


Business Requirements Specification

WEIM Resource Sufficiency Evaluation Enhancements – Phase-2 (RSEE-2)


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Revision History

Date	Version	Description
2/10/2023	1.0	Initial Document Release.
3/31/2023	1.1	<p>Updated for:</p> <ul style="list-style-type: none"> • Section 1.3 (Scope), Section 4 (Details of Business Need/Problem), RSEE2-BRQ-05060 <ul style="list-style-type: none"> ○ Updated to replace "Exclude RTLPT Exports and RTECON Exports Associated with Latest RTPD Run from RSE Tests for CAISO BAA Only " with "Count Hourly RTLPT and RTECON Exports in the RSE Capacity Test Up/Down and Flex Ramp Test Up/Down for CAISO BAA Only". • Section 1.3 (Scope), Section 4 (Details of Business Need/Problem), Section 5.2 (Other), RSEE2-BRQ-03060 (Track-1) – Item1C & (Track-2) – Item2A, RSEE2-BRQ-03080 (Track-2) – Item2A, RSEE2-MSIM-10060, RSEE2-MSIM-10080, RSEE2-MSIM-10100 <ul style="list-style-type: none"> ○ Updated to clarify that both existing Market Path Product field and Misc Info field will also be used for eTag submission in Track-1. • RSEE2-BRQ-02160 <ul style="list-style-type: none"> ○ Updated to clean up the BRQ verbiage for ALFS. • RSEE2-BRQ-02170 <ul style="list-style-type: none"> ○ Added for ALFS to Calculate Aggregate Hourly DR LF Adjustment for RSE's Use. • RSEE2-BRQ-03050 (Track-1) – Item1C <ul style="list-style-type: none"> ○ Deleted (as content is merged into RSEE2-BRQ-03060 (Track-1) – Item1C & (Track-2) – Item2A). • RSEE2-BRQ-03060 (Track-1) – Item1C & (Track-2) – Item2A <ul style="list-style-type: none"> ○ Changed Requirement Type from Core to Business Process. ○ Updated to merge contents from RSEE2-BRQ-03050 (Track-1) – Item1C. ○ Updated to add CRN to high priority market priority types. • RSEE2-BRQ-03080 (Track-2) – Item2A <ul style="list-style-type: none"> ○ Updated to add setting Market Path Product to G-FP if Misc Info e-Tag field is left blank. ○ Changed Market Priority Type to CAISO Priority Type. ○ Updated to add CRN to high priority CAISO priority types. ○ Updated to add validation for high priority exports.

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6/23/2023	1.2	<p>Updated for:</p> <ul style="list-style-type: none"> • Section 1.3 (Scope), Section 4 (Details of Business Need/Problem), Section 5.1 (Business Practice Manual (BPM)), Section 5.2 (Other) <ul style="list-style-type: none"> ○ Updated to add CMRI publishing of market priority types MW schedules breakdown for export resources. • RSEE2-BRQ-02040 (Track-3) – Item3A <ul style="list-style-type: none"> ○ Updated to only support 5-min granularity submission (removed 15-min and hourly granularity). • RSEE2-BRQ-02160 (Track-3) – Item3A <ul style="list-style-type: none"> ○ Updated to only support 5-min granularity data for submitted, included and excluded LF Adjustments (removed 15-min and hourly granularity).

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9/1/2023	1.3	<p>Updated for the following:</p> <ul style="list-style-type: none"> ● Section 1.3 (Scope), Section 4 (Details of Business Need/Problem), RSEE2-BRQ-03060 (Track-2) – Item2A <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT. ● RSEE2-BRQ-02160 (Track-3) – item3A <ul style="list-style-type: none"> ○ Revised the DR Performance Adjustment process. ● RSEE2-BRQ-02170 (Track-3) – Item3A



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		<ul style="list-style-type: none"> ○ Updated calculation to show application of DR Performance Adjustment percentage of 75% ● RSEE2-BRQ-03060 (Track-2) – Item2A <ul style="list-style-type: none"> ○ Updated to clarify use of CAISO Priority Type Misc field. ○ Updated ETC/TOR market priority types tags to enter CRN in CAISO Contract field. ○ Updated to revise CRN market priority type to ETC/TOR. ● RSEE2-BRQ-03080 (Track-2) – Item2A <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT. ○ Updated to revise validation rules regarding CRN. ○ Updated to revise CRN market priority type to ETC/TOR. ○ Updated to add clarification bullet that validations will apply to newly created eTags as well as modifications to existing eTags. ● RSEE2-BRQ-03160 <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration. ● RSEE2-BRQ-04010, RSEE2-BRQ-05480 (Track-2) – item2A <ul style="list-style-type: none"> ○ Added to roll over DAECON to DALPT. ● RSEE2-BRQ-08040 (Track-2) – item2A <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT. ○ Updated to clarify inclusion of CRN ID and Type ● RSEE2-BRQ-08560, RSEE2-BRQ-08580 (Track-2) – item2A <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT. ○ Updated to clarify inclusion of CRN ID and Type ○ Add a note to publish CRN and CRN Type for CMRI reports. ● RSEE2-MSIM-10060, RSEE2-MSIM-10080 (Track-2) – item2A <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration and clarify that DAECON is rolled over to DALPT. ● RSEE2-MSIM-10100 (Track-2) – item2A <ul style="list-style-type: none"> ○ Updated to remove DAECON enumeration.

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		<ul style="list-style-type: none"> • Appendix-D: Reports <ul style="list-style-type: none"> ○ Added for new CMRI report data samples for the two CMRI reports.
<u>9/20/2023</u>	<u>1.4</u>	<p><u>Updated for the following:</u></p> <ul style="list-style-type: none"> • <u>RSEE2-BRQ-03060, RSEE2-BRQ-03080 (Track-2) – Item2A</u> <ul style="list-style-type: none"> ○ <u>Updated to expand ETC/TOR market priority type to separate ETC, TOR.</u> • <u>RSEE2-BRQ-04010, RSEE2-BRQ-05480 (Track-2) – Item2A</u> <ul style="list-style-type: none"> ○ <u>Updated to limit DAECON roll over into DALPT to export resources only.</u> • <u>RSEE2-BRQ-08040 (Track-2) – Item2A</u> <ul style="list-style-type: none"> ○ <u>Updated to make it applicable to export resources only.</u> ○ <u>Updated to expand ETC/TOR market priority type to separate ETC, TOR.</u> • <u>RSEE2-BRQ-08560, RSEE2-BRQ-08580 (Track-2) – Item2A</u> <ul style="list-style-type: none"> ○ <u>Updated to expand ETC/TOR market priority type to separate ETC, TOR.</u> • <u>Appendix-D: Reports (Track-2) – Item2A</u> <ul style="list-style-type: none"> ○ <u>RUC Export Schedules by Market Priority Types</u> <ul style="list-style-type: none"> ▪ <u>Updated CMRI report name</u> ▪ <u>Updated to expand ETC/TOR market priority type to separate ETC, TOR.</u> ○ <u>Real-Time Export Schedules by Market Priority Types</u> <ul style="list-style-type: none"> ▪ <u>Updated to expand ETC/TOR market priority type to separate ETC, TOR.</u>
<u>9/21/2023</u>	<u>1.41</u>	<p><u>Updated for the following:</u></p> <ul style="list-style-type: none"> • <u>Appendix-D: Reports (Track-2) – Item2A</u> <ul style="list-style-type: none"> ○ <u>RUC Export Schedules by Market Priority Types</u> <ul style="list-style-type: none"> ▪ <u>Updated to delete Effective Inerties column.</u>

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1 Introduction

1.1 Purpose

The purpose of this document is to capture and record a description of what the Users and Business Stakeholders of the project wish to obtain, by providing high level business requirements. This document establishes the basis for the agreement between the initiators and implementers of the project. The information in this document serves as input to determine the scope of projects and all Business Process Modeling and System Requirements Specifications efforts.

Business requirements are what must be delivered to provide value for the Users and Business Stakeholders. Systems, software, and processes are the ways (how) to deliver, satisfy or meet the business requirements (what).

The purpose of this initiative is to continue to enhance the accuracy of the WEIM resource sufficiency evaluation (RSE).

This initiative addresses remaining items from the RSEE Phase 1 initiative as well as elements deferred from the Phase 1 policy development process. This scope is informed by analysis the CAISO performed on different aspects of the WEIM RSE that were not addressed under the RSEE Phase 1 policy development.


1.2 Conventions

- None


1.3 Scope

This second phase of this initiative includes:

- **Track-1**
 - Item1A – Count hourly RTLPT exports and RT economic (RTECON) exports in RSE Capacity Upward/Downward Test and Flexible Ramping Sufficiency Upward/Downward Test for CAISO BAA.
 - Item1B – Facilitate assistance energy transfer between WEIM BAAs into the WEIM BAAs that failed RSE upward test:
 - Added as ex-post surcharge through Settlements.
 - Market broadcasts needed data to Settlements.
 - Item1C – Clarification of Post-HASP Block Hour Low-Priority Export

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- Require DALPT (including rolled-over DAECON) export that clears both RUC and HASP, RTLPT and RT economic (RTECON) export that clears HASP be e-tagged as “Firm Provisional Energy (G-FP)” via utilizing existing Market Path Product and Misc Info fields.
 - **Track-2**
 - Item2A – Clarification of Post-HASP Block Hour Low-Priority Export
 - Operator-Driven Low-Priority Export Curtailment
 - Roll over DAECON into DALPT market priority type to minimize retagging requirements.
 - CAISO operator’s ability to initiate pro-rata curtailment based on identified MW, given the following priority order:
 - RTECON (RT economic hourly block export schedules that clear HASP).
 - RTLPT (RT Self-Schedule hourly block export schedules not backed by Generation from non-RA Capacity and cleared HASP).
 - Non-high-priority DA export [i.e. DALPT (DA hourly block export schedules not backed by Generation from non-RA Capacity that also cleared both RUC and HASP and are protected Self-Schedules, and including rolled-over DAECON (DA economic hourly block export schedules that clear both RUC and HASP)]
 - CAISO operator’s ability to identify/filter exports by market priority types as well as “Firm Provisional Energy (G-FP)” eTag identifier.
 - Publish resource-specific market priority types and their associated MW data to ADS and CMRI.
 - Item2B – Develop MF resource identification Capacity Test Failed-to-Start Rule Exemption flag to allow SCs of WEIM and CISO short start units that start with non-positive telemetry to identify specific resources that will be exempted from this functionality in RSE Capacity Test. (Implemented in Phase 1 – enhancements needed)
- **Track-3**
 - Item3A – DR Inclusion with RSE via ALFS (Implemented in Phase 1 – enhancements needed)
 - Furnish ALFS-SOA API integration to DR SCs to automatically submit their DR LF Adjustment (that reflect Non-Participating DR Schedules) to account for DRs that are not explicitly modeled in real-time markets.
- **Note:** The following scope will be deferred to future policy initiatives:
 - RSE Capacity Test uncertainty adders.


