

WESTERN ENERGY IMBALANCE MARKET

Market Monitoring Update

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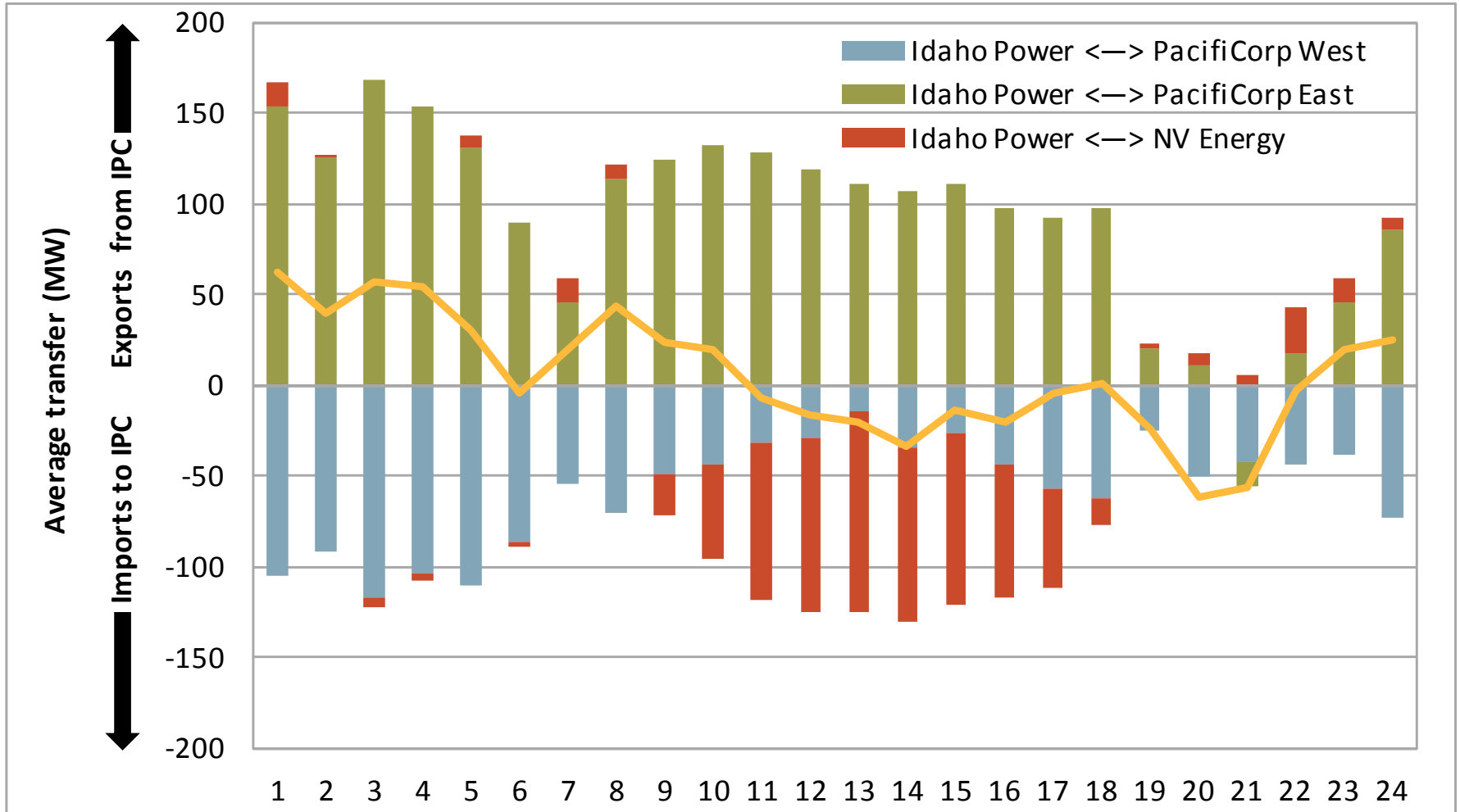
EIM Governing Body Meeting

