

STRATEGIC PLAN 2022-2026





WHO WE ARE

The California Independent System Operator (ISO) was established in 1997 as a non-profit, public-benefit corporation. We maintain reliability and provide open access to the transmission system covering approximately 80 percent of the state of California and a small portion of Nevada, meeting the energy needs of 32 million customers.

Through collaborative, innovative and efficient market design and grid planning, the ISO plays a crucial role in helping California achieve its goal of a carbon-free power system by 2045. Our multi-state, real-time Western Energy Imbalance Market (WEIM) also provides utilities in the West a platform through our sophisticated technology to efficiently share resources, helping provide the lowest cost power to customers and reduce greenhouse gas emissions. Since 2019, the ISO has also been providing reliability coordinator (RC) services for much of the Western United States.

A MESSAGE FROM THE PRESIDENT & CEO

On behalf of the people of the California Independent System Operator, I am pleased to present our new 2022-2026 Strategic Plan. Before I discuss the strategy, however, I'd like to touch on culture, because without a vibrant culture, the California ISO would not be able to deliver on its strategy or vision.

In 2021, I worked with our leadership team to take a fresh look at the ISO's values. Those we ultimately identified — integrity, accountability, service, humility and resilience — speak directly to who we want to be as an organization. At heart, we are a public service entity committed to meeting our important responsibilities in accordance with the highest ethical standards. And we do so while engaging collaboratively with our diverse customers and stakeholders to take on the unprecedented challenges and opportunities facing our industry.

Consistent with our values, we have worked with our Board of Governors, the Western Energy Imbalance Market Governing Body, and a broad range of customers and stakeholders within California and throughout the West to develop this new Strategic Plan.

The Plan will serve as the central organizing principle for the ISO and guide the priorities of our internal and external efforts over the coming years. The Plan will also support our work to deploy human and financial resources as efficiently as possible and ensure we are meeting the most pressing needs of our customers and stakeholders in California and throughout the region. And it will help us continue to retain and attract a highly skilled and engaged workforce through a flexible and individualized approach to remote work in a post-pandemic world.



If we are successful in achieving the strategic and tactical goals described in our Plan, we will move a big step closer towards achieving the ISO's vision of operating the world's most reliable, cost-effective and environmentally sustainable power system.

My great appreciation goes out to the many people who helped prepare and refine the Plan. My thanks in advance for helping us see it to fruition.

Sincerely,



Elliot Mainzer
President and CEO
California Independent System Operator



2 OPPORTUNITY

INTRODUCTION

The electricity industry is undergoing a profound transformation. Along with other states across the West and nation, California is transitioning to a cleaner electric grid to mitigate the impacts of climate change and meet the need for a reliable, cost-effective and environmentally sustainable bulk electric system. As the fifth largest economy in the world, the sheer size and scale of California's transition presents unique challenges and leadership opportunities.

The state's high point for peak demand is about 50,000 megawatts (MW). California is projecting the need for up to an additional 120 gigawatts (120,000 MW) of clean power over the next two decades to meet future demand and decarbonize the grid as required by Senate Bill 100. By more than doubling its resource mix to accommodate very significant projected growth in the electrification of transportation, building and other industries, and to offset the retirement of conventional fuel resources, California is undertaking a sweeping makeover of its electrical system. Hence, our new strategic framework for the ISO.

Over the past decade, the ISO has integrated more than 21,000 MW of renewable energy on to the grid and has the highest concentration of battery energy storage in the world. And during the last several years, as climate change impacts have become more pronounced, California has been accelerating the pace of resource development, ordering the procurement of unprecedented amounts of sustainable, carbon-free energy. The ISO's operating environment is also undergoing a period of rapid and fundamental transformation driven by climate change and the far-reaching policies enacted to mitigate it, our evolving resource

mix, market evolution and a growing recognition that regional coordination is needed to enhance efficiencies and reliability. We are also being affected by rapidly changing technology and the ever-present possibility of unforeseen external events such as wildfires or the COVID-19 pandemic.

