

Discussion on energy imbalance market year 1 enhancements

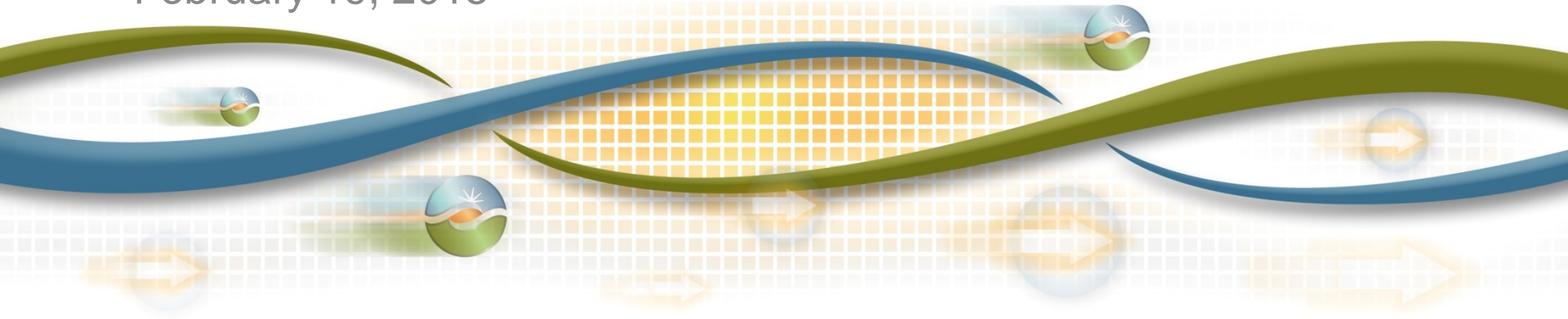
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Market Surveillance Committee Meeting

General session

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Phase 1 items planned for Board decision in March 2015

- Settlement of non-participating resources
- Administrative pricing rules
- Add base schedule import/export decline to resource sufficiency evaluation
- Resources sufficiency evaluation applied to ISO BAA
- EIM administrative charge redesign
- Reduce flexible ramping constraint combinations

- GHG flag and cost based bid adder
- Modification of EIM transfer limit constraints
 - Establishment of EIM transfer limits using ATC

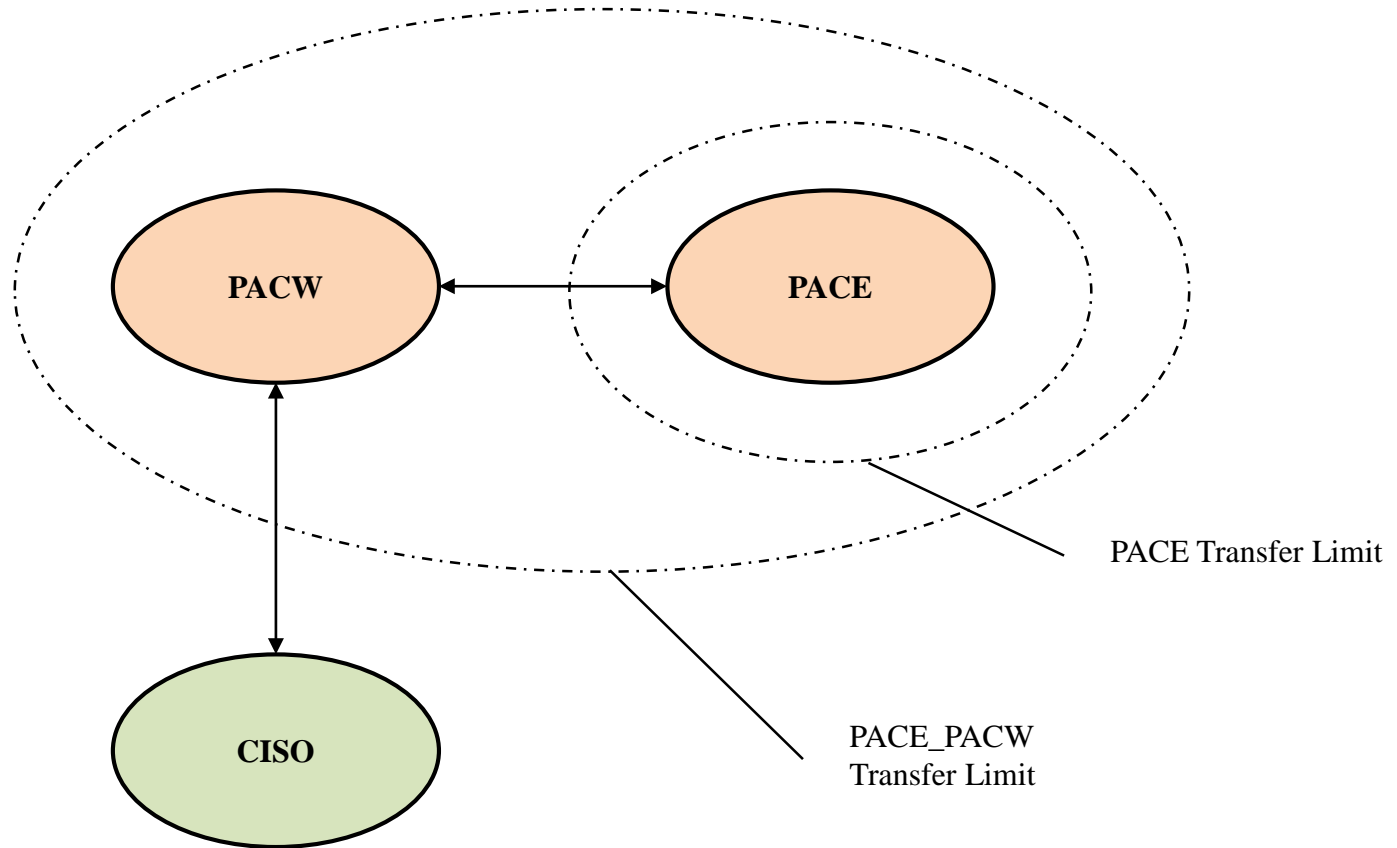
Updated GHG proposal provides more flexibility and maintains the “flag” concept

