



# Negotiated Default Energy Bids

Energy Imbalance Market Offer Rules

Technical Workshop

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# Negotiated Default Energy Bids (NDEBs)

- Tariff provisions (39.7.1.3)
  - Participant proposes NDEBs to CAISO
  - CAISO reviews/approves/disapproves
  - 60 day period for good faith negotiation and review
  - If not approved:
    - Participant may file a proposed DEB at FERC pursuant to section 205
    - CAISO may use a temporary DEB while filing is pending.
  - Accepted NDEBs filed at FERC on confidential basis
    - May be formulaic
  - To request a NDEB, submit a request in writing with supporting materials to [ndeb@caiso.com](mailto:ndeb@caiso.com). This process may move to CIDI this year.

# Negotiated Default Energy Bids (NDEBs)

- Implementation

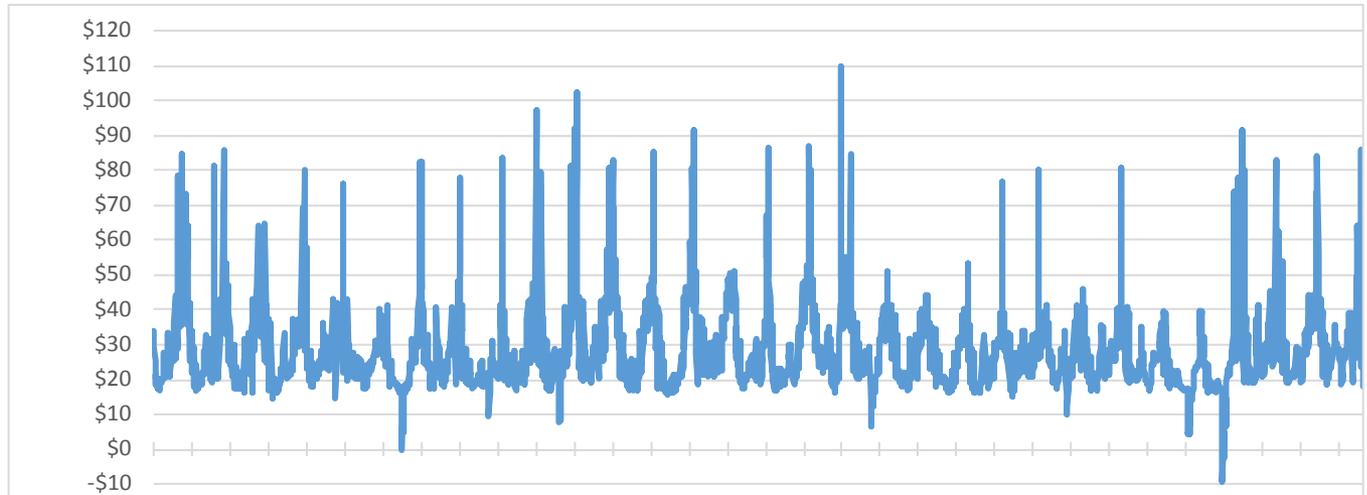
- Department of Market Monitoring (DMM) has lead in working with participants.
- CAISO (Market Quality and Renewable Integration) has opportunity to participate/review and is ultimately responsible for all DEBs.
- Process very interactive – DMM provides suggestions, reviews supporting data, develops/reviews sample results.
- DMM develops code to generate NDEBs and must produce NDEBs by ~9 pm prior to each operating day.
- Currently calculating NDEBs for 127 resources.

