



**Assembly Concurrent Resolution  
No. 188  
Relative to the Independent  
System Operator**

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**Stakeholder Comment and  
CAISO Responses from  
October 17, 2022  
Meeting**

**January 12, 2023**

# Assembly Concurrent Resolution No. 188

## Relative to the Independent System Operator

### Stakeholder Comments

## 1 Executive Summary

Assembly Concurrent Resolution 188 (Holden)<sup>1</sup> was passed to develop a report on Western regional market developments, and to assemble the latest information to inform the Legislature on this matter. The California Independent System Operator Corporation (“CAISO”), in consultation with the other California balancing authorities (“BAs”)<sup>2</sup>, is required to produce a report that summarizes recent relevant proposals, studies and papers addressing impacts of expanded regional cooperation on California that identifies key issues that will most effectively advance the state’s energy and environmental goals including:

- any available studies that reflect the impact of regionalization on transmission costs and reliability for California ratepayers;
- relevant updates to specified transmission development and resource diversity estimates;
- regional transmission organizations in Colorado, Nevada, and other regional states;
- collaboration between states on energy policies to maximize consumer savings while respecting state policy autonomy; and
- engagement between neighboring states on the future of regional transmission organizations in the west.

The CAISO and the California BAs engaged the National Renewable Energy Laboratory (“NREL”) to author the report. NREL and the CAISO held a stakeholder meeting on October 17, 2022 to discuss the studies it had identified and requested feedback on the list and request for any additional studies to be included in the analysis.

## 2 CAISO’s Response to Stakeholders Comments to the October 17, 2022 Discussion of the Report

The CAISO received comments from eight stakeholders: Bonneville Power Administration (“BPA”), California Public Utilities Commission (“CPUC”) – Energy Division, Arizona Public Service Company (“APS”), the Balancing Authority of Northern California and the Los Angeles Department of Water and Power submitted combined comments (“BANC/LADWP”), Public Advocates Office at the CPUC (“Cal Advocates”), Clean Energy Buyers Association (“CEBA”), and the Public Generating Pool (“PGP”) regarding the ACR 188 studies to be used for the report.

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<sup>1</sup> *Assembly Concurrent Resolution 188*, Chapter 138 (Filed August 19, 2022).

<sup>2</sup> The California Balancing Authorities are the Balancing Authority of Northern California, Imperial Irrigation District, the Los Angeles Department of Water and Power, NV Energy, PacifiCorp, and Turlock Irrigation District.

Comments received from the CPUC and Cal Advocates suggest that the CAISO should conduct additional studies that objectively evaluate the impacts of regionalization on transmission costs to California utility ratepayers and on reliability. The CPUC and Cal Advocate went on further to state that “If these studies do not exist, the CAISO must dedicate a portion of the report to describe the studies needed and describe the CAISO’s plan to conduct these studies. Further, the CPUC concurs with the Public Advocates Office of the CPUC that the CAISO and NREL should update several studies.” The CAISO disagrees. As stated in the Executive Summary, ACR 188 requested an analysis of existing reports regarding regionalization and did not direct the CAISO to perform any study(s). Therefore, the requests are beyond the scope of the Resolution. CAISO’s report will respond to ACR 188 based solely on existing studies, papers, and analysis.

## 2.1 Identify any listed studies that are most relevant for inclusion in the report.

CEBA commented that four studies are worth highlighting as recent, thorough, and clear in their assessments of critical aspects of Western regionalization. PGP also commented that the State-Led Study and Western Flexibility Assessment are the most relevant.

- The Western Flexibility Assessment provides detailed and well-supported evidence that the West will face higher operational costs and emissions if it fails to develop broad coordination of wholesale markets. The study is unique in its comprehensive assessment of transmission and demonstrates that full use of existing transmission infrastructure, in addition to coordinated wholesale electricity markets, can be an effective way to integrate renewable resources.<sup>3</sup>
- In Support of Western Regional Resource and Transmission Planning Coordination is also highly relevant considering its detailed discussion of the need to better coordinate resource planning and related transmission planning. It considers the benefits of transmission planning exercise at interconnection scale to assess capabilities and congestion related to achieving state goals.<sup>4</sup>
- The State-Led Market Study is a critical tool for western market expansion discussion as it compares the impacts of limited market development in the form of day ahead markets to the more advanced organized wholesale market structures that include joint transmission tariffs, consolidated balancing authorities, and long-term resource adequacy planning. Notably, the study results not only found that a full RTO model maximizes benefits across the region, but that load diversity benefits were highest in market footprints that connected California to the rest of the West.<sup>5</sup>
- The current list of studies only includes the Road Map document for the State Led study and should include the technical report.<sup>6</sup>
- Finally, Western RTO Economic Impact Study - Region-Wide Analysis builds upon the framework of the State-Led Market Study and adds clarity on the ability of an RTO construct to drive state-

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<sup>3</sup>[https://www.dora.state.co.us/pls/efi/efi\\_p2\\_v2\\_demo.show\\_document?p\\_dms\\_document\\_id=948065&p\\_session\\_id=](https://www.dora.state.co.us/pls/efi/efi_p2_v2_demo.show_document?p_dms_document_id=948065&p_session_id=) page 17.

