



Local Market Power Mitigation Enhancements

Issue Paper/Straw Proposal

Stakeholder Web Conference

September 19, 2018

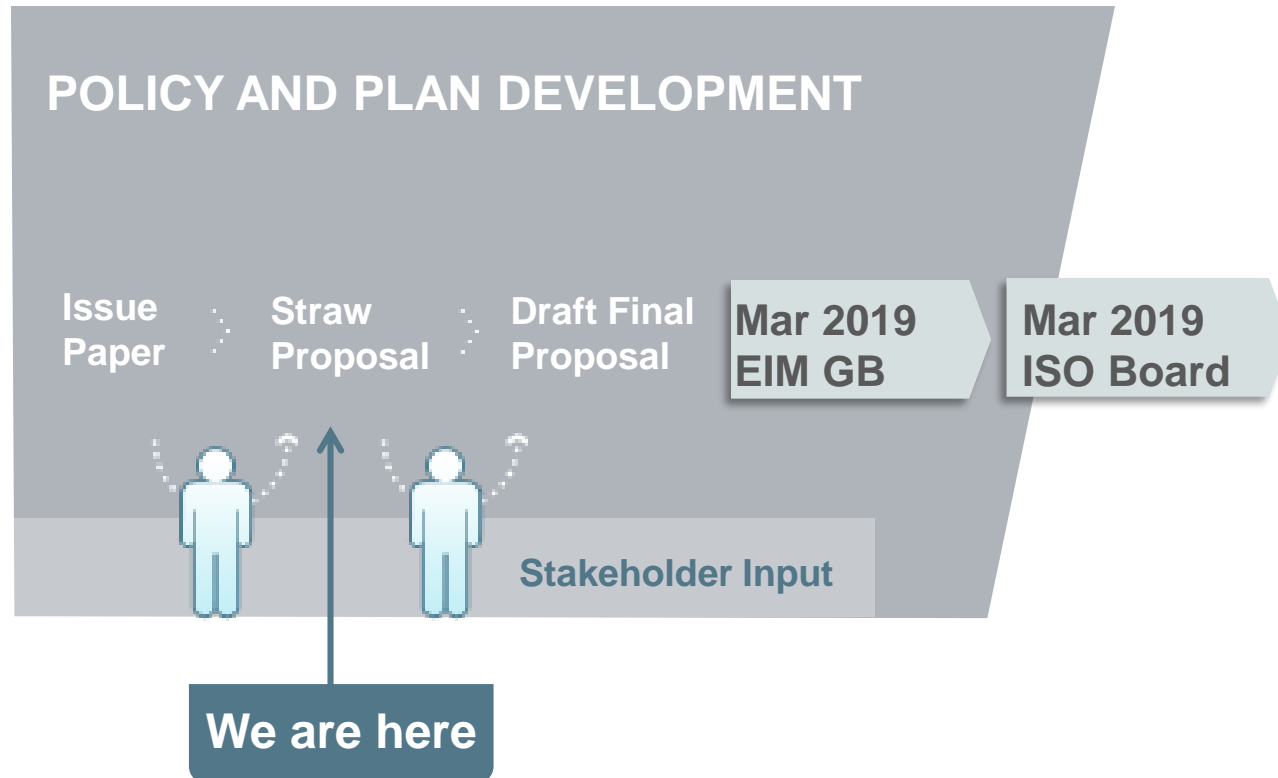
1:00 pm – 4:00 pm

Market Design Policy

Agenda

Time	Topic	Presenter
1:00 – 1:05	Welcome and Introductions	Kristina Osborne
1:05 - 1:20	Issues Identified	Don Tretheway
1:20 – 1:30	Principles	Don Tretheway
1:30 – 3:50	Proposals	
	<ul style="list-style-type: none">• Mitigation Framework Enhancements	Danielle Tavel/Elliott Nethercutt
	<ul style="list-style-type: none">• EIM use-limited default energy bid	Brittany Dean
	<ul style="list-style-type: none">• Reference level adjustments	Brittany Dean
	<ul style="list-style-type: none">• Gas price indices	Brittany Dean
3:50 – 4:00	EIM Governing Body Classification, Next Steps	Kristina Osborne

CAISO Policy Initiative Stakeholder Process



Work accomplished prior to issue/straw proposal

- **EIM offer rules workshop**

- April 30, 2018

- (<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=3509B16A-3A9F-4F34-B370-914AF5C85A49>)

- July 19, 2018

- (<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=330E5E16-D226-4C3D-9B39-738FC19E7A55>)

- **MSC meeting**

- August 3, 2018

- (<http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=CC691BB1-1D0D-4EF1-8AC8-6AAA79169155>)

Local Market Power Mitigation Enhancements

ISSUES IDENTIFIED

Issues Identified (1 of 2)

- **Real-time market power mitigation process**
 - Flow reversal: mitigation results cause EIM BAAs to change from importing to exporting
 - Competitive LMP addresses broader market issue
 - Economic displacement: additional exports dispatched because of lowered mitigated price
 - EIM specific issue
- **Default energy bid for EIM use-limited resources**
 - Existing default energy bids may not accurately reflect opportunity costs for EIM use-limited resources

Issues Identified (2 of 2)

- **Reference level adjustments**
 - Real-time gas volatility not always captured in reference level adjustment process
 - Broader market issue
 - Reference level adjustment process needed for new EIM use-limited default energy bid
- **Gas Price Indices**
 - Tariff cleanup of listed gas price index publishers
 - Broader market issue

Local Market Power Mitigation Enhancements

PRINCIPLES

Market design principles for market power mitigation, default energy bids, and reference level adjustments (1 of 3)

- Supply should not be forced to sell power below its bid price if it cannot exert market power. Supply bids should be mitigated to marginal costs to the extent supply has market power
- EIM is a voluntary market and each balancing authority area should have sufficient supply to meet its own load and reliability responsibilities. In cases of mitigation involving EIM transfers to another balancing authority area, supply should not be forced to sell energy at a mitigated price beyond what is needed to resolve market power. The use of mitigated bids should not result in additional economic displacement of other supply.

