



Price Formation Enhancements

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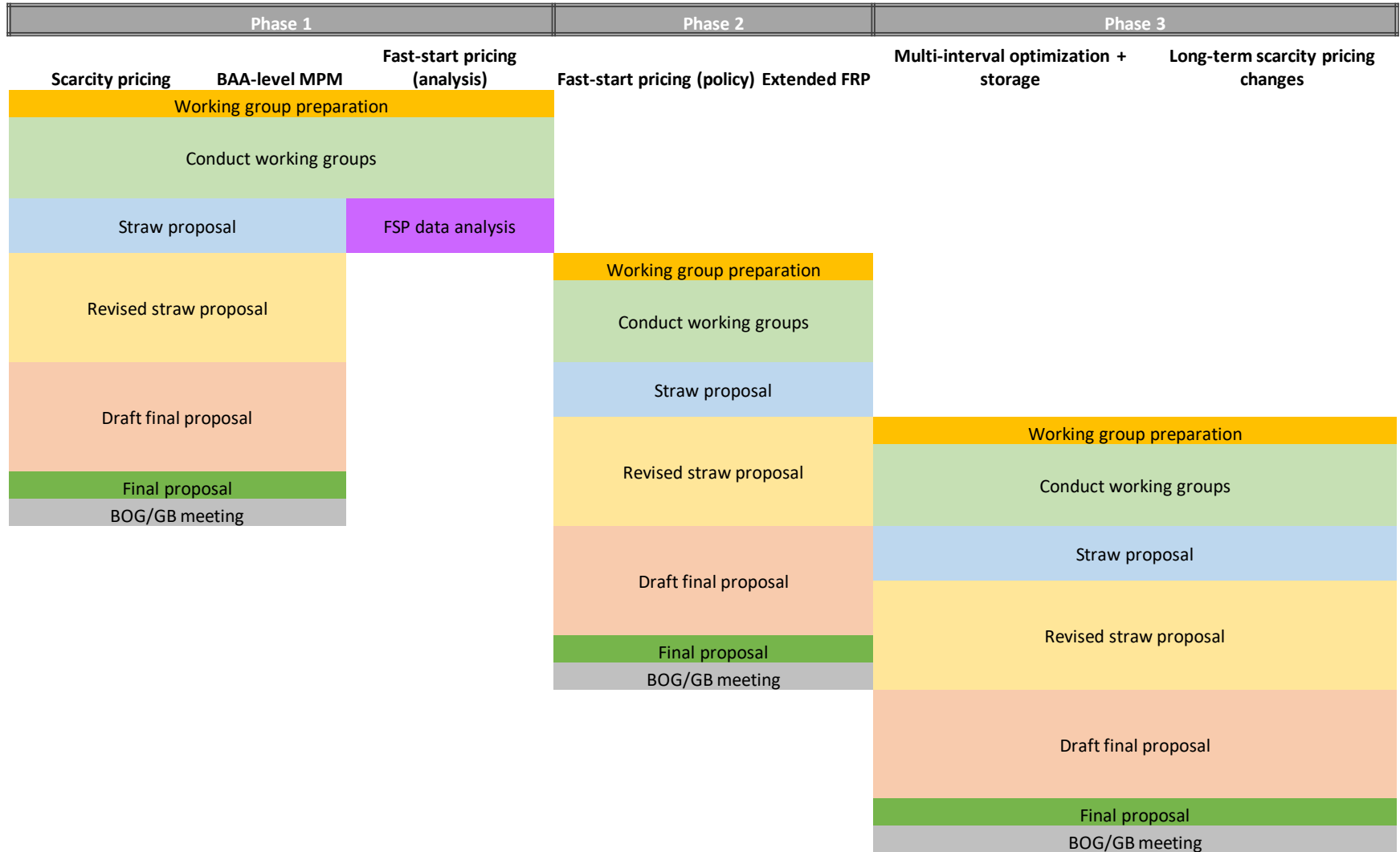
Price Formation: A Brief Overview

