

WESTERN ENERGY IMBALANCE MARKET

Briefing on 2020 Policy Initiatives Roadmap and Annual Plan

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EIM Governing Body Meeting

General Session

January 22, 2020



2020 Policy Initiatives Roadmap process

- *Policy Initiatives Catalog* process updates descriptions, categorization and status of all identified policy initiatives
- *Final Policy Initiatives Catalog* published on September 5, 2019
- *2020 Policy Initiatives Roadmap* process
 - Draft roadmap and annual plan posted September 30, 2019
 - Final roadmap and annual plan posted November 25, 2019
 - Roadmap briefing to Board of Governors on December 18, 2019
 - Roadmap briefing to EIM Governing Body on January 22, 2020
 - Post final roadmap following EIM Governing Body meeting

2020 Policy Roadmap reflects new process guidelines

- Previously, EIM Governing Body and Board of Governors decision dates are tied to completion of policy development
 - Tariff and business requirement development occur after board approval of a policy
 - Implementation details often identify further policy refinement
- Beginning 2020, the CAISO's new process:
 - Complete policy, tariff, and business requirements development prior to EIM Governing Body and Board of Governors approval
 - Allows for greater coordination and alignment during each stage of the process

Primary drivers of proposed three-year roadmap

- Manage operational risk resulting from a transforming grid
- Enhance the market in response to changing grid conditions and clean energy goals in California and the West
- Continue enhancements to EIM, including integration into the day-ahead market, to provide benefits across the West
- Reform CAISO's resource adequacy rules necessitated by increasing retirements and tightening dispatchable capacity
- Integrate new technologies to replace operational attributes previously provided by the thermal fleet

New flexible ramping product enhancements initiative to address issues identified in price performance analysis

**Deliverability of
RT Flexible
Ramping Product**

Not biddable
+/- 1000MW
50% deliverable

**Deliverability of
DAME Imbalance
Reserves**

Biddable
+/- 4000MW
50% deliverable?

EDAM Benefits

Can a BAA rely on
imbalance reserves in
other BAAs to avoid
unit commitment in its BAA?