Market design principles for market power mitigation, default energy bids, and reference level adjustments (2 of 3)

- The competitive locational marginal in each interval should accurately reflect market conditions in each interval.
- The marginal costs used to calculate default energy bids for use-limited resources should include opportunity costs for future market sales. These calculated default energy bids should have access to similar reference level adjustment process that is available to thermal resources.

Market design principles for market power mitigation, default energy bids, and reference level adjustments (3 of 3)

- Gas prices used to calculate reference levels should account for real-time gas prices volatility so that the CAISO efficiently dispatches supply, resulting in accurate market prices that minimize the need for after-the-fact cost recovery.

Local Market Power Mitigation Enhancements

PROPOSALS

Summary of proposals

- Mitigation framework enhancements
 - Prevention of flow reversal (i.e. changes to competitive LMP)
 - Prevention of economic displacement between mitigated BAAs
- EIM use-limited default energy bid
- Reference level adjustments
 - Gas resources
 - EIM use-limited resources
- Gas price indices

Mitigation framework enhancements: Prevention of Flow Reversal

- Flow reversal: mitigation results cause EIM BAAs to change from importing to exporting at mitigated bid price
 - MPM is triggered when import constraint is binding
 - To protect native imbalances from market power offer prices are replaced with mitigated bids
 - These mitigated bids are not solely used to serve native imbalance which can result in a decrease in imports and even changing directions to an export
 - Import constraint is no longer binding, which triggered mitigation in the first place
 - Selling to other BAAs only because mitigated bids were used in market

CAISO proposes to calculate the competitive locational marginal price for each market run

- This addresses flow reversal because if the import BAA's bids are mitigated to the higher of the competitive LMP or DEB, it will not be economic to serve load outside of the import BAA
- Current rules prevent accurate use of the competitive locational marginal price, so:
 - Eliminate the balance of the hour mitigation rules in fifteen-minute market for more accurate unit commitment
 - Eliminate rule that if mitigated in FMM, mitigated in RTD
 - Eliminate the rule that if mitigated in the first or second 5-minute interval that the remaining 5-minute interval(s) in the given 15-minute interval is mitigated

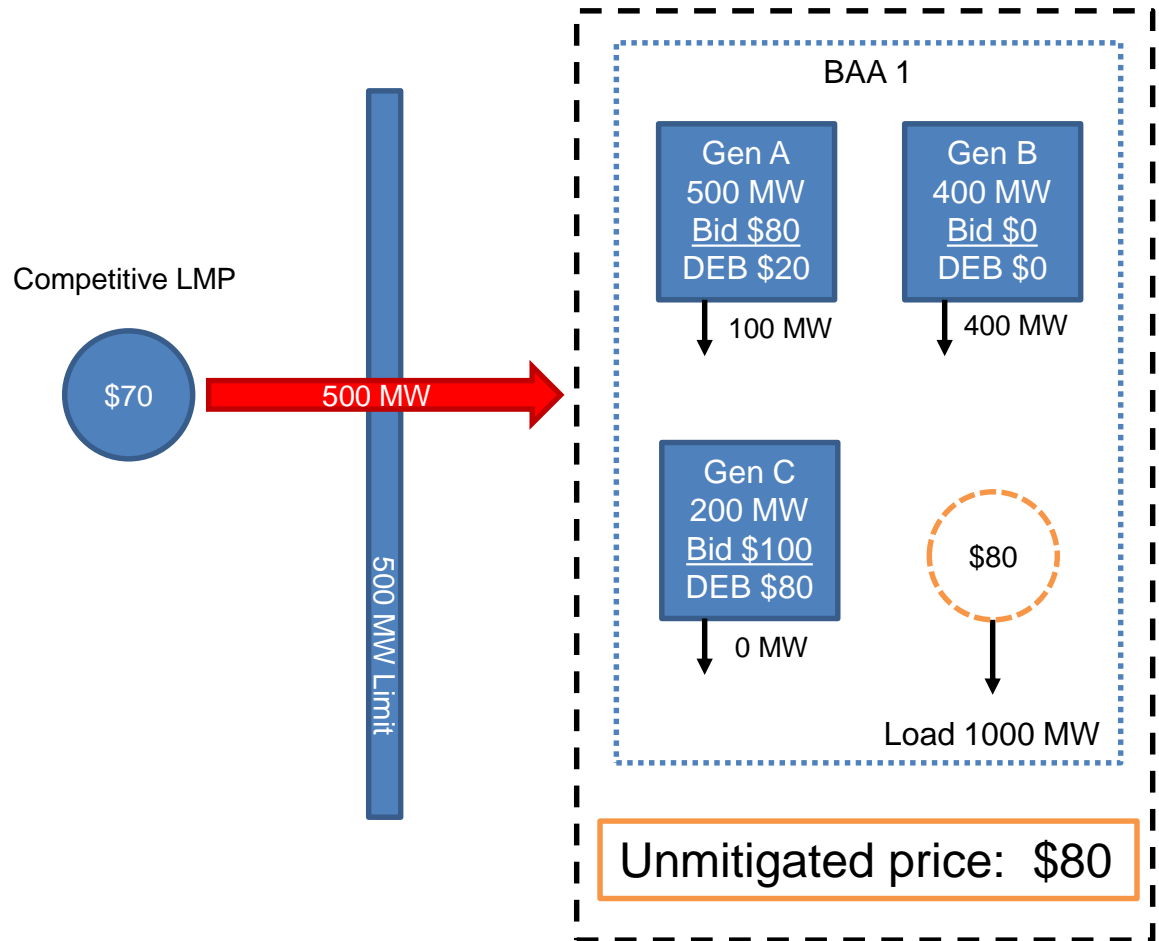
Competitive locational marginal price adder

- To alleviate concerns that dispatch order changes could occur, the CAISO is proposing implementing a nominal parameter to the mitigated bid calculation
- Ensures price separation between competitive and noncompetitive areas

