Day-Ahead Market Enhancements Revised Straw Proposal

Stakeholder Meeting
June 15 and 17, 2020

Agenda – June 15

Date	Time	Topic	Presenter
June 15	1:00 – 1:10 PM	Welcome and Introductions	Kristina Osborne
June 15	1:10 – 2:20 PM	Stakeholder Comments and Proposal Overview	Don Tretheway
June 15	2:20 – 3:50 PM	Updated Market Formulation	George Angelidis
June 15	3:50 – 4:00 PM	Next Steps	Kristina Osborne

Agenda – June 17

Time:	Task:	Presenter:
9:00 – 9:10	Welcome/introductions	Kristina Osborne
9:10 – 9:45	June 15 Follow Up Questions	All
9:45 – 10:30 am	Accounting for Energy Offer Cost in Upward Capacity Procurement	James Friedrich
10:30 – 11:15 am	Market Power Mitigation	James Friedrich
11:15 – 11:50 am	Other DAME Design Items	James Friedrich
11:50 am – 12:00 pm	Next Steps	Kristina Osborne

California ISO

CAISO development process for DAME

PROPOSAL DEVELOPMENT

Issue paper
↳ Straw proposal

Draft proposal
Draft business requirement specification
Draft tariff

Final proposal

🧍 Stakeholder input

DECISION

ISO Board
EIM Governing Body

Tariff filing

FERC

IMPLEMENTATION

Business practice manual revisions
Market simulation

Go Live

This represents the typical process, and often stages of the process run in parallel.

We are here

Implementation
Fall 2022

DAME policy development schedule

Item	Date
Post Revised Straw Proposal	June 8, 2020
Stakeholder Conference Call	June 15 and 17, 2020
Stakeholder Comments Due	July 6, 2020
Post Second Revised Straw Proposal	August 10, 2020*
Stakeholder Conference Call	August 17 and 18, 2020*
Stakeholder Comments Due	Aug 31, 2020*
Post Draft Final Proposal	Oct 27, 2020*
Stakeholder Conference Call	Nov 3, 2020*
Stakeholder Comments Due	Nov 17, 2020*
Implementation	Fall 2022

Dates are tentative and subject to change

Day-Ahead Market Enhancements

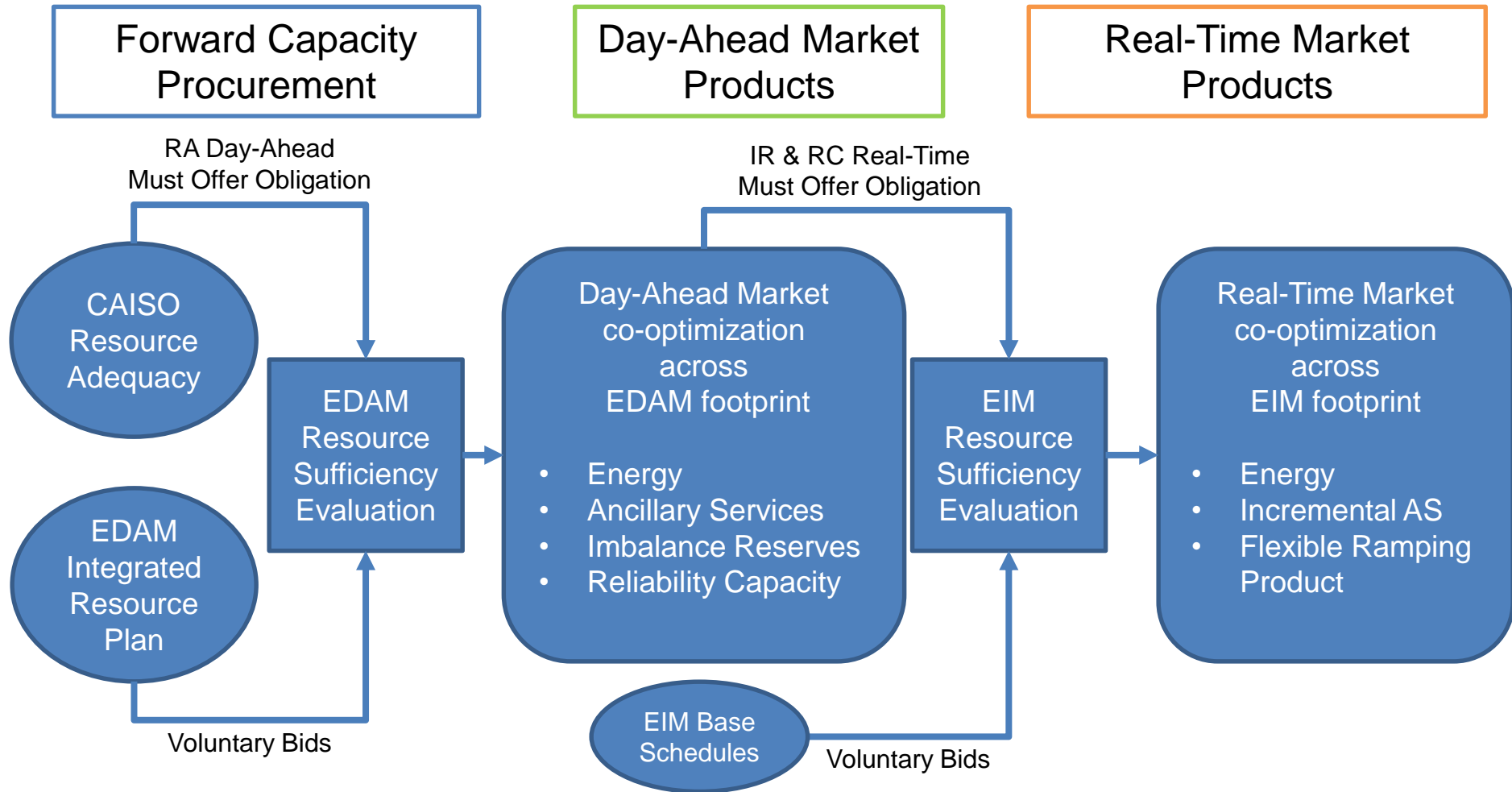# STAKEHOLDER COMMENTS AND PROPOSAL OVERVIEW

California ISO

The objective of this initiative is to enhance the CAISO's day-ahead market to:

- Commit deliverable physical supply to meet CAISO net load forecast and uncertainty that may materialize between day-ahead and real-time

- Minimize the need for out-of-market actions to meet operational needs

- Improve market efficiency and price signals by co-optimizing new capacity products with energy and ancillary services when scheduling resources in day-ahead market

The day-ahead market objective is met by:

- Introducing a reliability capacity product to meet the net load forecast with physical resources.

- Introducing an imbalance reserve product to provide flexible capacity to accommodate the increasing uncertainty and variability of real-time net load.

Overview of RA, DAME & EDAM relationship with CAISO market runs

Forward Capacity Procurement	Day-Ahead Market Products	Real-Time Market Products

RA Day-Ahead Must Offer Obligation

IR & RC Real-Time Must Offer Obligation

CAISO Resource Adequacy

EDAM Integrated Resource Plan

EDAM Resource Sufficiency Evaluation

Day-Ahead Market co-optimization across EDAM footprint

- Energy
- Ancillary Services
- Imbalance Reserves
- Reliability Capacity

EIM Resource Sufficiency Evaluation

Real-Time Market co-optimization across EIM footprint

- Energy
- Incremental AS
- Flexible Ramping Product

Voluntary Bids

EIM Base Schedules

Voluntary Bids

California ISO

DAME straw proposal posted on February 10, 2020

- Proposed new market formulation to change IFM and RUC from a sequential process to a co-optimized process.

- Introduced "reliability energy (REN)" to schedule physical resources to meet the CAISO net load forecast.

- Introduced imbalance reserves to schedule additional dispatch capability to meet uncertainty between day-ahead and real-time market.

- The day-ahead market would co-optimize energy, reliability energy, imbalance reserves, and ancillary services in a single market pass.

CAISO received stakeholder comments in response to the straw proposal and stakeholder meetings

- Broad stakeholder support for imbalance reserves and for nodal deliverability of day-ahead capacity products.

