



July 24, 2017

TO: Members, Subcommittee on Energy

FROM: Committee Majority and Minority Staff

RE: Hearing entitled “Powering America: A Review of the Operation and Effectiveness of the Nation’s Wholesale Electricity Markets”

I. INTRODUCTION

The Subcommittee on Energy will hold a hearing on Wednesday, July 26, 2017, at 10:00 a.m. in 2123 Rayburn House Office Building. The hearing is entitled “Powering America: Review of the Operation and Effectiveness of the Nation’s Organized Wholesale Electricity Markets” and the purpose of this hearing is to evaluate the current state of these markets.

II. WITNESSES

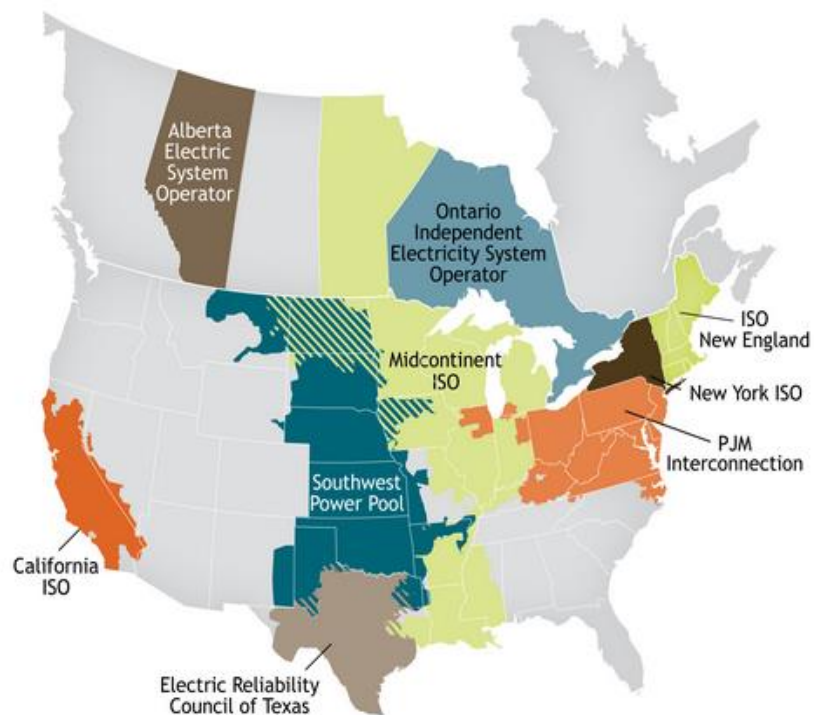
- **Gordon van Welie**, President & Chief Executive Officer, ISO New England
- **Nick Brown**, President & Chief Executive Officer, Southwest Power Pool
- **Bradley C. Jones**, President & Chief Executive Officer, New York ISO
- **Richard Doying**, Executive Vice President, Midcontinent ISO
- **Cheryl Mele**, Senior Vice President and Chief Operating Officer, ERCOT
- **Keith Casey**, Vice President, Market & Infrastructure Development, California ISO
- **Craig Glazer**, Vice President, Federal Government Policy, PJM Interconnection, LLC

III. BACKGROUND

The nation’s bulk power system is comprised of vast networks of transmission lines, generating resources, and other critical infrastructure to ensure the delivery of adequate and reliable supplies of electricity. In most regions of the country, this system is managed by regional grid operators that oversee the nation’s wholesale electricity markets, managing the day-to-day operations of its respective transmission systems and offering a market to purchase products including energy, capacity, ancillary services, and financial transmission rights. These

markets are vital to the nation's economy, as reliable and affordable electricity fuels innovation and commerce, and ensures that American workers can achieve their commercial and industrial potential. Reliable electric service is also critical to the public's health and safety.

The success of the grid relies on real-time communication and coordination between the grid operators and the many entities that participate in its markets, including generators, transmission owners, energy traders, marketers, and demand response providers, among others. These organized markets, also known as Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs), were established by Federal Energy Regulatory Commission (FERC) Order Nos. 888/889 and Order No. 2000 to promote wholesale competition and to ensure transmission access to the regional electricity markets.¹ FERC exercises exclusive jurisdiction over the six RTOs and ISOs, which include PJM Interconnection (PJM), New York ISO (NYISO), Midcontinent ISO (MISO), ISO-New England, California ISO (CAISO), and the Southwest Power Pool (SPP).² In addition to operating the real-time and day-ahead electricity markets, each of these RTOs and ISOs are responsible for longer-term resource adequacy forecasting and transmission planning to ensure continued reliability. Combined, these organized markets serve two-thirds of the nation's electricity load.



