2018 Draft Policy Initiatives Roadmap

Market and Infrastructure Policy
December 7, 2017
Primary drivers of proposed three-year roadmap

- Recent grid operations challenges pointing to need for day-ahead market enhancements to better manage net load curve in real time
- Extending day-ahead market enhancements to other EIM balancing areas provides regional benefits
- Increasing risk of retirement leading to increase in RMR driving need to reform the RA program
- Continuing efforts to lower barriers to DER market participation and addressing T-D interface coordination in line with DER growth
Day-ahead market enhancements address net load curve and uncertainty previously left to real-time market

- 15-minute scheduling granularity
  - Ensures day-ahead market commits resources with sufficient ramping capability

- Day-ahead flexible reserve product
  - Compensates resources for must-offer obligation in real-time market to address net load uncertainty

- Combined IFM and RUC
  - Increase efficiency by simultaneously clearing bid in demand and balancing area net load forecast
  - Allow RUC to decommit resources

- Full network model phase 2
  - Improved modeling of intertie transaction sources/sinks
Extending DAM to EIM Entities provides additional regional benefits

• Key benefits:
  – Allows EIM participants to take advantage of day-ahead market enhancements
  – Day-ahead unit commitment and scheduling across larger footprint improves market efficiency and more effectively integrates renewables

• Key principles:
  – Each balancing authority retains reliability responsibilities
  – States maintain control over integrated resource planning
    • Resource adequacy procurement decisions remain with local regulatory authority
    • Transmission planning and investment decisions remain with each balancing authority and local regulatory authority
Scope of stakeholder initiative to extend day-ahead market to EIM Entities

• Aligning transmission access charge (TAC) paradigms
  – Ensure EIM Entities recover transmission costs consistent with existing bilateral transmission framework
  – Consistent billing determinants across day-ahead market footprint for market efficiency

• Congestion revenue rights over expanded footprint
  – Congestion hedging similar to CAISO balancing area
  – Address long-term bilateral transactions within expanded day-ahead market footprint

• Day-ahead resource sufficiency evaluation
  – Ensure balancing areas not leaning on others for capacity, flexibility or transmission
• Transferring bid range
  – Facilitate monthly/daily/hourly bilateral transactions across expanded day-ahead market footprint
  – Used to help meet resource sufficiency evaluation using resources outside a balancing area

• Day-ahead GHG attribution
  • Extend EIM real-time market approach to day-ahead
Re-prioritized initiatives to focus on day-ahead market changes

• Deferring real-time market enhancements
  – High risk to implementing day-ahead and real-time market changes at the same time
  – CAISO and stakeholder resource constraints
  – Considering limited technology enhancements to shorten real-time market timelines

• Deferring frequency response product development and pay-for-performance regulation
  – FERC frequency response requirements uncertain (NOPR outstanding)
  – CAISO continues to evaluate system needs
  – CAISO and stakeholder resource constraints
Examining CRR auction efficiency is a high priority

- **Scope:** address CRR auction efficiency while balancing solutions with the need for market participants to hedge congestion
- **Phased approach:**
  - Promptly start and complete stakeholder initiative to examine issue and develop solutions
  - Phase implementation of identified solutions:
    - Implement any process changes as soon as feasible
    - Make any monthly auction changes as soon as feasible
    - Make any annual auction changes for auction conducted in July 2019
Emerging trends altering the California resource procurement and resource adequacy landscape

- Existing focus on summer peak demand is failing to secure the right resources and capabilities as the grid transforms.

- Load migration is causing utilities to alter long-term contracting practices and minimize stranded procurement risk.

- State policies promoting procurement of renewable and distributed energy resources.

- Some gas resources needed for reliability in need of significant maintenance and capital investment.

- Lower energy market prices lead to revenue inadequacy and potential uneconomic retirements.
Long and short-term planning must align with changing operational needs as generation fleet evolves to meet California energy policy goals.

- **IRP**
  Planning for future resource needs based on policy goals and operational needs.

- **Resource Adequacy**
  Ensure adequate resources are available to CAISO to meet forecasted market and operational needs.

