



California ISO

Day Ahead Market Enhancements

Don Tretheway

Senior Advisor, Market Design Policy

Regional Issues Forum

March 9, 2018

Day-ahead market enhancements address net load curve and uncertainty previously left to real-time market

- 15-minute scheduling granularity in IFM
- Day-ahead imbalance reserve product
- Combined Integrated Forward Market and Residual Unit Commitment

Why these three elements are dependent on each other?

- 15 minute scheduling addresses granularity issues between day-ahead market and FMM
- DA imbalance reserves ensure sufficient real-time bids to meet imbalances that materializes in RTM
- Integrated IFM/RUC allows the DA imbalance reserve to be procured relative to ISO net load forecast, not bid in demand

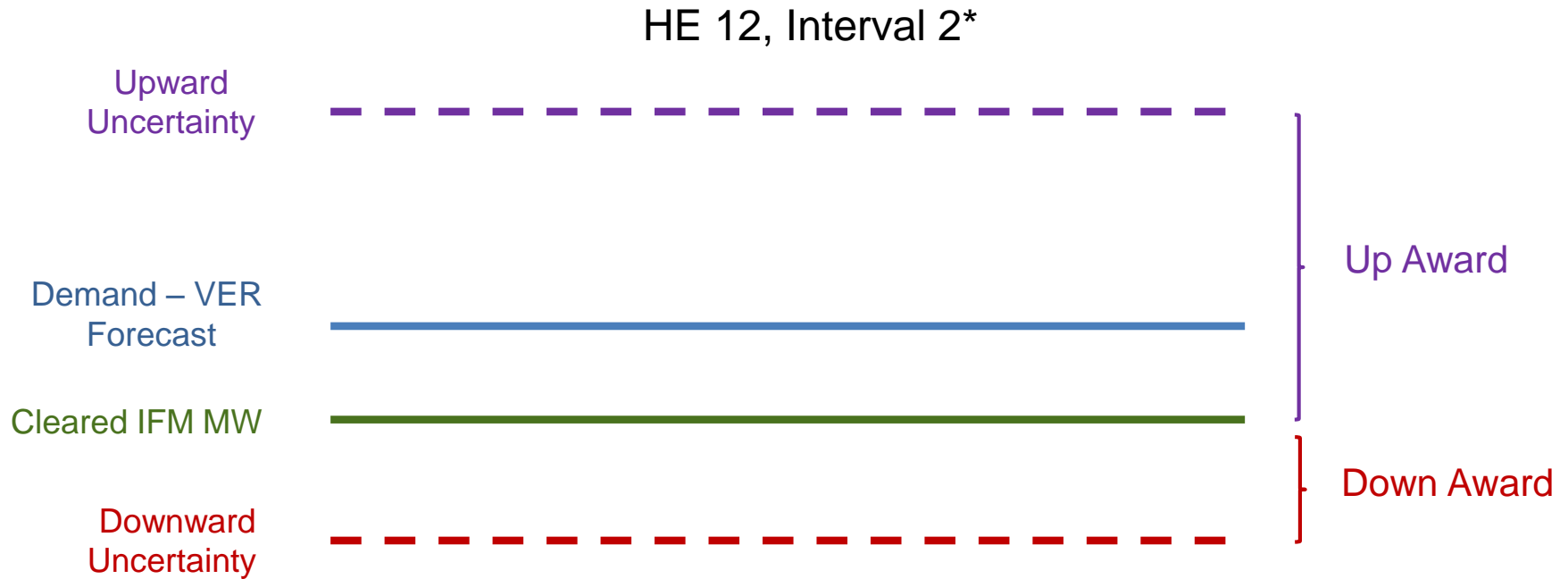
Currently RUC will commit additional resources if needed to match CFCD

HE12



- RUC net short will commit additional resources when IFM clears below CAISO forecast of CAISO Demand (CFCD)
- Intermittent Resource Adjustments account for under-scheduled VERs that will over-generate in real time.