- Opinions diverged on co-dependency of EN and REN
  - Supporters believed REN results in more efficient unit commitment, more equitable compensation of resources, and more assurance physical resources would be available
  - Opponents believed REN interferes with load's financial participation in the market, distorts price signals, and is too reliant on accuracy of CAISO forecast

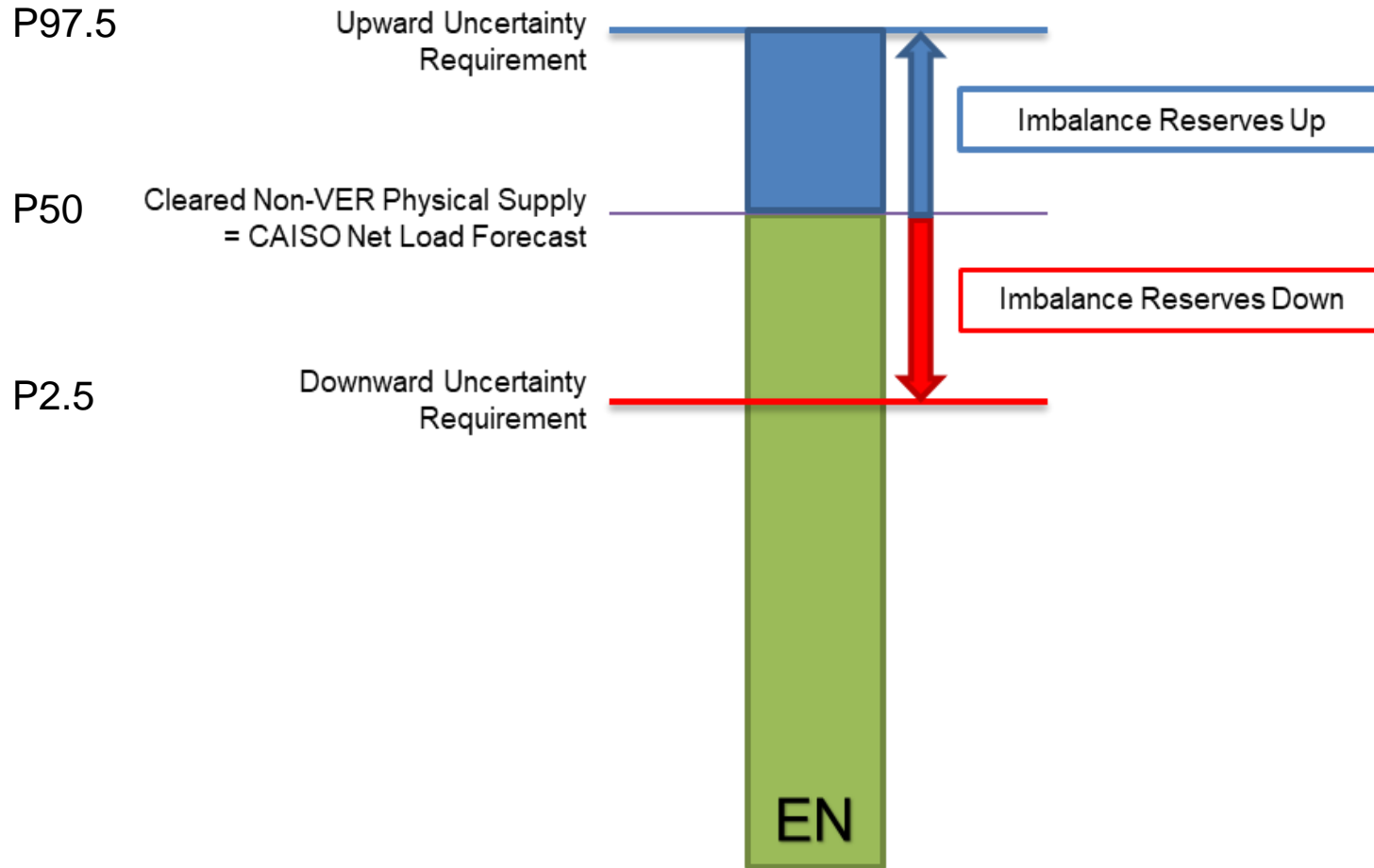- Some stakeholders opposed to REN were open to incremental RCU/RCD.

CAISO proposes a new day-ahead market formulation that pivots away from REN

- Revised design continues to propose reliability capacity and imbalance reserves without the overlapping EN and REN schedules

- Accomplished through two market passes in order to decouple energy and capacity products.
  - Determine RCU or RCD requirement
  - Optimize fixed RCU or RCD requirement

DAME overview - definitions

- Net load forecast = CAISO load forecast – CAISO wind forecast – CAISO solar forecast

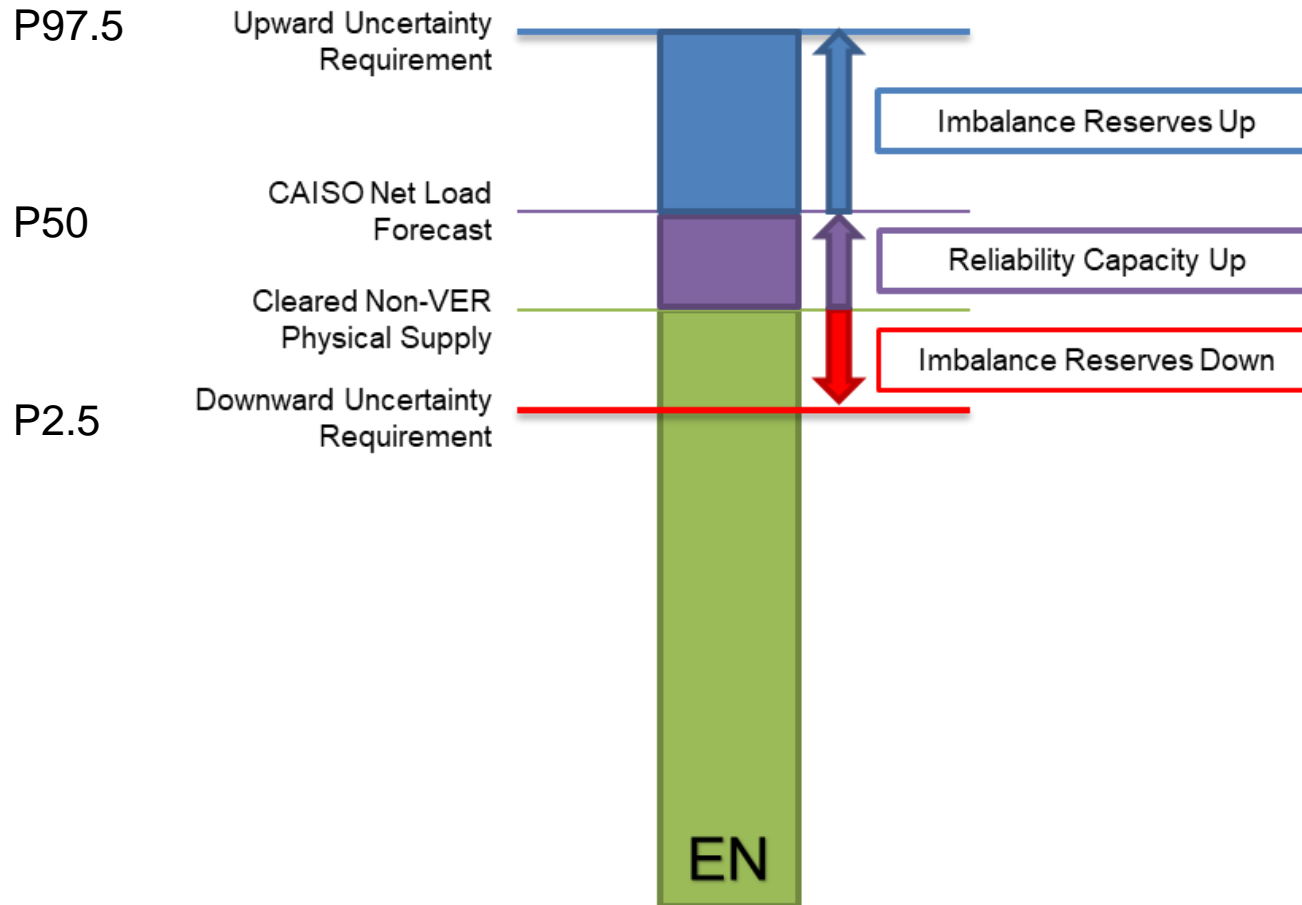- Non-VER physical supply = non-VER internal generation + imports - exports

California ISO

If the day-ahead market cleared similar to real-time market using physical resources to meet net load forecast

P97.5 — Upward Uncertainty Requirement

Imbalance Reserves Up

P50 — Cleared Non-VER Physical Supply = CAISO Net Load Forecast

Imbalance Reserves Down

P2.5 — Downward Uncertainty Requirement

EN

Reliability capacity is needed because cleared non-VER physical supply may clear differently when bid-in load, virtuals and VER offers are considered

