



Summer 2014 Energy Market and Reliability Assessment

Item No: A-3
May 15, 2014

Good morning Madam Chairman and Commissioners. We are pleased to present the *Summer 2014 Energy Market and Reliability Assessment*, a joint effort of the Office of Enforcement and the Office of Electric Reliability. The *Summer Assessment* is the staff's annual opportunity to share our assessment of the electric, natural gas, and other energy markets as we head into the summer months.

This presentation does not necessarily reflect the views of the Commission or any Commissioner.

Electric and natural gas market conditions this summer will reflect exceptional gas burn and storage withdrawals this winter, and the anticipation of a warmer-than-normal summer for much of the country. The possibility of a summer El Nino may moderate temperatures and associated market impacts. CAISO markets face a deep drought, while market expansions in SPP and MISO enter their first summer period of operation.

Key Takeaways

- Reserve margins remain adequate and recover in Texas
- Drought could affect California prices and operations
- First summer operations for MISO South and SPP Integrated Marketplace
- Natural gas and electric futures prices climb

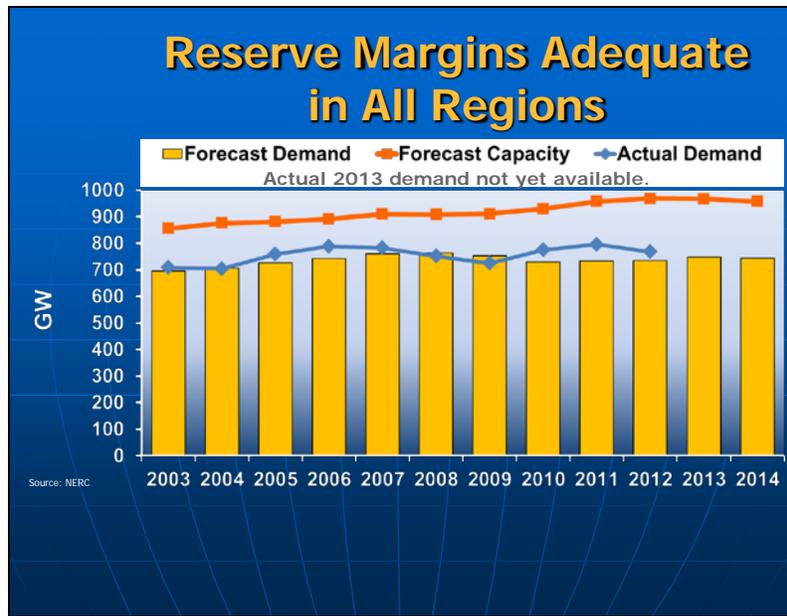
The key takeaways from today's presentation are as follows:

Forecasted reserve margins are adequate across the country. New resources in Texas are projected to put the region slightly above their reserve margin target this summer.

Drought could affect California's electric and gas markets as gas-fired generation increases to offset lower hydro generation.

The MISO South region and SPP Integrated Marketplace will operate under summer conditions for the first time, which should lead to lower production costs to serve system needs.

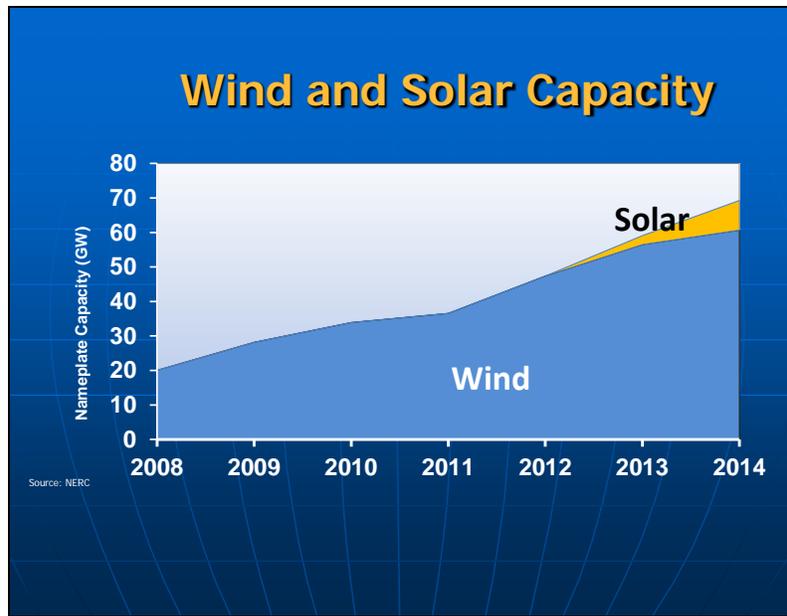
Higher electricity forward prices reflect increases in natural gas forwards. While futures are not a forecast of prices, this signals market expectations for higher prices this summer.



