Current Framework for Greenhouse Gas (GHG) Accounting within CAISO Markets

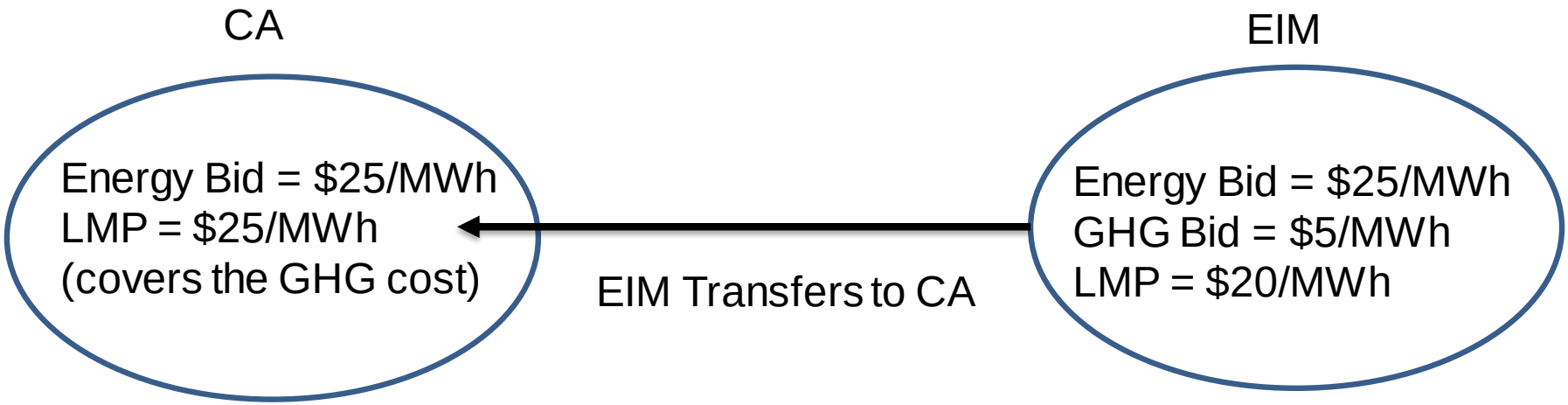
Abhishek Hundiwale
Sr. Advisor, Market Analysis
CAISO

EDAM Working Group #3
February 22, 2022

Background – GHG accounting in CAISO dispatch

- Generators (inside CA) that have a GHG compliance cost obligation and are reflected in their energy bids
- Imports into CA incorporate GHG compliance costs in their energy bid
  - Specified Resource (Resource Specific Emission Rate)
  - Unspecified Resource (Default Emission Rate)
  - Asset Controlling Supplier (ACS Emission Rate)
- In EIM, energy generated and consumed outside of CA does not have GHG compliance cost obligation
- In EIM, if the energy from EIM resources outside CA is imported into CA, it is subject to GHG regulation.

EIM GHG accounting



- CAISO Collects $5/MWh from CAISO load for transfers to CA
- EIM Entity collects $5/MWh for its GHG compliance costs
- SC can opt out to be delivered to CA either by bidding 0 MW or no GHG bids (default is zero)

Changes in GHG Bid Quantity rules since go live

	GHG Bid Quantity	GHG Bid Price
EIM go live	0 to Pmax of participating resource	<= $1000 minus the energy bid
One Year Enhancements	0 to Pmax of participating resource	<= Participating Resource's daily GHG Cost
Update in 2018	0 MW to (Upper economic Limit - Base Schedule)*	<= Participating Resource's daily GHG Cost

* Limits the amount of dispatch attributed as supporting transfer GHG area to the volume of difference between the Upper Economic Limit and the Base Schedule thus reducing potential secondary dispatch

