



Resource Adequacy Working Group

Discussion Paper

September 25, 2023

California Independent System Operator

Contents

1. Executive Summary.....	3
2. Background.....	3
3. Proposed Problem Statements.....	5
Problem Statement 1: Overall System Reliability Information	5
Problem Statement 2: Requirements for RA Capacity and Program Tools	6
Problem Statement 3: LRA Resource Adequacy Responsibility & Cost Allocation	7
4. Proposed Principles and Goals for Resource Adequacy	7
5. Proposed Resource Adequacy Working Group Process	9
6. Next Steps.....	10

1. Executive Summary

The California Independent System Operator Corporation (CAISO) is initiating a stakeholder-guided working group to collaborate on enhancements to the Resource Adequacy (RA) program in light of an evolving generation mix, variable supply and demand conditions, and changes to resource planning frameworks in California and the West. The CAISO anticipates the Resource Adequacy Working Group can greatly enhance the quality of market policy design by giving stakeholders a more active role in formulating proposals.

This effort will focus on three key areas: principles, problem statements, and prioritization of issues. The goal is to produce a “Resource Adequacy Action Plan,” containing recommendations for the next phase in which stakeholders and the CAISO will engage in policy development to address the problem statements. The Resource Adequacy Action Plan will inform the issue paper through which we will launch the policy development phase of the initiative to support RA designs that are just and reasonable, reliable, timely, and implementable.

This Discussion Paper outlines concepts to facilitate discussion at the October 5, 2023 working group meeting. It includes draft problem statements and principles in addition to a recommended format for the working group process. The initial problem statements focus on:

- Overall system reliability information
- Requirements for RA capacity and program tools
- Local regulatory authority (LRA) responsibility and cost allocation

This is a springboard for discussion. Working group members are strongly encouraged to bring and present their own problem statements, principles, goals, and process for the RA working group for discussion.

2. Background

Since the inception of the RA program in California in 2006, the RA landscape has changed significantly. First, the generation mix is rapidly shifting toward an increasing reliance on variable, energy-limited, and use-limited resources. In the past, the predominant generation types were thermal, nuclear, and hydroelectric resources that were generally able to produce energy when and where needed given limited constraints on fuel sources. Second, the effects of climate change have become more prevalent in recent years, impacting both demand and supply trends and introducing new risks to the grid. Third, several new load serving entities (LSEs) have emerged, increasing fragmentation from a reliability planning perspective. Notably the California

Public Utilities Commission (CPUC) LRA, the largest LRA in the CAISO's Balancing Authority Area (BAA), was comprised of three LSEs rather than the 37 that exist today. Against this backdrop, other characteristics remain largely unchanged; each LRA is responsible for establishing the Reserve Margin(s) applicable to its LSEs.^{1,2}

The RA landscape in California and in the West continues to evolve. The following key drivers warrant a more holistic review of the CAISO's RA program.

1. A changing climate that contributes to severe weather, high loads, drought, low hydro conditions, and grid risks such as wildfires potentially exacerbate reliability concerns.
2. The rapid transformation to a cleaner resource fleet comprised of intermittent, availability limited, or use limited resources.
3. Tight RA market conditions in California and across the West, resulting in high prices and in some cases an inability to access affordable capacity during critical months.
4. Evolving reliability planning and RA programs in California and in the West, (*i.e.*, reforms at the CPUC in their Integrated Resource Plan (IRP) proceeding and shift to a Slice of Day (SOD) RA framework, as well as the creation of the Western Resource Adequacy Program (WRAP)) require a reexamination of the interoperability of these reforms within the context of the CAISO's RA program and the joint administration of LRA RA programs.
5. Stakeholder feedback and CAISO staff analysis on important enhancements to RA programs and tools at the CAISO to meet the current and evolving grid needs.

To keep pace with these changes, stakeholders are invited to participate in an active dialogue and provide feedback on RA policy with the intent of driving towards consensus on principles, problem statements and a path forward. This will inform next steps on enhancements to the CAISO's RA framework including, potential solutions, and how the initiative should pace and prioritize policy changes.