Preliminary data from NERC’s Summer Assessment indicates that reserve margins will exceed planning targets for all assessment areas this summer. One area we have focused on in recent years is Texas. This year, ERCOT is forecasting a reserve margin of 15 percent, just above its reserve margin target of 13.75 percent. MISO is also forecasting a reserve margin of 15 percent, compared to its reserve margin target of 14.8 percent.

Overall, NERC’s total U.S. load forecast, when weather adjusted, is essentially unchanged over the past few years.

There has been a net reduction in available capacity of 10 GW NERC-wide since last summer. For example, PJM had a net reduction of about 2.5 GW of capacity. However, NERC is currently not projecting problems in any region due to these retirements. Forecasts for retirements in 2015 and forward to 2023 will be available from the Long-Term Reliability Assessment in the fall.



The NERC Summer Assessment forecasts that the summer installed nameplate wind capacity will increase by about 4 GW, or about 7 percent from 2013. This will bring the total nameplate capacity across the nation to approximately 61 GW. The forecasted average on-peak wind capacity for this summer is 17 percent of nameplate capacity.

NERC also projects that approximately 6 GW of new utility-scale solar capacity will come online this summer, most of which is located in Southern California and Arizona. This represents a substantial increase in solar capacity in California over the past two years. Rapid changes in wind and solar generation, particularly in the morning and evening, are expected to increase the need for flexible capacity for balancing and regulation.



As noted, ERCOT is projecting a reserve margin of 15 percent, assuming that normal weather conditions occur in Texas this summer. This projection includes over 2 GW of new gas-fired resources that are forecast to enter commercial service by August 1. Texas load typically peaks in August; however, an early season heat wave could stress the system before these new facilities are available.

Fuel Issues to Monitor

- Limited railroad capacity could affect coal deliveries and stockpiles
- Higher demand for natural gas to fuel peaking units and replenish underground storage
- Drought will affect hydro resources in California

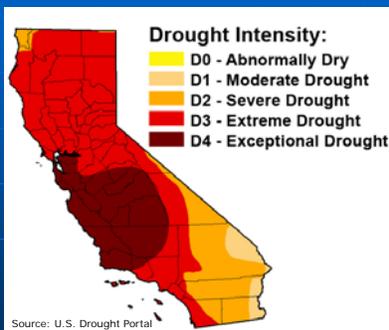
NERC reports that a number of coal-fired generating stations experienced delayed coal deliveries last winter. In some cases, these delays were because of ice on barge and shipping routes, while in other cases the delays were because of congestion and equipment problems on the rail network. Information from the Surface Transportation Board indicates that rail network congestion in some areas will continue into this summer because of the increased use of rail transportation for petroleum products and other commodities coming out of the Dakotas and the Upper Midwest, as well as limitations on rail capacity and equipment in the area. However, projections by the EIA indicate that reduced demand during the shoulder months could allow coal stockpiles to be replenished before the summer peak.

After a particularly cold winter, natural gas storage inventories are lower than normal. As a result, the natural gas pipeline network will likely be called on to both replenish storage inventories and to provide gas for generators during the summer peak. At this time, NERC is not projecting any fuel issues which would affect reliability this summer, but it is an issue that we will continue to monitor.

While the California assessment area in WECC continues to experience a severe drought, water conditions have improved since March, and new gas and solar resources should help to keep the anticipated reserve margin at acceptable levels for this summer.

Tight Market Conditions in California

- Drought: low hydro, generator limitations
- Gas fired demand expected to rise
- So. Orange County and San Diego remains constrained



California's electric and natural gas operations could experience elevated prices this summer from challenges that include drought, hot weather, and fire hazards. NOAA forecasts warmer than normal temperatures for much of California as a deep drought continues. Statewide snowpack was only 33% of normal on April 1, the traditional peak of the snow accumulation season. As of May 11, reservoir water storage was 66% of the historical average, resulting in part from low precipitation in previous years. The low snowpack and reservoir levels will reduce hydroelectric generation, possibly to half normal levels. These challenges may affect the entire state, however market impacts may be more pronounced in the north and central areas, given low hydro conditions.

The water conditions in the state may have additional implications for summer power operations. Low stream flows may restrict the availability and use of water for natural gas-fired power plants. State officials are assessing such restrictions. CAISO has added over 3 GW of generation since last summer, which will help offset drought-related supply limitations, and primarily consists of natural gas and solar. Further, Pacific Northwest snowpack is near or above normal, which raises the potential for lower cost imports for at least the early part of the summer.

