REPORT OF THE
CHIEF LEGISLATIVE ANALYST

DATE: May 30, 2025

TO: Honorable Members of the Rules, Elections, and Intergovernmental Relations Committee

FROM: Sharon M. Tso for
Chief Legislative Analyst

Council File No. 25-0002-S26
Assignment No: 25-04-0288

SUBJECT: Resolution to Oppose interference of LADWP's right to operate as an independent Balancing Authority

CLA RECOMMENDATION: Adopt Resolution (Nazarian – McOsker) to include in the City's 2025-2026 Federal and State Legislative Programs, opposition to any legislative or administrative action that would undermine the independent balancing authority of the Los Angeles Department of Water and Power, diminish its control or rights over its transmission assets, or impose additional charges or costs for the transmission of electricity for customers.

SUMMARY

The Resolution (Nazarian – McOsker), introduced March 28, 2025, states that LADWP prioritizes self-sufficiency by generating its own energy but participates in energy markets when it benefits the City economically or supports grid reliability for neighboring utilities during critical times. While LADWP collaborates with the California Independent System Operator's (CAISO's) Western Energy Imbalance Market (WEIM) and is moving toward joining the Extended Day Ahead Market (EDAM), it maintains full independence over its grid, generation, and transmission assets. These assets, funded by City residents, are used to sell surplus energy in regional markets, generating revenue to lower ratepayer costs and fund improvements. As a balancing authority, LADWP manages grid reliability for the cities of Los Angeles, Glendale, and Burbank, and insists that any energy exchanges remain voluntary to preserve local control and prioritize serving its own customers first.

Therefore, the Resolution requests that the City opposes any legislative or administrative action that would undermine the independent balancing authority of the Los Angeles Department of Water and Power, diminish its control or rights over its transmission assets, or impose additional charges or costs for the transmission of electricity for customers.

BACKGROUND

LADWP's electrical system was established in 1911. Today, the LADWP is the nation's largest municipally owned utility, operating under the Los Angeles City Charter as a proprietary department governed and managed by an independent and locally appointed five-member Board

of Water and Power Commissioners. LADWP's electrical service covers 1.4 million customers over 478 square miles in the City, and 1,839 square miles in Owens Valley; with a transmission system network totaling more than 4,000 miles to bring power from other states and parts of California to the City. LADWP is a vertically integrated utility that owns and operates its own generation, transmission, and distribution systems, and does not rely on the energy market or other transmission system operators as a primary means to meet its power needs.

LADWP's status as an independent balancing authority means it is responsible for continuously matching electricity supply with demand in real time within its designated region, ensuring grid reliability and stability without oversight from another operator like the California Independent System Operator (CAISO). LADWP's balancing authority area covers the City of Los Angeles and also includes the municipal utilities of Glendale and Burbank. Within this area, LADWP manages all aspects of electric system reliability, integrating resource planning and coordinating with neighboring utilities as needed to maintain a stable and reliable power supply.

Recently, in the California state legislature, there have been proposals to expand and restructure regional electricity markets, particularly through the California Independent System Operator's Pathways Initiative. The CAISO Pathways Initiative is a stakeholder-driven effort to create a new, independently governed regional organization that would oversee the Western Energy Imbalance Market (WEIM) and the Extended Day Ahead Market (EDAM), expanding the coordination and efficiency of electricity markets across the Western U.S. The goal is to maximize consumer benefits, improve grid reliability, and enable broader resource sharing among Western states, including California.

This initiative includes steps that could eventually transfer authority over market rules and operations to a new, fully independent regional organization, reducing the autonomy of local balancing authorities like LADWP. This would manifest primarily by shifting key decision-making authority over wholesale electricity markets from CAISO's board—which is directly accountable to the State of California—to a new, independent Western regional organization.

This transition could complicate or dilute LADWP's ability to prioritize local needs and policies, as market rules and operations would be set by a board representing a wide range of stakeholders across the West, not just Los Angeles or California. Although participation is currently voluntary and safeguards are proposed to protect state and local priorities, the long-term evolution toward a regional market operator introduces potential risks to LADWP's independent operational decision-making and its ability to respond solely to the interests of its own customers.

