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Rethinking FERC

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In reflecting on his chairmanship, Neil Chatterjee opined that "(t)he days of FERC being referred to as an obscure agency are over."[1] By regulating our nation's organized markets for wholesale electric and natural gas, FERC plays a critical role in the health of the U.S. economy. It will also play a vital role in the success or failure of efforts to reduce greenhouse gas emissions by crafting a regulatory environment in which various options will either flourish or wither and die. As Commissioner Chatterjee further reflected in that interview, "(w)here appropriate throughout my tenure, I wanted to do something appropriate about carbon mitigation." FERC's limitations on its approach to carbon mitigation are largely self-imposed. It is time for FERC to reconsider what its appropriate role ought to be with respect to carbon mitigation and begin a critical dialogue with its stakeholders.

Central to FERC's role is its consumer protection mandate to ensure that wholesale electricity rates are "just and reasonable." It does this by regulating the rates, operations, and design of the organized markets administered by the nation's Independent System Operators (ISOs). The electric markets that FERC regulates provide wholesale electric service to 66 percent of total U.S. load. The three Northeast ISOs: the New York ISO (NYISO); ISO-New England (ISO-NE); and the Pennsylvania, Jersey, Maryland Interchange (PJM) comprise 41 percent of total ISO load and 27 percent of total U.S. load.[2]

FERC has a special relationship with the three Northeastern ISOs, dating back to before electric restructuring in the 1990s. Each of these ISOs had its operational and market genesis in "tight" power pools[3] that were transformed into markets for power. Each of these serves a region in which vertically integrated utilities have divested their rate-based generation and sold it to entities that receive remuneration through the market. In these areas, retail service is provided either through regulated incumbent distribution utilities or merchant "load-serving entities" (LSEs). FERC's role in this relationship is to regulate the process of price making used by the ISOs. It does so to satisfy its consumer protection mandate under the Federal Power Act that prices be "just and reasonable."

A neglected question in the transformation from cost-of-service rates to prices based on markets is how to structure the payment to generators for their capacity, i.e., how to create capacity markets. FERC has always played catch-up in the design of mechanisms to provide generators with revenue adequacy and price signals for entry and exit. Its response has been to rely on capacity markets. Although ISOs began operating in the late 1990s, it was not until 2003-04 that they adopted formal capacity markets. The time for the current design of those markets has already passed, as those markets were designed for a different situation than we find ourselves in today. It is time to recognize that alternatives to capacity markets are needed.

1 Morehouse, C. "'The days of FERC being referred to as an obscure agency are over': Chatterjee reflects on chairmanship," *Utility Dive,* November 9, 2020, https://www.utilitydive.com/news/the-days-of-ferc-being-referred-to-as-an-obscure-agency-are-over-chatter/588610/.

2 NERC 2019 Electricity Supply Demand (ES&D) – Released December 2019. Total Net Energy for Load (NEL) represents actual data for 2018. NEL data for CAISO includes some non-CAISO entities and a small portion of Mexico, http://www.nerc.com/pa/RAPA/ESD/Pages/default.aspx.

3 Power pools were organizations that coordinated transactions between utilities. Tight power pools, had clearly articulated rules that governed the pricing of those transactions and dispatch centers that coordinated them. Power Pools were transformed into ISOs.

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FERC's Magic Pricing Formula and the Peaker Method

FERC relies on a "magic pricing formula" to fulfill its role in customer protection; particularly, for the three Northeast ISOs. The term "magic formula" comes from John Landis' *Report on Regulatory Agencies to the President-Elect* (Kennedy).[4] In his report, Landis uses this term to describe FERC's predecessor, the Federal Power Commission's (FPC) efforts to develop a single formula for regulating the field price of natural gas. Unfortunately, determining the field price of natural gas (like the emergent challenges in the electric industry today) is a complex problem that cannot be solved with a single formula. Recognizing this, FERC's ultimate solution, with legislative support, was to restructure the entire approach to the regulation of wholesale markets for natural gas, moving from prices determined by cost-of-service methods to a regime of market-based pricing.