Successful management of this unprecedented transition requires us to look very carefully toward both the short and the long term. The short term because we must maintain reliability during the transition to a carbon-free grid, and the longer term because we need to make sound decisions now that will help us reach that destination in the most reliable and cost-effective way. In our first 20-Year Transmission Outlook published in February 2022, we took an extended view on infrastructure needs, identifying a proposed baseline architecture for the transmission network of 2040. In our new 5-Year Strategic Plan, we focus more on the relative short term and what the ISO must do over the next five years to strengthen reliability today while keeping California on the path to the clean, reliable grid of the future.

Our vision: Operate the world's most reliable, cost-effective and environmentally sustainable power system.

CRITICAL STRATEGIC AND TACTICAL OBJECTIVES

- 1: RELIABLY AND EFFICIENTLY INTEGRATE NEW RESOURCES BY PROACTIVELY UPGRADING OPERATIONAL CAPABILITIES
- 2: STRENGTHEN RESOURCE ADEQUACY AND MEET CALIFORNIA'S SB 100 GOALS THROUGH LONG-TERM TRANSMISSION PLANNING AND EFFECTIVE COORDINATION WITH STATE AGENCIES
- 3: BUILD ON THE FOUNDATION OF THE WESTERN ENERGY IMBALANCE MARKET TO FURTHER EXPAND WESTERN MARKET OPPORTUNITIES
- 4: PROVIDE HIGHLY RESPONSIVE AND INCLUSIVE STAKEHOLDER ENGAGEMENT AND CUSTOMER SERVICE
- 5: CREATE A FLEXIBLE AND ADAPTIVE WORK ENVIRONMENT THAT RETAINS AND ATTRACTS A HIGHLY SKILLED AND ENGAGED WORKFORCE

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

The ISO has adapted to a significant amount of industry change over the past decade. We must continue to proactively adapt operational capabilities to enable and accommodate a changing resource mix. To do this, it is essential that we anticipate changes while quickly understanding and efficiently integrating emerging technologies. We must identify and adopt processes and tools that help us evolve and operate at our top capabilities. Staying ahead of the curve is crucial, otherwise, we face the very real consequences of major power disruptions in a vast economy increasingly reliant on electricity. And because no one can be sure how different technologies will continue to evolve, it is important to maintain flexibility to adapt as technologies change and, for instance, the role of distributed energy resources, progresses. To proactively adapt our operational capabilities, we believe the following strategies are critical:

A. Modernize tools that support control center operations

To continue meeting customer demand in real-time, we must take advantage of advances in technology to continuously evolve the grid and respond to the rapid pace of change in the energy industry and world around us. The tools our operators use to balance demand for energy with supply must be intuitive and make the most of automation. Additional and advanced tools are essential to prevent information overload and increase situational awareness.

))) **Indicators of success:** Better decision-making with streamlined processes and automation; increased situational awareness and reduced information overload for system operators; enhanced forecast information within the ISO market and operations; fewer out-of-market actions.

B. Ensure that our mission-critical information technology platform is secure, scalable, and resilient

We must continuously enhance our technology platform to ensure it is secure, scalable, and resilient — able to meet the needs of an increasingly electrified, distributed environment where data processing demands and vulnerable parts of that environment grow exponentially.

This will require us to look further ahead on the planning horizon to ensure we have the necessary technology to improve all aspects of the ISO's business. Artificial intelligence and machine learning will play an increasingly important role as the energy industry continues its trend towards more complex and distributed systems. We envision a future where we can leverage even greater



amounts of information to support complex modeling, forecasting, and simulations that can help us respond to uncertain events. And we believe the advancements seen today in cloud computing, data storage and encryption are a harbinger of future possibilities.

» **Indicators of success:** Enhanced ability to prevent and defend against cyber-attacks; enhanced data quality and consistency; minimized system downtime.

C. Increase coordination with distribution system operators

In California and other states, distribution utilities already face many of the same planning and operational challenges the transmission system has long experienced. With forecasted dramatic increases in electricity demand and distributed energy resources such as rooftop solar and residential energy storage, we are likely to see the development of distribution system operators (DSO) to better manage these local resources and

impacts. Reliable operation of the overall grid will depend on effective coordinated planning and seamless interaction between the ISO and DSO. This will require the development of communication protocols, visibility tools and commercial interfaces between the two systems to enable reliable operation of resources at the distribution level as well as efficient access to the ISO's wholesale markets for resources interested in such participation.