- On an hourly basis, submit single MW quantity and price by resource that can receive GHG award
 - GHG MW quantity and price is independent of bid range
- The “flag” is equivalent to bidding 0 MW
 - If SC does not submit a GHG MW bid, the default will be zero
- EIM transfers into ISO from all EIM BAAs can be no greater than total MW of GHG bids
 - If EIM transfers are limited by GHG bids will consider long term design change in Phase 2

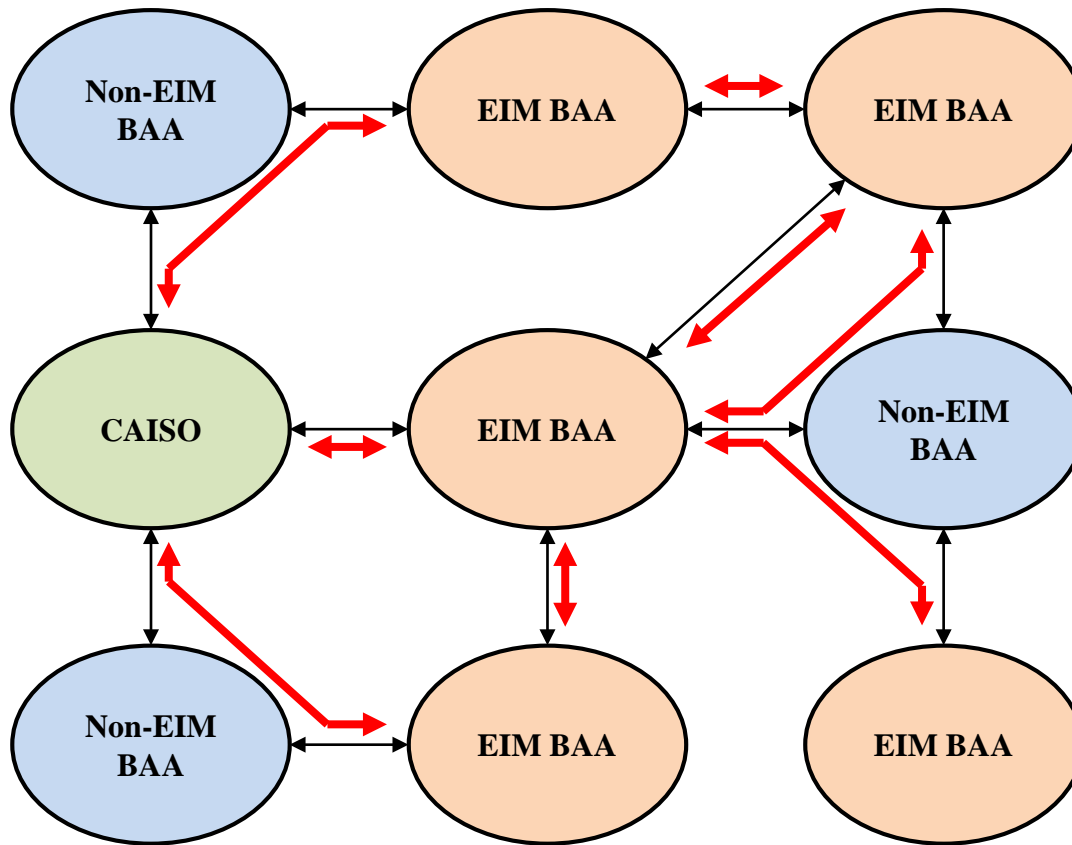
ISO will calculate a daily maximum GHG bid allowed by resource

- Similar to how ISO calculates GHG cost to be included in ISO resource's default energy bid
 - However, ISO calculates a cost curve based upon incremental heat rates to align with multi-segment bid curve
- Daily maximum GHG bid = max heat rate * GHG allowance price index * GHG emissions rate + 10%
- Scheduling coordinator can bid on an hourly basis less than its daily maximum GHG bid
- If a MW quantity is submitted, but no price, the daily maximum GHG bid will be used by default

