The Polar Vortex: Implications for Improving the Efficiency of Wholesale Electricity Spot Market Pricing

A. Joseph Cavicchi

Prepared for the Electric Power Supply Association

March 2014

COMPASS LEXECON

I. Summary

Extreme cold weather in early January 2014 provided a stress test for Mid-Atlantic and Northeastern wholesale electricity market designs. Following this unusual polar vortex weather event several important concerns were identified for review and modification.[1] Many of these concerns are appropriately associated with ensuring that independent system operators ("ISOs") have the ability to effectively manage electricity operations during periods when system conditions may be stressed. In addition, the recent cold weather events revealed several electricity spot market[2] pricing inefficiencies which can negatively impact operations and reliability. The polar vortex provides an important opportunity to highlight existing wholesale electric spot market energy pricing inefficiencies, and to embrace future market design policy that will eliminate these problems.

Two particular electricity spot market design inefficiencies were exposed during the polar vortex event. First, the polar vortex illuminated the ongoing problem where uneconomic out-of-market resource compensation ("uplift") puts downward pressure on spot market prices. Although it has been suggested that obfuscating spot market volatility through the payment of uplift is a preferable approach for wholesale electricity market design, the perpetuation of uplift distorts spot market prices and creates incentives for buyers and sellers to deviate away from efficient behavior over both the short and the long run. Since uplift can suppress market prices throughout the year, it can result in the premature retirement of economic resources that are needed during times such as the polar vortex. Some progress has been made over the last several years to formulate and implement more efficient resource commitment and dispatch algorithms that reduce uplift and result in more efficient spot market prices. Additional progress is needed, however, as good market design policy dictates that a concentrated effort be made to minimize uplift.

Second, price caps may have suppressed wholesale electricity market prices below competitive levels. That is, offer and price caps were demonstrably below input costs, and could have prevented spot market clearing prices from reflecting the actual value of electricity supply to the wholesale market. The polar vortex revealed that the expectations which originally formed the basis for a $1,000/MWh price cap were wrong.

[1] The Federal Energy Regulatory Commission ("FERC" or "Commission") has convened a technical conference to review electric system operator experiences during the cold weather events. See Notice of Technical Conference in Docket AD14-8-000, "Winter 2013-2014 Operations and Market Performance in [RTOs and ISOs]," scheduled for April 1, 2014.

[2] The term "spot market" as used herein refers to the day-ahead and/or real-time hourly markets administered by ISOs.

Moreover, once it was clear that rule changes were necessary, there was little time available to do so before reliability may have been adversely impacted. Thus, we have learned from the polar vortex that offer and price caps need to be expeditiously revised.

There are numerous reasons that an immediate permanent response is appropriate to eliminate these inefficiencies. In particular, it is broadly accepted that efficient wholesale electricity spot market design requires that market clearing prices (whether high or low) accurately reflect the marginal cost of balancing supply and demand. Accurate price signals guide market participants to make better decisions. For example, market sellers can make accurate fuel procurement decisions confident that their costs will be covered by spot market prices (e.g., day-ahead and intra-day gas purchases and oil stock decisions) and submit offers that allow efficient dispatch decisions among different resources. Market sellers will also face better short-run performance incentives and see more accurate price signals for longer-term investment decisions including the value of fuel arrangements and dual-fuel capability. In other words, if market prices are predictably allowed to clear at the cost of the marginal unit (both during times of scarcity as well as under normal operating conditions), the market will drive sellers to invest in firmer fuel strategies to ensure performance so that they can avail themselves of the benefits of the more robust markets. At the same time, market buyers will face incentives to submit accurate day-ahead load schedules and to make better hedging decisions. Finally, incentives for demand response will be better aligned with the value of energy.

The polar vortex revealed that electricity spot market price setting rules are inconsistent with sound market design policy. Short-term market rule "fixes" will not resolve the adverse impact of binding price caps on spot market prices. Moreover, ongoing and increased reliance on uplift payments exacerbates spot market pricing inefficiencies, pointing clearly to the need to make a concerted policy effort to reduce these out-of-market payments. The polar vortex illuminated the need to work diligently to resolve ongoing spot market design shortcomings that distort prices. Market design changes should be implemented without hesitation to clearly signal to market participants that electricity spot market pricing will not be distorted by potentially binding price caps and unnecessary uplift.