- **Market and Operations**
  Day-ahead and Real-time dispatches to maintain system reliability.
Collaborate with the CPUC to align resource adequacy with the needs of the transforming grid

RA Enhancements Track 1 (2020 RA)

- Establish RA capacity assessment that is better aligned with operational needs of the transforming grid
- Modify resource counting rules for non-availability and outages
- Vet load forecasting assumptions used to set RA requirements

RA Enhancements Track 2 (2021 RA)

- Establish multi-year RA requirements to ensure procurement of essential resources through transition to a low carbon grid
- Ensure sufficient capacity procured in each local capacity area
- Modify RA showing timeline to enable orderly retirement decisions
ESDER initiative will continue to refine DR and DER modeling and seek to lower integration barriers

- Expand DR and DER modeling to optimally capture value and leverage resource design attributes that support the grid

- Focus on regulatory framework to address:
  - DER resource adequacy qualification rules
  - Qualifying capacity counting of DERs
  - Roles and responsibilities at transmission and distribution interface to coordinate and manage DERs

- Clearly define multi-use applications to ensure sensible service and value staking that supports reliability and optimizes resource value
Review and revise CAISO backstop procurement options

Proposed two-phased RMR/CPM review:

- Phase 1: Consider more immediate changes to the long-standing Reliability Must Run contract, its terms and conditions
- Phase 2: Consider integration of RMR and CPM into a single, cohesive CAISO backstop procurement mechanism
Three-year Policy Roadmap of Major New Initiatives

2018 DAM

- DAM enhancements
- Extend DAM to EIM Entities
- CRR auction enhancements
- FRACMOO 2
- RA enhancements (Track 1)
- ESDER 3
- ISO/UDC DER coordination

2019 RTM

- RTM enhancements
- Frequency response products/improvements
- RA enhancements (Track 1)
- RA Enhancements (Track 2)

2020 Refinements

- Refinements to 2018/2019 Enhancements
- Smaller stakeholder driven initiatives

Shape Electric Sector Decentralization

Evolve ISO Markets

Enhance Resource Adequacy

Implementations:
- Process
- Monthly
- Annual

Assess the need for further High – DER development
## Day-ahead market/Extended Day-ahead Market Interactions

<table>
<thead>
<tr>
<th>15 min DA Scheduling</th>
<th>DA Flexible Reserve Product</th>
<th>Combined IFM and RUC</th>
<th>Flexible RA Criteria and Must Offer Obligation Phase 2</th>
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</thead>
<tbody>
<tr>
<td>RT Resource Sufficiency Enhancements</td>
<td>DA Resource Sufficiency Evaluation</td>
<td>Transferring Bid Range</td>
<td>CRR Expanded Footprint</td>
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<td>EDAM GHG</td>
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<td>Align TAC Paradigms</td>
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<td>Review TAC</td>
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<td>EIM GHG</td>
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**2018**
- Jan-Mar
- Apr-Jun
- Jul-Sep
- Oct-Dec

**2019**
- Jan-Mar
CAISO-CPUC Resource Adequacy Interactions

<table>
<thead>
<tr>
<th>FRACMOO 2</th>
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<tr>
<td><strong>CPUC RA Enhancements Track 1</strong></td>
<td><strong>CPUC RA Enhancements Track 2</strong></td>
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<td>CAISO RA Enhancements Track 1</td>
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<tr>
<td>Review RMR/CPM Phase 1</td>
<td>Review RMR/CPM Phase 2</td>
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**RA Enhancements Track 1**
1) Establish LSE RA assessment methodology to meet operational needs
2) Modify counting rules
3) Vet appropriate load forecasting assumptions
   Implementation Fall 2019 for 2020 RA

**RA Enhancements Track 2**
1) Multi-year RA procurement
2) LCA specific procurement
3) Modify RA showing timeline
   Implementation Fall 2020 for 2021 RA
Additional new initiatives on annual plan address important issues

- **Imbalance conformance**
  - General consensus among stakeholders to pursue solution proposed in ISO technical bulletin

- **Intertie deviation settlement**
  - Reliability concerns regarding recent quantities of undelivered imports/exports

- **Real-time resource sufficiency evaluation**
  - General consensus among stakeholders that improvements are needed
Additional new initiatives on annual plan address important issues (continued)

• **Storage as a transmission facility**
  – FERC January 2017 policy statement on ability for storage resources to provide services through cost and market based rates
  – Need to consider roles, responsibilities, costs, and operation of storage as a transmission facility under the CAISO tariff

• **Interconnection process enhancements 2018**
  – Modifications and clarifications to the current process
2018 Annual Plan

2018 Annual Plan

- ESDER 3
- FRACMOO 2
- Interconnection Process Enhancements 2018
- RA Enhancements (Track 1 and Track 2)
- Storage as a Transmission Facility
- Review RMR and CPM Revisions
- CCDEBE
- EIM GHG Enhancements
- CRR Auction Efficiency
- Imbalance Conformance
- Intertie Deviation Settlement
- RT Resource Sufficiency
- Review TAC
- DAM Enhancements
- Extend DAM to EIM Entities

Major New Initiatives
Current Initiatives
Additional New Initiatives