DEPARTMENTS NOTIFIED

Department of Water and Power

CD Fields

Christopher Fields
Analyst

Attachment: 1. Resolution (Nazarian – McOsker)
2. S. Energy, Utilities & Commc'ns Comm., Background: Western Energy Markets & Regionalization (Mar. 12, 2025), https://seuc.senate.ca.gov/system/files/2025-03/03-12-20-background-lh.docx.pdf

RESOLUTION

WHEREAS, any official position of the City of Los Angeles with respect to legislation, rules, regulations, or policies proposed to or pending before a local, state, or federal government body or agency must have first been adopted in the form of a Resolution by the City Council with the concurrence of the Mayor; and

WHEREAS, the Los Angeles Department of Water and Power (LADWP) electrical system was established in 1911 when Los Angeles citizens voted 10 to 1 in favor of distributing power as a municipal enterprise; today LADWP is the nation's largest municipally owned utility, operating under the Los Angeles City Charter as a proprietary department governed and managed by an independent and locally appointed five-member Board of Water and Power Commissioners; and

WHEREAS, today LADWP's electric service territory covers 1.6 million customers over 478 square miles in the City of Los Angeles and 1,839 miles in Owens Valley, with a transmission system network totaling more than 4,000 miles to bring power from the Pacific Northwest, Utah, Nevada, Arizona, and other areas within California to Los Angeles; and

WHEREAS, LADWP is a vertically integrated utility that owns and operates its own generation, transmission, and distribution systems, and does not rely on the energy market or other transmission system operators as a primary means to meet its power needs; and

WHEREAS, although LADWP's policy is to be self-sufficient and capable of generating all its energy needs from resources it owns or controls, it also participates in energy markets if it is in the City's best economic interest, and in critical times, neighboring utilities look to LADWP's surplus energy and transmission resources to bolster their power system and avoid blackouts; and

WHEREAS, LADWP also exchanges power with the California Independent System Operator (CAISO) Western Energy Imbalance Market (WEIM) and has entered into an Implementation Agreement with the CAISO to move forward with the process of becoming a participating Entity in the Extended Day Ahead Market (EDAM), a voluntary day-ahead electricity market designed to deliver significant economic, environmental, and reliability benefits to balancing authority areas and utilities throughout the West, it still maintains a uniquely independent grid system and does not rely on CAISO to control its generation and transmission assets; and

WHEREAS, this vast transmission system is owned or co-owned by LADWP and these assets represent strategic municipal infrastructure investments that have been directly paid for by the residents of the City of Los Angeles; and

WHEREAS, LADWP uses its extensive transmission network to sell its excess energy and capacity in the California, Northwest, and Southwest energy markets, and revenues from these excess energy sales are used to reduce costs to ratepayers and for capital improvements; and

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WHEREAS, in its role as a Balancing Authority, LADWP integrates resource planning ahead of time and maintains load-interchange-generation balance within its Balancing Authority Area, which also includes Glendale and Burbank; and

WHEREAS, while it is crucial that LADWP continue to exchange energy with other entities at the bulk electric system level, it must be able to continue to do so voluntarily, while retaining complete ownership and control of its own transmission and generation assets, and be able to prioritize its native load needs first;

NOW, THEREFORE, BE IT RESOLVED, that by adoption of this Resolution, with the concurrence of the Mayor, the City of Los Angeles hereby includes in its 2025-2026 State and Federal Legislative Programs, OPPOSITION to legislation or administrative actions that would undermine LADWP's right to operate as an independent balancing authority, diminish its control over its transmission assets or its rights to transmission assets over which it has ownership or in which it has as stake, and/or impose additional charges or costs for the transmission of electricity for LADWP Power System customers.

PRESENTED BY: _____
ADRIN NAZARIAN
Councilmember, Second District

SECONDED BY: _____

ORIGINAL

California State Senate

COMMITTEE ON
ENERGY, UTILITIES AND COMMUNICATIONS

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INFORMATIONAL HEARING

Regional Expansion of Wholesale Electricity Markets: An Overview of the West-Wide Governance Pathways Initiative

1021 O Street, Room 1200
Wednesday, March 12, 2025
2:30 p.m.

BACKGROUND

"Go West, young man, go West and grow up with the country."
– commonly attributed to Horace Greely, New York Daily Tribune, July 13, 1865.