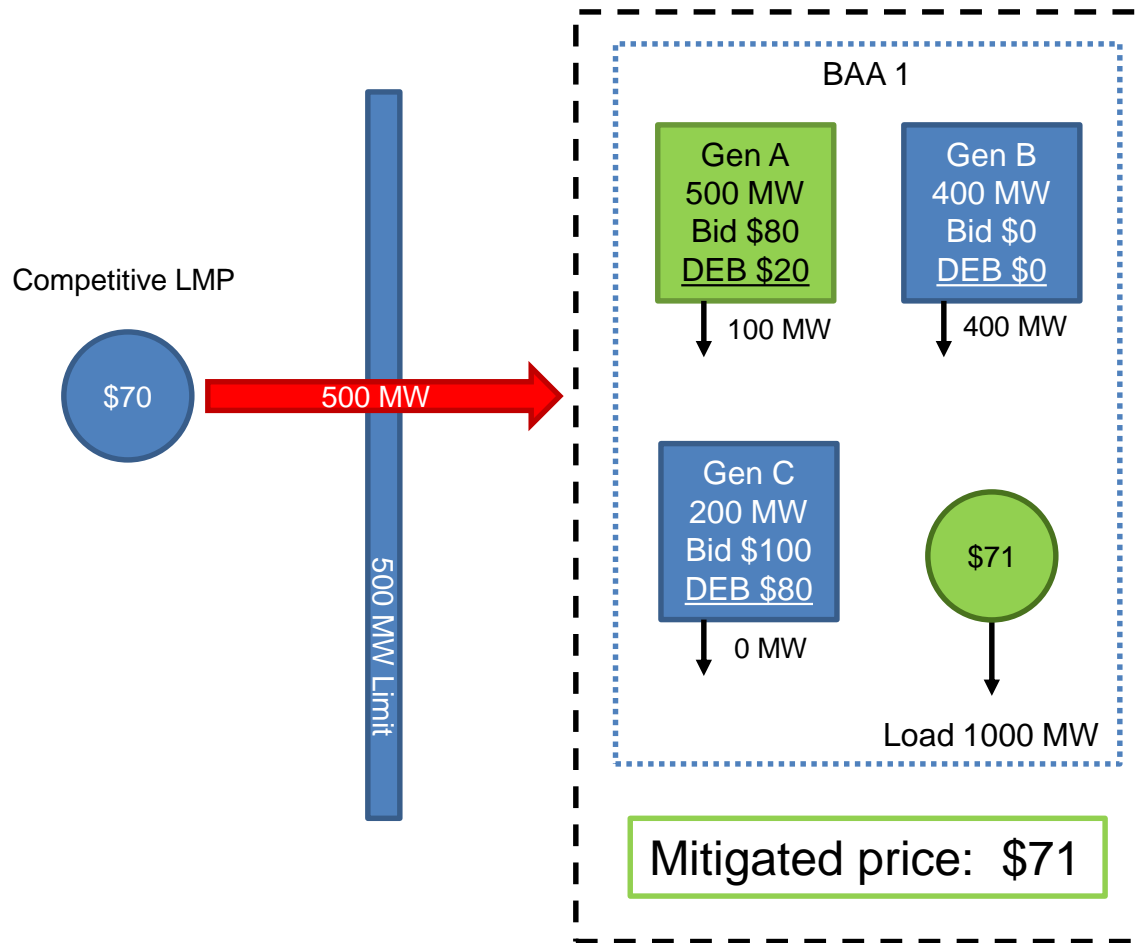
Following examples illustrate implementation results of incorporating this rule into the mitigation framework

- Current:
 - Competitive LMP can only decrease if previously mitigated
 - Mitigated bid = $\text{MAX}(\text{DEB}, \text{Competitive LMP})$
- Proposed:
 - Competitive LMP will be recalculated in each market interval
 - Mitigated bid = $\text{MAX}(\text{DEB}, \text{Competitive LMP} + \$0.xx \text{ parameter})$

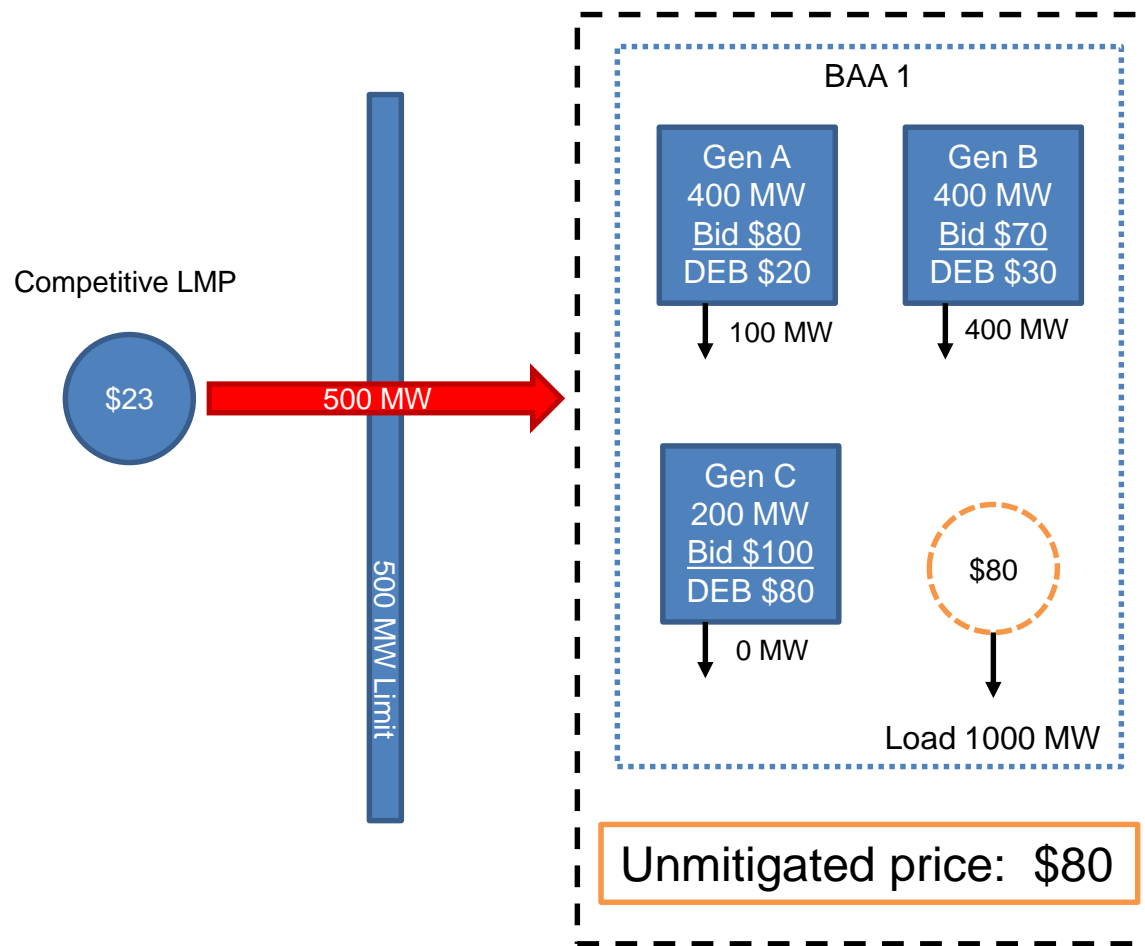
Example A: Single BAA importing - MPM Run (1 of 2)



