Day-Ahead Market Enhancements

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Reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.
- Today's meeting is structured to stimulate dialogue and engage different perspectives.
- Please keep comments professional and respectful
- Please try and be brief and refrain from repeating what has already been said so that we can manage the time efficiently.

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  Note: #2 only works if you dialed into the meeting.
  - Please remember to state your name and affiliation before making your comment.

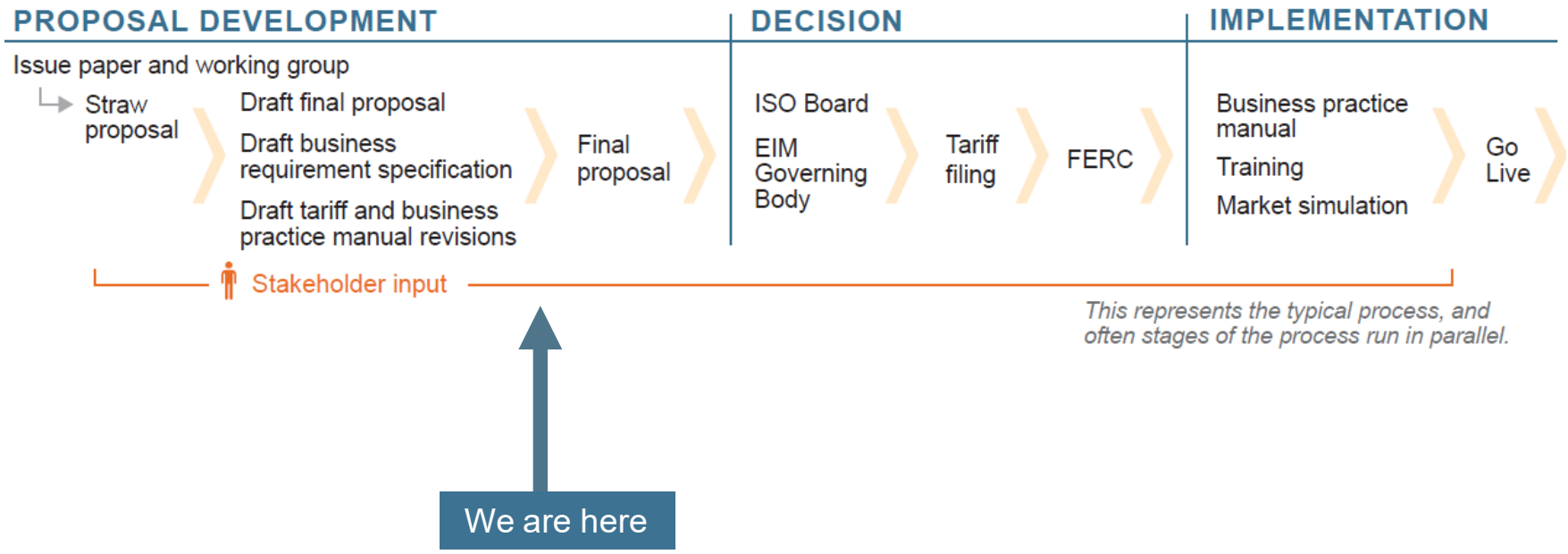
- If you need technical assistance during the meeting, please send a chat to the event producer.

- You may also send your question via chat to either Isabella Nicosia or to all panelists.

Agenda

Topic	Presenter
Welcome & introduction	Isabella Nicosia
Draft technical description walkthrough	George Angelidis
Imbalance reserve penalty price Imbalance reserve eligibility price cap	James Friedrich
Next steps	Isabella Nicosia

ISO Policy Initiatives Stakeholder Process



DRAFT TECHNICAL DESCRIPTION WALKTHROUGH

(Slides posted separately)

Imbalance Reserve Penalty Price

Stakeholder Feedback

- **CAISO DMM** - Imbalance reserves should be procured based on a demand curve.
- **MRP** - Penalty prices could be a function of operating conditions (i.e., the higher the operating stress, the higher the relaxation penalty price).
- **NVE** - Start conservatively and set the demand curve at 97.5 percent for $10/MWh with more steps at the lower end of the curve, gently relaxing the product until it reaches 75 percent of the upward requirement.
- **Pacificorp** - A demand curve could reduce the risk of over-constraining the imbalance reserve product and require less stringent mitigation.

Imbalance Reserve Penalty Price

Stakeholder Feedback

- **SDG&E** - the penalty price for IRU should be set at a level that is less than the penalty price for PBC and greater than the penalty price for LPT.
- **Shell** – Procurement of imbalance reserves should follow a graduated demand curve.
- **WPTF** – CAISO should implement a stepped demand curve.