Impact increases as you move
from real-time to EDAM

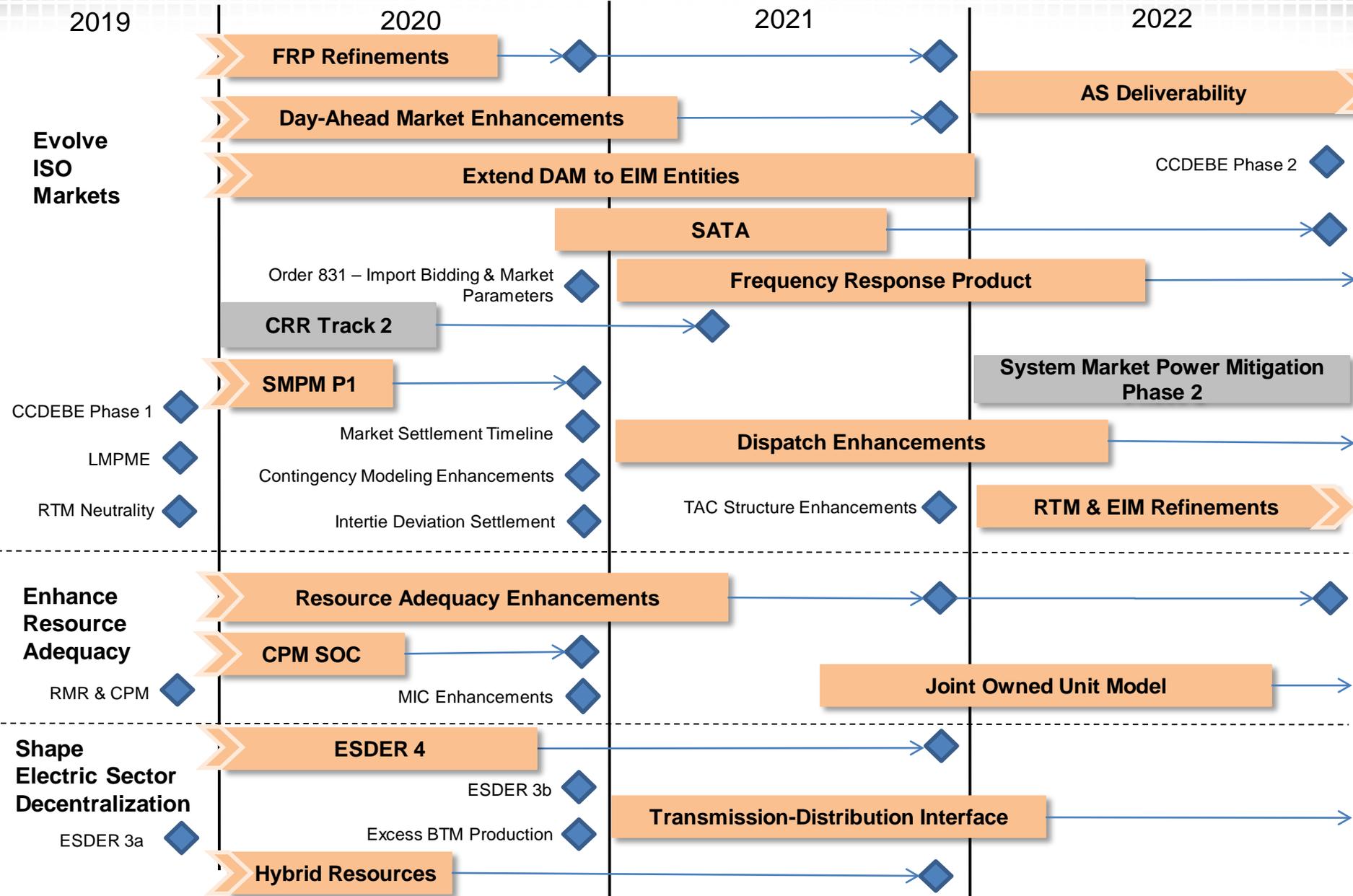
Price Performance Analysis identified need
to improve deliverability of market products

Extended day-ahead market to EIM Entities initiative to follow an expanded stakeholder process

- Topics to be addressed in prioritized bundles over a minimum 17-week period
 - Bundle 1: transmission provision, resource sufficiency evaluation, distribution of congestion rents
 - Bundle 2: accounting for GHG costs, ancillary services, full network model enhancements, administrative fee
 - Bundle 3: price formation, convergence bidding, external resource participation, and other items
- Coordinated with day-ahead market enhancements

