



FERC Order 831- Import Bidding and Market Parameters

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This initiative addresses two topics related to the ISO's compliance with FERC Order No. 831, which raised the energy bid cap to \$2,000/MWh

1. Adjusting ISO market constraint relaxation parameter prices “penalty prices” to align with the increased energy bid cap
2. Price screening methodology for import bids greater than \$1,000/MWh

ISO proposes power balance constraint penalty price remain at \$1,000/MWh, unless there are verified costs greater than \$1,000/MWh

- Without changes, power balance constraint penalty price would be set at \$2,000/MWh bid cap once FERC Order 831 is implemented
- Propose to set power balance constraint penalty price to \$2,000/MWh when either of the following conditions exist:
 - There is a cost-verified bid from a resource-specific resource greater than \$1,000/MWh
 - The ISO-calculated maximum import bid price is greater than \$1,000/MWh
- Propose to set prices in the pricing run at highest-priced cleared bid when the market relaxes the power balance constraint and conditions above are met

ISO proposes to set all power balance constraints at \$2,000/MWh when conditions are met

- ISO real-time market includes individual power balance constraints for each EIM BAA and one for the overall market
- If power balance constraint set to \$2,000/MWh for any hour in day-ahead market:
 - \$2,000/MWh penalty price will be used for all hours in day
- If power balance constraint set to \$2,000/MWh for one hour in real-time market:
 - \$2,000/MWh penalty price will be used for remaining hours in day

Propose to price-screen resource adequacy import bids greater than \$1,000/MWh

- Reduce resource adequacy import bids priced greater than \$1,000/MWh and greater than the ISO-calculated maximum import bid price to the ISO-calculated maximum import price
 - When reduced, the ISO will not reduce a bid to a price below \$1,000/MWh
- Market will not reduce non-resource adequacy and virtual bids greater than \$1,000/MWh
 - However, the market will only clear these bids when the power balance constraint penalty price is \$2,000/MWh

Proposal recognizes that reducing non-resource adequacy bids to a max import bid price without after-the-fact cost recovery would discourage imports from bidding into the ISO market

- Reducing resource adequacy imports to the maximum import bid price should not reduce import supply
 - Resource adequacy import bid submission required by resource adequacy must-offer requirements
 - Suppliers can factor risk that import bid price might be reduced below costs into their bilateral contracts
- There is no practical methodology for the ISO to objectively determine import costs

Propose to accept non-resource adequacy import bids (and virtual bids) in the market above the ISO - calculated maximum import bid price and up to \$2,000/MWh during certain periods

- Two factors that will mitigate the risk that this will result in excessive market prices:
 - Market will not clear any energy bids greater than \$1,000/MWh
 - Unless max import bid price or cost-verified bid greater than \$1,000/MWh
 - ISO market should be able to meet demand using only resource adequacy bids
 - The day-ahead market has the additional protection that energy supply clears against economic demand bids

Maximum import bid price =

$$\text{Electric Hub Price} \times 1.1$$

- Used to screen import and virtual supply bids and intended to represent prevailing hourly energy prices
- Calculated each day based on published electrical price indices at representative bilateral trading hubs
 - Reflects variation of ISO prices hour by hour
 - Prices calculated by on - and off peak periods
- Calculated separately for:
 - Day-ahead and real-time markets
 - North and south interties
- 110 multiplier accounts for differences in prices between published indices and individual transactions

Electric hub price component estimates the current prevailing hourly bilateral electricity price for interties at the north and south of the ISO, respectively

- Calculation must convert daily prices into hourly prices because electrical price indices are daily prices multi-hour block prices while ISO prices are hourly prices in the day-ahead market
 - Adjusts prices based on historical ISO day-ahead SMEC in each hour

Electric Hub Price:

[1+ (CAISO Monthly Average SMEC per hour – CAISO Monthly Average SMEC) /CAISO Monthly Average SMEC] x Index Price

