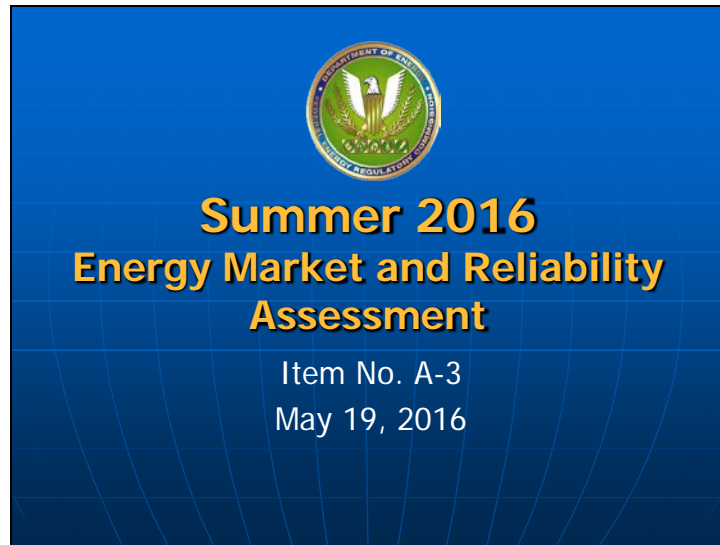


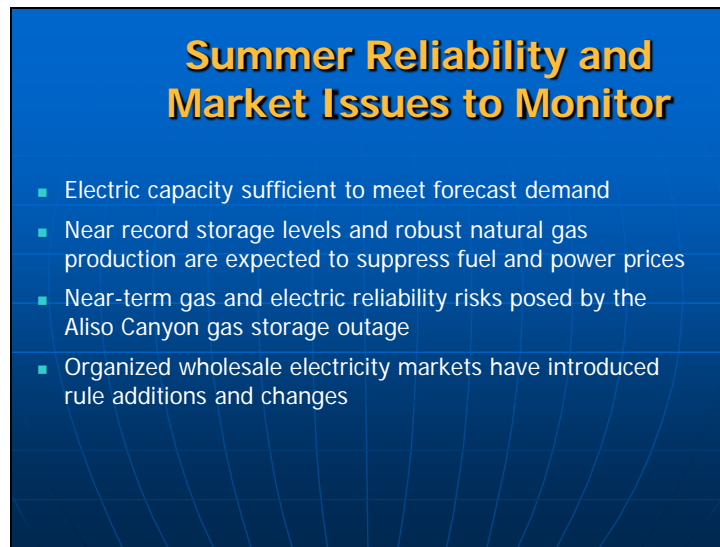
Slide 1



Good morning Mr. Chairman and Commissioners.

The Office of Electric Reliability and the Office of Enforcement are pleased to present the 2016 Summer Seasonal Assessment. This is staff's annual opportunity to share our summer outlook on the electricity and natural gas markets and reliability matters to better inform the Commission's understanding of current and future trends.

Please note that some information in this presentation comes from NERC's 2016 Summer Reliability Assessment which will be released at a later date and is still subject to change.



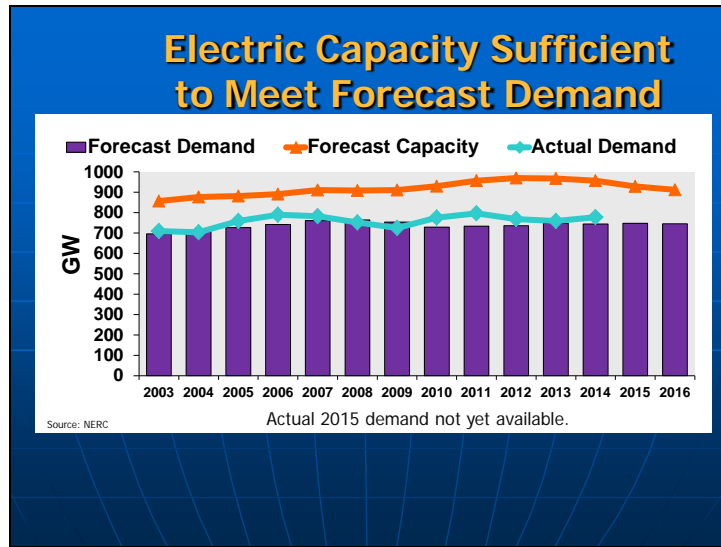
### Summer Reliability and Market Issues to Monitor

- Electric capacity sufficient to meet forecast demand
- Near record storage levels and robust natural gas production are expected to suppress fuel and power prices
- Near-term gas and electric reliability risks posed by the Aliso Canyon gas storage outage
- Organized wholesale electricity markets have introduced rule additions and changes

Market conditions going into this summer continue to reflect the impact of low natural gas prices that have resulted from robust production and near record levels of natural gas in storage. Moreover, despite modest load growth, regional electric system reserve margins are forecast to be adequate.

