WEIM Resource Sufficiency Evaluation Enhancements – Emergency Assistance Workshop

Facilitated by the CAISO
Includes emergency assistance proposal offered by NVE

03.23.2022

The CAISO held a workshop on 2.23.2022 and received comments on both an emergency RSE backstop as well as WEIM emergency assistance

- Stakeholders offer varying opinions on the necessity and potential methods to implement a backstop provision
  - No consensus on need for backstop provision
  - No consensus between operator actions, NERC EEA 2 or NERC EEA 3 on what represents a backstop measure of insufficiency

- CAISO will defer additional consideration of this issue through the RSEE Phase 2 policy development

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The CAISO agrees with stakeholders to immediately explore developing a framework where the WEIM can be used to cure real time insufficiencies

- Joint commenters submitted a proposed framework

- Powerex submitted an alternative proposal that once a failure occurs, it sets EIM net imports to zero and prices all additional transfers at the bid cap
  - CASIO believes this proposal is unworkable until the interaction between CAISO Exports and WEIM transfers is addressed
  - Reducing transfers to zero is a significant deviation from existing practice

- Many stakeholders support the emergency assistance concept, however raise concerns about
  - Fundamental paradigm shift of the WEIM
  - Potential to spread reliability issues
  - Impacts to pricing
  - Unforeseen issues due to truncated stakeholder process

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Residual Emergency Energy Service("REES") Proposal (submitted by Joint Commenters)

- The market runs as it does today. The solution would result in no change to the LMPs for EIM Entities that pass the RSE tests.
- An optional tool that could be elected by BAA operators to prevent or cure emergencies.
- Hourly test to determine there is enough market availability to allow the option to receive additional supply if needed.
- The imbalance needs of the EIM Entities that pass the RSE test should have priority access to voluntarily offered supply and the solution should be designed to prevent any cascading reliability issues.

Residual Emergency Energy Service("REES") Proposal Continued

- The scarcity price for the deficient EIM Entity that elected to receive additional imports would be $2,000/MWh for those imports.
  - If the REES Option elected: Imports would be procured at $2,000 for any additional MW amount above the previous interval import amount.
  - If the REES Option is not elected: The imports would continue to be capped at the previous market interval or the base transfer schedule.
- The product would be settled out of the market to provide payments to generators that responded.
- The expectation is that any use of REES would be infrequent.
  - The DMM should report on the use of REES by reporting the EIM Entity that triggered the transfers, the amount of additional supply, and the number of hours in which supply flowed.

