

# WESTERN ENERGY IMBALANCE MARKET

## Briefing on day-ahead market enhancements

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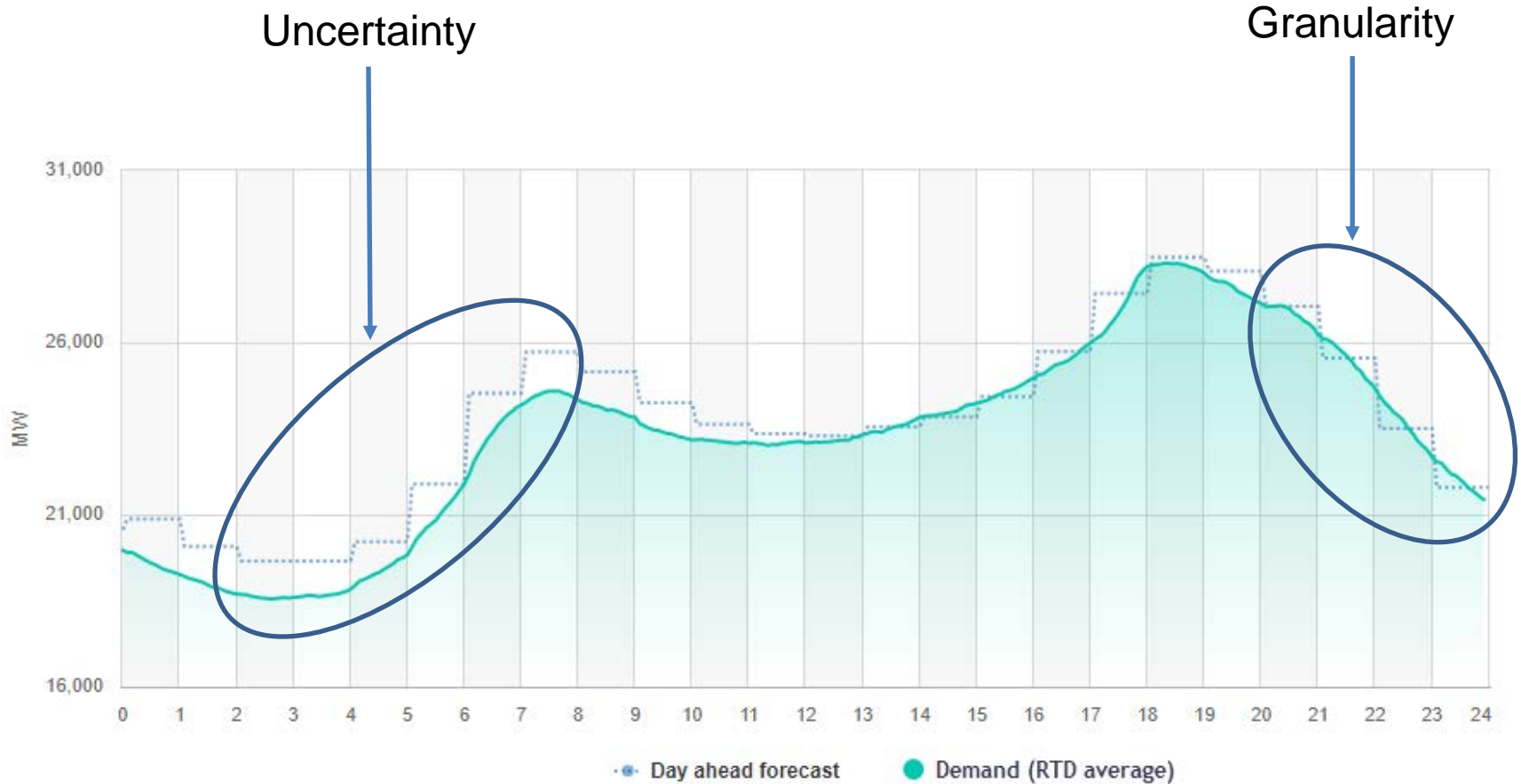
EIM Governing Body Meeting

General Session

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# Day-ahead market enhancements position the fleet to better respond to real-time imbalances