II. Uplift Payments: The Problem and its Solution

Out-of-market (uplift and make-whole) payments currently are a critical cost-recovery guarantee for market suppliers that took on particular importance during the polar vortex.[3] While uplift payments will increase as a result of the high fuel prices associated with the polar vortex market conditions, it is important to recognize that increased reliance on uplift distorts spot market prices.[4] Contrary to arguments that uplift is a desirable means of protecting consumers from spot market volatility, uplift prevents spot market prices from signaling to market participants the true value of energy and results in price discrimination among sellers. Because uplift distorts spot market prices, good market design policy dictates that uplift payments should be minimized, and market design objectives should seek to ensure that resource commitment decisions are accurately reflected in spot market prices.

Uplift payments arise when an ISO commits a generation resource which operates as directed, but cannot recover its total commitment costs from only spot market revenues.[5] In other words, ex post spot market prices (day-ahead and/or real-time) were not high enough to fully compensate the committed generation resource. The uplift payments created by this uneconomic resource commitment can occur for several reasons. For example, ISOs must ensure that when they award supply resources schedules in the day-ahead spot market, they have sufficient resources to meet forecasted demand. Because day-ahead markets include virtual bidding and the possibility that load bids might underestimate demand day-ahead, ISOs carry out unit commitment reliability checks to ensure sufficient resources will be available during the operating day. In addition, ISO dispatch algorithms incorporate numerous operational constraints, and it can be the case that a resource is dispatched because it is needed for energy, but it may only operate at minimum load, or be committed as block-loaded supply.[6]

However, many resources committed to operate at minimum output levels, or whose dispatch is inflexible, are ineligible to set spot market clearing prices. This means that these resources' supply is part of the market, but the resources' costs are not explicitly

---

[3] As explained below, both the PJM Interconnection ("PJM") and the New York Independent System Operator ("NYISO") sought and received Commission authorization to "uplift" suppliers whose costs increased as a result of the polar vortex. The Commission has previously authorized ISO-NE to introduce unique winter 2014 fuel expense management, however the polar vortex impact on ISO-NE, although significant, appears to have been manageable (see January 2014 FERC Data Request, ISO New England, System Operations, January 10, 2014).
[4] PJM and NYISO have reported expected increases in uplift; however, final data are unavailable as of early March 2014.
[5] Total operational cost refers to start-up, minimum load and incremental energy costs.
[6] It is important to discern between uplift associated with resource commitments for specific local reliability requirements (e.g., reactive power) and uplift associated with resource commitments to provide energy and/or to guard against potential contingencies. The discussion herein focuses on the latter.

taken into account when setting spot market prices. Moreover, it can often be the case that these resource commitments occur after that time when a resource can nominate natural gas in the more liquid day-ahead market, causing a supplier to procure gas in less liquid intra-day markets, driving up costs and increasing system reliability risk (when compared to receiving a commitment in the ISO day-ahead market). The payment of such costs through uplift rather than the energy price distorts market prices, and it can do so not only under stressed conditions such as the polar vortex, but throughout the year. This persistent price suppression through uplift can result in the premature retirement of economic resources, which in turn exacerbates reliability challenges during operating conditions that stress the electricity system.

A. Uplift Reduction

Uplift is carefully tracked by ISOs. For example, PJM recently established an energy market uplift cost task force that is actively examining the causes of uplift and examining market design changes that will minimize uplift.[7] PJM notes that resource commitments which result in significant uplift are for generating units that cannot set spot market prices, but whose supply was committed to provide energy in association with operational constraints.[8] Similarly, ISO New England ("ISO-NE") reports significant net commitment period compensation ("NCPC") costs (uplift) that result from resource commitments that do not receive adequate revenues from the spot markets.[9] Moreover, because there is often a tendency toward making additional resource commitments to ensure reliable system operations, it is more likely than not that there is extra supply committed.[10] The commitment of additional supply that is compensated out-of-market puts downward pressure on spot market prices.