The CAISO agrees with stakeholders that any emergency assistance must ensure capacity insufficiency is not spread
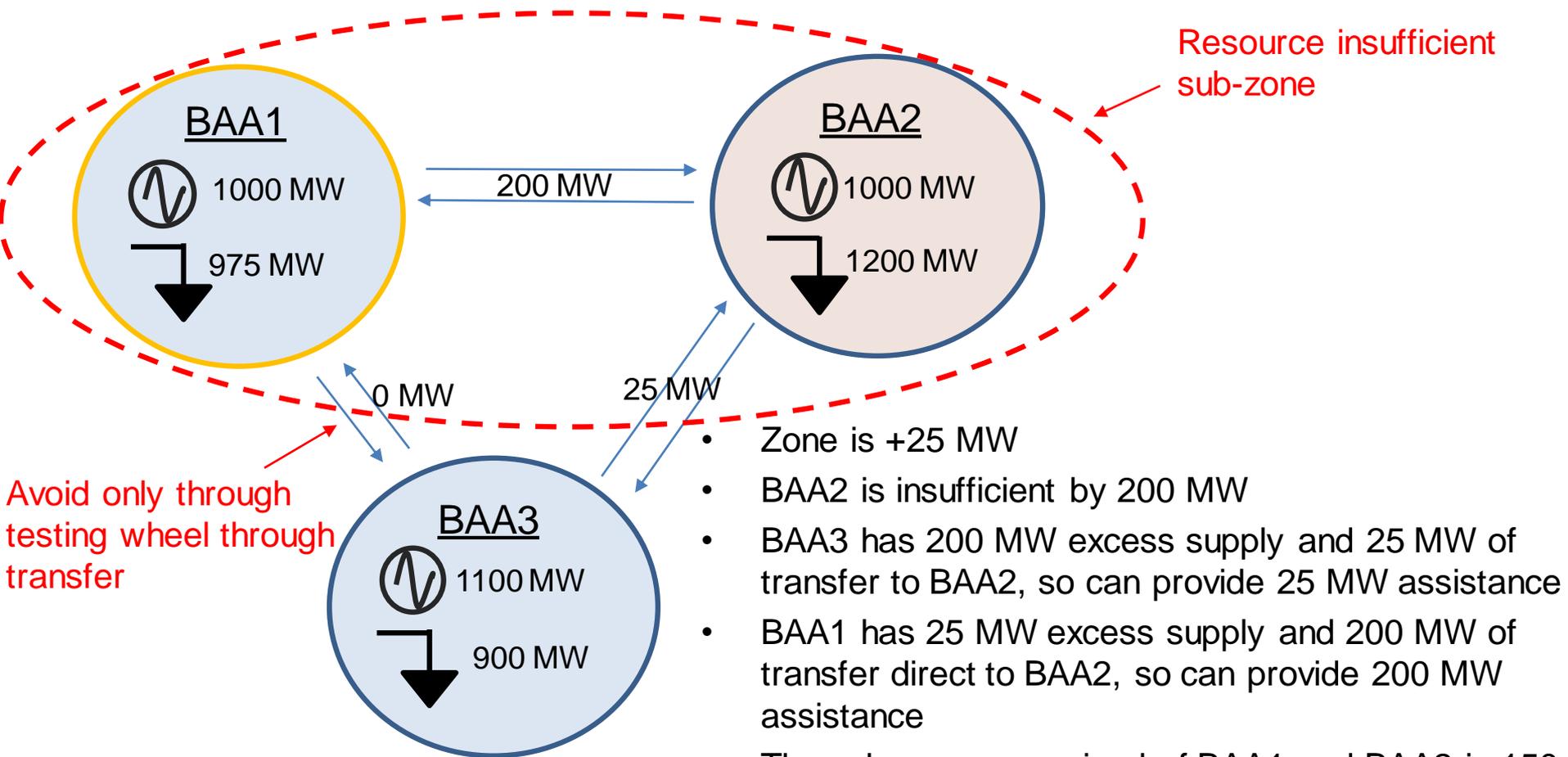
- Simply testing for residual supply within the WEIM, without accounting for available transmission creates the potential for shortfalls to be spread

- Testing neighboring WEIM entities for residual capacity as well as residual transmission is essential to ensuring capacity issues are not spread

- Should WEIM entities be able to elect for their capacity to be used in the WEIM emergency assistance?

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Example: Sufficient Transmission