This *Insights* paper addresses the emerging issue of how FERC can regulate the complex electric market, which has a growing mandate to decarbonize, is increasingly reliant on renewable energy, and must accommodate the changing role of the customer from "load" to prosumer. These factors are new, and it is time for FERC to take a hard look at how to embrace them. The key question, then, is whether FERC's reliance on the magic pricing formula artificially (and possibly incorrectly) limits the regulatory choices that it considers as options when thinking about the future, and what might replace that formula. The answer will be relevant to all the markets regulated by FERC, not just the Northeastern markets.

The central thesis of this paper is that FERC's magic formula for wholesale electric price-making and capital cost recover is increasingly invalid as a proxy for just and reasonable rates. The formula is based on the rich literature on the economic theory of peak load pricing beginning in the 1940s. The "Peaker Method," as it is called, is the practical implementation of that theory, used to estimate "avoided costs" (in compliance with the Public Utility Regulatory Policies Act of 1978) to provide a pricing framework for non-utility generation. FERC adopted this approach to pricing during the transformation of the electric regulatory structure from a cost-of-service basis to a market basis. At that time, adopting the theory behind the Peaker Method was reasonable, but it is now increasingly less so, given the revolutionary change in options for providing customers with electric service and the need to decarbonize. Ironically, avoided cost contracts supported the early development of many types of the renewables that now pose an existential threat to the future role of the Peaker Method in the regulation of the markets. The increasing prevalence of zero marginal cost renewable generation, combined with a changing role of the customer, turns the underlying theory on its head and creates this threat to FERC's magic pricing formula, as it renders it unsustainable.

The Peaker Method yields a two-part pricing formulation: energy markets and capacity markets. Energy markets involve the real-time coordination of generation resources to meet customers' instantaneous demand. These markets are fairly straight forward extensions (albeit technically complex) of methods developed by vertically integrated utilities. The key change is in the treatment of capacity. Historically utilities were vertically integrated, owning all of the levels of the supply chain—generation, transmission, and distribution. These utilities recovered the costs of investments made to meet customer demand through regulated rates collected from customers. Now, increasingly, merchant generators that provide generation to the grid rely on market prices for recovering their investment and making a profit.

The theory underlying the Peaker Method focuses on how to price electricity to recover the capital costs of generation. Generators earn infra-marginal rents when their marginal cost of producing power is less than the market price. It turns out that in an optimal resource mix,[5] with generators receiving compensation based on market prices, there will be a revenue shortfall equal

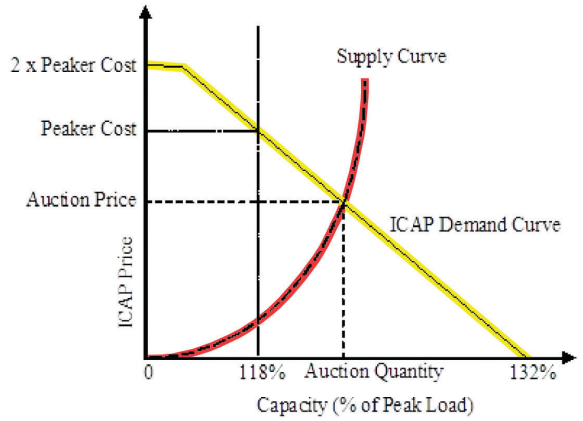
4 Landis, John, "Report on Regulatory Agencies to the President-Elect," December 1960, https://ratical.org/corporations/linkscopy/LandisRpt1960.pdf. John Landis, former dean of the Harvard Law School, founding commissioner and second chairman of the Securities and Exchange Commission, and Civil Aeronautics board chair, authored *The Administrative Process,* which informed the development of the Administrative Procedures Act, Yale University Press, 1938.

5 The optimal capacity mix is determined by minimizing the cost of providing service recognizing the tradeoff between capital and operating costs.

to the cost of a peaker. The only reason to build a peaker is to support electric system reliability, and, as the most expensive resource to operate on the system, there are no inframarginal rents to amortize its capital costs. This provides the theoretical basis for what has been called the missing money problem.[6] It also provides the rationale in the Peaker Method for developing mechanisms for compensating generators for the capital costs of system resources.

