Commitment Costs and Default Energy Bid Enhancements – Revised Draft Final Proposal

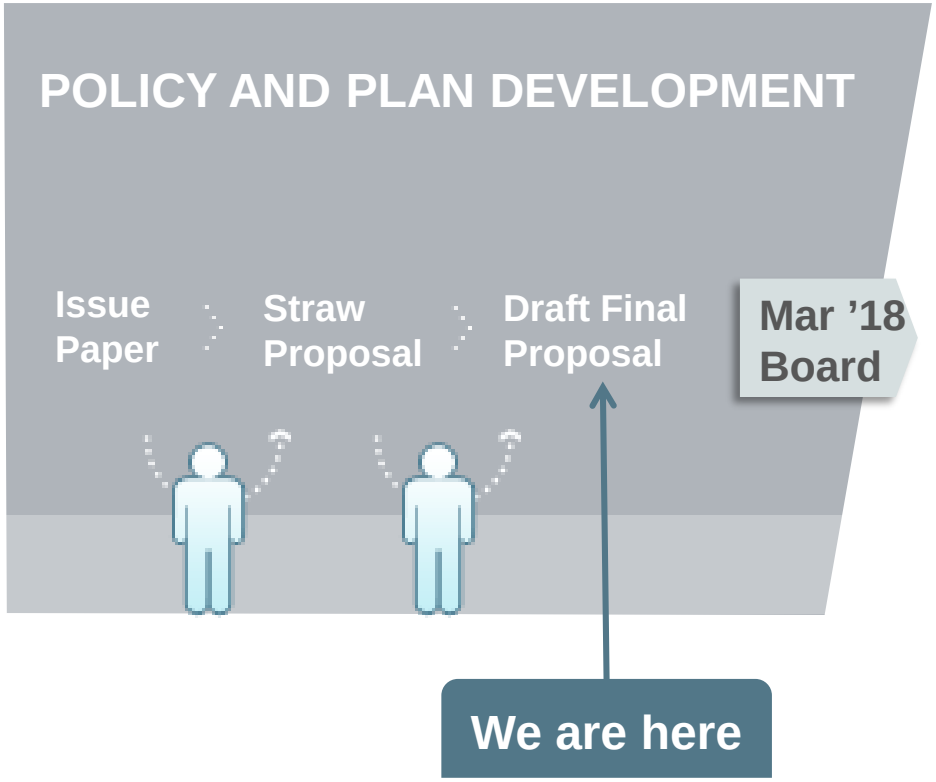
Cathleen Colbert, Sr. Policy Developer
Brittany Dean, Policy Developer
Bradford Cooper, Manager
Market and Infrastructure Policy

February 1, 2018

Agenda

Topic	Presenter
Introduction	James Bishara
Summary	Cathleen Colbert
Major changes and related stakeholder comments	Brittany Dean
Proposal	Cathleen Colbert/ Brittany Dean
Next steps	James Bishara

CAISO policy initiative stakeholder process



Plan for stakeholder engagement

Milestone	Date
Draft final proposal posted	August 18, 2017
Stakeholder call	August 30, 2017
Stakeholder written comments due	September 11, 2017
Stakeholder call	December 21, 2017
Stakeholder written comments due	January 11, 2018
Revised draft final proposal and business rules posted	January 31, 2018
Stakeholder call	February 1, 2018
Stakeholder comments due	February 27, 2018
EIM governing body meeting	March 8, 2018
Board of Governors meeting	March 21 & 22, 2018

EIM Categorization

- This initiative will affect the real-time market
- The EIM is an extension to the real-time market
- This initiative is EIM related
- EIM Governing Body – Advisory role classification

http://www.caiso.com/Documents/GuidanceforHandlingPolicyInitiatives-EIMGoverningBody.pdf