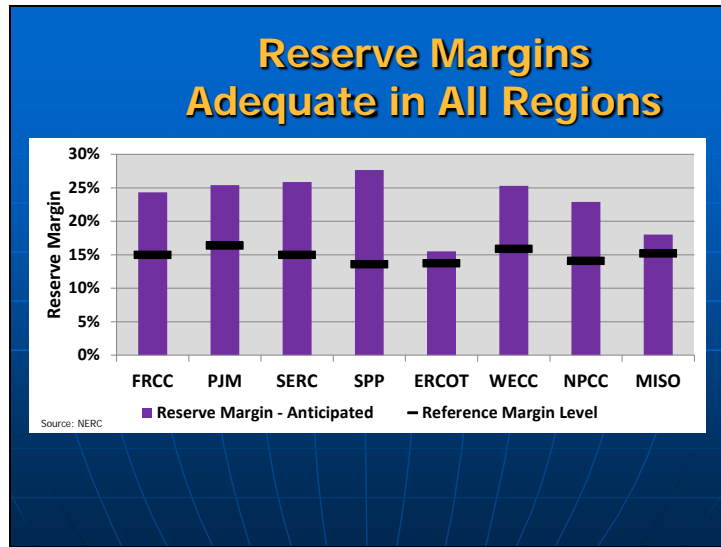
However, despite an optimistic national outlook, the recent events at the Aliso Canyon natural gas storage facility in California present an area of particular concern. The loss of this resource may pose a risk to local electric reliability and has the potential to result in elevated energy prices.

Additionally, we'll take a look at recent changes to the organized wholesale electricity markets – including the expansion of the California ISO's Energy Imbalance Market and the recent expansion of the Southwest Power Pool's footprint – and discuss the market impacts that we expect to see this summer.



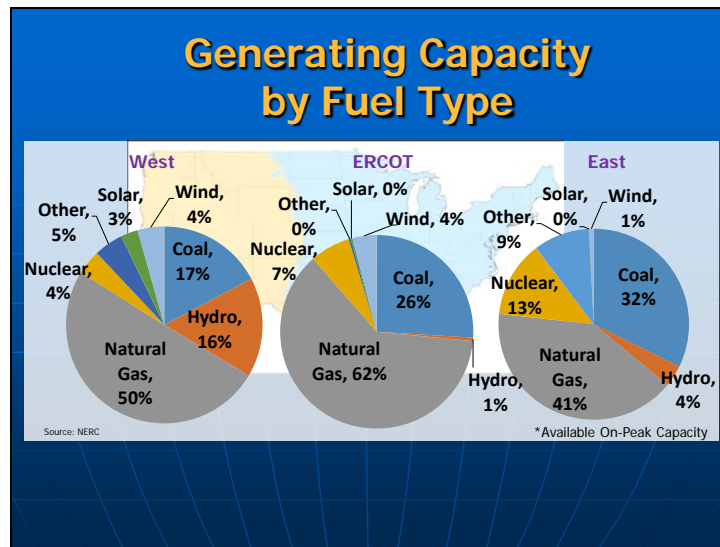
Preliminary data from NERC’s Summer Assessment indicates that the total U.S. load forecast, when weather-adjusted, is essentially unchanged over the past few years. This can be attributed to little to no load growth in the commercial and residential sectors.

Meanwhile, the total generating capacity in the U.S. has decreased by approximately 2 percent since last summer. The ongoing downward trend in capacity over the past several years is primarily due to coal retirements across the nation. The factors that prompted these closures include increased competition from natural gas, environmental regulations and an average fleet age that exceeded 50 years old.



NERC’s Summer Assessment data indicates that reserve margins for all assessment areas are anticipated to be adequate this summer. The columns shown on this chart display the anticipated reserve margins for various markets and regions, while the black bars indicate the Reference Margins.

The anticipated reserve margin in Texas continues to be tighter when compared with the other regions this summer. However, the region is expected to have sufficient generating capacity to serve peak demands during the expected weather conditions for this upcoming summer season.