¹ The ISO's tariff provides a minimum that is only applied if the appropriate Local Regulatory Authority or federal agency has not established a Reserve Margin(s) or to a CPUC LSE if a CPUC Load Serving Entity if the information is not provided to the CAISO.

² AB 209 [Committee on Budget, Energy and Climate Change.] Calls on the California Energy Commission to develop recommendations about approaches to determine an appropriate minimum planning reserve margin for local publicly owned electric utilities within the ISO balancing authority area sufficient to ensure each local publicly owned electric utility is adequately accounting for its contribution to reliability in that balancing authority area.

3. Proposed Problem Statements

The problem statements and supporting sub-issues in this section are a starting point to begin discussions for the Resource Adequacy Working Group. Stakeholders are encouraged to present their own problem statements to working group meetings and to submit comments on proposed problem statements. The goal of the working group is to develop viable, timely, and implementable RA solutions for the CAISO BAA.

Problem Statement 1: Overall System Reliability Information

There is a need for additional consistent, transparent, and timely information on the sufficiency of the RA fleet in the CAISO Balancing Authority Area (BAA).

Without this, there are challenges in:

- **Accessing and communicating the system wide sufficiency of the CAISO BAA in light of the contracted RA fleet; and**
- **Addressing such concerns in a timely and efficient manner.**

Sub-issues:

- **RA Portfolio Evaluation:** A comprehensive evaluation of the sufficiency of the current or expected CAISO BAA RA portfolio in forward time frames (e.g., monthly, yearly, multi-year) does not exist today. Such an assessment would provide the CAISO and stakeholders an understanding of the overall CAISO BAA level of system-wide reliability, LRA contribution to overall system reliability, and the implications of a growing diverse resource fleet.³
- **Non-RA Visibility:** The CAISO has limited visibility into resources not shown as RA.
- **Updating the CAISO's Default Planning Reserve Margin:** The CAISO's default PRM⁴ is outdated and has not kept pace with changes in the RA landscape.

³ The ISO conducts a forward portfolio analysis using the IRP portfolios. However, to date the ISO has not assessed the RA portfolio on a year ahead basis as the entire RA portfolio is only available on a month ahead basis.

⁴ CAISO Tariff Section 40.2.2.1. "For the Scheduling Coordinator for a Non-CPUC Load Serving Entity for which the appropriate Local Regulatory Authority or federal agency has not established a Reserve Margin(s) or a CPUC Load Serving Entity subject to Section 40.2.1(b), the Reserve Margin for each month shall be no less than fifteen percent (15%) of the LSE's peak hourly Demand for the applicable month, as determined by the Demand Forecasts developed in accordance with Section 40.2.2.3."

Problem Statement 2: Requirements for RA Capacity and Program Tools

The CAISO's current requirements for RA capacity and program tools (e.g., outage, must-offer, bid-insertion, and resource performance and availability rules) have not been updated recently in light of evolving market and regulatory structures, and could result in:

- **RA supply not available when and where needed;**
- **Inefficient procurement and investment (e.g. maintenance and capital upgrade) decisions; and**
- **Implementation challenges for the CAISO and market participants.**

Sub-issues:

- **Requirements for RA Capacity:**⁵ It is not clear if the current CAISO requirements for RA capacity are sufficient. For example: 1.) The CAISO does not evaluate the RA fleet for energy sufficiency which could pose a reliability risk to the CAISO BAA, and 2.) As the resource fleet has evolved, the CAISO has not conducted a comprehensive study to assess the overall need for a Flex RA product since the CAISO implemented the Flex RA product in 2015. It is unclear if the currently designed Flexible RA provides reliability benefits commensurate to the administrative burden on stakeholders and the CAISO.
- **Incentivizing Availability:** In light of current high RA prices, the current CAISO mechanism for incentivizing capacity to be available, the Resource Adequacy Availability Incentive Mechanism (RAAIM), may be insufficient and incentivize less reliable generation to be contracted or not provide sufficient signals for maintenance investments.
- **Incentivizing Performance:** The CAISO lacks a mechanism to incentivize RA performance.
- **Outages:** Current rules requiring substitute capacity for all planned outages on RA capacity were designed assuming there was excess capacity available at commercially reasonable prices and may require revisiting. As a result, today planned outages often cannot find substitution which risks the health of the resource if this results in potential delays in performing maintenance. In addition, current substitution rules for planned outages may be overly burdensome.
- **CPUC's Slice-of-Day:** The implementation of the CPUC's Slice-of-Day program will require a continued comprehensive review by the CAISO with stakeholder engagement to ensure continued operational, commercial, and regulatory objectives are met.⁶

⁵ "Requirements for RA Capacity" refers to the ability to meet the RA requirements as outlined in the CAISO's tariff.

⁶ The CAISO recognizes that other LRAs may also update their programs. As the CAISO becomes aware of new LRA RA programs, the CAISO will need to review those programs to ensure continued operational, commercial, and regulatory objectives are met.

- **Interoperability with WRAP:** The CAISO has not undertaken a comprehensive analysis of translatability and transactability between the WRAP and CAISO's RA program, to evaluate potential friction in trading.

Problem Statement 3: LRA Resource Adequacy Responsibility & Cost Allocation

There is concern about inequitable costs and cost allocation among market participants. There is a need for a transparent and common framework for evaluating reserve margins and counting rules, and understanding of an LRA RA program's contribution to overall system reliability.

Sub-issues:

- **Definitions and Requirements:** The CAISO lacks a common definition, method of measurement, or standard to ensure that various LRAs bring a portfolio of resources that are accessible in the right place, available at right time, and provide the right attributes needed to evaluate if LRA programs are reliable.
- **EDAM RSE Cost Causation:**⁷ Stakeholders have expressed the need for a policy that more directly aligns cost and benefit allocation with causation associated with the Extended Day Ahead Market (EDAM) Resource Sufficiency Evaluation (RSE), when the CAISO needs to assign costs accrued as a result of a deficiency or procurement of cure capacity.

Again, stakeholders are encouraged to present their perspectives and insights during the working group meetings. The RA facilitator will manage and coordinate the engagement to provide all interested stakeholders an opportunity for informed and productive conversations.

4. Proposed Principles and Goals for Resource Adequacy

Principles: The following principle topics reflect a starting point for the RA working group discussion. Throughout the working group process, stakeholders should consider how problem statements relate to principles to facilitate assessment of prioritization and potential trade-offs. Stakeholders are invited to submit their proposals on the principles, provide feedback on the draft principle topics in working group meetings, and submit comments afterwards on these principles topics (particularly in the context of the goals of the RA program):

- Reliable
- Efficient/Cost-Effective
- Implementable

⁷ This has crossover with the EDAM BAA Participation Rules Initiative.
<https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/Extended-day-ahead-market-ISO-balancing-authority-area-participation-rules>

- Durable
- Adaptable
- Transparent

Goals: The following goals reflect a starting point for the Resource Adequacy Working Group discussion. Throughout the working group process, stakeholders should consider how various solutions meet the goals to facilitate assessment of prioritization and potential trade-offs. Stakeholders are invited to provide feedback in the meeting and submit comments after the meeting on these goals.

The RA program is reliable, affordable, and implementable. This means:

1. The CAISO's established modeling, and visibility enable a reliable overall system.
 - The RA portfolio meets at least a 0.1 LOLE planning target.
 - Both planning assumptions and outputs are re-visited regularly.
 - The CAISO has visibility into both RA and non- RA resources for operational purposes, and the CAISO does not have to rely on out of market actions to maintain a reliable fleet.
2. Procurement and trading is efficient, cost-effective, fungible, and affordable.
 - Incentives are in place for RA capacity to perform.
 - The procurement of RA can meet reliability needs and environmental goals at least cost.
 - Cost allocation rules incent contracting and performance.
 - LSEs and LRAs are able to capture benefits of portfolio diversity within the region.
 - The CAISO's RA Program: minimizes the need to procure expensive resources due to timing or informational limitations, allows for efficient trade of capacity products between California and the WRAP, balances standards and requirements for resource eligibility with costs and benefits, and is aligned with the CPUC's IRP, modeling and assessments and should produce consistent results.
3. The RA program is implementable, adaptable, and compatible with different programs.
 - It is automated and efficiently operated in CAISO systems.
 - It is adaptable to changing needs and regulatory structure, and fleet.
 - It is harmonized between CAISO and LRAs and reliability targets and counting are consistent.
 - It is scalable so systems work effectively with EDAM and future regional market structures.

5. Proposed Resource Adequacy Working Group Process

The Resource Adequacy Working Group process intends to enhance the quality of market policy design by giving stakeholders a more active role in informing proposal development. The Resource Adequacy Working Group is also intended to enhance the transparency of the decision making process, facilitate broad community engagement, and create alignment prior to proposal development. The working group process reflects stakeholder feedback that additional stakeholder input early in the process would lead to more alignment on the proposed design when the initial straw proposal is published.

During this working group stakeholders will focus on four essential components necessary for proposal development:

1. **Problem Statements and Principles:** Stakeholders will refine suggested problem statements and principles. Through the working group process, stakeholders will contextualize drafted problem statements against working group design goals.
2. **Cadence and Prioritization:** Stakeholders will determine topic priorities and meeting cadence.
3. **Analysis:** Stakeholders will illustrate problem statements through review and assessment of current market solutions, data analysis, and/or agreed upon modeling.

Working group deliverables

Discussion Paper

The Discussion Paper will serve as a resource for stakeholders by tracking the working group input. After each working group meeting, the facilitator and scribes will update the previous Discussion Paper with key discussions, decisions, and action items identified by stakeholders related to the four components of development. The updated Discussion Paper will be posted for public comment between working group meetings.

RA Action Plan

The intended end state of the Discussion Paper draft evolution is a Resource Adequacy Action Plan. The Resource Adequacy Action Plan will cap off the working group process once stakeholders have agreed upon and prescribed action items for each of the problem statements identified. The Resource Adequacy Action Plan will bridge between the working group process and the initiative by informing steps toward, or immediate consideration of, a straw proposal if a market design or rule change is appropriate. This iterative process will provide a public record of decision making, ensuring that all stakeholder perspectives and objectives are acknowledged and considered.

Principles

Throughout the working group process, stakeholders will consider how problem statements relate to principles to facilitate assessment of prioritization and potential trade-offs. The CAISO invites feedback on the draft principles in this document both during the working group meeting and afterwards in written comments.

Problem Statements & Data Analysis

Identified problem statements should offer a clear path toward analysis and proposal development. Once problem statements are developed, the working group will assess what analysis is needed to analyze the issue. Once the group has reviewed the analysis, there may be additional iteration of the problem statement. The CAISO invites feedback on these problem statements both during the working group meeting and afterwards in written comments.

Working Group Topics

Topics are intended to capture and organize areas of development to facilitate the efficient use of stakeholder time and resources. The working group will develop the topic list after aligning on problem statements.

6. Next Steps

A public hybrid working group meeting will be held on October 5, 2023 on the Resource Adequacy Working Group. If you plan to attend the meeting in-person, please register [here](#) on the Resource Adequacy Working Group webpage by end of day September 28. Written comments and feedback on the working group meeting and Discussion Paper are due by end of day October 20 through the working group [web page](#). Stakeholders are also invited to contact the RA Working Group facilitator, Jeff McDonald at jmcdonald@ceadvisors.com to indicate when they would like to present, the topic they would like to present on and, how this topic relates to either their own problem statement or a problem statement developed by the working group. The RA facilitator will manage and coordinate the engagement to provide all interested stakeholders an opportunity for informed and productive conversations.