Transmission limitations continue to restrict the amount of power that can be imported into the southern part of Orange County and San Diego, resulting in limited imports and use of higher cost local generation. Overall supply and demand conditions remain similar to last summer.

Turning to natural gas markets, low hydro conditions, gas storage replenishment, new gas fired generation, and forecasted warm weather are likely to lead to above normal summer gas demand. This could lead to pipeline congestion, particularly in Southern California, and high natural gas prices. This is already evident in summer forward prices. Increased solar generation may moderate the increase in gas demand.

Market Expansion in Central Region

- First summer for SPP Integrated Marketplace and MISO South
- Potential coal delivery delays and low stockpiles
- Significant transmission additions

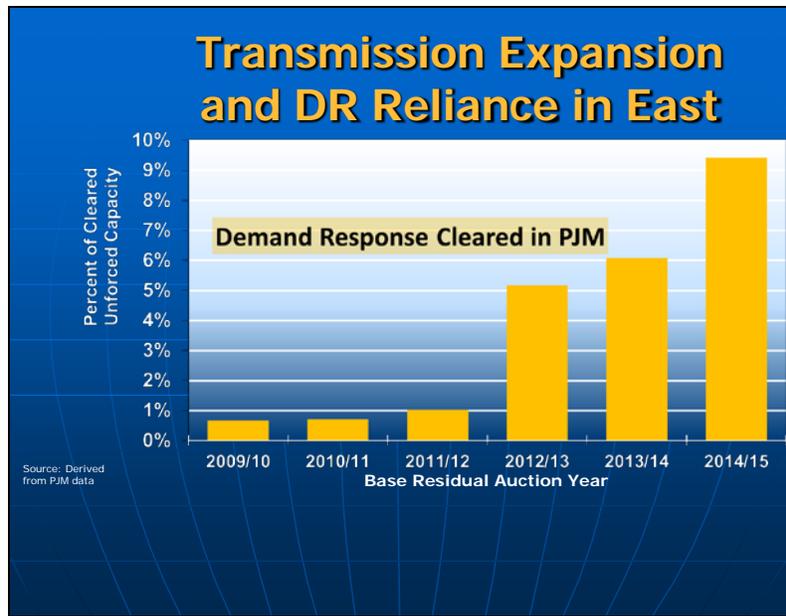


Source: Produced in Ventyx Energy Velocity

The new SPP Integrated Marketplace and MISO South region will operate for the first time under summer conditions. Both market expansions should improve unit commitment and dispatch, especially in more congested areas, as units should be used more efficiently relative to their value in alleviating congestion. MISO may see prevailing flows from north to south because of comparatively less expensive generation in the northern region, however flows could reverse under peak conditions as MISO South has a greater capacity surplus.

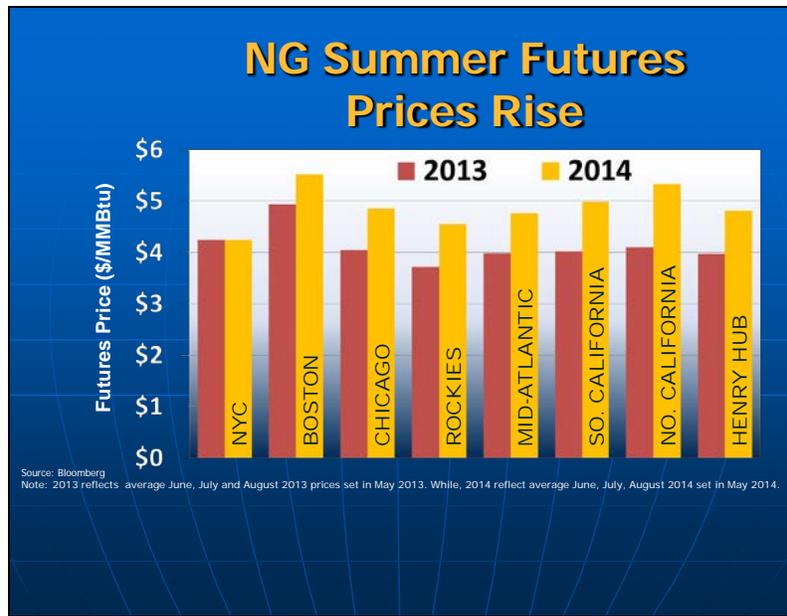
Increased coal generation this winter reduced coal stockpiles in parts of the Midwest and Plains. Some generators have had difficulty replenishing their inventories due to railroad congestion. If this persists into the summer, the market could exhibit upward pressure on electricity prices in some areas by reducing the availability of some lower-cost generators operating on Powder River Basin coal.