---

[7] See, generally, http://www.pjm.com/committees-and-groups/issue-tracking/issue-tracking-details.aspx?Issue={0584BFB6-F932-44FF-8CBA-AE4320338982}, accessed March 7, 2014.
[8] See, for example, meeting materials for PJM energy market uplift cost task force, November and December 2013, available at http://www.pjm.com/committees-and-groups/issue-tracking/issue-tracking-details.aspx?Issue={0584BFB6-F932-44FF-8CBA-AE4320338982}, accessed March 7, 2014.
[9] See, for example, 2013 Fourth Quarter, Quarterly Markets Report, ISO New England Inc., Internal Market Monitor, February 10, 2014, at 21, where ISO-NE reports that "Economic NCPC is the difference between the cost of committing and operating a generating resource to meet capacity and energy needs in the day-ahead and real-time markets and the energy revenues the resource realizes during the market day." Available at: http://www.iso-ne.com/markets/mkt_anlys_rpts/qtrly_mktops_rpts/2013/q4_2013_qmr.pdf, accessed March 7, 2014.
[10] For example, ISO-NE notes that "additional capacity was committed in December [2013] to supply energy during extremely cold weather days" (Id). PJM has also indicated in association with its energy market uplift cost task analyses that it is better to have more resources available than fewer (see Uplift in PJM, Adam Keech, PJM Interconnection, February 21, 2014, at 16)

However, the importance of seeking to minimize uplift through better spot market pricing has been the subject of research for several years.[11] The spot market pricing features necessary to account for the costs of resources dispatched at minimum load, or as fixed blocks, are well understood. Recognizing that an efficient electricity spot market design should result in spot market prices that are sufficient to cover the costs of all resources that are committed to provide energy, efforts are being made to minimize uplift.

For example, the NYISO allows fixed block units to be treated as "flexible" during the unit commitment process so that they are allowed to set spot market prices.[12] By allowing fixed block units to set market prices, and receive greater compensation through the energy markets, NYISO reduces uplift that would otherwise be paid to these resources and sets more efficient spot market prices.[13] In addition, the Midcontinent Independent System Operator ("MISO") is nearing implementation of a series of software changes referred to as extended locational market pricing ("ELMP").[14] Under ELMP the MISO will allow certain inflexible resources, particularly gas and combustion turbines, to set spot market prices, reducing uplift and improving spot market efficiency. Finally, PJM represents that its software allows block-loaded resources (combustion turbines) to set spot market prices.[15] Moreover, PJM's energy market uplift cost task force has recommended that software changes be implemented that will allow resources operating at minimum load to set spot market prices.[16] Thus, it is widely understood that prices that reflect the incremental cost of meeting demand, and thereby minimize uplift, provide better spot market price signals for market participants.

[11] See, for example, Gribik, P. R., Hogan, W. W., and Pope, S. L. (2007). Market-Clearing Electricity Prices and Energy Uplift. Available at http://www.hks.harvard.edu/fs/whogan/Gribik_Hogan_Pope_Price_Uplift_123107.pdf.

[12] See, NYISO Market Administration and Control Area Services Tariff ("MST"), 17.1 MST Att B LBMP Calculation Method, 7.0.0, New York Independent System Operator, Inc., as of 03/06/2014.

[13] For example, if high-cost gas turbines are being dispatched to meet load, but their cost is not reflected in market prices, market prices will not send the correct signal for scheduling either imports or exports, or indicate geographic regions where higher-cost supply is needed to meet demand.

[14] See, https://www.misoenergy.org/WhatWeDo/StrategicInitiatives/Pages/ELMP.aspx.

[15] See Manual 11: Energy & Ancillary Services Market Operations Section 2: Overview of the PJM Energy Markets, PJM © 2014, Revision 66, Effective Date: 03/07/2014, at 26.

[16] See, for example, meeting materials for PJM energy market uplift cost task force, November and December, 2013, available at http://www.pjm.com/committees-and-groups/issue-tracking/issue-tracking-details.aspx?Issue={0584BFB6-F932-44FF-8CBA-AE4320338982}, accessed March 7, 2014.