- Index price is determined by region
 - North Region = Mid-Columbia Trading Hub Price
 - South Region = Palo Verde Trading Hub Price
- Use historical SMEC in each hour to shape prices
 - Calculated in advance so market participants could use in forecasting maximum import bid prices
 - Direct indicator of expected hourly price variation than load forecast from revised straw proposal
 - Proposal reflects simple implementation for ISO internal processes

Average SMEC of an hour is determined by averaging all of the same hours in the same month from the previous year

- For example, Hour-Ending 10 on March 9, 2020:

March Date	SMEC Price
1	\$41.68
2	\$52.79
3 ... 8	\$\$
9	\$15.41
10...22	\$\$
23	\$8.00
24..31	\$\$
Average Monthly Price*	\$26.76

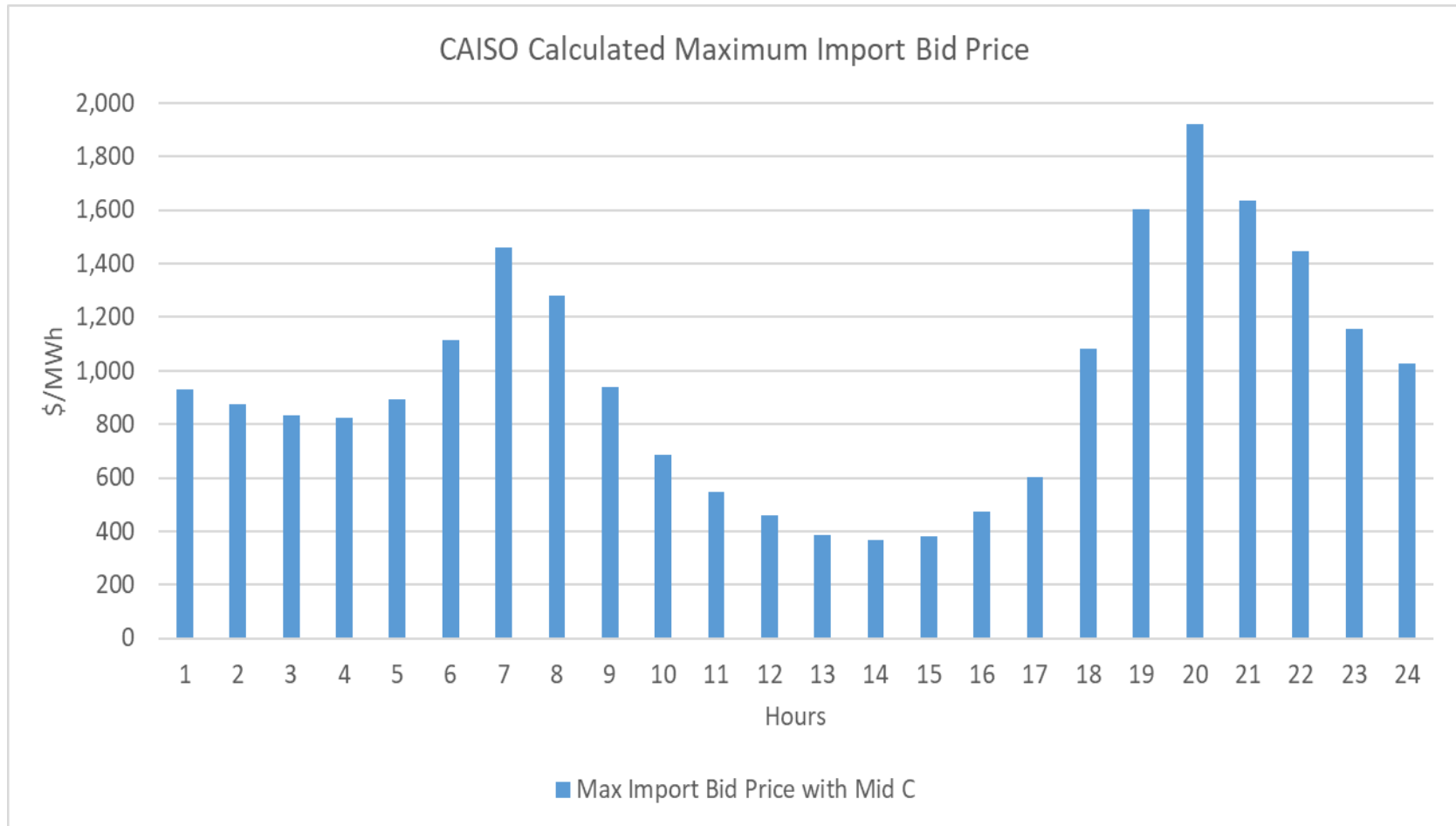
Monthly SMEC average is calculated by determining on- and off-peak average for the exact month from the previous year