On July 2023, a group of regulators, including California Public Utilities Commission (CPUC) President Reynolds and California Energy Commission (CEC) Vice Chair Gunda, along with regulators from Arizona, New Mexico, Oregon, and Washington called for a viable path to electricity market inclusive of all Western states, including California, with independent governance.[1] The regulators' call came in the form of a letter addressed to the Committee on Regional Electric Power Cooperation (CREPC)[2] and the Western Interstate Energy

[1] https://www.westernenergyboard.org/wp-content/uploads/Letter-to-CREPC-WIEB-Regulators-Call-for-West-Wide-Market-Solution-7-14-23-1.pdf

[2] The Committee on Regional Electric Power Cooperation (CREPC) was established in 1982 and is a joint committee of the Western Interstate Energy Board (WEIB) and the Western Conference of Public Service Commissioners (WCPSC). CREPC is composed of an energy office official and a regulatory utility commissioner from each of the Western states and Canadian provinces and focuses on electric power system policy issues that require regional cooperation in the West. In November 2022, WIEB and WCPSC adopted a charter articulating the scope, role, and membership of CREPC. https://www.westernenergyboard.org/committee-on-regional-electric-power-cooperation/

Board (WEIM)[3] whereby regulators expressed a common commitment in seeking the benefits of an expanded regional energy market and encouraged stakeholders to participate in the effort and shape the approach. This call was preceded by previous unsuccessful legislative attempts to regionalize California's main electric grid across the West.[4]

In the roughly year and a half since the effort was initiated by the regulators' letter, a stakeholder driven process has culminated in broad support among diverse parties – including environmental, labor, local publicly owned utilities, community choice aggregators, and others – for what is referred to as the *West-Wide Governance Pathways Initiative (Pathways Initiative)*. Unlike previous attempts which sought to authorize the expansion of the main electric grid and all the functions operated by the California Independent System Operator (CAISO), the Pathways Initiative has proposed an expansion of the energy market functions of the CAISO, preserving the other functions (including transmission, reliability, balancing authority, etc.). Specifically, the Pathways Initiative has proposed the development of a new regional organization to oversee the energy markets functions of the CAISO.

Today's informational hearing provides members of the committee and the public the opportunity to learn the details about the development and evolution of the Pathways Initiative, including Steps 1 and 2, and the efforts to create a new regional organization to oversee energy market functions. As this initiative has been shaped, there have been additional developments in the political and energy landscape, both within and outside California, that are important to consider, including:

- Increasing concerns about electricity affordability (the topic of a recent oversight hearing by this committee).
- The continued efforts to advance new and renewable generation in California (including growth in energy storage and efforts to support offshore wind development).

[3] The Western Interstate Energy Board (WIEB) is an organization of 11 Western States and two western Canadian Provinces. WIEB's legal basis is the Western Interstate Nuclear Compact (Public Law 91-461). The governor of each state and the premier of each province appoints a member to the Board. The Compact provides for the President of the U.S. to appoint an ex-officio member to the WIEB. The Compact states the purpose of the WIEB is to provide the instruments and framework for cooperative state efforts to "enhance the economy of the West and contribute to the well-being of the region's people." https://www.westernenergyboard.org/western-interstate-energy-board/

[4] AB 538 (Holden) of 2023, which was held by the author in the Assembly Appropriations Committee; AB 813 (Holden) of 2018 was held in the Senate Appropriations Committee; and AB 726 (Holden) of 2017 was held by the Senate Rules Committee.

- The current continued expansion of CAISO's existing market operations, including the scheduled expansion of the day-ahead market.
- New and expanded entrants into the West, including the efforts by a competing regional market effort via the Southwest Power Pool's (SPP) Markets+, which has been conditionally approved by the federal government and Bonneville Power Administration has signaled its intention to join.[5]
- The new federal Trump Administration and its vocal support for coal and other fossil fuel generation, general disdain towards climate policies, and the additional uncertainty about the White House's involvement in independent agency decisions, including those overseeing energy policies and markets.

As committee members and the public learn about the Pathways Initiative proposal, they may wish to consider:

- How does the proposal address electricity affordability?
- How does the proposal enhance electricity reliability?
- How does the proposal support and protect the State's clean energy policies, including the SB 100 zero-carbon and renewable energy goals and the Renewable Portfolio Standard?
- Can Californians be assured their best interest will be addressed in the launch and life of the new regional organization? What, if any, safeguards are considered or should be considered?
- What off-ramps might exist to protect Californians should the state no longer wish to remain within the new regional organization? What would be the costs?
- What happens if some California entities wish to remain with the regional organization but not all California entities?
- How does timing for the launch and implementation of the Pathways Initiative address the concerns posed by developments noted above, including pressures from competing regional markets and the uncertainties of the new federal administration, to name a couple?
- What are the additional benefits of the Step 2 Pathways Proposal to the existing CAISO governance, including those recently approved as part of the Pathways Initiative Step 1?