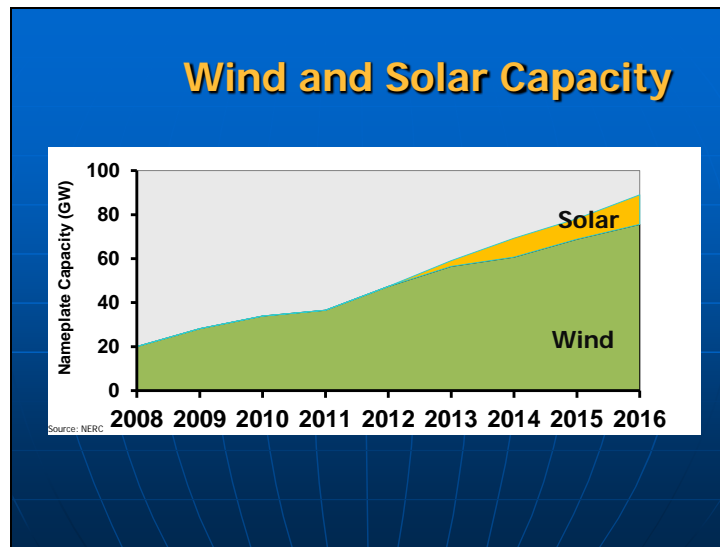


This map shows the breakdown of the on-peak generating capacity by primary fuel type for power generation in the three interconnections. Over 18 GW of new generating capacity will be installed nationwide through the summer, with a majority of these capacity additions coming from renewables such as wind and solar.

Looking at the Western Interconnection, approximately 1 GW of natural gas, 3 GW of solar and 1 GW of wind will be added to the system.

In ERCOT, approximately 2 GW of natural gas will enter commercial service by the end of season.

Finally, the generating capacity in the Eastern Interconnection will see an additional 1 GW of natural gas, 2 GW of solar, and 4 GW of wind. Additionally, Tennessee Valley Authority's Watts Bar Nuclear Unit 2 will also go into commercial operation this summer, adding over 1 GW in generating capacity and will mark the first time in over two decades that a new nuclear unit will come on-line in the United States.



This summer's installed nameplate wind capacity is forecast to increase by 7 GW, or approximately 10 percent from 2015, according to NERC. This would bring the total capacity of wind resources to 76 GW nationwide.

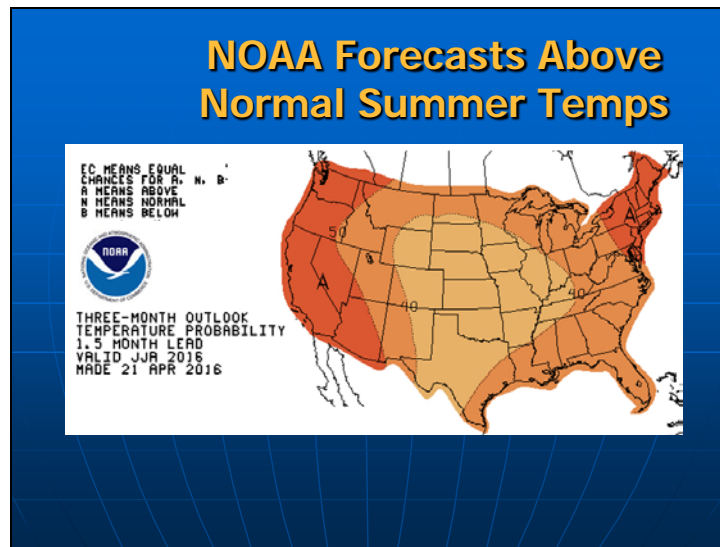
NERC is also projecting that about 4 GW of new utility-scale solar capacity will come on-line this summer.

Renewable sources of power production have grown substantially over the past few years, as both wind and solar power now have a significant presence in many electricity markets. However, as renewable's share of the generation fuel mix portfolio increases, grid operators are continually seeking operational solutions to address the challenge of integrating wind and solar resources.

In the California ISO, solar production is the fastest growing form of capacity. Solar production falls into two classes, utility-sized projects that are visible to and controllable by the ISO, and behind-the-meter installations at the customer level that are not clearly visible to the ISO. System loads have become more difficult to measure and predict as more demand is met by behind-the-meter solar generation.