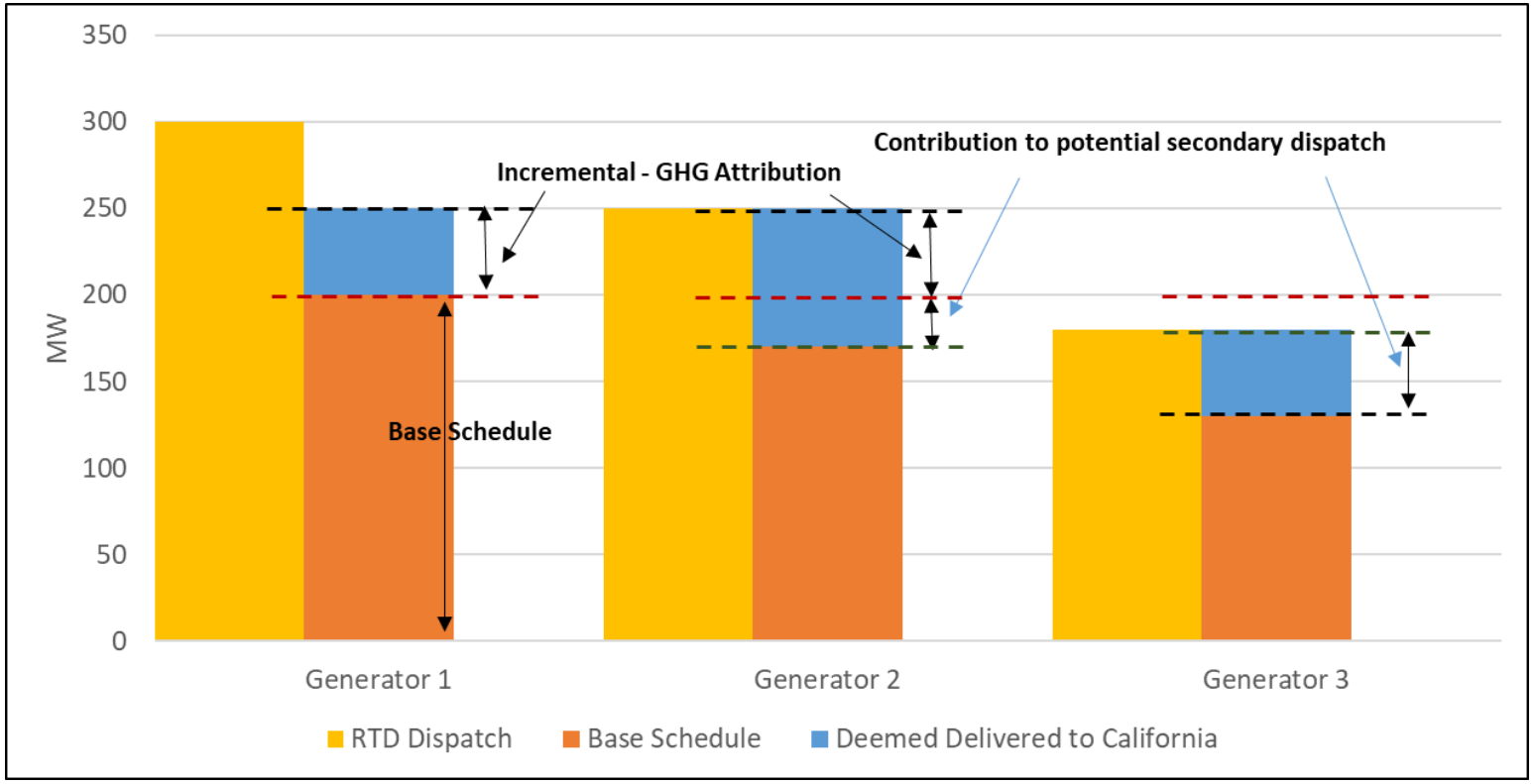
Recent Changes in GHG model reduces the potential magnitude of secondary dispatch

- Secondary dispatch is the portion of EIM dispatch that backfills GHG attributions associated base schedules and not incremental dispatch above base that are supported transfer into GHG regulatory region
- Limiting the GHG attribution to the volume of difference between upper economic limit and base schedule reduces the potential for secondary dispatch
- Since potential secondary dispatch is not eliminated, CARB calculates the emission intensity of EIM outstanding emissions at the unspecified source emission rate less any resource-specific emissions attributed to EIM participating resources by the CAISO's market optimization
- CARB assigns outstanding EIM Emissions to Electric Distribution Utilities pro-rata on retail load by reducing their freely allocated allowances

