Extended day-ahead market resource sufficiency evaluation discussion

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The objective of the EDAM RSE is to ensure each BAA has a net-day supply plan that would allow it to meet its obligations on a stand alone basis

The principles for the EDAM RSE can be summarized as:

- Participation in the EDAM, including meeting the EDAM RSE, should not modify state or local control over long-term RA planning and integrated resource planning

- Incentive-based consequences for the failing EDAM entity should encourage resource sufficiency prior to the EDAM market

- Passing the EDAM RSE should ensure confidence of EDAM transfers

- Transparent and equitable application of the RSE across all EDAM entities

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The EDAM RSE will be conducted through an application that optimally determines if a feasible day-ahead BAA specific operating plan exists

- Utilizes the resource bids made available by each BAA
  - Uses ISO market optimization and all existing resources models
  - The IFM will utilize the same bid-set to clear the market

- Evaluates bid-in supply against demand forecast and uncertainty requirements
  - Demand forecast can be provided by ISO or an EDAM BAA; will utilize the most accurate forecast
  - Uncertainty requirements will be calculated by the market operator
  - AS will be self provisioned

The EDAM RSE will be an on-demand application

- Increases an EDAM BAA's ability to pass the test

- While the application is on-demand, it has pre-set advisory runs that start at 6:00 and 9:00 AM
  - All requirements will be fixed at 9:00 AM to provide a stable target for the final binding run

- Utilizes the markets optimization engine assuming all load and supply is modeled on a single bus

The RSE will determine if a feasible BAA specific day-ahead operating plan exists on a stand alone basis

The application will not model transmission constraints

Advantages

- Prerequisite for the application to be run on demand
- Avoids having to design rules around potential failures due to loop or wheel through economic transfers arising form a networked solution rendering resources within a BAA undeliverable

Disadvantages

- Not ensuring deliverability on all supply creates scarcity in clearing the market
- ISO will monitor and report on infeasible RUC results as compared to EDAM RSE showings. The comparison will identify if undeliverable supply is being shown for purposes of passing the EDAM RSE
  - Market operator rules requires bids be based on expected performance capability

Propose to account for all different supply types used by EDAM BAAs in a manner that instills confidence

- As a default for supply to count resource bids will be required

- Select supply types require additional discussion:
  - Non-source specific – WSPP
  - Highlight treatment of gas resources
  - Demand response
  - VER bidding in BAA's with convergence bidding

Proposing to require non-resource specific supply contracts (WSPP-C) to identify a source BAA

- If the source BAA is within the EDAM footprint, the ISO assumes the sink BAA and/or 3rd party merchant will work with the source BAA to model as a bucket 1 transfer
  - Results in more accurate price formation by utilizing resources internal to the footprint
  - If agreement to model as transfer can't be reached, the ability to model as a self-scheduled injection at BAA boundary remains

- If the source BAA is external to the EDAM footprint, supply will be modeled as a self-scheduled MW injection sourced at the sink BAA's boundary

Proposing to require day-ahead e-tags no more then 3-hours after publication of the EDAM market

- Adheres to existing day-ahead bilateral timelines
  - Propose reporting on an EDAM BAA's failure to submit e-tags

- Non-tagged schedules will be required to submit e-tags, or otherwise cure shortfall, by the start of the STUC horizon for the hour in which the failure occurred
  - Failure to meet these requirements results in the removal from WEIM pooled RSE. Effectively, this increases the burden of passing the WEIM RSE for the deficient BAA through limiting access to imbalance reserves that were procured assuming access to a full diversity benefit

Intertie bids made at the CAISO BAA border that meet the following criteria will count

The objective is to provide equivalent treatment between EDAM BAAs and the CAISO BAA by only counting supply that has a contractual relationship with sink BAA

- Intertie bids associated with a resource adequacy contract, whether shown on a resource adequacy supply plan or not
- Intertie bids originating from resources that are pseudo-tied with the ISO BAA
- Intertie bids originating from dynamically scheduled resources into the ISO BAA
- Intertie bids originating from a *non-dynamic resource –specific system resource*

Contractual relationship offers greater assurance of ability to manual dispatch intra-day or the intertie offer rebidding into the real-time market

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All demand response programs can participate in EDAM