General Session

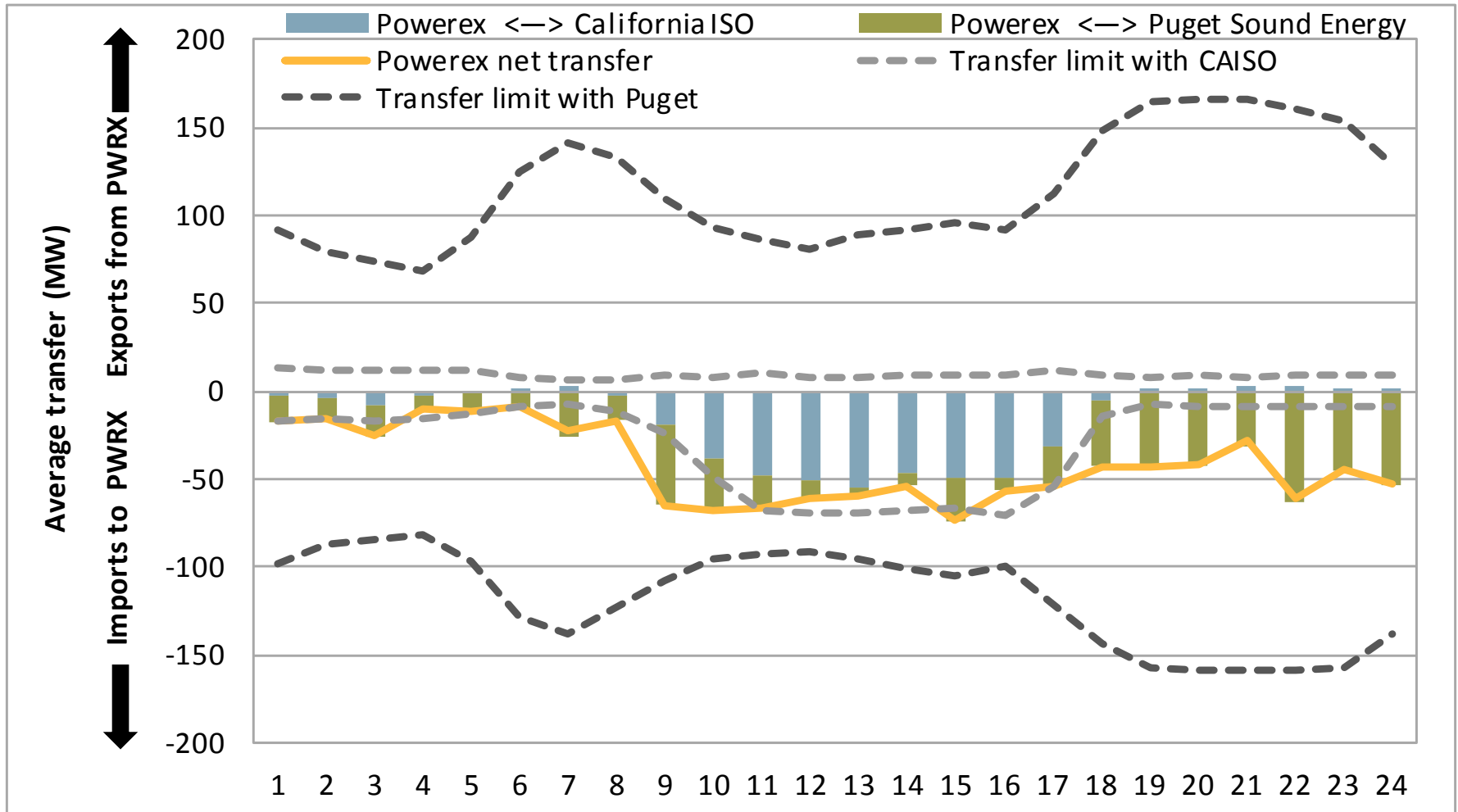
July 12, 2018



Average EIM transfers with Idaho Power Corp. (15-minute market, Q2 2018)



Average EIM transfers with Powerex (15-minute market, Q2 2018)



Areas for improvement of mitigation suggested by Powerex (April 30 Workshop).

1. “Flow reversal”

- Flow changes from import to export after bid mitigation triggered by import congestion.