[5] Bonneville opts to join SPP's Markets+ day-ahead market over CAISO alternative | Utility Dive

About the Pathways Initiative:

The Pathways Initiative is an effort led by a group of stakeholders[6] from the eleven Western states in the Western Interconnection (Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming) with the goal of creating a new entity with independent governance capable of offering an expansive suite of West-Wide, voluntary wholesale electricity market functions across the largest possible footprint. The development of the Pathways Initiative is in direct response to the regulators' letter issued in July 2023 (noted above), which called for a proposal "ensuring that the benefits of wholesale electricity markets are maximized for customers across the entire Western U.S." The letter described an independently governed non-profit that accomplished several objectives:

- Includes all states in the Western Interconnection, including California.
- Provides a platform for a full range of regional transmission operator services.
- Uses a contract for services with the CAISO, including assumption of the Western Energy Imbalance Market (WEIM) and the Extended Day-Ahead Market (EDAM).
- Avoids duplication of the investments and expenses of the market infrastructure that has already been created.
- Avoids a deterioration of the benefits already accruing from broad coordination.

The Pathways Initiative has developed a proposal that encompasses 3 Steps, specifically:

- **Step 1:** This step demonstrated early commitment to the regulators' vision of independent governance by elevating the authority of the Western Energy Market (WEM) Governing Body (GB) from joint authority with the CAISO Board of Governors (BoG) to primary authority over the WEIM and the EDAM. These substantive changes in decision-making authority can occur within the scope of existing law, but require changes to the CAISO By-laws to modify the dispute resolution that would now authorize joint Section 205 filings by the CAISO BoG and the WEM GB at the Federal Energy Regulatory Commission (FERC). The joint bodies met again on November 7, 2024, and approved the next legal step for implementation.

[6] Pathways-Initiative-Launch-Committee-Roster_Nov-17-2023.pdf

Step 1 Trigger. Step 1 implementation would be deferred until triggered by the addition of incremental EDAM load meeting the following requirements:

- Execution of implementation agreements by utilities representing non-CAISO Balancing Authority (BA) area load equal to or greater 70% of the CAISO BA area load.
- Geographic diversity of the incremental load additions beyond PacifiCorp, Balancing Authority of Northern California (BANC), and Los Angeles Department of Water and Power (LADWP), including at least one new participant from the Southwest and one from the Northwest, and will exclude California participants.

Step 1 has not been triggered as of the timing of this hearing.

Step 1 Dispute resolution modifications. A pivotal change to the dispute resolution requires that the CAISO, in the event that dispute resolution procedures do not resolve the dispute and either CAISO BoG or WEM GB votes in favor of a proposal that the other opposes, must make a "dual filing" (commonly known as a "jump ball") with FERC pursuant to its Section 205 rights.[7] The dual filing would present both the CAISO BoG proposed tariff and the WEM GB proposed tariff as "co-equal" proposals, with no preference for either proposal indicated in the filing. FERC would not be required to consider whether the then-existing filed rate is unlawful and may adopt any or all of the CAISO BoG or WEM GB proposed market rules. This requirement for co-equal filings would also apply in circumstances where either the CAISO BoG or the WEM GB believes a tariff change is necessary, but the other body does not, and in non-time-critical exigent circumstances.

- **Step 2:** Durable, independent governance of markets and other potential services. This step includes forming a new, fully independent Regional Organization (RO) that would have sole authority over the WEIM and

[7] Section 205 is the key provision of the Federal Power Act under which "public utilities" (generally, jurisdictional transmission owners, independent system operators, and regional transmission organizations), make filings at FERC seeking approval of organized wholesale market rules and related services. Any party may file a protest to a public utility filing under Section 206 of the Federal Power Act. The standard of review by FERC for filings under Section 205 (and therefore the legal burden borne by the filer) is a demonstration that the filing is just and reasonable. In contrast, the standard of review by FERC for Section 206 filings is substantially higher—the protestant must establish that an applicable tariff provision is unjust and unreasonable, before ever reaching the question of whether a potential alternative is itself just and reasonable, or somehow more just and more reasonable than the protested provision originally filed under Section 205.

EDAM. If implemented, the Step 2 proposal would create the foundation to achieve the regulators' vision and enable the West to create a suite of voluntary wholesale electricity market services as stakeholders and participants desire and require, without relying on the actions of any one state or BA. Step 2 consists of five areas that make up the primary building blocks of the new RO.