- Demand response can participate in the market through the existing DR models

- Demand response, that does not meet the existing model qualifications, can indirectly participate in the EDAM and be used to pass the EDAM RSE through load modifications
  - Ensures that to the extent the non-participating emergency demand response is part of a next day plan it can be accounted for
  - Load modifications should be made based on expected real-time use
  - Proposing load bidding / RUC forecast rules to ensure the EDAM does not clear transfers that circumvent the need to utilize demand response that allowed a BAA to pass the EDAM RSE

Variable energy resources will be credited in the EDAM RSE up to their day-ahead forecast

- Scheduling coordinators for VERs do not always have incentive to take a financial position all the way to maximum forecast output

  – For BAA's without convergence bidding, a load bidding limitation for the difference between the forecast and bid in quantities will be used to prevent artificial scarcity in the day-ahead market

- The VER forecast amount will be used in RUC through a default capacity bid to account for any VER supply that was not offered into the market

  – Ensures the RUC process is based on the most realistic inputs

Propose to make the D+2 market results available to relevant parties to address the misalignment between the EDAM and day-ahead gas nomination timelines

- EDAM BAAs may have to make assumptions regarding expected dispatch of gas resources prior to running the EDAM market
  - Partially mitigated by intra-day gas markets
  - Partially mitigated by gas storage
- The D+2 market run may provide a reasonable estimate of day-ahead gas nomination requirements
  - The ISO will work with market participants to increase bid quality and forecast accuracy to enhance D+2 market results

Based on stakeholder comments are considering modifications to a 3 tiered structure

Tier 1 – De minimums failure within max of 10 MW or the forecast error of the BAA's IRU requirement

No Consequence

- Designed to ensure failure within a small margin does not result in asymmetric financial penalties

Tier 2 – Failed RSE shortage does not exceed 50% of IRU requirement

Consequence is surcharge x1.25 with ratcheting consequences for repeated failure

- While a BAA is not resource sufficient it can meet its P50 forecast plus a reasonable amount of uncertainty

Tier 3 – Failed RSE shortfall is greater then 50% of IRU requirement

Consequence is surcharge x2 with ratcheting consequences for repeated failure

- This represents a significant shortcoming in a BAA's day-ahead supply plan. During tight system conditions can impact the EDAM footprints ability to achieve a feasible solution or impact market results

The surcharge is intended to proxy the cost of procuring a block of energy from the bilateral market

- The objective is to ensure that the EDAM provides an comparable option to address next day capacity needs as the existing bilateral markets
  - Design is in response for stakeholder desire to provide transition from purely bilateral day-ahead construct into a regional day-ahead market
  - An "in-market" hourly penalty is difficult to right-size to a bilateral block purchase; exacerbated by potential marginal pricing application to all day-ahead awards

- Repeated failures will have a prospective 1% adder applied to the Tier 2 or 3 multiplier for each day over a rolling period
  - Intended to discourage and account for systemic failure
  - % adder configurable and open to revision following monitoring of potential abuse

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Based on stakeholder comments a potential modified surcharge would be applied as

$$Surchage = \alpha * [(\beta * \gamma) - \sum_{i=1}^{n} (\beta - \delta_i)]$$

$\alpha = failuer\ tier\ multiplier$

$\gamma = Max\ [Mid - C, PV]\ price\ for\ a\ block\ of\ energy$

$\beta = Maximum\ EDAM\ RSE\ shortfall$

$\delta = MEC\ of\ insufficient\ BAA\ in\ non\text{-}failed\ intervals$

A 4-hour example of the surcharge; assume a failure in interval 3

α = 1.25

$\gamma = \$100$

$\beta = 10MW$

$\delta_i = \$40_1, \$50_2, \$70_4$

$Surchage = 1.25*[(4*100*10)-(10*40)-(10*50)-(10*70)]$
$\qquad\qquad = \$3000$

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The EDAM and WEIM RSE designs need to be coordinated to ensure the correct incentives

- The proposal attempts to cure deficiency through the EDAM

  – Does not allow a BAA to intentionally avoid forward/day-ahead procurement in day-ahead blocks to cure at hourly, potentially real-time imbalance only, consequence in the WEIM

- WEIM RSEE Phase 2 is currently in process, with revisions to failure consequences expected for Summer 2023 implementation

