

MID-POINT REVIEW

2022-2026 STRATEGIC PLAN



EXECUTIVE SUMMARY

In May 2022, the ISO's executive leadership team and Board of Governors published the 2022-2026 Strategic Plan with five over-arching strategic objectives:

Reliably and efficiently integrate new resources by proactively upgrading operational capabilities.

Strengthen resource adequacy and meet California's SB100 goals through long-term transmission planning and effective coordination with state agencies.

Build on the foundation of the Western Energy Imbalance Market to further expand Western market opportunities.

Provide highly responsive and inclusive stakeholder engagement and customer service.

Create a flexible and adaptive work environment that retains and attracts a highly-skilled and engaged workforce.

These strategic objectives were identified to serve as the central organizing principles guiding the ISO's priorities for its internal and external efforts over the coming years. The Plan and its strategic objectives were intended to support deployment of human and financial resources as efficiently as possible, while ensuring that the ISO is meeting the most pressing needs of its customers and stakeholders in California and throughout the region. This was all designed to achieve the ISO's vision, as articulated in the Plan, to "operate the world's most reliable, cost-effective and environmentally sustainable power system."

In the years leading up to the Plan, California and the region were facing tremendous challenges and opportunities that served as critical drivers towards the shaping of the strategic objectives listed above.

These significant events included:

- Rotating outages in 2020 that revealed resource adequacy concerns and market design issues with implications for stakeholders in California and across the region.
- Consecutive summers in 2021 and 2022 that saw record-setting heat waves and challenges to the grid requiring emergency actions to balance supply and demand.
- A global pandemic and increasingly competitive labor market that would require the shift towards a hybrid working environment.
- A rapidly evolving and more diverse resource mix with emerging grid technologies.
- The growing Western Energy Imbalance Market (WEIM) and the imperative to expand market services across the West to enhance reliability, increase efficiencies, and meet state policy objectives — including California Senate Bill 100's requirement that 100% of retail electricity sales come from carbon-free sources by 2045.

With all of these events occurring within a relatively short timeframe, it was imperative to take stock of our current situation, explore future needs, and articulate priorities and aspirations through a new five-year strategic plan that would result in concrete accomplishments and position the organization to continue fulfilling its mission of keeping California on the path to a clean, reliable grid while further strengthening regional market development.

Currently, we are passing through the mid-year point of this five-year planning horizon. This report highlights the journey and accomplishments over the past two-and-a-half years while also identifying where more work is needed. With our dedicated and highly-skilled team and the partnerships that have blossomed and grown in recent years within California and across the West, we have made considerable progress and look forward to working with our many partners and stakeholders to continue to meet the needs of the public we serve.



1: RELIABLY AND EFFICIENTLY INTEGRATE NEW RESOURCES BY PROACTIVELY UPGRADING OPERATIONAL CAPABILITIES

Strategic context

Strategic Objective 1 was identified to proactively adapt the ISO's operational capabilities to accommodate a changing resource mix and emerging grid technologies, such as the rapid growth of grid-scaled, inverter-based storage resources and the emergence of Distributed Energy Resources (DER). These changes require enhancements to our processes and tools to optimize dispatches while minimizing associated ramping and operational challenges.

The first steps were to modernize our tools that support control center operations and ensure that our mission-critical information technology platforms are secure, scalable and resilient. This is essential as our dependence on technology increases and the computing requirements for supporting advanced and emerging technology platforms continue to develop and advance.

With the potential for more rapid growth of distribution-side energy resources and increasing interconnectedness of the Western grid and markets, the third component of this objective was to increase coordination with distribution operators in and out of state — both for reliability purposes and to enable these resources to actively participate in the wholesale market.

Key achievements

- Planned and successfully executed initial two years of the Control Center Foundational Improvements & Modernization (CCFI&M) Initiative, enhancing operational capabilities of our people, processes, and technology. These critical improvements were required to effectively and reliably operate a modernized grid amidst an increasingly volatile climate and rapidly changing resource mix.

