

Slide 1 – 2019-2020 Winter Energy Market Assessment



2019–2020 Winter Energy Market Assessment
October 2019

10/17/2019 1

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Good morning Mr. Chairman and Commissioners, the Office of Enforcement and the Office of Energy Policy and Innovation present their 2019-2020 Winter Energy Market Assessment. The Winter Energy Market Assessment is staff’s opportunity to look ahead to the coming winter and share its thoughts and expectations about market preparedness, including a high-level assessment of risks and challenges anticipated in the coming operating season.

Slide 2 - Highlights

Highlights

- NOAA forecasts a warmer than average winter.
- Natural gas storage levels are expected to be average going into winter.
- Natural gas futures prices are lower compared to last winter.
- A diverse set of generation resources will play a key role in maintaining electric reliability during the winter.
- Winter reserve margins exceed reference levels in all areas.



10/17/2019

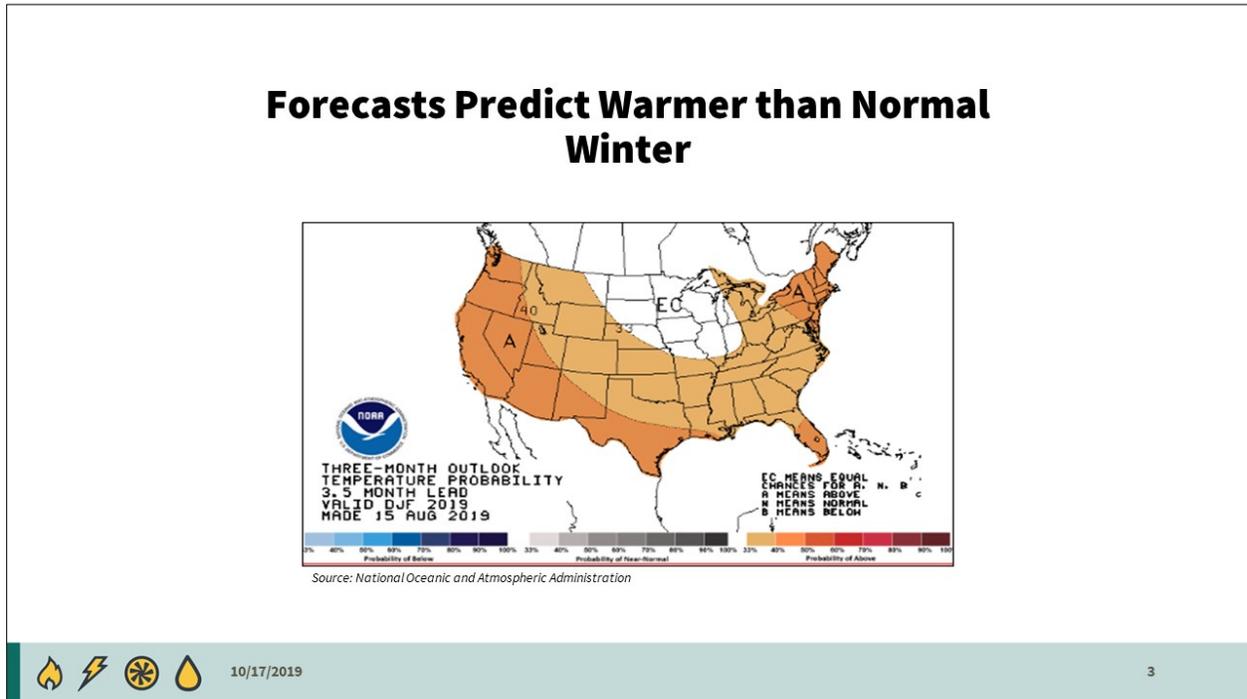
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Weather remains one of the largest determinants of outcomes in the energy markets. As we will discuss on the next slide, the National Oceanic and Atmospheric Administration (NOAA) forecasts a high chance for a warmer than average winter.

