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Date: 8/21/2017

Submitter Information

Organization	Contact Name	E-mail	Phone
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Please provide a title for the issue.

Flexible Ramping Sufficiency Test Enhancements

Please provide a summary description of the issue (i.e. 500 words)

The above captioned EIM Entities ("EIM Entities") submit the following summary of proposed enhancements regarding the Flexible Ramping Sufficiency Test (FRST) for inclusion as a separate CAISO stakeholder initiative in the Stakeholder Initiatives Catalog. These items are a high priority for these entities; therefore, the collective group is requesting a separate initiative to develop a robust discussion for EIM test enhancements. These include: (1) Overstatement of the Flexible Ramp Sufficiency Test Requirement; (2) Under Valuing EIM Entity Resources; (3) Improper Consequences for Failing the Flexible Ramp Sufficiency Test; (4) Performing FRST at T-40 with 5 minute granularity; (5) Potential Uncertainty Histogram Enhancements; and (6) Enabling Participating Resource Scheduling Coordinator visibility into the test obligations.

Please provide any data/information available that would characterize the importance or magnitude of the issue.

1. Overstatement of the Flexible Ramp Sufficiency Test Requirement

a. The Inclusion of Non-participating resources

The flexible ramping capacity calculation determines the capacity each EIM Entity must have available to meet the FRST requirement. Currently, this calculation includes all resources scheduled within each BAA, including non-participating resources (NPRs). A

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NPR's negative (or positive) base scheduling change from one hour to the next to support a negative (or positive) load change will be added to the capacity needed to pass the FRST. However, the capacity calculation does not include the expected change in load from one hour to the next. This overstates the flexible ramping capacity needed to pass the FRST.

The EIM Entities argue that these expected resource behaviors are a normal part of forecasting unit commitment and dispatch, reduce base scheduling imbalances, and should not increase the quantity of the FRST requirement. It would be more appropriate for the FRST capacity calculation to only include available (biddable) capacity that is capable to meet the FRST requirement. The EIM Entities further question the necessity to address expected dispatch changes within the FRST requirement that is designed to address unexpected VER changes when additional capacity and balancing tests exist.

Example 1: No Change in Load - HE 23

FR Requirement = 200

FR Capacity = 100

	HE 22	HE 23	
NPR	1000	900	- (-100)
PR	1000	1100	- (200 upward ramp capability)

- Lost 100 MW upward ramp capability to balance the base schedule and the NPR base scheduling change also counts against the available capacity

Example 2: Negative 200 MW Change in Load - HE 23

FR Requirement = 200

FR Capacity = 100

	HE 22	HE 23	
NPR	1000	800	- (-200)
PR	1000	1000	- (300 upward ramp capability)

- NPR base scheduling change also counts against the available capacity, but the load decrease is not accounted for in this calculation

b. Recognize Actual Renewable Condition of the System

The uncertainty requirements need to recognize the actual condition of the system for renewable; for instance, when a wind resource is at 0 MW there is no downward uncertainty or when resource is at its maximum output there no upward uncertainty, and the EIM entity does not need to carry corresponding flexible ramp capacity for that part.

2. Under Valuing EIM Entity Resources

a. The Valuation on Capacity of Participating Resources

The FRST requirement calculation also under values the ramping capability of participating resources. Participating resources that operate at their maximum

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capacity will increase the flexible ramping requirement if the resource has a derate or capacity change in the next hour. The derated capacity increases the flexible ramp up requirement for the next hour even when the resource does not have a decrease in upward “ramping capability”. In other words, a test already exists to ensure EIM Entities have enough biddable capacity bid into the market. An EIM Entity should not have to carry additional regulation or flexible ramp for expected load changes or for resources that reach their capacity limits.

Example 3: Negative 50 MW Change in Load - HE 23

FR Requirement = 200

FR Capacity = **199**

	HE 22	HE 23	
	BS	OPR	BS
PR 1	200	200	190 - (-10) PR operated both hours at pmax; but had a derate in HE 23
PR 2	300	260	260 - (109 upward capacity)
PR 3	350	350	350 - (100 upward capacity)

- There was a 10 MW derate on participating resource 1 (PR1) which negatively impacted the capacity calculation. PR1 was operating at pmax the hour before, therefore it had 0 upward MW ramp capability. The next hour PR1 operated at pmax still not having any available upward ramp capability. Therefore, PR1 does not have a ramp availability change, it had a capacity change.

