

MEMORANDUM

DATE: AUG 27 2019

REPLY TO
ATTN OF: N0000

SUBJECT: Recommendation to Participate in the California Independent System Operator Corporation's Energy Imbalance Market

TO: M. Gabriel, A0000, Lakewood, CO

Recommendation

Western Area Power Administration's Sierra Nevada Region (SN) has been evaluating participation in the California Independent System Operator Corporation's (CAISO) Energy Imbalance Market (EIM). (Available on CAISO's website: <https://www.westerneim.com/pages/default.aspx>.) With this memorandum, I recommend moving forward. Specifically, I recommend executing, by September 30, 2019, the Energy Imbalance Participation Agreement between SN, the Balancing Authority of Northern California (BANC), the Sacramento Municipal Utility District (SMUD), the City of Redding, the City of Roseville, and the Modesto Irrigation District. Additionally, I recommend negotiating and executing necessary agreements with CAISO to allow SN to participate in EIM.

Background

In the last twenty years, the electric power grid in the western United States has dramatically changed. In 1998, CAISO and California Power Exchange developed a dynamic and fluid energy market that changed the historic bilateral, negotiated, cost-based, contract system. In addition, the expanding deployment of intermittent, renewable resources, retirement of coal-fired generation, expanding environmental requirements, implementation of reliability standards, and changing climate are all adding to operational issues that make it more difficult to manage the system in isolation of the expanding energy markets.

With all of these dynamics affecting system operations and economics, at both the wholesale and retail level, SN must examine greater participation in CAISO's market, specifically participating in CAISO's EIM. Increasingly sophisticated system management tools and improved market access are needed to ensure least-cost, reliable operation in this changing operational landscape.

CAISO's EIM is an automated, voluntary, real-time, energy wholesale market that matches the lowest-cost electricity supply with demand every 15 minutes, and dispatches every 5 minutes. It is a centralized market that integrates many renewables into the grid by expanding access to participating balancing authority areas from other regions and states. EIM software automatically finds the lowest cost resources across a larger region to meet immediate power needs, thereby reducing costs for participants.

Risk assessment

The majority of investor-owned utilities and many public power entities in the western United States have joined CAISO's EIM to take advantage of economies of scale and the inherent diversity between loads and resources across a larger geographic footprint. These entities currently include NV Energy, PacifiCorp, Idaho Power Company, Portland General Electric, Arizona Public Service, BANC and SMUD. Salt River Project, Seattle City and Light, Los Angeles Department of Water and Power, Public Service Company of New Mexico, Northwestern Energy, Avista and Tucson Electric Power will be joining CAISO EIM in 2022. On June 20, 2019, WAPA's sister agency, Bonneville Power Administration proposed to sign an EIM implementation agreement with CAISO in September 2019, and join EIM by March 2022. In addition to SMUD, who joined EIM last year, WAPA understands that the City of Redding, City of Roseville and Modesto Irrigation District are evaluating and planning to announce their decision to join EIM in the spring of 2021.

As more organizations join EIM, it has impacted traditional, bilateral, contract-based energy sales. CAISO requires participants to commit real-time energy to CAISO's EIM. This reduces real-time energy available for bilateral sales. As more entities join EIM, SN has seen a negative trading impact in its ability to engage in real-time, bilateral, energy purchases in northern California. This negative impact greatly increased when SMUD joined EIM. SN expects further impacts if the City of Redding, City of Roseville, the Modesto Irrigation District and BPA join EIM in the spring of 2021 and spring of 2022, respectively. This will likely leave SN with few trading partners remaining in the BANC balancing authority for real-time trades. Unless SN acts, these changes will likely erode SN's ability to make real-time bilateral trades on behalf of all of its customers and to participate in a robust energy market, which ensures just and reasonable pricing.

As trading partners decrease, it increases the chance of adverse pricing. SN will continue to have a requirement to address energy imbalance, and the increase of variable resources, retirement of coal-fired generation, expanding environmental requirements, implementation of reliability standards, and changing climate are all adding to operational issues that make it more difficult to manage the system. While SN's demands continue, as willing trading partners decrease, there is an impact to supply. As supply decreases, SN expects prices may increase. Also as supply decreases chances for unjust, unreasonable or monopololy pricing also increase. Supply and demand both continue to increase in CAISO's EIM, which is a highly regulated energy market and contains oversight and enforcement provisions to ensure a fair, competitive and robust market. CAISO, as well as the Federal Energy Regulatory Commission, regularly examine the markets and any anomalous bidding behavior will be identified and resolved.