This year wind has provided half of the production in SPP in some hours. This increased wind generation can pose challenges for grid operators and both MISO and SPP have developed systems and procedures to take advantage of this seasonal output, while also managing its volatility and contribution to congestion. However, wind generation tends to be lower during the summer, especially on the hottest days when there is little wind.

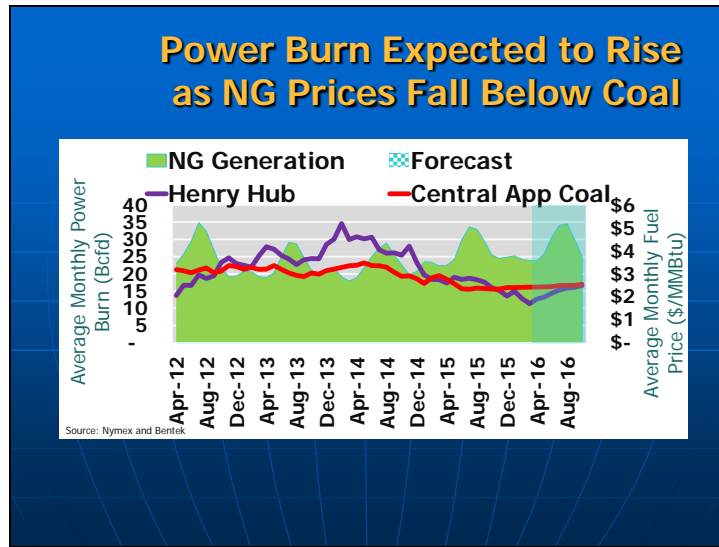
FERC Staff will continue to monitor how the organized markets are managing the growing impacts of renewable generation this summer and how these challenges are being met.



Weather is always a significant factor in the energy markets and warmer temperatures coupled with low natural gas prices this summer could lead to near record generation of natural gas-fired electricity. The National Oceanic Atmospheric Administration (NOAA) has forecasted above-normal temperatures for the continental U.S. this June, July and August, which should lead to increased power generation to meet cooling load. NOAA's forecast shows the strongest possibility for above-normal temperatures in the Northeast, Mid-Atlantic, and the Western quarter of the U.S. Parts of the West, Upper Midwest, East and Southeast are likely to see above-normal temperatures as well, while, the Midcontinent and Texas show the lowest possibility for above-normal temperatures.

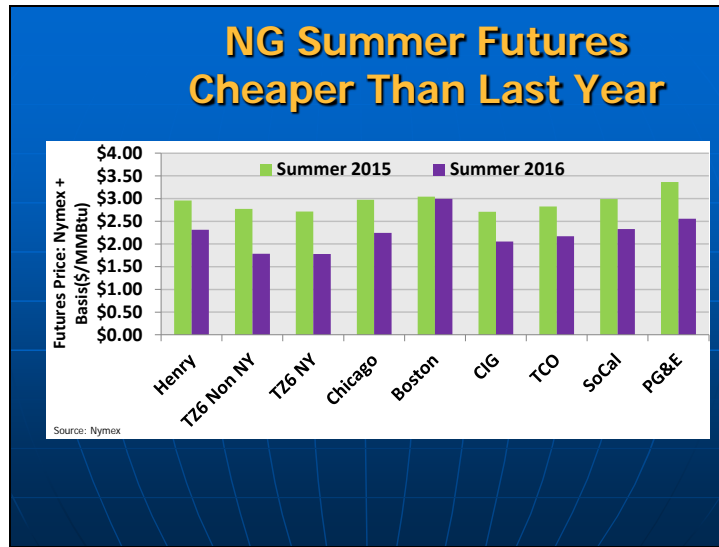
In addition, Colorado State University is predicting an average hurricane season with a 40% probability of at least one major hurricane tracking into the Caribbean.