» **Indicators of success:** Improved communication and coordination between the transmission and distribution systems, including across state boundaries; a more clearly defined operational and commercial interface between the high-voltage transmission system and DSO; increased participation of distributed energy resources in the ISO's wholesale energy market.



2: STRENGTHEN RESOURCE ADEQUACY AND MEET CALIFORNIA'S SB 100 GOALS THROUGH LONG-TERM TRANSMISSION PLANNING AND EFFECTIVE COORDINATION WITH STATE AGENCIES

Senate Bill 100, signed into law in September 2018, established as state policy a requirement that 100 percent of retail electricity sales come from carbon-free sources by 2045. As we continue working with state agencies to further diversify our resource mix, we must also ensure we have the necessary transmission infrastructure to efficiently deliver all that clean power reliably and cost-effectively to California and regional consumers and businesses. The California Public Utilities Commission's (CPUC) latest preferred system plan calls for an additional 43,131 MW of power over a 10-year period, highlighting the need for a more efficient system of planning, siting and constructing new transmission capacity to deliver that power. This second strategic objective lays the groundwork for optimizing infrastructure development with the following imperatives:

A. Ensure development of long-lead transmission plans that meet policy goals reliably and economically

Although it remains unclear precisely how much additional transmission capacity will be required and where, development and deployment of resources needed to achieve a carbon-free electricity system will unquestionably require significant additional transmission infrastructure. The ISO's long-term transmission planning process currently extends over 10 years, but we have recognized that will not be sufficient to meet the challenges of 2045. That is why we have embarked on an effort to look ahead 20 years to meet longer-term policy goals reliably and economically. Transmission projects with long lead times must be identified in the immediate short term so steps towards their development are advanced and the opportunities they present acted on in a timely manner.

))) **Indicators of success:** Identification of infrastructure needed to achieve policy goals; consistent progress towards having the necessary infrastructure to decarbonize the grid reliably by 2045.

B. Reimagine grid interconnection, prioritization, and coordination processes

A key component of our mission is to be an open-access transmission provider, which entails effectively managing the interconnection queue. In recent years, this has become a bigger challenge as an overwhelming number of projects have sought interconnection to the transmission system. Today's interconnection procedures must be reimaged to meet the



scale of current and anticipated infrastructure development. The processes used to plan, site, permit, finance and build transmission and other essential infrastructure demand greater coordination and proactivity. Bottlenecks and unnecessary delays need to be eliminated, and sequencing of planning and procurement better synchronized.

» **Indicators of success:** Streamlined interconnection queue process; using the [20-Year Transmission Outlook](#) process to enable more proactive coordinated planning with state agencies and stakeholders; improved coordination between integrated resource planning, transmission planning, power procurement and generator interconnection processes; timely interconnection of new resources and state procurement targets; resource replacement objectives met reliably and on schedule.

C. Sharpen the ISO's resource adequacy strategy and clarify priorities for engagement in CPUC and California Energy Commission (CEC) policy processes

In California, resource adequacy (RA) policy responsibilities are distributed between state agencies such as the CPUC and CEC, other local regulatory authorities and the California ISO. In addition to our core responsibilities around transmission planning, the ISO has a number of important tariff responsibilities regarding the evaluation of resource showings, establishing baselines for demand response resource performance, and setting local and system resource adequacy requirements. Clarifying our analytical approach and regulatory strategy on each of these elements, aligning them as much as possible with state policies and engaging effectively in other state processes that impact overall reliability in California will be a central focus of the ISO over the next few years.