# Negotiated Default Energy Bids

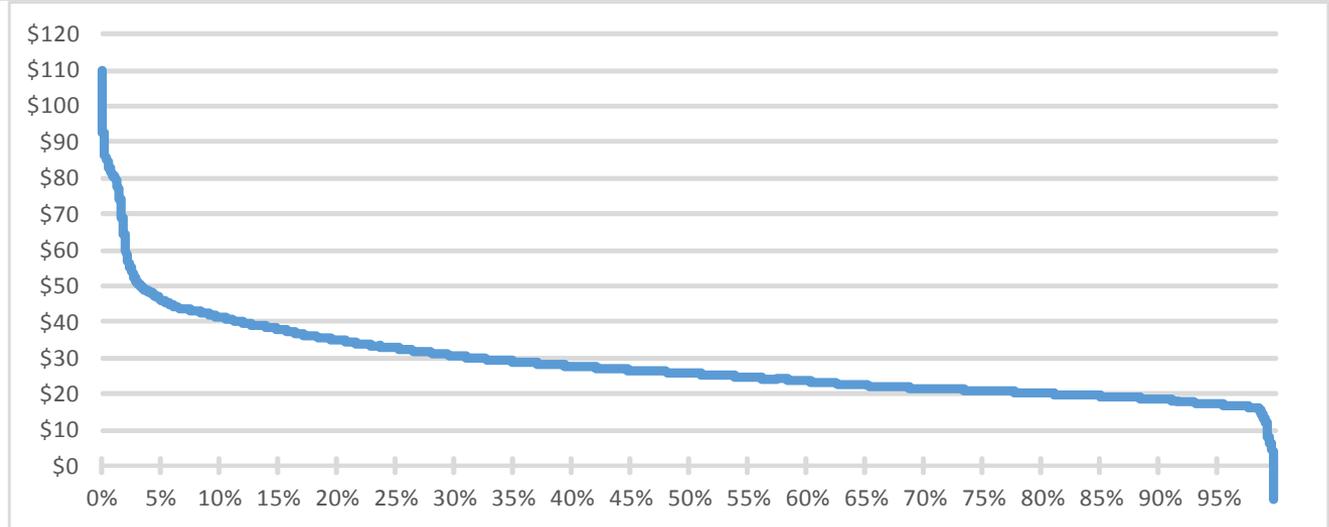
- Can be based on *opportunity costs* for resources with *energy limits over future time period*
  - Daily (hydro with daily storage/dispatch cycle)
  - Monthly (monthly resource plan of expected energy hydro)
  - Seasonal (expected energy over known period)
  - Annual or multi-year limitations
- Examples:
  - Price duration curve (e.g. monthly, seasonal)
  - Daily available energy model
  - General approach based on bilateral prices (day-ahead, balance of month, monthly futures, etc.)