- For example, Hour-Ending 10 on March 9, 2020

Hourly Shaping Factor =

$$1 + \left[\frac{(\text{Avg SMEC of HR 10 in March 2019}) - (\text{Avg SMEC of ON peak hrs in March 2019})}{\text{Avg SMEC of ON peak hrs in March 2019}} \right]$$

Illustration of hourly shaping factor



Examples:

#1: Assume the following inputs in the day-ahead market:

- Highest-priced submitted bid from a resource-specific resource = \$900/MWh
- Highest-priced submitted RA import bid = \$1,050/MWh
- Highest-priced submitted Non-RA import bid = \$1,200/MWh
- Highest-priced submitted virtual bid = \$1,000/MWh
- CAISO-calculated maximum import bid price = \$1,100/MWh

The power balance constraint penalty price would be set to \$2,000/MWh

- If there is a power balance constraint infeasibility:
 - Highest-priced cleared economic bid = \$1,200/MWh non-RA bid
 - Energy prices in the pricing run would be set based on \$1,200/MWh

#2 : Assume the following inputs in the day-ahead market:

- Highest-priced submitted bid from a resource-specific resource = \$900/MWh
- Highest-priced submitted RA import bid = \$900/MWh
- Highest-price submitted Non-RA import bid = \$950/MWh
- CAISO-calculated maximum import bid price = \$200/MWh

The power balance constraint penalty price would be set to \$1,000/MWh

- If there is a power balance constraint infeasibility:
 - Energy prices would be set based on \$1,000/MWh

#3: Assume the following inputs in the real-time market for HE 10:

- Highest-priced submitted bid from a resource-specific resource = \$1,400/MWh
- Highest-priced submitted RA import bid = \$800/MWh
- Highest-price submitted Non-RA import bid = \$700/MWh
- CAISO-calculated maximum import bid price = \$900/MWh

The power balance constraint penalty price would be set to \$2,000/MWh

- If there is a power balance constraint infeasibility:
 - Highest-priced cleared economic bid = \$1,400/MWh
 - Energy prices in the pricing run would be set based on \$1,400/MWh
- In HRs 11-24, the power balance constraint penalty price would remain set to \$2,000/MWh
 - If there is a power balance constraint infeasibility in one of these later hours and there are no cost-verified bids greater than \$1,000/MWh
 - Energy prices in the pricing run would be set based on \$1,000/MWh

#4: Assume the following inputs in the real-time market:

- Highest-priced submitted bid from a resource-specific resource within EIM BAA= \$1,200/MWh
 - EIM BAA is import constrained
- Highest-priced submitted RA import bid = \$800/MWh
- Highest-price submitted Non-RA import bid = \$700/MWh
- CAISO-calculated maximum import bid price = \$900/MWh

The power balance constraint penalty price would be set to \$2,000/MWh for all individual EIM BAAs and overall market

- If there is a power balance constraint infeasibility within the import constrained EIM BAA:
 - Highest-priced cleared economic bid = \$1,200/MWh
 - Import constrained EIM BAA energy prices in the pricing run set based on \$1,200/MWh
 - No special pricing provisions for other BAAs