- Key foundational enhancements implemented for critical applications have included:
 - **Market** – Improved usability, performance and situational awareness for managing dispatchable generation and real-time contingency dispatches.
 - **Energy Management System (EMS)** – Improved situational awareness alarms and user interface.
 - **Real-time Contingency Analysis (RTCA)** – Improved application performance, quality of solutions, and support for ongoing analysis and continuous improvement.
 - **Interchange Transaction Scheduler (ITS)** – Improved performance by redesigning critical user interfaces such as the Limits Monitor and Interchange Manager.
 - **Outage Management System (webOMS)** – More user-friendly, better performance.



- Developed robust metrics for monitoring and measuring effectiveness of the processes, data and tools in our Control Center while creating a culture of continuous improvement based on daily assessment of data-driven metrics.
 - Built new dedicated training facilities, including a replica control center, to enhance our training offerings, for internal and external operators.
- A plan to implement foundational improvements and upgrades to support the modernization initiatives, transition out end-of-life technologies, continuously enhancing our information security posture to reduce risk, as well as various process improvements in software change management and patching.
- To ensure that our operators are positioned to make the best decisions possible, we developed action plans to address issues which detract from monitoring and managing the markets and grid.
- Improved regression testing and user-acceptance testing practices to ensure readiness prior to promoting into production environments.

- Improved change management process coordination and communications to ensure internal and external customers are aware of and prepared for upcoming software changes.

More to do

- Ramping up efforts to define a multi-year roadmap for modernization with deliverables for 2025, 2026, and 2027, and ultimately through 2035, focused on improving situational awareness, streamlining decision-making and automation for monitoring and managing the markets and grid.
- Continuing to implement technology upgrades for hardware and software, and planning for future needs of the ISO's data center.
- Accelerating efforts to define a strategy and charter for increasing coordination and communication with utility distribution companies, enabling the utilization of more demand flexibility and distributed energy resources.



2: STRENGTHEN RESOURCE ADEQUACY AND MEET CALIFORNIA'S SB100 GOALS THROUGH LONG-TERM TRANSMISSION PLANNING AND EFFECTIVE COORDINATION WITH STATE AGENCIES

Strategic context

California Senate Bill 100 signed into law in 2018 requires that 100 percent of retail electricity sales come from carbon-free sources by 2045. The ISO and its State partners are committed to achieving these goals and delivering clean power reliably and cost-effectively. This requires the procurement of thousands of megawatts of new resources and optimization of power and transmission infrastructure development. Overall, greater coordination across entities and between transmission planning, procurement and interconnection processes is essential.

The first imperative in the Plan was to ensure the development of long-lead transmission plans to meet these goals. To ensure that the early study, permitting, and siting steps are conducted with enough time for infrastructure projects to be installed and connected to supply resources, a longer-term transmission outlook was needed.

Reimagining our grid interconnection, prioritization, and coordination processes is required to hasten the study and approval of resources needed to advance toward SB100 targets. It is also imperative to sharpen our own resource adequacy priorities and engagement with the California Public Utilities Commission (CPUC) and California Energy Commission (CEC) to harmonize resource adequacy policies and program design elements.

Key achievements

- Implemented a new 20-year Transmission Outlook incorporating gains year-over-year, including stronger coordination and alignment with state agencies' key strategic resource development areas.
- Advanced the third annual transmission plan with significant policy-driven transmission — averaging \$5.8 billion per year in approval of new additions over three years.
- Established regular coordination with state agency counterparts to ensure forward transmission planning is geared toward those goals and to ensure alignment with the CPUC's Integrated Resource Planning.
- Developed and received full approval from the Federal Energy Regulatory Commission (FERC) for an innovative zonal approach to resource interconnection that incorporates enhanced coordination of planning, procurement and interconnection processes.
 - Launched a robust stakeholder working group on interconnection process enhancements.
 - Developed and filed a revised interconnection process to comply with FERC Order No. 2023, and adapted the interconnection process enhancements around the new foundational process established by FERC.
 - Transitioned to a new application and study-tracking platform, the Grid Resource Interconnection Portal, with first phase live on October 1, 2024.



