market or dictating how retail markets should incorporate carbon prices, that would fall outside of the scope of the Commission's policy statement and outside of its Federal Power Act jurisdiction as well.

3. Responses to FERC's questions

   a. *How, if at all, do the relevant market design considerations change depending on the manner in which the state or states determine the carbon price (e.g., price-based or quantity-based methods)? How will that price be updated?*

In theory, the form of a carbon pricing policy does not matter as much for impacts on the electricity sector (changes in dispatch, investment, emissions, etc.) as stringency does. Both price-based and quantity-based carbon policies should have similar effects on the way in which a carbon price would impact wholesale markets. One potentially important difference is that quantity-based policies can have less price transparency than price-based policies.[2] To be specific, when allowances are distributed for free, this creates more uncertainty about how prices in FERC-regulated markets will be affected. However, this need not be the case if auctions are used to allocate allowances (which is the growing norm), because periodic allowance auctions regularly produce a transparent reference price. If free distribution of allowances is desired, perhaps to lessen potential impacts on prices for electricity consumers in states with cost of service regulated retail electricity markets, states could conditionally allocate allowances to

[2] The Commission has noted the importance of price transparency in electricity market design. *See, e.g.*, *PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,153, at P 81 (2020).

affected generators and require that those allowances be consigned to an auction to promote price discovery and market transparency.[3] Allowance auction revenues from such an auction are returned to the affected generators according to rules established by the program. Precedent for such a consignment auction for emissions allowances can be found in the SO_2 trading program established in Title IV of the Clean Air Act.[4] California's CO_2 cap and trade program also allocates emissions allowances for free to local distribution companies and gas distribution utilities, and then requires that those allowances be consigned to the allowance auctions. The California Air Resources Board has directed electricity regulators to ensure that the allowance value is used for the primary benefit of retail electricity or natural gas ratepayers.[5]

Potential policy interactions between overlapping quantity- and price-based policies can make transparency more important. For example, New York is part of the Regional Greenhouse Gas Initiative (RGGI), a regional carbon cap-and-trade program, and the ISO is also considering pricing carbon directly in its wholesale market. The NYISO's proposal is price-based and aims to price emissions at the state-determined social cost of carbon as a way to fully internalize the externalities associated with carbon emissions from electricity production within the state. In that spirit, the proposed NYISO policy also recognizes that New York generators that are subject to the RGGI program already pay a portion of the external cost of their CO_2 emissions by complying with the requirement that they cover their emissions with RGGI program allowances. The NYISO price-based proposal accordingly adjusts the carbon price it charges to those generators by subtracting the RGGI allowance price. In other words, the proposed price-based policy would impose an adder on top of the RGGI price. Implementation of this policy therefore would require transparent information about RGGI allowance prices.

[3] Burtraw, Dallas & McCormack, Kristen, 2017. "Consignment auctions of free emissions allowances," Energy Policy, 107(C): 337-344.
[4] 40 C.F.R. §§ 72.1-78.20.
[5] Cal. Code Regs. tit. 17, §§ 95892-93.

As FERC looks to evaluating section 205 filings from the RTOs that incorporate state-determined carbon pricing policies, it is important for the Commission to understand that in general, states tend to prefer quantity-based policies, but these policies are evolving to reduce price uncertainty and introduce quantity flexibility. All North American CO_2 cap and trade programs have price floors, below which no allowances will be sold in the auction, and cost containment reserve prices at which a fixed number of additional allowances are introduced to the market. (California is enacting a price ceiling of $65 per allowance from 2021 onward that escalates by 5 percent annually and is adjusted for inflation, which effectively converts the policy to a direct price on carbon when market prices hit that level.) RGGI recently added a new feature, called the emissions containment reserve, which sets a price level below which 10 percent of the allowances included in each quarterly auction will not sell.[6] Together, these various price triggers create a step function supply curve of CO_2 emissions allowances, where the supply of allowances increases as allowance prices increase. This supply curve essentially allows the market to adjust in a way that permits more emissions if the marginal cost of reducing them is high and fewer emissions if they can be reduced more cheaply at the margin.