Going into this winter, natural gas storage levels are close to the five-year average and natural gas futures prices are lower than last winter. Also, pipeline additions in the Permian and Marcellus Basins have bolstered the fuel supply chain, allowing additional natural gas supplies to reach markets. However, certain regions are more dependent on natural gas than others, and pipeline outages have the potential to increase both electric and natural gas price volatility. Coal and oil-fired generation continue to play an important role in maintaining electric reliability during the winter, especially in the Northeast, where winter demand for natural gas can exceed pipelines' capacity.

The North American Electric Reliability Corporation, or NERC, annually assesses the on-peak fuel mix and the availability of generators capable of serving peak winter loads. According to NERC's draft assessment, winter reserve margins are expected to exceed the reserve margin targets in all assessment areas. NERC will release its 2019 Winter Reliability Assessment at a later date and therefore this assessment is still subject to change.

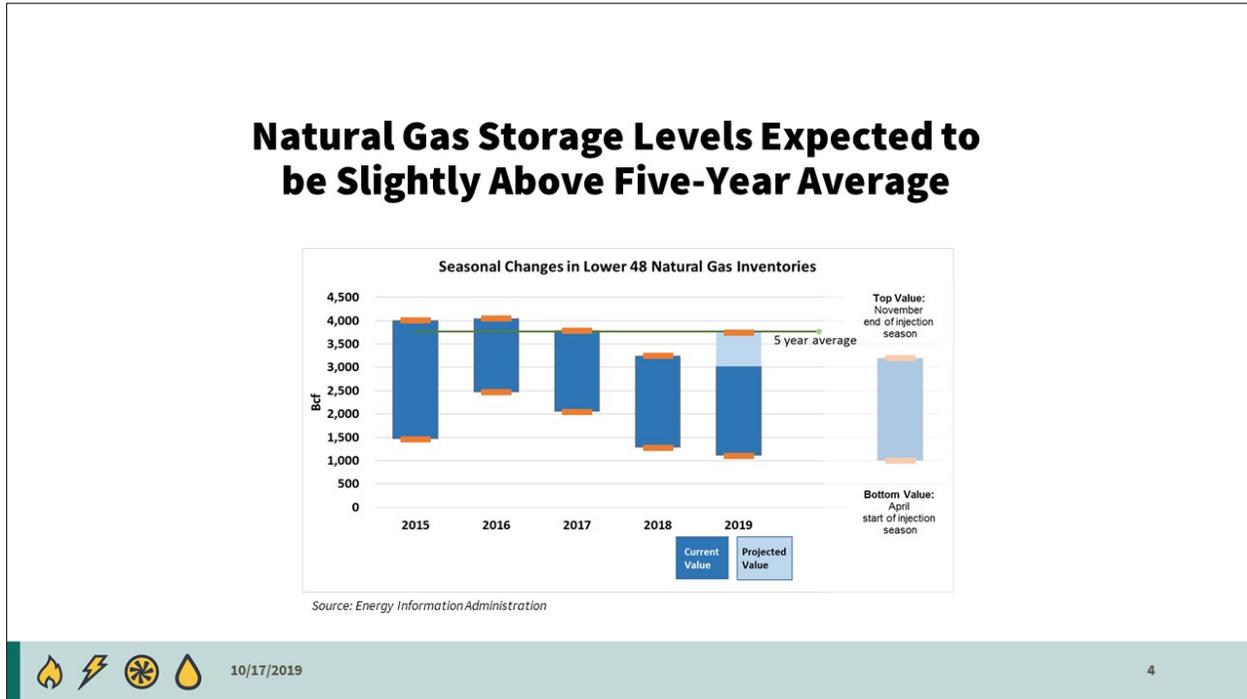
Slide 3 – Forecasts Predict Warmer than Normal Winter



As mentioned, the current NOAA three-month outlook for December 2019 through February 2020 predicts a higher than average probability for warmer temperatures across much of the continental United States. Warmer than average winter temperatures are expected in the Northeast, West, Texas, and Florida, with the Upper Midwest experiencing more normal conditions.

A warmer than average winter would moderate fuel and electricity demand. However, as seen in previous winters, acute cold weather events can occur during warmer than average seasons. These events increase the short-term demand for natural gas and electricity, which could create significant operational and market challenges.