- Connected more than 20 gigawatts (GW) of new resources to the ISO grid over the last four years — half of that being battery storage. CAISO now has the largest fleet of four-hour lithium-ion batteries in the United States and this fleet helped us manage summer heat events with no Flex Alerts the past two summers.
- Established resource adequacy strategy with defined reliability targets for the ISO balancing area rooted in loss-of-load expectation principles and analysis, and focused on coordinating with local regulatory authorities and assuring interoperability with regional RA partners.
- Deployed an internal committee of cross-functional team members responsible for providing strategic direction for our resource adequacy program while building understanding of the issue throughout the company.
- Conducted Summer 2024 Loads and Resource Assessment using 1-in-10 metrics, working collaboratively with stakeholders and communicated these results externally.
- The ISO continues to work with the CPUC on enhancements to its RA program and updates to its Planning Reserve Margin (PRM) for 2026.
- Ongoing engagement with WRAP and prospective participants to align and harmonize RA requirements across programs.
- Developed a plan and processes to ensure ISO resource adequacy remains compatible with showings based on the CPUC's Slice-of-Day requirements.

More to do

- Implementation of FERC decision on interconnection enhancements.
- Continued support for inter-regional West-wide transmission planning.
- Continued focus on interoperability with Local Regulatory Authorities' Resource Adequacy Programs.
- Develop unforced capacity (UCAP) proposal that can work in parallel with CPUC and other Local Regulatory Authorities' (LRA) programs.
- Continue to address issues on RA tracks related to modeling, default counting rules, outage substitution, performance incentives, and backstop procurement.