Price-responsive allowance supply also combats a phenomenon known as the 'waterbed effect' which plagues policies that use a fixed allowance supply. With fixed supply, companion policies to promote clean energy and reduce emissions, such as energy efficiency programs or tax credits for renewable investments, decrease demand for emissions allowances, thereby lowering the price of allowances without yielding any emissions reductions. Price-responsive allowance supply creates the potential for those other policies to both reduce the market price of allowances and reduce emissions from the capped sector at the same time.[7,8]

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[6] "Elements of RGGI." The Regional Greenhouse Gas Initiative. Accessed November 10, 2020 from https://www.rggi.org/program-overview-and-design/elements.
[7] Burtraw, D., Holt, C., Palmer, K., Paul, A., & Shobe, W. (2017). Expanding the Toolkit: The Potential Role for an Emissions Containment Reserve in RGGI. *Resources for the Future Report*.
[8] Burtraw, D., Holt, C., Palmer, K., & Shobe, W. M. (2020). Quantities with Prices: Price-Responsive Allowance Supply in Environmental Markets. *Resources for the Future Working Paper 20-17.*

Regardless of the program design, the carbon price will likely increase periodically, either administratively through a pre-set carbon price schedule or through periodic contraction of the number of emissions allowances introduced into the market, which will tend to drive up the price. Transparency about these rule-based mechanisms will be useful for market planning and for investors in new cleaner generation facilities to anticipate how the rewards to those investments will likely evolve over time. Most carbon programs also have periodic reviews that will use a more deliberative process to adjust allowance supply or shift price trajectories at key decision points. Such periodic reviews allow for programs to take advantage of the latest science in setting policy targets and goals but also increase the risk of other changes to the policy that could impact the value of new investments.

b. *How does the FPA section 205 proposal ensure price transparency and enhance price formation?*

In general, carbon pricing policies will help improve price formation by increasing the offer prices of emitting generators to supply energy and capacity in wholesale markets. Thus, when a carbon-emitting generator is at the margin in these markets, prices will be higher than they would be without the carbon policy. These higher market clearing prices will in turn create stronger incentives to improve the operating efficiency of existing fossil generating units by improving heat rates at those units, by shifting generation among fossil units to increase utilization of more efficient units relative to the utilization of less efficient units and to invest in renewables and other non-emitting generators. Higher clearing prices will particularly favor investment in renewables that will likely be operating in hours when these higher energy prices occur and create incentives to put those generators in locations where those higher prices are more likely to prevail.

The effect of the carbon pricing policy on wholesale energy prices will depend on whether the value created by the carbon pricing program in the form of allowance or carbon revenues is used wholly or in part to provide incentives for particular types of generators to operate or to encourage generation by those located in the region covered by the policy (and thus to mitigate leakage). In situations such as that, which

are discussed more in section (e) below, both allowance prices (under cap and trade) and energy prices will be affected in ways that are less transparent than what is described in the prior paragraph but that could yield certain benefits with respect to leakage. In general, using auction proceeds to encourage generation in the carbon pricing region will tend to reduce offer prices and thereby reduce equilibrium market prices relative to carbon pricing policies that direct allowance auction proceeds to other uses.

c. How will the carbon price or prices be reflected in LMP?

For a state carbon pricing policy to be effective, it must affect LMPs in the wholesale electricity markets. Incorporating a carbon price in wholesale electricity markets will raise LMPs, but to varying degrees depending on where the emitting power is generated and on the extent of transmission congestion. Typically, the effect of the carbon price at a node on the transmission grid will depend on the level of the price and the emissions rate of the marginal generator in any given hour. To the extent that emitting generators and non-emitting generators are found in different locations, pricing carbon will potentially shed light on new opportunities for energy cost-reducing transmission expansion. This information could play an important role in regional transmission planning under Order 1000, depending on the geographic scope of the carbon pricing policy and the level of the price.

d. 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? Are any reforms to the co-optimization rules necessary in light of the state-determined carbon price?

The incorporation of a state-determined carbon price into the RTO/ISO market will likely rearrange the dispatch order so that lower-emitting resources are more likely to be dispatched ahead of higher-emitting resources. The extent of the impact will depend on the composition of the existing generating fleet and the level of the carbon price. It will also depend on the extent to which there are low-cost measures that generators can take to reduce their emissions rate (generally, by lowering their heat rate), thereby lowering their allowance costs or carbon price. Generators can be expected to adopt such emissions-

reducing measures to the extent the cost of the measures is less than the cost of the avoided allowances or carbon price.