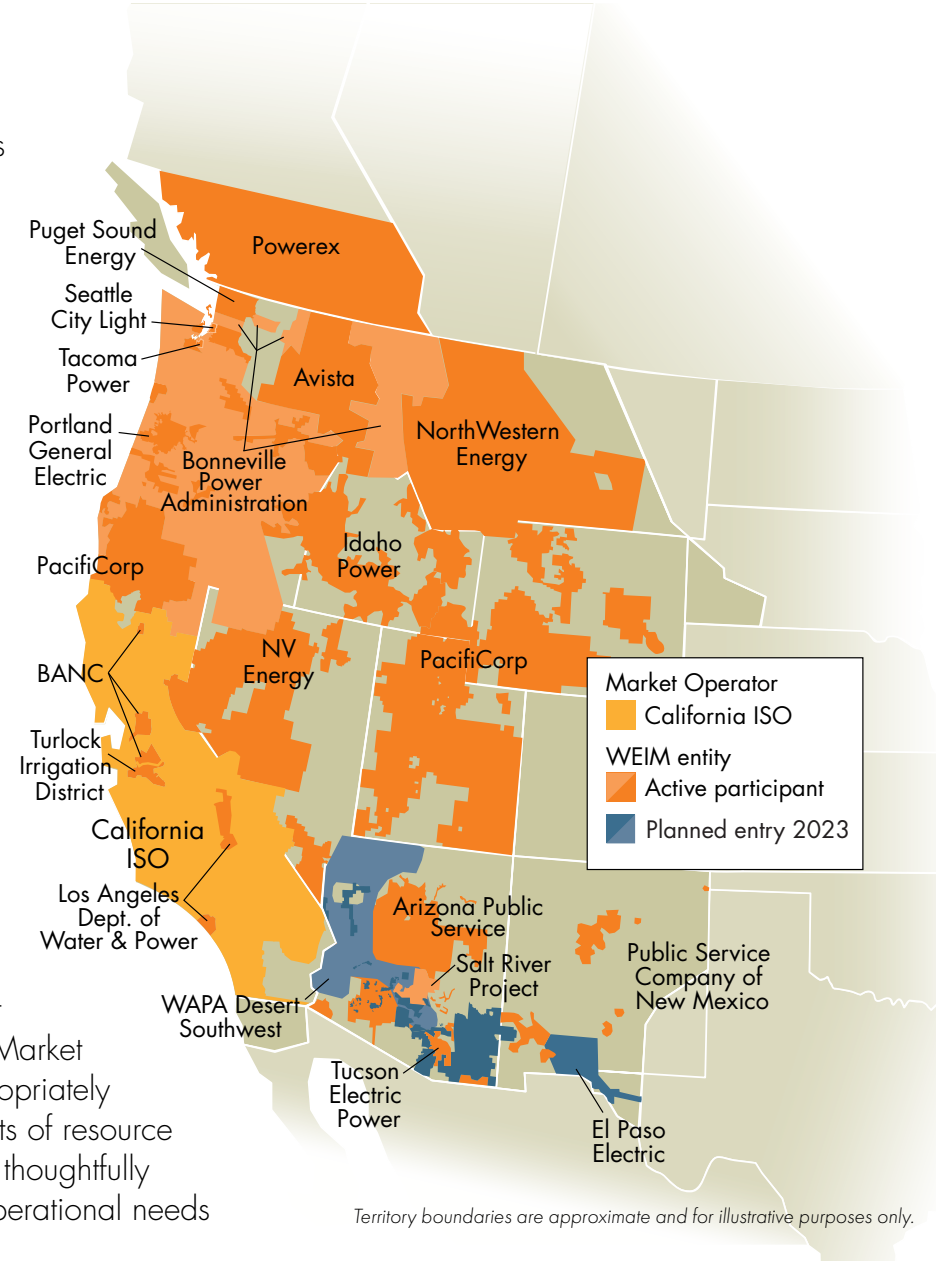


» **Indicators of success:** Greater clarity, less complexity and better coordination and harmonization between the ISO and state-level resource adequacy programs; improved processes to measure reliability impacts of resource planning, procurement, and resource counting decisions; reduced reliance on extraordinary measures to balance grid needs, including rotating outages, reliability must-run contracts and use of backstop procurement authority; greater stakeholder and market participant satisfaction related to interacting with the ISO's resource adequacy rules.

