

features

Greenhouse Gas Regulation in Organized Electricity Markets

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Although comprehensive federal legislation targeting greenhouse gas (GHG) emissions continues to appear unlikely in the near term, a growing number of states are taking legislative and regulatory action on carbon emissions, especially with respect to the electricity sector. The patchwork of state laws in this area ranges from cap-and-trade systems to the renewable portfolio standards adopted in 13 states and the District of Columbia, to various goals or targets adopted by several states in an effort to reach certain levels of GHG reduction or clean energy targets by dates certain, to no GHG regulations at all. These varying approaches reflect a “laboratories of democracy” approach that is the hallmark of the U.S. federalist system but present a challenge for organized electricity markets that often span multiple states and must harmonize diverse approaches to GHG regulation.

At its core, the challenge emerges from the federalism structure created by the Federal Power Act (FPA). In the FPA, Congress gave jurisdiction over wholesale sales of electricity to the Federal Energy Regulatory Commission (FERC) while reserving most environmental issues to the states, along with jurisdiction over retail sales. This means that states generally have the authority to regulate GHG emissions related to the generation of electricity but that FERC generally has the authority to regulate the wholesale markets in which interstate electricity transactions take place. Each state decides its own approach to GHG regulation, but the price impacts of those regulations must be accounted for in markets that sometimes stretch across state lines.

Under this paradigm, states exercising authority over GHG emissions have generally done so in one of two ways. First, states may regulate GHG emissions from the generating units located within the state (a “generation-based” approach). This approach is similar to how air pollutants are regulated—treating the emissions as a characteristic of a facility, rather than as a characteristic of the energy that is generated at that facility. A second approach is to instead regulate GHG emissions associated with electricity consumed in the state (a “consumption-based” approach). Unlike the generation-based approach, which regulates only generators physically located within a given state, the consumption-based approach is applied both to electricity that is generated and consumed within the state, as well as to energy that is imported from out of state for in-state consumption. This approach can be described as treating the GHG emissions as a characteristic of the energy that is generated, and it requires tracking the energy to the place of ultimate consumption for accurate accounting to take place.

Current Policy Frameworks: Generation-Based versus Consumption-Based

Generation-based GHG policies have been relatively easy to incorporate into organized markets—generators subject to those policies will incorporate compliance costs into their market offer prices regardless of where the power is ultimately delivered because the compliance costs are incurred based on the location of the generator. The Regional Greenhouse Gas Initiative (RGGI), which is a cap-and-trade program implemented

by 11 states in the eastern United States, uses such a generation-based tracking system. In RGGI, fossil-fuel electric power generators over a certain size are required to purchase and possess sufficient allowances equal to their carbon dioxide emissions over a three-year control period, and they must tender those allowances for compliance and purchase new allowances for the next compliance period.

Because it is generation-based, RGGI's system of accounting translates in a relatively straightforward way into the organized market context—generators simply include the costs of obtaining the required allowances in their offer prices to the extent they are participating in an organized market. The energy produced does not need to be tracked to its ultimate point of consumption for the emission charges to be assessed or determined. This means that for organized markets that overlap with RGGI's footprint (i.e., Independent System Operator (ISO) New England, the New York ISO, and the PJM Interconnection), no special market rules are necessary to recognize the state-law GHG policies adopted within RGGI. Instead, compliance costs associated with RGGI are passed through in much the same way as other state-law environmental compliance costs such as air or water permitting. In this way, generators subject to state laws implementing RGGI simply pass on the cost of compliance in their offer prices.

Of course, this type of generation-based policy means that, to the extent load-serving entities in RGGI states are importing power from non-RGGI states, they may in a sense be causing emissions that are outside of the RGGI “cap.” Likewise, to the extent a generator from a RGGI state exports power to a non-RGGI state, it does so at a price that includes compliance costs even though the non-RGGI state may not share the same policy preferences. And it does so in competition with generation resources that are not subject to the same GHG compliance costs. Nevertheless, this generation-based system has not created major challenges for organized markets because of its relatively straightforward nature. *See, e.g.,* Comments of the New England Power Pool Participants Committee, FERC Docket No. AD20-14-000 (Nov. 16, 2020).

The same does not necessarily hold true for consumption-based policies. For these policies, whether or not the generator faces costs related to GHG policy compliance depends entirely on where the power is ultimately used. Only if the power goes to a state with a consumption-based policy will the generator face compliance costs.