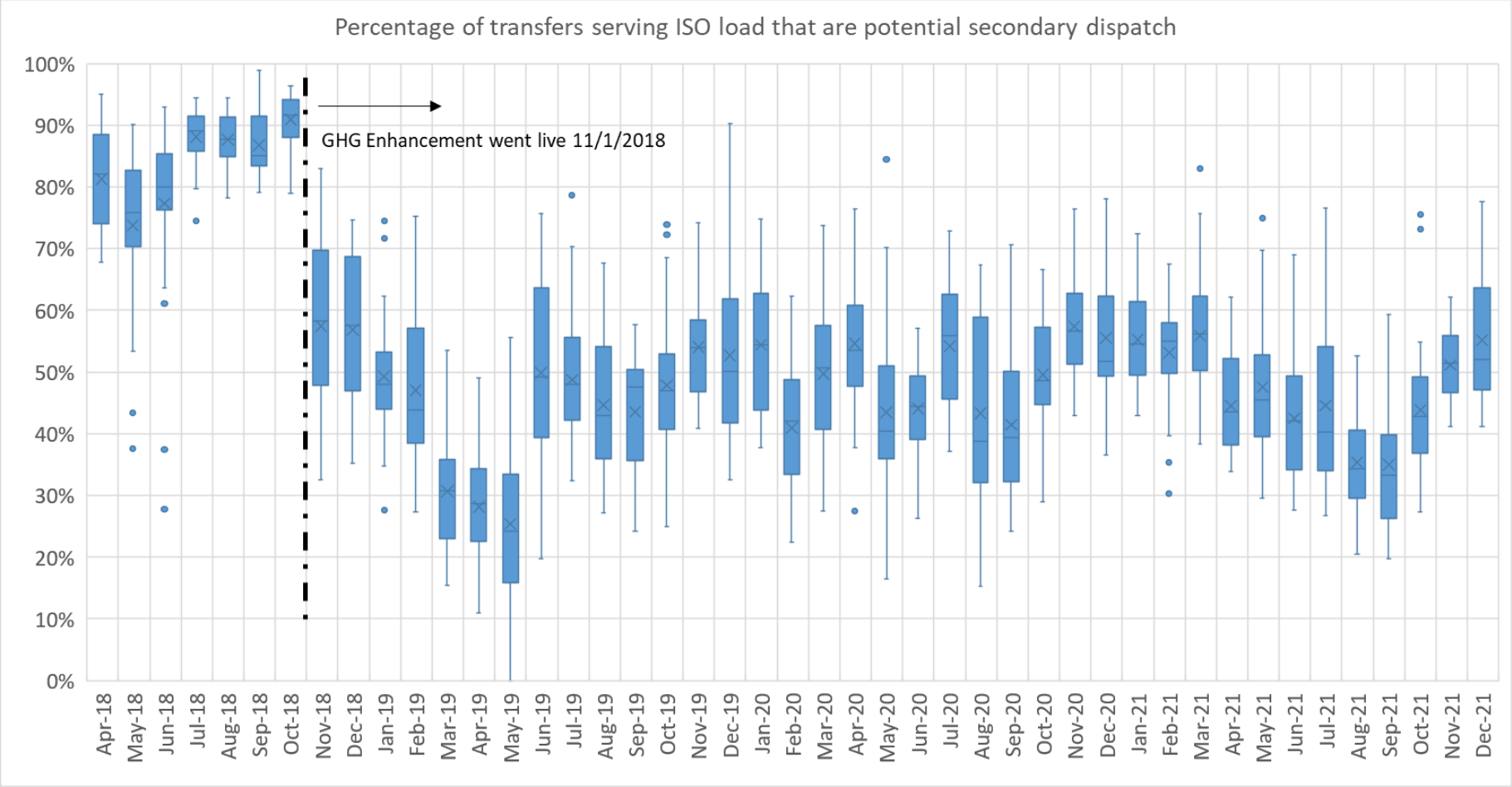
Example -

*Assume UEL = 300 MW for all the generators

Gen in EIM Area	Type	Base Schedule (MW)	RTD Dispatch (MW)	GHG Attribution – Deemed Delivered to California (MW)	Contribution to potential Secondary Dispatch (MW)
Gen 1	Hydro	200	300	50	0
Gen 2	Gas	200	250	80	30
Gen 3	Hydro	200	180	50	50



Percentage of Transfers serving CAISO load that are potential secondary dispatch



GHG emissions to serve CAISO demand reduced by about 23% since 2014