California ISO

April 30, 2018 Energy Imbalance Market Technical Workshop – Real-Time Resource Sufficiency Test

Stakeholder Comments Matrix
Categorized by Question

July 17, 2018

Introduction

The ISO held a workshop titled "EIM Offer Rules" on April 30th, 2018. The purpose of the workshop was to discuss the following topics:

- Real-time resource sufficiency test (RST) in the EIM, and
- Additional default energy bid (DEB) option for hydro resources.

Stakeholders presented at the workshop to discuss questions and/or concerns related to the two topics. Following the workshop, stakeholders submitted written comments. The presentations and written comments are located at the ISO website on the "Stay Informed: Miscellaneous stakeholder meetings" page.[1]

This document was created in response to the resource sufficiency test (RST) written comments. In reviewing the written comments, the ISO recognized questions could be grouped into three categories: training, enhancements/data requests, or policy. The respective tables are listed below and identify the question/comment, ISO response, and entity who submitted the question/comment.

Training Questions and Comments

Training Question/Comment	ISO Response	Entity
Ensure the resource sufficiency test (RST) is equitably tested and enforced upon all EIM BAAs.	The RST is applied equally to all BAAs that are participating in the EIM.	BPA Chelan Portland Powerex WPTF
The capacity test should be applied to all EIM entities in all hours.	The capacity test is applied to all entities for all hours. Failing the capacity test results in the automatic failure of the flexible ramping test. The balancing test allows an EIM entity that elects to use the CAISO forecast to be exempt from the over/under scheduling penalty. If the ISO forecast is used and BAA's imbalance (determined by comparing the BAA base schedules and the ISO's demand forecast is within +/- 1%, the over/under scheduling penalty does not apply. If the EIM entity uses its own forecast, the over/under scheduling penalty applies. This is necessary because an entity could elect to submit base schedules as "long" or "short".	Powerex

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[1]   The Miscellaneous stakeholder meetings page on the ISO's website is located at:
http://www.caiso.com/informed/Pages/MeetingsEvents/MiscellaneousStakeholderMeetings/Default.aspx

Training Question/Comment	ISO Response	Entity
	The over/under scheduling penalty does not apply to the ISO and will not apply to EDAM entities in the future because there is not an opportunity to determine the amount of imbalance to be met in the real-time market because base schedules are not submitted. The reference for imbalance settlement is the day-ahead schedule.	
Improve accuracy of resource sufficiency requirement to ensure there is no leaning on other EIM entities.	The intent of the RST is to ensure each EIM BAA carries adequate capacity to maintain the balance between generation and load. This prevents one EIM entity from leaning on another. The ISO is planning to improve the calculation of the flexible ramping requirement. A proposed methodology has been discussed in the Day Ahead Market Enhancements (DAME) initiative.	Chelan
Resource sufficiency tests are needlessly challenging for EIM Entities to pass: • **RST involve compressed timelines** • **Capacity test commingles concepts that should be evaluated separately**	Although the calculation for the requirement is complex, when the tests were originally developed it was assumed that EIM entities would bid all available EIM participating resources. It was not expected that an EIM entity would seek to only make available EIM participating resources necessary to pass the resource sufficient evaluation. The tests have been modified over time, such as freezing the load forecast and the VER forecast, recognizing that the EIM entities were looking to determine the amount to EIM participating resources needed versus making all that is available. In order to address the compressed timeline that occurs as a result of the publication of the fifteen-minute market, the ISO freezes the load forecast and VER forecast that is used in the test to ensure the target doesn't move. This was implemented on December 12, 2017. The objective of the balancing test is to determine if the EIM Entity will be subject to the under-over scheduling penalty. The capacity test ensures there are sufficient economic bids to meet the demand forecast	Powerex