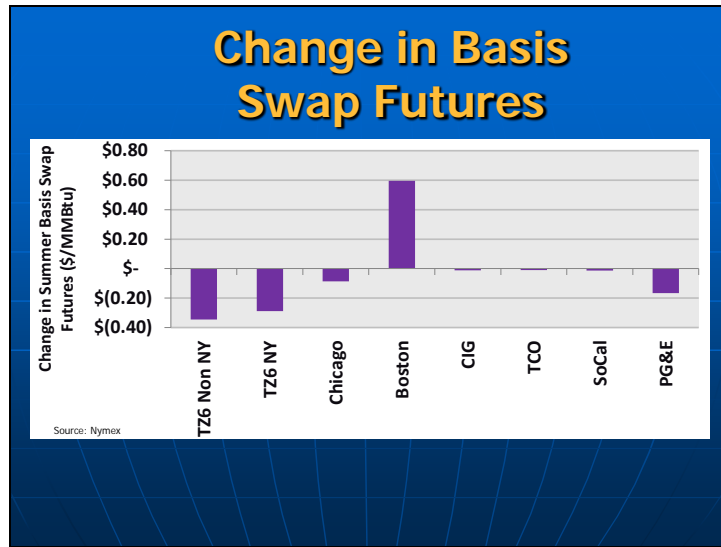


Traditionally, coal has been one of the least expensive fuels for power generation. However, natural gas prices reached a 17-year low in early March, making it less expensive than coal when adjusting for relative power plant efficiency. As coal plants continue to retire and natural gas power plants remain price competitive, we expect natural gas fired generation to remain robust. Natural gas fired generation has surpassed coal plant output since July 2015 and EIA projects this will continue through 2016. Coal and gas futures prices support this view, and power burn could reach 34.5 Bcf/d in July, three percent higher than last summer’s peak.

This decrease in coal generation has led to an increase in coal stockpiles. EIA reports that coal stockpiles are 22 percent higher than last year and 12 percent above the 5-year average.

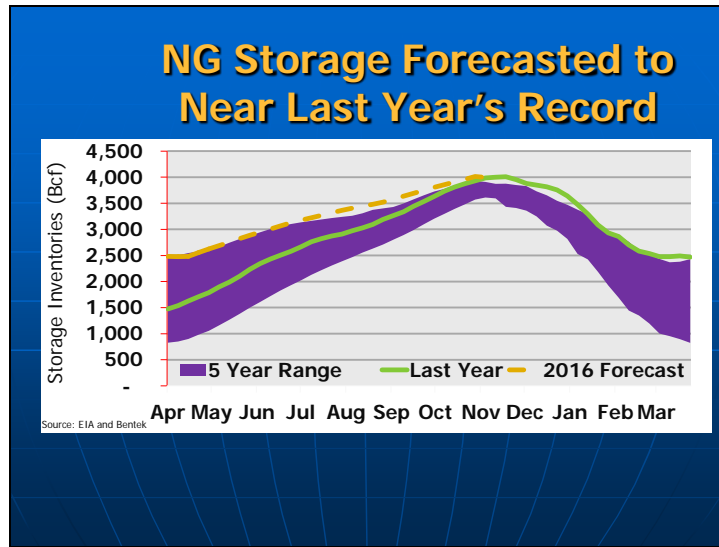


This slide shows that natural gas futures prices for July and August have fallen by as much as 36 percent compared to the summer of 2015. The decline is primarily due to a 22 percent drop in the Henry Hub summer futures price. The only region not to see a significant drop in natural gas prices this summer is Boston, which is nearly flat from last year. Generators are able to lock-in these low prices if they choose to do so.



This slide shows the summer-over-summer change in basis swap futures prices at major hubs. Natural gas basis swaps are financial instruments that represent the natural gas price differential between a specific point and the Henry Hub. Basis swaps help indicate the true cost to hedge natural gas and generally are a good indicator of pipeline congestion into a region.

Basis swaps futures for the New York City and Mid-Atlantic markets fell 32 cents on average from last summer indicating those markets expect to be well supplied with Marcellus gas this summer. The Boston area basis swap is 60 cents higher than last summer, suggesting expectations for greater congestion due to above-normal temperatures and a reduction in capacity along the Algonquin pipeline because of planned maintenance to tie in the Algonquin Incremental Market (AIM) expansion project this summer. The Southern California basis swap is flat from last summer, signaling the Aliso Canyon storage field outage may not have a large effect on natural gas prices at the border this summer. Finally, basis swap futures in Northern California are down 17 cents from last summer, a product of cheap natural gas deliveries from the Rockies and Western Canada.



The 2015/2016 winter was the warmest on record, with total heating Degree Days (HDDs) across the U.S. down 17 percent from the previous winter and 13 percent below the 30-year average. As a result, winter natural gas demand was well below-normal and storage inventories on April 1, the traditional start of the injection season, were at the highest level ever seen (68 percent higher than last year and 52 percent greater than the five-year average).