B. Uplift Distorts Buyer and Seller Incentives

Not only does uplift distort market prices, it also creates incentives for market participants to deviate from otherwise efficient bidding behavior. In particular, uplift cost allocation is often complicated and creates incentives for buyers to make decisions that take into account its cost allocation, which can distort bidding behavior. For example, if buyers can benefit from greater reliance on the spot market by shifting costs that end up in uplift onto other market participants, they will seek to do so. Minimizing the incidence of uplift diminishes incentives to alter bidding behavior.

Moreover, uplift can undermine the Commission's objective of relying on nodal pricing to ensure that electric energy markets reflect local conditions. Nodal pricing sends the appropriate price signals for the need for resources at a particular location, including demand response and energy efficiency resources. When ISOs turn to uplift to allocate the cost of energy, the uplift mechanisms do not assign costs at the same level of granularity that locational nodal energy market pricing provides. Instead, uplift cost allocation mechanisms tend to allocate based on the demand customers place on various regions with ISO-controlled transmission systems.[17] Thus, uplift can result in customers in a relatively low-cost location subsidizing the energy costs of customers in higher-priced locations. This is another undesirable result that uplift imposes on market participants, especially end-use customers.

Finally, market participants cannot hedge against uplift charges. Because uplift costs are a function of ISO day-to-day commitment and dispatch decisions and are not reported in a granular fashion (like spot market prices), there is no means by which its costs can be hedged (there are not forward markets for uplift). This means that those market participants that bear the burden of uplift cost allocation, often energy buyers, are exposed to price volatility. However, to the extent that uplift can be minimized by ensuring that spot market prices more accurately reflect actual system resource dispatch cost, buyers can hedge the cost through energy market forward/future contracts. This is a significant benefit for both buyers and sellers. Buyers avoid cost uncertainty and sellers can make forward sales at prices that reflect the true value of energy. This is a win-win outcome for market participants. A sound market design policy objective is to focus on reducing uplift.[18]

---

[17] See, for example, Manual 28: Operating Agreement Accounting, Section 5: Operating Reserve Accounting, PJM © 2013, Revision 63, Effective Date: 12/19/2013, at 32-33.

[18] The importance of reducing uplift is reinforced by the 2013 State of the Market Report for PJM which states: "PJM's goal should be to minimize the total level of energy uplift paid and to ensure that the associated charges are paid by all those whose market actions result in the incurrence of

Improvements in market design that result in reduced uplift and more efficient spot market prices are beneficial. The economic reasoning supporting spot market price setting approaches that incorporate all resources committed to meet demand is straightforward; the costs of supply resources committed to meet energy demand should be taken into account when setting spot market prices. Efficient price signals will provide incentives to sellers to be available and operational in the short run (including supporting fuel procurement decisions) and ensure that economic resources do not prematurely retire as a result of suppressed energy prices. Moreover, any concerns that improved rules for minimizing uplift may increase incentives to exercise market power are not material, as existing rules like those used by the NYISO have demonstrated that more efficient spot market price setting is workable. Although it can be difficult to define precisely the most efficient rules for improving the price setting process, additional progress is required to ensure that uplift payments are not utilized in lieu of competitive spot market prices that truly reflect all costs.

III. Offer/Bid Caps and Spot Market Pricing

An efficient electricity spot market design provides sufficient flexibility to market participants so that they can submit offers that are based on the costs they actually face (including opportunity costs as appropriate) and expect that market prices will be set consistent with those bids and offers accepted by an ISO. Attributes of an efficient electricity spot market design ensure that: offer-caps are consistent with underlying market conditions; gas-electric timelines are realistically accounted for to allow sellers to update bids accordingly and to coordinate commitment and dispatch as necessary; spot market prices are based on the appropriate set of bids and offers; and, any uplift payments are sufficient to cover resource operating costs.

However, market data during the polar vortex show that existing offer and price caps likely prevented wholesale markets from setting efficient electricity prices in portions of the Northeastern U.S. and Mid-Atlantic.[19] Two particular market design issues led PJM and NYISO to file with the Commission emergency requests seeking waivers from certain tariff restrictions. First, PJM and NYISO both sought and received approval to temporarily raise offer price caps above the then applicable $1,000/MWh limit set out in

such charges." (2013 State of the Market Report for PJM, Monitoring Analytics, LLC, March 13, 2014, Volume II, Section 4, Energy Uplift, at 124).