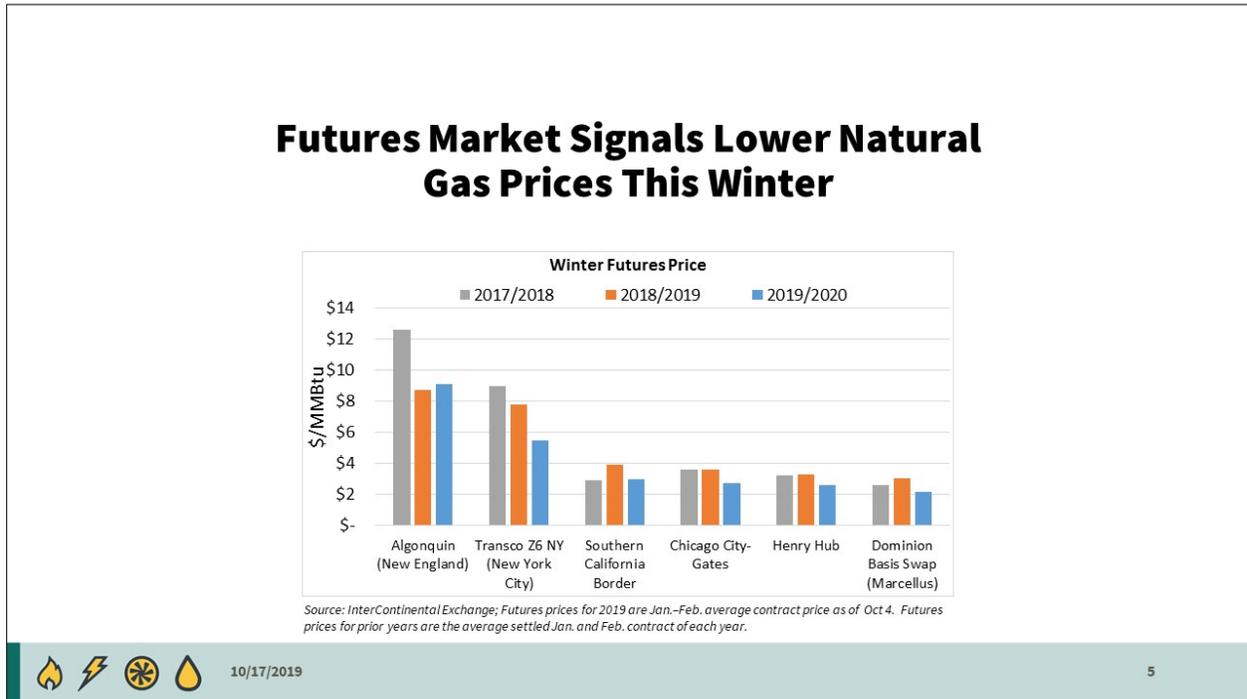
Slide 4 – Natural Gas Storage Levels Expected to be Slightly Above Five-Year Average



Natural gas storage inventories for the 2019 injection season, running from April 1 to October 31, began at 1.2 trillion cubic feet (Tcf), 30 percent lower than the prior five-year average. However, by November, inventories are expected to be slightly above the five-year average, reflecting robust storage injections throughout the season.

This year, natural gas storage levels have increased at the highest rate since 2015. As of September 6, natural gas inventories were at 3.0 Tcf, which is 15 percent higher than last year's levels at this time. According to an Energy Information Administration (EIA) forecast, the rate of natural gas injections into storage will be above the five-year average of 10.8 billion cubic feet per day (Bcfd) for the remainder of the injection season. This injection rate would result in natural gas inventories exceeding 3.7 Tcf by the end of October, a 16 percent increase over October 2018 levels and slightly above the five-year average. The EIA projects that the total withdrawals over the coming winter will be 2.1 Tcf, which is slightly more than last winter's total withdrawals of 2.0 Tcf.