Capacity markets require continuous administrative intervention to create prices that comport with FERC's market expectations. These expectations are based on an administrative structure that was derived from the economic theory of peak load pricing,[7] which, although brilliant for its time, is becoming increasingly obsolete. **Figure 1** shows the New York capacity market, referred to as the "demand curve." This figure demonstrates both the reliance on the Peaker Method and the role of administrative pricing and market intervention in pricing. The parts of the demand curve highlighted in yellow are a purely administrative price making mechanism. The supply curve is highlighted in red to indicate that it is subject to administrative price intervention. FERC mandates buyer-side mitigation in which some sellers are required to increase their offers to a minimum offer floor (which has the effect of increasing prices to consumers). Therefore, it can be seen that the fundamental dynamics in this so-called market are administratively determined. The key theoretical feature sets the demand curve's pivotal point, that the value of capacity at the desired reserve margin (118 percent) is equal to the CONE (Cost of New Entry). The other two pivotal points that define the demand curve, (1) the maximum allowable price (two times the cost of CONE) and (2) the point at which the incremental value of capacity (i.e., its price) is zero are not supported by empirical analysis, for example, a study of customer behavior.

Figure 1: The New York Demand Curve



Source: See, ECRC v. FERC, 407 F.3d 1232, 1235 (D.C. Cir. 2005), highlighting added.

The capacity markets are all auction-based markets that have a range of auction periodicities from monthly auctions to fulfill more immediate capacity obligations to annual auctions in which capacity is procured three years ahead of when it is needed. In these capacity auctions, resource offers are gauged against this demand curve to determine the price paid for capacity and the amount of capacity acquired. Capacity markets are an administratively set pricing mechanism, and an almost incomprehensibly complicated one at that. It is hard to imagine that any cost-of-service method could be more complex and opaque than the capacity markets.

The administrative procedures overseen by FERC and mis-classified as competitive markets are extremely problematic. Capacity markets "have proven themselves incapable of: meeting load-serving entities' needs for diverse resource portfolios; enabling states' efforts to pursue policy goals; satisfying generators' need for stable revenues; or ensuring resource adequacy."[8] As a

6 The missing money problem is a shortfall of revenues required to cover the capital investment in generation. Advocates for generator owners argue that this problem exists because of administrative price caps, which are imposed on markets to thwart the unfettered exercise of market power during periods of scarcity. The term was introduced by: Shanker, R. "Comments on Standard Market Design: Resource Adequacy Requirement." Federal Energy Regulatory Commission, Docket RM01-12-000. (2003). p. 3, http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=9619272.

7 Marcel Boiteux was the first to develop this theory in 1949. See: Boiteux, Marcel P. «La tarification des demandes en pointe: Application de la théorie de la vente au coût marginal», 1949, *Revue générale de l'électricité.*

8 Morrison, J., "Capacity Markets: A Path Back to Resource Adequacy," *Energy Law Journal,* Vol 37, No,1 (2016), p. 1, 18-1-60-Morrison_FINAL.pdf (eba-net.org).

consequence, FERC has had to resuscitate these markets through limiting the participation of renewable resources. This was accomplished by imposing rules that create a market fiction that requires market participants to provide offers at or above administratively determined levels, while at the same time undermining state policy that financially supports resource investments. As FERC has explained in its December 2019 Order on PJM's Minimum Price Offer Rule (MOPR), "…our statutory mandate requires the Commission to intervene "when subsidized [resources] supported by one state's or locality's policies has the effect of disrupting the competitive price signals that PJM's [capacity auction] is designed to produce, and that PJM as a whole, including other states, rely on to attract sufficient capacity."[9]

Historically, there has been a bright line between state and federal electricity regulation. FERC regulates the wholesale market, initially inter-utility sales, also called sales for resale; and now sophisticated power markets operated by ISOs. In that earlier formulation, customers were load who purchased their power from utilities that participated in the wholesale markets. State-regulated utilities provided retail service to the customers who used the power. Customers were at the end of the line of a one-way flow of power that started with generation, was transported over transmission lines, and distributed by local utilities. Now, the electric market is becoming more complex, with customers increasingly becoming active participants in electric markets as prosumers that both buy electricity and sell services (either demand response or electricity) back to the system. This blurs the jurisdictional line between wholesale and retail sales and makes the authority of state regulatory commissions and FERC ambiguous.