[19] See, generally, PJM Interconnection, L.L.C., 146 FERC ¶ 61,078 (2014) ("PJM Waiver Order"), and New York Independent System Operator, Inc., 146 FERC ¶ 61,061 (2014) ("NYISO Waiver Order"). In addition, volatile natural gas prices also impacted the California Independent System Operator's ("CAISO") ability to ensure efficient market outcomes (see below).

their tariffs.[20] Second, PJM sought and received approval to include in its calculation of spot market prices offers that exceeded the $1,000/MWh offer price cap.[21] Although these waiver approvals ensured that resources would be adequately compensated when costs exceeded historical offer-caps, these emergency measures expire this winter.

The polar vortex event provides an opportunity to recognize these market design flaws and prescribe market design policy initiatives that allow the Commission to act before such an event occurs again.[22] First, out-of-date offer and price cap tariff rules need to be permanently revised to ensure that if short-run marginal costs increase unexpectedly, market offers can be increased accordingly, and market clearing prices can reflect the appropriate value of spot market energy. Second, market offer rules must be sufficiently flexible to allow buyers and sellers to make offers that reflect actual real-time market conditions. There are several sound economic reasons for pursuing tariff changes to eliminate offer and pricing limitations based on out-of-date price caps.

A. Efficient Spot Market Design

First, the foundation of centralized electricity spot market design is the use of a uniform clearing price auction to set prices based on market participant bids and offers. The uniform price market design ensures that wholesale electricity market welfare is maximized by setting electricity spot prices at the level where buyers and sellers have no incentive at the margin to buy or sell more energy.[23] That is, prices are set such that the market clearing price represents an "equilibrium" price. All buyers and sellers transact based on the same transparent spot market prices, ensuring that all market participants are treated equally.

Basic economics teaches that binding price caps prevent a uniform clearing price auction from establishing a market clearing price that is efficient and non-

[20] Id.

[21] PJM Waiver Order at P 38. In its waiver request the NYISO indicated that it could not request authority to allow offers above $1,000/MWh to set spot market prices as its software could not readily support this modification (NYSIO Waiver Order at P 15).

[22] In its waiver approvals the Commission did not order any immediate ISO initiatives; stakeholder processes are expected to begin to consider permanent market rule revisions.

[23] It has been widely established that an electricity market design using bid-based, security constrained, economic dispatch with locational marginal prices and financial transmission rights will provide those features necessary for an open and transparent marketplace (see, for example, International Energy Agency ("IEA"), Tackling Investment Challenges in Power Generation in IEA Countries: Energy Market Experience, IEA, Paris, 2007, at 18-21). All U.S. ISOs use this market design framework, which establishes uniform market clearing prices for all buyers and sellers (differentiated as appropriate to account for losses and congestion), and the Commission has consistently endorsed this market design.

discriminatory.[24] For example, capping offer prices used in the calculation of spot market prices means that prices will not reflect market conditions when underlying marginal costs increase and offers rise above $1,000/MWh (offer prices are capped in the spot market price calculation). In electricity spot markets, this means that accepted offers above the price cap must be compensated through uplift, which results in price discrimination and market price distortion. However, the Commission has consistently stated "[p]ayments made only to individual resources and recovered in uplift fail to send clear market signals," and that those resource costs "should be reflected in transparent market prices whenever possible."[25] Moreover, the Commission noted in its recent order approving PJM's waiver request that "By limiting legitimate, cost-based bids to no more than $1,000/MWh, the market produces artificially suppressed market prices and inefficient resource selection."[26] Clearly, preventing legitimate offers above binding offer price caps from setting market clearing prices is distortionary.

Important benefits flow from efficient spot market prices. By revealing to sellers the actual value of energy production, sellers are provided the best incentives to be available, to operate reliably, and to enter into forward market sales contracts. At the same time, by revealing to buyers the actual value of consumption of spot market energy, buyers will be less likely to rely on the spot market and seek to shift costs onto others, and be more likely to enter into forward market hedges. Moreover, by setting efficient spot market prices, the spot market design guides medium and longer-term power purchase and sale decisions that tend toward more optimal resource allocation.