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2 Intellectual Property Ownership

Intellectual Property covers a broad array of information and materials, including written works, computer programs, software, business manuals, processes, symbols, logos and other work products. Determining ownership of Intellectual Property is very important in preserving the rights of the California ISO, and helps to avoid Intellectual Property infringement issues. In considering the business requirements or service requirements to be performed, the business owner of the project must determine Intellectual Property Ownership.


2.1 Checklist

All information in this document is the Intellectual Property (copyright, trademark, patent, and/or trade secret) of the California ISO.

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3 Acronym and Terms Definitions


Refer to **Appendix-A – Acronym Definition**

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4 Details of Business Need/Problem

4.1 Description


Business Opportunity/Problem Statement:	
What:	<ul style="list-style-type: none"> • Track-1 <ul style="list-style-type: none"> ○ Item1A – Count hourly RTLPT exports and RT economic (RTECON) exports in RSE Capacity Upward/Downward Test and Flexible Ramping Sufficiency Upward/Downward Test for CAISO BAA ○ Item1B – Facilitate assistance energy transfer between WEIM BAAs into the WEIM BAAs that failed RSE upward test: <ul style="list-style-type: none"> ▪ Added as ex-post surcharge through Settlements. ▪ Market broadcasts needed data to Settlements. ○ Item1C – Clarification of Post-HASP Block Hour Low-Priority Export <ul style="list-style-type: none"> ▪ Require DALPT (including rolled-over DAECON) export that clears both RUC and HASP, RTLPT and RT economic (RTECON) export that clears HASP be e-tagged as “Firm Provisional Energy (G-FP)” via utilizing existing Market Path Product and Misc Info fields. • Track-2 <ul style="list-style-type: none"> ○ Item2A – Clarification of Post-HASP Block Hour Low-Priority Export <ul style="list-style-type: none"> ▪ Operator-Driven Low-Priority Export Curtailment <ul style="list-style-type: none"> • Roll over DAECON into DALPT market priority type to minimize retagging requirements. • CAISO operator’s ability to initiate pro-rata curtailment based on identified MW, given the following priority order: <ul style="list-style-type: none"> ○ RTECON (RT economic hourly block export schedules that clear HASP). ○ RTLPT (RT Self-Schedule hourly block export schedules not backed by Generation from non-RA Capacity and cleared HASP). ○ Non-high-priority DA export [i.e. DALPT (DA hourly block export schedules not backed by Generation from non-RA

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Business Opportunity/Problem Statement:	
	<p>Capacity that also cleared both RUC and HASP and are protected Self-Schedules, and including rolled-over DAECON (DA economic hourly block export schedules that clear both RUC and HASP)]</p> <ul style="list-style-type: none"> • CAISO operator’s ability to identify/filter exports by market priority types as well as “Firm Provisional Energy (G-FP)” eTag identifier. • Publish resource-specific market priority types and their associated MW data to ADS and CMRI. <ul style="list-style-type: none"> ○ Item2B – Develop MF resource identification Capacity Test Failed-to-Start Rule Exemption flag to allow SCs of WEIM and CISO short start units that start with non-positive telemetry to identify specific resources that will be exempted from this functionality in RSE Capacity Test. (Implemented in Phase 1 – enhancements needed) <ul style="list-style-type: none"> • Track-3 <ul style="list-style-type: none"> ○ Item3A – DR Inclusion with RSE via ALFS ((Implemented in Phase 1 – enhancements needed) <ul style="list-style-type: none"> • Furnish ALFS-SOA API integration to DR SCs to automatically submit their DR LF Adjustment (that reflect Non-Participating DR Schedules) to account for DRs that are not explicitly modeled in real-time markets.
When:	<ul style="list-style-type: none"> • Policy changes that require tariff amendments must receive WEIM governing body approval and Board approval. • Track-1 implementation is expected by Summer 2023. • Track-2 implementation is expected Post-Summer 2023. • Track-3 implementation is expected Independent – Post-Summer 2023.
Why do we have this opportunity/problem:	<ul style="list-style-type: none"> • CAISO Board, WEIM governing body, and market participant have requested this initiative.

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<i>Business Opportunity/Problem Statement:</i>	
<i>Who does this opportunity/problem impact:</i>	<ul style="list-style-type: none"> • Real-Time Operations • MAF • Market Services • Market Participants • Customer Service • Policy • Legal

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5 Business Impacts


5.1 Business Practice Manual (BPM)

BPM	Description of Impact(s)
Demand Response	<ul style="list-style-type: none"> • Track-3 – Item3A <ul style="list-style-type: none"> ○ Non-Participating DR Schedule submission process via ALFS-SOA API.
Western Energy Imbalance Market (WEIM)	<ul style="list-style-type: none"> • Track-1 & Track-2 & Track-3 <ul style="list-style-type: none"> ○ MF Changes ○ RTM Changes ○ RTBS Changes
Market Instruments	<ul style="list-style-type: none"> • Track-1 – Item1A <ul style="list-style-type: none"> ○ Retiring of 2 CMRI reports (as they are replaced with OASIS reports). • Track-2 – Item2B <ul style="list-style-type: none"> ○ MF changes regarding resource identification for Capacity Test Failed-to-Start Rule Exemption flag and the rules for SCs to set them to Yes. • Track-2 – Item2A <ul style="list-style-type: none"> ○ CMRI reports for publishing market priority types MW schedules breakdown for export resources.
Market Operations	<ul style="list-style-type: none"> • Track-1 <ul style="list-style-type: none"> ○ RTM ○ Outline the conditions that require tagging Firm Provisional as required by WECC. • Track-2 <ul style="list-style-type: none"> ○ RTM and ITS Changes
Settlements and Billing	<ul style="list-style-type: none"> • Track-1 – Item1B <ul style="list-style-type: none"> ○ Settlements Changes


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5.2 Other

Impact	Description (optional)
Market Simulation	Track-1 & Track-2 & Track-3 <ul style="list-style-type: none"> • Yes
Market Participant Impact	Changes to: <ul style="list-style-type: none"> • Track-1 <ul style="list-style-type: none"> ○ MF (via CIDI submission) ○ Settlements of AET ○ Submission of existing Market Path Product and Misc Info fields for export G-FP eTags. ○ Retiring of 2 CMRI reports (as they are replaced with OASIS reports). • Track-2 <ul style="list-style-type: none"> ○ MF (via GRDT submission) ○ Submission of Misc Info field for export eTags ○ Settlements ○ WEIM and CAISO BAA’s visibility and awareness of low-priority export curtailment. ○ CMRI reports for publishing market priority types MW schedules breakdown for export resources. • Track-3 – Item3A <ul style="list-style-type: none"> ○ Submission of DR LF Adjustments to ALFS-SOA via API.
External Bid Publication	N/A
Customer Readiness Impact	
<ul style="list-style-type: none"> • External Communication Needed 	Track-1 & Track-2 & Track-3 <ul style="list-style-type: none"> • Yes
<ul style="list-style-type: none"> • External Onboarding and Maintenance 	Track-1 & Track-2 & Track-3 <ul style="list-style-type: none"> • Yes
<ul style="list-style-type: none"> • External Training 	Track-1 & Track-2 & Track-3

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Impact	Description (optional)
	<ul style="list-style-type: none"> • Yes
<ul style="list-style-type: none"> • External Computer Based Training 	Track-1 & Track-2 & Track-3 <ul style="list-style-type: none"> • No
Policy Initiative	Track-1 & Track-2 <ul style="list-style-type: none"> • Yes
Tariff Modifications	Track-1 & Track-2 <ul style="list-style-type: none"> • Yes

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6 Business Requirements

The sections below describe the Business processes and the associated business requirements involved in the project. These may represent high-level functional, non-functional, reporting, and/or infrastructure requirements. These business requirements directly relate to the high-level scope items determined for the project.