# In response to stakeholder comments, day-ahead market enhancement initiative split into two phases

- Phase 1: 15-Minute Granularity
  - 15-minute scheduling
  - 15-minute bidding
  - Implementation Fall 2020
- Phase 2: Day-Ahead Flexible Ramping Product (FRP)
  - Market formulation of FRP consistent between day-ahead and real-time market
  - Improve deliverability of FRP and ancillary services (AS)
  - Consider re-optimization of AS in real-time 15-minute market
  - Implementation Fall 2021

# Decisional classification for day-ahead market enhancements

- 15-minute granularity: Hybrid non-EIM driven
  - 15-minute scheduling/bidding: Advisory
  - 15-minute base scheduling: Primary
  - Changes to resource sufficiency evaluation: Primary
  
- Day-ahead flexible ramping product: Advisory

# 15-minute scheduling in the day-ahead market positions the fleet to better respond to real-time imbalances (Phase 1)

- Operational benefits
  - Pacific Northwest hydro resources can provide 15-minute schedules in day-ahead, but not real-time
  - Improves variable energy resource scheduling in day-ahead
  - DA flexible ramping product only needs to cover uncertainty
  - Commits resources to more closely match steep net-load ramps and sharp changes in ramp within the hour
- Technical challenges
  - Market optimization to solve for 96 intervals vs. 24
  - Solving market within current market timelines
  - Settlement updates to nearly all charge codes

## Design elements to change from hourly to 15-minute scheduling granularity

- 15-minute bidding for day-ahead and real-time market
- 15-minute residual unit commitment process
- Inter-SC trades submitted for each 15-minute interval
- Hourly load meters can be shaped into 15-minute values
- Clarification to ancillary services rules
- Bid submission deadline moved to 9:00 AM from 10:00 AM

In general, all hourly rules move to 15-minute granularity

# Corresponding design changes to the energy imbalance market

- Base schedules will now be submitted with 15-minute granularity
- Resource sufficiency evaluation balance test performed for each 15-minute interval
  - Under/Over scheduling penalties by 15-minute interval
- Resource sufficiency evaluation capacity test performed for each 15-minute interval
  - Failure results in EIM transfers limited for 15-minute interval

Aligns ISO day-ahead schedule & EIM base schedule

# Stakeholders support the move to a 15-minute day-ahead market

- Broad support for phasing the initiative
- Broad support for 15-minute scheduling and bidding
- EIM entities support changes to the resource sufficiency evaluation
- Proposal to move bid submission deadline to 9:00am is not opposed; but stakeholders recognize this will require changes to their business practices
  - Stakeholders requested ISO to confirm market timeline change is needed and sufficient



# Schedule for phase 1 and phase 2 of the day-ahead market enhancement initiative

- **Phase 1: 15-Minute Granularity**
  - EIM Governing Body: Q1 2019
  - ISO Board of Governors: Q1 2019
  - Implementation: Fall 2020
  
- **Phase 2: Day-Ahead Flexible Ramping Product**
  - EIM Governing Body: May 2019
  - ISO Board of Governors: May 2019
  - Implementation: Fall 2021

## In summary, 15-minute scheduling provides significant operational benefits to integrate more renewables

- Pacific Northwest hydro resources can provide 15-minute schedules in day-ahead, but not real-time
- Improves variable energy resource scheduling in day-ahead
- DA flexible ramping product only needs to cover uncertainty
- Commits resources to more closely match steep net-load ramps and sharp changes in ramp within the hour

# Potential approaches to meet solution time goals

1. Direct 15' granularity modeling approach ... *In progress*
  - Encouraging results but twice as long as current timelines without CME
  - Carefully revisiting model formulation and tuning MIP algorithm
2. All 15' granularity except hourly commitment for resources with start-up, min-up, or min-down constraints more than 1 hour, everything else is 15' commitment.
3. Hourly commitment as today but with new intra-hour special ramping constraints then
  - a) Fix commitment of resources with start-up, min-up, or min-down more than 1 hour and
  - b) Run 15' optimization with everything else flexible including commitment of resources not restricted by 3a.
4. Hourly commitment as today but with new intra-hour special ramping constraints then
  - a) Fix commitment of all resources and run 15' Dynamic Dispatch run