Source: ISO/RTO Council

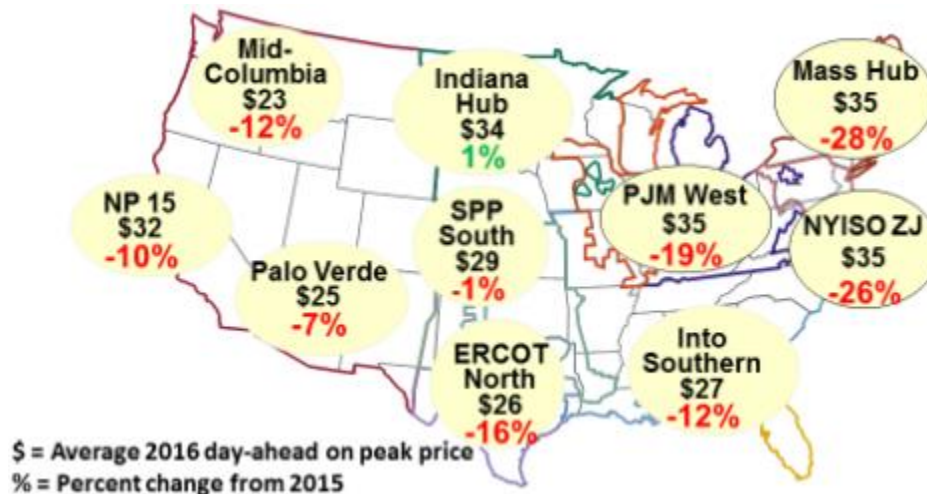
¹ FERC Order Nos. 888/889, 75 FERC ¶ 61,078 and 75 FERC ¶ 61,080, (April 24, 1996); and FERC Order No. 2000, 89 FERC ¶ 61,285, (December 20, 1999).

² The ISO that manages the electricity grid in Texas is the Electric Reliability Council of Texas (ERCOT). Since the transmission grid in Texas is deemed to be located solely within the state and is not interconnected to the rest of the United States, the transmission of electric energy occurring wholly within ERCOT is not subject to FERC's jurisdiction.

A. Energy Markets

The physical electricity markets within the RTOs/ISOs have grown in complexity in recent years as competition has increased and ownership structures of market entrants have diversified. In a physical market, electricity is sold and purchased at a clearing price, generally on a day-ahead or real-time basis. This price, known as a locational marginal price (LMP) reflects the market price for electricity and is composed of three elements: an energy charge, a congestion charge, and a charge for transmission system energy losses. The RTOs/ISOs calculate a LMP at each location on its grid to reflect the marginal cost of serving demand (or “load”) at that specific location. Depending on the level of congestion on a particular transmission line, LMPs can vary widely, but will reflect the highest cost unit that is dispatched to meet load in that area. All resources selling energy receive the LMP and all buyers pay that same market clearing price.

In recent years, wholesale electricity prices have remained very low, primarily because of record-low natural gas prices. In 2016, the price for physical electricity dropped in most regions of the country. The chart below illustrates the average price of electricity (in \$/MWh) at major wholesale trading hubs in 2016, along with the year-over-year percentage change from 2015. While low prices directly benefit ratepayers, some market participants, including coal and nuclear generators are finding it difficult to earn sufficient revenue in the RTO/ISO markets in order to continue operations. In response, some states are evaluating whether to support certain nuclear and coal units with additional payments.



Source: FERC 2016 State of the Markets Report (April 13, 2017)

B. Capacity Markets

In addition to energy markets, several of the RTOs/ISOs also operate capacity markets, including PJM, NYISO, ISO-NE, and MISO. While there are differences in capacity market

design among the RTOs/ISOs, the sale of “capacity” typically provides the buyer with the right to purchase the energy produced by a power plant at some point in the future, and in exchange, the generator selling its capacity receives an upfront payment. When the capacity obligation comes due in the future, the generator is required to make its output available. Capacity is generally transacted at auctions administered by the RTO/ISO at regular intervals. For many generators, revenues received in the capacity auctions are a necessary supplement to revenues earned in the energy markets, particularly when energy prices are depressed.³

Capacity market design varies widely across RTOs/ISOs, with PJM and ISO-NE holding capacity auctions three years in advance, while MISO and NYISO use a shorter time horizon. In recent years, some capacity markets have added new performance requirements holding resources to the obligations they committed to supply. In the event a generator does not supply its promised capacity at some point in the future, it could be required to pay a substantial penalty for non-performance, with penalty revenues being distributed to resources that exceed its performance commitments. As RTOs/ISOs have added new features to capacity markets, they have become more complicated and controversial, resulting in extensive debate within the various RTO/ISO stakeholder processes, and before the FERC.