Higher energy prices may increase the opportunity cost of providing ancillary services. If energy and ancillary services are co-optimized, this could raise ancillary service clearing prices. On the other hand, if carbon pricing leads to some generators being bumped out of the dispatch order for the energy market, that could increase their availability for ancillary service provision. The effect of a carbon pricing policy in the energy market on ancillary service markets will also depend on how the policy affects the composition of the generation fleet, including the fleet's reliance on variable and intermittent renewable generators. A substantial increase in the role for such generators could increase demand for some ancillary services such as reserves and voltage control, which in turn could increase their market price and induce entry of additional resources into the market. Such effects could also be brought about by other types of policies to encourage clean energy investment and generation (such as renewable or clean energy standards) and so are not unique to carbon pricing.

e. *Does the proposal result in economic or environmental leakage? How does the proposal address any such leakage?*

Environmental leakage, which occurs when a carbon policy increases emissions in a neighboring region not covered by the carbon policy, is an almost inevitable consequence of state or regional carbon pricing policy in the electricity sector, particularly for regions that have unused transmission capability to generators outside the policy's domain. Some jurisdictions, such as California, seek to address leakage by regulating the financial entities that bring power into the state system. The NYISO carbon pricing proposal includes an emissions charge on imported power and an ability for power exporters to avoid the carbon charge. RGGI has no formal policy to address leakage directly, but has mechanisms, described in the original Memorandum of Understanding[9], for monitoring leakage and taking actions to address it.

[9] Regional Greenhouse Gas Initiative (2005). Memorandum of Understanding. Available at: https://www.rggi.org/sites/default/files/Uploads/Design-Archive/MOU/MOU_12_20_05.pdf

The RGGI states have argued that using RGGI allowance revenues to support energy efficiency reduces demand for power and therefore the profitability of extra-jurisdictional generators to profit from increasing generation to sell to RGGI.[10] Research has shown that using emissions allowance value as a production incentive can be an effective mechanism to offset leakage and in some situations can result in negative leakage.[11] Model simulations of the New York state carbon pricing policy suggest that, depending on what happens with future natural gas prices and renewables costs, the NYISO proposal for border adjustments could result in negative leakage.[12] In general, research has found that environmental leakage rates in electricity markets from regional carbon pricing policies vary greatly. Kindle et al. (2011) find no evidence of emissions leakage in RGGI, while Fell and Maniloff (2018) show evidence of a nearly 50 percent leakage rate from RGGI to non-RGGI states. Caron et al (2015) estimate that, without restrictions on imported electricity, California's cap-and-trade program would exhibit leakage of about 45 percent.[13] [14].[15] In general, leakage from existing carbon pricing policies does not fully offset the emissions reduction benefits of the policy.

FERC is not an environmental regulator, so the issue of emissions leakage should not be a factor in determining if the section 205 filing is just and reasonable. The effectiveness of a state environmental policy is a matter for the state to consider in setting its policy, and it is up to the state that establishes a carbon pricing policy to decide whether it is willing to accept the environmental leakage associated with

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[10] Regional Greenhouse Gas Initiative (2007). Potential Emissions Leakage and the Regional Greenhouse Gas Initiative (RGGI): Evaluating Market Dynamics, Monitoring Options, and Possible Mitigation Mechanisms. Available at: https://www.rggi.org/sites/default/files/Uploads/Design-Archive/Staff-Working-Group/il_report_final_3_14_07.pdf

[11] Palmer, K., Burtraw, D., Paul, A., & Yin, H. (2017). Using production incentives to avoid emissions leakage. *Energy Economics*, *68*, 45-56.

[12] Shawhan, D., Picciano, P., & Palmer, K. (2019). Benefits and Costs of Power Plant Carbon Emissions Pricing in New York. *Resources for the Future Report 19-08.*

[13] Kindle, Andrew, Shawhan, Dan, Swider, Michael, 2011. An Empirical Test for Inter-State Carbon-Dioxide Emissions Leakage Resulting from the Regional Greenhouse Gas Initiative. Report to the New York Independent System Operator.