<sup>4</sup> [https://cnee.colostate.edu/wp-content/uploads/2021/11/Western\\_Resource\\_Transmission\\_Planning\\_Coordination\\_Rev\\_1.pdf](https://cnee.colostate.edu/wp-content/uploads/2021/11/Western_Resource_Transmission_Planning_Coordination_Rev_1.pdf), page ii.

<sup>5</sup><https://static1.squarespace.com/static/59b97b188fd4d2645224448b/t/6148a012aa210300cbc4b863/1632149526416/Final+Roadmap+-+Technical+Report+210730.pdf>, page 6-7 and 37.

<sup>6</sup><https://static1.squarespace.com/static/59b97b188fd4d2645224448b/t/6148a012aa210300cbc4b863/1632149526416/Final+Roadmap+-+Technical+Report+210730.pdf>

level financial benefits and drive up to 4,400 MWs of new corporate clean energy purchases by 2030.<sup>7</sup>

The CAISO agrees that the listed studies are most relevant to the report.

## 2.2 Request for list of studies that should not be included.

The CPUC believes studies completed prior to 2015 should not be included in the analysis as they have little relevance given the big transformation that the California electric grid has undergone. The CAISO disagrees, while four studies in the analysis were completed prior to 2015, they are all regarding the benefits of the Western Energy Imbalance Market which began in 2014 and has shown to be more beneficial than any of the analysis performed prior to its inception.

PGP supports the concept of narrowing the list or keeping it in categories so that a deeper understanding and comparison of a smaller list of studies may be provided. Similar to the caveats listed under the state-led study, constant consideration of the major policy evolution that has occurred at the federal level (IRA), the regional level (WPP WRAP creation), and the state level (WA CAA), as well as the significant progress that has occurred in drafting design of the Day-Ahead Market options must be part of any interpretation of results at this phase, and should be regularly reiterated in any summary that is provided to policy-makers so as not to trigger false conclusions. The assumptions behind many of these studies may no longer be valid, and the benefits may be locked-in, in some cases, and at-risk vs prior assessments in others. These are important considerations for any study under review. The CAISO appreciates PGP's concept and the report has been structured to group the literature included in the review into four categories: technical, policy, legal and other. The CAISO believes this should respond to PGP's concern.

## 2.3 Request to identify any additional studies that should be included.

BPA suggested adding the following studies, as they are descriptive of the interaction of state legislative and regulatory policies with regional coordination objectives. The two WIRED working group reports were produced by collaborations of Western utilities and state energy policy officials, renewable energy companies and public interest organizations to describe opportunities for coordination among state clean energy and economic policies. These reports are companion to the listed WIRED report "In Support of Western Regional Resource and Transmission Planning Coordination." The Gridworks report describes how resource adequacy policies for the Pacific states were structured at the time. The report has relevant background on the interaction of California's resource adequacy policies with incentives for resource sharing among regional utilities. The specific reports and cites are as follows:

- Final Review Draft, WIRED GHG Accounting Working Group Report, November 2020. Western Interconnect Regional Electricity Dialogue (WIRED); Center for the New Energy Economy, Colorado State University.<sup>8</sup>

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<sup>7</sup> <https://info.aee.net/hubfs/Western%20RTO%20Economic%20Impact%20Study%20Report.pdf>, page 41.

<sup>8</sup> <https://cnee.colostate.edu/wp-content/uploads/2021/01/final-review-draft-WIRED-GHG-accounting-work-group.pdf>

- Final Review Draft, WIRED Resource Adequacy Working Group Report, November 2020. Western Interconnect Regional Electricity Dialogue (WIRED); Center for the New Energy Economy, Colorado State University.<sup>9</sup>
- Resource Sharing Among the Pacific States; Gridworks, January 2018.<sup>10</sup>

The CAISO included the studies by BPA in the ACR 188 analysis. APS suggested including the State-led Market Study prepared by Energy Strategies for the Utah Office of Energy Development and the SB 350 Study done by the CAISO. Both studies are included in the analysis.

