

Regional Electricity Reliability: A Brief Look at U.S. Prospects

One problem with the California electricity market is that peak demand far exceeds availability. The negative consequences of the demand–supply imbalance have raised a question about the reliability of electricity supply in other areas of the country. Analysts and consumers alike are now asking if there will be sufficient electricity to meet the anticipated demand over the next few years.

When thinking about the reliability of supply, two issues come to mind. The most obvious is the question of generation capacity. Are there enough power plants to meet demand? Second, and often overlooked, is the structure of the transmission network. Will the current system be able to move the expected increased amounts of electricity from power plants to consumers? Both of these elements determine the reliability of supply in a region.

According to the North American Electric Reliability Council (NERC), the reliability of supply is acceptable in most

U.S. regions; problems are currently localized to the Western states and New York. However, continuous monitoring, planned additions to generation and transmission systems, and sensible restructuring schemes are vital to ensuring reliability of supply as more states progress in restructuring their electricity markets.

NERC was formed in 1968 as a not-for-profit organization to promote the reliability of electricity supply for all of North America. Its members consist of 10 regional councils, which oversee reliability issues for the member states within their region (*Chart 1*). What follows is a brief outlook for each of these regions based on NERC's most recent reliability assessment.¹

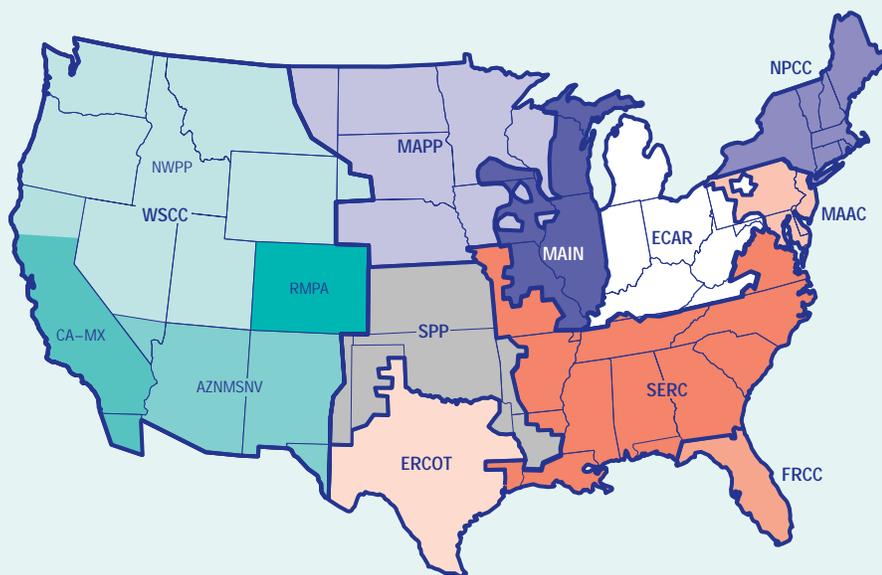
East Control Area Reliability (ECAR)

ECAR is currently meeting its electricity demand obligations. However, by 2009 over 66 percent of its generating facilities will be 30 years old or older, thus increasing maintenance and lengthening outage durations. In addition, overloads

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Chart 1

North American Electric Reliability Council Regions



SOURCE: North American Electric Reliability Council.

on the transmission system are deemed possible in the near future. To alleviate this problem, 456 miles of additional extra-high-voltage transmission lines has been proposed and could be operational in 2005.

Electric Reliability Council of Texas (ERCOT)

The Lone Star State appears to be adequately prepared for deregulation, assuming that enough time has been allowed for proper resource development to ensure adequate generation and transmission capabilities. Existing transmission systems are strained in periods of peak demand; however, ERCOT has approved the construction of new transmission lines to help alleviate constraints, and the chance of outages this summer remains low.