Upward DA imbalance reserve ensures sufficient RT bids to meet uncertainty in net load forecast



* 15-minute interval

Currently RUC will not de-commit resources if needed to match CFCD

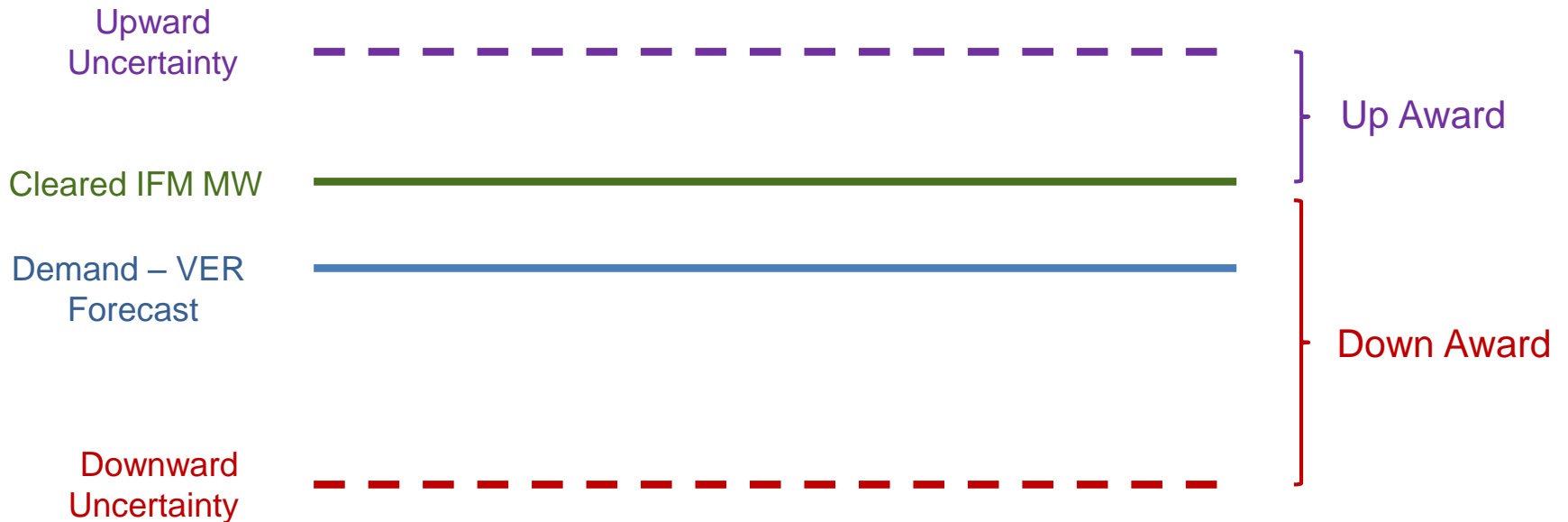
Current Design - HE 10



RUC is unable to de-commit units to match the CFDF. Therefore, imbalance is left to real-time market to resolve.

Downward DA imbalance reserve ensures sufficient RT bids to meet forecast difference and uncertainty in net load forecast