6.1 Business Process: Resource Management

6.1.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-01020 (Track-2) – Item2B	Definition and Submission of Resource-Specific Capacity Test Failed-to-Start Rule Exemption Flag <ul style="list-style-type: none"> System shall be updated to define a resource-specific Capacity Test Failed-to-Start Rule Exemption flag (for resources within CISO and WEIM BAAs) to provide the capability for SCs of WEIM and CISO short start units, that start with non-positive telemetry, to identify specific resources that will be exempted from Failed-to-Start Short-Start Units rule/functionality in RSE Capacity Test. System shall set the default values of this flag to non-exemption. System shall automatically validate that submitted flag is exempted for hydro resources only, otherwise it will be rejected. Notes <ul style="list-style-type: none"> This flag shall be provided by resource’s SC via GRDT. 	Core BPM: Market Instrument Tariff: §29.34 (l)	<ul style="list-style-type: none"> MF
RSEE2-BRQ-01060 (Track-1) – Item1B	Definition of BAA Assistance Energy Transfer Opt In/Out Flag <ul style="list-style-type: none"> System shall be updated to define a flag for each BAA (CISO and WEIM) to indicate whether it opts in or out of the receipt of assistance energy transfer functionality along with an effective dates. The default values for assistance energy transfer opt in/out flag shall be set to: <ul style="list-style-type: none"> Opting Out for CISO BAA. Opting Out for all other WEIM BAAs. 	Core BPM: Market Instruments, WEIM Tariff: §29.34 (n)	<ul style="list-style-type: none"> MF
RSEE2-BRQ-01080	Submission of Assistance Energy Transfer Opt In/Out Flag by WEIM Entities for their BAAs Each WEIM Entity shall have the capability to notify CAISO with its intent to opt in/out of the receipt of assistance energy transfer	Business Process	<ul style="list-style-type: none"> CIDI

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
(Track-1) – Item1B	functionality for their associated BAA(s) with an effective date of their choice, and shall follow similar submission lead timeline as other WEIM BAA parameters. Note: <ul style="list-style-type: none"> The requested effective date of toggling this flag shall not be less than the submission lead timeline. 	BPM: WEIM Tariff: §29.34 (n)	
RSEE2-BRQ-01105 (Track-3) – Item3A	Ensure DR Inclusion Flag Submission by WEIM Entity Only Submission of DR Inclusion Flag shall only be on WEIM Entity level and shall only be submitted by WEIM Entities. Any submissions by other parties shall not be accepted.	Business Process BPM: WEIM Tariff: §29.34 (l)	<ul style="list-style-type: none"> CIDI


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6.2 Business Process: Short-Term Forecasting – Load Forecast


6.2.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-02020 (Track-3) – Item3A	<p>Consume Data from MF</p> <ul style="list-style-type: none"> • System shall access the following data from MF: <ul style="list-style-type: none"> ○ DR Inclusion Flag <ul style="list-style-type: none"> ▪ (WEIM Entity Level) • System shall translate the WEIM Entity flag to their associated LF zones. <p>Notes</p> <ul style="list-style-type: none"> • This applies only to WEIM Entities but not CISO BAA. • If the translated flag enabled for a LF zone, it shall allow the entity with which it is associated and responsible for its LF submission (whether it is WEIM Entity) to submit Non-Participating DR Schedules for that LF zone. 	Core BPM: N/A Tariff: \$N/A	<ul style="list-style-type: none"> • ALFS-SOA
RSEE2-BRQ-02040 (Track-3) – Item3A	<p>Receive Non-Participating DR Schedules from WEIM Entity</p> <p>System shall have the capability to automatically receive the following from WEIM Entities that plans to utilize a DR that are not explicitly modeled in RTM (DRPs that are not able to be represented by the PDR or RDRR models), regardless of the 5% of load forecast threshold, for LF zones that have enabled DR Inclusion Flag, using similar mechanism as receiving existing LF:</p> <ul style="list-style-type: none"> • Non-Participating DR Schedules <p>Notes:</p> <ul style="list-style-type: none"> • This applies only to WEIM Entities but not CISO BAA. <ul style="list-style-type: none"> ○ Submitted Non-Participating DR Schedules shall be in 5-min granularity and they are on-demand submission. ○ If 15-min granularity schedule is desired, participants shall enter same schedule for each 5-min within the corresponding 15-min. ○ If hourly granularity schedule is desired, participants shall enter same schedule for each 5-min within the corresponding hour. • The DRPs can be reflected as an increase in load that captures expected “pre-cooling” as well as a decrease in LF that reflects the DR event itself. 	Core BPM: Market Instruments, Demand Response Tariff: \$29.34 (l)	<ul style="list-style-type: none"> • ALFS-SOA

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-02160 (Track-3) – Item3A	<p>Accounting for DR LF Adjustment in RT Demand Forecast Process For each BAA, System shall utilize applicable business process to:</p> <ul style="list-style-type: none"> • Process a % of the submitted non-participating DR schedules into LF via ALFS and forecast(s) that are streamed to RTBS and RTM for all applicable LF zones that are associated with BAAs and/or WEIM Sub-Entities. • Apply a single DR Performance Adjustment % to entire non-participating DR schedule. The Performance Adjustment % will be mapped at LF zone associated with BAAs and/or WEIM Sub-Entities. <ul style="list-style-type: none"> ○ The DR Performance Adjustment % can be updated per STF user discretion. • The DR Performance Adjustment % would be based on evaluation of historical non-participating DR performance. • Before broadcasting the ALFS LF: <ul style="list-style-type: none"> ○ System shall automatically track (and store the historical data) the following data : <ul style="list-style-type: none"> ▪ ALFS-DF-Submitted DR LF Adjustment (5-min) ▪ STF-DF-Excluded DR LF Adjustment (5-min) ▪ STF-DF-Included DR LF Adjustment (5-min) ▪ DR Performance Adjustment % (5-min). <p>Notes</p> <ul style="list-style-type: none"> • 100% DR Performance Adjustment setting will include 100% of ALFS-DF-Submitted DR LF Adjustment in the ALFS load forecast and send 0% to RTBS. • 0% DR Performance Adjustment setting will include 0% of ALFS-DF-Submitted DR LF Adjustment in the ALFS load forecast and send 100% to RTBS. • These calculated LF data that will be broadcasted by ALFS will be on both BAA level as well as LF zone level. • This applies only to WEIM Entities but not CISO BAA. • Existing WEIM non-participating DR process will automatically include DR into ALFS LF if DR amount exceeds a 5% of load threshold. New process will eliminate the 5% threshold so that all submittals are included in ALFS LF after application of the Non-Participating DR Performance Adjustment %. • Existing WEIM non-participating DR BPM section will be updated to create additional requirement that WEIM entities 	Core BPM: WEIM Tariff: §29.34 (l)	<ul style="list-style-type: none"> • ALFS

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	submit historical DR performance evaluation data and/or rely on CAISO DR performance evaluation. <ul style="list-style-type: none"> Refer to examples in Appendix-B: Formulas, Calculation Details, and Examples 		
RSEE2-BRQ-02170 (Track-3) – Item3A	<p>Calculating Aggregate Hourly DR LF Adjustment for RSE’s Use System shall automatically calculate, track (and store the historical data) the hourly aggregate values of the following data for RSE’s use (data that will be broadcasted to RTBS):</p> <ul style="list-style-type: none"> ALFS-DF-Submitted DR LF Adjustment (hourly aggregate) , calculated as: <ul style="list-style-type: none"> Hourly average of STF-DF-Submitted DR LF Adjustment (5-min) STF-DF-Excluded DR LF Adjustment (hourly aggregate), calculated as: <ul style="list-style-type: none"> Hourly average of STF-DF-Excluded DR LF Adjustment (5-min) Percentage of the submitted Non-Participating DR Schedules that are included in ALFS LF (hourly aggregate), calculated as: <ul style="list-style-type: none"> $100\% - \{ \text{STF-DF-Excluded DR LF Adjustment (hourly aggregate)} / \text{ALFS-DF-Submitted DR LF Adjustment (hourly aggregate)} \} * 100$ <p>Example</p> <ul style="list-style-type: none"> Submitted 5-min ALFS-DF-Submitted DR LF Adjustment = 100 MW for all 5-min intervals within that hour. Non-participating DR Performance Adjustment = {75%} Calculated ALFS-DF-Submitted DR LF Adjustment (hourly aggregate) for that hour = 100 MW. Calculated STF-DF-Excluded DR LF Adjustment (hourly aggregate) = 25 MW. Note: STF-DF-Included DR LF Adjustment (hourly aggregate) = 75 MW Calculated Percentage of the submitted Non-Participating DR Schedules that are included in ALFS LF (hourly aggregate) = 75%. <p>Notes</p> <ul style="list-style-type: none"> These calculated LF data that will broadcasted by ALFS will be on both BAA level as well as LF zone level. This applies only to WEIM Entities but not CISO BAA. 	Core BPM: WEIM Tariff: \$29.34 (l)	<ul style="list-style-type: none"> ALFS

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6.3 Business Process: Manage Real Time Interchange Scheduling

6.3.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-03060 (Track-1) – Item1C (Track-2) – Item2A	<p>Exports e-Tagging Submission Requirement</p> <ul style="list-style-type: none"> • SCs shall be required to e-tag the following as “Firm Provisional Energy (G-FP)”, via utilizing existing Market Path Product field: <ul style="list-style-type: none"> ○ RT economic exports that clear HASP <ul style="list-style-type: none"> ▪ Enter RTECON in Misc Info field of the eTag as CAISO Priority Type. ○ RTLPT exports that clear HASP <ul style="list-style-type: none"> ▪ Enter RTLPT in Misc Info field of the eTag as CAISO Priority Type. ○ DALPT exports that clear both RUC and HASP (this includes rolled-over DAECON) <ul style="list-style-type: none"> ▪ Enter DALPT in Misc Info field of the eTag as CAISO Priority Type. • SCs shall be required to e-tag the following as non-“G-FP”, via utilizing existing Market Path Product field: <ul style="list-style-type: none"> ○ RTPT exports that clear HASP <ul style="list-style-type: none"> ▪ Enter RTPT in Misc Info field of the eTag as CAISO Priority Type. ○ DAPT exports that clear both RUC and HASP <ul style="list-style-type: none"> ▪ Enter DAPT in Misc Info field of the eTag as CAISO Priority Type. ○ ETC/TOR that clear both RUC and HASP <ul style="list-style-type: none"> ▪ Enter CRN in in Misc Info field of the eTag as CAISO Contract. ▪ Enter ETC/TOR in Misc Info field of the eTag as CAISO Priority Type. ○ <u>TOR that clear both RUC and HASP</u> <ul style="list-style-type: none"> ▪ <u>Enter CRN in in Misc Info field of the eTag as CAISO Contract.</u> ▪ <u>Enter TOR in Misc Info field of the eTag as CAISO Priority Type.</u> <p>Notes</p> <ul style="list-style-type: none"> • In Track-1, System will not validate the submitted eTags. • Implementation <ul style="list-style-type: none"> ○ The eTag Misc Info field will have additional attribute for “CAISO Priority Type”. 	<p>Business Process</p> <p>BPM: Market Operations</p> <p>Tariff: §34.12.4</p>	<ul style="list-style-type: none"> • ITS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-03080 (Track-2) – Item2A	Exports e-Tagging Validation <ul style="list-style-type: none"> • If the Misc Info CAISO Priority Type e-Tag field is left blank for an export eTag and Misc Info CAISO Contract field exists, System shall deny that e-Tag. • Else If the Misc Info CAISO Priority Type e-Tag field is left blank for an export eTag (and Misc Info CAISO Contract field does not exist), System shall default it to lowest curtailment priority order (which is RTECON) and set Market Path Product to “G-FP”. • System shall have the capability to deny the G-FP e-tagging based on the following validation rule regarding CAISO Priority Types: <ul style="list-style-type: none"> ○ If DALPT (including rolled-over DAECOM), RTLPT, RTECON exports are not e-tagged as “G-FP”, it shall be denied. ○ If DAPT, RTPPT, ETC/TOR exports are e-tagged as “G-FP”, it shall be denied. ○ If the sum of eTag MW for an export resource ID and a specific CAISO priority type and CAISO Contract (if applicable) does not match the corresponding market data, those submitted eTags shall be adjusted to match corresponding market data, similar to existing eTag adjustment rules for resource IDs. If there are multiple eTags for same resource ID, CAISO priority type and CAISO Contract (as applicable), they shall be adjusted pro rata to their eTag MW values. Note: This process is similar to existing process adjusting the eTag per a resource ID. • These validations shall apply to newly created eTags as well as modifications to existing eTags. 	Core BPM: Market Operations Tariff: §34.12.4	<ul style="list-style-type: none"> • ITS
RSEE2-BRQ-03160 (Track-2) – Item2A	Operator-Driven Pro-Rata Curtailment of Low-Priority Exports System shall provide capability to automatically perform pro-rata curtailment of operator-identified MW to operator-identified/filtered exports, without overloading the scheduling limits resulted from eliminating the exports counter-flow on them due to the exports curtailments, in the following default order: <ul style="list-style-type: none"> • RTECON • RTLPT • DALPT (non-high-priority DA export) Notes <ul style="list-style-type: none"> • Refer to RSEE2-BRQ-03180 (Track-2) – Item2A. • Refer to Track-2 – Logic of Operator-Driven Export Curtailment without Violating Scheduling Limits in Appendix-B: Formulas, Calculation Details, and Examples. • Implementation 	Core BPM: WEIM, Market Operations Tariff: §34.12.4	<ul style="list-style-type: none"> • ITS