New transmission in SPP and MISO may improve access to wind resources and provide congestion relief for areas such as the Texas panhandle and west Kansas in SPP.

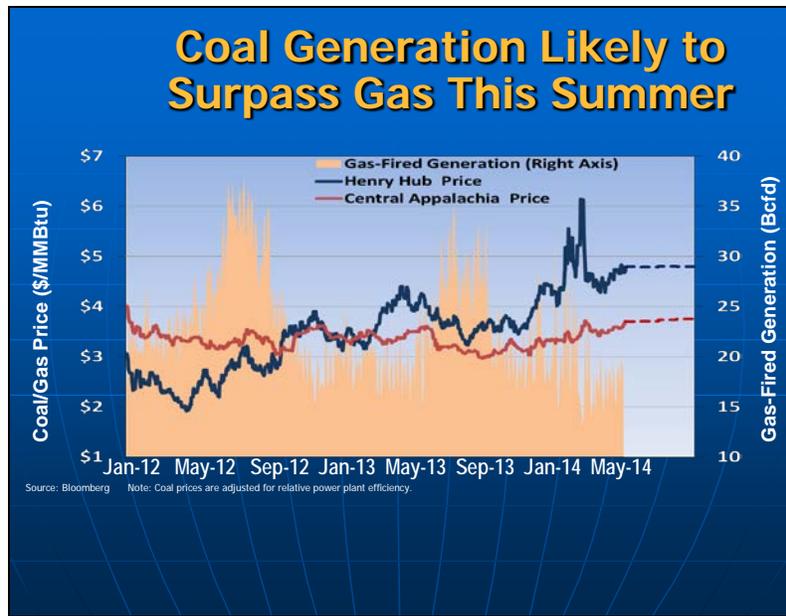


Transmission improvements should also yield market benefits in the east. Two 500 kV projects in eastern and central PJM, the Mount Storm-Doubs rebuild and the Hopatcong-Roseland segment of the Susquehanna-Roseland project, are scheduled to enter service in June 2014 and should help reduce congestion. The Greater Springfield Reliability Project in ISO-NE will provide incremental congestion benefit to western Massachusetts and northern Connecticut. Full service of the Neptune line in NYISO will increase import capability and exert downward price pressure in Long Island, a typically constrained zone. Changes in congestion management on the Ramapo line will enable more market interchange benefits between NYISO and PJM.

Demand response (DR) remains an important resource under high load conditions in the eastern region. DR will provide a larger proportion of reserves in PJM, which presents a greater opportunity for evaluating the performance of DR activations. Although the amount of cleared DR capacity decreased in NYISO, recent measures to improve performance may increase DR responsiveness.

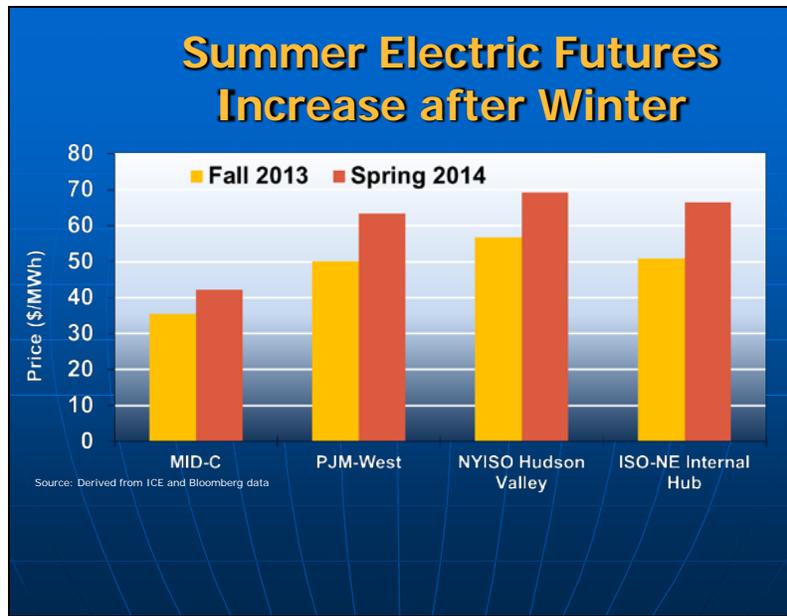


This graph shows that average natural gas futures prices for June, July and August are generally higher than last summer. Henry Hub summer futures averaged \$4.81/MMBtu as of May 6th, 84 cents higher than last summer. The largest increases are in the West, where Southern California and Northern California are up 97 cents and \$1.23, respectively, making them two of the most expensive points in the country. The higher prices there reflect expectations for high summer natural gas demand in California. Futures prices in New York City are about the same as last summer but they remain 58 cents below the Henry Hub. The market expects few constraints into New York City this summer because of the NJ-NY Expansion Project put into service November 2013 and greater access to low cost Marcellus shale gas.