Low gas prices and increasing production helped storage inventories set a record at the start of the 2015/2016 winter. Similar conditions this injection season would leave storage inventories again at historically high levels by the fall. However, a variety of factors may reduce storage injections this summer. First, production is likely to fall by 2 Bcfd (3 percent) from last summer as falling fuel prices have made wet and dry plays less profitable. Second, above-normal temperatures across the U.S. this summer should lead to near record power burn, it's expected to rise 1 Bcfd (3 percent). Third, Mexican demand for natural gas has grown significantly, and gas exports to Mexico could rise by 0.83 Bcfd (27 percent) from last summer. Finally, Cheniere's Liquefied Natural Gas (LNG) export terminal at Sabine Pass sent its first cargo from the U.S. in February. Cheniere's LNG export capability is currently about 600 MMcfd and is forecasted to reach approximately 1 Bcfd by the end of the summer. To date, Cheniere has sent out 8 cargoes for a total of 26 Bcf.

Our analysis shows total U.S. supply falling 2.9 percent and total U.S. demand growing 2.6 percent from last summer. Although this change in the supply demand balance could slow injections this summer, we still expect natural gas inventories to approach last year's record at the end of the 2016 injection season. While storage is expected to be robust nationally, the Aliso Canyon storage outage may create regional issues in California.



After this presentation, there will be a panel to talk more in detail about the restricted operation of the Aliso Canyon Natural Gas Storage Facility and its impact on electric supply in Southern California.

Given the situation at Aliso Canyon following the sealing of the natural gas leak in February, CAISO, LADWP and state agencies produced a *Reliability Action Plan* that identified actions intended to preserve gas and electric reliability in the region.

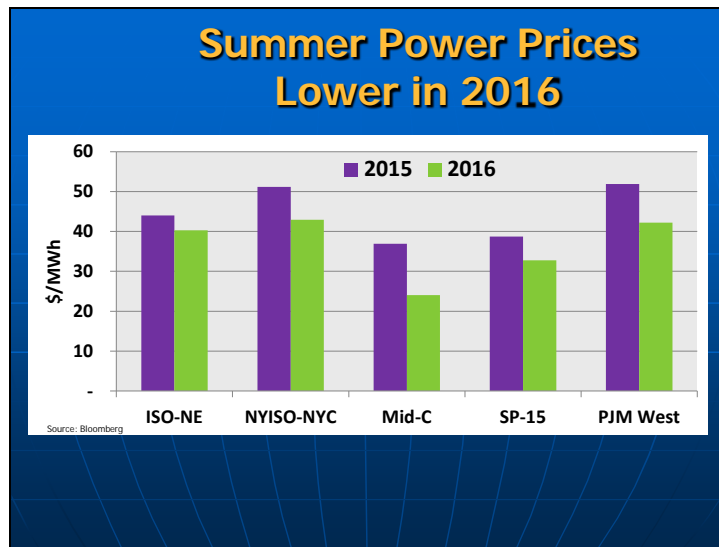
Aliso Canyon plays a major role in the delivery of natural gas into the Los Angeles Basin and maintaining gas system pressures in the region. As long as Aliso Canyon's storage fields remain out-of-service, there is an increased risk of natural gas curtailments which could lead to disruptions in electricity supply to the region.

In addition to the significant reliability concerns presented by the loss of the Aliso Canyon facility, we anticipate commensurate market effects. With 86 Bcf of capacity, Aliso Canyon is one of the largest natural gas storage sites in the US and is also the only field that can effectively support demand and pipeline pressure in the Los Angeles Basin because of pipeline limitations into the area. Aliso Canyon is uniquely important because it is a critical summertime resource for 17 large power plants in the Los Angeles Basin that represent approximately 10 GW of capacity. Over the past four years, summer withdrawals were frequent from Aliso Canyon.

One of the potential impacts of the loss of Aliso Canyon is the lessened flexibility to serve generator needs, especially during ramping periods. Aliso Canyon provided or absorbed natural gas, helping maintain pipeline pressures. Without it, generators' operating flexibility drops in

real time, as natural gas cannot be delivered from the pipeline interconnections in time to supply more than planned-for generation. Changes in demand and in wind and solar generation, for example, can require increased natural gas generation. Yet those generators may not have scheduled enough gas into the system to meet those additional needs. We may see increased transmission congestion, localized price spikes and greater than normal uplift as California ISO's market mechanisms reflect these operational difficulties in its pricing outcomes.

Because of these concerns, staff will be closely monitoring this situation and maintaining contact with the other parties during this period.



