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EIM Basics

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Western Energy Imbalance Market

- Operated by the California Independent System Operator (CAISO) created in 2014
- Real-Time Market that finds the lowest cost energy to serve real-time customer demand across a wide geographic footprint
- Consists of 11 participants (8 active, 4 pending) and multiple Balancing Areas
- No resource adequacy standards
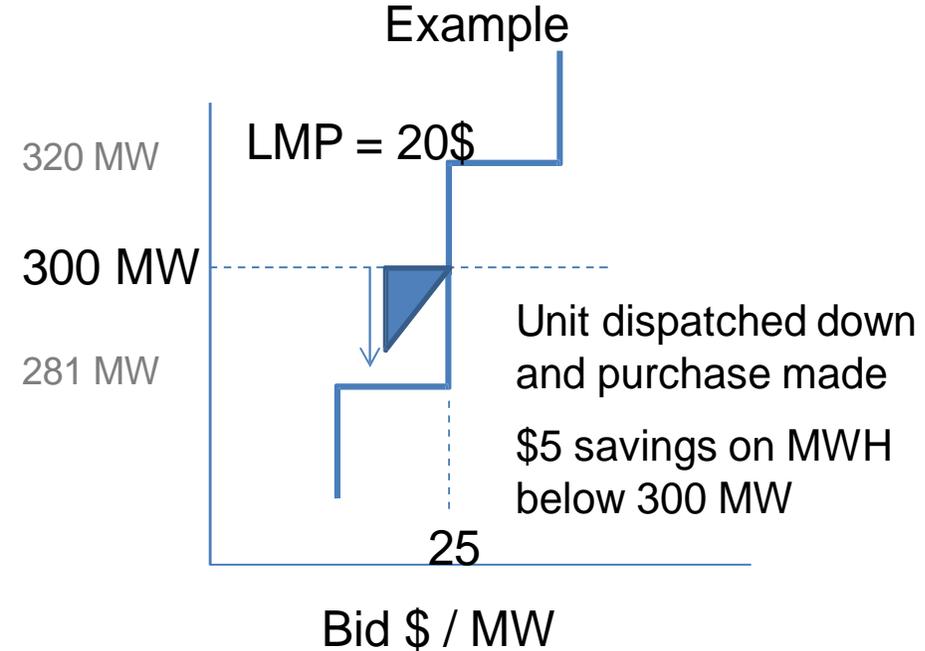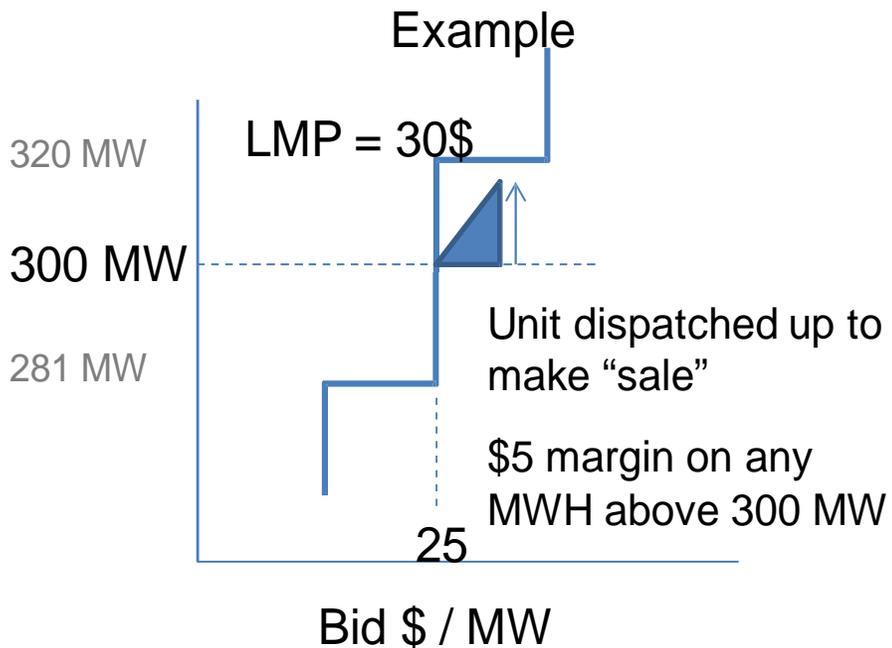- Separate from capacity and ancillary service markets
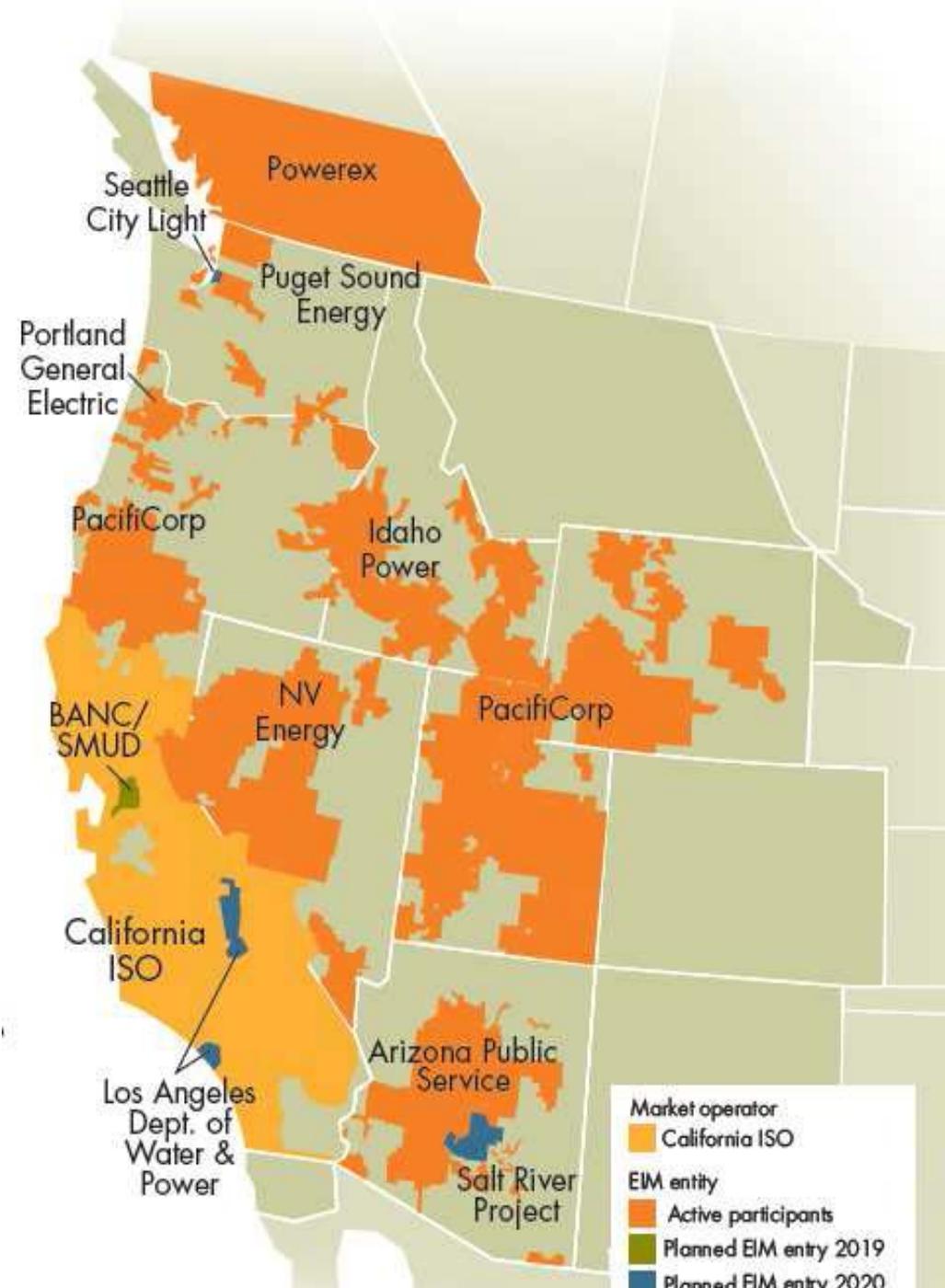
Market Basics