SUMMARY

Objective: Comprehensive solution to ongoing commitment cost and DEB issues

- Suppliers need more flexibility to reflect unique costs and volatility
  - Support integration of renewable resources through incentivizing flexible resources participation during tight fuel supply
  - Account for costs of flexible resources (gas and non-gas) to reduce risk of insufficient cost recovery
  - Encourage participation of non-RA and voluntary EIM resources
- ISO needs to comply with FERC Order 831
  - Requires supporting verified costs of energy bids above $1,000/MWh

ISO proposes to allow market based offer for “three-part bid” subject to mitigation and allow greater flexibility to negotiate or adjust each component to support market efficiency

	Type	Sub-type	Market Based Offer	Cost Based Offer
Hourly	Energy	Variable Cost	X	Mitigated Price
Hourly	MLC	Variable Cost Fixed Cost	X	Mitigated Proxy Cost
Daily	TC	Fixed Cost	X	Mitigated Proxy Cost
Daily	SUC	Fixed Cost	X	Mitigated Proxy Cost

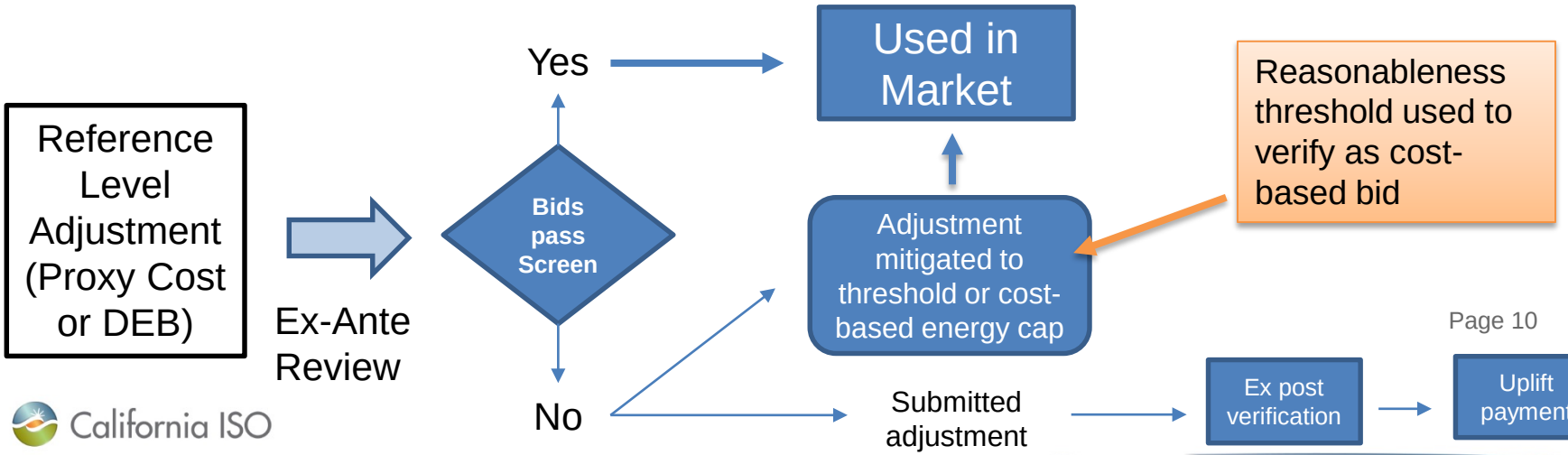
Proposal provides a comprehensive solution to ongoing commitment cost and DEB issues

- Support market-based commitment cost offers subject to mitigation and market-based caps
- Provide for ex ante reference level adjustment requests subject to ex ante and ex post verification
- Support hourly minimum load cost offers
- Add negotiated option for commitment cost proxy costs
- Make permanent Aliso Canyon Phase 3 measures:
  - Use gas price approximation in DAM
  - After-the-fact filing right at FERC for energy costs
  - D+2 results publication

