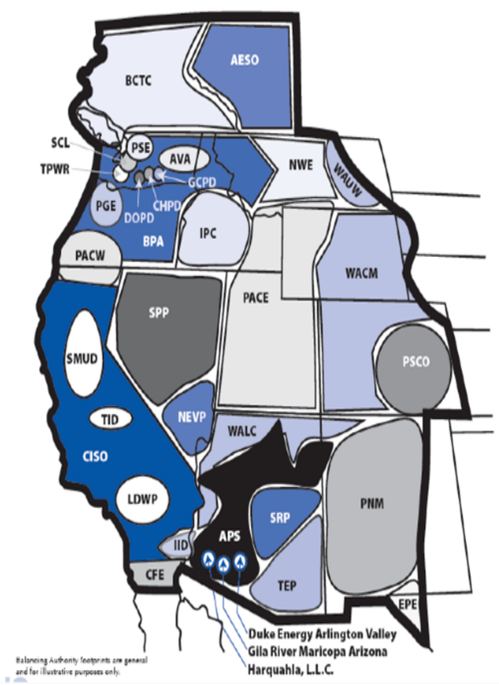
Fostering Robust Ancillary Service Markets in Non-Restructured Regions of the Western Power Grid

Collaborators: University of Colorado (PI – Adam Reed; Kevin Doran; Stephen Lawrence; Angela Cifor)
National Renewable Energy Laboratory (PI – Erik Ela; Paul Denholm; Bri-Mathias Hodge)

Project Description

Non-restructured regions of the western interconnection have lagged behind regional transmission organizations in the East in consolidating balancing areas (BAs) to achieve economies of scale in the provision of ancillary services. With the exception of California and Alberta, the West lacks organized wholesale markets and has no consolidated dispatch system by which to share ancillary services across multiple BAs. Rather, each BA is generally responsible for providing all the ancillary services necessary within its area. This situation is becoming problematic as rising penetrations of variable renewable-energy-based generation have increased the need for frequency regulation, reserves, and other services within a number of western BAs. One means of alleviating the rising demand for (and thus cost of) ancillary services is to consolidate them across multiple balancing authorities through a centralized dispatch strategy, such as a transparent and open market. For example, the Western Electricity Coordinating Council (WECC) has proposed a western energy imbalance market (EIM) – a real-time, sub-hourly energy market for balancing energy based on a similar strategy used in the Southwestern Power Pool – as a means of achieving the efficiencies of centralized, automated, wide-area dispatch for balancing energy without replacing the existing bilateral energy arrangements that are the long-standing norm in the region. The same sorts of strategies may be useful for the provision of ancillary services in the WECC. As with any experimental solution, uncertainties abound in the system costs and benefits attributable to such solutions, as well as in the scope of the regulatory constraints with which they must ultimately contend. This project will provide analysis of several potential ancillary service market configurations, including capabilities , a detailed schema of relevant entities and their likelihood of engagement, and a sophisticated, legally-based analysis of regulatory and jurisdictional barriers.



Next Steps

Task 1: Identify future western grid requirements for ancillary services and create a report with our findings.

Task 2: Create a report with detailed descriptions of the potential components and economics of potential ancillary service markets, with an emphasis on relevant balancing authorities.

Task 3: Create a final synthesis report including future western grid requirements, potential future composition and economics of western ancillary service markets, and regulatory/jurisdictional barriers.

Accomplishments and Current Status

Ancillary services are critical to the reliability of the power grid as state legislatures require higher penetrations of renewable energy. Accordingly, the first two months of the project focus on literature review to lay the academic foundation for providing accurate background and analysis of ancillary service markets in the West.

Expected Outcomes and Applications

This project will produce more accurate information to market participants and regulators about the benefits, composition, and non-technical challenges to the development of ancillary service markets in non-restructured regions of the Western power grid. This information is valuable to public utilities and state regulators engaged in integrated resource planning decisions, the FERC in addressing market rules and operational issues within its jurisdiction, and utilities in determining their level of involvement in such markets. More-informed decision-making at these levels is likely to contribute to more efficient markets in the West, and thus the provision of sufficient ancillary services to support increasing penetrations of renewable energy on the Western grid in a more cost-effective manner.

JISEA Joint Institute for Strategic Energy Analysis

Joint Institute for Strategic Energy Analysis
1617 Cole Blvd.
Golden, CO 80401-3393

Contacts

Adam Reed	adam.reed@colorado.edu
Kevin Doran	kevin.doran@colorado.edu
Stephen Lawrence	stephen.lawrence@colorado.edu
Angela Cifor	angela.cifor@colorado.edu
Erik Ela	erik.ela@nrel.gov
Paul Denholm	paul.denholm@nrel.gov
Bri-Mathias Hodge	bri-mathias.hodge@nrel.gov

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