UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators	)	Docket No. RM16-5-000

COMMENTS OF THE AMERICAN PETROLEUM INSTITUTE ON THE NOTICE OF PROPOSED RULEMAKING

Pursuant to the Federal Energy Regulatory Commission's ("Commission" or "FERC") January 21, 2016 Notice of Proposed Rulemaking ("NOPR") in the subject docket, the American Petroleum Institute ("API") hereby submits comments regarding offer caps in markets operated by Regional Transmission Organizations ("RTOs") and Independent System Operators ("ISOs"). API responds here to selected topics from the NOPR but reserves the right to comment on remaining issues as relevant in this docket. Though API references a few RTOs/ISOs as examples, these comments are meant to apply generally to all RTOs and ISOs under FERC jurisdiction.

I. INTRODUCTION

API is a national trade association representing over 650 member companies involved in all aspects of the oil and natural gas industry. API's members include producers, refiners, suppliers, pipeline operators, and marine transporters, as well as service and supply companies that support all segments of the industry. API advances its market development priorities[1] by

[1] Effective January 1, 2016, America's Natural Gas Alliance ("ANGA") dissolved as a separate organization but its mission — to promote the demand for and use of natural gas — and a supporting staff team was combined into the API.

working with industry, government, and customer stakeholders to promote increased demand for and continued availability of our nation's abundant natural gas resources for a cleaner and more secure energy future. Electricity generation is a significant market for clean-burning natural gas and our members are both producers and consumers of electricity. Therefore, API has an interest in ensuring wholesale electricity market rules and regulations treat natural gas generation equitably, providing a non-discriminatory level playing field for all resource types. This extends to promoting market design changes that incorporate additional components to appropriately value energy resource attributes, above and beyond equally valuing every MWh of power provided. While such changes are beyond the scope of this NOPR, we believe they should accompany the changes to generation compensation we recommend below. Ultimately, an efficient, well-designed market would likely help contribute to both reliability and a least-cost supply solution for consumers.

II. BACKGROUND

The API market development function previously resided at ANGA,[2] where there was a history of advocacy with respect to offer caps in wholesale electricity markets. ANGA submitted comments in several FERC dockets[3] discussing the need for reforms. We believe market caps, as currently designed and used, can distort price signals, potentially hampering development of innovative products based on technologies that were not available at the time the prevailing RTO/ISO market design was developed, and create market inefficiencies in both the short and long term that could ultimately raise costs to energy consumers. Additionally, restrictive offer caps are often presented as a backstop market power mitigation tool, which we believe is an

[2] *Ibid*
[3] See ANGA comments in FERC Docket Nos. EL15-31, ER15-691, ER16-76, ER16-248, and previously in AD14-14.

inappropriate reason to maintain an offer cap and an ineffective means to mitigate market power abuses. If an RTO/ISO's market power mitigation tools are inadequate, such that the market monitor feels a cap is needed to serve as a backstop, it would be more appropriate for the Commission to recommend that the RTO/ISO work with its stakeholders to develop appropriate market mitigation tools that do not require the use of a market-distorting offer cap. To reduce unnecessary market distortions and help allow for price signals that better track market fundamentals, at a minimum, the offer cap should be significantly increased with concurrent consideration of changes in market infrastructure, design, and operation that will encourage the best mix of resources to improve real-time reliability during extreme weather events. Additionally, we recommend that FERC look for ways to encourage the appropriate integration of new technologies, including the cutting-edge gas-fired generation technology that starts and ramps quickly to meet rapidly changing grid conditions, that could allow prices in real-time markets to better reflect the true state of grid reliability at a given moment while addressing any remaining concerns about market power abuse.

III. COMMENTS

API commends the Commission for considering this issue and proposing reforms. We believe, however, the focus of the recommendations is too narrow. It seems to be aimed at alleviating only one of the market failure concerns outlined by Duke Energy ("Duke") and Old Dominion Electric Cooperative ("ODEC"), about their inability to recover costs incurred during January/February 2014 when they were required to run at below-cost, due to fuel price spikes.[4]

[4] *See Duke Energy Corporation v. PJM Interconnection, L.L.C*, "Complaint of Duke Energy Corporation on Behalf of Duke Energy Commercial Asset Management, Inc. and Duke Energy Lee II, LLC Against PJM Interconnection, L.L.C. and PJM Settlement, Inc. Or, In The Alternative, Request For Waiver, Docket No. EL14-45-000 (May 2, 2014) and *Old Dominion Electric Cooperative*, "Petition Of Old Dominion Electric Cooperative For Waiver Of PJM
(Continued...)