- RO Scope and Function,
- RO Formation,
- RO Governance,
- Public Interest Protections, and
- Stakeholder Engagement Process

The RO will launch in the form of Option 2.0, serving as a policy-setting organization for the establishment and oversight of market rules for the WEIM and EDAM. All references to "beyond 2.0" include at least the elements and goals originally identified in Option 2.5 and are meant to expand future options rather than limit them and are meant to increase the RO's corporate responsibility for the markets. Under Option 2.0:

- The RO will have full independent governance authority over market rules, with sole Section 205 rights, and ultimate authority over the associated business practice manual provisions.
- Market operations will continue to be performed and overseen on a day-to-day basis by the CAISO within the scope of its existing corporate authority, with varying levels of input from the RO. While the RO would not have direct day-to-day supervision of market operations, the RO would have audit rights and responsibilities to ensure the CAISO as market operator is following the tariff and business practices.
- The RO and CAISO rules will remain in a single integrated tariff. The existing CAISO tariff is expected to need a stakeholder process to enable clarification and/or reorganization to ensure accountability and responsibility is clear for each organization, as well as understanding the classification of existing provisions as sole RO authority, sole CAISO authority, or shared authority.
- The CAISO's existing financial responsibility, liability, and compliance responsibilities related to the market will not migrate to the RO immediately, reducing the time and cost required for RO start up.

- The CAISO will remain the counterparty to existing market contracts, such as Participating Generator Agreements and Scheduling Coordinator Agreements.
- Market operator staff will retain emergency operational authority under FERC oversight, during actual emergency conditions in the market, as it does today.
- The Pathways Initiative Launch Committee has taken a high-level cut at what might be an initial RO budget. Based on a host of assumptions, the RO will have initial limited staffing with an estimated annual cost of $1.25 to $1.5 million, which could increase to $10 to $14 million over time as the organization develops.

The Pathways Initiative Launch Committee recommends that the RO consider a transition to a structure that will enable the RO to take on additional regional market services with components consistent with the list below. Although Option 2.5, as previously identified by the Launch Committee, presents one possible option, we anticipate that other options will be considered by the RO in its feasibility analysis. In that spirit, the feasibility study undertaken by the RO would assess the costs, benefits, possible expanded market functions, and implementation details including:

- Continued RO fully independent governance authority over market rules and associated business practice manual provisions and contractual responsibility for the operation of the market with sole Section 205 rights.
- Potential separation of the integrated CAISO/RO tariff into two separate tariffs, building upon the efforts contemplated for implementation of Option 2.0.
- RO assumption of the CAISO's ultimate financial responsibility, liability, and compliance responsibilities to FERC for the market operator function.
- Shifting the CAISO's operation of the markets from two entities operating under a single tariff to operating under a vendor contract between the RO and the CAISO.
- RO assumption of the CAISO's ultimate financial responsibility, liability, and compliance responsibilities to FERC for the market operator function.
- RO filing with FERC for full public utility status as defined by the Federal Power Act, if the RO assumes ultimate responsibility over the markets or other services or establishes a separate tariff.

- RO assumption of counterparty responsibility for existing market contracts, such as Participating Generator Agreements and Scheduling Coordinator Agreements, from the CAISO, requiring modification of these contracts and adding to the complexity of transition.
- More extensive RO executive staffing with an estimated annual cost of roughly $25 million; the additional RO staff will enable the RO to meet its increased oversight responsibilities with respect to the markets. The feasibility study will examine, among other cost factors, the extent to which these RO cost increases would be offset by increases in expanded market products and participants and/or decreases in the administrative payments to CAISO.

By creating a new fully independent regional entity, the proposal creates a platform for the RO to offer any additional services desired by Western stakeholders on a voluntary basis. Such an evolution should provide opportunities to gain many of the benefits of broad participation in an expanded suite of RO services through co-optimization under a vendor contract with the CAISO.

- **Step 3:** Beyond the Pathways Initiative. Solutions in Steps 1 and 2 have been developed with a clear line of sight to enable potential additional voluntary future regional services beyond the scope of existing energy markets. The Launch Committee refers to this later evolution of additional services as Step 3.