BAA1
1000 MW
800 MW

BAA2
1000 MW
1200 MW

BAA3
1000 MW
900 MW
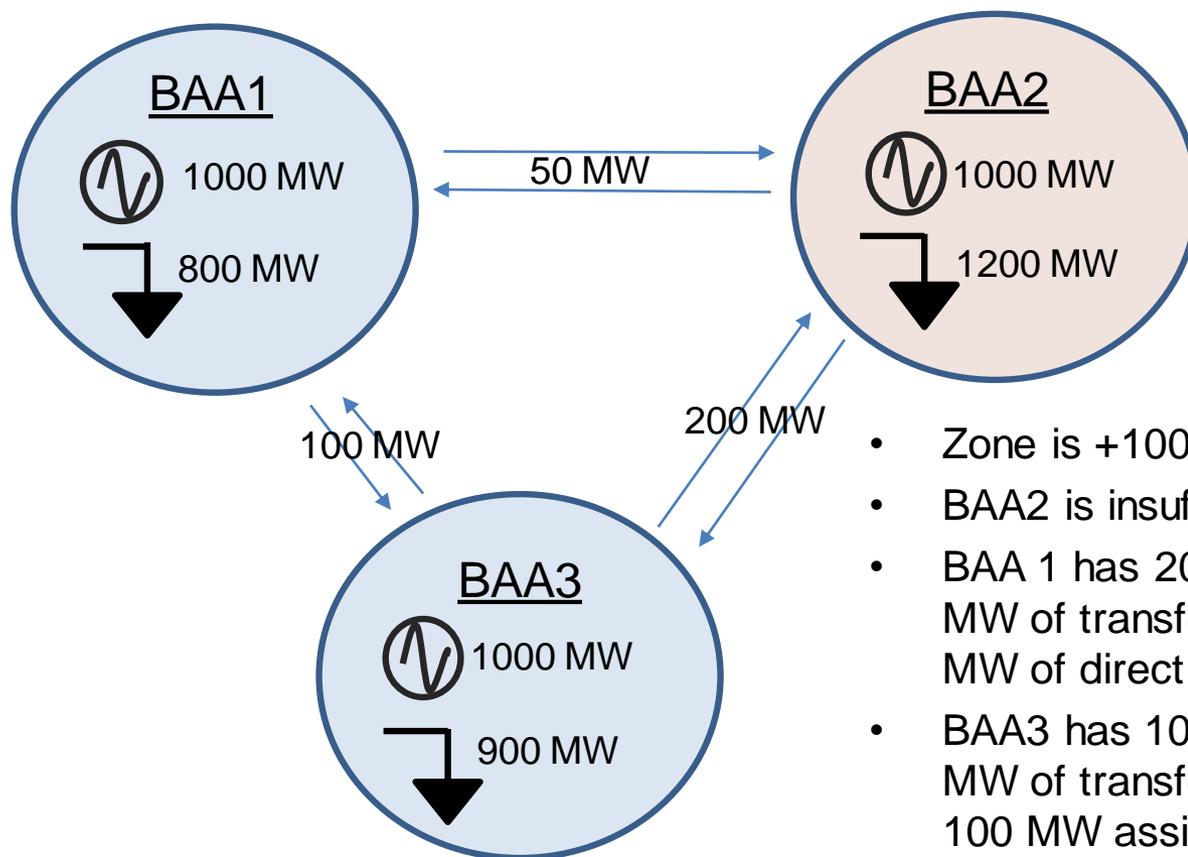
50 MW

100 MW

200 MW

- Zone is +100 MW
- BAA2 is insufficient by 200 MW
- BAA 1 has 200 MW excess supply and 50 MW of transfer to BAA2, so can provide 50 MW of direct assistance to BAA2
- BAA3 has 100 MW excess supply and 200 MW of transfer to BAA2, so can provide 100 MW assistance
- BAA1-BAA3 has 100 MW transfer and 100 MW of transfer remains between BAA2-BAA3, so at least 50 MW from BAA1 can be wheeled through BAA3 to BAA2.
- WEIM can clear BAA2 insufficiency

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Example: Insufficient Transmission

Resource insufficient sub-zone

BAA1
1000 MW
975 MW

200 MW

BAA2
1000 MW
1200 MW

0 MW

25 MW

Avoid only through testing wheel through transfer

BAA3
1100 MW
900 MW

- Zone is +25 MW
- BAA2 is insufficient by 200 MW
- BAA3 has 200 MW excess supply and 25 MW of transfer to BAA2, so can provide 25 MW assistance
- BAA1 has 25 MW excess supply and 200 MW of transfer direct to BAA2, so can provide 200 MW assistance
- The sub-zone comprised of BAA1 and BAA2 is 150 MW short; given there is 200MW existing transfer in the sub-zone, BAA1 may clear less then 975 MW depending on network model and internal BAA congestion.

There are a number of different ways to ensure that allowing incremental transfers maintains reliability (Robust Solution)

1. Failed (capacity or flex ramp) entity elects to receive additional imports during test run

2. Ensure neighboring BAAs are net long (both capacity and flexibility)

   a) Test the zonal supply (Failed BAAs + neighboring BAAs) to ensure the supply can meet the zones forecast + uncertainty

3. Ensure that neighboring BAAs possess sufficient transfer capacity to cure insufficiency

   a) Includes testing for residual transmission directly connected to insufficiency BAA

   b) Includes testing for transmission between neighboring BAAs to facilitate WEIM assistance through wheeling

4. Allow additional incremental transfers corresponding to this calculated value

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There are a number of different ways to ensure that allowing incremental transfers maintains reliability (Simple Solution)

1. Failed (capacity or flex ramp) Entity elects to receive additional imports during test run

2. Ensure neighboring BAAs are net long (both capacity and flexibility)
   a) Test the zonal supply (Failed BAAs + neighboring BAAs) to ensure the supply can meet the zones forecast + uncertainty

3. Test for additional transfer capacity to cure insufficiency
   a) Includes testing for residual transmission directly connected to insufficiency BAA

4. Allow additional incremental transfers corresponding to this calculated value

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Both of these solutions likely necessitate software enhancements to ensure reliability