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

Fostering long-term and mutually beneficial relationships with neighboring utilities and states is critically important to a cost-effective and reliable clean-energy network. The electric grid is interconnected. We have become increasingly dependent on the diversity of clean resources and weather patterns affected by climate change. We are actively exploring regional market opportunities beyond the scope of our highly successful real-time Western Energy Imbalance Market, (WEIM), launched in 2014 to achieve greater optimization of grid-related resources in California and the broader West. Included in those opportunities is the ISO's current initiative to establish a day-ahead market across the broader West over the next several years. Benefits that have accrued to ISO customers and all WEIM participants have helped to build trust in the belief that expanded mutual benefits are possible through greater collaboration and market integration. Keeping that trust requires the ISO to continue demonstrating strong leadership in innovation and coordination and for governance to continue to evolve as the market evolves. Extending the regional market's advantages to a wider and more collaborative Western footprint is embedded in our overall vision, as we know from experience states in the West do better in achieving their own energy policy objectives when we work together on shared challenges and opportunities.

The ISO's market provides a sound framework for pricing energy and ancillary services. The WEIM served as a solid starting point for integrating renewable resources and supporting coordination across much of the West. But the market needs to evolve with changing operational imperatives and stakeholder input. Market prices should reflect scarce and constrained conditions on the system and appropriately compensate resources for the services they provide, while balancing the interests of resource providers and end-use customers. Additional changes to the market will require thoughtfully sequenced modifications and greater alignment of market dispatch with grid operational needs to reduce out-of-market actions.



The following strategies are critical to our mission of operating a reliable, openly accessible power system through collaborative, innovative, and efficient market design that is beneficial to all market participants:

A. Extend the ISO day-ahead market to participants across the West and pursue additional opportunities for regional coordination

The same market and operational conditions that affect the ISO create similar challenges and opportunities for our partners in the West. The WEIM continues to help us collectively mitigate some of these challenges in real time — including resource variability and extreme weather events — while providing benefits that bring significant cost savings, reductions in greenhouse gas emissions and efficient integration of a growing fleet of renewable resources. The ISO remains committed to ongoing collaboration and believes expansion of our partnerships in the West is the best path towards collective regional success while continuing to meet our responsibilities to California.

))) **Indicators of success:** Developing and implementing the ISO's Extended Day-Ahead Market (EDAM) with appropriate governance changes; identifying and pursuing opportunities for additional regional coordination; EDAM participation by a large number of WEIM members; increased benefits to a broad range of participants beyond those realized from WEIM.

B. Effectively prioritize and sequence market design enhancements

Expansion of the WEIM has helped engender increased awareness and confidence in the benefits of wholesale markets across the West. Building on this momentum requires continued

adaptation and responsiveness to the needs of diverse market participants and other stakeholders as well as a search for win-win, regional solutions. As we adapt our market to address changing needs, the ISO is committed to driving for simple, straight forward and easily understood solutions that assure the equitable treatment of all market participants.

))) **Indicators of success:** Simplification and standardization of market design; improved sequencing of market enhancements; decreased schedule variance between planned and actual delivery of market enhancements; improved customer readiness to implement market enhancements.

C. Enable new technologies through efficient market rules and interfaces

The ISO's mission includes the reliable operation of an openly accessible power system through a market that includes a diverse range of technology choices while allowing different resources to compete and deliver energy at the lowest cost possible. We anticipate and welcome increasing diversity among market participants and will continue to foster a power system that supports all who are capable of participating at the wholesale level. To do this, we need concise market rules that carefully consider the most efficient way to integrate new resources into the power system while reducing complexity and allowing for scalability.

))) **Indicators of success:** Increased opportunities for emerging technologies to participate in the wholesale market and in the operation of the transmission system; increased diversity of resource mix.