To date, only one organized market in the United States, the California Independent System Operator (CAISO), has implemented a system designed to accommodate a consumption-based GHG policy. CAISO's implementation includes both the CAISO market itself and the Western Energy Imbalance Market (EIM) administered by CAISO. The EIM includes participants across a growing number of western states and allows those participants to buy and sell electric power on a “real-time” basis close to the time electricity is generated and consumed. Because the EIM allows these transactions to occur across state lines, including into and out of California, it has adopted market rules that account for California's GHG policies.

Specifically, California has a cap-and-trade policy for GHGs that imposes a compliance obligation on the “first jurisdictional deliverer” of electricity into California to purchase and surrender compliance instruments (i.e., emission credits) in an amount sufficient to account for carbon emissions associated with electricity imports. Effectively, load-serving entities importing power into California must purchase cap-and-trade credits to cover carbon emissions associated with their imports. The California Air Resources Board (CARB) implements the system and has a complex set of rules for assigning GHG emissions to imported power based on whether it comes from a known or unspecified source. *See* Cal. Code Regs. tit. 17, § 95852.

At the wholesale market level, this system is implemented by CAISO through market rules (approved by FERC) that reflect California's GHG compliance costs in the locational marginal prices for generators that are serving load within California. For in-state generators, the accounting is straightforward—the generator simply includes the cost of its compliance obligation in its offer price. For out-of-state generators, however, the accounting is more complex. The CAISO rules allow, but do not require, an out-of-state generator to include a GHG price “adder” for power that is offered into California, in order to reflect the additional costs of compliance with California's cap-and-trade policy. *See* California Independent System Operator Fifth Replacement Electronic Tariff § 29.32 (June 17, 2022). If the out-of-state generator chooses not to include this adder, the market operator will not dispatch the out-of-state resource into California. If the out-of-state generator does include the adder, the power will be offered into California at a price that includes the adder and outside of California at a price that does not include the adder. In theory, this system of implementation results in policy and market optimization by ensuring that compliance costs associated with California's cap-and-trade policy are captured in offer prices for power that will be used to serve California load (but are not imposed on transactions outside of California).

The Challenges of Secondary Dispatch and GHG “Leakage”

The EIM consumption-based system has not been without difficulty. Because the EIM captures the California state policy by using a bid adder for GHG compliance costs, a substantial quantity of low or zero-emitting generation resources may be attributed to California by the market's least-cost dispatch, with higher-emitting generation resources “backfilling” the dispatch to serve load outside of California where no GHG adder applies. CAISO refers to this phenomenon as “secondary dispatch” and stakeholders have argued that the existence of secondary dispatch means the EIM results in inaccuracies for GHG accounting. In effect, the argument goes, secondary dispatch results in “leakage” of GHG emissions because it causes a change in how resources are assigned by the market without producing an overall reduction in emissions. Although lower-emitting resources are assigned to the California market, they are to some extent offset by the assignment of higher-emitting resources to non-California jurisdictions that would have

otherwise (i.e., in the absence of the GHG price adder) been assigned to California.

CAISO has in response taken a number of steps to adjust its market design to reduce the extent to which secondary dispatch occurs, by limiting dispatch in the EIM based on the difference between a generator's "base schedule" and its effective dispatchable capacity. *California Indep. Sys. Operator Corp.*, 165 FERC ¶ 61,050 (2018). Although this approach reduces secondary dispatch, it does not eliminate it entirely because the market still may attribute more generation to the California market than would occur in the absence of the cap-and-trade policy.

Similarly, on the compliance side, CARB has implemented various adjustments to attempt to account for the impact of secondary dispatch. See, e.g., CARB Indep. Emissions Advisory Comm., *Report on Emissions Leakage and Resource Shuffling* (Sept. 10, 2018). Its approach approximates the emissions associated with secondary dispatch using California's default unspecified emissions rate and assigns those additional emissions to EIM importers on a basis proportional to total imports. Cal. Code Regs. tit. 17, § 95111(h). Like CAISO, however, CARB has continued to face challenges and criticism with respect to the accuracy of its emissions accounting. See Powerex Corp., *The Western EIM's Approach to Applying California's Cap and Trade Program to Imports Is Undermining the Program's Core Objectives* (July 18, 2022).