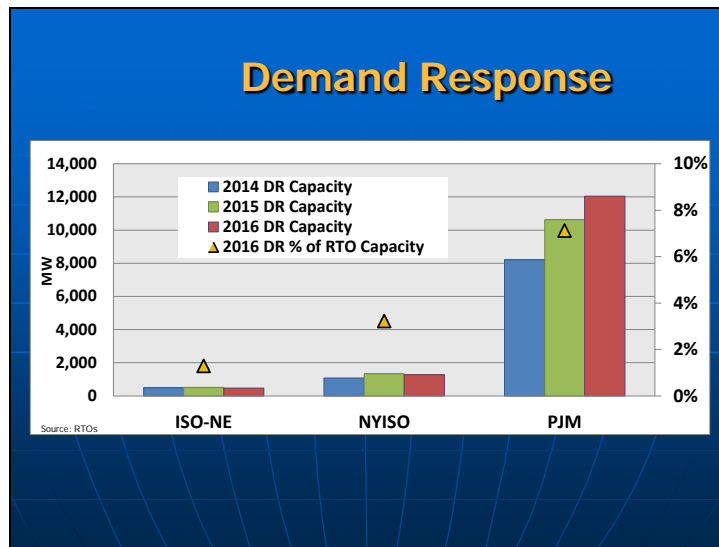
Similar to natural gas prices, futures prices for on-peak power this summer are 5 to 47 percent lower than 2015, which is a continuation of the downward trend that occurred last summer. As depicted in this chart, prices have dropped 5 percent at the ISO-NE internal hub and 47 percent at the Mid-Columbia hub (reflecting improved snowpack in the Pacific Northwest). These price changes appear to be consistent with market fundamentals, such as marginal generating resources in varying regions, fuel input costs and other factors such as the previously mentioned Algonquin pipeline restrictions in New England, which may create regional fuel delivery constraints.



In November 2014, California ISO began operating its Energy Imbalance Market, or EIM, outside of its Balancing Authority Area. When the EIM started-up, there was only one market participant, PacifiCorp. However, on December 1, 2015, NV Power joined the EIM. This fall, Arizona Public Service and Puget Sound Energy plan to join the EIM, with Portland General and Idaho Power after that.

The startup of the EIM introduced significant challenges, particularly the inability of the California ISO market model to see the capacity available to the EIM Balancing Authority, but not offered in the market. This lack of visibility caused a number of scarcity pricing events in periods when capacity was actually available. However, recent enhancements to the EIM have resulted in increased visibility to CAISO and the successful integration of NV Power. FERC Staff will be watching the performance of this new market operation this summer to monitor how well the market design changes are achieving efficiencies.

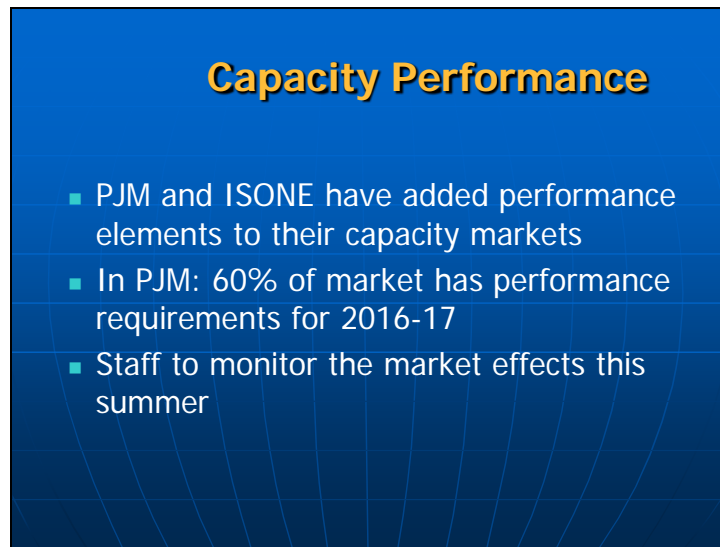




Demand response is an important resource that is used to maintain reliability during periods of market stress, such as peak summer days or during system emergencies. As shown in this chart, the amount of available demand response capacity in the three northeast RTOs has increased modestly since last summer. This has been most notable in PJM, where demand response has increased by 765 MW and now represents 7 percent of the RTO’s capacity.

There are two new market developments that could have a bearing on demand response this summer. The first is the NYISO’s revisions to its scarcity pricing mechanism, which affect the real-time markets and incorporates scarcity pricing into the real-time optimization by establishing a 30-minute reserve requirement in real-time when NYISO calls upon demand resources. This change should improve real-time price formation, reduce the potential for uplift payments and increase price transparency.