In Example 3 above, the EIM Entities raise the questions:

- Should the derate increase the upward ramp needed for the hour?
- Or, should the PR1 available ramp capacity be 0?

b. The Valuation of Available Balancing Capacity

Available Balancing Capacity (ABC) is capacity that is available to be released prior to a market infeasibility that would otherwise trigger application of the \$1,000/MWh or \$-150/MWh parameter penalty price based on whether the system has a power deficit or surplus. This capacity is released at the energy market bid for participating resources or default energy bid for NPRs of the EIM Entity's merchant function. This capacity is available to be dispatched for a market solution, therefore, this capacity should be available to pass the FRST.

3. Improper Consequences for Failing the Flexible Ramp Sufficiency Test

Currently, EIM transfers are frozen when an EIM Entity fails FRST at either the base schedule or the last 15min interval of the previous hour. While this

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provision was included to prevent “leaning”, it has the potential to add unnecessary challenges for the EIM Entities to maintain ACE in their BAA. Based on EIM operations to date, the additional reserves carried by the EIM Entities, and the EIM Entities’ responsibilities as BAAs, the EIM Entities submit that the potential problems caused by the freezing of EIM transfers vastly outweigh any potential benefit. The CAISO should consider removing the freeze limitation and relying on the parameter price to prevent any “leaning.” Alternatively, a ramped or stepped approach to freezing the EIM transfers could reduce reliability concerns.

4. Perform FRST at T-40 with 5 minute granularity

At the current time, FRST is performed at T-40 with 15-minute granularity within the hour, with the rule of "fail one fail all". The CAISO should consider that if failing FRST for a portion of intervals, only impose financial consequence for those intervals and not the full hour. This would not change when the test is run, but how it is run and the consequences. As noted in issue 3, the freezing of the interties should be eliminated in conjunction with this suggestion.

5. Potential Uncertainty Histogram Enhancements

The EIM Entities propose dividing the uncertainty histogram for the FRST requirements into each component that may impact the requirement. For instance, it might be easier to understand possible drivers if the VERs and load components were separated instead of showing a net load. Moreover, the histograms should be based on similar monthly or seasonal patterns.

6. Enable Participating Resource Scheduling Coordinator visibility into the test obligations

Currently, FRST requirements have three components. However, OASIS only displays the uncertainty component. PRSC needs to see the overall FRST requirements in order to submit base-schedules with sufficient FR capacity.

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Over/Under Scheduling Enhancement

Please provide a summary description of the issue (i.e. 500 words)

This initiative was suggested by NV Energy during the 2017 stakeholder process. There are two aspects to the proposal: (1) examine possible improvements and enhancements to load forecasting transparency and accuracy; and (2) review the current penalty bands for EIM entities deviating from the forecast,

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Accurate forecast are significant to reliable operations and the overall efficiency of the EIM. They are the basis of the EIM Entities' balanced base schedules. While forecasting has improved, there are still significant intervals when there is predictable deviations between the T-80 forecast and the binding T-60 forecast. The entities use the T-80 forecast to make adjustments to the base schedules. These adjustments are key to successful results of balancing tests against the binding forecast at T-60. The EIM Entity and the CAISO should be able to agree on the possibility of an independent 3rd party to provide the forecast to both the EIM Entity and the CAISO with the same protection against penalties reflected in CAISO Tariff Section 29.11(d) currently only for use of the CAISO forecast. In this way, the contract with the 3rd party can be structured

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to award additional financial payments for scheduling accuracy and penalties for inaccuracies. Alternatively, the CAISO could modify the deviations bands to provide more flexibility than currently allotted. In this manner, the EIM Entity could submit a balanced schedule that should more accurately represent system conditions. As an additional alternative, CAISO could review and refine its own load forecast using more data for the areas being forecast and using data in the same time increments as the RTM.