This problem of "secondary dispatch" or "leakage" is likely to be a significant concern as organized markets continue to grow while attempting to account for state-law GHG policies. CAISO, for example, is considering how to expand the limited real-time market embodied in the EIM to include a day-ahead market that allows participants to trade energy on a forward basis. See CAISO, *Policy Initiative: Extended Day-Ahead Market*. However, this "Extended Day Ahead Market" proposal may further complicate CAISO's and CARB's ability to measure leakage or secondary dispatch. For example, unlike in the real-time EIM market, the proposal will not be able to clearly rely on a generator-determined "base schedule" for determining the extent of secondary dispatch. Instead, CAISO has discussed using its Resource Sufficiency Evaluation (RSE) model to simulate a counterfactual base schedule. It would then compare the simulated base schedule against actual generation resource dispatch in order to determine the level of secondary dispatch occurring within the market. See CAISO EDAM Working Grp. 3, *Resource Specific Approach Option Version 2.0* (Feb. 24, 2022). This approach would be significantly more complicated than the accounting approach currently used in the EIM, and it is not yet clear how accurately it would account for the emissions associated with secondary dispatch.

As additional western states develop GHG regulations, expansion of the EIM to include additional market services (such as a day-ahead offering) will face the challenge of harmonizing transactions between states that have different GHG policies. For example, Washington has adopted a "cap-and-invest" policy that will take effect starting in 2023. Given that CAISO's proposed Extended Day Ahead Market could include participants in both the states of California and Washington, it may need to address the GHG accounting treatment of

electricity transfers between generators subject to California's cap-and-trade policy and generators subject to Washington's new policy. Like California's program, Washington's cap-and-invest policy will apply to electricity imports as well as to electricity generated within the state. This type of structure could result in electricity transactions where power is subject to carbon regulation in more than one jurisdiction. CAISO has not proposed a specific market construct for harmonizing situations where multiple GHG policies must be accounted for, but it has indicated that this structure could result in some electricity facing GHG compliance costs from both jurisdictions. While harmonizing the approaches between these two states may turn out to be possible, as the number of states adopting similar policies grows, market operators could be faced with having to develop market rules that grow rapidly in complexity and expose new challenges in implementation.

FERC's Policy Statement on Carbon Pricing in Wholesale Markets

In response to these growing state-law measures regulating GHG emissions, FERC issued a Policy Statement in 2021 setting forth general principles it may use in evaluating proposals by utilities that are proposing to account for carbon pricing or cap-and-trade systems in the context of organized markets. *Carbon Pricing in Organized Wholesale Elec. Markets*, 175 FERC ¶ 61,036 (2021). Although FERC had at that time already approved the market rules for the EIM to account for California's cap-and-trade policy, FERC sought and received comments from a wide range of stakeholders in order to take a broader view of this important issue. Many of the comments it received were enthusiastic about FERC action on GHGs and encouraged FERC to allow market operators to incorporate GHG policies into their markets, for example, by arguing that FERC has the right to regulate these types of market rules under the FPA.

Other commenters emphasized the challenges discussed here with respect to crafting market rules that appropriately harmonize divergent state policies. In particular, a number of commenters highlighted FERC's limited role as an economic and reliability (rather than environmental) regulator and urged FERC to let the states take the primary role in creating policy, with FERC focusing its efforts on ensuring that market implementation of divergent state policy regimes still results in just and reasonable wholesale rates.

In this vein, the Policy Statement acknowledges that "states are . . . taking a leading role in . . . adopting policies to reduce greenhouse gas (GHG) emissions," and that while FERC does not "directly administer environmental statutes," it may "be called upon to review proposals . . . that incorporate a state-determined carbon price into" organized markets. 175 FERC ¶ 61,191. It justifies this scope of review based on its FPA jurisdiction to regulate practices that "directly affect" wholesale electricity rates, as explained by the Supreme Court in *FERC v. Electric Power Supply Association*, 577 U.S. 260 (2016). FERC reasoned that "wholesale market rules that incorporate a state-determined carbon price could . . . govern how resources participate in [an organized market], how market

operators dispatch those resources, and how those resources are ultimately compensated.” 175 FERC ¶ 61,193. Further, FERC explained in the Policy Statement, regulating wholesale market rules that simply incorporate state-law carbon regulations does not intrude on the jurisdiction of the states because such rules do not change the underlying substantive policies. *Id.*

The Policy Statement encourages market operators to incorporate “state-determined carbon prices” into their markets, citing the importance of long-term price signals around GHGs to drive investment. In making this encouragement, FERC also identified specific factors it may consider when it evaluates filings related to the incorporation of GHG regulations into organized market rules. 175 FERC ¶ 61,194. These factors identify many of the key issues that have been faced by CAISO and others that have tried to account for state-law carbon regulations in market rules, such as ensuring adequate price transparency and avoiding environmental “leakage” of emissions due to the re-dispatching of generators to avoid sending high-emitting generation resources into states with steep GHG prices. FERC also was careful to avoid suggesting that market operators should adopt GHG regulations on their own—in the absence of underlying state law.