3: BUILD ON THE FOUNDATION OF THE WESTERN ENERGY IMBALANCE MARKET TO FURTHER EXPAND WESTERN MARKET OPPORTUNITIES

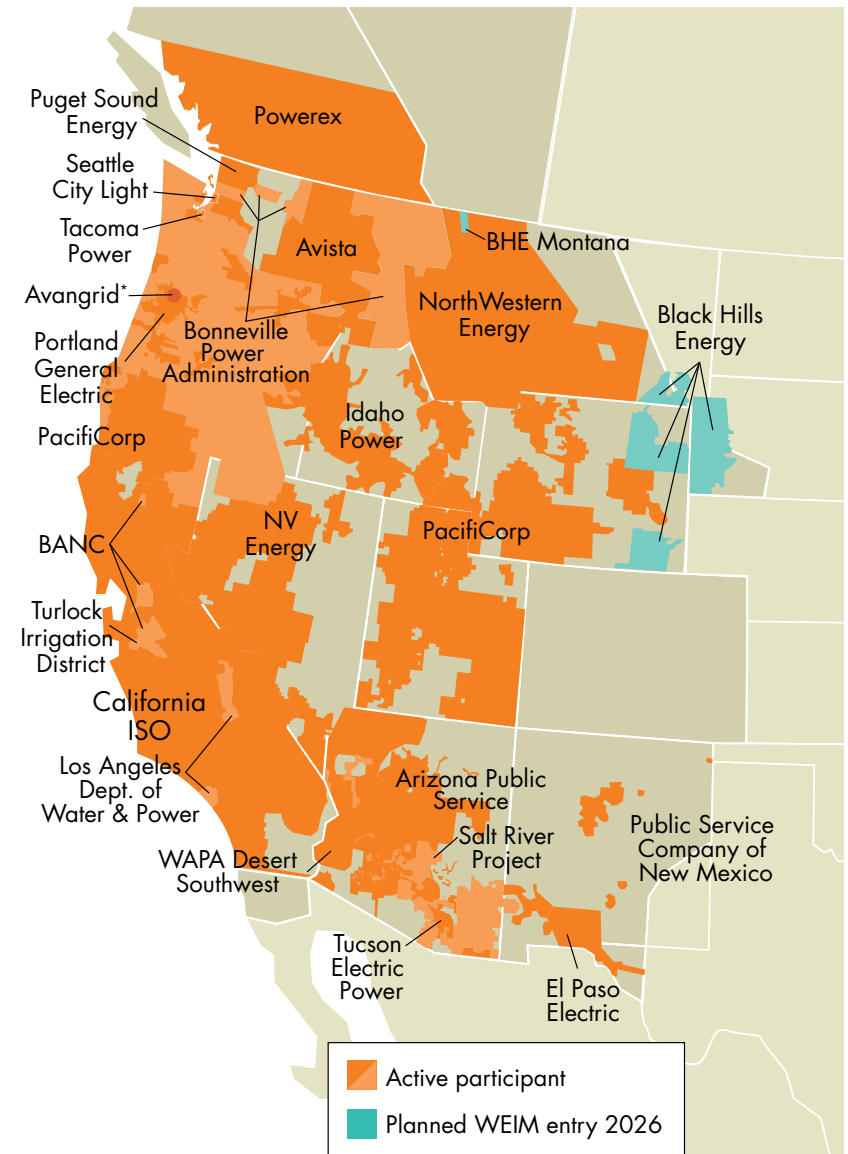
Strategic context

Organized energy markets are critical to our ability to provide reliable service given the growing impacts of climate change along with the increased uncertainty of resources and loads on the grid. Expanding these markets over a larger footprint allows for the participation of a wider variety of resources, including the renewable and storage resources needed to advance state, regional, and federal clean-energy goals.

At the time leading up to the Plan, the WEIM was well established and had built a strong record of success. When this Plan was being drafted, the WEIM already had 19 participating balancing authorities West-wide, and had resulted in \$2.39 billion in market benefits. Since then, this has grown to \$6.62 billion in benefits and 21 participating balancing authorities outside of the CAISO across 11 states that represent 80 percent of the load in the Western Interconnection. Two additional balancing authorities, BHE Montana and Black Hills, are joining in 2026.

The growth in benefits and expansion of the WEIM footprint signaled interest in broader participation in the day-ahead market that extends beyond the ISO balancing authority area. The Plan, appropriately, includes the goal of broadening the reach of an enhanced day-ahead market platform to the Western region, while continuing to enhance the market platform and demonstrate its economic and reliability benefits.

The ability to optimize resources and load across the larger footprint in the day-ahead timeframe offers greater opportunities for all participants to provide more reliable and cost-effective solutions.



*Avangrid office; generation only BAA with distribution across multiple states. Map boundaries are approximate and for illustrative purposes only.

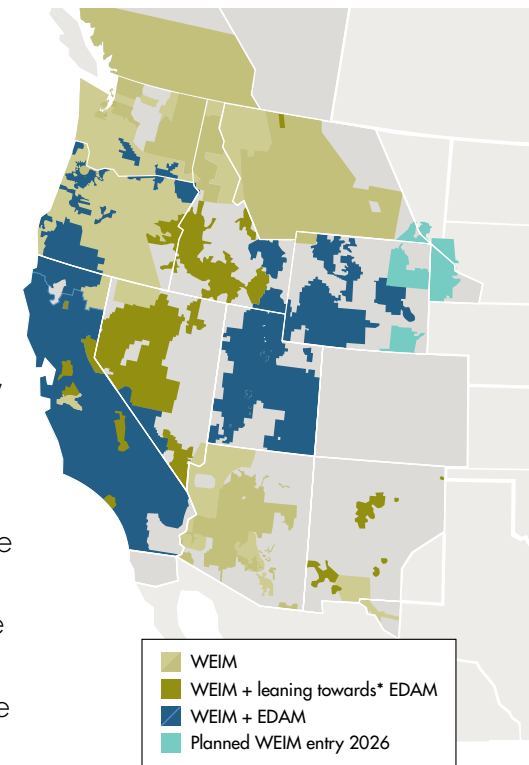
To attract participants in the day-ahead market required some enhancements to the current platform. These enhancements will unleash the benefits of a day-ahead market in meeting not only expected load, but also uncertainty around supply and demand as California and the greater West continue to see an influx of new technology and resources.