Competitive conditions

Uncompetitive conditions without reference level adjustment

Uncompetitive conditions with reference level adjustment



SUMMARY OF CHANGES AND STAKEHOLDER COMMENTS

Circuit breaker cap and reference level headroom scalar

- CAISO revised proposal:
  - Initially set circuit break cap at 200% and headroom scalar at 125%
  - Automatically increase circuit breaker cap to 300% and decrease headroom scalar to 110% after 18 months
  - Initiate stakeholder initiative to analyze performance

Circuit breaker cap and reference level headroom scalar continued

- Many stakeholders support this approach as a reasonable compromise to assess the effectiveness of dynamic market power mitigation
- DMM opposes the automatic increase and maintains 125% headroom scalar double counts expected fuel costs (i.e. reasonableness threshold already includes 110% or 125% on top of fuel costs)
  - CAISO believes automatic increase is a reasonable approach to phase-in changes
  - 110% or 125% in reasonableness threshold is not a safe harbor

Dynamic market power mitigation

- System level competitiveness
  - Some stakeholders maintain that this principle should be codified in tariff
    - ISO does not currently nor is it proposing to mitigate for system market power and therefore its tariff lacks any language enabling it.
- Both net buyers and net sellers included in RSI calculation
  - Some stakeholders maintain that this would lead to over mitigation and alternatively CAISO should change BCR allocation to address this concern
    - CAISO believes it's appropriate to include because net buyers could have incentive to inflate commitment costs
    - CAISO determined in *Bid Cost Recovery* initiative that bid cost recovery cost allocation changes are not appropriate

Dynamic market power mitigation continued

- Stakeholders requested testing of new market power mitigation prior to go-live
  - CAISO clarifies routine testing for market changes occurs during the implementation phase of an initiative
  - The purpose of the phased approach of the circuit break cap and headroom scalar provides a period to assure commitment cost market power mitigation functions correctly
- A number of stakeholders withheld opinion on market power mitigation until release of proposal

Mitigate minimum online constraints

- Minimum online constraints (MOCs)
  - In response to stakeholder questions, CAISO clarified MOC proposal is standalone and will not be impacted by *Contingency Modeling Enhancements*

Ex ante - adjustments to reference levels and reasonableness threshold

- Reasonableness threshold calculation
  - Revised from previous approach to be:
    - 125% for Monday and days without published indices + resource specific feedback loop
    - 110% for all other days + resource specific feedback loop
  - CAISO changed proposal in response to DMM concerns about the validity of statistical measure
  - Reasonableness threshold calculations are unknown to SCs due to concerns of artificial price submissions

Ex ante - adjustments to reference levels and reasonableness threshold continued

- Adjustment to reference levels
  - CAISO changed its proposal after further considering FERC Order 831 requirements
  - Revised to include manual consultations for energy costs above $1,000/MWh
  - Not proposing other manual consultation due to administrative burden
  - Tool should only be used when a resource's cost expectations exceed CAISO calculated cost estimates (negotiated or estimated)

Ex ante - adjustments to reference levels and reasonableness threshold continued

- Revised proposal to add additional audit authority to audit ex ante adjustment requests
  - Stakeholder requested clarifications and application
  - CAISO clarified reasonableness threshold is not a safe harbor; rules require resources to bid based on their expected costs and can be subject to audit

Ex post verification

- Stakeholders generally support ex post verification and costs recovery, but requested clarification that it will be based on actual costs
- Consistent with FERC Order 831 principles, CAISO revised proposal to base ex post cost recovery on actual costs (includes opportunity cost for demand response)

No change to existing policy for real-time re-bidding

- California ISO discussed a potential change to the proposal to support hourly start-up or transition cost bids on December 2017 call
  - California ISO will not propose to revise hourly start-up or transition cost bids
- Proposal will remain to support hourly minimum load cost
- Real-time commitment cost bids can be resubmitted subject to real-time re-bidding rules
    - Existing tariff allows for updating hours without IFM or binding RUC commitment in the real-time market

No change to existing policy for commitment costs real-time re-bidding

- DMM contends rebidding start-up costs in an hour before day-ahead schedule could inflate real-time BCR payments by moving start-up costs into real-time BCR calculation
  - Existing tariff specifies that costs for start-up during or before an IFM schedule are still included in day-ahead BCR calculation

