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Power & Utilities

Wholesale Markets

Texas Grid Operator Looks to Bolster Energy Prices Amid Renewables Influx

Pressure to Reform Wholesale Markets in Response to Changing Generation Mix Mounting Nationwide

December 5, 2017

OCTOBER 27 TX PUC REQUEST FOR COMMENTS ON PRICE FORMATION

On October 27, 2017, the Public Utility Commission of Texas (TX PUC) requested **comments on its project to assess price-formation rules in the Electric Reliability Council of Texas** (ERCOT) energy-only market (Project **47199**) to examine possible market improvements in response to concerns over **persistently low prices**. The proceeding stems from a **whitepaper that generators Calpine Corporation and NRG Energy** filed with the TX PUC in May **seeking changes to ERCOT's pricing and settlement rules**.

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1 Questions by TX PUC

The TX PUC's October 27 request seeks comments on specific questions regarding market design reforms. The commission said that other issues including transmission allocation and rate design will be addressed in another proceeding. The questions that the commission put forth include:

- Are market design reforms needed to support efficient investment and retirement decisions?
- Do ERCOT electricity prices fully reflect the value of supply?
- Do out-of-market payments for renewables interfere with competitive outcomes?
- Are reliability contributions of units subject to operator-initiated commitments undervalued?
- Can changes be deferred over summer 2018 or longer to observe market dynamics in the light of recent retirement announcements?

2 Whitepaper by NRG and Calpine

The whitepaper titled "Priorities for the Evolution of an Energy-Only Electricity Market Design in ERCOT," which inspired the proceeding, suggests there are some factors distinct from the market fundamentals that point to market design challenges, including:

- Production tax credit and other federal and state-level regulations
- Growth in subsidized renewable generation
- Persistently low price of natural gas as the marginal fuel in the wholesale market
- Transmission investment and cost recovery

Reforms to ERCOT's price formation proposed by the authors of the whitepaper

Adjustments to operating reserve demand curve (ORDC)	Marginal losses	Local scarcity pricing	Transmission planning and cost recovery
Subtract out-of-market commitments from real-time on-line capacity Consider impact of changing supply mix on loss of load probability	Modify dispatch and pricing to be consistent with the proved standard in all other U.S. ISOs Software is available Reduces inefficiency and improves pricing in every hour	Change mitigated offer prices and pricing of transmission constraints for out-of-market actions to relieve transmission constraints (e.g. reliability unit commitment or reliability-must-run procedures) Include both region-wide and local ORDCs in co-optimized energy and reserves dispatch	Consider beneficiaries pay planning model for consistency with objective of market-driven investment Modify the 4 Coincident Peak program to avoid impact on spot market efficiency and prices through recovery rules for sunk costs
Easier			More difficult

Source: TX PUC

Unlike the ISOs/RTOs on the East Coast, ERCOT does not have a forward capacity market which ensures sufficient resources to meet the future demand. Electricity suppliers in ERCOT receive direct compensation only from short-term energy markets, without any additional revenue from a capacity market. They rely on scarcity pricing events which can offer up to $9000/MWh during high demand periods to cover the operating costs and incentivize construction. Lately, the market participants have complained that the influx of subsidized renewables has cut down on scarcity events.

3 Response from Other Stakeholders

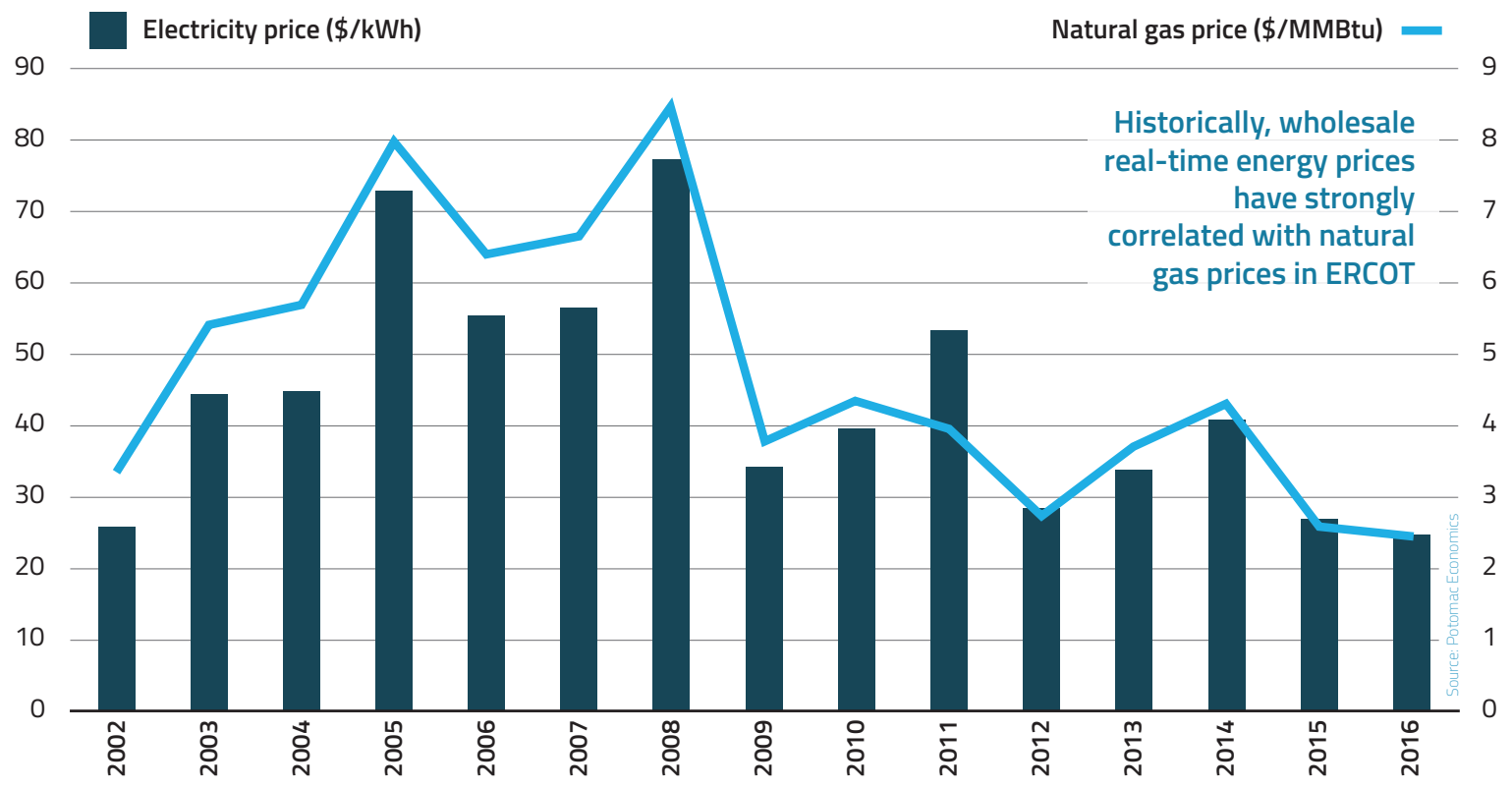
Potomac Economics, ERCOT's independent market monitor: Some of the proposals put forth in the whitepaper, such as real-time co-optimization of energy and ancillary service markets, are consistent with the recommendations in its 2016 State of the Market. However, Potomac said that the proposal is a "concept worthy of further study" to implement real-time co-optimization and not a mechanism ready for implementation.