- Implementing logic to test for underlying transmission capacity is necessary to ensure reliability

- The amount of additional transfer capacity may be inversely related to the implementation complexity
    - Implementation to account for the ability to wheel-through neighboring BAAs will not be trivial for well networked WEIM entities

There are multiple ways to allow for additional transfers

- Limited incremental transfer could be increased by an amount corresponding to test results

- The deficient BAA load could be biased down to reflect insufficiency that is not able to be cured

- Implementation of either concept would rely on administrative pricing to account for incremental transfers
  - Could raise energy costs through market utilizing more expensive resources to clear more demand
  - Can be avoided through implementation of a hurdle rate; which requires further software enhancements

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There are multiple ways to distribute revenue if implementation is done through an administrative penalty

- Will require additional charge codes that will need to be developed by the CAISO, and potentially implemented during summer operations

- Pro-rata to all WEIM BAAs that passed the RSE?
  - Poor cost causation since not all WEIM entities are providing additional similar quantities of additional energy

- Pro-rata to all WEIM BAAs who passed the RSE and are net exporters?
  - May not provide additional revenue for entities whose costs are raised by clearing more supply in the WEIM
  - Would not compensate for reducing an WEIM net import position

REES Pricing Goals (submitted by NVE)

- Should exhaust internal generation before using any incremental transfers

- Have the ability to track the amount of incremental transfer and still have the ability to go to PBC slack when emergency transfer capacity is exhausted

- Sends a price signal that represents the shortage when using the incremental transfer

- Simple solution that will not affect regular operation

REES Pricing Proposal (submitted by NVE)

- Create emergency capacity – Intertie Transfer Capability (ITC)
  - Only enforced when BAA opted in for emergency capacity and Emergency Transfer Capacity was available
  - Transfer capacity would include full transfer up to T+7.5 point (current capping point) + Emergency transfer capacity
- ITC transfer capability would be a two-step penalty price
  - No cost up to T+7.5 point (current capping point)
  - Emergency transfer capacity range would have penalty price above ABC and below PBC in scheduling run while the pricing run would have the soft or hard cap depending on market conditions
  - Sends price signal when dispatched into Emergency Capacity range and all other internal generation is exhausted
- Total Transfer would also have a limit of T+7.5 (current capping point) + Emergency Transfer Capacity
- Emergency Transfer Capacity ITC would be a pre-process enforcement and does not interfere with normal operations optimization and penalty price relaxation

REES Pricing Example (submitted by NVE)

- Assumptions
  - 1000 MW initial load
  - 50 MW upward ABC
  - 50 MW emergency transfer capacity priced at $1350 in scheduling run
  - $1000 Soft Cap
  - T-7.5 Transfer = 10MW Import

Dispatch Range	Load Range (MW)	Load (MW)	Transfer (MW)	Emergency Transfer Dispatched (MW)	PBC Slack (MW)	Scheduling Run ($)	Pricing Run ($)
ABC	1000-1050	1025	10	0	0	$1050 to $1200	Bid in Price Range for WEIM Participating Resource and DEB for WEIM Non-Participating
Emergency transfercapacity	1050-1100	1075	35	25	0	$1,350	$1,000
PBC slack	>1100	1101	60	50	1	$1,450	$1,000

Additional Considerations

- What are reasonable assumptions regarding excess flexible supply that is shown to meet uncertainty?

  - Should full quantity be protected?

- What assumptions should be made regarding available-balancing-capacity (ABC)?

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Next Steps

Submit comments on the call presentation/discussion by April 1, 2022

- CAISO will look to put forward a proposal once feedback on this workshop has been obtained

Please use template on the initiative webpage to submit your comments:
https://stakeholdercenter.caiso.com/Comments/AllComments/672cc5d6-eb00-406b-a343-2535303e592d

SAVE THE DATE | Nov 9-10, 2022 Sacramento, CA
2022 STAKEHOLDER SYMPOSIUM

- The ISO is pleased to be hosting the Stakeholder Symposium in-person at the Safe Credit Union Convention Center in downtown Sacramento on Nov. 9 – 10, 2022

- Registration will be open in May

  - Public notice will be issued once the site is available

- Additional information is available on the Stakeholder Symposium page on ISO's website at: http://www.caiso.com/informed/Pages/MeetingsEvents/StakeholderSymposium/Default.aspx

- Please direct questions to symposiumreg@caiso.com

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