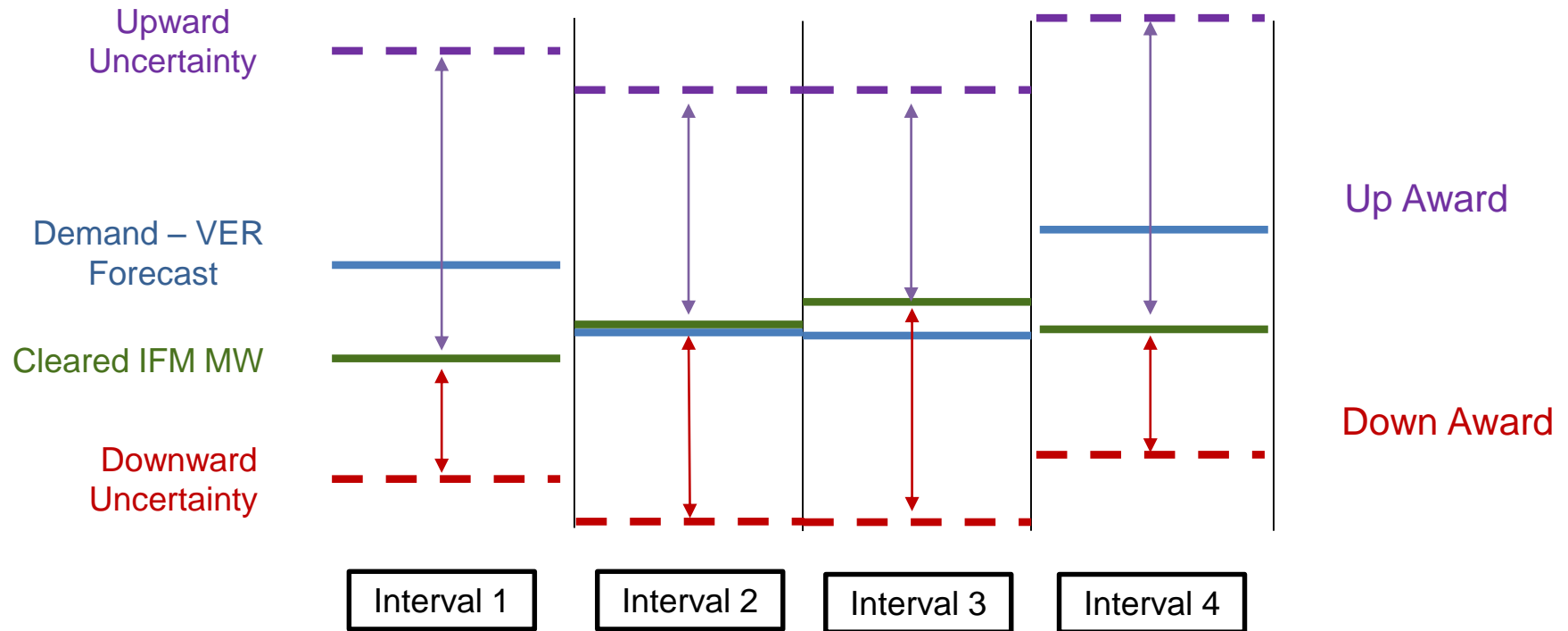
HE 10, Interval 1*



* 15-minute interval

Imbalance reserve positions fleet in DA to ensure that RTM can address uncertainty that materializes

Proposed Design - HE 12, Intervals 1-4



Imbalance reserves can be used for all services in the real-time market

Day-Ahead Market	Bid-in Demand	ISO Net-Load Forecast	Contingency Reserves	Regulation	Corrective Capacity	Imbalance Reserves	
	Financial	Reliability	6.3% of the load forecast	Forecast error between RTD and Actual	System able to meet line limits after contingency	Forecast difference between IFM and RTD for all real-time products	
Real-Time Market	Bid-in Demand	ISO Net - Load Forecast	Contingency Reserves	Regulation	Corrective Capacity	FRP Forecasted Movement	FRP Uncertainty Awards
	Not Applicable	Imbalance energy	Incremental	Incremental	Re-dispatch, if necessary	Ramp between market intervals in the same run	Forecast difference between binding and advisory intervals between runs

Plan to complete stakeholder process midyear and implement changes in Fall 2019

Item	Date
Post Issue Paper	February 28, 2018
Stakeholder Meeting	March 7, 2018
Stakeholder Comments Due	March 21, 2017
Post Straw Proposal	April 11, 2018
Stakeholder Meeting	April 18, 2018
Stakeholder Comments Due	May 2, 2018
Post Revised Straw Proposal	May 16, 2018
Stakeholder Meeting	May 23, 2018
Stakeholder Comments Due	May 30, 2018
Post Draft Final Proposal	June 12, 2018
Stakeholder Call	June 19, 2018
Stakeholder Comments Due	June 26, 2018
EIM Governing Body Meeting (Advisory)	July 12, 2018
ISO Board of Governors Meeting	July 25-26, 2018

