FERC Order 831 – Import Bidding and Market Parameters discussion

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INTRODUCTION/BACKGROUND

In 2016, FERC raised the energy offer cap for ISO/RTOs from $1,000/MWh to $2,000/MWh (FERC Order 831)

- Required suppliers to submit energy bids greater than $1,000/MWh based on expected or actual short-run marginal costs
  - Verify costs above $1,000/MWh before the market to be eligible to set energy prices
  - Capped bids at $2,000/MWh
  - Provided make whole-payments for resource's bids greater than $1,000/MWh
  - Did not require the same verification rules for import or virtual bids above $1,000/MWh

CAISO Order 831 compliance filing

- The ISO proposed:
  - Not to cost-verify non-resource specific import bids and proposed to allow suppliers to submit import bids up to $2,000/MWh
  - Set the market constraint relaxation penalty prices relative to the new $2,000/MWh bid cap
- Stakeholders recently raised stakeholder concerns regarding these proposals, the ISO has started this initiative to reexamine them

POTENTIAL MODIFICATIONS TO THE APPROACH SUBMITTED IN THE CAISO'S FERC ORDER NO. 831 COMPLIANCE FILING

IMPORT COST VERIFICATION

Unlike resource-specific resources, imports do not have easily verifiable costs.

- Imports can bid based on different physical resources
  - Vary hour to hour
  - Energy from multiple resources in a single hour
- Import bids can be based on opportunity costs rather than actual physical costs to generate energy.
  - Have opportunity to sell in bilateral market and to sell in the future
  - Costs calculations can be highly complex and subjective
- Straw proposal acknowledged this difficulty and did not propose to directly verify import's costs before including import bids in the market

The ISO proposes to calculate a maximum import bid price to "cost-verify" import bids. Revised straw proposal describes two options on how the maximum import bid price will be used:

- Cap import bids to the maximum of $1,000/MWh or the ISO-calculated maximum import bid price. If an import bid is above $1,000/MWh and the maximum import bid price, the CAISO would reject the import bid; or
- Reduce import bids above both $1,000/MWh and the ISO-calculated maximum import bid price to the greater of maximum import bid price or $1,000/MWh. Provide for after-the-fact cost recovery of the original bid amount if the import's actual costs can later be verified.

Maximum import bid price would be calculated using a methodology somewhat similar to the hydro default energy bid.

Maximum import bid price = MAX (Electric Hub Price, Long-Term Opportunity Cost) × 1.1

- Maximum import bid price will be calculated:
  - Once per day, for each hour and used in the day-ahead and real-time markets
  - Separately for on-and off-peak hours
  - Separate prices calculated for northern and southwestern interties, respectively

Maximum import bid price represents import's highest potential opportunity cost.

- Calculates highest potential cost because the ISO market does not have the source of an import
- "Electric Hub Price" represents opportunity costs for bilateral sales in that hour
  - Based on published day-ahead bilateral electrical price indices
  - Shaped hourly based on load
  - Adjusted based on current gas prices
- "Long-Term Opportunity Cost" component represents long-term opportunity costs of use-limited resources
  - Based on published monthly futures prices

Electric Hub Price component estimates the current prevailing hourly bilateral electricity price by converting daily published index prices into hourly values.