- Drivers of reliability capacity up
  - Bid-in load clears less than CAISO forecast
  - Virtual supply clears market
  - Cleared VERs greater than CAISO forecast

- Drivers of reliability capacity down
  - Bid-in load clears greater than CAISO forecast
  - Virtual demand clears market
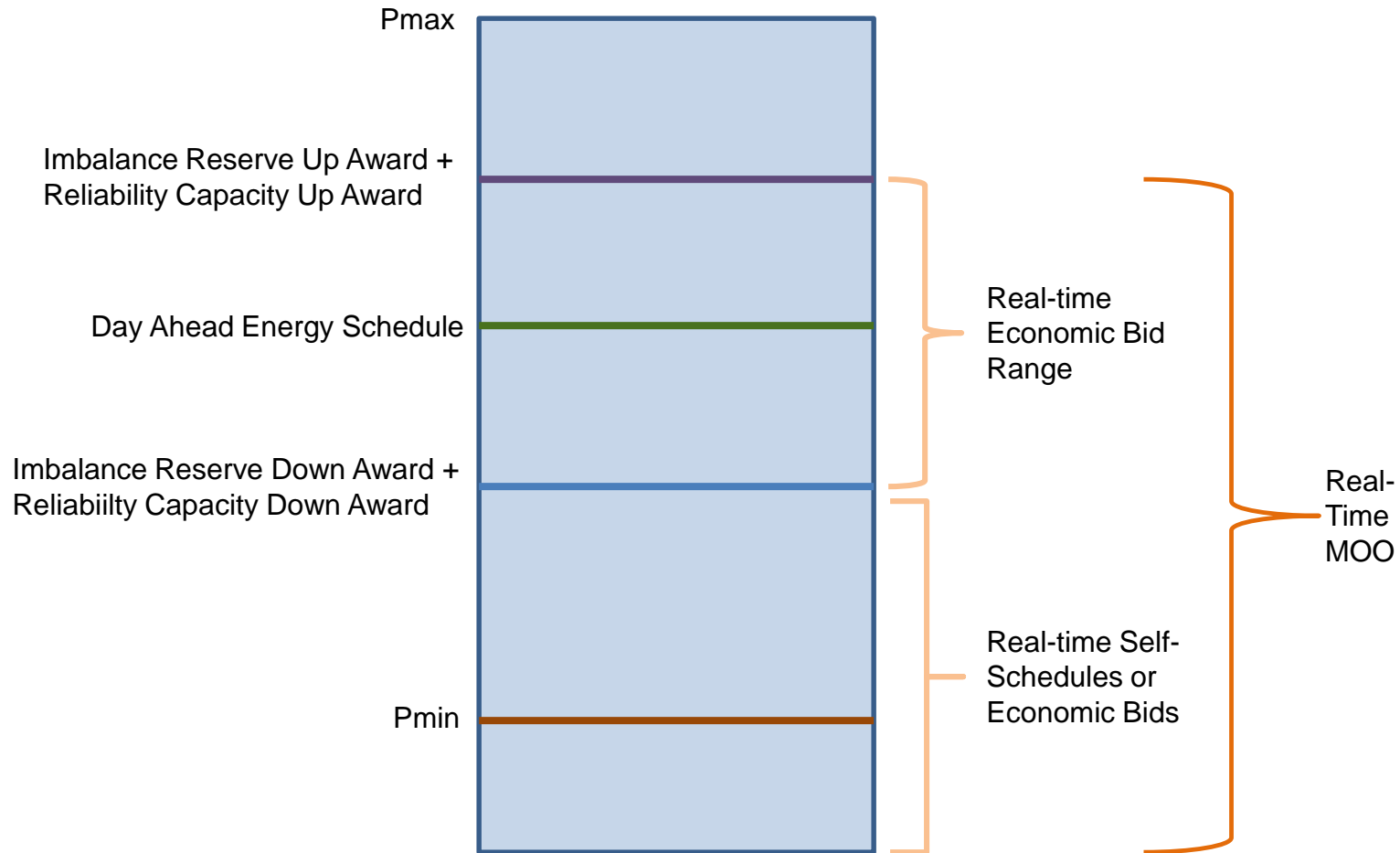 - Cleared VERs less than CAISO forecast

Day-ahead market products when forecast is greater than non-VER physical supply

California ISO

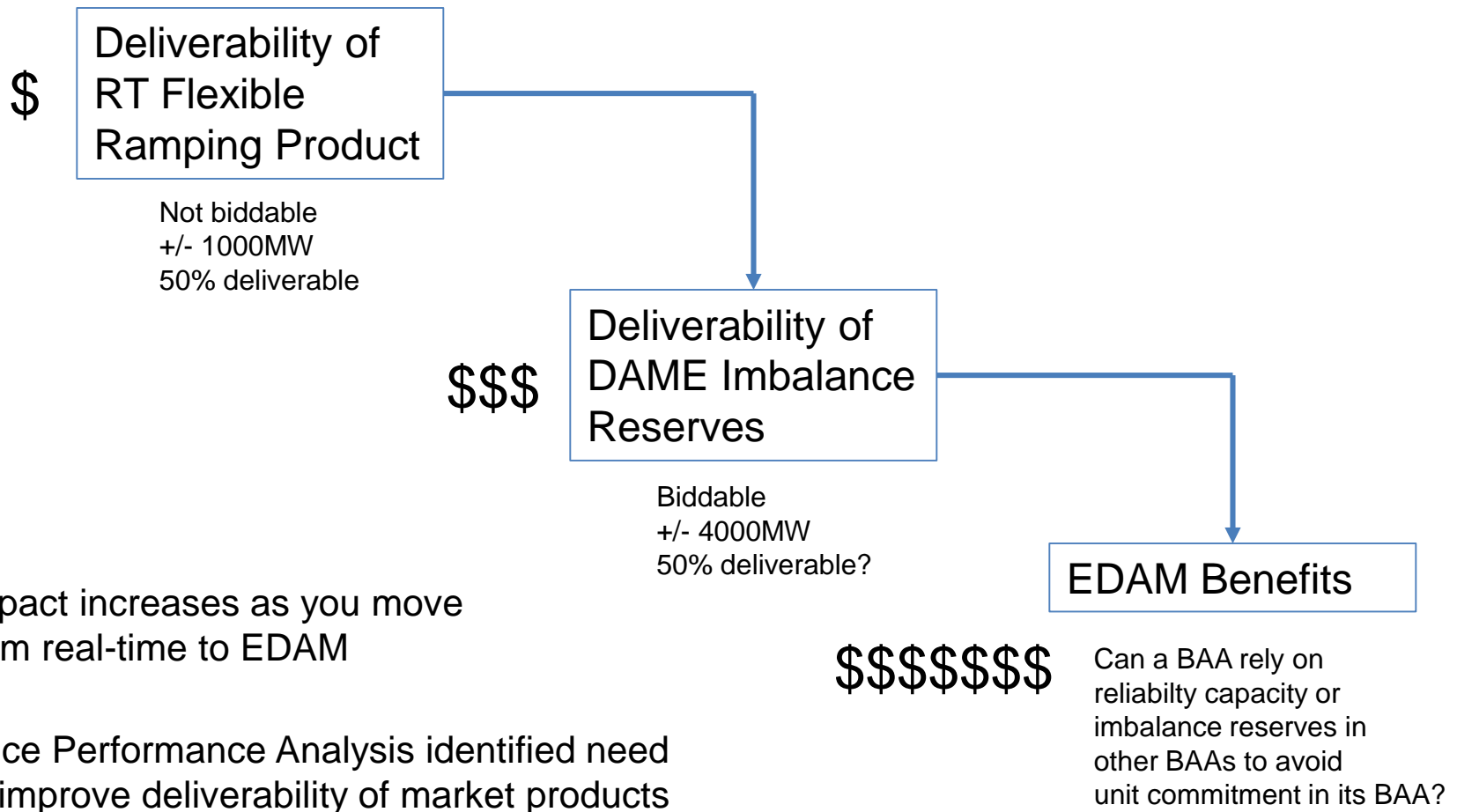# Day-ahead market products when forecast is less than non-VER physical supply
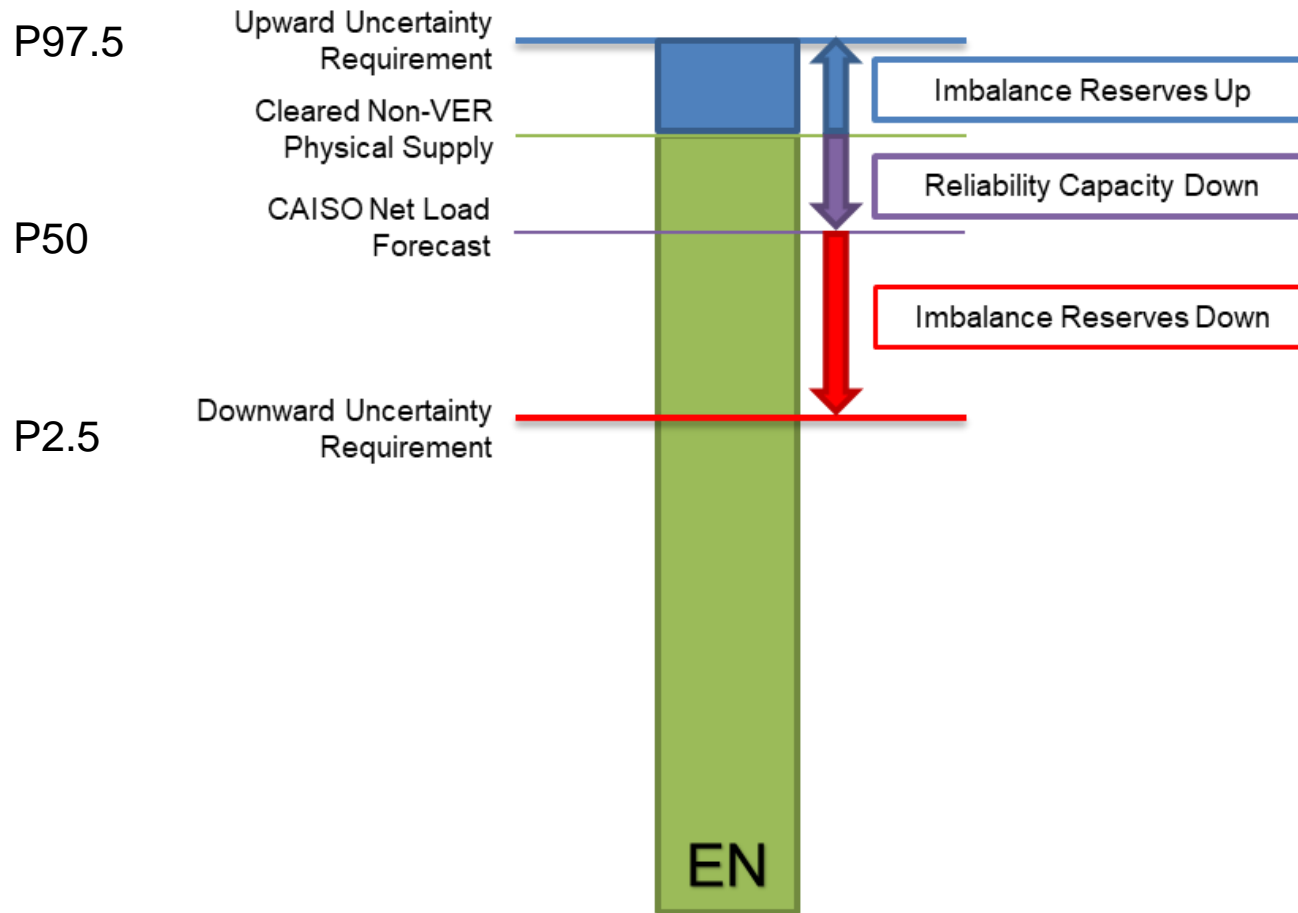
As a result of day-ahead market, sufficient physical generation is scheduled to meet real-time needs