Proposed Three-year Policy Roadmap of Major Initiatives

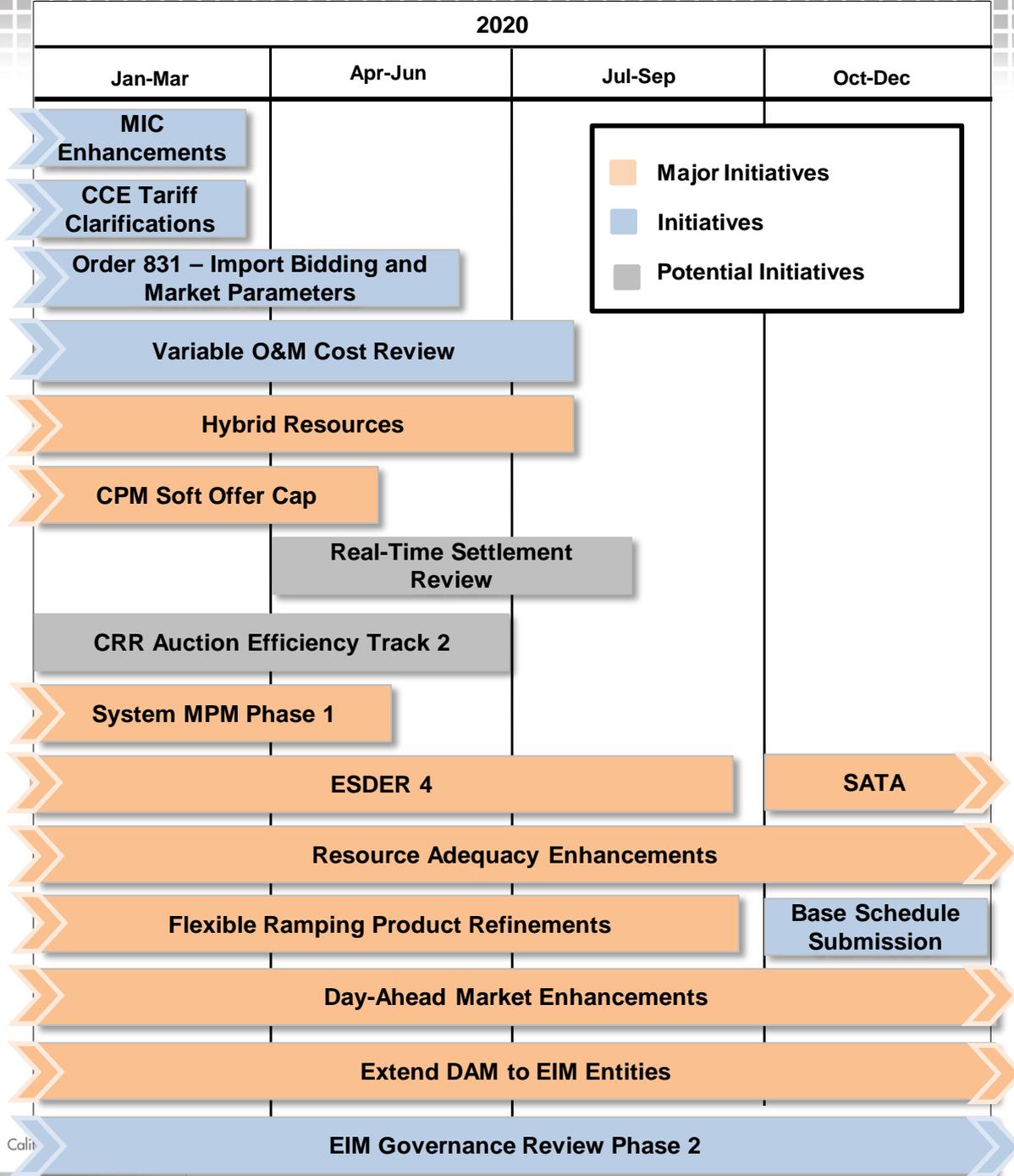
◆ = Implementation



*Timeframes are approximate and subject to change

2020 Draft Annual Plan

*Timeframes are approximate and subject to change



Stakeholders support the 3-year roadmap and annual plan

- Stakeholders support new process guidelines
- PG&E believes the 2020 Annual Plan is too ambitious and requests prioritization of System Market Power Mitigation, Resource Adequacy Enhancements, and Capacity Procurement Mechanism Soft Offer Cap
- Stakeholders urge for continued policy alignment between Day-Ahead Market Enhancements and Extended Day-Ahead Market to EIM Entities
 - Management recognizes the interdependencies between both initiatives. Policy teams are closely working together to ensure DAME and EDAM designs align.

Acronyms

AS	Ancillary Services
BTM	Behind the Meter
CCE	Commitment Cost Enhancements
CCDEBE	Commitment Costs and Default Energy Bid Enhancements
CPM	Capacity Procurement Mechanism
CRR	Congestion Revenue Rights
DAM	Day-Ahead Market
DAME	Day-Ahead Market Enhancements
DER	Distributed Energy Resources
EIM	Energy Imbalance Market
ESDER	Energy Storage and Distributed Energy Resources
FRP	Flexible Ramping Product
LMPME	Local Market Power Mitigation Enhancements
MIC	Maximum Import Capability
MPM	Market Power Mitigation
RMR	Reliability Must Run
RTM	Real-Time Market
SATA	Storage as a Transmission Asset
SMPM P1	System Market Power Mitigation Phase 1
SOC	Soft Offer Cap
TAC	Transmission Access Charge