Briefing on 2021 Three-Year Policy Initiatives Roadmap and Annual Plan

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General Session
December 17, 2020
Annual roadmap process is a comprehensive planning process for evolving the ISO markets

- Roadmap developed through a stakeholder process to prioritize the policy initiatives the ISO will undertake over the next three years

- The development of the annual roadmap includes updating the Policy Initiatives Catalog
  - Comprehensive directory of current, planned, and potential policy initiatives that require a stakeholder process
  - Stakeholders can propose potential policy initiatives
  - Updated twice a year but catalog submissions are accepted year-round
PRIMARY DRIVERS
Primary drivers of proposed three-year roadmap

• **Resource sufficiency** - comprehensively reform resource adequacy requirements to align with the changing nature of resources and load and tightening western supply conditions
  - Net peak load, reserve margin, load and supply uncertainty, accurate resource crediting to meet reliability needs

• **Increased resource and load variability** - enhance the day-ahead market and extend to EIM entities to leverage regional diversity to provide benefits across the West

• **New technologies** - enhance market products, modeling, and deliverability to integrate new technologies that replace operational attributes previously provided by the thermal fleet
Policy development focused on addressing issues identified in the preliminary Root Cause Analysis

- **Resource adequacy reforms (current initiative)**
  - Plan and provide sufficient physical resources to reliably meet load, reliability requirements and uncertainty all hours of the year

- **Scheduling priorities**
  - Mechanisms to ensure demand (load and exports) is properly prioritized (new workshop)
  - Day-ahead market enhancements (current initiative)

- **Improved market incentives during tight supply conditions**
  - Ensure CAISO can compete for imports during tight supply conditions (planned initiative)
  - Provide greater incentives for accurate load scheduling in the day-ahead market (planned initiative)
  - Provide incentives for virtual resources to better align with operational needs during tight supply conditions (planned initiative)
COMPREHENSIVE REDESIGN OF RESOURCE ADEQUACY
Proposed reforms will drive greater dependability and operability of the RA fleet

- **Portfolio assessment** - ensure the shown RA fleet satisfies all operational needs in all hours—both capacity and energy.
- **UCAP** - RA resources’ capacity values properly reflect their availability and that resource owners maintain resources to ensure a high availability.
- **Planned outage process** - ensure sufficient capacity is procured in advance to cover expected planned outages; no last minute capacity substitution.
- **RA import reform** - RA import rules eliminate the possibility of double counting and speculative supply; lock in supply and transmission in advance.
- **Must offer obligation** - minimize exemptions and ensure resources are offered into the market to meet their RA obligations.
- **Flexible RA** - ensure sufficient resources are secured with the right attributes to meet ramping and uncertainty needs given supply and demand variability.
- **Operationalizing storage** - ensure a minimum level of stored energy is available during the net load evening peak to meet operational needs.
Reforms to resource adequacy program needed to align procurement with operational needs

- **Phase 1 - Implementation 2021 (RA Yr. 2022)**
  - RA Import provisions
  - Planned outage process enhancements
  - Local studies with availability-limited resources CPM clarifications
  - Operationalizing Storage – minimum charge requirement

- **Phase 2 - Implementation 2022 (RA Yr. 2023)**
  - Unforced capacity (UCAP) counting
  - Portfolio analysis to ensure system sufficiency
  - Day-ahead market enhancements alignment
    - Must offer obligations and Bid Insertion Modifications
    - Flexible Resource Adequacy
The day-ahead market enhancements initiative addresses challenges of the transforming grid

- Efficiently schedule supply to meet net load and to address uncertainty that may materialize between day-ahead and real-time
  - Improve market efficiency and price signals by co-optimizing imbalance reserves with energy and ancillary services
  - Enhanced RUC process to prioritize demand (load and exports)
- Minimize the need for out-of-market actions and RUC load biasing to meet ramping and uncertainty
Extending the day-ahead market to EIM entities provides regional benefits

- EDAM will improve market efficiency and more effectively integrate renewable resources by
  - Optimizing day-ahead unit commitment
  - Producing hourly schedules
  - Improving transmission utilization across a larger footprint
Stage EDAM policy development to develop policy on major topics prior to considering other issues

- Bundle 1 – Resource sufficiency evaluation, transmission provision, transfer/congestion revenue

- Bundle 2 – Accounting for GHG costs, ancillary services, FNM Phase 2, EDAM administrative fee

- Bundle 3 – Price formation, convergence bidding, external resource participation, market power mitigation including system market power, other issues
Upcoming dispatch enhancements initiative will improve renewable resource management

• Manage ramp rates to better control system balance
  – Solar and storage resources

• Enhance market incentives for resources to provide accurate curtailment response

• Explore solutions to mitigate decremental market power

• Change settlement rules for decremental exceptional dispatch
New scarcity pricing initiative planned in response to Summer 2020 tight supply conditions

• Improve market’s scarcity pricing provisions for efficient market pricing during tight supply conditions

• Explore mechanisms to ensure real-time prices incentivize accurate day-ahead scheduling and bidding that aligns with operational needs during tight supply conditions

• Examine relationship of scarcity pricing to System Market Power Mitigation and FERC Order 831 designs
Frequency Response initiative will examine mechanisms for CAISO to continue to meet NERC/WECC frequency response requirements

• Develop additional mechanisms to continue to meet frequency response requirements
  – Potential options: continuation of transferred frequency response, inclusion in a frequency response sharing group, market frequency response product