The $1,000/MWh price cap prevented Duke and ODEC from submitting offers into the PJM market that reflected their true costs.[5] While this proposed tailored solution would theoretically prevent this from happening again, it fails to align with cost-causation principles and address the market distortion issues associated with imposing an artificially low price cap on wholesale energy markets. These issues are discussed below.

A. *Opportunity Costs and Risk Premiums*

Opportunity cost as a traditional economic principle is -- the value of the best alternative forgone, where a choice needs to be made between several mutually exclusive alternatives given limited resources. As such, opportunity costs can include a variety of factors each individual market participant faces in unique combinations and, therefore, do not well lend themselves to a formulaic solution. Risk premiums can be equally difficult to pre-verify in real-time markets, because of the great diversity of consumer preferences and the increasing range of options for generation, and energy management technologies that are becoming more commonplace for energy producers and consumers. As with opportunity costs, each energy supplier or consumer faces a unique landscape of risks and rewards and must calculate offers/bids that take their particular situation into account. Accordingly, this presents a serious problem for RTOs/ISOs in implementing the proposed rule, as no "formula" could be functionally sufficient in capturing

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Tariff And Operating Agreement Provisions In Order To Make ODEC Whole For Certain January 2014 Operations, Docket No. ER14-2242-000 (June 23, 2014).

[5] FERC ultimately denied the relief sought by Duke and ODEC. *Duke Energy Corporation v. PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,206 (2015), *reh'g denied*, 154 FERC ¶ 61,156 (2016); *Old Dominion Electric Cooperative*, 151 FERC ¶ 61,207 (2015), *reh'g denied*, 154 FERC ¶ 61,155 (2016). Similar issues were raised by Calpine and New Jersey Energy Associates ("NJEA"). *See Calpine Energy Services, L.P*., "Request For Limited Waiver Of Calpine Energy Services, L.P., Docket No. ER15-376-000 (Nov. 12, 2014); *New Jersey Energy Associates, a Limited Partnership*, "Petition Of New Jersey Energy Associates, a Limited Partnership For Waiver Of PJM Tariff And Operating Agreement, Docket No. ER15-952-000 (Jan. 30, 2015). FERC also denied the relief sought by NJEA while Calpine withdrew their request following the rulings in the above. *New Jersey Energy Associates, a Limited Partnership*, 152 FERC ¶ 61,181 (2015), *reh'g pending*.

accurately the increasingly wide range of choices that suppliers and consumers have available to them, making the pre-verification of opportunity costs and risk premiums by grid operators and stakeholders impractical.

One important function of markets is that of “price discovery”, something that has largely been left out of the discussion on offer caps and proper pricing in wholesale energy markets. According to basic economics, true marginal cost that incorporates opportunity cost and risk is not defined by a pre-determined formula but rather “discovered” within the market through the intersection of supply and demand. Imposing a cap on one side of the market, without understanding the unintended consequences arising from the restrictions on commercial opportunities, can impede this process. Ideally, real-time prices should reflect the higher of operating costs (plus a small margin) or prevailing reliability conditions on the grid. If the markets appropriately price reliability conditions, some of the “missing money” problem, which RTO/ISO have tried to address through capacity payments, can disappear while improving reliability.

Why should the real-time price be the higher of operating costs (and a small margin) or prevailing reliability conditions on the grid? The reason is that “real-time markets” in RTOs and ISOs are not traditional commodity markets (see below). In addition, real-time grid reliability is what economists describe as a “common pool resource” that needs to be instantly reflected in real-time prices to help provide the appropriate strong incentives for market participants to modify their behavior in ways that "keep the lights on" by marrying good market outcomes with good reliability outcomes.[6]

Traditionally, bilateral over-the-counter markets, electronic bulletin boards and futures exchanges have allowed market participants to manage risk in commodities such as oil, grains, and metals from near real-time to years in the future. The engineering requirements of electricity generation, transmission and use, however, led to RTOs/ISOs using a centralized engineering solution – a constrained optimization model – in real-time to determine the equivalent of real-time prices and quantities, because (given the design of RTOs and ISOs) traditional commodities markets cannot clear quickly enough "to keep the lights on".[7] For example, the current nodal market design is intended to address local reliability challenges, producing locational reliability pricing through the use of security constrained economic dispatch ("SCED") that traditional commercial markets would likely fail to resolve in real-time.