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

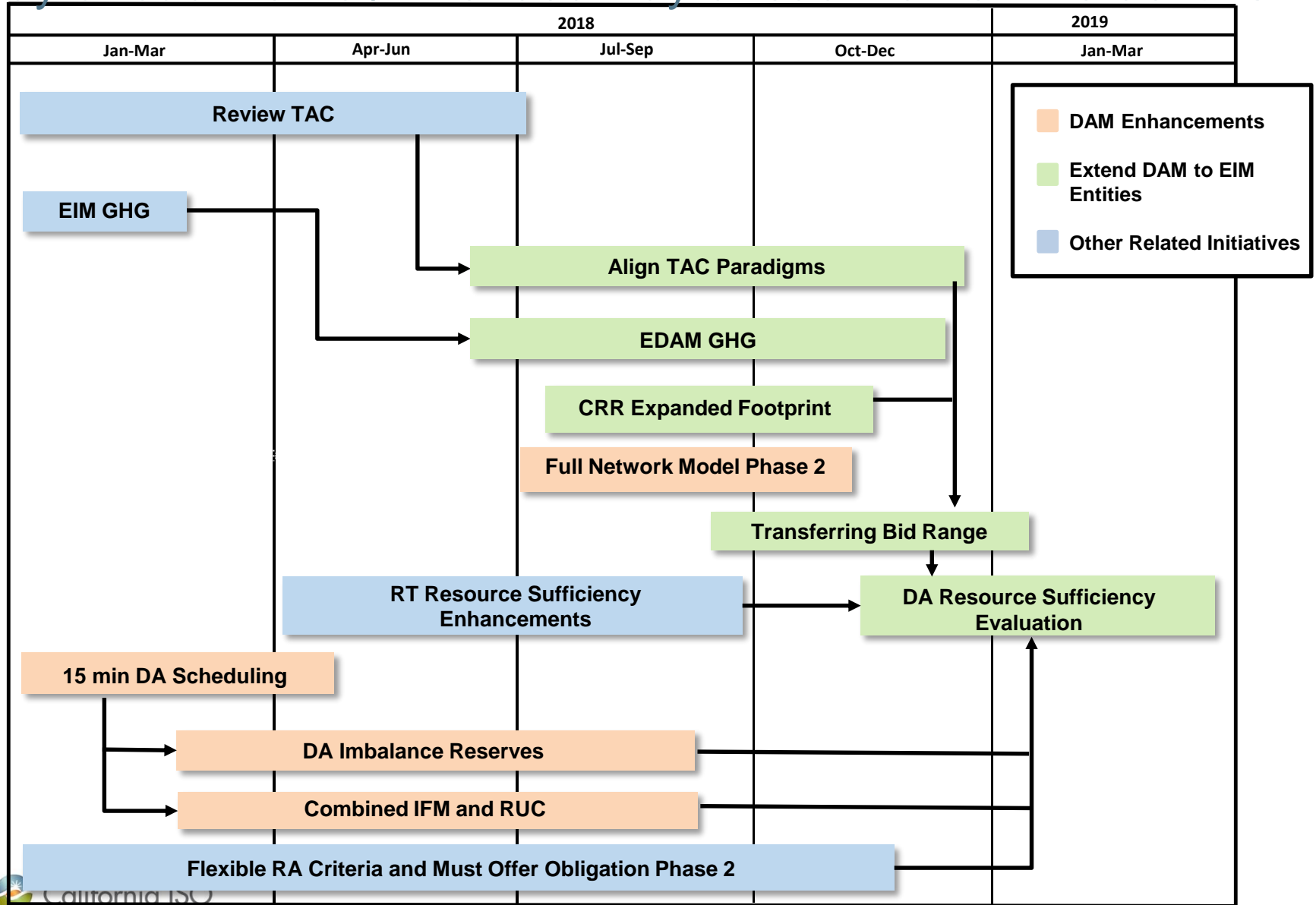
Scope of stakeholder initiative to extend day-ahead market to EIM Entities

- **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

Scope of stakeholder initiative to extend day-ahead market to EIM Entities (continued)

- 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

Day-ahead market/Extended Day-ahead Market Interactions



THANK YOU

Stay connected



@California_ISO



Download ISO Today
mobile app



Sign up for the
Daily Briefing at
www.caiso.com