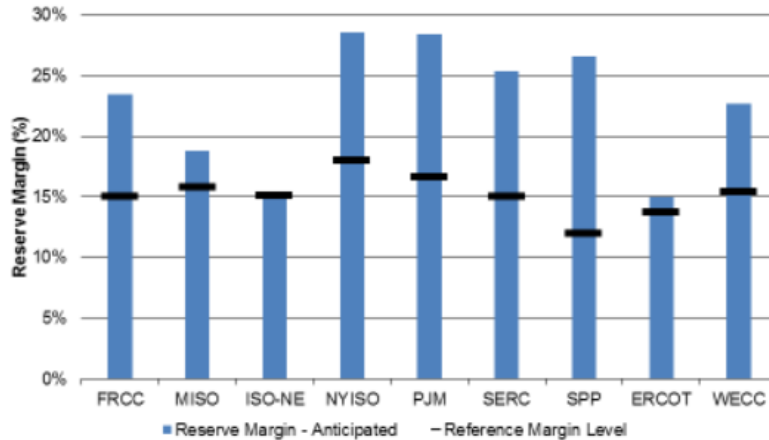
C. Fuel Assurance and Reserve Margins

The retirement of traditional “baseload” resources combined with the growth of intermittent, renewable sources has resulted in a generation portfolio mix with widely differing characteristics, posing unique challenges for grid operators. Additionally, as natural gas-fired units continue to expand their share of the generator portfolio mix, ensuring good communication and coordination between the natural gas and electric industries has taken on additional importance. To this end, the RTOs and ISOs are continuing to evaluate the ability of natural gas pipeline infrastructure to serve the future needs of electric generation. Additionally, the grid operators and market participants have taken steps to prepare for, and respond to, contingencies in the event of a disruption.⁴

Another essential function of the RTOs/ISOs is to maintain adequate reserve margins, ensuring obligations to deliver electricity are met when system disruptions occur, or when peak demand exceeds obligated load. The chart below illustrates anticipated reserve margins for this summer in the various regions. While the reserve margins are anticipated to be adequate for this summer, the forecast for Texas and New England reveals tight margins and these regions could be required to take additional steps to maintain reliability.

³ In 2016 capacity payments reflected an average of 21.9% of the total wholesale power price in PJM and 15% in ISO-NE. See “State of the Market Report for PJM” at Table 1-10, Monitoring Analytics, LLC, Independent Market Monitor for PJM (May 11, 2017), and “ISO New England’s Internal Market Monitor 2016 Annual Markets Report” at p. 13 (May 30, 2017).

⁴ “PJM’s Evolving Resource Mix and System Reliability”, *PJM interconnection*, March 30, 2017, at 33-34. <http://www.pjm.com/~media/library/reports-notice/special-reports/20170330-pjms-evolving-resource-mix-and-system-reliability.ashx>



Source: FERC 2017 Summer Energy Market and Reliability Assessment (June 15, 2017)

IV. ISSUES

The following issues may be examined at the hearing:

- The current state of the RTO/ISO energy and capacity markets, and predictions regarding the long-term functioning of these markets.
- The state of regional and interregional transmission planning and development across the RTOs and ISOs.
- Whether the RTO/ISO markets can accommodate state policies, and if so, how the objectives of state policies may be met while also preserving the efficiency of the markets.
- How RTOs and ISOs are preparing to incorporate new resources into the markets while the diversity of the generator fleet continues to change.
- The state of coordination between the RTOs/ISOs and the interstate natural gas pipelines to ensure reliable delivery of natural gas supplies to natural gas-fired generation.

V. STAFF CONTACTS

If you have any questions regarding this hearing, please contact Jason Stanek, Annelise Rickert, or Wyatt Ellertson on the Majority Committee staff at (202) 225-2927, or Rick Kessler on the Minority Committee staff at (202) 225-3641.