  – Current policy development is conscious of EDAM RSE failure consequences
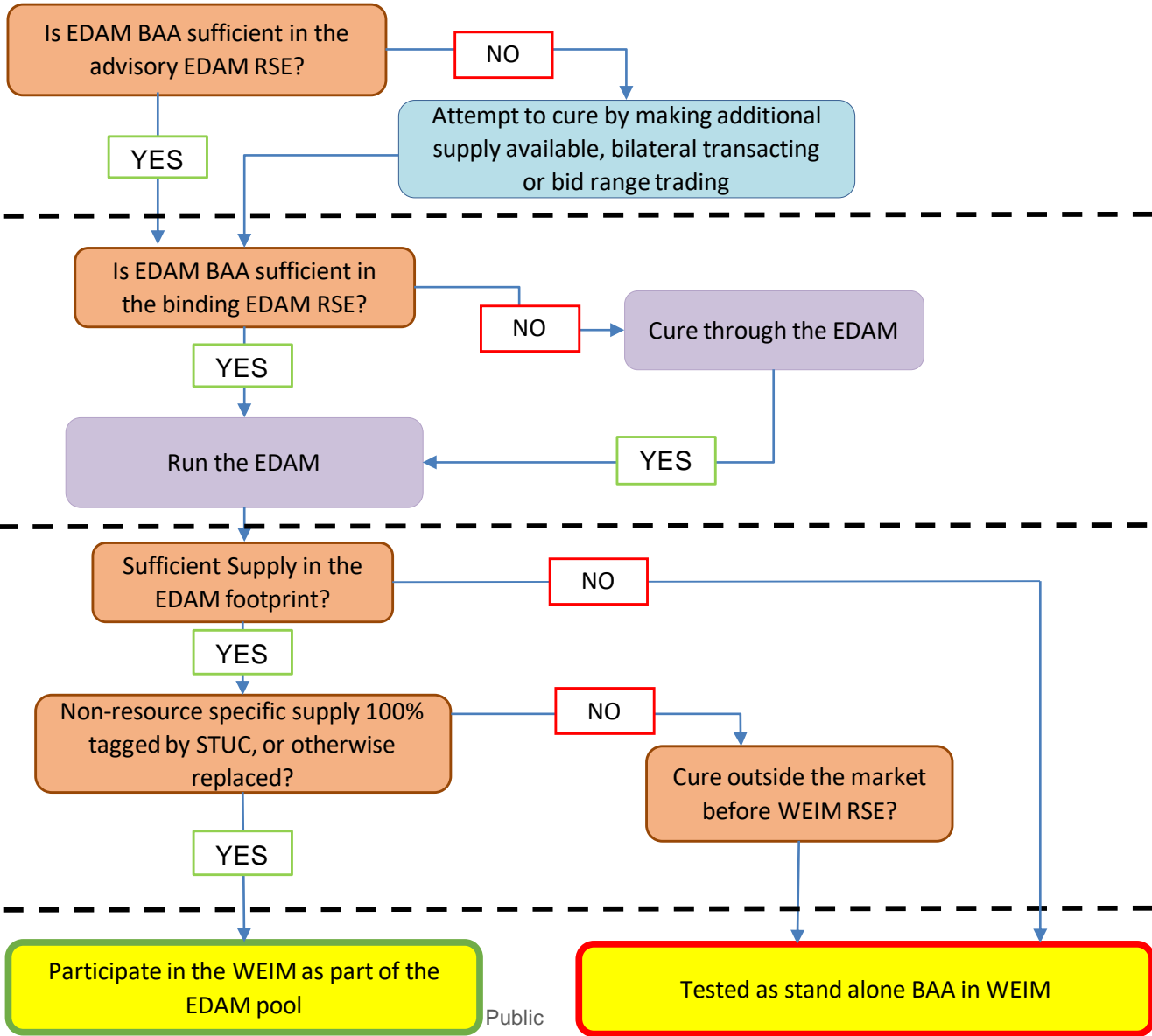
EDAM – to – WEIM RSE

Pre Day-Ahead

Is EDAM BAA sufficient in the advisory EDAM RSE?
— NO → Attempt to cure by making additional supply available, bilateral transacting or bid range trading
— YES ↓

EDAM Process

Is EDAM BAA sufficient in the binding EDAM RSE?
— NO → Cure through the EDAM
— YES ↓
— YES → Run the EDAM

Run the EDAM

Intra-day

Sufficient Supply in the EDAM footprint?
— NO →
— YES ↓

Non-resource specific supply 100% tagged by STUC, or otherwise replaced?
— NO → Cure outside the market before WEIM RSE?
— YES ↓