The other unique challenge of organized power markets is that when total demand for electricity exceeds the total supply of electricity at any given moment, it can cause the entire grid to go dark for a substantial amount of time. During these times, the real-time optimization model that generates real-time prices in RTOs/ISOs needs to include "price overrides" so that reliability

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[6] See discussion of electricity as a "common pool resource" in L. Lynne, Kiesling, Chapter 8, "Is Network Reliability a Public Good?' in *Deregulation, Innovation, and Market Liberalization* (2009), Routledge Studies in Business Organizations and Networks: New York, New York. For a broader discussion on the use of market mechanisms to effectively manage a "common pool resource," see *Governing the Commons* (1990) or *Understanding Institutional Diversity* (2005) by Nobel-winning economist Elinor Ostrom.

[7] For a discussion of the role of the duality theory in RTO and ISO markets, see Charles Rivers & Associates [Larry Ruff], *A Transitional Non-LMP Market for California: Issues and Recommendations*, 2004, at 5-6.

conditions are appropriately priced in real-time, whether it is an insufficiency in balancing energy or a shortage of ramping capability that threatens grid reliability.[8]

RTOs/ISOs have traditionally taken a very narrow view with respect to opportunity costs and risk premiums. A review of RTO/ISO tariffs indicate that generally only fuel costs and some emissions allowance costs are permitted under the category of "opportunity costs" that are allowed to be included in offers.[9] Risk premiums, particularly for those resources that are not committed to an RTO/ISO through a capacity market, are insufficiently addressed. An example would be demand response through smart devices in homes and businesses that could be on standby to quickly and opportunistically respond to reliability problems as they occur, without the cumbersome qualification processes associated with capacity mechanisms originally designed to meet the needs of utility-scale generation.

This shortfall points to a systemic problem with the narrow definitions of opportunity costs and risk premiums, in the context of efficient real-time pricing in wholesale electricity markets. These components have not been dealt with adequately in electricity market pricing under the cap and the problem is only amplified by the proposed design for pre-verification of offer prices above the cap. PJM has attempted to capture some of these elements by allowing supply offers to include a 10% adder, but even including this element in above-the-cap offers is being questioned.[10]

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[8] See *Settlement Intervals and Shortage Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 152 FERC ¶ 61,218 (2015) (addressing the related issues of settlement intervals and the timing of scarcity pricing).
[9] For example, see PJM Manual 15 and ISO-NE Tariff, Appendix A, Section III.A.7.5.1.
[10] See PJM Manual 15

To enhance good market outcomes and improve real-time reliability, API recommends that FERC initiate an examination of opportunity costs and risk premiums, inclusive of a wider range of resources, in wholesale energy market offer pricing and how they may or may not be considered by the various RTO/ISO market rules.

B. The Case for Allowing Price Volatility in the Real-time Markets

As noted previously, API takes the position that offer caps should be significantly higher in wholesale energy markets, and in particular in real-time markets. Real-time electricity markets are (or should be) essentially balancing markets, where load serving entities ("LSEs") purchase (or sell) the energy not procured or scheduled through the day-ahead market, due to the imperfect nature of load forecasting. In modern real-time markets, LSEs have the ability to fully hedge their market purchases and, therefore, exposure to real time price volatility can be reduced to a minimum. As a result, the real-time markets generally account for less than 5% of wholesale electricity sales.[11]

The need for greater volatility in real-time prices arises from the technological changes that are sweeping the power industry at both the wholesale and retail level. At the time the current RTO/ISO design – the classic two-settlement nodal market design with a capacity construct to manage entry and exit of new resources – was developed, the electric industry was very different and that design, still used today, incorporated the following prevailing characteristics:

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[11] See for instance the 2014 State of the Market Report for the MISO Electricity Markets, Analytical Appendix, Section IV.C. Day-Ahead Load Scheduling, Potomac Economics, June 2015, at A-34 to A-37. http://www.potomaceconomics.com/uploads/midwest_reports/2014_SOM_Report-Appendix_Final.pdf

- dispatchable large-scale generation with limited ramping capability owned by integrated utilities, municipals, coops, or independent power producers meeting most of the electricity demand on a daily basis;
- passive (or inelastic) load;
- load forecasts based on weather, time of day, and day of the week;
- load largely unaware and therefore unresponsive to both spot market prices and real-time reliability conditions; and
- load, if left unprotected, is subject to both potential market-power abuse and unstable reliability conditions.

Deviations between day-ahead market and real-time market outcomes – prices and outputs at various nodes, hubs, and zones – largely resulted only from minor fluctuations in load and forced outages of transmission and generation. In response to these fluctuations, the grid operator would conduct minor offer-based re-dispatch where market clearing prices would be consistent with the reliability actions of the grid operator. Ancillary services were added to address the potential for unit trips or reduced ramping capability on the grid.

In contrast, in 2016, the following resources (among others) can be both technologically feasible and affordable to be widely deployed in power markets:

- utility-scale variable renewable resources (wind and solar);
- rooftop solar;
- quick start gas-fired generation with low (or no) minimum loads and fast ramping capability;
- distributed gas-fired generation;

- industrial and large commercial demand response programs and technologies; and,
- smart meters and smart adaptive thermostats that allow residential and small commercial customers to actively manage their energy use in real-time.

Thus, the underlying assumptions that guided the formation of RTO/ISO market design (which were a reasonable approximation in the year 2000 of the prevailing cost-effective generation on the supply side and energy-management technologies on the demand side of the power industry) are becoming increasingly less realistic over time. As smart devices in homes and businesses, distributed generation, and growing penetration of variable energy resources are serving an increasing role in meeting the electricity needs of energy consumers, the optimal real-time market pricing regime needs to evolve to address these changes that pose real reliability concerns for grid operators.

Not allowing prices to rise when market forces dictate they should, (by artificially capping them and putting costs into uplift instead) can lead to distortion of incentives and a misallocation of penalties and rewards. The risk, from a market perspective, is that such distortion and misallocation may promote market inefficiencies and dampen incentives to develop and invest in products necessary for reliability. Consider the following simplified illustration involving two LSEs and two generators ("G"):

<table>
<tr><td>LSE1</td><td colspan="2">Fully hedged; uses latest load forecasting methods; purchases as much as possible in day-ahead</td></tr>
<tr><td>LSE2</td><td colspan="2">Not forecasting and hedging</td></tr>
<tr><td>G1</td><td colspan="2">Maintains its facilities in order to provide reliable energy</td></tr>
<tr><td>G2</td><td colspan="2">Falls behind on maintenance</td></tr>
<tr><td>Real-time market outcome during constrained operations:</td><td>Real-time market operating under offer caps; cost allocation with resulting uplift:</td><td>Real-time market operating without offer caps; cost allocation with LMP:</td></tr>
<tr><td>LSE1 – meets requirements and does not need extra energy
LSE2 – needs to make a large purchase at real-time LMP
G1 – meets its real-time energy supply obligations
G2 – must purchase replacement energy at real-time LMP</td><td>LSE1 – pays extra uplift costs
LSE2 – pays less than full market cost for its real-time energy
G1 – earns less than full market price for reliable energy and pays uplift charges
G2 – pays less than full market cost for replacement energy

LSE2 and G2 are effectively subsidized by LSE1 and G1 due to socialization of out-of-market uplift charges. LSE1 and G1 are harmed.</td><td>LSE1 – held harmless, was hedged
LSE2 – pays full market cost for its RT energy
G1 – earns incentive for being reliable
G2 – pays full market cost for replacement energy

LSE1 and G1 are held harmless or benefit from their reliability.
LSE2 and G2 see appropriate incentives to improve</td></tr>
</table>