For example, electricity spot market prices that are allowed reflect high marginal cost supply provide market sellers assurance that their costs will be covered by spot market prices and more efficiently guide firm fuel procurement decisions such as day-ahead and intra-day gas purchases and oil supply restock decisions. In addition, reducing seller uncertainty regarding receipt of adequate compensation for providing electricity will improve seller creditworthiness and ensure that fuel supply can be readily purchased when prices are volatile. Accurate price signals will also provide sellers stronger performance incentives and provide more effective signals for longer-term investment decisions, including the value of fuel stocks and dual-fuel capability. Moreover, efficient prices are an important signal as to where, when, and how much new capacity may be

[24] It is a basic economic principle that price caps will result in shortages by discouraging sellers from offering supply to the marketplace (see, for example, Mankiw, N. Gregory, Principles of Microeconomics, Fourth Edition, Thomson South-Western, 2007, at 114-117). Although electricity spot market design seeks to circumvent this problem with uplift payments, distortionary effects remain as seller marketplace expectations are altered by the price caps.
[25] *PJM*, 139 FERC ¶ 61,057, at P 78, n.72.
[26] PJM Waiver Order at P 40.

economical. Higher prices often indicate that the introduction of newer, more efficient resources is likely to be profitable. Existing resources facing accurate prices can make better ongoing operational and capital investment decisions.

In addition, ensuring efficient spot market pricing reduces the incentive market participants face to take actions that distort market clearing prices. For example, if spot market prices omit certain costs, or are capped at levels below the actual value of energy to the marketplace, buyers will take this into account in their decision-making. Buyers can avoid payment for higher-cost energy by relying more on the spot market and shifting these costs (collected through uplift) onto other market participants that are likely to have hedged.[27] Such cost shifting results in price discrimination, which is clearly against Commission policy.[28] It also undermines the value of a hedge, since uplift cannot be hedged, which discourages customers from hedging as they will be paying for a product that is not capable of giving them the value they require. However, efficient spot prices provide incentives to market buyers to accurately schedule load and to make better hedging decisions.[29] At the same time, buyers can make better decisions about the benefits of hedging and the value of forgoing consumption when prices are high.

Finally, in addition to allowing market clearing prices to reflect offers that may be above outdated offer price caps, market participant offers used to determine spot market clearing prices must reflect current market conditions. This is especially relevant in two ways. First, efforts that are currently underway to better coordinate gas and electric markets require increased offer flexibility to accommodate gas price variation between day-ahead and day-of scheduling and delivery times.[30] Second, in instances where daily gas price volatility is high it is critical that ISOs use appropriate

---

[27] This behavior is not hypothetical, as these kinds of uplift cost allocation debates occur frequently. See, for example, ongoing market design modifications being pursued by ISO-NE in association with uplift: NCPC Cost Allocation: Phase 1 - Strengthen Incentive for Load to participate in the Day-Ahead Energy Market ('DAEM'), by Catherine McDonough, http://www.iso-ne.com/committees/comm_wkgrps/mrkts_comm/mrkts/mtrls/2014/mar12132014/index.html, accessed March 25, 2014.

[28] See, for example, *Blumenthal v. ISO New England*, 117 FERC ¶ 61,038, at P 83.

[29] Virtual bidders also face distorted price signals and possible misallocation of costs resulting from inefficient physical buyer and seller bidding behavior.

[30] There are a series of important issues associated with gas-electric coordination. The focus herein is on assuring that supplier offers have sufficient flexibility to change offers to reflect gas market price volatility.

fuel prices when setting cost-based offers.[31] Offer flexibility is critical for ensuring that market participants can adjust offers as appropriate to reflect market conditions.

B. Supplier Spot Market Offer Flexibility

The importance of supplier offer flexibility and efficient pricing has been a long-standing market design issue that the NYISO has worked to address. The NYISO tariff currently provides market participants the flexibility to structure and modify supply offers consistent with underlying costs. In particular, the NYISO permits sellers to adjust real-time offers to account for fuel price volatility between the day-ahead and real-time markets.[32] This ensures that generators are able to reflect actual fuel prices in their adjusted offers, which was of particular importance in the context of the polar vortex experience due to the volatility of natural gas prices during that time. The offer flexibility that NYISO provides is an example of good market design policy, though it was impaired by the current $1,000/MWh offer cap as discussed above.