PROPOSAL

Market based hourly offers

Changes to definition of the supply bid components

- **Incremental energy costs –** costs associated with providing energy above Pmin
- **Minimum load costs –** costs associated with operating unit at Pmin including costs for providing energy at Pmin. It also includes other costs associated with commitment hour costs even for resources with 0 MWh minimum operating level
- **Startup costs –** costs associated with bringing a unit online or to a state capable of providing energy
- **Transition costs –** multi-stage generators costs associated with moving from one configuration to another

Allow hourly minimum load bids in DA and RT markets

Bid component	Market-based bid	Cost-based bid (Reference level adjustment)	Default reference level*
Energy	$/MWh	$/MWh	3 DEB Options: negotiated, variable, LMP
Minimum Load Costs	$/hour	$/hour	2 Proxy Cost Options: estimated or negotiated
Start-up Costs	$/start	$/start	2 Proxy Cost Options: estimated or negotiated
Transition Costs	$/transition	$/transition	2 Proxy Cost Options: estimated or negotiated

**If negotiated, then all commitment cost components are negotiated and filed at FERC*

CAISO will cap both market-based and cost-based bids and verify cost-based bids

Bid component	Market-based bid cap	Cost-based bid cap	Cost-based bid (Reference level adjustment) verification
Energy	$1,000/ MWh	$2,000/ MWh	≤ Reasonableness Threshold
Minimum Load Costs	200% of adjusted proxy cost	N/A	≤ Reasonableness Threshold
Start-up Costs	200% of adjusted proxy cost	N/A	≤ Reasonableness Threshold
Transition Costs	200% of adjusted proxy cost	N/A	N/A

**Reference level adjustment requests can be submitted regardless of option*

Market-based commitment cost circuit-breaker caps

- Temporarily set percent multiplier at 200%
- Propose to automatically increase the percent multiplier from 200% to 300% in 18 months
- Analyze mitigation performance with 12 months of data
- If design issues are identified, CAISO would file to delay the automatic increase
  - CAISO will begin stakeholder process to evaluate and address identified issues

Headroom scalars in commitment cost reference levels, estimated option

- Temporarily retain commitment cost headroom scalar in reference levels to 125%
- Propose to automatically decrease from 125% to 110% in 18 months
- Analyze mitigation performance with 12 months of data
- If issues are identified, CAISO would file to delay the automatic decrease
  - CAISO will begin stakeholder process to evaluate and address identified issues

Measures addressing inter-temporal concerns

- *Bidding Rules Enhancement's* re-bidding rules apply to market awards –
  - Lock real-time re-bidding window once receiving financially binding IFM award or binding RUC start-up instruction
  - Lock real-time re-bidding window once receive binding RTM start-up instruction through minimum up time
- Settlement rules for incremental exceptional dispatches at commitment cost bids considered in initial instruction for the instruction period
- Settlement rules for resources dispatched at full ramp to settle at bid at the start of the ramp period (based on existing rule for residual imbalance energy)

Mitigation

Dynamic market power mitigation

- Dynamic commitment cost market power mitigation performed in unit commitment processes
  - Performed in all runs and intervals for binding commitments
- Energy bid mitigation added to short-term unit commitment (STUC)
- Commitment cost mitigation occurs in commitment runs:
  - Binding constraints - effectiveness to non-competitive critical constraints (committed or uncommitted resources)
  - Non-binding constraints – counterflow dispatch exceeds or meets unloaded capacity of non-competitive critical constraints (only committed resources)

Dynamic market power mitigation cont.