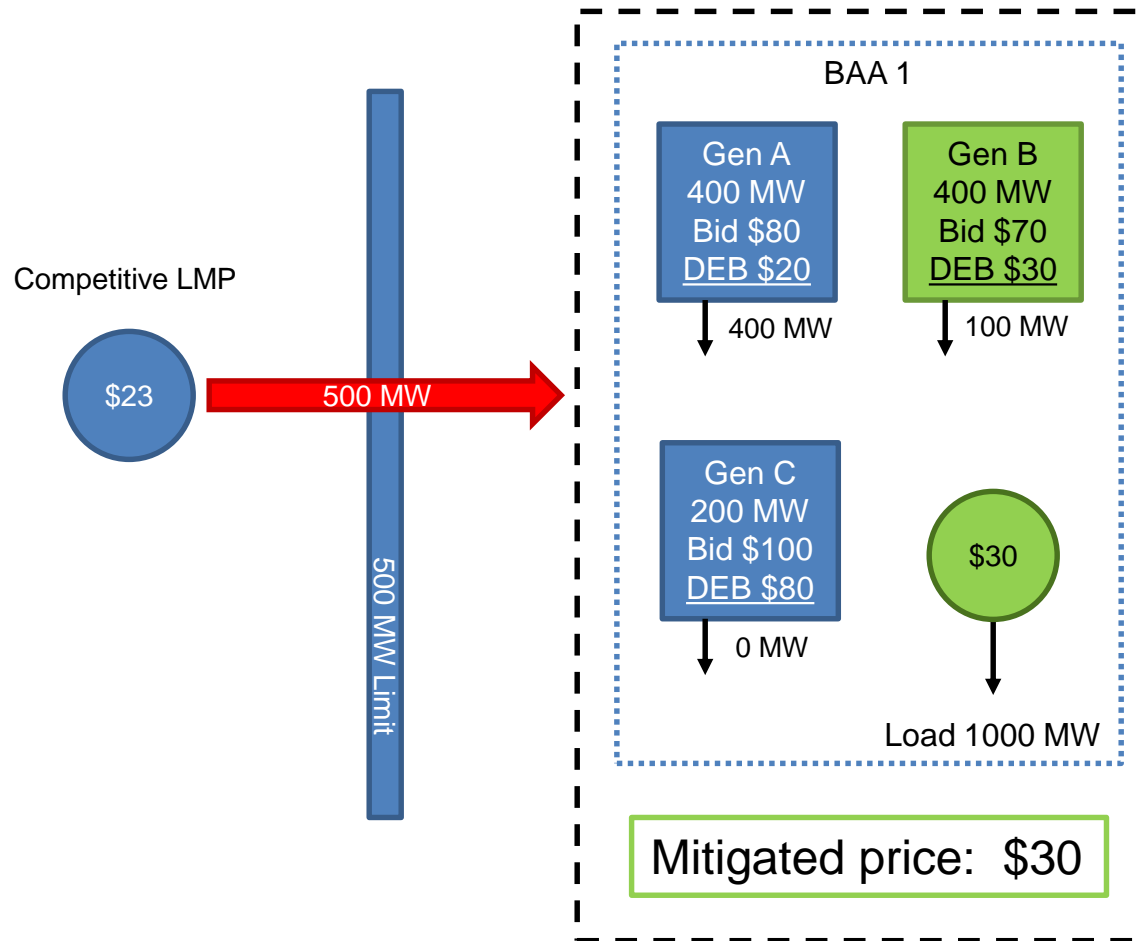
Example A: Single BAA importing - Market Run (2 of 2)



Example B: Single BAA importing - MPM Run (1 of 2)