Studies on impacts. Various studies have been presented or released to help better quantify the potential impacts of a broader energy market footprint on consumer cost/savings, electricity reliability, and emissions. Previous studies examined the benefits of the expansion of the CAISO BA functions across a broader Western footprint.[8] At a recent CEC Integrated Energy Resources Planning workshop last month, both the Brattle Group and Professor Michael Wara from Stanford University presented studies on the impacts of a regional market.[9]

[8] *Senate Bill 350 Study The Impacts of a Regional ISO-Operated Power Market on California.* Brattle Group, BEAR, E3, and Aspen Environmental Group: July 2016. https://www.caiso.com/documents/sb350study-volume1purpose-approachandfindings-mainreport.pdf Hurlbut, David, Mark Greenfogel, and Brittany Speetles. 2023. *The Impacts on California of Expanded Regional Cooperation to Operate the Western Grid* (ACR 188 Final Report). Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-84848. https://www.nrel.gov/docs/fy23osti/84848.pdf.

[9] https://www.energy.ca.gov/event/workshop/2025-01/iepr-commissioner-workshop-regional-electricity-markets-and-coordination

The Brattle Group preliminary study examines the impacts of expanded participation in the West in CAISO's EDAM. In general, the study notes that benefits vary depending on the size and diversity of the members that join, with a greater potential for benefits from a larger and more diverse footprint. The study considered 2032 as the proxy year and simulates four market footprints, ranging from baseline to expanded EDAM to a split regional market (EDAM and SPP Markets+). The preliminary study found the expanded EDAM could produce $500 million/year in benefits to Californians, higher than a split market scenario (at $182 million/year). The expanded EDAM also provides a greater reduction in natural gas generation within California and overall reduced emissions, as compared to the split market scenario which would reduce emissions in state but increase within the broader footprint. The study by Professor Michael Wara and researchers at Stanford University examined electricity reliability benefits of broader regional cooperation under extreme events. The study found that in the worst-case stress event, the benefits in operating in a single West-Wide electricity market are greater as compared to those of a split West-Wide market.

About the U.S. power grid. Electricity supplied by power plants moves through a complex network of electricity substations, power lines, and distribution transformers before it reaches customers. The electric grid consists of the bulk power systems, high-voltage transmission equipment, and the distribution system (which are generally lower voltages). North America is comprised of two major and three minor alternating current grids or "interconnection," which operate largely independently from each other with limited transfers of power between them. Within each interconnection are multiple BAs that ensure electricity grid stability by maintaining a balance between electricity production (supply) and consumption (demand).

The United States electric power system in the contiguous 48 states is made up of three main interconnections:

- The Eastern Interconnection – the area east of the Rocky Mountains and a portion of northern Texas, which consists of 36 BAs.
- The Western Interconnection – the area from the Rockies west, stretching north into Canada, south to Baja California in Mexico, and west to the Pacific Ocean, and consists of 38 BAs, including the BA operated by the CAISO and four additional BAs in California.
- The Electric Reliability Council of Texas (ERCOT) – covers most of Texas and consists of a single BA.

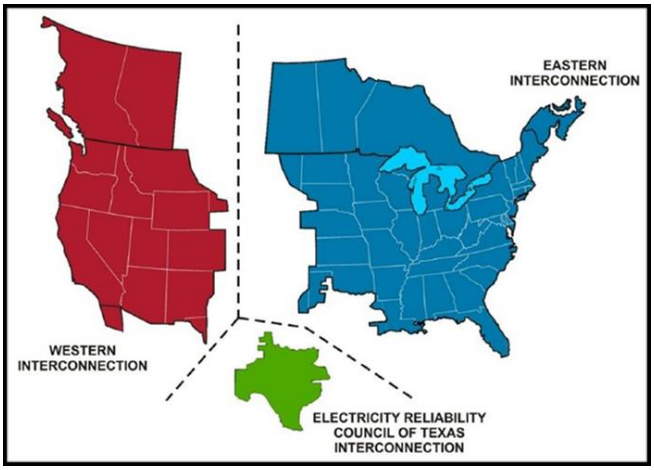

Figure 1. The Three Major Interconnections of the U.S. Electric Power Grid. Source: North American Electric Reliability Corporation.