Future Directions

As market rules continue to evolve in this area, it is likely that new questions will arise over the appropriate roles to be played by states, market operators, and FERC. In particular, depending on what types of market rules FERC is called on to approve, it is possible that questions will arise regarding the scope of FERC’s authority to approve market rules that attempt to harmonize state approaches to GHG regulation.

The Supreme Court recently indicated in *West Virginia v. Environmental Protection Agency*, 142 S. Ct. 2587 (2022), that federal agencies may not enjoy much leeway in acting on climate change in the absence of clear congressional authorization. The Court held that the U.S. Environmental Protection Agency (EPA) could not regulate GHG emissions by requiring system operators to shift generation from “dirtier” to “cleaner” sources because Congress did not give it clear authorization in the federal Clean Air Act to do so. In reaching this conclusion, the Court relied on the “major questions doctrine” to find that EPA could not “substantially restructure the American energy market” by requiring generation shifting as a method of reducing GHG emissions. *Id.* at 2610.

A similar risk may exist with respect to wholesale market rules designed to harmonize state GHG laws. While FERC has conceived of its role in this area as being a neutral arbiter of rates and rules proposed by market participants—primarily by ensuring those rates and rules are “just and reasonable”—its decisions in this area have the potential to put FERC in the position of determining whether organized market rules have environmental integrity and, relatedly, whether those rules may allow operators to effectively impose one state’s GHG policies on other states within the same market. It is possible—if not likely—that FERC will face requests to police issues related to

secondary dispatch or to otherwise ensure that market rules accurately account for GHG emissions associated with market transactions. This dynamic is currently playing out in the adjacent context of FERC’s consideration of GHGs in natural gas infrastructure project reviews, where environmental groups are asking FERC to evaluate GHG emissions from FERC-jurisdictional pipeline proposals, but industry groups are pushing back citing a lack of congressional authorization. *See, e.g.,* Reply Comments of Natural Res. Def. Council, FERC Docket Nos. PL21-3-000, PL21-3-001 (May 25, 2022); Supplemental Reply Comments of the Interstate Natural Gas Ass’n of Am., FERC Docket Nos. PL21-3-000, PL21-3-001 (May 25, 2022).

FERC Commissioner Mark Christie made a similar observation when he concurred in part and dissented in part from the 2021 Policy Statement. He observed that while states clearly have the right to regulate GHG emissions related to retail sales or energy production, “no one has made a convincing case that Congress has granted this power to FERC” and when reviewing proposals from market operators regarding state regulation of GHG emissions, a “key question will be to determine whether the line has been crossed between simply *recognizing* an individual state’s carbon tax versus *imposing* that state’s tax on generating resources—and consumers—in other states that have *not* consented to be taxed. . . .” 175 FERC ¶ 61,200. As organized markets continue to grow across state lines, including in the Mountain West (where various proposals are emerging to extend the reach of organized markets), this concern may become more important as market operators seek to balance competing goals of recognizing state policy while ensuring the efficiency of market operations.

This may be especially true as the landscape of state regulations becomes more complex. The experience in California illustrates that it is challenging to make an interstate market accurately account for GHG emissions when only one state participant has a cap-and-trade policy in effect. Including additional state participants in the market with their own regulations significantly complicates tracking and accounting. Determining which emissions occur as a result of which load within the market will likewise become more difficult as additional state policies overlap in a market.

Because it appears that regulation in this space will continue to evolve from local and regional efforts, with state governments adopting policies that then may be integrated into regional markets, there will be more room for learning and policy innovation as different structures are tried to address these challenges. Key issues to watch going forward will include how market operators attempt to craft rules to address perceived leakage of emissions due to “secondary dispatch” type problems, how states that are not adopting GHG policies react to market rules designed to accommodate those policies, and whether FERC becomes more deeply involved in the substantive environmental issues underlying this ongoing conversation. 🦋

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