In addition, increased use of non-traditional resources such as storage and distribution level energy requires us to enable these new technologies to integrate into the market effectively. Finally, recognizing the growing participation of market entities, the cost and impact of complex and frequent changes to market design, the Plan included the requirement to effectively prioritize and sequence market design enhancements as cost-effectively as possible.

Key achievements

- Four participants have joined WEIM since this Plan was established and two more will enter in 2026.
- WEIM market benefits grew from \$2.39 billion when this Plan was drafted to current cumulative benefits of \$6.62 billion, more than doubling in just over two years.
- In each of the past three years, the WEIM demonstrated its reliability benefits when different parts of the market were able to send energy to areas experiencing tight supplies due to extreme weather events, helping to maintain reliability market-wide.
- Earned full FERC approval of EDAM tariff changes.
- There are executed EDAM implementation agreements with PacifiCorp, Portland General Electric (PGE), the Balancing Authority of Northern California (BANC), and Los Angeles Department of Water and Power (LADWP).

- In addition to the executed agreements, Idaho Power, NV Energy, BHE Montana, WAPA Sierra Nevada and Public Service New Mexico have expressed public intent to join the market.
- Proven track record of benefits, growing relationships and influence across state agencies and the West, and leadership in coordinating “The Impacts on California of Expanded Regional Cooperation to Operate the Western Grid” report in response to Assembly Concurrent Resolution 188. This paved the way to explore ways to optimize the benefits of EDAM across the West, including the West-wide Governance Pathways Initiative, while assuring resource adequacy and reducing wholesale electricity costs.
- ISO Board and WEM Governing Body approved the Step 1 recommendation of the Pathways Launch Committee, which would further transform governance by elevating the Governing Body’s decision-making authority over matters applying to WEIM and EDAM.



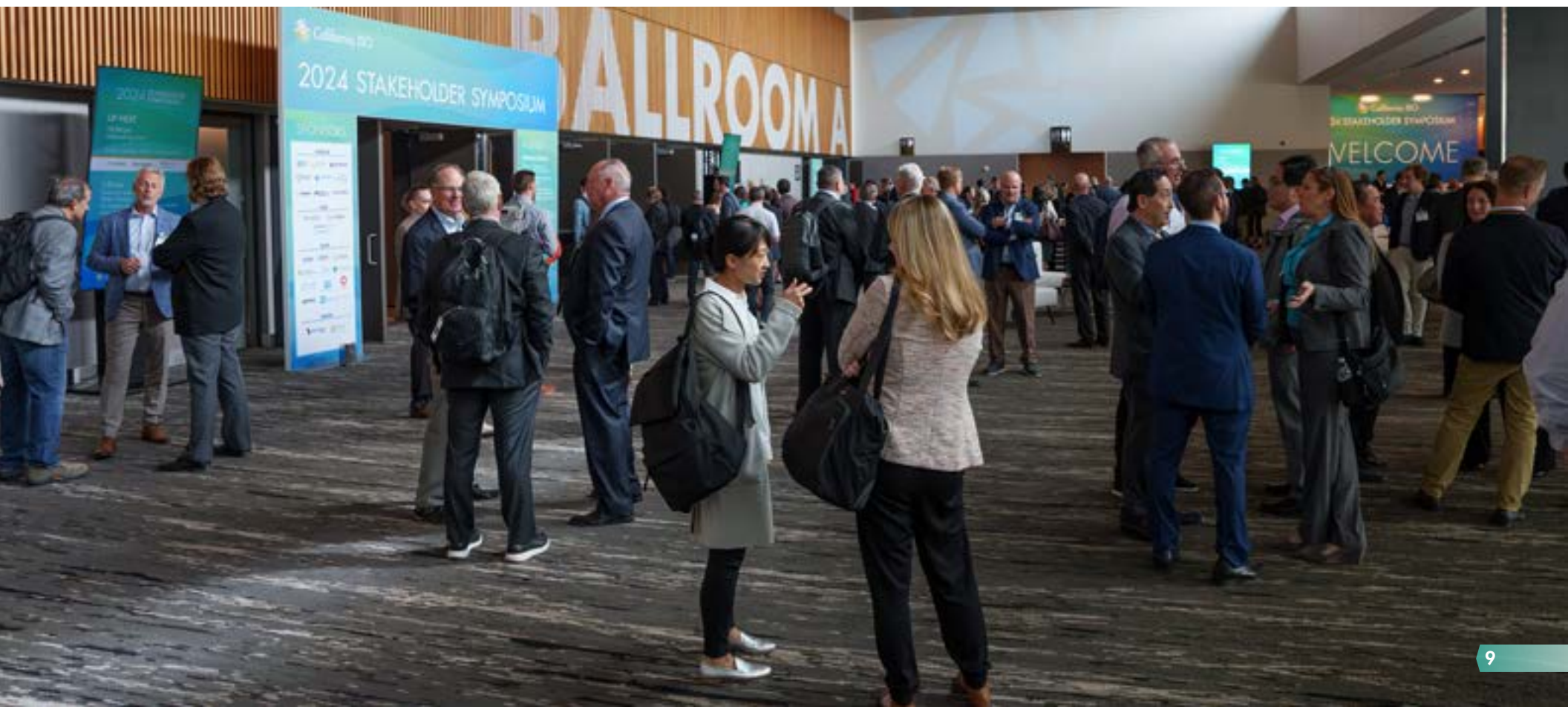
**These entities have publicly indicated a leaning towards EDAM as their preferred day-ahead market.*

