

WESTERN ENERGY IMBALANCE MARKET

Briefing on EIM Greenhouse Gas Attribution Enhancements

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Current EIM greenhouse gas design (GHG) recognizes only certain generation is subject to California Air Resources Board (ARB) regulations

- Generation inside the ISO has a compliance obligation
- Generation outside the ISO has a compliance obligation when serving ISO load
- Generation outside the ISO does not have a compliance obligation when serving non-ISO load

EIM participating resources submit a separate GHG bid MW quantity and price which expresses willingness to support EIM transfer to ISO

Observations of current EIM dispatch optimization

- Least cost dispatch can have effect of sending low GHG gas emitting resources to ISO, while not accounting for “secondary” dispatch of other resources backfilling to serve external demand
 - ARB is implementing bridge solution to temporarily account for these additional emissions.
- Least cost dispatch can result in avoided curtailment of ISO renewables by displacing emitting resources to serve external demand in EIM

ISO is working with ARB to address concern with whether current GHG attribution sufficiently captures the atmospheric effects of EIM least cost dispatch to serve ISO load

Atmospheric effect is not always apparent when GHG attributed to a base schedule

- If the attributed resource would have generated in the absence of serving ISO demand, then another resource's emissions may be higher
- But, if the attributed resource would not have generated in the absence of serving ISO demand, then the resource's incremental emissions correctly reflect atmospheric effect

GHG enhancement is to perform two step process to more accurately determine GHG attribution for EIM transfers to serve ISO load

1. Optimize schedules without EIM transfers to ISO to establish reference point to measure upward dispatch capability of EIM participating resources
2. Optimize schedule allowing EIM transfers to ISO while limiting the GHG bid quantity to the remaining upward dispatch capability quantified in step 1

Two pass solution significantly reduces, but may not eliminate all potential secondary dispatch

- Solution must balance objectives of minimizing secondary dispatch with optimization solution performance, price / dispatch consistency
- ISO will provide data to ARB on the emissions of any residual secondary dispatch

After Q4'17 demonstration and discussion with stakeholders, Management will determine next steps

- Implementing two pass solution in parallel operations
- If Q4'17 demonstration is positive, seek EIM GB and ISO BOG approval in early Q1'18
- If attribution accuracy insufficient, then review additional enhancements with stakeholders and seek EIM GB and ISO BOG approval in Q2'18