Pmax

Imbalance Reserve Up Award +
Reliability Capacity Up Award

Day Ahead Energy Schedule

Imbalance Reserve Down Award +
Reliabiilty Capacity Down Award

Pmin

Real-time
Economic Bid
Range

Real-time Self-
Schedules or
Economic Bids

Real-
Time
MOO

DAME no longer proposes changes to how VERs bid in the day-ahead market

- VERs ineligible to provide RCU and IRU but eligible to provide RCD, IRD, and AS

- Awarding VERs energy and upward capacity above their forecast undermines reliability
  - Similar concern does not exist for downward capacity

- In the future if VERs are needed to provide upward capacity they would be required to provide DA energy bids with UEL established by CAISO forecast
  - Formulation and deployment scenarios would be modified to use VER energy schedule rather than forecast

Undeliverable products lead to current and future market inefficiencies and operational challenges

$

| Deliverability of RT Flexible Ramping Product |

Not biddable
+/- 1000MW
50% deliverable

$$$

| Deliverability of DAME Imbalance Reserves |

Biddable
+/- 4000MW
50% deliverable?

| EDAM Benefits |

Impact increases as you move from real-time to EDAM

Price Performance Analysis identified need to improve deliverability of market products

$$$$$$$

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

CAISO proposes mechanisms to allow new products to be priced and deliverable at a nodal level

- Reliability capacity and imbalance reserves will be scheduled based on a transmission constrained power flow
  - Upward deployment scenario: non-VER physical supply + VER forecast + RCU awards + IRU awards
  - Downward deployment scenario: non-VER physical supply + VER forecast – RCD awards – IRD awards

- VER forecast is used in deployment scenarios because that is the expected real-time supply

- Surplus variable for imbalance reserves also included in deployment scenarios similar to FRP

Physical and virtual resources clear at the same price at the same node

- First market pass decouples the energy and reliability energy allowing reliability capacity up or down to be a fixed requirement in last pass

- Last market pass deployment scenarios, physical energy schedules are fixed at first pass level and VERs at their forecast to eliminate marginal congestion impact in deployment scenarios

Elimination of REN removes need to modify existing CRR process

- Deployment scenarios used in last market pass do not result in marginal congestion cost to energy schedules

- CRRs will settle using current marginal congestion calculation based on energy schedules

California ISO

Main objective of revised straw proposal is to build stakeholder consensus around market formulation

- Only a few additional design elements were added
  - Accounting for energy price when procuring upward capacity
  - Market power mitigation of capacity products

- Auxiliary elements (e.g., settlements) will be fully fleshed out with stakeholders after agreement on formulation

QUESTIONS?

Day-Ahead Market Enhancements

PROPOSED DAY-AHEAD MARKET FORMULATION

California ISO

DAME overview

- **Three passes:**
  - ◆ Market Power Mitigation (MPM) pass
    - Full problem formulation with submitted bids
  - ◆ First Market (FM) pass
    - Skipped if there is no mitigation
    - Full problem formulation with mitigated bids
  - ◆ Last Market (LM) pass
    - Fixed unit commitment
    - Approximations to decouple marginal pricing between energy and capacity products
    - Approximations to remove impact on Congestion Revenue Rights from deployment scenarios

DAME features

- Integrated IFM and RUC problem with single unit commitment

- Introduction of new capacity products:
  - Reliability Capacity Up/Down (RCU/RCD)
    - 60min capacity to cover difference between day-ahead net demand forecast and non-VER physical supply schedules
  - Flexible Ramp Up/Down (FRU/FRD)
    - 15min capacity to cover upward/downward uncertainty in day-ahead net demand forecast (demand forecast minus VER forecast)