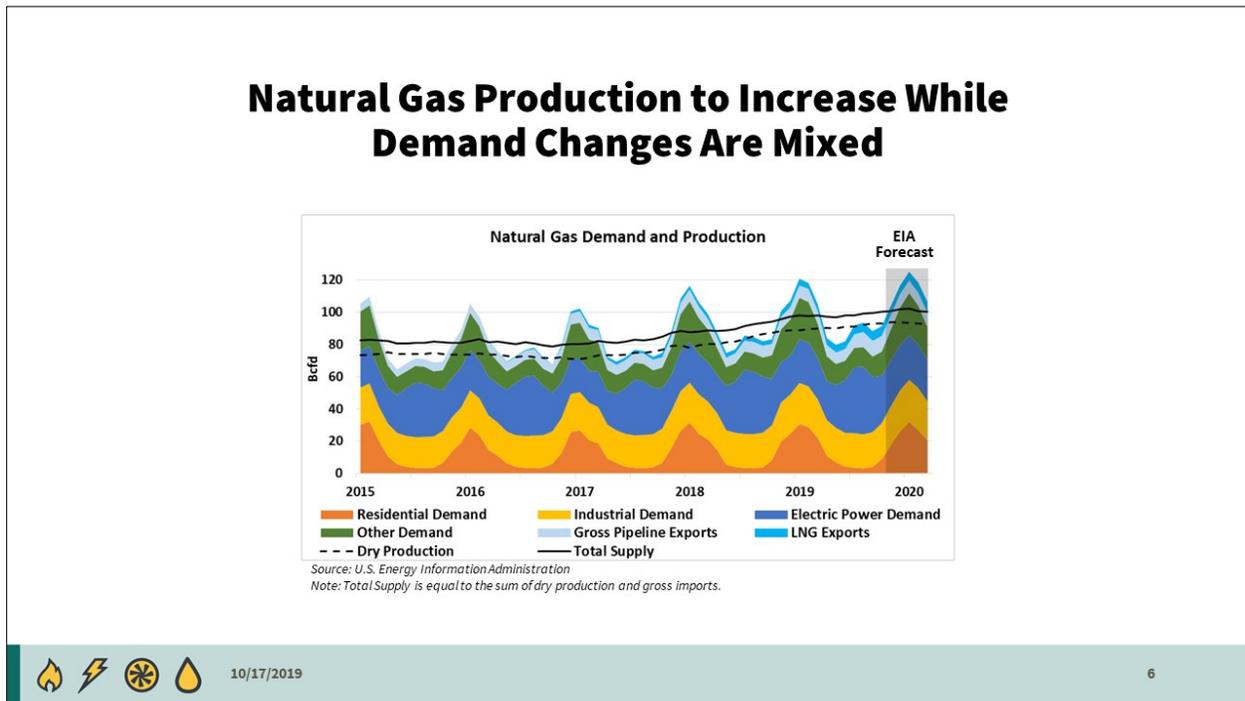
Slide 5 – Futures Market Signals Lower Natural Gas Prices This Winter



This graph shows the total natural gas futures prices for the past and upcoming winters for regions in the United States. Regional natural gas prices are calculated by adding the NYMEX Henry Hub winter futures price to the winter basis futures prices at major trading hubs in the United States. As of October 4, 2019, the NYMEX Henry Hub futures price, which measures the general cost of the natural gas commodity, was 73 cents below last winter's average futures settlement price, with an average price of \$2.56/MMBtu for January and February 2020.

Basis futures prices, which approximate the cost to deliver natural gas to regional markets, were lower for the upcoming winter compared to last year's futures settlement prices across all regions except New England. In Boston, basis futures prices averaged \$6.54/MMBtu, a \$1.16 rise from last winter. New York City experienced the largest declines from last winter. Basis futures prices in New York City averaged \$2.92/MMBtu, down \$1.56 from last year. Basis futures prices in the Southwest, Chicago, Southern California, and the Marcellus shale region all experienced moderate declines compared to last year.