Florida Reliability Coordinating Council (FRCC)

Current and proposed additions to generation capacity and transmission system capability should provide sufficient electricity reserves in the future. One concern, however, is that Florida may not have sufficient natural gas supplies to generate electricity. Florida relies on only a single gas transmission pipeline company, Florida Gas Transmission Co., and future demand will exceed capacity. The Florida Public Service Commission estimates an additional 1 billion cubic feet per day may be needed over the next 10 years to generate enough electricity to meet the forecasted demand.²

Mid-Atlantic Area Council (MAAC)

Overall, this region appears to have sufficient generation capacity to sustain forecasted energy growth rates through 2005. However, concerns have been raised in some states over whether transmission systems will be able to deliver the increased loads. Various states within MAAC do have a small chance of experiencing outages this summer.

Mid-America Interconnected Network (MAIN)

The MAIN region imports a substantial amount of electricity from the adjacent ECAR and MAPP regions. While current import capabilities appear adequate, congestion on transmission lines

near the MAPP area raises some concern. Overall, outages are not anticipated for this summer.

Mid-Continent Area Power Pool (U.S.) (MAPP)

Member states should be slightly concerned about reliability of supply. While over 500 miles of additional transmission is planned over the next 10 years, generation capacity deficits remain a possibility. To decrease dependence on Canadian supply and guard against capacity deficits, utilities in the region are proposing additional generation with a short lead time.

Northeast Power Coordinating Council (U.S.) (NPCC)

New York residents have reason to worry. Generating capacity could be below NPCC standards as early as 2003, and the occurrence of blackouts and brownouts this summer is possible. Nearly all other states in the NPCC region appear to have additional generation capacity planned to accommodate future demand.

Southeastern Electric Reliability Council (SERC)

Existing and planned resources are deemed adequate in lieu of low reserve margins because of the region's commitment to using short lead-time resources to add significant new capacity. SERC members have done a good job of continuing to plan for a reliable bulk transmission system, with 2,097 miles of additional lines projected for completion by 2009.

Southwest Power Pool (SPP)

The SPP region has room for improvement. Capacity margins are expected to decline through 2003, and few transmission system additions are planned. Rates are expected to rise, but the possibility of brownouts or blackouts remains low this summer.

Western Systems Coordinating Council (WSCC)

The WSCC includes four subregions covering the Western United States.

Northwest Power Pool Area (NWPP). Extremely high peak demand combined with severe weather could impose serious constraints on the power system. Areas

within the region are experiencing low water levels, which could lead to less than normal electricity generation from hydroelectric power plants and a shortfall in total supply. Oregon, Washington and far northern California could see further rate increases this summer and have a good chance of brownouts, blackouts or both. The remaining states appear to be in only fair condition.

Arizona–New Mexico–Southern Nevada Power Area (AZNMSNV). Over the next 10 years, peak demand is expected to grow at a 3.6 percent rate, compounded annually. Although few projects are planned to improve the reliability and capability of transmission systems, capacity margins appear healthy and range from 11.3 to 28.1 percent. Summer brownouts and blackouts are not expected.

Rocky Mountain Power Area (RMPA). Peak demand is estimated to increase at a compound annual rate of 2.7 percent for the next 10 years, with resource capacity margins projected to remain between 15.8 and 24.4 percent. The region as a whole has proposed significant additions to its transmission system, which will have a large positive impact on the region's transfer capabilities.

California–Mexico Area (U.S.) (CA–MX). Through 2009, resource capacity margins are expected to be between 9.3 and 17.8 percent. The restructuring of the electricity industry in this region has made it difficult to accurately project future generating capacities. Present power supplies are extremely tight and the transmission system heavily burdened. Further brownouts and blackouts remain a threat, along with upward movement in residential rates.

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Notes

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¹ North American Electric Reliability Council, *Reliability Assessment 2000–2009: The Reliability of Bulk Electric Systems in North America*, October 2000, pp. 49–75.

² Florida Public Service Commission, "Review of Electric Utility 2000 Ten-Year Site Plans," December 2000, p. 9.