- Enforce transmission constraints in FRU/FRD deployment scenarios

California ISO

Capacity procurement when non-VER physical supply clears below the net demand forecast
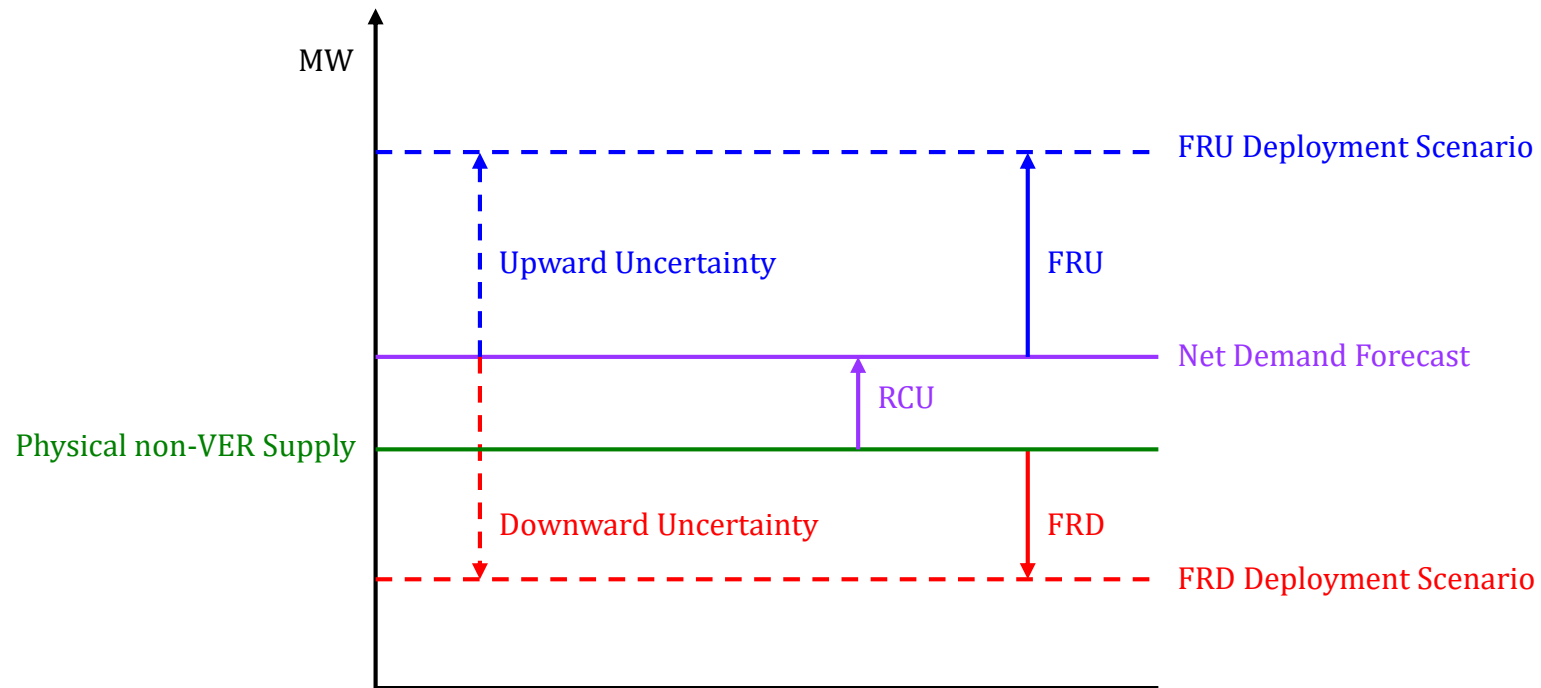
Capacity procurement when non-VER physical supply clears above the net demand forecast
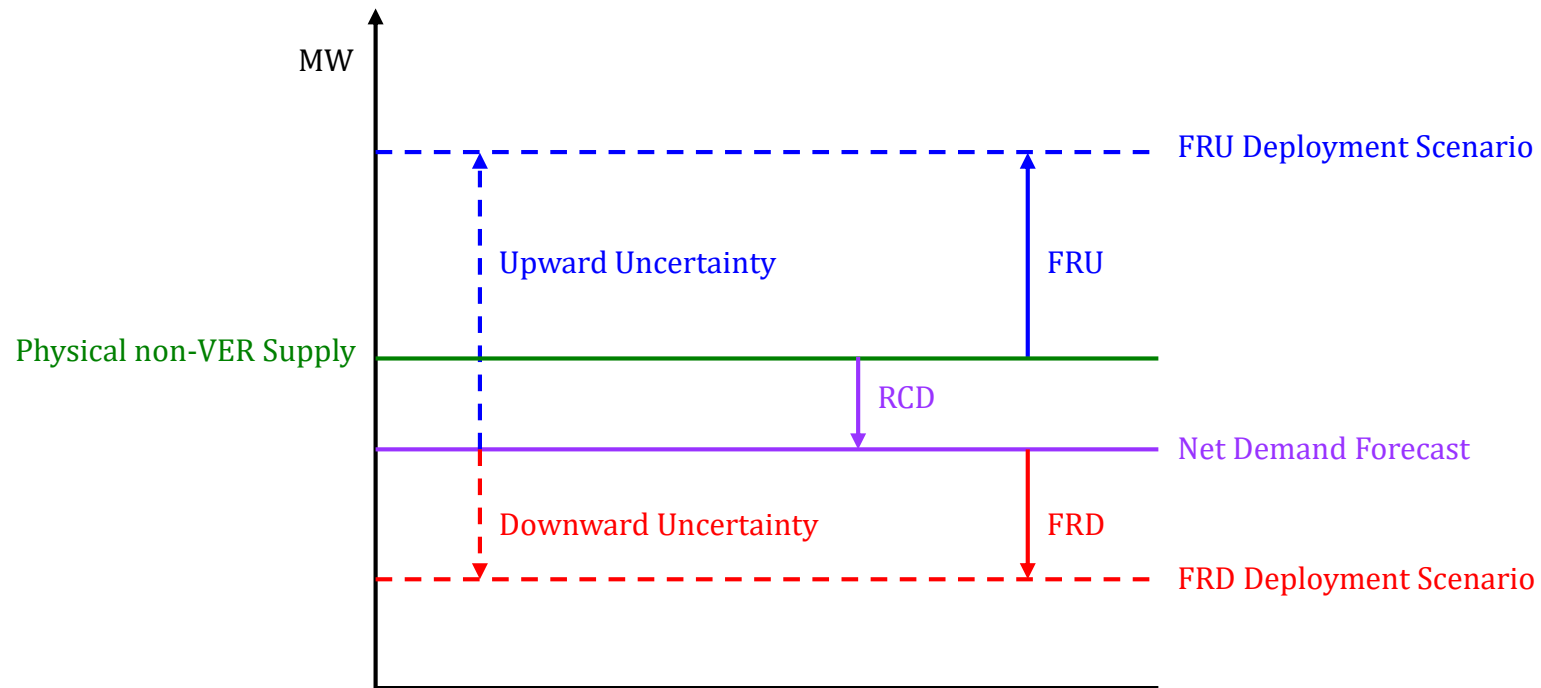
Objective function

- **Minimize:**
  - ◆ Unit commitment cost based on SUC, MLC, STC, and PC bids
  - ◆ Energy cost based on energy bids
  - ◆ Ancillary services cost based on RU, RD, RUM, RDM, SR, and NR bids
  - ◆ Reliability capacity cost based on RCU/RCD bids
  - ◆ Flexible ramp cost based on FRU/FRD bids
  - ◆ Uncertainty requirement relaxation (demand price curve) cost

- **Must Offer Obligation (MOO) for RCU/RCD and FRU/FRD awards**

California ISO

Power balance constraint

- Same in all passes:

$$\sum_i \left(EN_{i,t} + VS_{i,t} - VD_{i,t} - L_{i,t} \right) - Loss_t = 0, t = 1,2,\dots,T$$

- Linearized:

$$\sum_i \frac{\Delta EN_{i,t} + \Delta VS_{i,t} - \Delta VD_{i,t} - \Delta L_{i,t}}{LPF_{i,t}} = 0, t = 1,2,\dots,T$$

California ISO

Reliability capacity procurement constraint

- **MPM and FM pass:**

$$\sum_i EN_{i,t} + \sum_i RCU_{i,t} - \sum_i RCD_{i,t} = D_t \Rightarrow$$

$$\sum_{i \notin VER} EN_{i,t} + \sum_{i \notin VER} RCU_{i,t} - \sum_i RCD_{i,t} = ND_t, t = 1,2,\ldots,T$$

- **LM pass:**

$$\sum_{i \notin VER} RCU_{i,t} - \sum_i RCD_{i,t} = ND_t - \sum_{i \notin VER} \widehat{EN}_{i,t}, t = 1,2,\ldots,T$$

California ISO

Flexible ramp procurement constraints

- **Same in all passes:**

$$\left.\begin{array}{l} \sum_i RCD_{i,t} + \sum_{i \notin VER} FRU_{i,t} + \sum_r FRUS_{r,t} \geq FRUR_t \\ \sum_{i \notin VER} RCU_{i,t} + \sum_i FRD_{i,t} + \sum_r FRDS_{r,t} \geq FRDR_t \end{array}\right\}, t = 1,2,\dots,T$$

- **FRU/FRD requirements (FRUR/FRDR) are distributed separately to load and solar/wind VER based on historical causation factors**

- **FRU/FRD surplus (FRUS/FRDS) are distributed independently to each DLAP**

California ISO

Linearized transmission constraints

- **Base scenario, same in all passes:**

$$\widetilde{LFL}_{m,t} \leq \tilde{F}_{m,t} + \sum_i \left(\Delta EN_{i,t} + \Delta VS_{i,t} - \Delta VD_{i,t} - \Delta L_{i,t} \right) SF_{i,m,t} \leq \widehat{UFL}_{m,t}$$