• Consider regulation product enhancements
  – Enhancements to the pay-for-performance payments
  – Enhancements to the ISO’s minimum performance criteria and regulation certification process
INTEGRATING DISTRIBUTED ENERGY AND STORAGE RESOURCES
FERC Order 2222 Compliance

• Complete comprehensive gap analysis on FERC Order 2222 requirements against current distributed energy resource provider (DERP) provisions (2021 Q1)

• Compliance filing (July 19, 2021)

• Deploy all changes identified in compliance filing (TBD)
  – May include but not limited to:
    • Reducing minimum distribute energy resource aggregation (DERA) size requirement of 500 kW to 100 kW
    • Adjusting aggregation and metering requirements to accommodate baseline measured demand response in a DERA
    • Resolving settlement impact on broader definition of mixed aggregations (energy injections, energy withdrawals, and demand reductions)
ESDER implementation, evaluation, and clean up

• Focus on implementing ESDER 3b and ESDER 4 functionality in 2021 and 2022
  – Evaluate the usefulness and effectiveness of new distributed energy resource functionality and identify gaps that remain
  – Will consider new enhancements based on evaluation of current functionality

• Focus on operationalizing distributed energy resources
  – Enhancements to distributed energy resource systems and tools
  – Greater visibility
  – Enhanced forecasting
  – Operationalizing storage
Development of an alternative qualifying capacity methodology for demand response using ELCC

- Update ESDER4 effective load carrying capability (ELCC) study prepared by E3
  - Study explores how to apply an ELCC methodology to demand response given its variable output nature and energy limitations for resource adequacy capacity valuation

- Updated study results submitted into Track 3B of the RA proceeding and shared with CPUC demand response measurement and evaluation committee
  - Explore alternative QC methodology using ELCC or similar methodology to assess DR’s contribution to reliability in 2021 for RA year 2022
Ensure most effective use, value, and treatment of distributed energy and storage resources

- Allow time for local regulatory authorities to develop policies needed to integrate distributed energy resources into the market

- Within California, coordinate with CPUC and CEC on demand response valuation, load management standards, resource adequacy rules, and load modification rules

- Refine applicable business practice manual and tariff provisions
  - Must offer obligations
  - Resource adequacy rules
  - Default energy bids
Hybrid resource evolution initiative will develop additional provisions and consider enhancements for hybrid resource market participation

- Market power mitigation
- Resource adequacy must offer obligations
- Additional functionality based on operational experience
ROADMAP AND ANNUAL PLAN
Market evolution requires coordinated policy development among forward capacity requirements, day-ahead market enhancements, and extended day-ahead market.

**Forward Capacity Procurement**
- CAISO Resource Adequacy
- EDAM Integrated Resource Plan

**Day-Ahead Market Products**
- EDAM Resource Sufficiency Evaluation
- Day-Ahead Market products procured across EDAM footprint:
  - Energy
  - Ancillary Services
  - Imbalance Reserves
  - Reliability Capacity
- EIM Resource Sufficiency Evaluation
- EIM Base Schedules

**Real-Time Market Products**
- IR & RC Real-Time Must Offer Obligation
- Real-Time Market co-optimization across EIM footprint:
  - Energy
  - Incremental AS
  - Flexible Ramping Product
- Voluntary Bids
2020 Roadmap Initiatives not included in 2021 Roadmap

- System Market Power Mitigation Phase 2
  - Second phase will be conducted in conjunction with EDAM design
- Congestion Revenue Rights Track 2
  - Major modifications not immediately needed but further refinements will be considered
- Commitment Costs and Default Energy Bid Enhancements Phase 2
  - Want to see how Phase 1 performs and confirm consistency with EDAM and DAME
- Contingency Modeling Enhancements
  - Changing NERC standards decrease benefit of implementation
Proposed Three-year Policy Roadmap of Major Initiatives

2020
- FRP Refinements
- Evolve ISO Markets
  - DAME
- Order 831 – Import Bidding & Market Parameters
- Market Settlement Timeline

2021
- DAME
- Extend DAM to EIM Entities
- Dispatch Enhancements
- RA Enhancements
- MIC Enhancements
- Joint Owned Unit Model
- ESDER 3b
- Excess BTM Production
- Hybrid Resources

2022
- SATA
- Frequency Response Measures
- TAC Structure Enhancements
- MIC Enhancements
- Order 831 – Import Bidding & Market Parameters

2023
- AS Deliverability/RT Re-Optimization
- ESDER Enhancements
- Hybrid Evolution

*Timeframes are approximate and subject to change*
## 2021 Draft Annual Plan

*Timeframes are approximate and subject to change*

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<td>EIM Governance Review Phase 2</td>
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Stakeholder comments on final roadmap

- LS Power advocated for additional storage policy development
  - Exceptional dispatch for storage and associated settlement rules
  - Minimum charge requirement for storage resources
  - Multi-interval optimization enhancements for storage

- PG&E requests ISO revise the RMR designation procedure to address cost and affordability issues

- PG&E urges moving forward to achieve implementation of system market power mitigation by summer 2021

- SDG&E requests ISO include a stakeholder process to review the convergence bidding uplift allocation

- SDG&E recommends developing an outage substitution market to procure substitute capacity

- Powerex requests prioritizing shortage pricing mechanism and examining a new bid-cost recovery mechanism for importers prior to summer 2021

- Some stakeholders recommend considering EIM resource sufficiency evaluation improvements based on the August events
2021 Policy Initiatives Roadmap process schedule

- Final roadmap and annual plan – November 20
  - Stakeholder call – November 23
  - Comments December 7

- Board of Governors briefing – December 17

- EIM Governing Body briefing – January 20