Imbalance Reserve Penalty Price

FRP-like demand curve

- Allows the market to assess the tradeoff between the value and cost of reserves.
- The cost of insurance should not be the same as the product you are insuring.
- It supports a conservative approach to mitigating local market power.
- The EDAM net export transfer constraint helps the source BAA protect their reliability while supporting firm EDAM transfers out.

Imbalance Reserve Penalty Price

FRP-like demand curve

- Option 1: graduated/stepped penalty prices
  - Steps determined by (probability of exceeding IRU requirement) * (power balance constraint penalty price)

Upward Uncertainty Percentile	Scheduling Run	Pricing Run
97.5	$25	$25
95	$50	$50
90	$100	$100
75	$250	$250
50	$500	$500
25	$750	$750
0	$1000	$1000

- Option 2: same implementation of FRP demand curve w/ administrative price ceiling = PBC violation

Imbalance Reserve Penalty Price

FRP-like demand curve

- Potential critiques:
  - The purpose of FRP is less intended to ensure reliability and more intended as an economic instrument to avoid PBC violations due to ramp shortages. Arguably, imbalance reserves are more important for reliability in tight system conditions, meaning that penalty prices should be more protective.
  - The value of reserves may be higher than the PBC violation price.
  - At the same time, the probability of a PBC violation may be lower than implied by the calculations due to intraday actions.
  - BAAs may take out-of-market actions to replace relaxed imbalance reserves.
  - EDAM BAAs may be poorly positioned to pass the WEIM RSE and lose out on the benefits of being in the pool.

Imbalance Reserve Penalty Price

Different Stepped Curve Option

- Stricter penalty prices

Upward Uncertainty Percentile	Scheduling Run	Pricing Run
97.5	$100	$100
95	$200	$200
90	$400	$400
75	$1200	$1000

Imbalance Reserve Penalty Price

No Stepped Curve

	Scheduling Run	Pricing Run
Self-scheduled demand, self-scheduled export using identified non-RA supply resources, and export leg of wheel-through self-schedules	$1800	$1000
Imbalance Reserve Up Requirement	**$1600**	**$1000**
Self-scheduled exports not using identified non-RA supply resource	$1050	$1000

- This protects the full imbalance reserve requirement ahead of economic demand and (for CAISO) LPT exports but sets the administrative IRU price to at least $1000 for any level of relaxation.

Imbalance Reserve Penalty Price

No Stepped Curve – Another Option

	Scheduling Run	Pricing Run
Self-scheduled demand, self-scheduled export using identified non-RA supply resources, and export leg of wheel-through self-schedules	$1800	$1000
Imbalance Reserve Up Requirement	**$1600**	**$247**
Self-scheduled exports not using identified non-RA supply resource	$1050	$1000

- This protects the full imbalance reserve requirement ahead of economic demand and (for CAISO) LPT exports but sets the administrative IRU price to at least $247 for any level of relaxation.
  - IRU price would likely be higher than $247 given energy opportunity costs
  - Potential concerns about price formation

Imbalance Reserve Eligibility Price Cap

Stakeholder Feedback

- **CESA -** Opposes the IRU eligibility criteria introduced in the DFP, as it could lower the supply of IRU and hinder reliability.
- **CAISO DMM** - The proposal to set a price threshold for energy bids in order to procure imbalance reserves from capacity more likely to be dispatched economically in real-time markets is a reasonable approach that balances the costs of procuring reserves against their effect on expected real-time cost
- **MRP** - Express concern about how the CAISO's proposal to establish eligibility criteria might interact with the proposed must-offer obligation for imbalance reserves
- **PG&E -** Opposes the CAISO's approach that would disqualify bids and restrict participation of California RA resources in imbalance reserves
- **Pacificorp** – Concerned about the eligibility price cap

Imbalance Reserve Eligibility Price Cap

Stakeholder Feedback

- **REV Renewables –** opposes the imbalance reserve eligibility criteria, as these could limit the pool of IR resources and create artificial scarcity
- **Six Cities** - do not oppose the proposed criteria for determining eligibility for IRU
- **SCE** - requests the CAISO revise the IRU eligibility price cap process to provide access to valid IRU bids by reinserting them at the IRU bid cap
- **Wellhead -** remain concerned about the proposed IRU eligibility cap; continues to suggest that CAISO should monitor for the concerned behavior, allowing CAISO to confirm the need for the proposed changes
- **WPTF** – CAISO should eliminate the eligibility criteria based on day-ahead energy offer price

Next Steps

Milestone	Date
Final proposal	January 10, 2023
Joint ISO Board of Governors and WEIM Governing Body meeting (decision)	February 1, 2023
Implementation	Fall 2023

All initiative related information is available at https://stakeholdercenter.caiso.com/StakeholderInitiatives/Day-ahead-market-enhancements.

Please contact isostakeholderaffairs@caiso.com if you have any questions.