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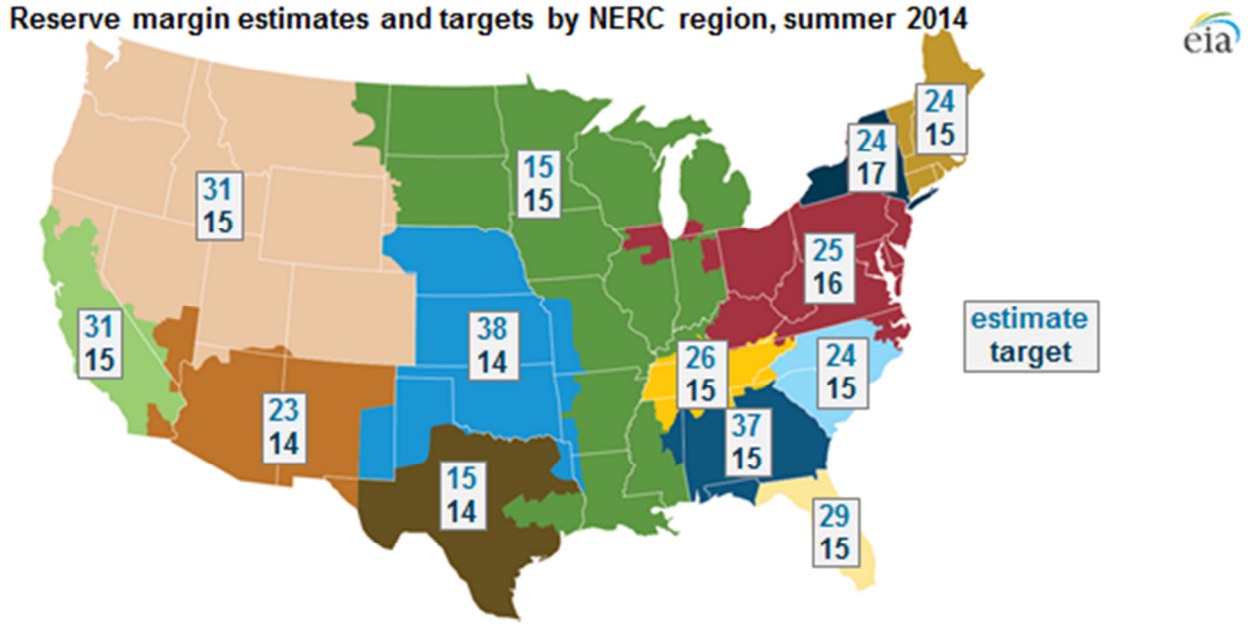
NERC's Summer Reliability Assessment highlights regional electricity capacity margins



Source: North American Electric Reliability Corporation, 2014 Summer Reliability Assessment
Note: Reserve margins are unused generating capacity at the time of peak load as a percentage of expected peak demand.

The North American Electric Reliability Corporation's (NERC) recently released 2014 Summer Reliability Assessment finds all of North America to have enough resources to meet this summer's projected peak electricity demand. Reserve margins, the amount of unused capacity at the time of peak load, expressed as a percentage of expected peak demand, range from just under 15% in Texas to almost 38% in the Southwest Power Pool.

Reserve margins highlight one fundamental requirement of modern electricity systems—always have more capacity available to ensure the reliability of the grid. Due to the lack of large scale, cost effective electricity storage, supply must be able to meet demand at all times. This can be challenging when demand is high or when generators or transmission lines have unexpected outages. Meeting demand can be accomplished through a combination of sufficient generating capacity, a robust transmission system, and demand-side management programs.

Each region has a target reference margin above which summer peak loads should be met reliably in all but the most extreme cases. Reserve margins below the reference margin indicate increased potential for system disruptions during times of high electricity demand. At the other extreme, reserve margins significantly in excess of target levels, although helpful for reliability, may be an indication of underutilized or unused generation capacity.

Areas of interest this summer include the Midcontinent Independent System Operator (MISO), whose anticipated reserve margin of 15.01% is just above the NERC reference margin level of 14.8%. This margin is down significantly from 2013 because of generator retirements and long-term outages as well as the exclusion of nonfirm imports into the

system, which had been included in prior assessments, from the calculation this year. This will also be the first summer following the integration of Entergy and its six utility operating companies in December 2013, which are referred to as MISO South. The integration will not only affect MISO operations, but may present challenges to adjacent systems, whose operators have signed an operations reliability coordination agreement with MISO to deal with reliability concerns that may arise regarding power flows between MISO North/Central and MISO South.

In Texas, an anticipated reserve margin of 14.98% is just above the NERC reference margin level of 13.75% and is based on the addition of several new generators in time for the projected system peak in early August. An early summer peak later this month or in July before the new generators come online could require the Electric Reliability Council of Texas (ERCOT) to take emergency actions, ranging from calling a conservation alert to shedding load to help prevent a major blackout.

Managing adequate reserve margins can be challenging for system planners as they deal with a host of short- and long-term considerations for both the supply and demand of electricity.

Supply-side considerations:

- The long-term nature of siting new power plants and transmission lines, with multiyear time horizons, makes capacity changes fairly inflexible in the short term. Planned transmission and generating assets can also be delayed at any time for a number of reasons.

- Changes to the resource mix in much of the country (including the retirements of some large coal and nuclear power plants as well as the addition of a significant number of wind, solar, and natural gas generators) have created challenges for local grid operators.

- Short-term operational issues such as unplanned long-term outages or transmission constraints can also affect reserve margins and system operation.

Demand-side considerations:

- Long-term economic or societal changes can affect electricity demand. In North Dakota, increased oil and gas exploration and production activities have structurally increased electricity demand in the area. Alternatively, demand can decline as a result of decreasing population or increased energy efficiency.

- Demand-side management (DSM), which includes a broad array of programs and application, has matured in recent years and allows grid operators more flexibility in balancing supply and demand.

- Short-term events, such as extreme weather, can lead to unanticipated spikes or drops in demand for electricity, which in turn can challenge the balancing of supply and demand.

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