- **Price formation** is the process through which market prices are determined in electricity markets
- Price formation is crucial for efficient market operations because it:
 - Maximizes market surplus
 - Incentivizes participants to adhere to commitment and dispatch instructions
 - Promotes system reliability and efficient investment
 - Enhances transparency about costs to serve load
 - Ensures suppliers can recover their costs

Price Formation Enhancements Initiative Topics

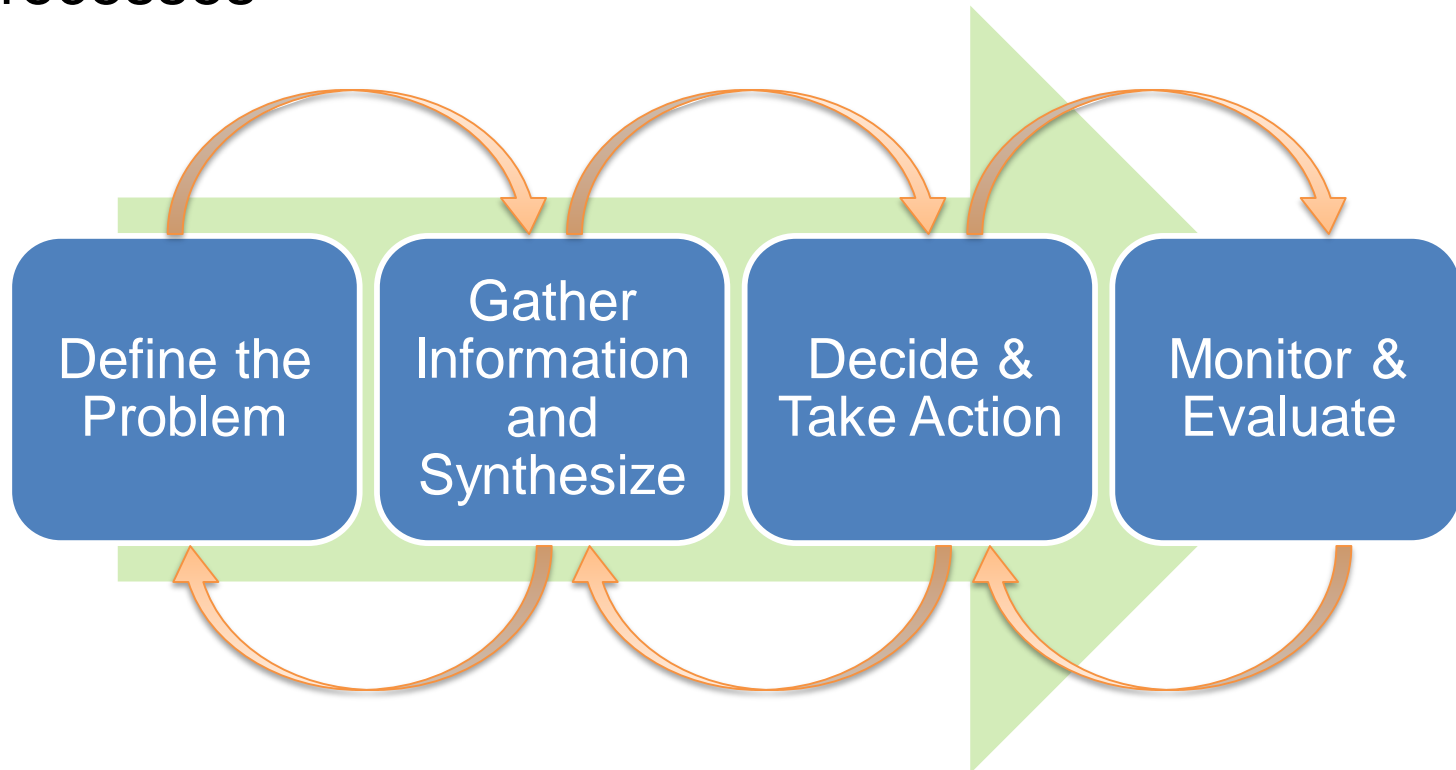
- **Scarcity pricing:** establishing prices when there is insufficient supply to meet energy and reserve requirements
- **BAA-level market power mitigation:** assessing competitiveness of EDAM/WEIM transfer constraints
- **Fast-start pricing:** incorporating fast-start generators and their commitment costs into market prices
- **Extended FRP:** increasing look-ahead horizon of flexible ramping product
- **Storage + multi-interval optimization:** improving market dispatch and pricing outcomes of storage resource under multi-interval optimization