# Example 1: Price duration curve approach

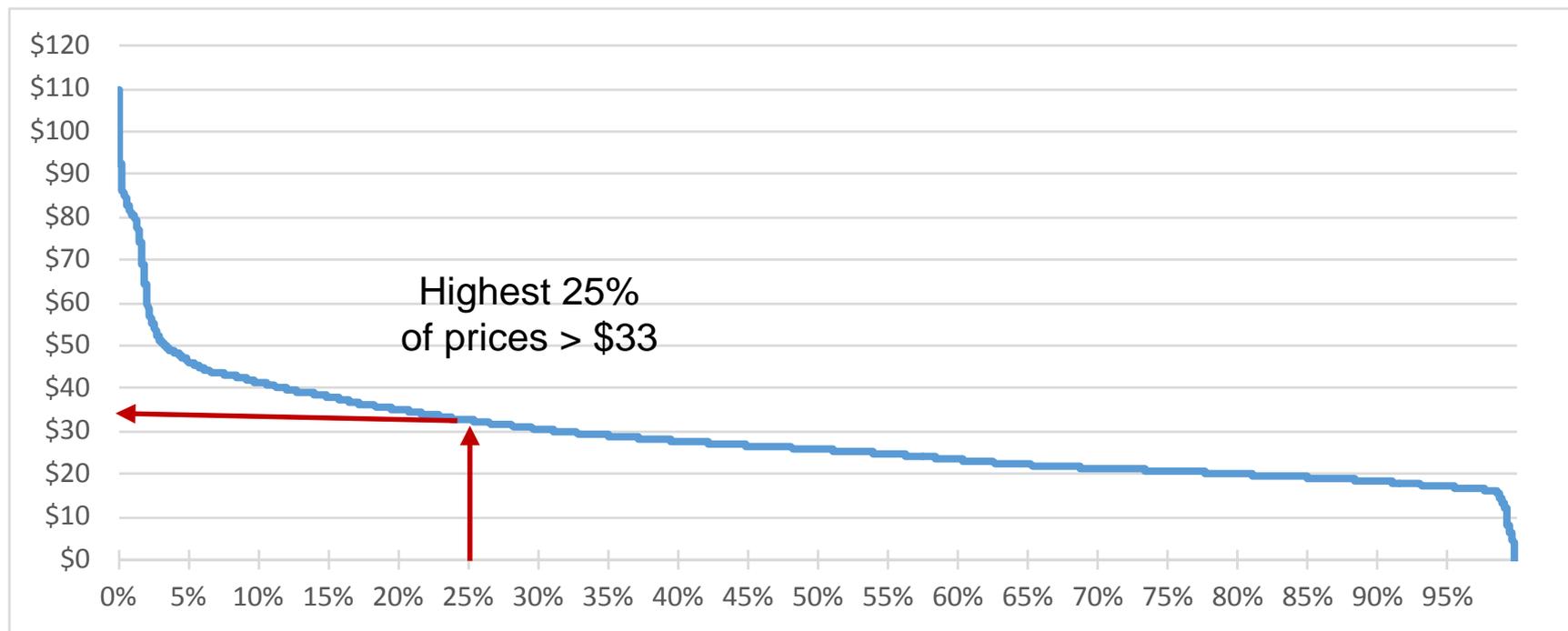
1) Historical 15-minute EIM prices used to determine shape of price curve.



2) 15-minute price duration curve (adjusted to reflect futures prices).



# Example 1: Price duration curve approach



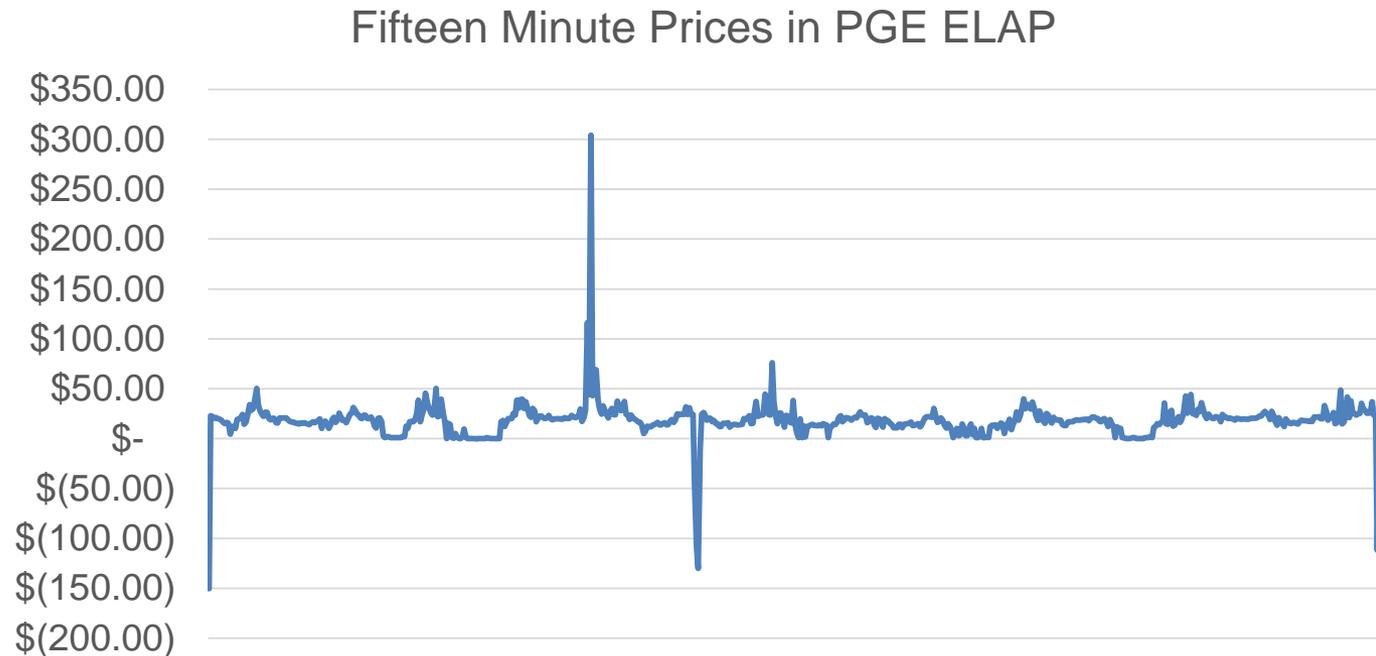
3) Opportunity cost estimated based on optimal “strike price” given total hours of available energy.