Slide 6 – Natural Gas Production to Increase While Demand Changes Are Mixed

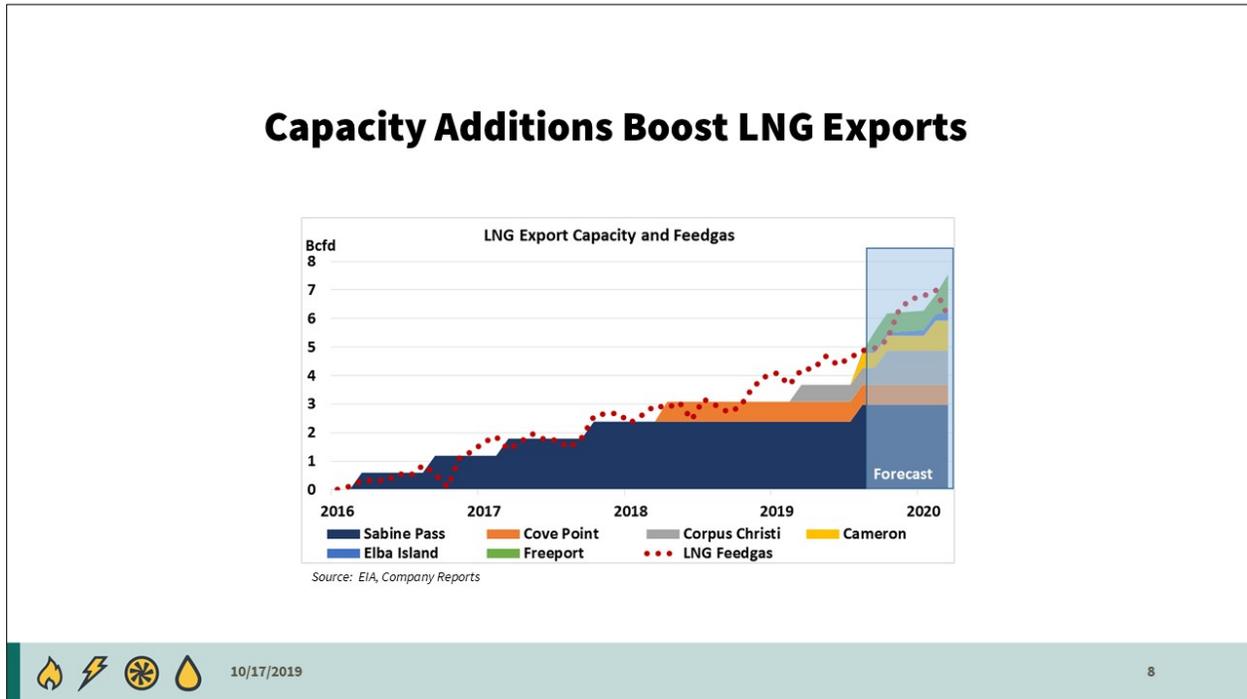


Dry natural gas production, or the process of producing consumer-grade natural gas, set new record highs in the first half of 2019, averaging 90 Bcf/d through June, a 12 percent increase from the 2018 level over the same period. The Marcellus Basin, located in Pennsylvania, West Virginia, Ohio, and New York, led all production regions with an average of 22 Bcf/d of production through June 2019. The Permian Basin, located in Texas and New Mexico, averaged 9 Bcf/d in 2019 through June, which represents a 38 percent increase year-over-year. The EIA Short Term Energy Outlook forecasts that production growth will continue through the winter, averaging 93 Bcf/d from November 2019 through March 2020.

While production continues to grow, the EIA forecasts U.S. demand will average 100 Bcf/d from November to March, a 1 percent increase from the previous winter. EIA forecasts domestic demand in January 2020 will average 112 Bcf/d. This is nearly 3 Bcf/d higher than the record for average monthly demand, which was observed in January 2019.