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	<ul style="list-style-type: none"> ○ The curtailment priority order shall be user configurable. 		
RSEE2-BRQ-03180 (Track-2) – Item2A	<p>Logic for Operator-Driven Pro-Rata Curtailment of Low Priority Exports without Violating Scheduling Limits</p> <p>System shall not violate the scheduling limits when performing the automatic pro-rata curtailment of operator-identified MW by following this logic:</p> <ul style="list-style-type: none"> • Start from the selected lowest priority. <ul style="list-style-type: none"> ○ Mark all exports that are associated with the selected priority as eligible for curtailment. ○ Start first iteration <ul style="list-style-type: none"> ▪ Ignore the scheduling limits and calculate the curtailment factor (CF_0) by equally allocating the operator-identified MW curtailment (C) to all exports of the selected priority. ▪ For each scheduling limit “m”, calculate the curtailment factor (CF_m) by equally allocating the operator-identified MW curtailment (C) to all exports of the selected priority without violating that scheduling limit “m”. ▪ Calculate effective CF of that iteration as the minimum (most restrictive) of CF_0 and all CF_m. ▪ Calculate the remaining Curtailment MW (C) after curtailing all eligible exports by the effective CF of that iteration. ▪ Calculate the adjusted scheduling limits for each scheduling limit “m” after all export curtailment using effective CF of that iteration. ▪ If a scheduling limit is binding, all export schedules associated with it shall be marked as ineligible for further curtailment in subsequent iterations and report them to the operators. ○ Continue to the subsequent iterations by using the remaining curtailment MW (C) and adjusted scheduling limits until either: <ul style="list-style-type: none"> ▪ No more remaining curtailment ($C = 0$). In this case, all operator-identified curtailment MW has been curtailed and the logic shall stop, or ▪ All scheduling limits are binding ($C \neq 0$). In this case, continue to the next selected priority starting from the remaining curtailment MW (C). 	Core BPM: WEIM, Market Operations Tariff: \$34.12.4	<ul style="list-style-type: none"> • ITS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	<ul style="list-style-type: none"> If all exports of the selected priorities are processed and all scheduling limits are binding and there are still remaining curtailment MW (C), System shall report that remaining MW to the operators. <p>Notes</p> <ul style="list-style-type: none"> Exports that are paired with imports in wheeling transactions identified by unique wheeling identifiers are exempt from the curtailment. Refer to Track-2 – Logic of Operator-Driven Export Curtailment without Violating Scheduling Limits in Appendix-B: Formulas, Calculation Details, and Examples. 		

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6.4 Business Process: Manage DAM

6.4.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-04010 (Track-2) – Item2A	<p>Roll Over DAECON into DALPT for DAM Resource-Specific Market Priority Types <u>for Export Resources</u></p> <p>System shall roll over DAECON into DALPT resource-specific market priority type for <u>allexport</u> resources.</p> <p>Notes</p> <ul style="list-style-type: none"> An export resource ID can be associated with more than one market priority types with a MW corresponding to each market priority type. 	Core BPM: Market Operations Tariff: §34.12.4	<ul style="list-style-type: none"> RUC

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6.5 Business Process: Manage RTM

6.5.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-05040 (Track-2) – Item2B	<p>Exempt Specific Resources from Capacity Test Failed-to-Start Rule/Functionality</p> <p>System shall exempt resources that have enabled MF Capacity Test Failed-to-Start Rule Exemption flag from Failed-to-Start Short-Start Units rule/functionality in the RSE Capacity Test.</p> <p>Notes:</p> <ul style="list-style-type: none"> This shall apply to all BAAs (CISO and WEIM BAAs) 	<p>Core</p> <p>BPM: WEIM</p> <p>Tariff: §29.34 (l)</p>	<ul style="list-style-type: none"> RTBS
RSEE2-BRQ-05060 (Track-1) – Item1A	<p>Count Hourly RTLPT Exports and RTECON Exports in RSE Capacity Up/Down Test and Flex Ramp Up/Down Test for CAISO BAA Only</p> <p>Hourly RTLPT and RTECON exports for the CAISO BAA shall be counted as capacity up/down and flex ramp up/down similar to 15-min RTLPT exports and 15-min RTECON Exports</p> <p>Notes:</p> <ul style="list-style-type: none"> Treat Hourly RTLPT and RTECON as 15-min dispatchable resources. No change on existing calculation requirements for RSE Capacity Test. 15-min RTECON exports are already counted as capacity up/down and flex ramp up/down. 15-min RTLPT exports are already counted as capacity up/down and flex ramp up/down. 	<p>Core</p> <p>BPM: WEIM</p> <p>Tariff: §29.34 (l), §29.34 (m)</p>	<ul style="list-style-type: none"> RTBS
RSEE2-BRQ-05110 (Track-3) – Item3A	<p>Display DR LF Adjustments in BAAOP</p> <ul style="list-style-type: none"> System shall rename existing DR LF Adjustment to Operator DR LF Adjustment. System shall display the following DR LF Adjustments, side by side along with the LF on LF zone level: <ul style="list-style-type: none"> ALFS-DF-Submitted DR LF Adjustment STF-DF-Excluded DR LF Adjustment Operator DR LF Adjustment 	<p>Core</p> <p>BPM: WEIM</p> <p>Tariff: §29.34 (l)</p>	<ul style="list-style-type: none"> BAAOP

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	<ul style="list-style-type: none"> System shall display the DR LF Adjustments by LF Zones (currently it is by BAA). The manual entry via BAAOP UI shall be disabled on a sunset date, after all participants transition to ALFS-SOA API submission. <p>Notes</p> <ul style="list-style-type: none"> This applies only to WEIM Entities but not CISO BAA. Refer to examples in Appendix-B: Formulas, Calculation Details, and Examples 		
RSEE2-BRQ-05120 (Track-3) – Item3A	<p>Accounting for DR LF Adjustments in RSE</p> <ul style="list-style-type: none"> System shall have the capability to automatically account the received STF-DF-Excluded DR LF Adjustment (on LF zone level) as well as the Operator DR LF Adjustment (BAAOP-Submitted) in the load forecast that is used in RSE Tests (Balancing Test, Feasibility Test, Capacity Test, and Flexible Ramping Test) for the applicable WEIM BAAs that are associated with these LF zone, through either an increase or decrease in those requirements. System shall apply the hourly STF-DF-Excluded as well as Operator DR LF Adjustment (BAAOP-Submitted) for each of the corresponding four 15-min intervals for Capacity Test and Flexible Ramping Test. System shall use the most updated STF-DF-Excluded as well as Operator DR LF Adjustment (BAAOP-Submitted) present for the run at T-75', T-55', and T-40'. <p>Notes</p> <ul style="list-style-type: none"> This applies only to WEIM Entities but not CISO BAA. 	Core BPM: WEIM Tariff: §29.34 (l)	<ul style="list-style-type: none"> RTBS
RSEE2-BRQ-05240 (Track-1) – Item1B	<p>Opted-Out Assistance Energy Transfer</p> <p>If Assistance Energy Transfer Flag is Opt-Out for a WEIM BAA (including CISO BAA), and that BAA fails the RSE test (either fails capacity upward test and/or fails flexible ramping upward test), existing rules shall still apply.</p>	Core BPM: WEIM Tariff: §29.34 (n)	<ul style="list-style-type: none"> RTM
RSEE2-BRQ-05260 (Track-1) – Item1B	<p>Opted-In Assistance Energy Transfer</p> <p>If Assistance Energy Transfer Flag is Opt-In for a WEIM BAA (including CISO BAA), and that BAA fails the RSE test (either</p>	Core	<ul style="list-style-type: none"> RTM

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	fails capacity upward test and/or fails flexible ramping upward test), System shall apply the following rules: <ul style="list-style-type: none"> Allow that BAA to receive WEIM assistance energy transfer by not enforcing the BAA Import transfer limit in the base scenario. 	BPM: WEIM Tariff: \$29.34 (n)	
RSEE2-BRQ-05480 (Track-2) – Item2A	Roll Over DAEMON into DALPT for All Resource-Specific Market Priority Types <u>for Export Resources</u> System shall roll over DAEMON into DALPT resource-specific market priority type for <u>all export</u> resources. Notes <ul style="list-style-type: none"> An export resource ID can be associated with more than one market priority types with a MW corresponding to each market priority type. 	Core BPM: Market Operations Tariff: \$34.12.4	<ul style="list-style-type: none"> RTM