The result of FERC's focus on creating an appropriate price signal has displaced its statutory role of protecting consumers and the public interest and has led to an unprecedented split between the states and FERC. It is evident that the changes in electric generation and the new smart but disruptive role of consumers pose an existential threat to the magic pricing formula and, perhaps, to FERC's future role in regulating electric markets. Renewable generation, which essentially has zero marginal costs, will wreak havoc on the energy markets' ability to play their role in supporting investment in needed generation. Inframarginal rents for amortizing capacity investment will decline. The capacity markets will need to pick up the slack. This will be difficult when they are already on life support. Indeed, there is no reason to be optimistic that the capacity markets can be modified to successfully support financing the capital requirements of decarbonization.[10] Actions such as FERC's recent PJM MOPR are designed to resuscitate those markets. Creating appropriate price signals increases payments to generators at the cost to consumers and the economies served by the ISOs. Goggin and Gramlich estimate that the cost of subjecting state supported generation to PJM's MOPR could reach $5.7 billion a year or a 60 percent increase in cost.[11] It is therefore not surprising that FERC's actions are prompting states to consider ordering their utilities to abandon FERC regulated markets, effectively backtracking on unbundling and re-establishing the power procurement role of utilities. It is time to determine whether the current magic pricing formula is up to the job. And, if not, what the alternatives are and whether it would be more advantageous to have a portfolio of market mechanisms rather than a single magic pricing formula.

Prudent Regulation

The prudence standard is one of the primary tools used by regulators to judge the reasonableness of utility actions. It provides the gateway for cost recovery of utility expenditures. It is based on the nature of the utility's deliberative process, not the final outcome of its decision. The prudence standard revolves around the question of whether an action is reasonable given the facts that are known and knowable at the time that

9 Calpine Corp. v. PJM Interconnection, L.L.C., 169 FERC ¶ 61,239 (2019) at p. 68 ("PJM MOPR") citing: 2011 MOPR Rehearing Order, 137 FERC ¶ 61,145 at P 3; see supra note 23.

10 Decarbonization will be very capital intensive, renewables are pure capital investments, with minimal operating costs, and Carbon Capture and Storage (CCS) is a capital-intensive technology.

11 Goggin, M. and Gramlich, R. "Consumer Impacts of FERC Interference with State Polices: An Analysis of the PJM Region," Grid Strategies, August 2019, p. 2, https://gridprogress.files.wordpress.com/2019/08/consumer-impacts-of-ferc-interference-with-state-policies-an-analysis-of-the-pjm-region.pdf.

the decision is made. If a utility is able to demonstrate that a decision to pursue a particular investment was reasonable at the time it was made, even though the outcome was not as desired (in a market context, the investment was a disaster), the utility is still allowed to recover its costs. Prudence is a well-accepted standard for deliberation and should be used as a standard for evaluating regulatory behavior as well. Because FERC's own deliberative processes are not based on what is known and knowable, they effectively limit the nature of the information available for deliberation. It is time for FERC to adopt a prudent approach to regulation.

FERC's principal objective, as defined by its mission statement, is "economic efficiency." One only needs to look at the structure of different capacity markets to recognize that FERC has not relied upon what is known and knowable in its pursuit of efficiency. The capacity markets in ISO-NE, the NYISO, and PJM – Interconnection are all very different. How can a regime in which these three ISO's have such different markets designed to meet the same objectives all be economically efficient? Geographic differences do not provide the answer to how and why these markets are different. The differences are based on the stakeholder processes within the ISOs. Those processes frame the information FERC uses for its decision making, which the courts have characterized as passive. The correct path for FERC to take is active and prudent regulation in coordination with the states to achieve the objective of efficiency. It will need to do so in the future to fulfill its consumer protection role, while playing an active role in guiding the decarbonization of the electric sector.