2. “Extension” of mitigation to subsequent intervals.

- Bids mitigated in 15-min interval mitigated during rest of hour.
- Bids mitigated in 15-min interval mitigated during corresponding three 5-min intervals.

3. “Misapplication” of mitigation

- Is it appropriate to apply mitigation into area where not potential for market power (i.e., no customers exposed to LMPs)?
- Mitigation would still apply if triggered by congestion on other paths (i.e., multiple EIM BAAs separated from rest of EIM).

Areas for improvement of mitigation suggested by Powerex (continued).

4. “Inaccurate DEB”

- Negotiated DEB option is “Not workable in practice for hydro resources located outside CAISO BAA “
- “Requires ability to accurately determine methodology / formula to estimate expected marginal costs, which are complex, dynamic, and involve both objective and subjective variables”
- Problem compounded by ISO constraints on DEB calculations:
 - DEBs must be completed the day prior to operations.
 - DEBs do not have hour-by-hour granularity.

Frequency and impacts of mitigation on Powerex transfer constraints in 15-minute market (April-July)

- Mitigation triggered 35% of 15-min intervals
 - 26% of intervals due to congestion into Powerex only
 - 9% of intervals due to congestion into multiple BAAs
 - 20% of mitigated intervals due to “extension” of mitigation from prior interval
- Flow reversal during mitigated 15-min intervals
 - Exports were limited to zero about 54% of 15-min intervals mitigated (no flow reversal possible).
 - During the 30% of mitigated intervals by “extension” (with exports allowed), net exports occurred in 16% of time.
 - During other 16% of intervals mitigated (not by extension), flow reversal occurred 2% of time.

Total potential “flow reversal” up to 2% of all 15-minute intervals.

Frequency and impacts of mitigation on Powerex transfer constraints in 5-minute market (April-July)

- Mitigation triggered 24% of 5-min intervals
 - 16% of intervals due to congestion into Powerex only
 - 8% of intervals due to congestion into multiple BAAs
 - 14% of mitigated intervals caused by “extension” of mitigation from prior interval
- Flow reversal during mitigated 5-min intervals
 - Exports were limited to zero about 49% of 15-min intervals mitigated (no flow reversal possible).
 - During the 31% of mitigated intervals by “extension” (with exports allowed), net exports occurred in 5% of time.
 - During other 20% of intervals mitigated (not by extension), flow reversal occurred 5% of time.

Total potential “flow reversal” up to .4% of all 5-minute intervals.

DEB for EIM hydro recently proposed by Powerex much higher than EIM/CAISO market prices >99% of intervals.