4: PROVIDE HIGHLY RESPONSIVE AND INCLUSIVE STAKEHOLDER ENGAGEMENT AND CUSTOMER SERVICE

The needs and concerns of our customers and stakeholders are foundational to everything we accomplish at the ISO. We are also acutely aware that we must be fully engaged with a much broader group than simply those who participate in the California ISO's market. They include all of our direct customers, regulatory bodies, government agencies, associations, advocacy groups, and the people of California and the broader West we collectively serve. To meet the needs of this large, diverse group most effectively, the following strategies are critical:

A. Foster broad stakeholder trust through transparency, collaboration and mutually beneficial solutions

Our stakeholder community and customer base have expanded considerably over the past decade. It is imperative that we strengthen our engagement with stakeholders and continue to build trust with many more interested parties and constituents to fulfill our mission and achieve the objectives in this plan. We must provide a transparent view of our decisions, actions and activities to enable, support and contribute to a reliable, cost-effective and environmentally sustainable electric sector. These steps will also solidify our standing as a global leader known for consistently purveying intellectually honest information, allowing the ISO to share ideas with the best and the brightest in the energy industry throughout the region and world as we collectively transform the electrical grid.

»» **Indicators of success:** Improved customer satisfaction; collaboration with a broad spectrum of stakeholders to identify and implement mutually beneficial solutions; continued

improvement of trust through openly and honestly working through difficult issues; regular and meaningful outreach and communication with key leadership and elected officials inside California and throughout the West.

B. Provide highly accurate, easily accessible, clear information to ensure customer preparedness and to deepen understanding about the reliability needs of the grid

The electricity landscape in the West is a complex interaction of many systems and entities. More than 150 core transmission and generation companies participate in the ISO market. It is essential that we provide transparent, accessible information about the state of the system and prices for this large, diverse group of customers



to participate effectively. As we enter this next period of energy industry evolution, we will need to proactively and nimbly adapt, along with our customers. That requires the ISO to provide accurate and easily accessible information our customers need to successfully adopt the enhancements that we develop together through our collaborative stakeholder processes and to help ensure reliable and efficient delivery of electricity throughout the West.

Using our considerable convening power and independence to work inclusively through difficult and complex issues, we will increase our visibility and responsiveness to stakeholders. This includes leveraging our relationships with peers across the world to help turn the challenges ahead into opportunities. Timely, clear, and consistent communication that is complementary to our Corporate Communications Plan will be the baseline, as we continue to work with our customers and stakeholders to take all necessary steps to meet evolving demands and their concerns.

»» **Indicators of success:** Transparency of market information and grid conditions; increased accessibility of data and communications; responsiveness and resourcefulness in addressing customer needs; meaningful communications tailored to the intended audience; increased engagement with worldwide experts to share innovative strategies; enhanced reach and effectiveness of social media channels.

C. Ensure rigorous information-driven decision making across the ISO

It is our vision to operate the world's most reliable, cost effective and environmentally sustainable power system. That includes bringing the reliability, economic, and environmental benefits of an integrated electricity market to California and the broader West, which assumes expansion of our market, customer base, and service offerings to meet the needs of disparate participating entities. This expansion, coupled with exponential technological

growth, promises to also deliver massive quantities of information that the ISO must leverage to inform how and when it needs to evolve. This brings with it the opportunity for the ISO to enhance our ability to efficiently read any and all market signals so we can quickly adapt and embrace supporting innovation.

»» **Indicators of success:** Accurately predicting magnitude and direction of changes to supply, demand, and price volatility; transparent data in market design decisions; improved quality of forecasts associated with supply, demand, and price volatility; enhanced ability to quantify uncertainty and manage risk.

D. Maintain customer confidence through continued disciplined cost management and strategic investments

Cost management is very important to our customers as well as the broader stakeholder groups we serve. Continued fiscal discipline across the energy sector will be a key performance measure in successfully achieving energy policy goals. Because of the significant changes we are all facing that have been highlighted in this plan, there will also be a need for additional resources. Fortunately, we have a long history of adapting to major change in innovative ways that allow us to bear these costs so they do not have a significant impact on our customers. As we move forward and address continuing challenges of the energy transition, our strategy will continue to be anchored around disciplined growth in our revenue requirement to support strategic investments.

»» **Indicators of success:** Maintaining fiscal discipline; timely and thorough communication with customers around cost management, cost of service, and strategic investments; maintaining responsible spending within Board-approved budget.