- Allow consideration of minimum load energy if a resource can start up within the optimization time horizon
- Allow inclusion of minimum load energy if resource can be shutdown in real-time
- Mitigate all resources under a minimum online constraint

Apply mitigation enhancements to the EIM areas consistently with application within ISO BAA

- Internal constraints will be tested for commitment cost mitigation based on whether binding/non-binding
- EIM transfer constraints will be tested for commitment cost MPM if shadow price is positive
- Recall –
  - If binding, CAISO will mitigate any resources with negative shift factors to constraint
  - If non-binding, CAISO will mitigate any resources with counterflow dispatch that meets or exceeds the unloaded capacity

Mitigate commitment costs under exceptional dispatches

- Addressing reliability requirements related to non-competitive transmission constraints
  - Include historical commitment cost MPM results in DCPA
- Ramping resources with ancillary services awards or RUC capacity to a dispatch level that ensures their availability in Real-Time
- Ramping resources to Pmin in real-time
- Addressing unit-specific environmental constraints not incorporated into the full network model or market software that affect the dispatch of generating units in the Sacramento Delta

Commitment costs mitigation

- Bids mitigated in the market to:
  - Mitigate minimum load to the lower of the market-based bid and the reference level
  - Mitigate start-up and transitions to the lower of the market-based bid and the reference level
- Exceptional dispatches mitigated to:
  - Mitigate minimum load to the higher of minimum load energy revenues and the lower of the market-based bid and the reference level
  - Mitigate start-up and transitions to the lower of the market-based bid and the reference level

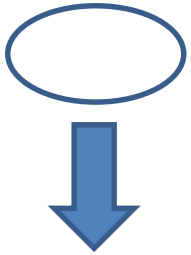
Reference Levels

Reference levels

- CAISO refers to combination of 3 commitment proxy costs as “commitment cost reference levels” or “mitigated proxy costs” for simplicity
- CAISO clarifies that in practice CAISO will continue to refer to its commitment cost reference levels as commitment proxy costs and energy cost reference levels as default energy bids
  - 2 options for proxy costs to include negotiated or estimated
  - 3 options for default energy bids (existing policy/no changes)

Headroom scalar proposal

Reference Level =$(MLC\ Fuel\ Cost + VOM + GMC\ Adder +$



110%

Automatic change after 18 months

Reference levels continued

- CAISO clarifies that the ex ante submitted reference level adjustments are requests to adjust reference levels regardless of option selected to value more reflective of suppliers' cost expectations resulting in either:
  - Unadjusted reference levels (based on selected options)
  - Adjusted reference levels

Negotiated commitment cost reference levels

- Add negotiated option for commitment proxy costs
- Negotiated option for systematic differences in cost formulation
- If selected, all commitment cost components must be negotiated

Stakeholders requested clarification in which processes the “new” commitment cost reference levels will be used

- Used to calculate:
  - Market-based commitment cost cap at 200%
  - Cost-based reasonableness threshold limit
- Used in market and settlements when mitigation applies
- Used in settlements when “no bid” process needed

Reference level adjustment requests

Allow adjustments to default reference levels

- Support ex ante adjustments to reference levels subject to verification and energy capped at $2,000/MWh
  - Verify requests against a reasonableness threshold
    - No verification for imports, exports and convergence bids
  - Cap EIM SCs without market-based authority to adjusted reference levels
- Requirements for adjustment requests:
  - Cost based offers based on cost expectations given contemporaneous information available to supplier
  - Retain sufficient justification for need to request a reference level adjustment

Allow adjustments to default reference levels cont.

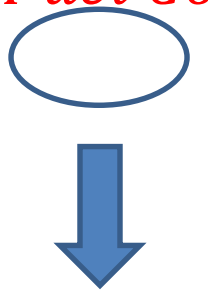
- CAISO will evaluate request against reasonableness threshold to validate cost-based bid prior to market run
  - Reasonableness threshold establishes a verified level for reasonable reflection of suppliers' cost expectations
- If request is below reasonableness threshold, market replaces reference level with requested value
- If request is above reasonableness threshold, market replaces reference level with reasonableness threshold and will make any amount above the threshold eligible for after-the-fact recovery