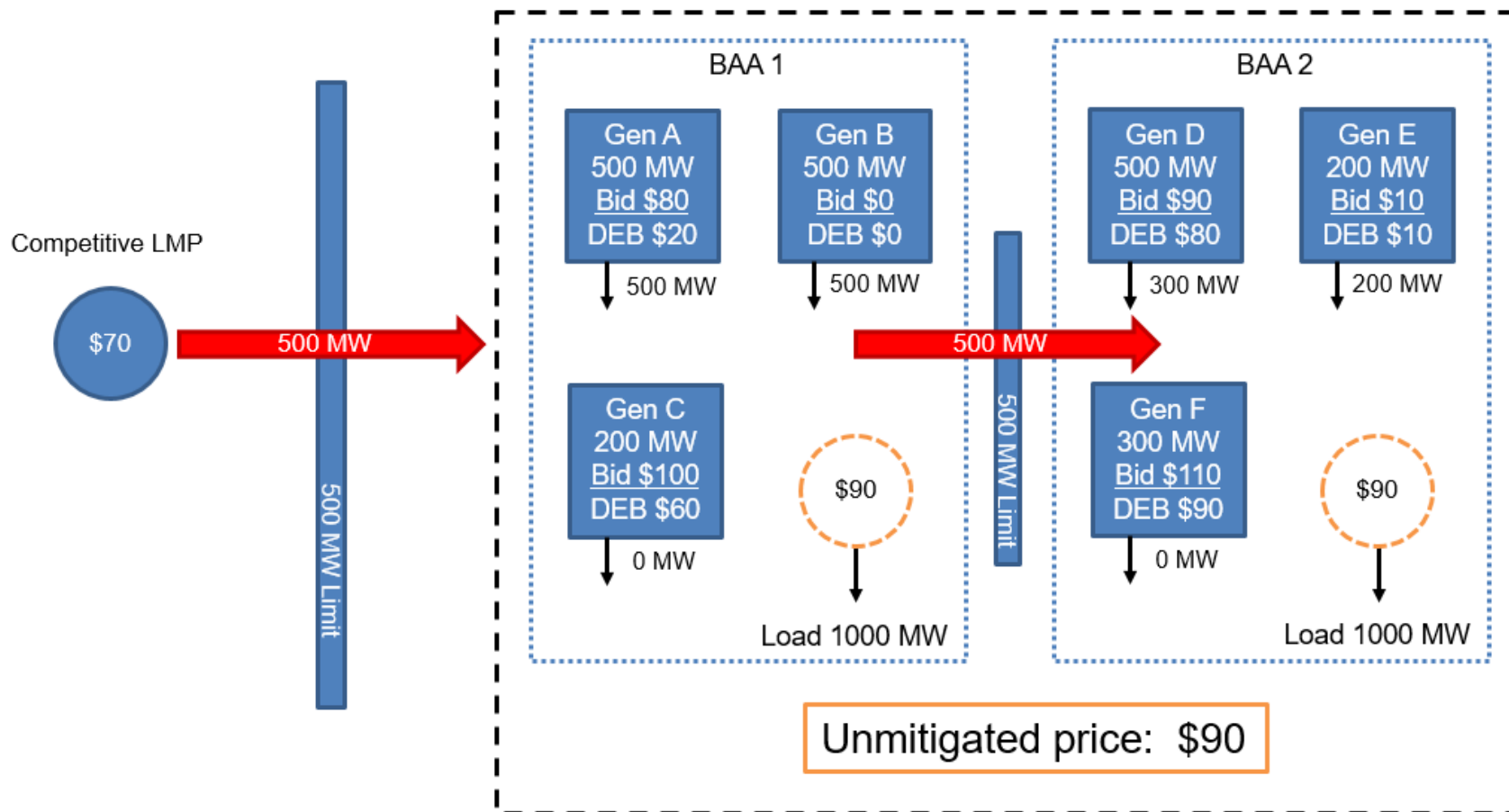
Example B: Single BAA importing - Market Run (2 of 2)



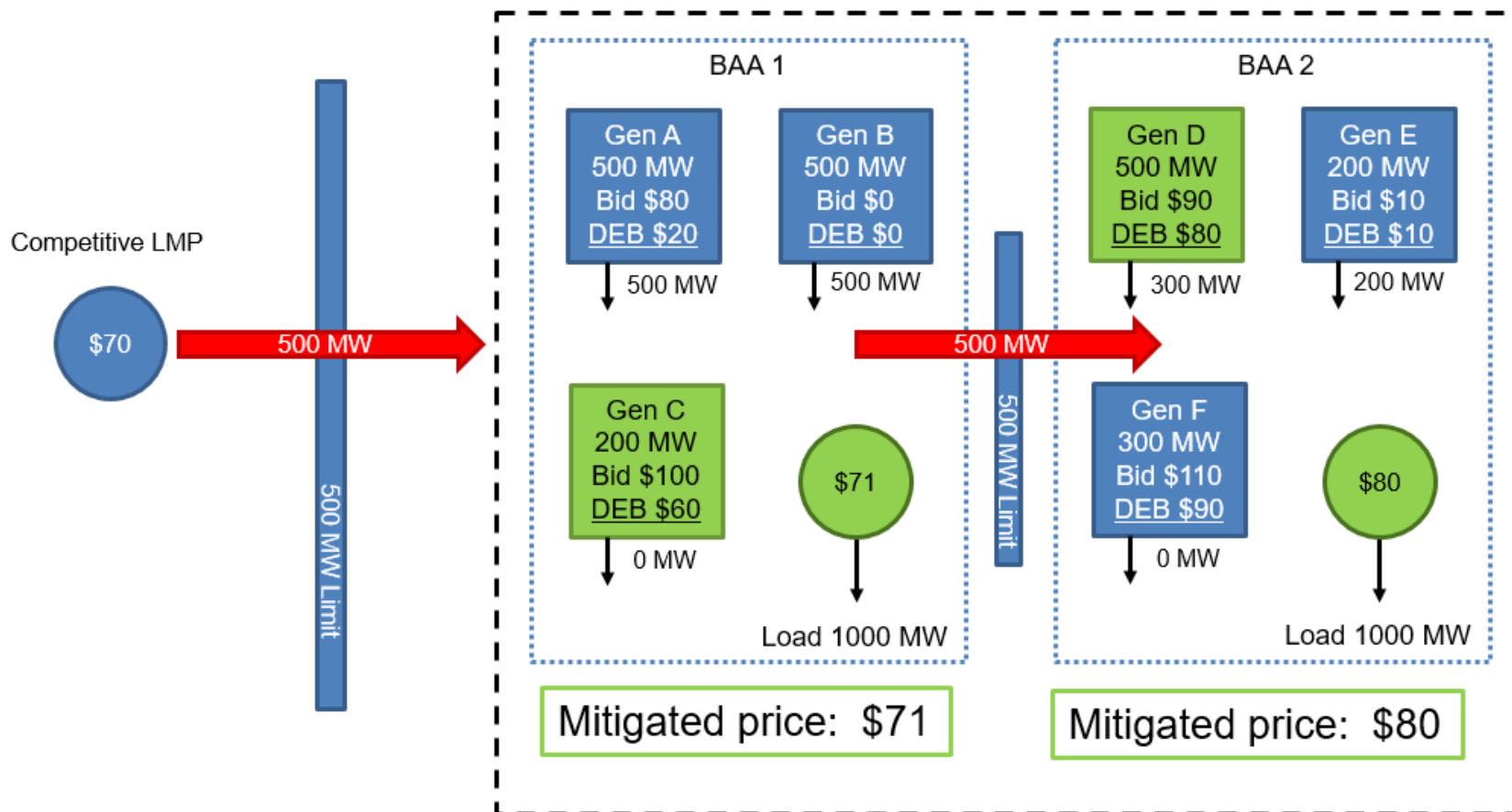
Mitigation framework enhancements: Economic displacement prevented between mitigated BAAs