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6.6 Business Process: Manage Market Billing and Settlements

6.6.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-07040 (Track-1) – item1B	<p>Calculate RT Assistance Energy Transfer Ex-Post Surcharge for Insufficient WEIM BAAs</p> <ul style="list-style-type: none"> • System shall apply AET surcharge (equal to RTM Bid Cap) to applicable real-time assistance energy transfer for each insufficient WEIM BAA. • For BAAs that opted in for AET, the applicable real-time assistance energy transfer shall be calculated as: <ul style="list-style-type: none"> ○ If Tagged Dynamic WEIM Transfer is less than the RSE Failure Capacity, then it is equal to: <ul style="list-style-type: none"> ▪ Positive difference between Tagged Dynamic WEIM Transfer and the Applicable Credit ○ Else (i.e. If Tagged Dynamic WEIM Transfer is greater than or equal the RSE Failure Capacity), it is equal to: <ul style="list-style-type: none"> ▪ RSE Failure Capacity. ○ Where RSE Failure Capacity is the Higher of the quantity of failure capacity of <ul style="list-style-type: none"> ▪ WEIM RSE Upward Capacity Test ▪ WEIM RSE Upward Flexible Ramp Test ○ The Applicable Credit is <ul style="list-style-type: none"> ▪ ABC Up Credit (i.e. dedicated to Regulation-Up) for WEIM BAAs (excluding CISO), or ▪ Summation of RT Cleared Regulation-Up, adjusted for non-compliance quantities, over all resources for CISO BAA-Only. • For BAAs that opted out for AET, the applicable real-time assistance energy transfer shall be set to zero. 	Core BPM: Settlements and Billing Tariff: §29.11 (t)	<ul style="list-style-type: none"> • Settlements
RSEE2-BRQ-07080 (Track-1) – item1B	<p>Allocate Collected RT Assistance Energy Transfer Ex-Post Surcharge Revenue from Insufficient WEIM BAAs to all other WEIM BAAs that Pass Upward RSE Tests Pro Rata to their Net Exports</p> <ul style="list-style-type: none"> • System shall allocate the sum of real-time assistance energy transfer ex-post surcharge revenue that are collected from all insufficient WEIM BAAs to all other (i.e. sufficient) WEIM BAAs (including CISO BAA) that have passed both upward RSE 	Core BPM: Settlements and Billing	<ul style="list-style-type: none"> • Settlements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	<p>Capacity Test and Flexible Ramping Test, pro rata to their net exports beyond base transfer and/or DA transfer.</p> <ul style="list-style-type: none"> System shall allocate WEIM BAAs (excluding CISO BAA) assistance energy transfer ex-post surcharge revenue to their associated WEIM Entities. 	Tariff: §29.11 (t)	
RSEE2-BRQ-07090 (Track-1) – item1B	<p>BAA Sub-Allocation of Charged Assistance Energy Transfer Ex-Post Surcharge Cost to Measured Demand</p> <p>System shall sub-allocate the charged assistance energy transfer ex-post surcharge cost for CISO BAA to SCs, pro rata to their Measured Demand in relationship to ISO BAA Measured Demand.</p> <p>Notes</p> <ul style="list-style-type: none"> WEIM Entities sub allocation of the charged assistance energy transfer ex-post surcharge cost will be performed per their defined OATT of these WEIM Entities (outside CAISO's Settlements system). 	Core BPM: Settlements and Billing Tariff: §29.11 (t)	<ul style="list-style-type: none"> Settlements
RSEE2-BRQ-07100 (Track-1)	<p>BAA Sub-Allocation of Received Assistance Energy Transfer Ex-Post Surcharge Revenue to SCs Providing Incremental RT Imbalance Energy</p> <p>System shall sub-allocate the received assistance energy transfer ex-post surcharge revenue by CISO BAA to SCs that are providing incremental net RT imbalance energy (FMM IIE, RTD IIE and/or UIE), excluding non-participating loads.</p> <p>Notes</p> <ul style="list-style-type: none"> WEIM Entities sub allocation of the received assistance energy transfer ex-post surcharge revenue will be performed per their defined OATT of these WEIM Entities (outside CAISO's Settlements system). 	Core BPM: Settlements and Billing Tariff: §29.11 (t)	<ul style="list-style-type: none"> Settlements

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6.7 Business Process: Manage Market Reporting

6.7.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-08040 (Track-2) – item2A	<p>Publish Resource-Specific Market Priority Types and their Associated MW Data System shall have the capability to automatically publish the following:</p> <ul style="list-style-type: none"> • All Resource-specific market priority types and their associated MW data <u>for export resources</u>, including but not limited to: <ul style="list-style-type: none"> ○ <u>ETC/TOR</u> (including CRN ID and Type) ○ <u>TOR (including CRN ID and Type)</u> ○ DAPT ○ DALPT (this includes rolled-over DAECON) ○ RTPT ○ RTLPT ○ RTECON (RT economic exports that clear HASP) <p>Notes</p> <ul style="list-style-type: none"> • An export resource ID can be associated with more than one market priority types with a MW corresponding to each market priority type. 	Core BPM: Market Instruments Tariff: §34.12.4	<ul style="list-style-type: none"> • ADS
RSEE2-BRQ-08280 (Track-1) item1B	<p>Publish RTM Bid Cap Upon data receipt, System shall publish the following:</p> <ul style="list-style-type: none"> • RTM Bid Cap (e.g. \$1,000/MWh or \$2,000/MWh) 	Core BPM: Market Instruments Tariff: §29.34 (n)	<ul style="list-style-type: none"> • OASIS
RSEE2-BRQ-08300 (Track-1) – item1B	<p>Publish Updated Original & Corrected WEIM RSE Test Results Upon data receipt, System shall be updated to publish the following original and corrected data:</p> <ul style="list-style-type: none"> • WEIM RSE Capacity Test (15-min granularity on BAA level for Upward/Downward directions) <ul style="list-style-type: none"> ○ Failure Capacity <ul style="list-style-type: none"> ▪ Insufficiency Amount ▪ Insufficiency % ○ Requirement Amount • WEIM RSE Flexible Ramp Test (15-min granularity on BAA level for Upward/Downward directions) <ul style="list-style-type: none"> ○ Failure Capacity. 	Core BPM: Market Instruments Tariff: §29.34 (n)	<ul style="list-style-type: none"> • OASIS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	<ul style="list-style-type: none"> ▪ Insufficiency Amount ▪ Insufficiency % <p>Notes</p> <ul style="list-style-type: none"> • These data are the ones that are moved from the 2 retired CMRI reports (refer to RSEE2-BRQ-08500 (Track-1) – Item1B). 		
RSEE2-BRQ-08320 (Track-1) – item1B	<p>Publish Corrected WEIM RSE Test Results (Similar to Existing Original Data) Upon data receipt, System shall be updated to publish the following corrected data set (similar to existing original data set):</p> <ul style="list-style-type: none"> • WEIM RSE Capacity Test (15-min granularity on BAA level for Upward/Downward directions) <ul style="list-style-type: none"> ○ Test Status ○ Bid Range Capacity ○ BAA Load Forecast ○ Generation Base Schedule ○ Import Base Schedule ○ Export Base Schedule ○ Net Schedule Interchange ○ Intertie Uncertainty ○ Net-Load Uncertainty • WEIM RSE Flexible Ramp Test (15-min granularity on BAA level for Upward/Downward directions) <ul style="list-style-type: none"> ○ Requirement Amount ○ Test Status ○ Ramping Capacity ○ Change in Load Forecast ○ Net Import Capability ○ Net Export Capability ○ Net-Load Uncertainty ○ Credit ○ Diversity Benefit 	Core BPM: Market Instruments Tariff: §29.34 (n)	<ul style="list-style-type: none"> • OASIS
RSEE2-BRQ-08500 (Track-1) – item1B	<p>Retire Publishing RSE Bid Range Capacity Test Results & Flexible Ramp Requirement Sufficiency Test Results CMRI Reports Upon go-live, System shall retire publishing new data in the following CMRI reports:</p> <ul style="list-style-type: none"> • EIM -> Bid Range Capacity Test Results • EIM -> Flexible Ramp Requirement Sufficiency Test Results <p>Notes</p> <ul style="list-style-type: none"> • The reports shall still be available for all historical pre-Go-Live data. 	Core BPM: Market Instruments Tariff: §29.34 (n)	<ul style="list-style-type: none"> • CMRI



ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
<p>RSEE2-BRQ-08560 (Track-2) – item2A</p>	<ul style="list-style-type: none"> These data are moved to OASIS reports (refer to RSEE2-BRQ-08300 (Track-1) – Item1B) <p>Publish Resource-Specific Market Priority Types and their Associated MW Data that Clear RUC for Export Resources Upon data receipt, System shall have the capability to automatically publish the following:</p> <ul style="list-style-type: none"> All Resource-specific market priority types and their associated MW data for export resources, including but not limited to: <ul style="list-style-type: none"> o ETC/TOR (including CRN ID and Type) o <u>TOR (including CRN ID and Type)</u> o DAPT o DALPT (this includes rolled-over DAECON) <p>Notes</p> <ul style="list-style-type: none"> An export resource ID can be associated with more than one market priority types with a MW corresponding to each market priority type. No corrections are needed for this report as it is merely to support operations and does not used by Settlements. The report will publish CRN ID and CRN Type (ETC, TOR). Refer to Appendix-D: Reports for data samples of this new report. 	<p>Core</p> <p>BPM: Market Instruments</p> <p>Tariff: §34.12.4</p>	<ul style="list-style-type: none"> CMRI
<p>RSEE2-BRQ-08580 (Track-2) – item2A</p>	<p>Publish Resource-Specific Market Priority Types and their Associated MW Data that Clear both RUC and HASP for Export Resources Upon data receipt, System shall have the capability to automatically publish the following:</p> <ul style="list-style-type: none"> All Resource-specific market priority types and their associated MW data for binding 15-min intervals for export resources, including but not limited to: <ul style="list-style-type: none"> o ETC/TOR (including CRN ID and Type) o <u>TOR (including CRN ID and Type)</u> o DAPT o DALPT (this includes rolled-over DAECON) o RTPT o RTLPT o RTECON (RT economic exports that clear HASP) <p>Notes</p>	<p>Core</p> <p>BPM: Market Instruments</p> <p>Tariff: §34.12.4</p>	<ul style="list-style-type: none"> CMRI

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	<ul style="list-style-type: none"> • An export resource ID can be associated with more than one market priority types with a MW corresponding to each market priority type. • No corrections are needed for this report as it is merely to support operations and does not used by Settlements. • The report will publish CRN ID and CRN Type (ETC, TOR). • Refer to Appendix-D: Reports for data samples of this new report. 		