However, the NYISO is the exception. Given New England's growing reliance on natural gas electric generation resources, ISO-NE has pursued tariff changes to provide sellers greater offer flexibility to better accommodate fuel market price volatility. Although the Commission conditionally approved ISO-NE's tariff changes to improve offer flexibility in October 2013, these changes have yet to be implemented, though it is hoped that they will improve sellers' ability to reflect real-time fuel costs, as occurs in NYISO.[33] Most recently, gas price volatility and supplier offer restrictions have significantly impacted the CAISO. On March 4, 2014, certain CAISO suppliers filed an emergency request for temporary waiver, explaining that compliance with CAISO dispatch directives was resulting in significant unrecoverable fuel expenses.[34] Just two days later, on March 6, 2014, the CAISO filed emergency waiver requests in an apparent effort to assure sellers that they will not be committed and dispatched and unable to recover their costs.[35] However, contrary to the relief requested by the CAISO

[31] These two concerns significantly overlap; however, they have arisen in different contexts when considering the polar vortex experience in comparison to recent cost recovery issues in the CAISO market.
[32] See New York Independent System Operator, Inc. - NYISO Tariffs - Market Administration and Control Area Services Tariff (MST) Services Tariff, section 23.4.7.
[33] ISO New England Inc. and New England Power Pool, 145 FERC ¶ 61,014(2013).
[34] See, Indicated CAISO Suppliers, Emergency Request for Temporary Waiver and Shortened Comment Period, Docket No. ER14-1428, March 4, 2014.
[35] See, California Independent System Operator Corporation, Petition for Limited Waiver of Tariff Provisions and Request for Next Day Commission Action, Docket ER14-1442, and Petition for Limited Waiver of Tariff Provisions, Request for Shortened Comment Period, and Request for Expedited Commission Action by March 19, 2014, Docket ER14-1440, March 6, 2014.

suppliers, the CAISO's waiver request proposes only limited instances where fuel price volatility will be acknowledged and therefore will continue to leave suppliers exposed to losses when following CAISO dispatch instructions. Suppliers need to be provided assurance that they will be fully compensated for performance with dispatch directives.

It is clear that seller incentives to competitively offer supply to the market require that sellers be permitted to submit supply offers consistent with actual costs, and be compensated appropriately. Providing offer flexibility that allows hourly differentiation of day-ahead and real-time offers reduces financial risks faced by sellers and provides an ISO with greater assurance that sellers will have an incentive to follow commitment and dispatch awards. The ability to incorporate gas price variation between the day-ahead and real-time spot markets will improve ISO commitment and dispatch decisions (e.g., less uncertainty regarding cost recovery will allow more accurate bids which should improve commitment and dispatch). In addition, in instances where seller resources have dual-fuel capability, improved flexibility should provide better signals for fuel switching decisions. Moreover, offer flexibility results in spot market prices that better reflect actual fuel supply costs (see above).

C. Criticisms Against Efficient Spot Market Pricing Are Unfounded

Various criticisms have been put forth as a basis to continue the "status quo" offer price cap and spot market price cap limits. For example, it has been suggested that the offer and price caps are essentially a market feature that market participants ought to expect will not be subject to change (at least not quickly), and that instances where seller costs exceed the cap can be collected through uplift.[36] In addition, it has been suggested that allowing spot market prices to be set based on offers above $1,000/MWh will materially increase buyer costs and create incentives for both gas sellers and electricity market participants to raise prices un-competitively.[37] Moreover, it has been suggested that relaxing offer and bid caps affects hedging decisions and can result in increased exposure to high prices.[38] None of these arguments provides a sound economic basis to perpetuate out-of-date offer and market price caps.