Prudent federal regulation requires coordination with the states. Underlying the notion of economic efficiency is coherence. The wholesale electric markets cannot be efficient if they do not recognize and coordinate with state policies. Those policies represent the interests of the citizens of those states. Those citizens are also the consumers that FERC is charged with protecting. It is now widely recognized that the FERC has recently abandoned its earlier efforts to coordinate with the states. Indeed, FERC's recent actions thwart any states' ability to regulate utilities in compliance with its state policies. Given these policies, it is no wonder that many of these states feel frustrated as their efforts to maintain reliability and to decarbonize are increasingly interfered with and seemingly assaulted by an agency whose powers were developed to support state regulation, rather than to restrict state regulatory and policy goals. FERC needs to reinstate and readopt its past efforts to coordinate with the states. This change will be vital to it successfully fulfilling its mission.

Clean Energy and Decarbonization

For those who follow energy policy and are working to promote a clean energy future, the elephant in the room for FERC is its role in the U.S. efforts to decarbonize. The FERC must identify and remove self-imposed constraints on efforts to decarbonize. This is largely a function of the nature of FERC's decision-making processes, in which it responds to petitions and complaints rather than setting a regulatory agenda. FERC's caution, often characterized as deliberation, is not an adequate excuse for avoiding innovation.

At different times in the life of an agency, it needs to pause to take stock. FERC's predecessor, the FPC, did so with the National Power Survey. The New York Public Service Commission did so with a "self-assessment" in the 1990s at the dawn of restructuring the state's electric markets. Many federal agencies maintain situational awareness of the factors influencing their approach to governing change. To address that challenge, they prepare quadrennial reviews that articulate the agency's mission and delineate plans to achieve that mission. It is time for FERC to follow suit and also take stock; to clarify its mission with respect to consumer protection and decarbonization; to rationalize its relationship with the states; and, ultimately, to lead rather than passively follow. The opportunity for leadership and a new approach by FERC couldn't be more clear, as a failure to adapt and modernize its regulatory model will otherwise have long-term deleterious effects for the process of decarbonization, the future of the electric grid, and the U.S. economy.

Recommendations

Given the need to decarbonize, the growing role of electrification, the critical frailty of FERC's magic pricing formula, and the growing and substantial evidence that the current approach will not meet the challenge it faces, it is time for FERC to consider alternatives. To facilitate FERC's efforts to develop a new regulatory paradigm that will both be truly efficient and will enable the decarbonization of the United States, the

following actions are recommended:

1. Create an expert panel on emerging technologies to analyze how current market structures limit the adoption of new technologies, and propose alternative market designs that enhance innovation.
2. Evaluate the way that the Commission receives information and determine what enhancements are necessary to enable prudent regulation.
3. Audit the FERC approved and regulated stakeholder governance structure to determine whether it yields efficient results or is an impediment to decarbonization and customer protection.
4. Evaluate the efficacy of capacity markets in compliance with the recommendations made by the U.S. Government Accountability Office.
5. Collaborate with the U.S. Department of Energy to prepare a National Power Survey that maps out the steps required to decarbonize the electric grid.
6. Initiate a Quadrennial Regulatory Review process focused on FERC's role in implementing decarbonization policy, customer protection and environmental justice.
7. Create an economics office.
8. Create a stakeholder ombudsman office.
9. Review current management practices to determine if they inhibit regulatory and market innovation, including assessing whether FERC staff is appropriately trained, and whether its culture supports its role as a consumer protection agency.
10. Initiate an open dialogue on the role of carbon and the implications of greenhouse gas reductions on FERC's regulatory scope.
11. Explore methods for working with the states to enhance the efficient transformation of the electric markets to reduce greenhouse gasses.
12. Prepare environmental impact statements on major electric market policy actions that affect the choice of resources used to meet customer demands.
13. Establish an ongoing process and dialogue to investigate market design options that can address methods of decarbonization that assure just and reasonable rates, as well as revenue adequacy for resources supplying the market.

This *Insights* paper is an excerpt from the author's forthcoming publication, *"Whither the FERC: Overcoming the Existential Threat to the Magic Pricing Formula through Prudent Regulation."*

About the Author
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