This distortion of penalties and rewards was highlighted in the Champion Energy Marketing complaint following the 2013-2014 winter, and discussed in Commissioner Moeller's dissent in that case.[12] Champion protested that it was fully hedged (even long on some days) during that season, but was still saddled with significant balancing energy charges that were socialized to all market participants. Socialization of uplift charges violates the principle of cost causation and can weaken real-time reliability. Commissioner Moeller's dissent noted this

[12] See *Champion Energy Marketing LLC v. PJM Interconnection, L.L.C.*, 153 FERC ¶ 61,059 (2015) (Moeller dissent).

important principle explaining that, "Allocating costs broadly to load-serving entities like Champion unfairly frustrates their efforts to hedge their positions; it does not ensure that the market participants who actually caused those uplift costs pay corresponding charges."[13] While the Commissioner's dissent is directed at the allocation method for balancing energy uplift charges, the problem would likely not have been created in the first place if the real-time LMPs had accurately reflected the costs that were ultimately relegated to out-of-market uplift charges instead. While not all types of costs can be (or should be) removed from uplift, allowing real-time prices to rise to the level required to maintain the supply-demand balance may remove these 'harmful' types of costs from uplift and properly align market penalties and rewards, analogous to the role enhanced scarcity pricing has played in the operations of the real-time market in ERCOT[14] and, to a lesser extent, the way the pay-for-performance systems have aligned penalties and rewards in PJM and ISO-NE capacity markets.[15]

In addition to distorting incentives and not allowing price to rise to the appropriate demand-supply level, a market cap that is too low can hamper the development of supply products that increase demand elasticity. For example, PJM has developed price responsive demand and economic demand response programs, both of which are underutilized. While API takes the position that demand response ("DR") is not naturally a capacity supply resource and is a poor fit for capacity markets, there is a place for it in the energy markets. For example, a large refinery with significant load could install a clean-burning natural gas reciprocating engine that could be turned on in response to high real-time prices, thereby almost instantly reducing their

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[13] *Id*, at 2.
[14] PUCT Commissioner Kenneth Anderson, Public Utility Law Conference – *The Reliability Triad, A Market Based Approach to Operational Reliability*, August 8, 2014.
[15] See PJM Manual M-18 and ISO-NE Manual M-20 for descriptions of the capacity market rules and pay-for-performance systems.

loading on the grid. But, the incentive to do this may not exist if potential payback from such an investment is not sufficient.

The U.S. Supreme Court definitively held that FERC has jurisdiction with respect to DR in wholesale markets.[16] This provides an opportunity for the Commission to facilitate the development of products that could increase demand elasticity and allow for greater price discovery in real-time markets without trying to awkwardly shoehorn them into a clunky capacity construct originally designed a decade ago to procure utility-scale generation to serve passive load. The greater reliance on real-time pricing to integrate these non-utility-scale resources and innovative technologies may increase market participation and reliability because they can more naturally work with the wide variety of ways energy consumers will want to actively manage their power choices in a given day, week, or season.

In parallel with a greater reliance on real-time pricing, FERC may need to find ways to improve reliability and reduce uplift, by marrying cost-causation with the concept of direct assignment of reliability to both generation and load-serving entities in real-time markets. Perhaps this would encourage state-level decisions on rate designs that hamper demand elasticity to follow suite. As such, API recommends that the Commission reconsider the proposal to maintain the offer cap at $1,000/MWh in real-time markets and instead allow the markets to properly “discover” true marginal costs and correctly set incentives by significantly raising the cap and relying on the RTO/ISO market power screens.

Generally, API believes that instituting a more appropriate regime of scarcity pricing in real-time energy markets – allowing much higher levels of price volatility in real-time markets

[16] *FERC v. Elec. Power Supply Ass'n*, 136 S. Ct. 760 (2016).

more often to both maintain reliability and to coordinate the actions of these new, more distributed, variable energy resources, quick-start gas-fired technologies, and home-based energy management systems – is absolutely critical for successfully integrating the widest range of resources.

IV. CONCLUSION

API appreciates the Commission's consideration of these comments, which support modifications to RTO/ISO pricing that allow prices to reflect market fundamentals. For the reasons discussed herein, API requests that the Commission adopt the recommendations proposed.

Respectfully submitted,

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