- If two or more EIM BAAs become an import constrained bubble mitigation is triggered
 - Economic displacement using mitigated bids may occur between two BAAs within a constrained bubble
- Mitigated bids result in exports that increase, imports that decrease beyond quantities necessary to prevent the exercise of market power within the bubble
- The CAISO proposes limiting transfers between EIM BAA to the scheduled quantity prior to mitigation within the bubble

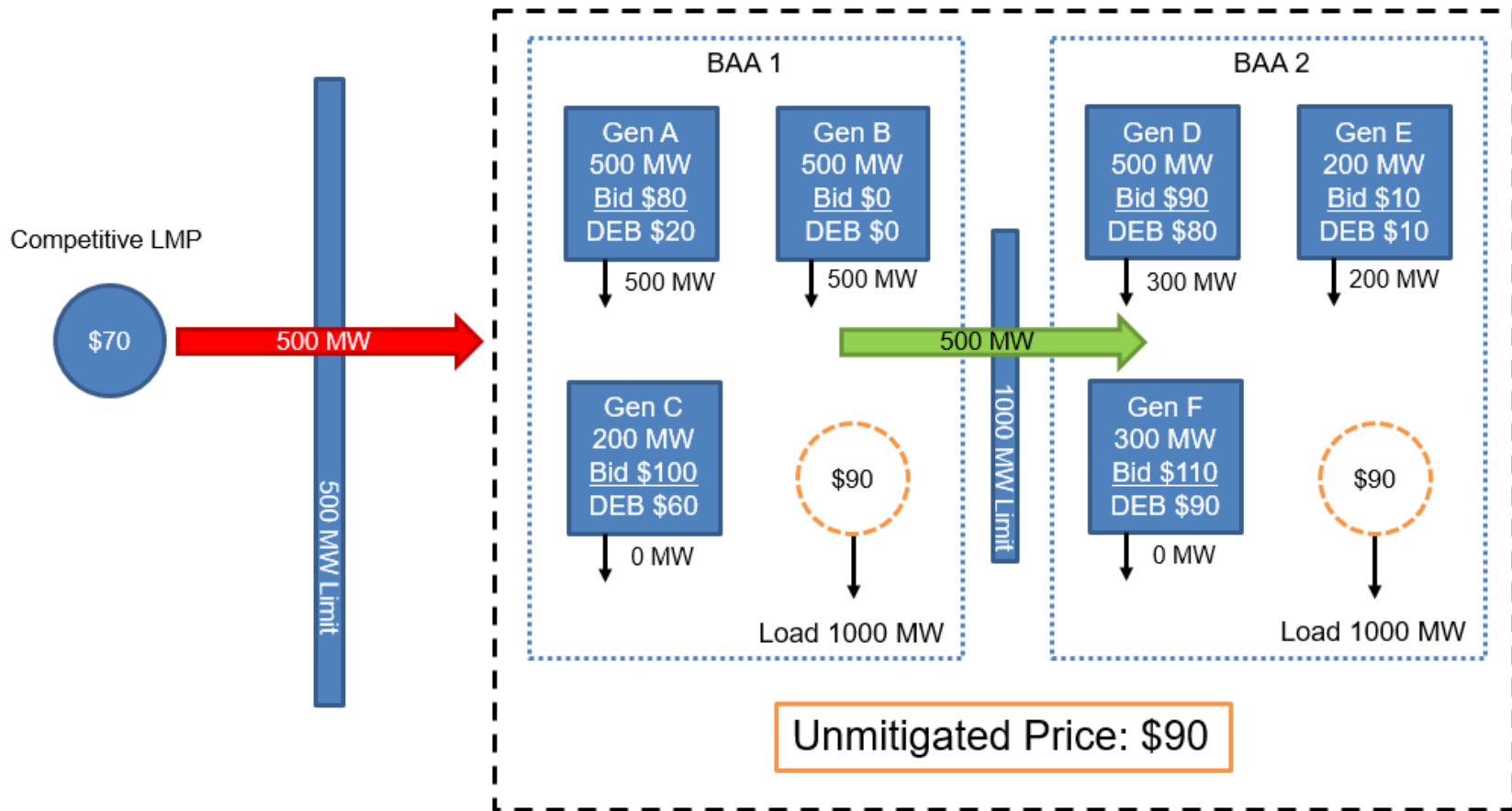
Example C: BAA 2 importing with binding constraint - MPM Run (1 of 2)