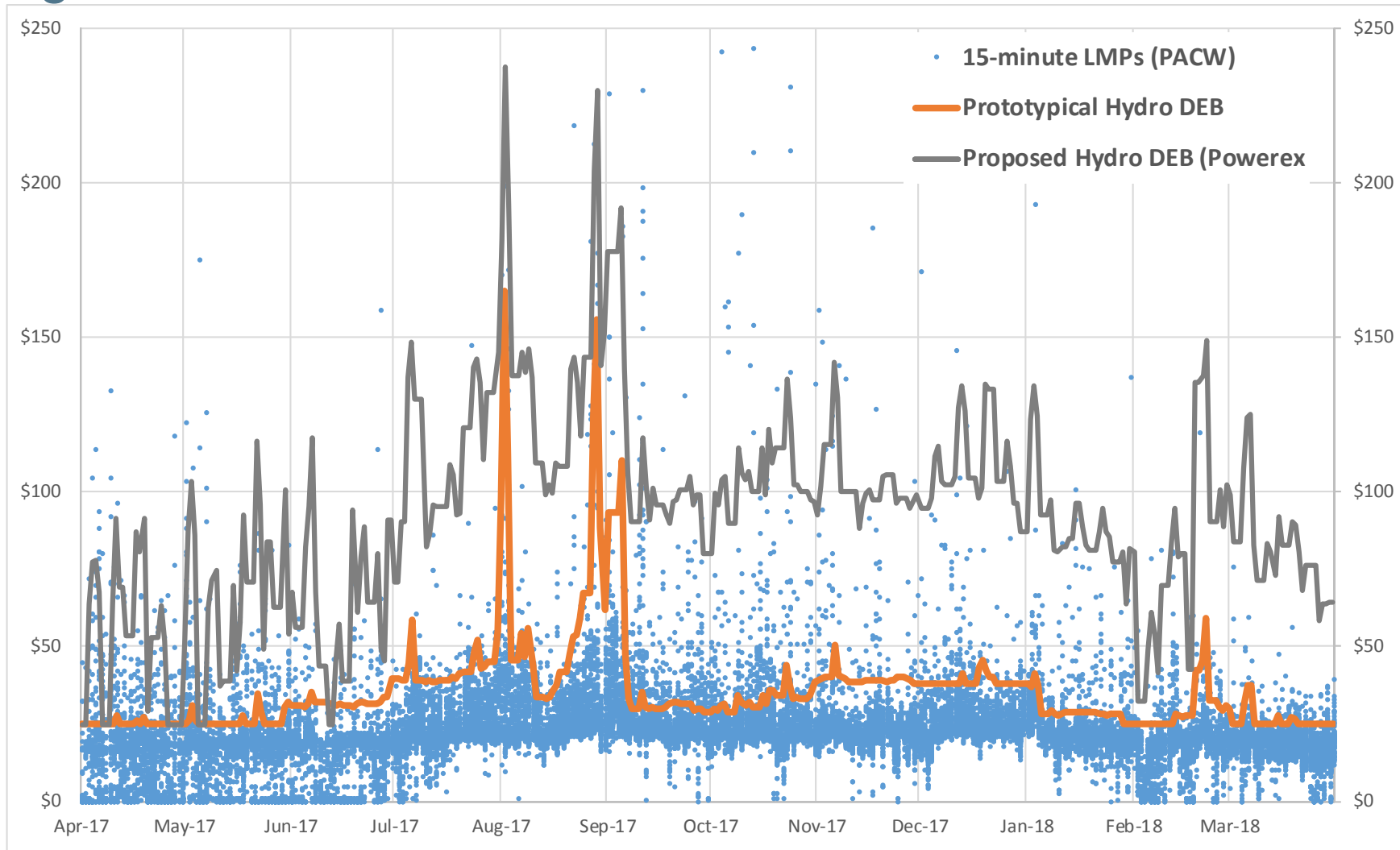
Powerex Sales in Western U.S.

July 2016 – Daily and Hourly from FERC EQR



Source: Addressing LMP/DEB Challenges for Energy-Limited EIM Participating Resources, CAISO April 30 Workshop, Powerex, p.19
<http://www.caiso.com/Documents/PowerexDefaultEnergyBidPresentation-EnergyImbalanceMarketofferRulesTechnicalWorkshop.pdf>

Potential DEBs for EIM hydro using current methods higher than LMP <90% of intervals.



Discussion of Market Power Mitigation at EIM Regional Issues Forum (June 6)

- Some other RTOs use much higher conduct/impact thresholds in mitigation:
 - Cost + \$100/MWh for constraints that are “not chronic”
 - Cost + \$10 to \$100/MWh for “chronically constrained”
- Main difference between CAISO/EIM and these RTOs is the threshold used for determining if bids have “significant” impact on prices/costs.
 - Similar methods used to calculate marginal or opportunity costs.
- CAISO/EIM uses dynamic vs static approach used by other RTOs for determining if potential market power exists.
 - With dynamic approach, bids only mitigated when congestion and structural market power occur.

Recommendations on EIM-related issues

- Expand *EIM Offer Rules Initiative* to include changes to mitigation being cited as reasons for needing extremely high hydro DEB option.
- Revise CCDEBE proposal to allow *reasonableness thresholds* to be adjusted during operating day.
 - This can be important for gas and hydro resources in EIM.
- Do not allow import bids up to \$2,000/MWh to set LMPs without cost verification (FERC Order 831).
 - Allowing imports bid on CAISO interties up to \$2,000/MWh without cost-verification could undermine incentive to offer supply in EIM and bilateral markets.