## Example 2: Daily available energy forecast

- Daily price curve based on average 15-minute EIM price over representative sample of prior days (e.g. prior 7 days).
- Price curve can be scaled up by the ratio of day-ahead bilateral prices to historical peak prices, if higher
- Available energy based on:
  - Average default (e.g. based on monthly or seasonal forecast)
  - or
  - Updated day-ahead projection (if provided).

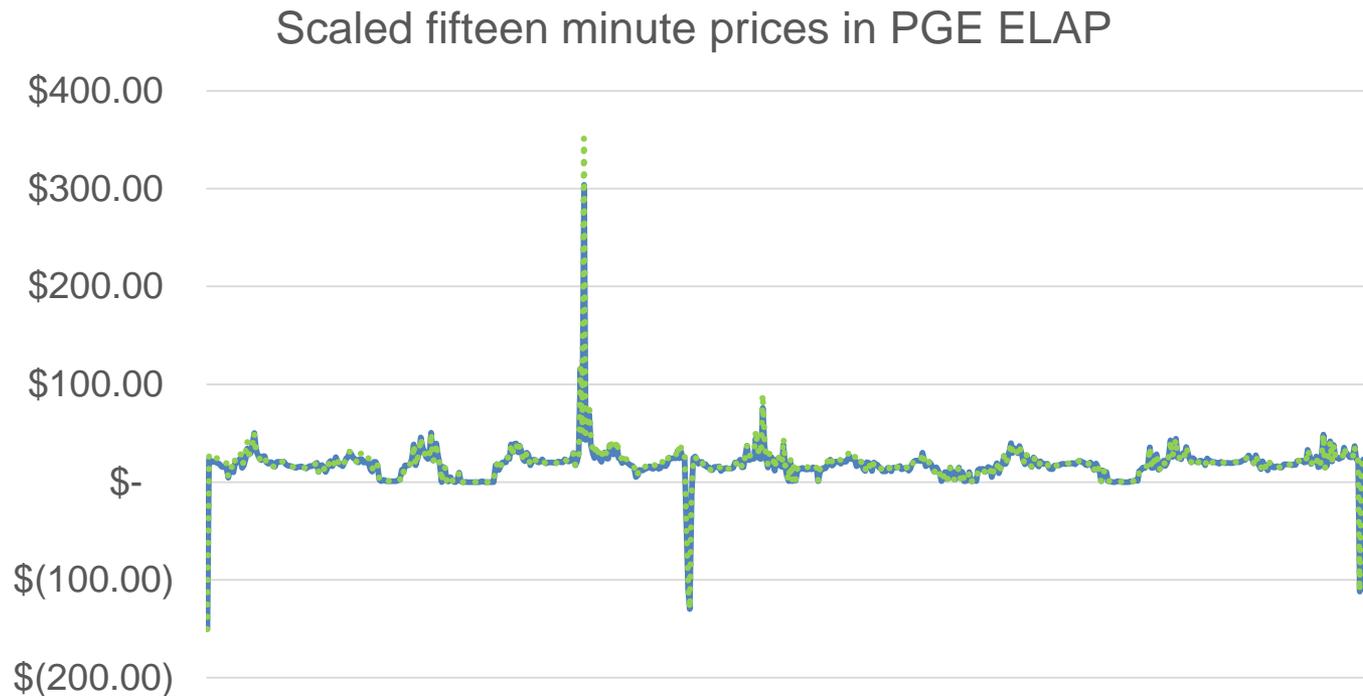
## Example 2: Daily energy forecast inputs

