



# Price Formation Workshop

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# About Gridwell Consulting

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- Women-owned economics and energy consulting firm – [www.gridwell.com](http://www.gridwell.com)
  - Educate, model, advise, and advocate
  - Experts in energy and ancillary service markets, resource adequacy, interconnection, and storage optimization and modeling for RFOs, due diligence, and bid strategy
- Kallie Wells, co-founder and Senior Partner
  - Designed CAISO's Opportunity Cost methodology for use-limited resources
  - Developed GridSolver, a resource valuation and dispatch optimization model to assess storage and storage + renewable resources in CAISO market
  - Represent WPTF at the CAISO, full client list on website



# About WPTF

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- The Western Power Trading Forum (WPTF) is a broad-based industry organization of companies that do business and advocate for competitive market rules and transparency throughout the Western Interconnection



# Outline

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- Overview of Priorities
- Scarcity Pricing
- Multi-interval Optimization
- Fast Start Pricing
- Market Power Mitigation
- Key Takeaways



# Prioritize known issues over new features

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- WPTF strongly encourages the CAISO to first focus on addressing existing market features that dilute price signals
  - Scarcity Pricing
  - Multi-interval optimization
  - Out of market actions
- WPTF believes efforts to design and implement new market features should be postponed
  - System Market Power Mitigation
  - Fast Start Pricing
- At this time, WPTF is not proposing any solutions but taking this opportunity to prioritize issues



# Strengthen Scarcity Pricing Signals

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- Price formation, especially during near scarce and scarce conditions is a key element in any functioning market
- Scarcity pricing is not a static signal/price sent only once shortages occur
- Prices should gradually rise above supply offers as system nears, and potentially reaches, shortage conditions
- There are existing market features currently hindering price formation during tight supply/scarce conditions and enhancements should be prioritized



# Enhance existing features that dilute price signals

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- Energy prices do not always reflect ancillary service scarcity when it occurs
  - Energy prices reflect ancillary service shortages, but only under *certain conditions*, and only in the *day-ahead and fifteen-minute* market
- Power Balance Constraint (PBC) penalty price is set to energy bid cap, so no differences between prices set by economic offers or shortage conditions
  - FERC Order 831 “shortage threshold”
- RUC biasing results in suppressed real-time prices and should only be used when absolutely necessary
- Out of market actions taken to avoid, or during, emergency conditions should reflect some form of scarcity signals



# Multi-interval Optimization

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- Price formation between advisory and binding prices are key to helping storage resources efficiently participate in the CAISO markets
- WPTF believes this should be prioritized due to the impact it has, and will continue to have, as storage penetration increases
- Short term solution: provide more transparency on advisory prices for storage resources
- Long term solution: consider enhancements, supported by analysis, to better align the advisory and binding prices



# Fast-Start Pricing

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- Theoretically speaking, fast-start pricing can improve price formation
- Practically speaking, WPTF is unsure if there are benefits to designing and implementing Fast-Start pricing in CAISO today
- Additional analysis can help inform and quantify potential benefits
  - Fast ramping vs Fast-start system need
  - How many resources today are fast start (CAISO and EDAM BAAs)



# System Market Power Mitigation

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- CAISO has discussed in EDAM the consideration of testing for market power by grouping BAAs within this effort
  - System Market Power Mitigation
- Mitigating for market power when it does not exist suppresses and dilutes price signals (Type I errors)
- There is no evidence that system market power exists today, even absent EDAM
  - Extended day-ahead market will increase competition of supply, not decrease
- WPTF strongly urges the CAISO to defer consideration of system market power mitigation until (1) there is evidence that it can be exerted and (2) a robust scarcity pricing mechanism is implemented



# Key Takeaways

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- Scarcity pricing allows prices to rise above economic offers as supply conditions tighten (e.g., near scarce and scarce conditions)
- CAISO should focus on ways to have scarcity conditions reflected (1) in both energy and ancillary service prices, (2) in all near scarce/scarce conditions, and (3) in all markets
- Prioritize issues with existing market design features before implementing anything new
  - Prioritize scarcity pricing, multi-interval optimization, and out of market actions
  - Analyze benefits of Fast Start pricing
  - Defer System Market Power



# Contact Information

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