Training Question/Comment	ISO Response	Entity
	and historical intertie declines. The objective of the flexibility test is to determine if there is adequate ramping capability to meet system needs. Failure of the capacity test will result in a failure of the flexible ramp sufficiency test. Passing of the capacity test will result in credits being applied to the flexible ramp capacity test.	
Should ABC count towards the RS requirement?	No. The resource sufficiency test is intended to determine if there are adequate economic bids to enable the market to meet imbalance needs of each Balancing Authority Area (BAA). Available balancing capacity (ABC) can only be dispatched if the BAA is violating its power balance constraint. ABC is used for reliability needs after all effective economic bids in the EIM have been exhausted and cannot be used to meet the imbalance needs of another EIM BAA. Assume a BAA #1 has no economic bids from participating resources and used ABC to pass its RST. The market optimization would dispatch another BAA's participating resource to meet the needs of BAA #1. This enables BAA #1 to effectively lean on the rest of the EIM BAAs to meet its own imbalance needs.	Idaho NVE PGP Portland Puget Sound
What is the purpose of the RST? Is it to prevent leaning on other BAAs and/or ensure adequate ramping capacity?	The RST ensures EIM entities do not lean on others' generation capacity, generation flexibility, and transmission. Besides ensuring entities offer their own generation into the EIM, the RST ensures entities enter into forward bilateral contracts to make up for any shortfalls (including purchasing any needed transmission).	NVE
When a BAA fails the RST, do the transfers freeze completely or are they locked in one direction?	When a BAA fails the RST, the transfers are frozen in the direction in which the entity failed. For example, if an EIM BAA does not have adequate generation to serve load, the imports will be capped at the previous schedule. If an EIM BAA has excess generation in comparison to load, the exports will be capped at the previous schedule.	NVE

Enhancement/Data Requests

Enhancement/Data Request	ISO Response	Entity
When was the net import/export solution (to avoid incorrect calculation of the requirement for failed back to back intervals) implemented and how does it affect EIM entities?	This was implemented on June 12, 2018. The intent of the fix was to improve the calculation of net import capability when an EIM entity fails the flex ramp test for two consecutive hours. Previously the net import capability was calculated using the last binding FMM interval of the prior hour; therefore, if the entity failed the flex test in the prior hour, the net import capability was limited to the base transfer of the previous hour's last fifteen-minute interval. With the fix, the net import capability is now calculated using the total net import capability (the EIM transfer limit) which is not impacted by the flexible ramping test failures from previous hours. The same fix was also applied to net exports.	NVE
The ISO should publish metrics and reporting related to the resource sufficiency test and requirement for all EIM Entities including the ISO.	The ISO will begin publishing these metrics in either the monthly reports of the MPPF slides.	Powerex
The ISO should complete data analysis to compare the RST requirement to the amount of uncertainty that materialized. Evaluate if FRST requirement is meeting the P95 standard.	The ISO will take this request into consideration and provide a metric in the MPPF slides or one of the EIM discussions.	PGP Seattle
Ensure EIM entities are correctly passing or failing RST based on 95% confidence level.	This requires additional discussion to determine a methodology that all entities agree to. The ISO will coordinate a meeting to discuss how to measure the performance of the RST.	Powerex

Policy Questions and Comments

Policy Question/Comment	ISO Response	Entity
When an entity fails the RST, freeze transfers for the corresponding interval as opposed to the entire hour.	This will be implemented with the fifteen-minute scheduling granularity in the Day-Ahead Market Enhancements initiative. The DAME initiative will move to fifteen-minute base schedules which enables the freezing of transfers for an individual interval when the	Chelan Idaho Portland PGP Puget Sound Seattle