- Projected availability based on use limitation (25%)
- Historical prices (sample: ELAP\_PGE-APND 4/15-4/21)



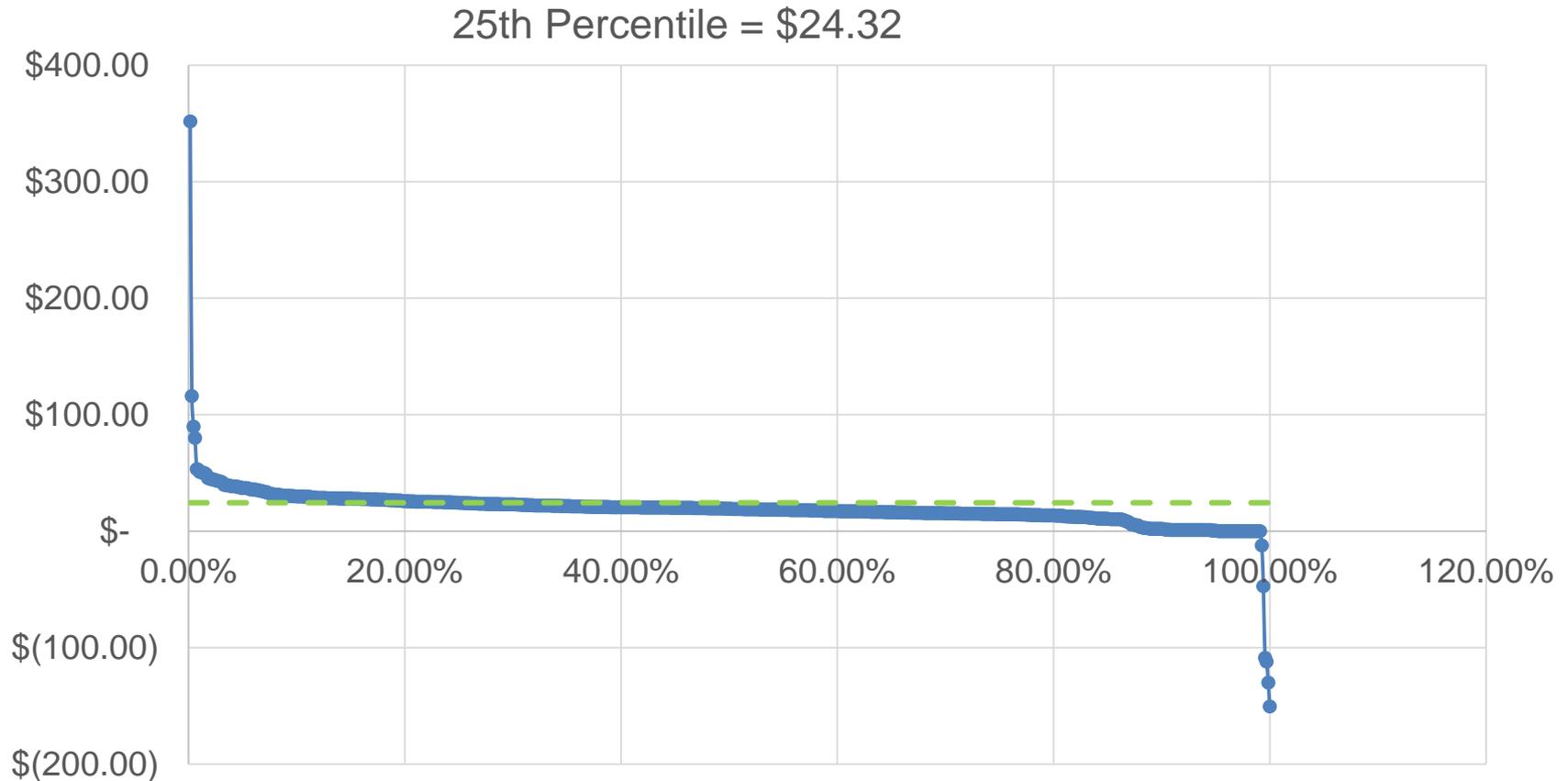
## Example 2: Daily energy forecast inputs