- Implemented the working group model to enhance engagement with stakeholders in development of policy initiatives, specifically targeting, in addition to EDAM and interconnection topics, key price formation issues such as scarcity pricing, market power mitigation, fast-start pricing, and storage-related items.
- Improved visibility into greenhouse gas emission rates by publishing average emissions data for 2022 and 2023, and monthly reports for 2024.

More to do

- Implement EDAM and day-ahead market enhancements on time and within budget.

- Continue to support and help enable the Pathways Initiative, assess impacts on the ISO, and provide technical expertise to the Pathways Formation Committee.
- Continue to evolve the working group model while integrating effective prioritization and efficient sequencing of the most impactful initiatives of interest to stakeholders.
- Continue to engage with stakeholder working groups on solutions for key price formation topics as stated above.
- Ensure the availability of models to accommodate emerging technologies and evolve the market design to achieve the most reliable and economically efficient dispatch of resources.



4:

PROVIDE HIGHLY RESPONSIVE AND INCLUSIVE STAKEHOLDER ENGAGEMENT AND CUSTOMER SERVICE

Strategic context

Recognizing growing participation in the ISO's markets, we understand the need to support a broader range of stakeholders, including our direct customers, regulatory bodies, government agencies, associations and advocacy groups within California and across the West.

Our goal continues to be to build trust through transparency and collaboration while striving for the development of mutually beneficial solutions in a robust and inclusive stakeholder process. We aim to provide easily accessible, clear and relevant information to help all stakeholders make informed decisions, ensure customer readiness and deepen the understanding of the reliability needs of the grid.

Another component of this objective was to increase engagement with world-wide experts and similarly situated organizations to share innovative strategies. This acknowledges the value of collaboration with US-based national labs, universities, and institutes, as well as a variety of international engagements, to share technical expertise and learn from worldwide experts on issues such as the integration of renewables, transmission infrastructure development, and the optimization of inverter-based resources.

At the same time, we are focused on maintaining financial discipline to benefit our customers while continuing to position the organization for sustained success.