Policy Question/Comment	ISO Response	Entity
	EIM entity has failed the RST for the corresponding interval.	
RST requirement should be published ahead of time to allow adequate response by BAA.	The RST requirement considers the final 15-minute schedule of the preceding operating hour. This impacts the credits the EIM entity receives. Therefore, the requirement cannot be calculated until after the market has run. It is not feasible to publish the requirement any sooner than it already is. The intent of RST was not to facilitate "strategic" participation. It was to determine if sufficient resources were economically bid into the EIM, not to determine the number of economic bids that should be participating. Therefore, the assumption was made that EIM entities would economically bid to the fullest extent of their participating resources. The ISO will not change the load forecast or the VER forecast (already implemented) after the first test has run at T-55. This was implemented on December 12, 2017.	NVE PacifiCorp Powerex Seattle
Are the consequences of failing the RST adequate?	Yes. Freezing transfers for the corresponding interval (as implemented with the DAME initiative) prevents the EIM BAA from participating in the EIM for that interval. This eliminates the potential for EIM entities to lean on each other. Stakeholders examined a penalty as opposed to freezing transfers during the EIM Y1 policy initiative. It was determined that the penalty would need to be too high to make this a feasible option.	NVE
Uncertainty of renewable resources should be taken into consideration when determining the RST requirement.	The flexible ramping requirement currently uses historical net load (load – wind – solar) to account for uncertainty at a net level. The CAISO plans to improve the flexible ramping requirement methodology in the Day Ahead Market Enhancements initiative. Instead of using a histogram approach, the CAISO proposes to calculate the requirement based on potential uncertainty of load, wind and solar. This will improve the accuracy of	PacifiCorp Portland PGP Powerex Puget Sound Seattle

Policy Question/Comment	ISO Response	Entity
	the requirement in relation to the amount of wind, solar, and load on the system for the corresponding interval.	
Credits should be allocated ahead of time so BAA can anticipate the balancing capacity requirement reduction.	Credits (inclusion of imports/exports to reduce the RST requirement) can only be allocated once the market has run; it is impossible to determine the appropriate amount of credits prior to the market run.	Portland
Import/export transfer limits used for setting the requirement should be based on expected future transfer capacity.	Future transfer capacity can change (for example unscheduled/forced transmission and/or generation outages). Therefore, it would be inappropriate to forecast future transmission capacity.	Portland
Apply test equitably by not counting imports if physical generator and transmission are not identified.	This issue is limited to the ISO's hourly block intertie resources because imports/exports that are fifteen-minute dispatchable must be tagged with a transmission profile by T-40; if a fifteen-minute dispatchable resource not, the schedule will be reduced to 0 MW and therefore does not count towards passing the RST. All EIM entities have imports/exports that are used in the determination of the requirement at T-40. These "hourly block" schedules must be tagged by T-20. This is the same for all EIM entities. Hourly blocked intertie schedules are considered in the historical non-delivery of imports/exports which increases the capacity requirement. The ISO will address the under-delivery of intertie resources in the Intertie Deviation Settlement initiative.	PGP Seattle Powerex
RST should incorporate imbalance conformances that occur systematically in a particular direction.	Imbalance conformances (aka "load biases") can change by interval and are not guaranteed to be predictable. The ISO is addressing systematic conforming and making improvements to the conforming process as a result of the Imbalance Conformance Enhancements initiatives.	Powerex
RST should be measured relative to base schedules instead of the last interval of the previous hour.	Using base schedules in the RST would result in inaccurate ramp capability. The balancing test does not ensure base schedules are	Powerex

Policy Question/Comment	ISO Response	Entity
	ramp feasible between hours. For example, a participating resource schedule could be decremented during an hour and there would be no way to determine if it is ramp feasible for that resource to meet a dispatch for the next interval based on the base schedule.	
RST should be performed with 5-minute granularity.	This is not feasible. The RST results occur in the real-time unit commitment (RTUC) which occurs in 15-minute granularity.	Puget Sound Energy
Is the CAISO incorrectly receiving credits towards its flexibility capacity requirement? • **Double-counting of EIM Transfer credits is flawed**	No. There are no unique credits towards the flexibility capacity requirement. There is no double-counting in the FRST. The test recognizes that each BAA needs to individually meet their own requirements absent economic transfers between BAAs. Alternate options would be to: • Not apply credit because it is not possible to "isolate" the credit based on BAA and/or operating hour. • Use a histogram approach from previous trade day to determine if there's a net change between hours.	Powerex