In response to a question from a stakeholder during the recent public meeting, NREL suggested that its role would not be limited to a simple regurgitation of study results, but provide a qualitative assessment and commentary as well. BANC/LADWP support the approach. The CAISO agrees.

CEBA believes the studies listed below substantively add to NREL’s effort to summarize relevant studies on the impacts of expanded regional cooperation, such as customer savings, because they provide the unique and valuable perspective of large energy customers.

- The Renewable Energy Policy Pathways Report is an analysis of pathways to increase renewable energy access and decrease costs of renewable energy procurement across the U.S. The report demonstrates how greater regional coordination through centrally organized wholesale markets are key to increasing customer options through virtual power purchase agreements (PPAs), reducing costs, and facilitating greater renewable energy integration. It also highlights the benefits organized wholesale markets provide to utilities as integrating and balancing renewable energy resources becomes easier when manages over larger geographic footprints. Finally, the report concluded that organized wholesale markets lowered the costs of other decarbonization pathways studies.<sup>11</sup>
- The Designing the 21st Century Electricity System report provides a roadmap of high-impact recommendations for large energy customers developed through a meta-study of existing studies. This study demonstrates why regional coordination is a top priority for large energy customers and provides customer centric recommendations on key market issues such as RTO governance, market design, market monitoring and resource adequacy.<sup>12</sup>
- The Pathways Toward Grid Decarbonization: Impacts and Opportunities for Energy Customers from Several U.S. Decarbonization Approaches report analyzes pathways that would optimize power sector decarbonization and the impacts of those pathways on customers’ access to clean energy. The study noted that expansion of competition among electricity generators via expansion of Organized Wholesale Electricity Markets (OWMs) to the parts of the U.S. that do not currently have them can provide an estimated cost savings around \$11 billion dollars per year in 2035 and \$14 billion dollars in 2050.<sup>13</sup>

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<sup>9</sup> [final-review-draft-WIRED-resource-adequacy-working-group.pdf \(colostate.edu\)](https://www.colostate.edu/~energy/final-review-draft-WIRED-resource-adequacy-working-group.pdf)

<sup>10</sup> [Gridworks ResourceAdequacy online-2.pdf](https://www.gridworks.com/resources/online-2.pdf)

<sup>11</sup> [https://cebi.org/wp-content/uploads/2020/05/Renewable-Energy-Policy-Pathways-Report-One-Page\\_2020-05-05.pdf](https://cebi.org/wp-content/uploads/2020/05/Renewable-Energy-Policy-Pathways-Report-One-Page_2020-05-05.pdf).

<sup>12</sup> <https://cebi.org/research/designing-the-21st-century-electricity-system/>

<sup>13</sup> <https://cebi.org/research/pathways-toward-grid-decarbonization/>

These three reports have been included in the analysis. The CPUC suggested adding:

- The Root Cause Analysis: Mid-August 2020 Extreme Heat Wave report should be evaluated based on any parallels that could be drawn between the market design issues that contributed to the challenges faced during the 2020 extreme heat wave and potential market design issues with the Extended Day Ahead Market.
- Summer Market Performance Report (September 2022) At the October 27, 2022 meeting of the CAISO Board of Governors, the Chief Executive Officer, Elliot Mainzer, stated that he and his team, “were trying to visualize how the operations of the system would have been different if we had actually had an Extended Day Ahead Market in place at the time.”<sup>14</sup> He concluded that, “the additional visibility and transparency to the sufficiency of the broader footprint and the confidence we would have had on a number of days that the market and transfers between the different regions would have maintained reliability between California and other states would significantly reduce the need for emergency declarations, and also would have increased the incentives for folks to bid their generation into the market which would have increased liquidity.”

The Root Cause Analysis report has been included in the analysis. The Summer Market Performance Report was not included in the analysis because a study would need to be completed which is not the objective of ACR 188. PGP suggested adding:

- Resource Adequacy in the Pacific Northwest study. While NW-centric, explores resource adequacy planning in the Pacific Northwest in a high-renewable future. While the policy recommendations from this report are now well underway through the Western Power Pool’s Western Resource Adequacy Program, all of the findings are more broadly applicable to regional market coordination and the benefits it may provide from a reliability perspective. Other key conclusions about maintaining a reliable system with deep decarbonization are transferrable to the CAISO, given California’s policy objectives are very well aligned with those covered within the scope of this study. This study also attempts to quantify some of the diversity benefits that have now been locked in through the WRAP program, and others that would require an RTO, so is very relevant for interpretation of results for the State-Led Study. Other relevant takeaways for CAISO include the analysis of potential land requirements for decarbonization, which are very important considerations for California, given existing constraints.