Many entities interface to ensure bulk power system reliability:

- FERC is an independent federal agency that regulates the transmission of electricity, natural gas, and oil in the U.S. FERC has the power to enforce mandatory electricity reliability standards and assess penalties on violations of those standards. FERC also oversees the regulation of wholesale electricity markets and reviews electricity transmission rate cases to ensure costs are just and reasonable.
- The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the reliability and security of the bulk power system in North America. FERC monitors, reviews, and supervises NERC.
- Regional Entities have responsibility delegated by NERC for assuring bulk power system reliability in their respective footprints. The Western Electric Coordinating Council (WECC) is the Regional Entity responsible for the bulk power system reliability of the Western Interconnection.
- Reliability Coordinators (RC) monitor the grid in real-time and interact with individual operators and other RCs to maintain reliable operations. The CAISO serves as the RC, via RC West services, for much of the Western Interconnection (specifically, 25 BAs and 39 transmission operators), with the remaining areas nearly exclusively served by SPP.
- BAs are responsible for maintaining load-generation balance within their footprint.
- Independent System Operators (ISO) and Regional Transmission Operators (RTO) coordinate, control and monitor portions of the electric grid. ISOs and RTOs may also operate wholesale electricity markets. The WEIM is a real-time market operated by the CAISO.

About the Western Interconnect. There are 38 separate BAs operating across the interconnected western United States (known as the Western Interconnect which is managed by the WECC), (as shown below). All the electric utilities in the Western Interconnection are electrically tied together during normal system conditions and operate at a synchronized frequency of 60 hertz (Hz). Among the 38 BAs within the Western Interconnection are those serving California, namely: the CAISO (which serves roughly 35% of the load in the WECC), BANC, LADWP, Turlock Irrigation District (TID) and Imperial Irrigation District (IID), as well as, several outside California. According to the WECC, the generation capacity of the Western Interconnection makes up approximately 20% of all capacity in the United States and Canada.

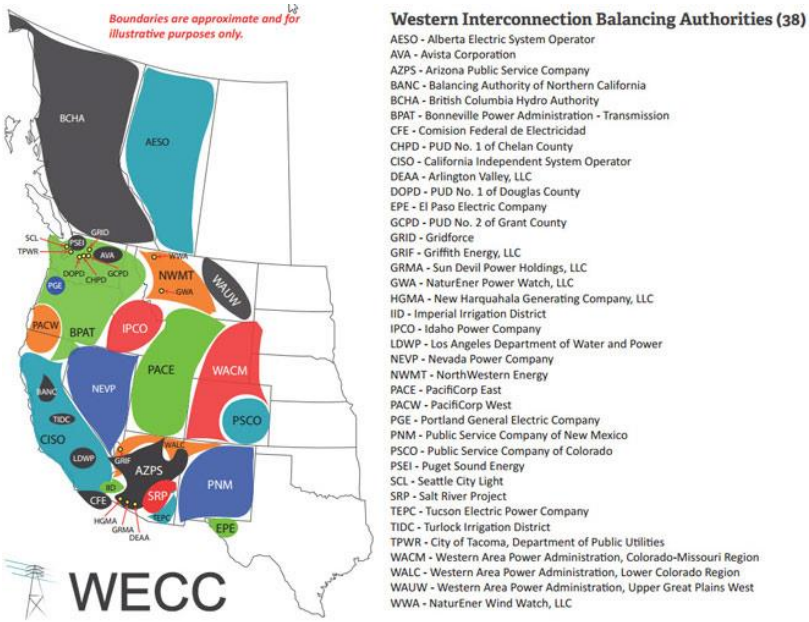

Figure 2. WECC BAs. Source: WECC.

About BAs. The actual operation of the electric system is managed by entities called BAs. A "balancing authority" is an entity responsible for managing the transmission of high-voltage electricity across long-distance transmission lines. BAs must operate at a synchronized frequency of 60 Hz. The BA ensures in real-time that power system demand and supply are balanced. If demand and supply fall out of balance, the result can be local or wide-area blackouts. BAs also must manage transfers of electricity with other BAs. The NERC issues mandatory reliability standards which are approved by the FERC and mandated on BAs. Most BAs are electric utilities that have taken on the balancing responsibilities for a specific portion of the power system.

RTOs/ISOs. RTOs and ISOs operate a region's electricity grid, administer the region's wholesale electricity markets, and provide reliability planning for the region's bulk electricity system. RTOs/ISOs are independent, membership-based, non-profit organizations that ensure reliability and optimize supply and demand bids for wholesale electric power. All of the RTOs/ISOs in the United States also function as BAs. Seven RTOs/ISOs operate bulk electric power systems across much, but not all, of North America. ISOs grew out of FERC orders (Orders 888/889) which suggested ISOs as a concept to satisfy the requirement of providing non-discriminatory access to transmission. Subsequently, RTOs developed in the 1990s to accommodate the FERC policy to encourage competitive generation through requiring open access to transmission (FERC Order 2000). RTOs dispatch power by feeding both day-ahead and real-time bids from both generators and load-serving entities into complex optimization software.