- Need enough unscheduled transmission capacity to allow for transactions with neighbors

- Participants must come "balanced"- need enough generation to cover load, plus/minus transactions

- Dispatched on a 5 and 15 minute basis

- EIM is an incremental market – does not replace bi-lateral trading
  - Settled against your Base Schedule

- Utilizes Cost Based Incentive Design
  - Encouraged to bid very close to actual cost/value for a range around your Base Schedule

Benefits of the Market

- Replaces incremental / marginal MW within the hour with cheapest resources (near cost) across the footprint

- Utilizes unscheduled transmission assets for real time transactional benefits on a 5 and 15 minute basis.

- Provides low cost 15 and 5 minute balancing of variable renewables

- Wider footprint for "must take" renewables

- Maintains grid autonomy at the local level

- Helps California achieve Carbon goals with Green House Gas market component

Example – Bid Price and Dispatch

- GenCorp submits an energy bid of 25$ / MW for +/- 20 MW around base schedule of 300 MW.

Example

320 MW

LMP = 30$

300 MW

281 MW

Unit dispatched up to make "sale"

$5 margin on any MWH above 300 MW

25

Bid $ / MW

Example

320 MW

LMP = 20$

300 MW

281 MW

Unit dispatched down and purchase made

$5 savings on MWH below 300 MW

25

Bid $ / MW

The unit will move such that:
Sales will be made at LMP>25$, and purchases will be made at LMPs <25$.
GenCorp kept whole to costs.

Example: Cost Bidding Incentive

- Bids are not only used to stack resources for native load, but also used for a sale (or purchase) from a neighboring EIM member.

- *One day a GenCorp Trader decides to Bid 30$ instead of the $25 cost for the same range, trying to improve off system sales margin*
  - *Risky… the LMP goes to 28$, and the unit is moved down to 280 MW.*
  - *The market now believes it is optimizing by shutting down the higher cost power (30$) and selling "cheaper" ($28) resources to GenCorp.*
  - *This results in $25 cost power being replaced with $28 power. This increases costs 3$ / MWH above the actual cost GenCorp would have normally incurred to meet its own load.*