This graph shows natural gas burned for generation compared to historical and summer futures prices for natural gas and coal. When natural gas prices remain near or below coal prices for an extended period of time during the summer, natural gas fired generation ramps up as the market shifts away from coal. Gas futures prices this summer are over \$1/MMBtu higher than coal futures, compared to 41 cents higher last summer. In 2012, natural gas was 57 cents cheaper than coal resulting in record natural gas-fired generation. Higher natural gas prices this summer should make natural gas-fired generation less competitive with coal, with gas burn projected to be 2.5% lower than last summer and 17% below the summer of 2012.

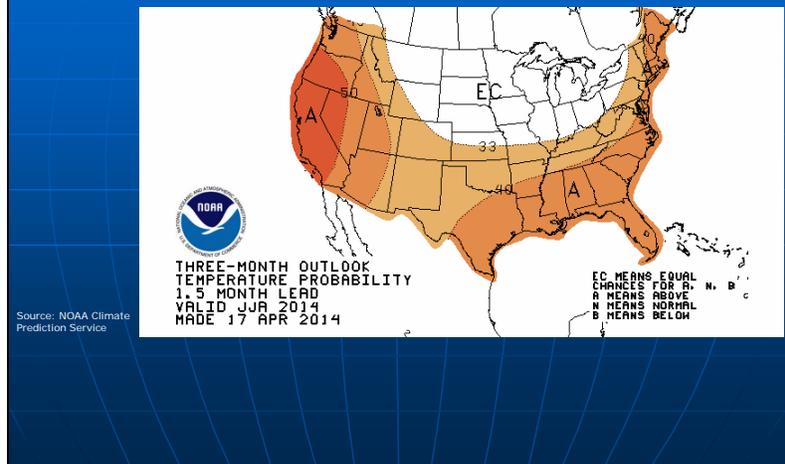
Higher natural gas prices also create greater incentives for increased production. Currently natural gas production is projected to grow 3% in 2014. Moderate natural gas burn and higher production would help natural gas storage recover from the current low levels. However, summer natural gas fired generation increasingly competes with storage injections for supply, and utilities may face some natural gas delivery constraints as LDCs and pipelines begin to refill storage.



Average electric futures for June through August increased markedly from November 2013 to May 2014. The increases were between 19 and 30 percent for the Mid-C, PJM-West, NYISO Hudson Valley, and ISO-NE Internal Hubs. The series of extreme cold weather events in the 2013/2014 winter significantly increased electric futures prices, which mirrored increases in gas forwards. Futures prices increased in the West, which also reflects updated expectations for drought conditions. Regional variances in futures prices result in part from differing fuel mixes. For example, Mid-Columbia prices reflect a strong contribution from low-cost hydro, and Mass Hub prices reflect greater reliance on comparatively higher-cost gas generation.

Spot electricity prices are particularly sensitive to weather conditions in the summer. Extreme heat elevates electricity prices through load spikes. Extended heat waves create additional price pressure by inducing generation and transmission derates and outages.

Forecasted Summer Weather



The National Weather Service is forecasting above-normal temperatures along the Pacific coast, inland through the Southwest, and spreading northward through the Great Basin and Pacific Northwest. NWS also projects above-normal temperatures from central Texas, through the entire Southeast, and along the Eastern Seaboard as far north as Maine. These forecasts do not project severe weather events, which commonly have major impacts on market outcomes.

Offsetting this hot forecast, some forecasters are calling for a weak to moderate El Niño to develop by the summer. This tends to inhibit tropical storm development, and generally results in wet and cool summers in the central and eastern U.S. A strong El Niño may result in cooler and wetter weather across the country.

Current hurricane forecasts call for 10-12 named storms, with 4-5 of those storms becoming hurricanes. Forecasters expect only 2 of those hurricanes to be category 3 or greater. The 30-year average is 12 named storms, 6 hurricanes, and 3 intense hurricanes. Hurricanes are much less important to the U.S. gas market than just a few years ago, as offshore gas production has declined, from supplying more than 20% of the U.S. gas market to around 5%.



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This concludes our prepared remarks. We will answer any questions you may have.