SN believes that participating in CAISO's EIM:

- Provides market liquidity to make imbalance energy purchases to maintain just and reasonable pricing;
- Reduces WAPA financial risk if there are little or no resources to purchase;
- Mitigates the negative impacts of a changing generation mix, and;
- Addresses WAPA energy imbalance requirements with greater available resources

In addition to providing a stable trading source to purchase and sell imbalance energy, EIM may have additional financial benefits for SN. Since its start in November 2014, CAISO

estimates more than \$732 million in benefits associated with EIM. The benefits accruing to EIM participants come in different forms, including a reduction in costs due to economic redispatch, and costs savings associated with the use of surplus renewable energy.

SN has worked with stakeholders and studied the costs and benefits of participating in CAISO EIM. SN anticipates estimated upfront costs of \$3,500,000 and estimated ongoing, annual costs of \$630,000. These numbers are not final at this time. SN performed various benefits studies. Based on the analysis of historical data, SN estimated an average of \$2,200,000 in annual benefits had we been participating in EIM during that time period.

Although there may be a financial benefit, as noted above, SN's primary reason for participating is to ensure SN secures adequate trading partners to ensure a robust energy market for just and reasonable prices.

Addressing customer concerns

SN, in coordination with Reclamation, held four customer meetings over a 3-month period from June through August and SN's customers have been closely engaged with SN in considering the risks and opportunities should SN decide to participate in EIM. SN encouraged its customers to provide comments and concerns regarding SN's participation in EIM. SN received and responded to over 69 questions. SN did not receive any negative comments indicating that it should not explore or participate in EIM. SN also evaluated and prepared a National Environmental Policy Act categorical exclusion (NEPA CX) document for potential participation in EIM. All meeting presentations, NEPA CX, and questions and responses are posted at: <https://www.wapa.gov/regions/SN/PowerMarketing/Pages/western-eim.aspx>.

Many of the concerns raised deal with costs and cost allocations. SN will develop formal rates for EIM and will allow stakeholders to fully vet cost allocations during that process. SN's customers submitted other significant comments during the comment period. Such comments include:

- What will the impacts be to current Central Valley Project (CVP) programs, such as base resource deliveries, the hourly exchange program, regulation up/down, the displacement program, and the max peaking program? SN does not intend to impact any current CVP programs by participating in EIM. SN also committed to working with its customers during its customer coordination committee meetings to explore other potential opportunities for SN to participate in EIM;
- How will SN contribute transmission in EIM? SN plans to use CVP transmission for EIM. SN plans to designate unused available transmission capacity on a real-time basis for moving generation out of its sub-BA, and SN's transmission customers will be responsible for managing transmission they have for serving their load. Further, SN does not plan to include its rights on the California-Oregon Transmission Project or the Pacific Alternating Current Intertie, and;
- What strategies has SN looked at to benefit from EIM? SN has analyzed its benefits using excess generation available after it has met its day ahead statutory and contractual obligations to determine the best economic option should SN decide to participate in EIM.

Conclusion

For the above reasons, I recommend proceeding with execution of the Energy Imbalance Participation Agreement before September 30, 2019. Additionally I recommend negotiating and executing necessary agreements with CAISO to allow SN to participate in EIM.

Please let me know if you have any questions or concerns.

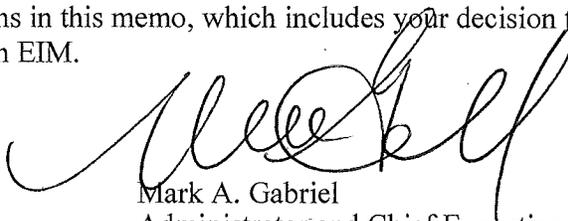
Sonja A.
Anderson

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Sonja Anderson
Senior Vice President and
Sierra Nevada Regional Manager

Concurrence

I concur with the recommendations in this memo, which includes your decision to move forward with SN's participation in EIM.



8/28/2019

Mark A. Gabriel
Administrator and Chief Executive Officer