Historically, offer and price caps were set at $1,000/MWh under the expectation that this level was sufficiently greater than historically observed supplier short-run marginal costs and would provide fail-safe protection against the possible exercise of

[36] See, for example, PJM Waiver Order at P 21.
[37] Id. at PPs 19 and 23.
[38] These concerns were specifically raised in the context of PJM's waiver request that sought authority to include offers above $1,000/MWh in the determination of spot market prices.

market power.[39] However, the polar vortex event demonstrated that the historical basis for the offer/price cap is no longer valid.[40] The simple fact that seller costs could credibly increase, causing the historical offer/price cap to bind, provides a reasoned economic basis to relax the offer/price caps. It is clear that market expectations have now changed.

Next, it has been suggested that "unlimited" price exposure could result if offer and price caps are relaxed so that spot market prices can be set based on offers above $1,000/MWh.[41] This assertion is misplaced. First, as explained above, an efficient market design requires that prices be consistent with underlying market conditions. Second, market power monitoring and mitigation has been substantially refined since the establishment of the $1,000/MWh offer cap.[42] The original purpose of the offer caps was to mitigate seller market power; however, there is no mitigation purpose being served by preventing sellers from submitting cost-based offers. In addition, extensive market power mitigation rules will continue to guard against artificially increased prices; the Commission acknowledged the importance of ongoing market power monitoring and mitigation in its PJM waiver order as well as its ISO-NE offer flexibility order.[43] Third, buyers and sellers will continue to enter into hedging contracts that provide financial protection against spot market price volatility. Actual consumer exposure to spot market prices is limited, and numerous contractual instruments are available to buyers and sellers to hedge spot market price volatility.[44]

Finally, arguments that reference prior reliance on particular hedging strategies by buyers and sellers as a reason for maintaining offer and price caps are not economically

[39] See, for example, Answer of PJM Interconnection, L.L.C., to Comments and Protests, Commission Docket No. ER14-1145-000, February 3, 2014, at 6-7.
[40] See, Id. at 1 and Petition for Temporary Tariff Waivers, Request for Shortened Comment Period, and Request for Expedited Commission Action by January 31, 2104, New York Independent System Operator, Inc., Docket No. ER14-1138-000, January 22, 2014, at 3.
[41] PJM Waiver Order at P 22.
[42] See, for example, Review of PJM's Market Power Mitigation Practices in Comparison to Other Organized Electricity Markets, The Brattle Group, September 14, 2007.
[43] PJM Waiver Order at PPs 42-43 and ISO New England Inc. and New England Power Pool, 145 FERC ¶ 61,014(2013), at P 37.
[44] The majority of smaller electricity consumers in the Northeastern and Mid-Atlantic U.S. obtain retail electricity through standard offer service (also referred to as default or basic generation service), which is almost exclusively procured by utilities under fixed price supply contracts of various terms. Other larger customers actively seek service from competitive retailers and understand the costs and benefits of hedging. Finally, numerous electricity spot market hedging instruments are available to buyers and sellers (see, for example, http://www.cmegroup.com/trading/products/#pageNumber=1&sortField=oi&sortAsc=false&page=1&subGroup=11).

sound. Allowing legitimate costs to be reflected in market clearing prices will ensure that strategies of relying on spot markets and the prospect of shifting uplift costs to others is not beneficial. Moreover, sellers will not, and should not, be expected to use hedges to keep spot market prices artificially low. Buyers and sellers will seek all profitable transactions taking into account current opportunity costs, not the historical cost or benefit associated with a pre-existing hedging arrangement.[45]

In summary, the polar vortex event revealed that there are critical aspects of electricity spot market rules that are inconsistent with sound market design policy. Short-term market rule "fixes" will not resolve the adverse impact of out-of-date price caps on spot market prices. Moreover, ongoing and increased reliance on uplift payments exacerbates spot market pricing inefficiencies, pointing clearly to the need to make a concerted policy effort to reduce these payments. The polar vortex illuminates the need to work diligently to resolve ongoing spot market design shortcomings that distort prices. Market design changes should be implemented without hesitation to provide clarity to market participants that spot markets are intended to price spot electricity consistent with underlying market conditions.

[45] To be clear, buyers and sellers will take into account their net market positions (which includes hedging contracts) when making short-run decisions, but it will be the costs and benefits at the margin that inform these day-to-day and hour-to-hour decisions.