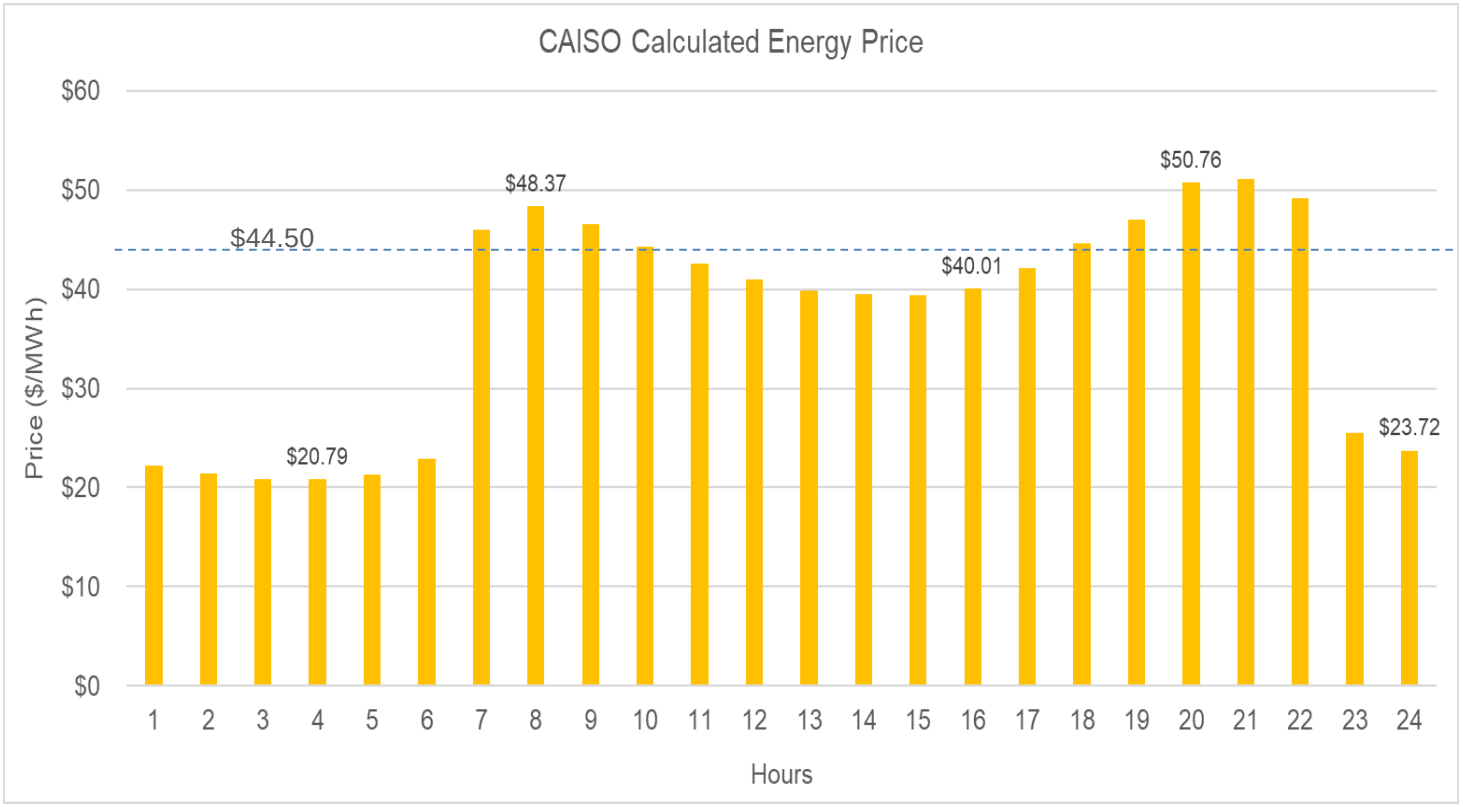
*[1+(CAISO Hourly Load Forecast – ISO Load Forecast Average)/ CAISO Load Forecast Average] x Price**

Where, *Price* is:

MAX (Average Gas Price, Electric Hub Price)

- Adjusts prices based on the load in each hour
  - Increases the hourly maximum import bid price in the hours with higher load and decreases in hours with lower load

Daily price calculated by the ratio of each hour's load forecast to the average load forecast over the day.



Electric hub price component also includes current natural gas prices to represent highest cost for gas generation to produce energy for all potential sources of imports.

- Calculated each morning for use in the day-ahead and real-time markets based on current natural gas prices on ICE
  - Use highest gas price for a gas price region
- Represents a floor price to ensure the electrical hub price is at least the level of the physical cost of producing energy
- Increases the electric hub price if there is a sudden increase in gas prices not reflected in the bilateral hub index price published the prior evening

Long-term opportunity cost component approximates the opportunity cost of use-limited resource's future sales.

Long-Term Opportunity Cost =

$$MAX(M\ Index{+}1, \ldots, M\ Index{+}12)$$

- Calculated based on monthly forward electrical price indices of the major bilateral electrical trading hubs in the western interconnection.
- Assumes source of the import is use-limited and has limitations over 12-months
  - Reasonable estimation of the longest period applicable to both gas and use-limited resources limitations

Option 1- Implements the maximum import bid price as a cap import bids to the maximum of $1,000/MWh or the ISO-calculated maximum import bid price.

- Assumes that the ISO does not have the ability to verify import bid costs, even after-the-fact
- No requirement for suppliers to submit import bids based on actual or expected costs
  - Creates “safe harbor” for import bids accepted by the ISO

Example:

- An import supplier submitted $1,200/MWh import bid
  - The CAISO calculated maximum import bid energy price is $1,100/MWh
  - The CAISO would reject the $1,200/MWh import bid
- Pro – Assures import suppliers the ISO market will not accept their bid at a price below their submitted bid price
- Con – The ISO market will lose access to potentially needed supply

Option 2 – Implements the maximum import bid price by reducing import bids above both $1,000/MWh and the ISO-calculated maximum import bid price to the greater of maximum import bid price or $1,000/MWh.

- Original bid price eligible for after-the-fact uplift payment, if the ISO could later verify the import's actual costs
- Option is similar to the ISO process proposed to FERC for resource-specific resources resulting from its CCDEBE initiative
  - Creates "safe harbor" for import bids accepted by the ISO
  - This option does not require bids above $1,000/MWh to be based on actual or expected costs
  - However, in order to receive after-the-fact cost recovery payment, suppliers must demonstrate actual costs

Examples:

- An import bid was submitted at $1,500/MWh
  - The ISO calculated maximum import bid energy price is $1,300/MWh
  - The ISO would reduce the import's bid to $1,300/MWh use in the market. $200/MWh eligible for after-the-fact cost payment
- An import bid was submitted at $1,500/MWh
  - The ISO calculated maximum import bid energy price is $950/MWh
  - The ISO would reduce the import's bid to $1,000/MWh use in the market. $500/MWh eligible for after-the-fact cost payment

Pros and Cons of Option 2

- Pro – Import suppliers have the potential to recover the total amount of their original bid after-the-fact, as long as they can demonstrate actual costs. This may increase amount of imports offered.
- Con – The ISO may not be able to verify import costs, even after-the-fact. Supplier's costs are often driven by opportunity costs, which are complex and subjective calculations.