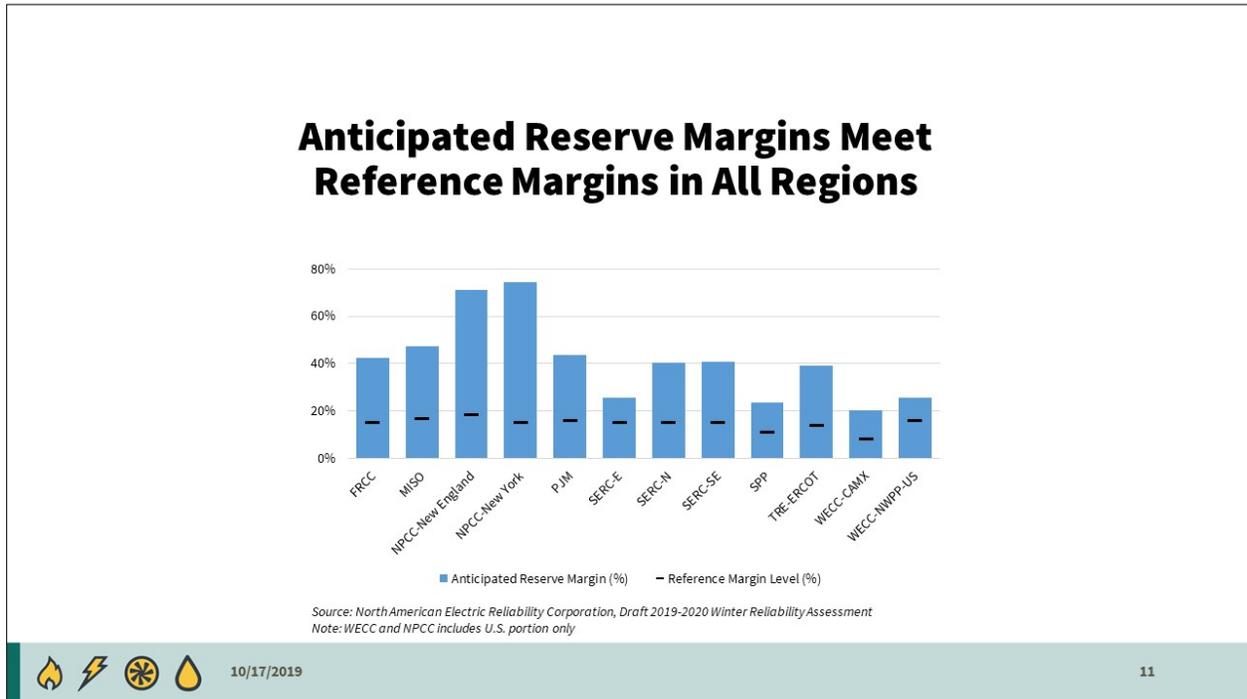
Electric power generation is a driver of the forecasted increase in domestic demand this winter, with an expected year-to-year increase of 6 percent to 27 Bcf/d, a projected all-time winter high. Industrial natural gas demand is also expected to increase, but only by 2 percent to 25 Bcf/d. However, residential natural gas demand, which is typically the biggest driver of peak winter demand, is expected to decrease 3 percent to 25 Bcf/d.