Key achievements

- Deployed improvements to our processes for managing customer inquiries to improve responsiveness and timely issue resolution

resulting in fewer software defects and an overall improved delivery to customers.

- Developed and delivered four resource performance/operations training sessions to enhance knowledge in preparation for summer operations. Session topics included: resource performance expectations, battery operations, managing intertie transactions and WEIM resource performance expectations.



- Evolved the ISO's process for policy and market design by adopting a working group methodology that has expanded stakeholder engagement, resulting in greater stakeholder-driven outcomes.
- Conducted a survey and focus group in collaboration with Regional Issues Forum members for feedback to continuously improve the ISO's stakeholder processes.
- Enhanced transparency for stakeholders by providing data improvements to high volume reports, e.g., Solar and Wind Peaks, Natural Gas Supply and Emissions, Plant Information (PI) Web

services to improve forecasting and data quality on OASIS as well as an OASIS bulk data download capability for historical research.

- Hosted successful in-person Stakeholder Symposiums in 2022 and 2024.
- Launched new CAISO.com website to better inform the public of the evolving work of the CAISO and provide timely information on a more agile platform. The new website has been well-received and the team continues to refine important elements of the site.
- Enhanced our content strategy and public outreach by increasing the frequency of timely blogs, launching engaging podcasts, boosting our social media presence with diverse posts, and issuing more news releases. This multi-format approach ensures we effectively reach and inform a broad audience.
- Since launching the Strategic Plan in 2022, we have expanded our international outreach to share and exchange technical knowledge on integrating renewables and emerging grid technologies, including reliable operations with the rapid growth of more inverter-based resources:
 - Through our engagement with GO15, an association of Grid Operators serving more than half the global load, we have sent our own subject matter experts (SMEs) to share technical expertise with their international peers.
 - Our SMEs have engaged in more than ten one-on-one international technical exchanges to share knowledge on addressing challenging operational issues, bringing key findings back to the ISO.
 - We have hosted more than 40 international exchanges in person and remotely with teams operating in nearly 20 countries, including Australia, India, Japan, several European nations, and countries in Africa and South America.
 - Through the ISO/RTO council, we have also sustained discussions with the Alberta Electric System Operator (AESO) and the Independent Electricity System Operator (IESO) in Canada.
 - Established our first relocation exchange program, sending an operations SME to Terna, Italy and an infrastructure planning SME to the Australian Energy Market Operator (AEMO) for about two months in exchange for one of its SMEs to share knowledge on accommodating larger fleets of inverter-based resources on the grid.
- We have also provided technical advisory services and knowledge-sharing on the integration of renewable resources to universities, national laboratories, and energy institutes, many of these to support US Department of Energy-funded projects. These included collaborations with Pacific Northwest National



Laboratory, Argonne National Laboratory, National Renewable Energy Laboratory, Stanford University, Carnegie Mellon, UC Berkeley, Sacramento State University, Arizona State University, the Ohio State University, University of Wisconsin, the Edison Electric Institute, and the Energy Systems Integration Group.

- During the Summer of 2024, we completed a joint study with the Electric Power Research Institute (EPRI) on advancing interconnection requirements for inverter-based resources to optimize their services on the grid.
- Operated consistently within budget, while addressing items that were not planned nor budgeted for during the budgeting cycle, often using surpluses from efficient cost-management practices to address additional needs in other areas.
- Received stakeholder and FERC support to increase revenue requirement cap from \$202 million to \$250 million by 2026 to allow for strategic investments.
- Achieved zero compliance violations in 2023 and had two in 2024.

More to do

- Update WEIM participation portal to include EDAM.
- Survey of communication quality, brand.
- Update communications plan.
- Rebuild westerneim.com and flexalert.org.
- Continue to evolve our stakeholder process.
- Multi-year effort to build a Certification Training Program for customers.
- Provide customers earlier visibility into external impacts of projects through improved change management.
- Develop and implement modern data and analytics infrastructure to both improve data access and quality, and prepare for an AI future.