Ex ante verification reasonableness threshold changes

- Reasonableness threshold for gas resources
  - Fuel-region level: apply volatility scalar to next day commodity price
  - Re-calculate reference levels with scaled GPIs
- Reasonableness threshold for non-gas resources
  - Resource level: Apply volatility scalar to registered cost values
  - Re-calculate reference levels with scaled fuel equivalent costs
- Proposal retains resource specific feedback loop (tuning based on observed actual costs)

Reasonableness threshold proposal

Reasonableness Threshold=($MLC\ Fuel\ Cost^{*} + VOM +$



110%

Automatic change after 18 months

Fuel price volatility scalar proposal – gas resources example

***Scaled**

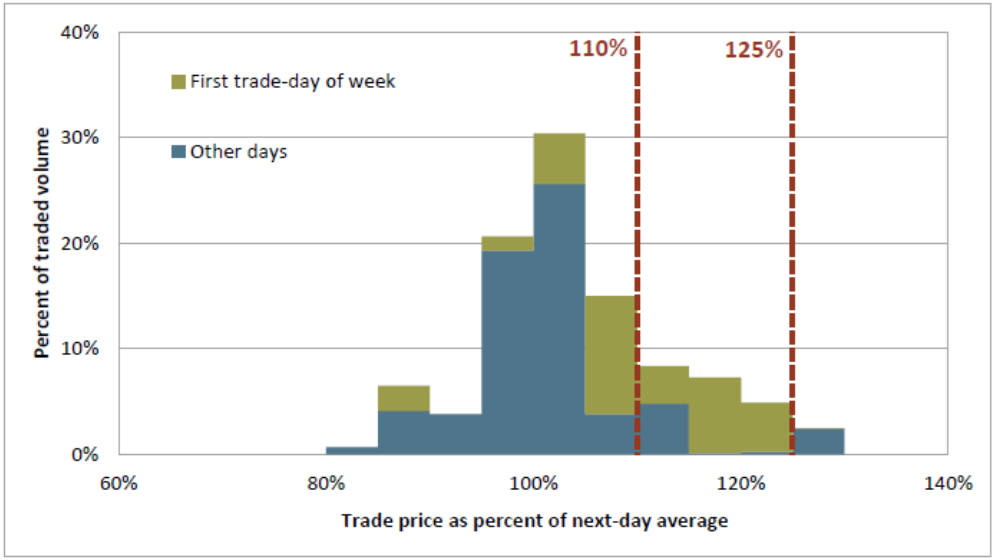
$$MLC\ Fuel\ Cost^{*} = GPI^{**} \times HR \times Pmin$$

125% or 110%
Monday/Days without Index
Other Days

$$GPI = Index \times volatility\ scalar + Transportation\ Rates$$

Ex ante verification reasonableness threshold changes cont.

- Propose gas resources' commodity price will be scaled using volatility scalars at:
  - Monday and days without index at 125%
  - Other days at 110%



Time period analyzed was from July through September 2016 at the SoCal Citygate hub

Department of Market Monitoring, Q3 Market Issues and Performance Report, December 2017

- Propose non-gas resources' volatility scalar at 110%

Example of minimum load reference level adjustment request

*** Value unknown to SC*

Reference Level	Adjustment Request	Reasonableness Threshold**
$3,000/h	$6,000/h	$8,000/h

Adjustment Request	Reasonableness Threshold**
$6,000/h	$8,000/h
Used in market	Request passed threshold

Request subject to CAISO audit

Example of minimum load reference level adjustment request

*** Value unknown to SC*

Reference Level	Adjustment Request	Reasonableness Threshold**
$3,000/h	$10,000/h	$8,000/h

