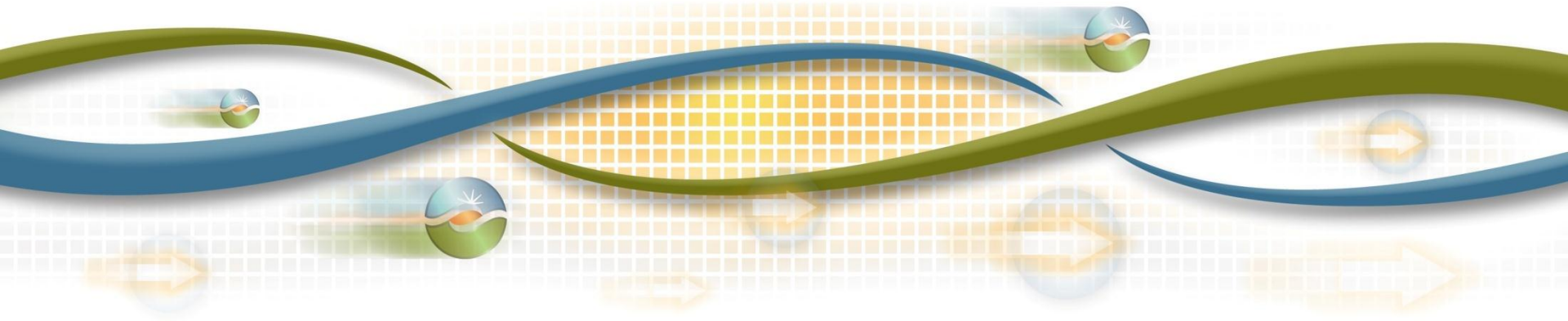# FERC Order 764 Compliance
Implementation of 15 minute scheduling and settlement

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Based on stakeholder comments, the ISO has been internally discussing the following

- Transmission Reservation (TR) process and settlement
  - Convergence bidding interaction with TR

- Settlement of Load

- Settlement rules or penalties to incentivize following dispatch

- Addressing dual-constraint issue in integrated IFM/RUC

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New process to determine hourly block schedules necessary to reliably manage the grid

- Perform market optimization based upon intertie bids
  - Hourly Blocks
    - Enforce constraint that T = T+15 = T+30 = T+45
    - If economic bid is not cleared, hourly block schedule is 0MW
  - 15 Minute and Dynamic Schedules
    - 15 minute intervals can have different MW level
    - If not accepted, option to not allow economic bid in RT market
  - VER forecast over intertie
    - Use hourly forecast in 15 minute intervals
- Publish results on hourly block schedules accepted at T-45
- Hourly block-schedules are price takers in 15-min market
  - Even if an economic bid submitted for purposes of determining if hourly block schedule is accepted

Hour Ahead Block Process Schedules Decline Penalty needed

- Counterflows that do not tag will cause divergence between accepted block schedules and 15 minute price
  - Import congested in hour ahead
    - DEC Import in HA
      - Tag at DA schedule not approved, subject to 15-min settlement
    - INC Export in HA
      - If the INC does not flow, no financial settlement ←
  - Export congested in hour ahead
    - INC Import in HA
      - If the INC does not flow, no financial settlement ←
    - DEC Export in HA
      - Tag at DA schedule not approved, subject to 15-min settlement

Ensure variable energy resources that self-schedule output have intertie capacity available

- ISO hourly forecast used
  - Select maximum 15 minute interval
  - Select maximum + forecast error
- VER forecast used
  - Select maximum 15 minute interval
  - To prevent overstating forecast, should they be subject to the Hour Ahead Block Process Schedules Decline Penalty
- As the quantity of bids that can be curtailed in 15 minute market increases, the amount of capacity to hold for VER self-schedules decreases

Intertie Bids Allowed in Real-Time

- Self-schedule Hourly Block

- Self-schedule VER Forecast

- Economic Bid Hourly Block Only

- Economic Bid Hourly Block w/ Intra Hour Curtailment

- Economic Bid 15 Minute Dispatchable

- Economic Bid Dynamic Transfer

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Real-Time Settlement of Load

- Calculate LAP hourly weighted average price by market volume for 15-minute market and RTD
  - New payload to settlements which disaggregates the CAISO Load Forecast into LAP Load Forecasts

- Apply weighted average price to deviations to DA schedule

- Neutrality based upon metered demand of LAP

- Spreadsheet example posted

Settlement of Internal Generation

- Deviations to DA schedule settle at 15-minute schedule

- Deviations to 15-minute schedules settle at RTD

- RTD multi-interval optimization may result in a 5 minute dispatch being lower than 15 minute energy schedule
  - Since the same bid is used in both markets, the dispatch in the binding RTD interval can be inconsistent with bid, but economic over the horizon.

- Incentives to follow RTD dispatch
  - Recent BCR changes, FRP capacity awards rescinded, FRP cost allocation
  - Are other measures needed? Worse of price, UDP, other

Settlement of Intertie Transactions

- No bid cost recovery for hourly block schedules
- Bid cost recovery for economically bid 15 minute schedules

- Deviations to DA schedule settle at 15-minute schedule
- Deviations to 15-minute schedules settle at RTD

- Incentives to follow 15-minute schedule
  - Are other measures needed? Worse of price, UDP, other

Dual Constraint under integrated IFM and RUC

- Physical/virtual (PV) intertie constraints for Energy schedules in the IFM sub-problem with an Energy power balance equation
    - Financially binding Energy schedules

- Physical (P) intertie constraints for RUC schedules in the RUC sub-problem with a RUC power balance equation
    - Financially binding RUC capacity awards
    - Obligation to bid RUC schedules in the RTM
    - RUC schedules used to accept day-ahead tags

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RUC Schedules must be tagged prior to T-20

- IFM schedule <> RUC schedule
  - If IFM > RUC, then physical import cut to solve dual constraint and must bid in the hour ahead process
    - Allowed to SS the IFM schedule in real-time
  - If IFM < RUC, then reliability commitment to bid in hour ahead process market to replace virtual supply
- Modify HASP Reversal Rule to be based on RUC schedule, not IFM schedule
  - If RUC schedule not fully tagged, then worse of price between DA and 15 minute applied to un-tagged MW
  - If IFM > RUC, then only required to tag RUC, the IFM portion above RUC is not subject to the rule
  - If RUC > IFM, the RUC portion above IFM is subject to potential RUC Schedule Declines Charge

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