5:

CREATE A FLEXIBLE AND ADAPTIVE WORK ENVIRONMENT THAT RETAINS AND ATTRACTS A HIGHLY SKILLED AND ENGAGED WORKFORCE

Strategic context

The pandemic was winding down as this Plan was being developed, but it was still a major driver in transforming how we thought about our work environment. More specifically, flexible working conditions were required to protect the health and safety of our people and the global workforce overall, and we learned that we could be productive in hybrid or fully remote environments. While the pandemic created tremendous challenges, particularly in competition for talent, the ISO responded by embracing flexibility and thereby widening our reach in securing highly qualified new employees. This flexibility also improved our ability to retain existing employees.

Notwithstanding this change in our work policies, the ISO has continued to make meaningful progress in delivering a positive and productive work environment by maintaining our focus on cultivating a diverse, equitable, and inclusive culture.

Key achievements

- Implemented the Personal Choice Flexible Work Policy to accommodate both remote and hybrid work options, and updated it to provide for standard computing packages for all employees' remote offices. This brought consistency to our computing assets and decreased the time to deploy new hires and strengthened business continuity.

- Implemented several programs resulting from the 2022 employee engagement survey and 2023 pulse check survey, including: enhanced leadership development curriculum and coaching infrastructure, increased focus on leadership accountability for demonstrating desired behaviors, engagement action planning, and instant recognition opportunities through a new tool. In 2024, all people leaders participated in a leadership 360 assessment and received feedback along with an individual development plan. Also, a new 360 feedback module will be rolled out in 2025 so leaders can receive ongoing feedback and track progress.
- Deployed onboarding improvements to bring efficiencies to administrative steps, accommodate remote hires, and readily issue equipment for new employees, as well as bringing them on-site during their first week, with guidance to managers on how to enrich their onboarding experience.



- Hired a leader for our Diversity, Equity, and Inclusion efforts and produced a DEI strategy, with goals and programs to sustain a work environment and culture reflective of the diversity in the world around us.

- Deployed programs to strengthen CAISO safety culture focused on employees on and off-site, including training and awareness programs on topics such as workplace violence, ergonomics, emergency preparedness, first aid and CPR, and reinforcement of reporting safety issues without fear of retaliation.

More to do

- With a more geographically dispersed workforce, an optimal employee experience requires greater effort by the ISO to ensure employees are experiencing an inclusive culture, and an understanding of how they directly impact the success of the ISO with high levels of engagement. This will require ongoing efforts, particularly by our first-line leaders who form the primary relationship with each employee. Improved engagement survey results, high levels of employee retention and positive employee sentiment on culture, equity, and inclusion, and workplace flexibility will be monitored as indicators of success.
- Our diversity, equity and inclusion practice has varying levels of maturity and our work will be ongoing. We will monitor our ability to attract and retain diverse top talent while also tracking employee sentiments on culture, equity and inclusion.
- Developing and advancing strong leaders will also continue during this strategic plan cycle and beyond. We will use our succession plans to identify potential leaders and deploy targeted training and development to prepare for smooth transitions and limited disruption to business continuity.
- Further develop company-wide breadth and depth of technical subject matter expertise to assure we always have sufficient support for our customers, stakeholders and staff.

Cultural Values

Integrity

Accountability

Service

Humility

Resilience

CULTURE

IN SUMMARY

Working with our partners and stakeholders while remaining true to the strategic objectives in this plan, we have accomplished a great deal in just a few short years. Soon, we will turn our attention toward our next five-year planning horizon as we examine and articulate what the California ISO needs to achieve by 2030. We will leverage the momentum of our shared accomplishments, continue to adapt and evolve WEIM and EDAM and fully embrace the challenges of a grid that is likely to modernize at a faster rate

than many of us can imagine, especially with the advent of artificial intelligence and machine learning. We will continue to build on the valued partnerships across the West to leverage the tremendous diversity of resources, skills and capabilities needed for a reliable, cost-effective and environmentally sustainable grid.



TRANSITION