- **FRU deployment scenario in MPM and FM pass:**

$$\widetilde{LFL}_{m,t}^{(u)} \leq \tilde{F}_{m,t}^{(u)} + \sum_{i \notin VER} \left(\Delta EN_{i,t} + \Delta RCU_{i,t} + \Delta FRU_{i,t} \right) SF_{i,m,t} + \sum_r \Delta FRUS_{r,t} \, SF_{r,m,t} \leq \widehat{UFL}_{m,t}^{(u)}$$

- **FRD deployment scenario in MPM and FM pass:**

$$\widetilde{LFL}_{m,t}^{(d)} \leq \tilde{F}_{m,t}^{(d)} + \sum_{i \notin VER} \Delta EN_{i,t} \, SF_{i,m,t} - \sum_i \left(\Delta RCD_{i,t} + \Delta FRD_{i,t} \right) SF_{i,m,t} - \sum_r \Delta FRDS_{r,t} \, SF_{r,m,t}$$

$$\leq \widehat{UFL}_{m,t}^{(d)}$$

Linearized transmission constraints

- **Base scenario, same in all passes:**

$$\widetilde{LFL}_{m,t} \leq \tilde{F}_{m,t} + \sum_i \left(\Delta EN_{i,t} + \Delta VS_{i,t} - \Delta VD_{i,t} - \Delta L_{i,t} \right) SF_{i,m,t} \leq \widehat{UFL}_{m,t}$$

- **FRU deployment scenario in LM pass:**

$$\widetilde{LFL}_{m,t}^{(u)} \leq \tilde{F}_{m,t}^{(u)} + \sum_{i \notin VER} \left(\Delta RCU_{i,t} + \Delta FRU_{i,t} \right) SF_{i,m,t} + \sum_r \Delta FRUS_{r,t} \, SF_{r,m,t} \leq \widehat{UFL}_{m,t}^{(u)}$$

- **FRD deployment scenario in LM pass:**

$$\widetilde{LFL}_{m,t}^{(d)} \leq \tilde{F}_{m,t}^{(d)} - \sum_i \left(\Delta RCD_{i,t} + \Delta FRD_{i,t} \right) SF_{i,m,t} - \sum_r \Delta FRDS_{r,t} \, SF_{r,m,t} \leq \widehat{UFL}_{m,t}^{(d)}$$

California ISO

Price formation

$$\sum_i \frac{\Delta EN_{i,t} + \Delta VS_{i,t} - \Delta VD_{i,t} - \Delta L_{i,t}}{LPF_{i,t}} = 0 \qquad \lambda_t$$

$$\sum_{i \notin VER} RCU_{i,t} - \sum_i RCD_{i,t} = ND_t - \sum_{i \notin VER} \widehat{EN}_{i,t} \qquad \xi_t$$

$$\sum_i RCD_{i,t} + \sum_{i \notin VER} FRU_{i,t} + \sum_r FRUS_{r,t} \geq FRUR_t \qquad \rho_t$$

$$\sum_{i \notin VER} RCU_{i,t} + \sum_i FRD_{i,t} + \sum_r FRDS_{r,t} \geq FRDR_t \qquad \sigma_t$$

$$\tilde{F}_{m,t} + \sum_i \left(\Delta EN_{i,t} + \Delta VS_{i,t} - \Delta VD_{i,t} - \Delta L_{i,t} \right) SF_{i,m,t} \leq \widehat{UFL}_{m,t} \qquad \mu_{m,t}, \forall m$$

$$\tilde{F}_{m,t}^{(u)} + \sum_{i \notin VER} \left(\Delta RCU_{i,t} + \Delta FRU_{i,t} \right) SF_{i,m,t} + \sum_r \Delta FRUS_{r,t} \, SF_{r,m,t} \leq \widehat{UFL}_{m,t}^{(u)} \qquad \mu_{m,t}^{(u)}, \forall m$$

$$\tilde{F}_{m,t}^{(d)} - \sum_i \left(\Delta RCD_{i,t} + \Delta FRD_{i,t} \right) SF_{i,m,t} - \sum_r \Delta FRDS_{r,t} \, SF_{r,m,t} \leq \widehat{UFL}_{m,t}^{(d)} \qquad \mu_{m,t}^{(d)}, \forall m$$

$$\left. \right\}, t = 1,2, \dots, T$$

Marginal prices

$$LMP_{i,t} = \frac{\lambda_t}{LPF_{i,t}} - \sum_m SF_{i,m,t}\, \mu_{m,t}$$

$$RCUMP_{i,t} = \xi_t + \sigma_t - \sum_m SF_{i,m,t}\, \mu_{m,t}^{(u)}$$

$$RCDMP_{i,t} = -\xi_t + \rho_t + \sum_m SF_{i,m,t}\, \mu_{m,t}^{(d)} \left.\right\} , t = 1,2,\ldots,T$$

$$FRUMP_{i,t} = \rho_t - \sum_m SF_{i,m,t}\, \mu_{m,t}^{(u)}$$

$$FRDMP_{i,t} = \sigma_t + \sum_m SF_{i,m,t}\, \mu_{m,t}^{(d)}$$

QUESTIONS?

Day-Ahead Market Enhancements Revised Straw Proposal – Day 2

Stakeholder Meeting

June 17, 2020

Agenda – June 17

Time:	Task:	Presenter:
9:00 – 9:10	Welcome/introductions	Kristina Osborne
9:10 – 9:45	June 15 Follow Up Questions	All
9:45 – 10:30 am	Accounting for Energy Offer Cost in Upward Capacity Procurement	James Friedrich
10:30 – 11:15 am	Market Power Mitigation	James Friedrich
11:15 – 11:50 am	Other DAME Design Items	James Friedrich
11:50 am – 12:00 pm	Next Steps	Kristina Osborne

Day-Ahead Market Enhancements

ACCOUNTING FOR ENERGY OFFER COST IN UPWARD CAPACITY PROCUREMENT

Current day-ahead market does not distinguish the energy cost of resources when awarding capacity

- Current DAM optimization is indifferent to the underlying energy cost of resources when determining capacity awards.

- Less of concern for contingency reserves but a big concern for RCU and IRU because they will be routinely dispatched for energy in real time.

- Optimal to award upward capacity products to unloaded resource with lowest underlying energy cost because it would be most cost-effective if needed in real-time.

- It is necessary to implement rules that make it difficult for resources with high energy costs to be consistently awarded RCU and IRU.

The proposal is to have a real-time energy offer cap for resources awarded RCU and IRU

- Resources with underlying energy costs below real-time energy offer cap are not impacted by the cap and should not influence capacity bid

- Resources with underlying energy costs above real-time energy offer cap need to increase capacity bid price to be compensated for requirement to bid energy below cost in real-time.

- Real-time energy offer cap incentivizes high-cost resources to increase their capacity offers → decreases chance those resources will are awarded

Example
RT energy offer cap = $150/MWh

	Underlying Energy Cost	RT Availability Cost	Cost of Offer Cap	Capacity Bid
Resource A	$25	$5	$0	$5
Resource B	$100	$5	$0	$5
Resource C	$250	$5	$100	$105
Resource D	$950	$5	$800	$805

Resource D would not offer RCU or IRU since above $247 penalty price

The real-time energy offer cap would be set on an hourly basis before the day ahead market closes

- SCs will have sufficient time to adjust capacity bids.

- Ideally, real-time energy offer cap set at the marginal price of meeting the P97.5 net load forecast using all available day-ahead energy bids.

- CAISO is determining how to forecast the P97.5 net load price and evaluating the implementation feasibility

- If market conditions change between DA and RT, the CAISO may need to adjust the real-time offer cap.

California ISO

QUESTIONS?