MARKET PARAMETERS

The ISO market may relax constraints when it needs to reach a feasible solution.

- When supply does not equal demand the power balance constraint is relaxed.
- When the market cannot bring flows below limits, transmission constraints are relaxed
- Market constraint relaxation parameter prices are the price at which the market relaxes a constraint.
  - The market reflects this cost in energy prices
  - These relaxation parameter prices are referred to as “penalty prices”
- Currently, the power balance constraint is set at the hard energy bid cap of $1,000/MWh and all other penalty prices are scaled relative to the power balance constraint.

Two potential options to set penalty prices:

- Option 1: Scale the penalty prices relative to the power balance constraint relaxation penalty price set at the $2,000/MWh hard energy bid cap
  - Same methodology as used today under a $1,000/MWh bid cap
- Option 2: Scale the penalty prices relative to a $2,000/MWh power balance constraint relaxation penalty price only when there are bids in the market that have been cost-verified at a price greater than $1,000/MWh (i.e. two sets of penalty prices)

Two options for pricing when power balance constraint is relaxed under $2,000/MWh power balance constraint penalty price set:

- Option 2A: sets prices based on “price discovery mechanism” when the power balance constraint needs to be relaxed
- Option 2B: sets prices based on $2,000/MWh power balance constraint penalty price

Option 1: Penalty prices scaled relative to power balance constraint relaxation penalty price set at $2,000/MWh hard bid cap.

- This option is consistent with the existing rules that set the power balance constraint relaxation penalty price at the hard energy bid cap.
- Aligns the administrative scarcity price with the maximum allowable bid price
  - Pro: Stronger scarcity pricing signal
    - Compensates flexible resources that can meet operational needs
    - Preserves importers incentive to bid actual costs
    - Provides strong incentives to deliver supply in real-time
  - Con: May be higher price than necessary to incent additional supply

Option 2: Two sets of penalty prices based on accepted cost-verified bids.

- The two sets of scheduling and pricing run penalty prices are:

1. No cost-verified bid that is greater than $1,000/MWh:
    - Penalty prices scaled relative to $1,000/MWh power balance constraint relaxation penalty price
2. Cost-verified bid greater than $1,000/MWh:
    - Penalty prices scaled relative to $2,000/MWh power balance constraint relaxation penalty price

Options 2A and 2B use the same two sets of scheduling and pricing run penalty prices, however:

- Option 2A: sets prices based on “price discovery mechanism” when the power balance constraint needs to be relaxed
- Option 2B: sets prices based on $2,000/MWh power balance constraint penalty price

Option 2A: Set market prices based on “price discovery mechanism” in market’s pricing run.

- Price discovery mechanism used to find the last economic bid to set CAISO energy prices
  - Pro:
    - Sets the scarcity price at the high cleared bid price instead of “arbitrarily” at $2,000/MWh
  - Con:
    - Reduces incentives for imports to bid actual costs when there are cost-verified bids above $1,000/MWh
    - Does not send as strong of a scarcity price signal to attract additional supply

Option 2B: Set market prices on $2,000/MWh power balance constraint relaxation penalty price.

- Assumes market should send this higher-priced scarcity price signal only when there are cost-verified bids in the market greater than $1,000/MWh.
  - Pro:
    - Compensates flexible resources that can meet operational needs
    - Incentivizes import suppliers to bid actual costs
    - Provides strong incentives to deliver supply in real-time
  - Con: May be higher price than necessary to incent additional supply

Energy prices differ based on application of price discovery mechanism

- For example, assume highest-priced cleared bid in market is $1,200/MWh
  - If there is a power balance constraint infeasibility:
    - Option 2A:
      - Penalty prices scaled relative to $2,000/MWh power balance constraint penalty price
      - The pricing run would use price discovery mechanism to set energy prices based on the $1,200/MWh highest cleared bid
    - Option 2B:
      - Penalty prices scaled relative to $2,000/MWh power balance constraint penalty price
      - The pricing run would set energy prices based on the $2,000/MWh power balance constraint penalty price

Proposed treatment of virtual supply bids under both Option 2A and 2B:

- Virtual supply bids greater than $1,000/MWh would only be accepted if the ISO had cost-verified physical supply bids greater than $1,000/MWh.
  - Virtual supply bids are not subject to cost-verification
  - If there is no cost-verified physical supply bid above $1,000/MWh and virtual supply bids can bid above $1,000/MWh and clear for congestion management purposes
  - Also, potential for virtual supply bids to consistently set penalty prices at $2,000/MWh