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6.8 Business Process: Manage FERC Reporting

6.8.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
RSEE2-BRQ-09080 (Track-2) – item2B	Publish to FERC System shall have the capability to automatically publish the following data to FERC: <ul style="list-style-type: none"> • Resource-Specific Capacity Test Failed-to-Start Rule Exemption flag. 	Core BPM: N/A Tariff: §N/A	<ul style="list-style-type: none"> • FODD
RSEE2-BRQ-09120 (Track-3) – item3A	Publish to FERC System shall the capability to automatically consume/access, store and publish the following data to FERC: <ul style="list-style-type: none"> • ALFS-DF-Submitted DR LF Adjustments • STF-DF-Excluded DR LF Adjustments • Operator DR LF Adjustments (BAAOP-Submitted) (rename existing DR LF Adjustments) 	Core BPM: N/A Tariff: §N/A	<ul style="list-style-type: none"> • FODD

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6.9 Business Process: <Market/Business Simulation>

This section shall provide a basis for the development of the Market/Business Simulation Scenarios. These requirements will provide guidance on the market participant impacts, inputs into the Scenarios, endpoints to the Scenarios and reasons for potential Scenarios. The guidance on market participant impacts shall be gathered from the requirements that impact rules, interfaces, applications/reports, new system processes, new/modified data models, and new user roles. The source and sink systems shall be determined through the development of the system context diagram and the web service requirements. The *Reason for the Potential Scenario* column will be to offer guidance regarding what potential scenarios, and their context, may be needed for this project. This section applies to all policy development projects, market enhancements, technology enhancements, operation enhancements, Western Energy Imbalance Market (WEIM) implementations, and Reliability Coordination (RC) service implementations.

In the Reason for Potential Scenario column, select one or more of the following reasons:

1. **Rule Impacts:** Generalized changes in market rules, bidding rules, settlements rules, market design changes, or other business rules.
2. **Interface changes:** Changes that impact templates (e.g., the Resource Adequacy (RA) supply plan), user interface (UI), and application programming interface (API) (e.g., retrievals of new shadow settlement data).
3. **New application/report:** Changes that cause addition/modification of market software or reports, especially when market data input is required by the market participant.
4. **New system process:** Modification of data flow in systems, especially if the new process requires the market participant to demonstrate proficiency prior to production.
5. **New/Modified model data:** Addition or substantial modification of model data as a market solution or export provided by the ISO.
6. **New user role:** The addition or modification of access permissions for a user role applied to specific business units within a WEIM entity or market participant organization (e.g., Load Serving Entity (LSE) as a Local Regulatory Authority (LRA) role). Scenarios are beneficial for market participants taking on a new function or process within their organization.

6.9.1 Business Requirements

ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
RSEE2-MSIM-10020	Assistance Energy Transfer Opt-In Functionality <ul style="list-style-type: none"> • Set up a scenario where CISO BAA and/or some WEIM BAAs who opted 	<ul style="list-style-type: none"> • MF • BSAP • SIBR 	<ul style="list-style-type: none"> • OASIS • Settlements 	1. Rule Impact



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ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
(Track-1) – Item1B	<p>in for the Assistance Energy Transfer functionality fail Upward Capacity Test and/or Flexible Ramping Upward Test and resulted in net import beyond their base schedules of these BAAs.</p> <ul style="list-style-type: none"> • Run market (RTBS and RTM). • Run Settlements • Follow the results in OASIS to verify the RSE failure capacities and RTM bid cap. • Follow the results in Settlements to verify the charges and revenue allocation for the assistance energy transfer. 			5. New/Modified model data
RSEE2-MSIM-10030 (Track-1) – Item1C	<p>Submission of G-FP Export e-Tagging</p> <ul style="list-style-type: none"> • Set up a scenario to allow SCs of export resources to e-tag several of them as “Firm Provisional Energy (G-FP)” via utilizing existing Market Path Product and Misc Info fields. • Follow the results in the sink systems to verify the e-tags G-FP identification. • SCs follow the results in their own Web Smart Tag system to verify the e-tags G-FP identification. • CAISO Operators follow the results in ITS to verify the e-tags G-FP identification. 	<ul style="list-style-type: none"> • SIBR • ITS 	<ul style="list-style-type: none"> • SC’s own “Web Smart” Tag system. • ITS 	1. Rule Impact 5. New/Modified model data
RSEE2-MSIM-10040 (Track-2) – Item2A	<p>Submission & Auto Approval of G-FP Export e-Tagging</p> <ul style="list-style-type: none"> • Set up a scenario to allow SCs of export resources to e-tag several of them as “Firm Provisional Energy (G-FP)”. 	<ul style="list-style-type: none"> • SIBR • ITS 	<ul style="list-style-type: none"> • SC’s own “Web Smart” Tag system. • ITS 	1. Rule Impact 5. New/Modified model data




ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
	<ul style="list-style-type: none"> Follow the results in the sink systems to verify that these e-tags are auto approved. SCs follow the results in their own Web Smart Tag system to verify the e-tags. CAISO Operators follow the results in ITS to verify the e-tags. 			
RSEE2-MSIM-10060 (Track-2) – Item2A	Approval of G-FP Export e-Tagging <ul style="list-style-type: none"> Set up a scenario to allow SCs of export resources to e-tag several of them correctly as “Firm Provisional Energy (G-FP)” (via Market Path Product field) and fill their “CAISO Priority Type” attribute of Misc Info field as RTECON, RTLPT, and/or (DALPT [this includes rolled-over DAECON]). Follow the results in the sink systems to verify that these e-tags are approved. SCs follow the results in their own Web Smart Tag system to verify the e-tags. CAISO Operators follow the results in ITS to verify the e-tags. 	<ul style="list-style-type: none"> SIBR ITS 	<ul style="list-style-type: none"> SC’s own “Web Smart” Tag system. ITS 	1. Rule Impact 5. New/Modified model data
RSEE2-MSIM-10080 (Track-2) – Item2A	Denial of G-F Export e-Tagging <ul style="list-style-type: none"> Set up a scenario to allow SCs of export resources to e-tag several of them incorrectly as “Firm Energy (G-F)” (via Market Path Product field) and fill their “CAISO Priority Type” attribute of Misc Info field as RTECON, RTLPT, and/or (DALPT [this includes rolled-over DAECON]). Follow the results in the sink systems to verify that these e-tags are denied. 	<ul style="list-style-type: none"> SIBR ITS 	<ul style="list-style-type: none"> SC’s own “Web Smart” Tag system. ITS 	1. Rule Impact 5. New/Modified model data



ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
	<ul style="list-style-type: none"> SCs follow the results in their own Web Smart Tag system to verify the e-tags. CAISO Operators follow the results in ITS to verify the e-tags. 			
RSEE2-MSIM-10100 (Track-2) – Item2A	<p>Operator-Driven Pro-Rata Curtailment of Low-Priority Exports</p> <ul style="list-style-type: none"> Set up a scenario where CAISO initiates EEA3 alert level. CAISO operators initiates pro-rata curtailment of low-priority exports of the approved export G-FP eTags (via Market Path Product field) with the following Misc Info field CAISO Priority Types: <ul style="list-style-type: none"> RTECON RTLPT DALPT (non-high-priority DA export) SCs follow the results in their own Web Smart Tag system to verify the curtailed e-tags. CAISO Operators follow the results in ITS to verify the curtailed e-tags. 	<ul style="list-style-type: none"> SIBR RTM ITS 	<ul style="list-style-type: none"> SC's own "Web Smart" Tag system. ITS 	1. Rule Impact 5. New/Modified model data
RSEE2-MSIM-10140 (Track-3) – Item3A	<p>DR LF Adjustment Submission via ALFS-SOA API</p> <ul style="list-style-type: none"> Set up a scenario where WEIM Entity participants signed required attestation and submit DR LF Adjustments via ALFS-SOA API (that reflect Non-Participating DR Schedules), on LF zone level, to CAISO. WEIM Entity participants submit Operator DR LF Adjustments via BAAOP UI (that reflect Non- 	<ul style="list-style-type: none"> ALFS-SOA BAAOP 	<ul style="list-style-type: none"> BAAOP CMRI OASIS 	1. Rule Impact 5. New/Modified model data

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ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
	Participating DR Schedules), on LF zone level, to CAISO. <ul style="list-style-type: none"> • Run market (RTM and RTBS). • Follow the results in the sink systems. 			