- Scale historical prices by day-ahead prices on MIDC in cases where average EIM price for date and period is lower than MIDC and EIM price is positive (floor)



# Example 2: Daily energy forecast

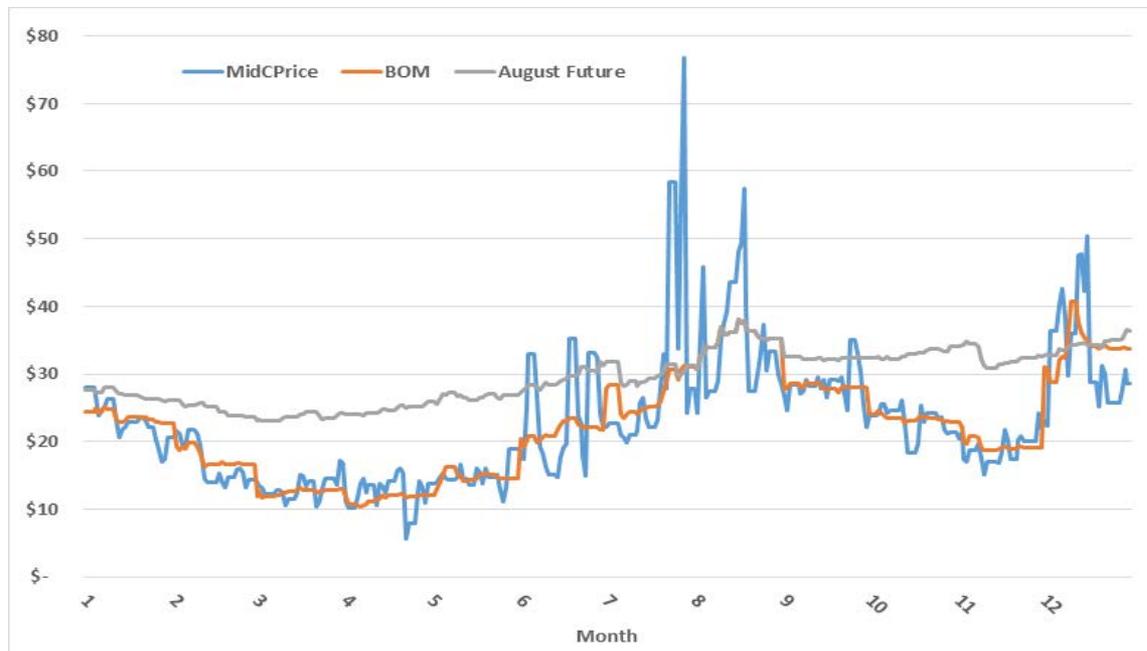
## DEB calculated using duration curve of scaled prices





## Example 3: General approach based on bilateral prices

- Recognizes opportunities available in bilateral market outside of EIM
- Can be combined with duration curve approach for resources with seasonal or other longer term limitations (e.g. multi-year)



# Negotiated Default Energy Bids are sufficiently flexible to reflect demonstrable costs.

- Longer term opportunity costs:
  - Price duration curve/bilateral approach
  - NDEB could be based on SC's proprietary model, approved and validated by DMM and the ISO
- SC calculation possible, but requires approval/verification
- Existing NDEBs can be reevaluated and changed after implementation in the market, by either party
- Contact [ndeb@caiso.com](mailto:ndeb@caiso.com)