EIM Transfer Constraints (Current)



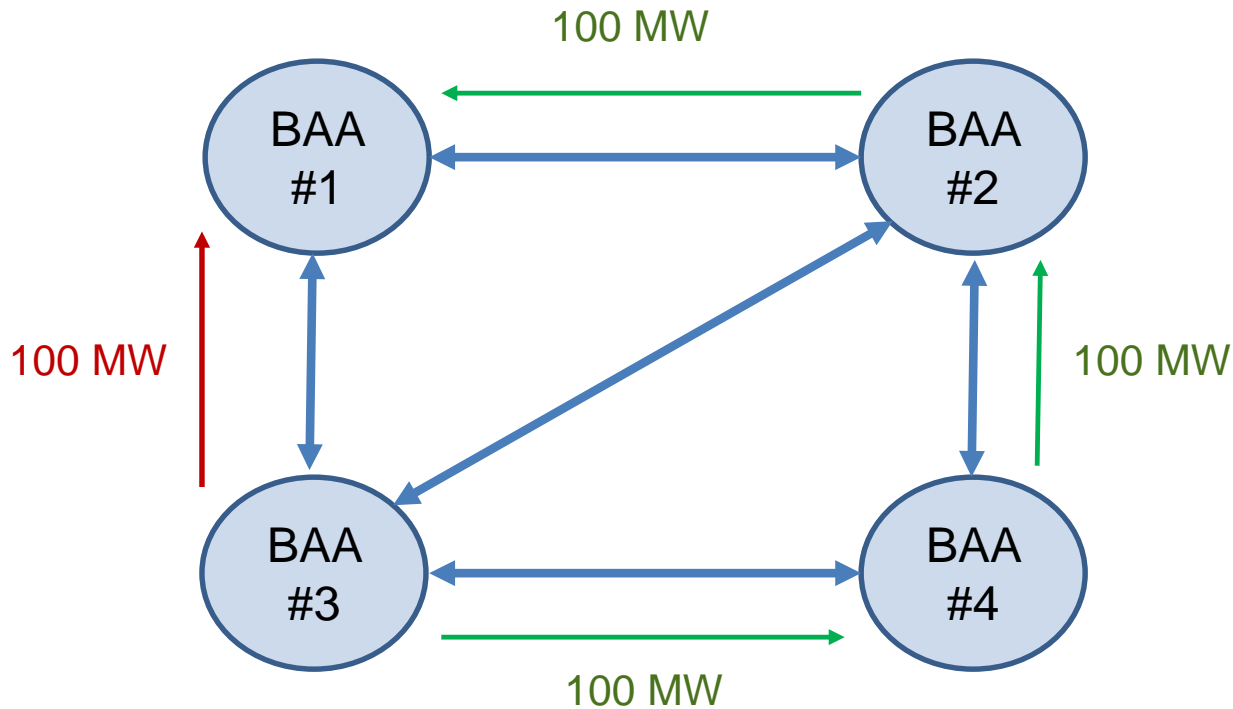
EIM Transfer Constraints (Future)



Energy Transfer Schedule Definition

- Portion of the EIM Transfer distributed to an intertie (or between tags on the same intertie) with another BAA in the EIM area for accounting and tagging
- Constrained by energy transfer limits
 - Limits reflect transmission rights released for EIM
 - Limits may be 15 min static (RTUC) and 5 min dynamic (RTD), or only 5min dynamic (RTUC/RTD)
 - If using contractual rights, provided by EIM entity
 - If using ATC, calculated with priorities provided by EIM entity
- Constrained by scheduling limits (ISL/ITC) on interties with California ISO or non-EIM BAAs

Transfer cost ensures unique solution and most direct path is used to tag EIM transfers



3x to tag on green path, than the red path

Transfer cost allows implementation of priority order of which tags to schedule EIM transfers

- Direct paths will have higher priority over indirect paths
- Paths that 5-minute scheduling is allowed on will have different priority over paths that only 15-minute scheduling is allowed on
- Paths with firm transmission will have higher priority over paths with non-firm transmission
- Paths that experience less-frequent curtailments will have higher priority than paths with more-frequent curtailments

Transfer cost used in market will balance the benefits with minimizing impact to LMPs

- Based on simulations, the ISO will propose a maximum transfer cost allowed
- The maximum transfer cost will be in the ISO tariff
- EIM entity can provide priority of tags, the ISO will determine the transfer cost used to implement priority

Phase 2 items informed by six month of operational experience or need additional discussion

- 15-minute bidding on intertie scheduling points
- Additional sub-allocation of RTCO (flow entitlements)
- EIM transmission charge
- Dynamic market power mitigation
- Additional transition period measures
- Long term changes to GHG design
- Other items identified during implementation

Ability to bring design changes for Board decision before 1 year of operational data