WEIM

Participate in the WEIM as part of the EDAM pool

Tested as stand alone BAA in WEIM

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Public

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Proposing to stand up a bid-range trading platform; initial implementation would be similar to a message board

- Allows EDAM BAA's to work together to make residual supply and transmission available to facilitate offsetting requirements in the EDAM RSE prior to running the market
  - Benefits the source BAA through allocation of 100% of the transaction revenue as compared to curing through the EDAM market

	BAA 1	BAA 2	BAA 3
BAA IRU Up Requirement	1000	150	400
BAA1 – BAA 2 Trade	-50	50	-
BAA1 – BAA 3 Trade	-200	-	200
BAA2 – BAA 3 Trade	-	-	-
Final IRU Requirements	750	200	600

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Allocation of the EDAM deficiency surcharge will be at the discretion of each EDAM BAA

- Proposal for the CAISO BAA is to utilize a two tiered allocation that adheres to cost causation principles
  - Compare EDAM RSE supply offers against RA requirements to determine if shortfall was the result of a failure to meet RA obligations; allocate surcharge to SC or deficient LSE
  - If the supply bids meet RA requirements in full, propose to allocate surcharge pro-rata based on metered demand

- Additional policy development relating to how the CAISO BAA participates is recognized as necessary and is expected to be completed prior to EDAM go-live

Proposing to allocate a partial diversity benefit. This then allows for the procurement of additional imbalance reserves for the use of the EDAM footprint

- Addresses a stakeholder concern that imbalance reserves are only being procured to 97.5% upward uncertainty level
  - Also ensures extra capacity should the exercise of RT rights reduce day-ahead supply deliverability

- Configurable parameter. Propose to start with higher procurement across the EDAM footprint with the ability reduce shared IRU procurement as the EDAM market matures

Proposing all EDAM BAAs that pass the EDAM RSE are tested in the WEIM RSE together as a pool

- The diversity benefit is created by offsetting uncertainty requirements due to a larger, more diverse, geographic footprint

  – Results in less imbalance reserve procurement for each BAA if the WEIM RSE tests each BAA in a stand alone manner

- Participation in the pooled WEIM RSE creates incentives for EDAM BAA's to participate with, and submit e-tags on, real supply

- Day-ahead transfers are fixed schedules that can only be counter-flowed against in the WEIM. This combined with an existing constraint that does not allow a WEIM BAA to dynamically export itself into a shortage will ensure the shortfall appears as a PBC relaxation in the correct BAA within the pool

The EDAM will provide a net EDAM transfer constraint

- Available to all stakeholders

- Allows a BAA with must-offer supply rules to control how their supply is used in the EDAM

- Limit would constrain supply in excess of RSE requirements. Would base constraint limit to ensure objective concerns, such as replacement reserves or traditional non-credible contingences (fires), do not jeopardize reliability

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Example of EDAM pooled participation in the WEIM

EDAM	IRU (Stand Alone)	Diversity 3 BAA	3BAA IRU
BAA 1	10	2	8
BAA 2	10	2	8
BAA 3	10	2	8
Shared IRU	-	-	1
Footprint	30	6	24

BAA 3 fails to tag or replace a portion of their day-ahead supply plan

WEIM RSE Testing		IRU Bids	IRU with Hybrid
Passed Group	BAA1 / BAA 2	16	16.67
Failed Group	BAA 3	8	8.33

- WEIM diversity benefit will also apply and will partially mitigate lower collective resultant IRU procurement due to the failure of BAA 3

Example of partially withheld diversity benefit

	Imbalance Requirement	Partial Diversity Benefit	MSSC Holdback	EDAM IRU Procurement
BAA 1	1000	390	-195	805
BAA 2	2000	810	-405	1595
BAA 3	750	300	-150	600
Footprint	3750	1500	-750	3000
* Diversity Benefit 1500 MW; **Withheld quantity is 750 MW				

	EDAM Schedules*	EDAM Imbalance Reserve Schedules*	WEIM Forecast	Pooled WEIM RSE Forecast	Pooled WEIM RSE Schedules	Pooled WEIM RSE
BAA1	9300	805	10200	29700	29300 + 750	Passed
BAA2	8000	1595	9000	29700	29300 + 750	Passed
BAA3	9000	600	10500	29700	29300 + 750	Passed

**An outlier event combined with a generation outage between day-ahead and real-time that was not able to be replaced is cured through the sharing of residual imbalance reserves and access to holdback capacity