Day-Ahead Market Enhancements

MARKET POWER MITIGATION FOR RELIABILITY CAPACITY AND IMBALANCE RESERVES

California ISO

CAISO proposes to extend local market power mitigation to reliability capacity and imbalance reserve bids

- Suppliers will offer to sell energy, reliability capacity, and imbalance reserves in the day-ahead market

- A supplier may be able to exercise market power in providing reliability capacity or imbalance reserve awards

- CAISO proposes to evaluate constraints for uncompetitive conditions and mitigate reliability capacity and imbalance reserve offers effective on binding constraints

Proposal for market power mitigation of capacity products

- Allow imbalance reserves bids up to $247
  - Reflects FRP relaxation price

- If market power detected, mitigate capacity bids to $30
  - ~90th percentile of historical spin price – assumed a competitive capacity price

California ISO

Spin prices by month

California ISO

Public
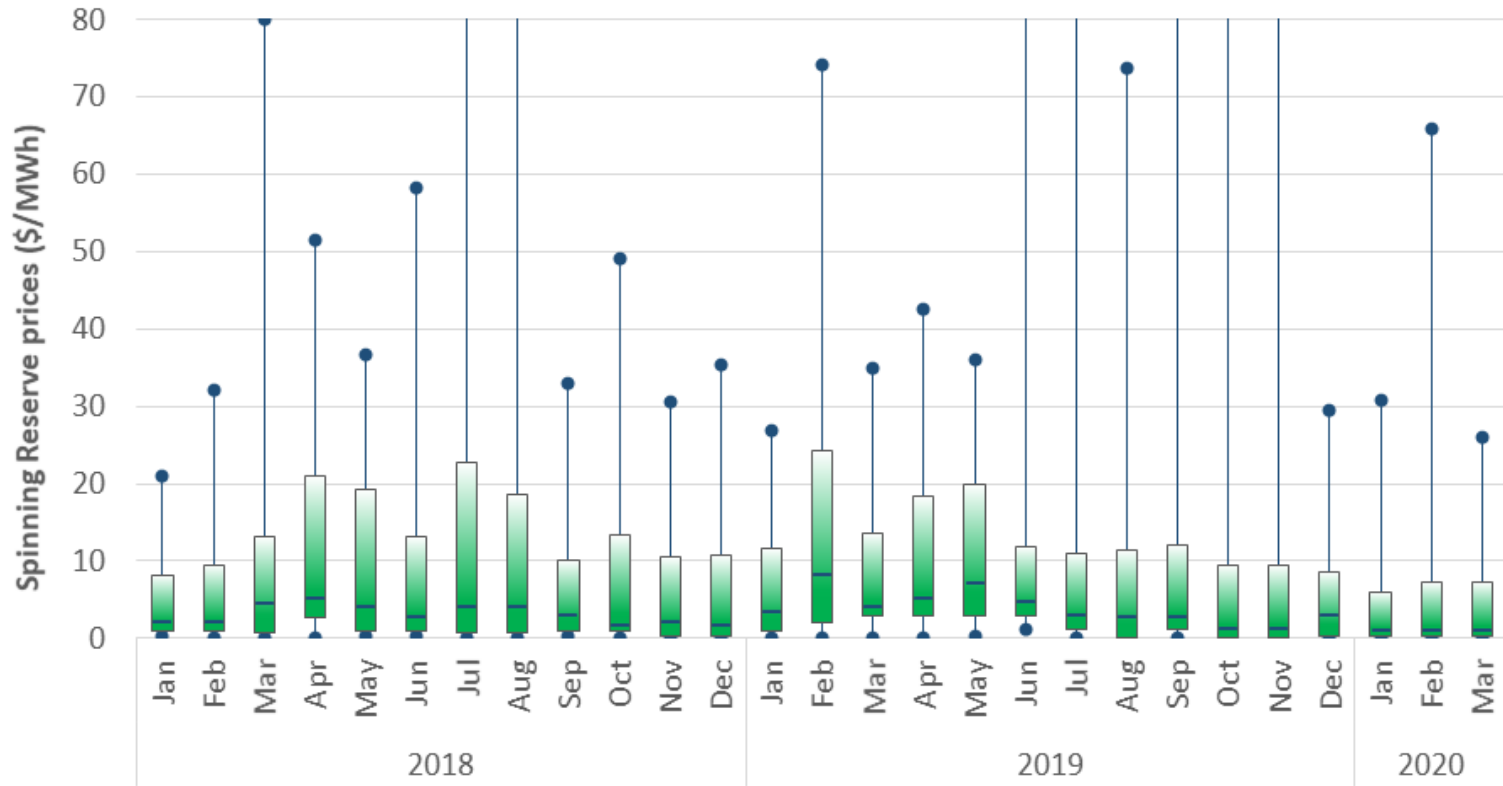
Spin prices by hour

California ISO

Public
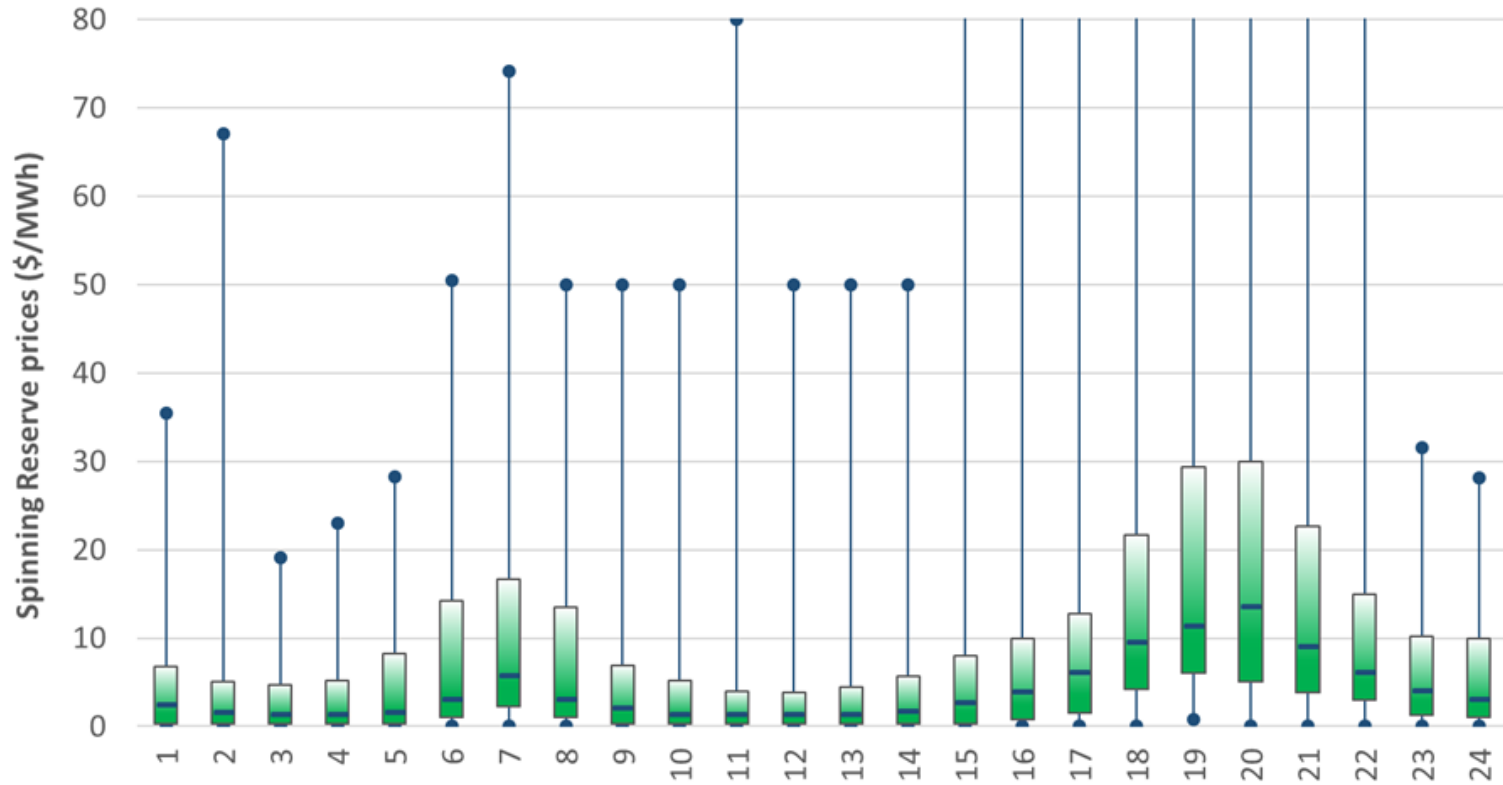
If all capacity bids were mitigated to $30, that may not be enough to compensate high-cost resources subject to real-time offer cap

- Resources with high energy costs bidding for RCU/IRU are expected to incorporate the cost of the offer cap into their capacity bid

- For those resources, bids would be mitigated to $30 plus MAX(0, DEB – RT Offer Cap)

California ISO

QUESTIONS?

Day-Ahead Market Enhancements

SETTLEMENT RULES

California ISO

The CAISO proposes the following day-ahead payments and charges

- No changes to energy settlement

- Resources awarded reliability capacity or imbalance reserves are paid the LMP for the corresponding product and direction (up/down)

California ISO

Uplift cost for reliability capacity will be allocated as follows:

- RCU Tier 1 cost is allocated to net virtual supply, under-scheduled load and over-scheduled variable energy resources.