Three phases will support stakeholder and staff bandwidth



Price Formation Working Groups

- **Goals:** Align on principles and problem statements, generate fresh perspectives, educate on CAISO market processes

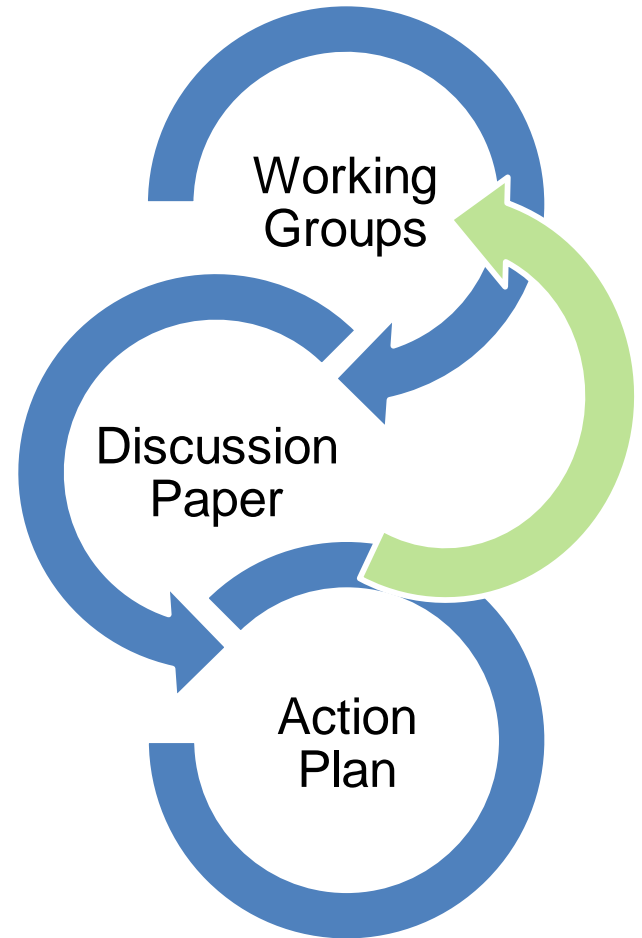


Working Groups offer additional opportunities for stakeholder review and engagement

Working Groups: Open to all stakeholders; materials posted publically on CAISO stakeholder initiative page

Discussion Paper: A Discussion Paper will be published between working groups to reflect progress toward working group goals. The iterative process will provide stakeholders additional opportunities to reflect, comment, and prepare.

Action Plan: Serves as the conclusion of the working group and informs transition into policy development. Captures context around the final principles, problem statements, and priorities resulting from the working group



Scarcity Pricing

- **Scarcity pricing** is a mechanism to establish market prices during shortage conditions
- **Key challenges:** Offer prices/penalty values, triggering ancillary services shortage pricing, dynamics of strategic reserves and non-market demand response
- Important in maintaining grid reliability and promoting efficient investments

BAA-Level Price Mitigation

- Similar to flow-based transmission constraints, BAA transfer constraints create isolated, price-separated, local areas within the larger system that are subject to MPM procedures
- This initiative will explore:
 - Whether improvements to the methodology can be made (e.g., through a “grouping approach”)
 - Whether the CAISO BAA should be included in any grouping approach

Fast-Start Pricing

- **Fast-start pricing** is a mechanism that allows fast-start resources to set the market price, while simultaneously incorporating their commitment costs into that price.
- CAISO plans to conduct analysis to assess potential market impacts of fast-start pricing before moving into policy discussions