Exelon: ORDC should be changed immediately to correct flaws that were "masked" in recent years due to the surplus in supply, as supply would tighten from early 2018 when significant resources are scheduled to retire and the reserves could become unacceptably low.

Wind Coalition: Scarcity price formation can be adjusted without disrupting the market by implementing co-optimization and refining the ORDC. The coalition noted that the displacement of higher-cost generation by lower-cost generation is normal and that the low variable costs of renewables will suppress prices regardless of subsidies.

Texas Solar Power Association: The significant drop in the marginal cost of natural gas generation and the tremendous decline in the capital cost of solar and wind have shifted the market fundamentals. Rather than constraining new technologies, the TSPA called for market design adjustments to leverage these advancements. Pointing to the existence of incentives and tax provisions for coal, lignite, gas, and oil producers, the TSPA suggested that the TX PUC should examine federal and state support to all resource types in ERCOT.

4 Gas or Renewables?



5 Price Formation Reforms in PJM

On November 15, PJM Interconnection issued a proposal to revise price formation rules in its energy markets in response to the changing energy mix. The proposal would allow all types of generators, both flexible and inflexible, to set the clearing price to accurately reflect the resources required to serve load to limit out-of-market payments, known as uplift. Inflexible resources lack the ability to alter their output within a specified period and require a minimum runtime or a minimum downtime. These resources are currently not permitted to set the price and therefore, when an inflexible unit serves demand but its cost is precluded, the locational marginal price (LMP) does not accurately reflect the true incremental cost to serve the load. PJM says that this limitation can suppress prices and increase the generators' dependence on the capacity market.

Load: 530 MW LMP: $25		Load: 510 MW LMP: $0
100 MW Flexible Unit	Offer: $25	100 MW Flexible Unit
500 MW Inflexible Unit	Offer: $20	500 MW Inflexible Unit
20 MW Wind Unit	Offer: $0	20 MW Wind Unit -10 MW

Under PJM's proposal, LMP would be $20 and the wind unit would be paid to follow load

Source: PJM

PJM also proposed to enhance shortage pricing – the rules governing the calculation of energy and reserve prices when there is inadequate supply to meet demand and reserve requirements. The grid operator has proposed to implement a real-time, 30-minute operating reserve product that would send price signals to mitigate severe shortages of 10-minute reserves. It would better align reserve pricing and reliability value and revise PJM's current reserve demand curve to value more granular amounts of reserves.

BOTTOM LINE

Getting Windy

As for Texas, the outcome of ERCOT proceeding could significantly impact wind energy in the state, which tops the nation in wind production. The inclusion of marginal losses, for example, would make it more expensive for remote wind farms or other generators far away from the load centers to transmit power.

Reforming the Formation

Price formation proposals in ERCOT and PJM, along with the U.S. Department of Energy's grid resiliency proposal represent significant developments in the ongoing national discussion regarding the role of organized electricity markets in ensuring fuel diversity and system reliability through pricing mechanisms. Stakeholder discussions will have a key role in shaping the outcome of these proceedings. So far, FERC's proceeding on wholesale market design, for example, has remained inconclusive. In the long term, however, wholesale markets could potentially see some adjustments to place the appropriate economic value on resource diversity and resiliency.

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Sources: EnerKnol, TX PUC, Potomac Economics, PJM

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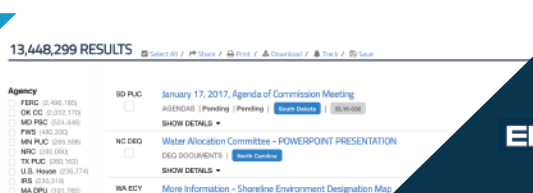

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