This report was included in the analysis.

## 2.4 Any general comments.

BPA believes it is essential for readers of the report to understand that the scope of policy issues extend beyond solely those pertaining to the CAISO. California state law and regulatory policy include provisions that create barriers and frictions for the interaction of the California electric power system

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<sup>14</sup> The entire October 27, 2022 Board of Governors meeting and the Chief Executive Officer report are available to view at: [https://www.youtube.com/watch?v=rtnHfyc8mRg&list=PLpEmS\\_3q2cQ5Pbuu--NDIvSpwUW05JMKy&index=3](https://www.youtube.com/watch?v=rtnHfyc8mRg&list=PLpEmS_3q2cQ5Pbuu--NDIvSpwUW05JMKy&index=3). The Chief Executive Officer report begins at approximately 2 minutes 30 seconds.

with the rest of the Western Interconnection. Such provisions originate from objectives of California policy in the service of economic and environmental goals of the state. In some cases, these policies serve to encourage greenhouse gas emission reductions and clean energy development within California. In others, the policies support unique standards and accounting designed to advantage California ratepayers. The consequences of these policies, however, may increase costs for California consumers by impeding access to clean and economic resources and increasing costs for system reliability. They may also impede California's goals to support cost-effective reduction of greenhouse gas emissions.

BPA encourages consideration of the importance of regional cooperation in such policies. In many cases, increased regional cooperation will benefit from the direction of the Legislature and consideration in regulatory policy decisions. For the immediate purpose of responding to ACR 188, BPA encourages the report to include discussion of such laws and regulations in addition to the authorities and governance of the CAISO. The CAISO agrees and a separate section on legal assessment has been included in the report.

Arizona Public Service appreciates the opportunity to provide input in advance of CAISO fulfilling its responsibilities enacted by ACR 188 and looks forward to reviewing the results of CAISO's analysis. The CAISO appreciates APS's participation in this process.

BANC/LADWP support the process initiated by the CAISO and appreciate the collaborative approach developed by the CAISO as envisioned by ACR 188.<sup>15</sup> BANC and LADWP agree that given the prominence and profile of regional market issues, a public process as set forth by the CAISO, with regular consultation with stakeholders, is appropriate. BANC and LADWP further agree with the CAISO that engaging a third-party author provides a level of independence to the report, and that the National Renewable Energy Laboratory ("NREL") is an excellent choice as lead author. The CAISO agrees.

CEBA encourages the study team to maintain a focus on studies that address wholesale market coordination and the benefits it provides. For example, *Regulation and Markets: Ideas for Solving the Identity Crisis* provides some commentary relevant to maximizing customer savings and resource diversity, noting "States using the Joint Dispatch Market Model have a number of other advantages for consumers. In addition to maintaining control and transparent decision making around resource decisions, they have access to broader regional resources for cost effective joint dispatch."<sup>16</sup> However, the paper highlights several regulatory constructs or issues not relevant to the aims of ACR-188, such as the Restructured Administrative Market Model. In revising the paper, the CAISO has refocused the content to meet the objectives of ACR 188.

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<sup>15</sup> ACR 188 states in part: "the Legislature requests that by February 28, 2023, the Independent System Operator, in consultation with the California balancing authorities, produce a report that summarizes recent relevant studies on the impacts of expanded regional cooperation on California and identifies key issues that will most effectively advance the state's energy and environmental goals, including any available studies that reflect the impact of regionalization on transmission costs and reliability for California ratepayers.

<sup>16</sup> [https://www.wbklaw.com/uploads/file/Articles-%20News/2017%20articles%20publications/Market%20Identity%20Crisis%20Final%20\(7-14-17\).pdf](https://www.wbklaw.com/uploads/file/Articles-%20News/2017%20articles%20publications/Market%20Identity%20Crisis%20Final%20(7-14-17).pdf) page 10

PGP believes it would be beneficial to attempt to break any stated benefits into three categories, for comparison across studies where applicable: Capacity savings/reliability benefits, production cost savings/operational benefits, and CO2 emission savings/environmental benefits. Stating specific assumptions driving these savings, and noting any core differences across studies or areas that an updated study may consider modified assumptions, and how (directionally, not quantitatively) this may increase or decrease the benefits indicated. These benefits may be quantitative and qualitatively stated in the studies. An additional category that has received past focus, but is more qualitative, is barriers to success, including policy hurdles that may be called out in some studies. The CAISO appreciates PGP's suggestion and is trying to be neutral with respect to the analysis and merely presenting the literature requested by the legislature.