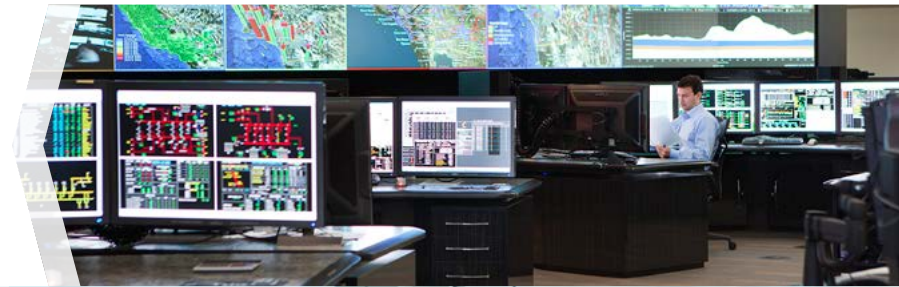
5:

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

Since March 2020, the transformation of the electric power industry has been occurring amidst a deeply disruptive global pandemic that continues to reverberate throughout the world. We have successfully managed our response and performance of the corporate mission through prompt implementation of extensive procedures to protect the health and safety of our employees, including those most essential members of the grid operations and critical technology teams. Despite the disruptions and need to adapt quickly, we have risen to significant operational challenges under severe stress, making the organization even more resilient going forward.

Our business environment has always been fast-paced, technically challenging, and intrinsically rewarding. The years ahead will bring additional challenges, both anticipated and uncertain. Our success in meeting them will require an engaged, highly skilled, diverse and motivated workforce. Conversely, our employees depend on us to foster an equitable, inclusive, and highly flexible work environment that models excellence and responds to their needs and concerns with a more individualized approach.

To achieve the ISO's strategic objectives, a creative and more flexible approach are crucial to addressing human resources challenges and opportunities as the workforce and labor markets evolve through the end of the pandemic and beyond. The following strategies, along with our continuous monitoring and adaptation, are aimed at ensuring we can always attract and retain the diverse, deeply skilled workforce central to the ISO's ongoing success:



RETENTION

A. Foster an equitable and inclusive workplace that models excellence and the ISO's cultural values

The organization requires diverse talents, experiences, backgrounds and skill sets to identify and carry out creative solutions in a world where change is constant and greater value is being placed on workplace flexibility. To retain and attract a talented and diverse workforce, the ISO must have a work environment and corporate culture that puts a premium on equity and inclusion, sound values, a world-class employee experience, and strong engagement throughout the organization.

Moving forward in an uncertain future, it is also important that as we continue to adapt, we do so in alignment with the ISO's cultural values. Through continued focus and investment on the employee experience, we can reach ever-higher and continue to fulfill our mission no matter what challenges emerge now and in the years ahead.

»» **Indicators of success:** Retaining and attracting top talent; a diverse workforce reflecting the broader regional community; positive employee sentiment on culture, equity, inclusion and workplace flexibility; increased offer-acceptance rates; employee retention increasing closer to pre-pandemic levels.

B. Cultivate strong leadership and technical competencies

Our healthy support of employee career development and personal goals is a core pillar of our organizational culture and in the achievement of ISO strategic objectives. Helping to train,

nurture and advance strong leaders will improve retention and recruitment while keeping the ISO successful and enhancing its reputation as an organization where the best and brightest in the field are eager to work.

»» **Indicators of success:** Development of strong succession plans; maintaining high engagement levels; positive employee sentiment on career development.

Cultural Values

Integrity

Accountability

Service

Humility

Resilience

CULTURE

CONCLUSION

This strategic blueprint for optimal management of a transitioning electric grid, including our ongoing commitment to collaborative relationships and a world-class workforce, has the ISO well positioned to play an essential role supporting California and the West in meeting their energy policy objectives now and far into the future. In carrying out the strategic objectives in this plan, we will implement operational and technical advancements that help fulfill our vision to operate the world's most reliable, cost-effective and

environmentally sustainable power system. At the same time, we must be nimble and flexible enough to adapt to any and all contingencies that occur, including increased impacts of climate change and circumstances that no one can fully anticipate. Because of our strong organizational culture and the deep expertise and resilience of the ISO's people, we believe the future will be one of greater regional collaboration, achievement, and enhanced reliability.



TRANSITION



California ISO

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