RTOs and ISOs are often compared to air traffic controllers because they manage the electron traffic on a power grid they do not own, as traffic controllers manage airplanes landing and taking off on airport runways. RTOs and ISOs use bid-based markets to determine economic dispatch of electricity resources. Roughly, two-thirds of the nation's electricity load is served in RTO/ISO regions. RTOs have diverse types of members, including: independent generators, transmission companies, load-serving entities, integrated utilities that combine generation, transmission and distributions functions, and power marketers and energy traders. Each of the RTOs and ISOs have energy and ancillary service markets in which buyers and sellers could bid for or offer generation.

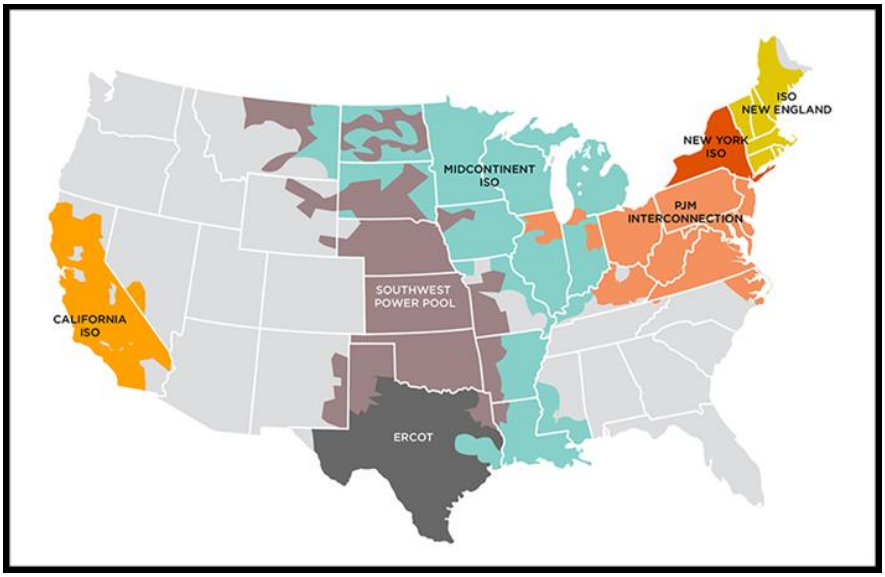

Figure 3. Seven RTO and ISO Regions in the Continental United States. Source: FERC.

About the CAISO. The CAISO is a nonprofit public benefit corporation that was created by California statute as part of the effort to deregulate and restructure the electricity market in the late 1990s. The CAISO manages the flow of electricity across the high-voltage bulk power system that makes up 80% of California's and a small part of Nevada's electric grid. CAISO is registered as both a transmission operator and BA under the NERC reliability functional model. As with other BAs, the CAISO is FERC and NERC regulated. However, unique to the CAISO, as compared to other RTOs, is the appointment of the CAISO governing board members who are appointed by the Governor and require confirmation by the State Senate.

CAISO WEIM. As part of its management of the wholesale electricity market, the CAISO also operates a voluntary WEIM which was established in 2014. The WEIM is a real-time bulk power trading market involving 22 participants across ten western states (representing 79% of the load of the Western Interconnection) that trade the difference between the day-ahead forecast of power and the actual amount of energy needed to meet demand in each hour. Energy trade in the WEIM is limited and intermittent. Currently, the WEIM handles generation that a participating load-serving entity considers surplus at the last minute.

EDAM. In addition to the WEIM, the CAISO is launching a voluntary EDAM in 2026 with the participation of PacifiCorp and Portland General Electric and additional participants, including LADWP and BANC, committed to join in 2027. The EDAM is designed to deliver additional benefits to those realized in the WEIM through greater reliability coordination and resource optimization. The EDAM design was jointly approved by the CAISO BoG and the WEM [recently known as the WEIM] GB in February 2023, and the associated tariff has been approved by the FERC. These tariff provisions aim to improve renewable integration and market efficiency through day-ahead scheduling and unit commitment across a larger area for expanded regional activity in the extended day ahead market that may not require governance changes of the CAISO. The expanded market will also increase reliability from greater situational awareness and allow participants to share surplus renewable energy across a broad Western footprint.