[14] Fell, H., & Maniloff, P. (2018). Leakage in regional environmental policy: The case of the regional greenhouse gas initiative. *Journal of Environmental Economics and Management*, *87*, 1-23.

[15] Caron, J., Rausch, S., & Winchester, N. (2015). Leakage from sub-national climate policy: The case of California's cap–and–trade program. *The Energy Journal*, *36*(2).

its efforts to limit carbon emissions. Environmental leakage is not relevant to FERC's exercise of its authority under section 205, even if that leakage may have some incidental effects on prices in the wholesale electricity market.

If a state does adopt a carbon pricing policy that applies to power imports (as California has done), then FERC in exercising its section 205 authority should examine whether the policy is being applied in a nondiscriminatory fashion to out-of-state resources. It is entirely rational and appropriate for a state, in setting its carbon policies, to consider the environmental impacts of all electricity that is used in the state, whether the electricity is produced in state or out of state. Courts have upheld such policies as constitutional and nondiscriminatory as long as they apply nondiscriminatory factors—here, carbon emissions—in applying the policies. *See, e.g.*, *Rocky Mountain Farmers Union v. Corey*, 730 F.3d 1070, 1089 (9th Cir. 2013). The same considerations should guide FERC's review of state carbon policies under section 205. As long as the state is applying its environmental policies based on neutral and nondiscriminatory environmental factors such as carbon emissions, the fact that a state's carbon policy increases the cost of power imported from out of state should not affect the section 205 analysis.

FERC also seeks comment on the need to address economic leakage resulting from the carbon pricing policy in evaluating a section 205 filing. This line of inquiry poses the threat of a potential Pandora's box. Climate pricing policies, like a multitude of other state and local policies, will have economic consequences for electricity markets. In an interstate wholesale electricity market, price effects in one state are likely to have spillover effects in other states, even if those other states have a different carbon price or have no carbon price at all. In some cases, depending on the configuration of wholesale markets, power purchasers in non-carbon-pricing states may pay a higher wholesale (and retail) price for electricity as a consequence of carbon pricing in a neighboring jurisdiction. Such spillover or economic leakage effects are not unusual or unique to carbon pricing and are to be expected.

4. Other Issues

a. Additional comments on state policies

In addition to the five considerations enumerated by the Commission in its Notice (p. 13), we suggest that the Commission also consider the impacts of RTO rules on state environmental policies, including state laws that might not be fully consistent with the Commission's understanding of an ideal carbon pricing policy. States have adopted a wide variety of environmental policies that mitigate carbon emissions. These policies include emissions limitations, procurement goals, tax incentives, and renewable energy mandates. Such policies fall outside of the Commission's Federal Power Act authority. It is possible, however, that an RTO rule applying state carbon pricing could interfere with other state carbon emission mitigation measures. Under general principles of comity and the doctrine of cooperative federalism—which the Commission cites in its draft policy statement (p. 10)—the Commission should avoid unnecessarily inhibiting state environmental policies, regardless whether they meet the Commission's understanding of an ideal carbon pricing policy. In other words, although the Commission can and should encourage wholesale market rules that facilitate effective carbon pricing, the Commission also should avoid rules that would have the effect of forcing states to change their environmental policies. The Commission should not, to quote from Professor Rossi's introductory remarks at the technical conference (p. 2), "use a carbon price in a wholesale tariff to pass judgment on existing state programs favoring clean energy resources."[16]

[16] Rossi, J. (2020). Legal considerations for state–adopted carbon pricing and RTO/ISO markets. Carbon Pricing in Organized Wholesale Electricity Markets, FERC Docket No. AD2014. Available at https://www.ferc.gov/media/panel-1-prof-jim-rossi-vanderbilt-university

Respectfully submitted,

Karen Palmer
Senior Fellow and
Director of the Future of
Power Initiative
Resources for the Future
1616 P Street NW
Washington, DC 20036

Todd Aagaard
Visiting Fellow
Resources for the Future
1616 P Street NW
Washington, DC 20036

Kathryne Cleary
Senior Research Associate
Resources for the Future
1616 P Street NW
Washington, DC 20036

Dallas Burtraw
Darius Gaskins Senior Fellow
Resources for the Future
1616 P Street NW
Washington, DC 20036

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