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7 Appendices

7.1 Appendix-A – Acronym Definition


Acronym	Definition
A2A	Application-to-Application
ABC	Available Balancing Capacity
ACL	Access Control List
ADS	Automatic Dispatch System
AET	Assistance Energy Transfer
AGC	Automatic Generation Control
AIM	Access and Identity Management
ALFS	Automated Load Forecast System
Anode	Aggregate Node
API	Application Program Interface
Apnode	Aggregate Pricing Node
AS	Ancillary Services
AUX	Auxiliary
B2B	Business-to-Business
BA	Business Analyst
BAA	Balancing Authority Area
BAAOP	Balancing Authority Area Operations Portal
BCR	Bid Cost Recovery
BPM	Business Process Manual
BRS	Business Requirement Specifications

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Acronym	Definition
BSAP	Base Schedule Aggregation Portal
BSC	Base Schedule Coordinator
BSSD	(WEIM) Base Schedule Submission Deadline
CAISO	California Independent System Operator
CB	Convergence Bidding
CC	Commitment Cost
CCDEBE	Commitment Costs and Default Energy Bid Enhancements
CDN	Conformed Dispatch Notice
CIM	Common Information Model
CIP	Critical Infrastructure Protection
CIRA	Customer Interface for Resource Adequacy
CISO	California Independent System Operator
CLAP	Custom Load Aggregation Point
CMRI	Customer Market Results Interface
Cnode	Connectivity Node
COG	Constrained-Output Generator
CPM	Capacity Procurement Mechanism
CRN	Contract Reference Number
CRR	Congestion Revenue Rights
CRRS	Congestion Revenue Rights Settlements (aka CRR Clawback system)
CSS	Critical Systems Support

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Acronym	Definition
DA	Day-Ahead
DACA	Day-Ahead Contingency Analysis
DAECON	Day-Ahead Economic
DALPT	Day-Ahead Low Price Taker (low priority)
DAM	Day-Ahead Market
DAPT	Day-Ahead Price Taker (high priority)
DART	Day-Ahead Reliability Tool
DCPA	Dynamic Competitive Path Assessment
DCC	Default Commitment Cost
DEB	Default Energy Bid
DER	Distributed Energy Resource
DF	Demand Forecast
DGAP	Default Generation Aggregation Point
DMLC	Default Minimum Load Cost
DMM	Department of Market Monitoring
DOP	Dispatch Operating Point
DOT	Dispatch Operating Target
DR	Demand Response
DRP	Demand Response Program
DSA	Dynamic Stability Analysis
DSTC	Default State Transition Cost

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Acronym	Definition
DSUC	Default Start Up Cost
ECIC	Energy Costs and Index Calculator
ECON	Economic
ED	Exceptional Dispatch
EDAM	Extended Day-Ahead Market
EDR	Enterprise Data Repository
EE	Expected Energy
EEA	Expected Energy Allocation
EESC	Energy Imbalance Market Entity Scheduling Coordinator
EFC	Effective Flexible Capacity
EMM	Enterprise Model Management
EMMS	Enterprise Model Management System
EMNA	Energy Management Network Application
EMS	Energy Management System
EPI	Electricity Price Index
ESP	Electronic Security Perimeter
ETC	Existing Transmission Contract
ETSR	Energy Transfer System Resources
FDR	Forecast Data Repository
FERC	Federal Energy Regulatory Commission
FMCA	Fifteen-Minute Contingency Analysis

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Acronym	Definition
FMM	Fifteen-Minute Market
FMU	Frequently Mitigated Unit
FNM	Full Network Model
FODD	FERC Outgoing Data Depository
FRCT	Forbidden Region Crossing Time
FRD	Flexible Ramp Down
FRU	Flexible Ramp Up
GDF	Generation Distribution Factor
GHG	Green House Gas
GIP	Generator Interconnection Procedure
GMC	Grid Management Charge
GPI	Gas Price Index
GRDT	Generator Resource Data Template
GUI	Graphical User Interface
HASP	Hour-Ahead Scheduling Process
HAVGC	Heat Average Cost (for non-gas resources)
HR	Heat Rate
ICE	InterContinental Exchange
ICM	Infrastructure Contracts and Management
ID	Identifier
IFM	Integrated Forward Market

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Acronym	Definition
ISL	Intertie Scheduling Limit
ISO	California Independent System Operator
IOOC	Integrated Optimal Outage Coordination
IT	Information Technology
ITC	Inter-Tie Constraint
ITPD	Information Technology Product Development
ITS	Interchange Transaction Scheduler
ITSM	Information Technology Service Management
JOU	Joint Owned Unit
LACA	Look-Ahead Contingency Analysis
LAP	Load Aggregation Point
LDF	Load Distribution Factor
LEL	Lower Economic Limit
LFR	Lower Forbidden Region
LF	Load Forecast
LFZ	Load Forecast Zone
LMP	Locational Marginal Price
LMPM	Locational Market Power Mitigation
LOL	Lower Operating Limit
LPT	Low Price Taker (low priority)
LRA	<i>Local Regulatory Authority</i>




Acronym	Definition
LRL	Lower Regulation Limit
LSE	Load Serving Entity
LTCA	Long-Term Contingency Analysis
MCI	Model and Contract Implementation
MD	Manual Dispatch
MDT	Minimum Down Time
MDS	Maximum Daily Startups
MF	Master File
MLAC	Minimum Load Average Cost
MLC	Minimum Load Cost
MLHAVGC	Minimum Load Heat Average Cost (for non-gas resources)
MLHR	Minimum Load Heat Rate
MMA	Major Maintenance Adder
MMAMLC	Major Maintenance Adder for Minimum Load Cost
MMASUC	Major Maintenance Adder for Start Up Cost
MMASTC	Major Maintenance Adder for MSG State Transition Cost
MMG	Manage Markets & Grid
MMR	Manage Market & Reliability
MOS	Manage Operations Support & Settlements
MPM	market Power Mitigation
MQS	Market Quality System

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Acronym	Definition
MRID	Master Resource Identifier
MRI-S	Market Results Interface – Settlements
MSSA	Metered Sub System Agreement
MSG	Multi-Stage Generator
MUT	Minimum Up Time
MV&A	Market Validation & Analysis
MVT	Market Validation Tool
N/A	Not Applicable
NA	Network Application
NDEB	Negotiated Default Energy Bid
NGR	Non-Generating Resource
NM	Network Model
NQC	Net Qualifying Capacity
NSI	Net Scheduled Interchange
OASIS	Open Access Same-time information System
OATI	Open Access Technology International
OATT	Open Access Transmission Tariff
OC	Opportunity Cost
OCC	Opportunity Cost Calculator
ODCP	On Demand Capacity Procurement
OES	Operations Engineering Services

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Acronym	Definition
OMS	Outage Management System
OOM	Out Of Market
OTS	Operations Training Simulator
PAM	Program and Application Management
PBC	Power Balance Constraint
PC	Pre-Calculation
PCA	Price Correction Admin
PCT	Price Correction Tools
PDR	Proxy Demand Resource
PI	Plant Information
PL	Participating Load
Pmax	Maximum Generation Capacity
Pmin	Minimum Generation Capacity
PMO	Program Management Office
PNM	Public New Mexico
Pnode	Pricing Node
POC	Point Of Contact
PRSC	Participating Resource Scheduling Coordinator
PSH	Pump Storage Hydro
PSTD	Power Systems Technology Development
PSTO	Power Systems Technology Operations

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Acronym	Definition
PT	Price Taker (high priority)
PTO	Participating Transmission Owner
QRB	Quality Review Board
RA	Resource Adequacy
RC	Reliability Coordinator
RC-BSAP	Reliability Coordinator - Base Schedule Aggregation Portal
RCD	Reliability Capacity Down
RCSA	Reliability Coordinator Service Agreement
RCU	Reliability Capacity Up
RDOT	Ramping Dispatch Operating Target (a continuous piecewise linear curve connecting consecutive <i>DOTs</i> using their mid-interval points, from RTD, RTCD, or RTDD runs, as applicable)
RDRR	Reliability Demand Response Resource
RDT	Resource Data Template
RIG	Remote Intelligent Gateway
RIMS	Resource Interconnection Management System
RMR	Reliability Must Run
ROPR	Operating Reserve Ramp Rate
RR	Ramp Rate
RREG	Regulation Ramp Rate
RSE	Resource Sufficiency Evaluation
RSEE	Resource Sufficiency Evaluation Enhancements

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Acronym	Definition
RT	Real-Time
RTBS	Real-Time Base Scheduler
RTCA	Real-Time Contingency Analysis
RTCD	Real-Time Contingency Dispatch
RTD	Real-Time Dispatch
RTDD	Real-Time Disturbance Dispatch
RTECON	Real-Time Economic
RTLPT	Real-Time Low Price Taker (low priority)
RTPD	Real-Time Pre-Dispatch
RTPT	Real-Time Price Taker (high priority)
RTM	Real-Time Market
RTUC	Real-Time Unit Commitment
RUC	Residual Unit Commitment
SADS	System And Design Specifications
SC	Scheduling Coordinator
SCME	Scheduling Coordinator Meter Entity
SE	State Estimator
SIBR	Scheduling Infrastructure and Business Rules
SME	Subject Matter Expert
SOA	Service-Oriented Architecture
SQMD	Settlements Quality Meter Data

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Acronym	Definition
SRS	System Requirement Specifications
STC	State Transition Cost
STF	Short-Term Forecast
STC	State Transition Cost
STT	State Transition Time
STUC	Short-Term Unit Commitment
SUC	Start Up Cost
SUE	Start Up Energy
SUF	Start Up Fuel
SURT	Start Up Ramp Time
SUT	Start Up Time
T	Trading Hour
TBD	To Be Determined
TEP	Tucson Electric Power
TG	Tie Generator
TNA	Transmission Network Application
TOP	Transmission Operator Provider
TOR	Transmission Ownership Contract
TEE	Total Expected Energy
TTEE	Total Target Expected Energy (based on RDOT)
UAT	User Acceptance Testing

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Acronym	Definition
UEL	Upper Economic Limit
UFR	Upper Forbidden Region
UI	User Interface
UIE	Uninstructed Energy Imbalance
UL	User Limited
UOL	Upper Operating Limit
URL	Upper Regulation Limit
VER	Variable Energy Resource
VOM	Variable Operations & Maintenance
VOMC	Variable Operations & Maintenance Cost
WebOMS	Web-based Outage Management System
WEIM	Western Energy Imbalance Market
XML	Extensible Markup Language
XSD	XML Schema Definition
ZIL	Zero Impedance Line

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7.2 Appendix-B: Formulas, Calculation Details, and Examples

7.2.1 Track-3 – DR LF Adjustments Example

References

- RSEE2-BRQ02160 (Track-3) – Item3A
- RSEE2-BRQ-05110 (Track-3) – Item3A

For BAAx BAA that has 2 LF zones (LFZ1 and LFZ2)

ALFS-DF-Submitted LF (via ALFS)