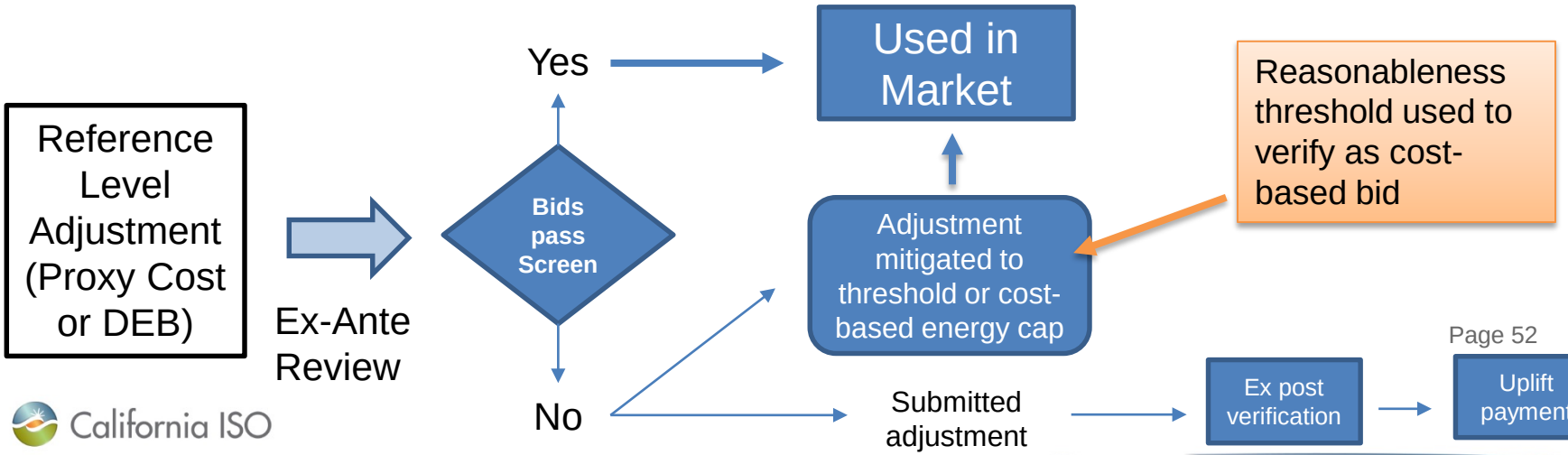
Adjustment Request	Reasonableness Threshold**
$10,000/h	$8,000/h
Ex post review	Used in market

Extra $2,000 could be recovered

Competitive conditions

Uncompetitive conditions without reference level adjustment

Uncompetitive conditions with reference level adjustment



Introduce manual verification process for requests above $1,000/MWh

- CAISO will allow SCs to pursue a manual consultation for reasonableness threshold for energy costs above $1000/MWh
- If verifiable prior to the market close then the verified value will be the adjusted reference level value

Revised ex post verification based on actual costs

- Align after-the-fact review to the existing data documentation requirements for a FERC filing
- After-the-fact uplift recovery will be based on actual cost
  - Require invoice dated after the market that produced relevant award where rules do not allow delay in procurement
  - Attest that no pooling arrangement or balancing rules would allow other than immediate procurement
  - If gas rules allow additional time to procure in less volatile conditions then it would fail verification

Revised ex post verification based on actual costs continued

- After-the-fact recovery may not include any adders above cost such as risk-related adder
- Demand Response
  - Customer opportunity cost are eligible for ex post review by:
    - Registered in fuel equivalent cost scaled by 110%
    - After-the-fact recovery of customer opportunity cost would require supporting actual lost profits
  - No energy market opportunity costs will be eligible for ex post review

NEXT STEPS

Plan for stakeholder engagement

Milestone	Date
Draft final proposal posted	August 18, 2017
Stakeholder call	August 30, 2017
Stakeholder written comments due	September 11, 2017
Stakeholder call	December 21, 2017
Stakeholder written comments due	January 11, 2018
Revised draft final proposal and business rules posted	January 31, 2018
Stakeholder call	February 1, 2018
Stakeholder comments due	February 27, 2018
EIM governing body meeting	March 8, 2018
Board of Governors meeting	March 21 & 22, 2018

Questions?

Stay connected

@California_ISO

Download ISO Today mobile app

Sign up for the Daily Briefing at www.caiso.com