The second development is the Capacity Performance initiative in PJM, which has created new requirements and penalties with the intent to encourage resources, including demand response resources, to meet their supply commitments during system emergencies.

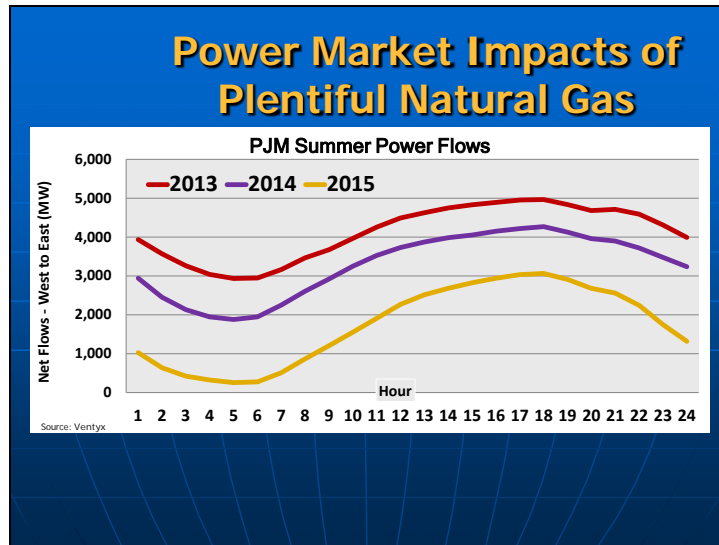


### Capacity Performance

- PJM and ISONE have added performance elements to their capacity markets
- In PJM: 60% of market has performance requirements for 2016-17
- Staff to monitor the market effects this summer

As just mentioned, capacity performance is an enhancement and new market feature in PJM and ISO New England. In ISO New England, the new Pay for Performance rules were included in the Forward Capacity Auction, held in 2015, and will take effect in June 2018. The PJM capacity market, however, is currently phasing in its new requirement that 60% of its total capacity requirement for the 2016-17 planning year be met by resources that can meet the performance requirements. The performance portion for this coming period was achieved through a transitional auction held last fall.

Staff will be monitoring the effect of the capacity performance standards on overall performance and outage rates and to what extent any penalties are assessed.



The summer is particularly important for generators because it is the period of highest demand and is traditionally when generators earn a substantial portion of their net revenues from the energy market. With falling fuel prices and other factors, power prices have declined summer-over-summer since 2011, despite similar loads.

As previously noted, lower natural gas prices have prompted a shift away from coal to natural gas-fired generation. While PJM continues to depend substantially upon coal-fired generation to meet demand, the region’s generation contribution from coal-fired units has fallen from 44% five years ago to 34% in 2015. In addition to contributing to the rate of coal generator retirements, the shift to natural gas has had an impact on power flows.


Historically, power has flowed from lower-cost generation located in the western half of PJM to more expensive markets in eastern PJM. In 2015, power flows across the central PJM transmission interfaces dropped to about 3,000 MW, from almost 5,000 MW in 2013. Given the forward price indicators for power and natural gas, we expect this trend to continue this summer.



In our final slide, we'd like to provide an update on Southwest Power Pool's recent market expansion. As you know, on October 1 of last year, SPP's footprint added three new entities, the Upper Great Plains Region of the Western Area Power Administration, Basin Electric Power Cooperative, and Heartland Consumers Power District. The three entities, known as the Integrated System, added about 5 GW of peak demand and 7.6 GW of generating capacity to SPP.

This will be the first summer in which the Integrated System will participate directly in the SPP power market. Notably, abundant hydro-production in the newly integrated northern part of the RTO has introduced a low-cost supply of power to SPP's fuel portfolio. This has put downward pressure on prices in SPP and increased flows from the Integrated System into the rest of SPP.

One of the challenges in implementing this expansion was the complex interweaving between the transmission systems of the Integrated System and MISO, which are connected by 178 transmission ties. The flows on either system have implications for potential congestion on the other. However, all indications are that SPP has succeeded in integrating this new area into its operations and is effectively managing congestion in coordination with MISO. As the summer progresses, FERC Staff will closely monitor changes and events in this newly expanded market.



**Summer 2016  
Energy Market and Reliability  
Assessment**

Item No. A-3  
May 19, 2016

This concludes staff's assessment. A copy of this presentation will be posted on the Commission's website. Thank you.