Slide 7 – Capacity Additions Boost LNG Exports



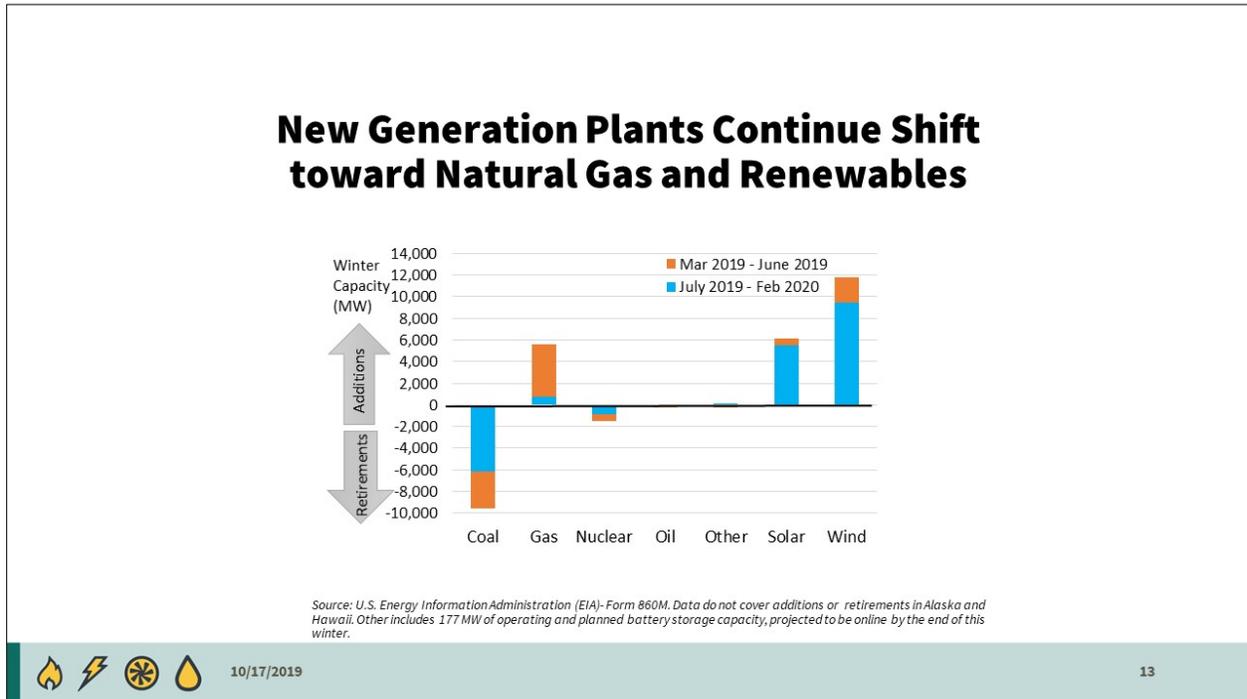
Since the beginning of 2019, the consumption of feedgas, which is natural gas used as a raw material for LNG liquefaction, has grown over 1.5 Bcfd—from 4.5 Bcfd to more than 6 Bcfd. From March to October 2019, more than 3 Bcfd of new LNG export capacity went in-service, representing the largest concentration of capacity additions in the short history of U.S. LNG exports. During that time, operations started on the first trains of LNG export plants at Corpus Christi and Freeport in Texas, Cameron in Louisiana, and Elba Island in Georgia. Additionally, a second LNG train at Corpus Christi and a fifth LNG train at Sabine Pass, in Louisiana, went in-service during that period. Increased demand for feedgas from all operational facilities should continue through this winter as utilization rates are expected to remain high. Second LNG trains at both Cameron and Freeport are expected to start operations during the winter months. Recent reports estimate that the in-service date for Freeport’s second train will be in January 2020, while the in-service date for Cameron’s second train will be in February 2020.

Slide 8 - Anticipated Reserve Margins Meet Reference Margins in All Regions



In its preliminary 2019-2020 Winter Reliability Assessment, NERC estimates that reserve margins for all assessment areas will exceed their reference margin targets this winter. The columns on the chart display the anticipated reserve margins for the regions comprising the U.S., while the black bars indicate the reference margins identified by the RTO or reliability region. Although all regions are expected to maintain healthy reserve margins through the winter, reserve margins are not always guarantors of reliable operations during the winter. Staff notes that fuel availability, particularly natural gas and fuel oil, can affect electric operations and must be monitored.

Slide 9 –New Generation Plants Continue Shift toward Natural Gas and Renewables



The past three years have seen significant additions of natural gas-fired and renewable generation across RTO/ISO and non-RTO/ISO regions, offsetting retirements of coal capacity and nuclear capacity. This chart shows actual and planned capacity additions and retirements in the 48 contiguous states from March 2019 to February 2020, as reported to the EIA.

More than 3.4 GW of coal capacity retired from March 2019 to June 2019, and another 6.2 GW of coal capacity is expected to retire between July 2019 and February 2020. Approximately 680 MW of nuclear capacity retired from March 2019 to June 2019, and an additional 829 MW of nuclear capacity has announced plans to retire between July 2019 and February 2020.

From the end of last winter through the upcoming winter, 5.6 GW of natural gas capacity has been or will be added across the United States. The installed capacity of renewable resources continues to increase, including significant additions of wind in MISO and SPP and of solar photovoltaic in CAISO. In both cases, this follows capacity addition trends from the past three years.

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 10/17/2019 15

This concludes staff’s prepared comments. A copy of this presentation will be posted on the Commission’s website. The online version of this report contains additional information on pipeline additions, pipeline restrictions in Southern California and the Northeast, dual-fuel capability in the Northeast, and winter reliability initiatives. We are available to answer any questions you may have.