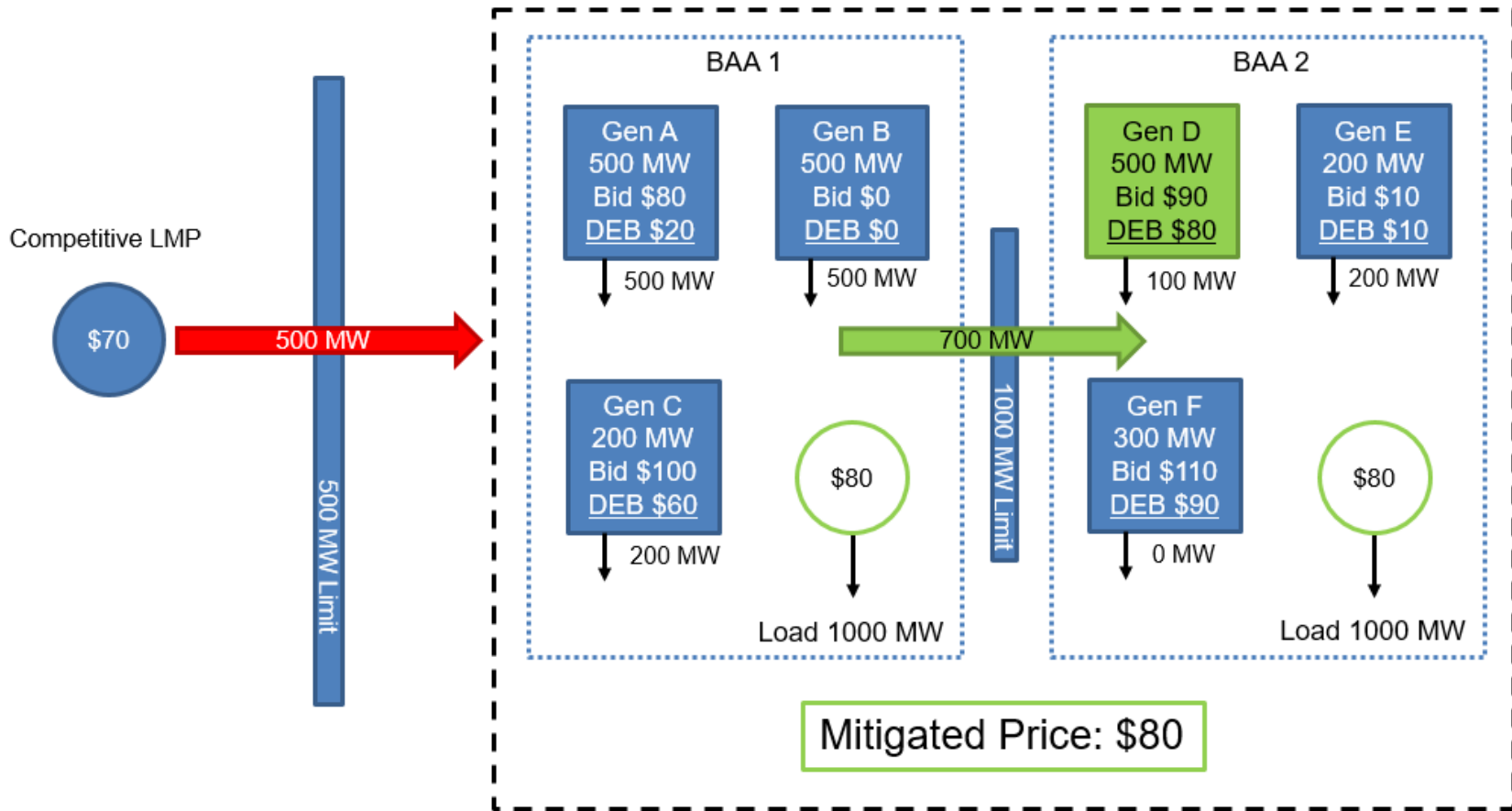
Example C: BAA 2 importing with binding constraint – Market Run (2 of 2)



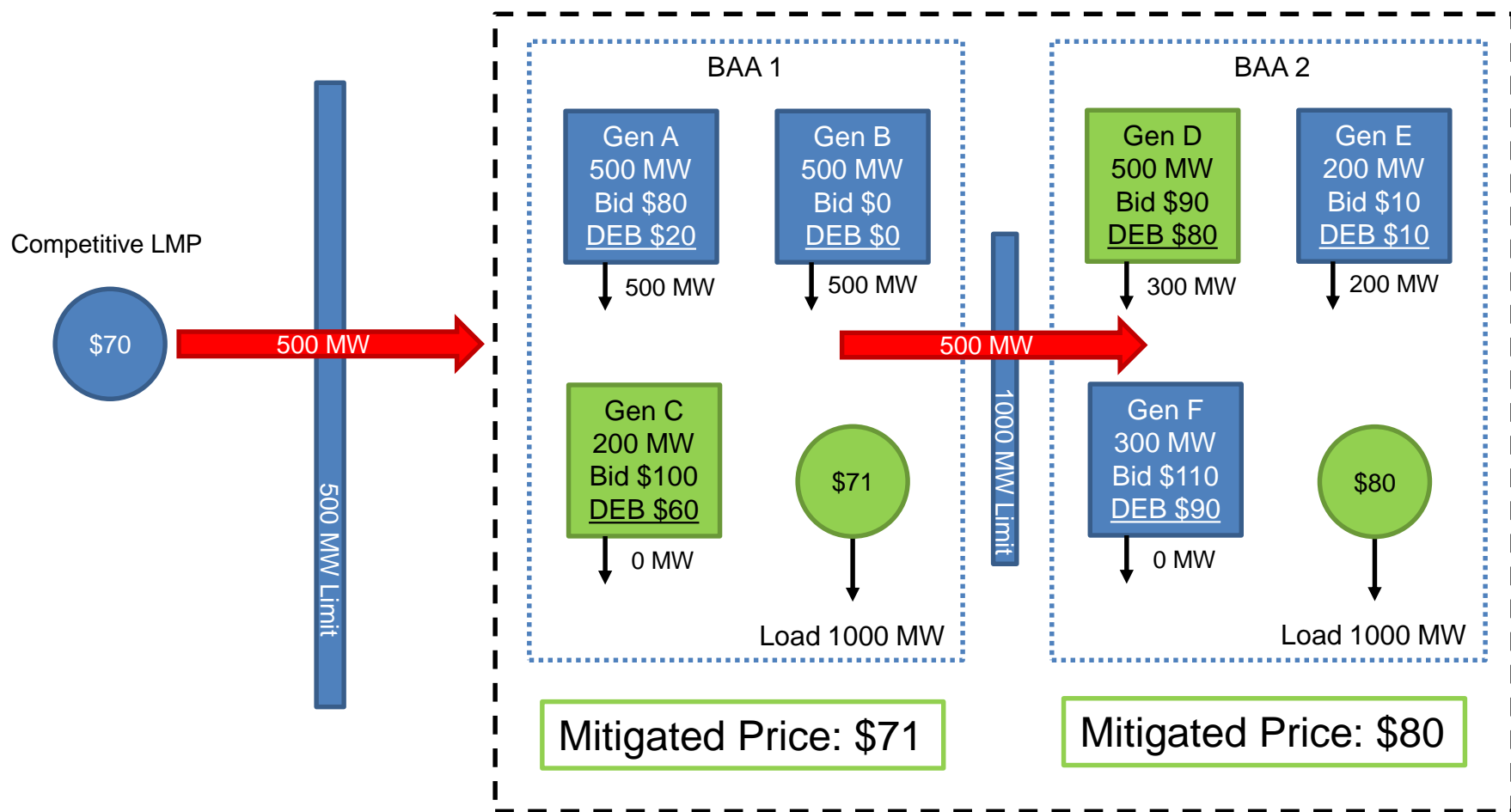
Example D: BAA 1 Net Scheduled Interchange is importing – MPM Run (1 of 3)