- RCU Tier 2 cost will be allocated to metered demand.

- RCD Tier 1 cost allocated to net virtual demand, over-scheduled load and under-scheduled variable energy resources

- RCD Tier 2 cost will be allocated to metered demand.

Uplift costs for imbalance reserves will be allocated as follows:

- IRU Tier 1 cost will be allocated to net negative demand deviation.

- IRU Tier 2 cost will be allocated to metered demand.

- IRD Tier 1 cost will be allocated to net positive demand deviation.

- IRD Tier 2 cost will be allocated to metered demand.

The CAISO proposes the following changes to bid cost recovery

- Day-ahead bid cost recovery will now include the following revenues
  - Energy, reliability capacity, imbalance reserves, corrective capacity, and AS

- Day-ahead bid cost recovery will now include the following costs
  - Energy bids, reliability capacity bids, imbalance reserve bids, corrective capacity bids, AS bids, and commitment costs
  - Reliability capacity bid cost is limited to RCU and RCD schedules

- RTM BCR will no longer include RUC uplift

California ISO

QUESTIONS?

Day-Ahead Market Enhancements

TREATMENT OF MSS, ETC, AND TOR

California ISO

DAME proposes to maintain current settlement treatment of MSS day-ahead schedules

- No longer an option for MSS to choose whether to participate in RUC procurement process

- MSS resources with imbalance reserve or reliability capacity awards settled same as non-MSS resources regardless of net or gross settlement selection

California ISO

DAME proposes to maintain current settlement for ETCs and TORs

- If ETC/TOR self-schedules are balanced, market does not need to procure reliability capacity
  - ETC/TOR self-schedules are excluded from reliability capacity tier 1 and imbalance reserve tier 2 allocations up to the valid and balanced portion

- If ETC/TOR self-schedules enough supply to meet real-time demand, CAISO does not need to procure additional imbalance reserves
  - ETC/TOR self-schedules are excluded from imbalance reserve tier 1 and tier 2 up to the valid and balanced portion

California ISO

QUESTIONS?
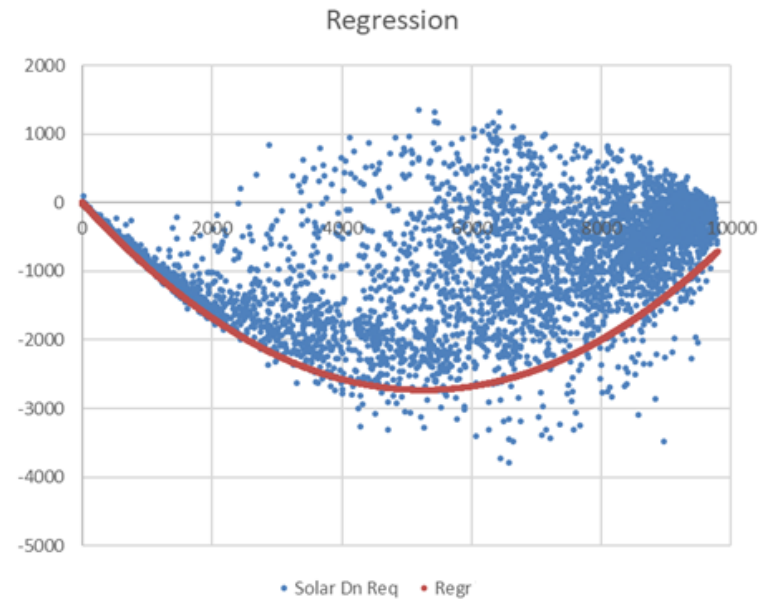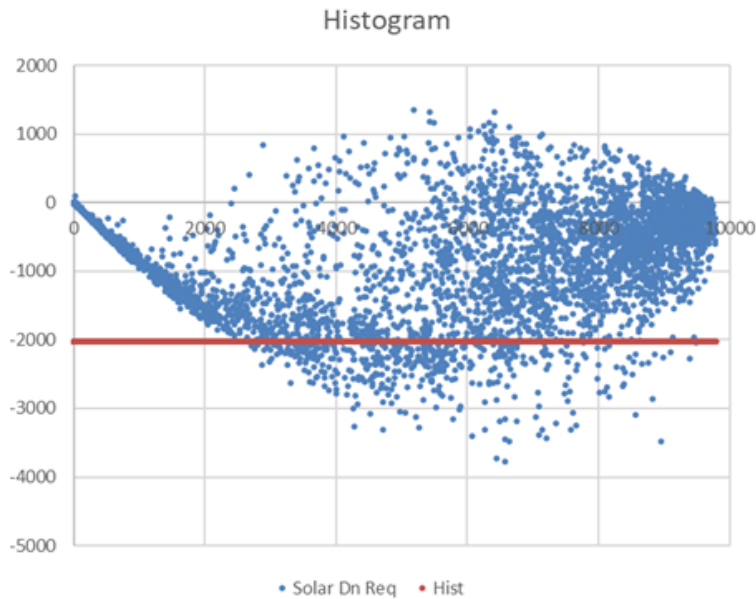
Day-Ahead Market Enhancements

IMBALANCE RESERVE REQUIREMENT

California ISO

The CAISO proposes to use a regression approach to determine the imbalance reserve requirement

- Use historical data of load, wind, and solar forecast error between DAM and FMM and identify highest and lowest imbalance within each 15-min interval for every hour

- Upward and downward uncertainty requirement is output of quantile regression model based on forecasted amounts of load, wind, and solar

- Quantile regression estimates at 2.5/97.5 percentiles

Benefits of regression vs. histogram approach for determining the imbalance reserve procurement target

Solar imbalance down values compared to day-ahead solar forecast

Regression approach is shaped to better capture variance of imbalance to forecast values

California ISO

QUESTIONS?

Day-Ahead Market Enhancements

RESOURCE ADEQUACY DAY-AHEAD MUST OFFER OBLIGATIONS

California ISO

Resource Adequacy day-ahead bidding obligation for energy, reliability capacity, and imbalance reserves

	DA Bid (SS or Economic) for Energy	DA Bid (Economic) for Reliability Capacity	DA Bid (Economic) for Imbalance Reserves
System RA	Yes	Yes	Not required
Local RA	Yes	Yes	Not required
Flex RA	Yes (economic)	Yes	Yes

Real-time bidding obligation will be determined by day-ahead awards

QUESTIONS?

Day-Ahead Market Enhancements

NEXT STEPS

EIM Governing Body classification

- The CAISO proposes the EIM Governing Body have an **advisory role** in the approval of the day-ahead market enhancements initiative

- Stakeholders encouraged to submit responses to the EIM classification within written comments

California ISO

Day-ahead market enhancements implementation moved to Fall 2022

- Provides additional time to develop revised market formulation

- Allows for operational experience with deployment scenarios to ensure deliverability
  - FRP nodal deliverability implementation in Fall 2021

- Allows for operational experience with requirement calculation based on load, wind and solar forecast
  - FRP requirement implementation no later than Fall 2021

California ISO

DAME policy development schedule

Date	Milestone
Revised Straw Proposal	
Paper Posted	June 8, 2020
Stakeholder Meeting	June 15 and 17, 2020
Comments Due	July 6, 2020
Second Revised Straw Proposal	
Paper Posted - *tentative*	August 10, 2020
Stakeholder Meeting - *tentative*	August 17 and 18, 2020
Comments Due - *tentative*	Aug 31, 2020
Draft Final Proposal	
Paper Posted - tentative	Oct 27, 2020
Stakeholder Meeting - *tentative*	Nov 3, 2020
Comments Due - *tentative*	Nov 17, 2020
Start Tariff Stakeholder Process	Early Q1 2021
Start Business Requirement Specification (BRS) Development	Early Q1 2021
Policy Final Proposal	Late Q1 2021
EIM Governing Body & CAISO Board of Governors	Early Q2 2022
Implementation	Fall 2022

Dates are tentative and subject to change

California ISO

Next steps

- Stakeholders should submit comments on the DAME revised straw proposal to initiativecomments@caiso.com by July 6, 2020

- Submit comments using the template provided on the CAISO's initiative webpage located here: http://www.caiso.com/StakeholderProcesses/Day-ahead-market-enhancements

California ISO

New online stakeholder commenting tool coming soon

- Ability to view all comments with a single click.

- Ability to filter comments by question or by entity.

- Login, add your comments directly to the template and submit.
  - You can save and return to your entry anytime during the open comment period.

NOTE

Submitting comments in the new tool will require a one-time registration.

California ISO