Example D: Gen C is dispatched down 200 MW to serve BAA 2s load (problematic) – Market Run (2 of 3)



Example D: Proposed rule: Set BAA's Net Scheduled Interchange at pre-mitigation schedule (3 of 3)



Issue remains for EIM entities when market mitigates offers to default energy bid

- Default energy bids can still be used to serve load outside the resource's BAA, but in more limited circumstances previous changes
- Existing opportunity cost methodology for default energy bids do not consider:
 - Bilateral prices outside of the EIM
 - Short-term limitations within the day

EIM use-limited default energy bid proposal

$$\text{MAX} (DA \text{ Peak Index}, MA \text{ Index}_{+1}, MA \text{ Index}_{+2}, \dots, MA \text{ Index}_{+N}) \times 1.10$$

- Two components represent short-and long-term limitations:
 - *DA Peak Index* – Day-ahead (DA) peak price at a specific trading hub
 - *MA Index* – Month-ahead (MA) price at a trading hub for the successive month *m* after the current month
 - *N* – The number of months of storage capability that the use-limited resource has available
- MAX used to reflect opportunity cost of generating energy today, at the highest price that energy could be sold in the future
- Peak hourly electricity prices published by ICE

EIM use-limited default energy bid adder

- CAISO proposes 110% adder to default energy calculation for the following reasons:
 - Mitigation only occurs if uncompetitive
 - Dynamic competitive assessment
 - CAISO analysis showed 110% would still preserve a use-limited resource use for highest value in summer months
 - Proposed reference level adjustment process allows updates when real-time electricity prices spike

Commitment Costs and Default Energy Bid Enhancements policy established reference level adjustment process

- CAISO reference levels based on published price information may not always be accurate
 - Suppliers request a before-the-market adjustment to reference level
- Supplier's actual costs must be more than CAISO calculated reference level
 - Retain sufficient justification supporting the need for a reference level adjustment request
- Bidding up to a supplier's reasonableness threshold is not a safe harbor and reference level adjustment requests must be based on actual costs

Reference level adjustments – gas resources proposal

- Recent gas market events, CAISO reconsidered treatment of real-time gas price volatility in reference level adjustment process
- A supplier may request a manual consultation if reference level request exceeds the automated reasonableness threshold
- CAISO to review requested amount, documentation, and observed same-day gas trading information available on trading platform
 - Approve reference level adjustment if requested amount appears to reflect current costs
 - May automatically adjust reasonableness threshold for gas region if costs apply to other resources

Reference level adjustments – EIM use-limited resources proposal

- Day-ahead price index may not reflect actual real-time electricity prices for short-term limitations
 - Adjustments to reference level may be made to the day-ahead energy component of equation

$$\text{MAX} (\text{DA PEAK INDEX}, \text{MA INDEX}, \text{MA INDEX}_{+2}, \dots, \text{MA INDEX}_{+N}) \times 1.10$$

- Resources must demonstrate the sale of real-time energy prices is greater than day-ahead index prices
 - Real-time ICE trading information or bilateral offers to buy electricity
- Reasonableness threshold amount to be determined based on analysis examining the historical variation of index prices and hourly bilateral prices

Gas Price Indices

- S&P Global Platts contains information about Intercontinental Exchange (ICE) trades through their daily and monthly North America natural gas indices
 - CAISO proposes to remove references to ICE in tariff
- Modify requirement of two gas indices to determine a blended gas price used in markets
 - CAISO proposed to allow as few as one index
- Current practice of updating every weekday morning gas price for day-head market to remain unchanged

Local Market Power Mitigation Enhancements

NEXT STEPS

EIM Governing Body Classification

- The following proposals fall within the EIM Governing Body's primary approval authority:
 - Freeze transfer quantities from mitigation schedule run between EIM BAAs areas
 - EIM use-limited resources default energy bid
- The following proposals fall within the EIM Governing Body's advisory role:
 - Recalculation of competitive locational marginal price
 - Reference level adjustment process
 - Gas price indices

Proposed Initiative Schedule

Please email your comments on the issue paper and straw proposal to initiativecomments@caiso.com by close of business October 3, 2018.

Milestone	Date
Post Issue Paper/Straw Proposal	September 13, 2018
Stakeholder Call	September 19, 2018
Market Surveillance Committee Meeting	September 28, 2018
Stakeholder Written Comments Due	October 3, 2018
Stakeholder Working Group Meeting	October 10, 2018
Stakeholder Written Comments Due	October 17, 2018
Post 2 nd Revised Straw Proposal	October 31, 2018
Stakeholder Call	November 8, 2018
Stakeholder Written Comments Due	November 29, 2018
Post Draft Final Proposal	December 21, 2018
Stakeholder Call	January 3, 2019
Stakeholder Written Comments Due	January 10, 2019
EIM Governing Body Meeting	March 12, 2019
Board of Governors Meeting	March 27-28, 2019