LFZ1	1,000 MW
LFZ2	2,000 MW
BAAx	3,000 MW (calculated)

ALFS-DF-Submitted DR LF Adjustments (via ALFS-SOA API)

LFZ1	-100 MW
LFZ2	-200 MW
BAAx	-300 MW (calculated)

STF Approval of ALFS-DF-Submitted DR LF Adjustments


LFZ1	40% (-40 MW)
LFZ2	60% (-120 MW)
BAAx	-160 MW (calculated)

ALFS LF – Broadcast to RSE, RTM

LFZ1	$1,000 - 40 = 960$ MW
LFZ2	$2,000 - 120 = 1,880$ MW
BAAx	2,840 MW

ALFS DR LF Adjustments – Broadcast to RSE

LFZ1		
	ALFS-DF-Submitted DR LF Adjustments	-100 MW
	STF-DF-Excluded DR LF Adjustments	-60 MW
LFZ2		

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ALFS-DF-Submitted DR LF Adjustments –200 MW

STF-DF-Excluded DR LF Adjustments –80 MW

BAAx

ALFS-DF-Submitted DR LF Adjustments –300 MW

STF-DF-Excluded DR LF Adjustments –140 MW

BAAOP –for RSE-Use Only

LFZ1

LF 960 MW (read-only)

ALFS-DF-Submitted DR LF Adjustments –100 MW (read-only)

STF-DF-Excluded DR LF Adjustments –60 MW (read-only)

Operator DR LF Adjustments (BAAOP-Submitted) –20 MW (manual entry)

Adjusted LF = 960 - 60 - 20 = 880 MW (calculated)

LFZ2

LF 1,880 MW (read-only)

ALFS-DF-Submitted DR LF Adjustments –200 MW (read-only)

STF-DF-Excluded DR LF Adjustments –80 MW (read-only)

Operator DR LF Adjustments (BAAOP-Submitted) –40 MW (manual entry)

Adjusted LF = 1,880 - 80 - 40 = 1,760 MW (calculated)

BAAx

LF 2,840 MW (calculated)

ALFS-DF-Submitted DR LF Adjustments –300 MW (calculated)

STF-DF-Excluded DR LF Adjustments –140 MW (calculated)

Operator DR LF Adjustments (BAAOP-Submitted) –60 MW (calculated)

Adjusted LF = 2,840 - 140 - 60 = 2,640 MW (calculated)


RTM

LFZ1 960 MW


LFZ2 1,880 MW

BAAx 2,840 MW

Notes:

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- Operator DR LF Adjustments (BAAOP-Submitted) will have sunset date after that it will be a read-only for All (via UI patch).

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7.2.2 Track-2 – Logic of Operator-Driven Export Curtailment without Violating Scheduling Limits

References

- RSEE2-BRQ-03160 (Track-2) – Item2A
- RSEE2-BRQ-03180 (Track-2) – Item2A


7.2.2.1 Introduction

This technical paper describes a methodology for performing pro rata curtailment of low scheduling priority exports without violating scheduling limits. Exports that are paired with imports in wheeling transactions identified by unique wheeling identifiers are exempt from the curtailment. The exports that are subject to the pro rata curtailment have cleared in the IFM either economically with energy bids or as low priority price-takers with LPT self-schedules, and they have a lower scheduling priority than load in real time. The exports are scheduled at Scheduling Points where scheduling limits are enforced in both import and export directions. Since exports provide counter flow for imports, the objective is to allocate a given export quota curtailment to the exports at the Scheduling Points without violating the scheduling limits in the import direction. This is a complex problem because the scheduling limits apply to intertie schedules in multiple Scheduling Points and through several hierarchical tiers. At the first (inner) tier, the intertie schedules at a Scheduling Point are constrained by the scheduling limit that applies to that Scheduling Point. At the second tier, the intertie schedules at this and other Scheduling Points are constrained by the scheduling limit that applies to the group of these Scheduling Points, and so on for higher-level tiers.

7.2.2.2 Notation

The following notation is used in this technical paper:

n	Scheduling Point index.
m	Scheduling limit index.
k	Low priority export index.
N	Number of Scheduling Points.
M	Number of scheduling limits.
K_n	Number of exports at Scheduling Point n .
$A_{m,n}$	Mapping of scheduling limits to scheduling points: $A_{m,n} = 1$: scheduling limit m includes scheduling point n . $A_{m,n} = 0$: scheduling limit m does not include scheduling point n .
e_n	Export curtailment eligibility for Scheduling Point n : $e_n = 1$: eligible (initial value). $e_n = 0$: ineligible.
$E_{n,k}$	Export schedule k at Scheduling Point n .
I_m	Net import schedule constrained by scheduling limit m .
I_m	Net import scheduling limit m .
C	Export curtailment quota.
C_n	Total export curtailment at Scheduling Point n .

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- C_m Total export curtailment over all Scheduling Points associated with import scheduling limit m .
 CF_0 Export curtailment factor (ignoring all scheduling limits).
 CF_m Export curtailment factor (respecting scheduling limit “ m ”).
 CF Effective Export curtailment factor.

7.2.2.3 Export Scaling Factor Calculation

If every export schedule is curtailed by the same curtailment factor s , the total export curtailment at Scheduling Point n is as follows:

$$C_n = CF_0 e_n \sum_{k=1}^{K_n} E_{n,k}$$

Where:

$$0 \leq CF_0 \leq 1$$

The sum of export curtailments over all Scheduling Points is limited by the export curtailment quota, as follows:

$$\sum_{n=1}^N C_n = CF_0 \sum_{n=1}^N e_n \sum_{k=1}^{K_n} E_{n,k} \leq C \Rightarrow CF_0 \geq \frac{C}{\sum_{n=1}^N e_n \sum_{k=1}^{K_n} E_{n,k}}$$

The increase on net import schedule constrained by scheduling limit m due to the export curtailment is as follows:

$$C_m = \sum_{n=1}^N A_{m,n} C_n = CF_m \sum_{n=1}^N A_{m,n} e_n \sum_{k=1}^{K_n} E_{n,k}$$

Since the net import schedule must not exceed the corresponding import scheduling limit:

$$I_m + C_m = I_m + CF_m \sum_{n=1}^N A_{m,n} e_n \sum_{k=1}^{K_n} E_{n,k} \leq \bar{I}_m \Rightarrow CF_m \geq \frac{\bar{I}_m - I_m}{\sum_{n=1}^N A_{m,n} e_n \sum_{k=1}^{K_n} E_{n,k}}$$

Where an initial feasible solution is assumed:


$$I_m \leq \bar{I}_m, m = 1, 2, \dots, M$$

Consolidating all constraints:

$$CF = \min(1, CF_0, \{CF_m, m = 1, 2, \dots, M\})$$

$$CF = \min \left(1, \frac{C}{\sum_{n=1}^N e_n \sum_{k=1}^{K_n} E_{n,k}}, \left\{ \frac{\bar{I}_m - I_m}{\sum_{n=1}^N A_{m,n} e_n \sum_{k=1}^{K_n} E_{n,k}}, m = 1, 2, \dots, M \right\} \right)$$

When CF is 1, all exports are curtailed fully, whereas when CF is 0, no export curtailment is needed or no export curtailment is feasible.

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7.2.2.4 Algorithm

The export curtailment is iterative. After each iteration, the remaining export curtailment quota is derived as follows:

$$C \leftarrow C - CF \sum_{n=1}^N e_n \sum_{k=1}^{K_n} E_{n,k}$$

The net import schedule for each scheduling limit is adjusted as follows:

$$I_m \leftarrow I_m + CF \sum_{n=1}^N A_{m,n} e_n \sum_{k=1}^{K_n} E_{n,k}, m = 1, 2, \dots, M$$


If a net import schedule reaches its scheduling limit, no further export curtailment is possible at the associated Scheduling Points, thus these Scheduling Points become ineligible for further export curtailment:

$$I_m = \bar{I}_m \Rightarrow A_{m,n} = 1 \rightarrow e_n = 0, m = 1, 2, \dots, M$$

Finally, the export schedules are reduced pro rata by the export curtailment factor, as follows:


$$E_{n,k} \leftarrow E_{n,k} - CF e_n E_{n,k}, k = 1, 2, \dots, K_n; n = 1, 2, \dots, N$$

If the remaining export curtailment quota is zero, the process terminates. Otherwise, if there are still eligible Scheduling Points for export curtailment, the process proceeds into the next iteration. If there are no eligible Scheduling Points for export curtailment, no further export curtailment is feasible and the process terminates with the remaining export curtailment quota.

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7.3 Appendix-C

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7.4 Appendix-D: Reports

7.4.1 Report Samples


7.4.1.1 *New CMRI -> Day-Ahead -> RUC ~~Import-Export~~ Schedules by Market Priority Types Report UI Mockup*

Reference

- RSEE2-BRQ-08560 (Track-2) – Item2A

This report shall be the same structure as the Existing CMRI -> Day-Ahead -> DA Import-Export Schedules report, except adding CRN and CRN Type columns and the Schedule Type column shall be replaced with “Market Priority Type” and its data enumeration shall be:


- ~~ETC/~~
- TOR
- DAPT
- DALPT (this includes rolled-over DAECON)

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Day-Ahead -> RUC ~~Import~~ Export Schedules by Market Priority Types

Trade Date: mm/dd/yyyy Entity: [ALL] Resource: [ALL] Scheduling Point: [ALL]

Trade Date	SC ID	Resource	Scheduling Point	Market Priority Type	CRN	CRN Type	HE01 [MW]	HE02 [MW]	HE03 [MW]	HE04 [MW]	...	HE24 [MW]	HE25 [MW]
06/22/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	DALPT			300.00	200.00	200.00	200.00	...	300.00	
06/22/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	DAPT			0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ETC /TOR	ABC_5092	TOR	0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	ABC	ABC_E_RESOURCE_2	ABC_SCH_POINT2	ETC /TOR	ABC_5093	ETC	0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	DEF	DEF_E_RESOURCE_1	DEF_SCH_POINT1	DALPT			300.00	200.00	200.00	200.00	...	300.00	
06/22/2023	DEF	DEF_E_RESOURCE_1	DEF_SCH_POINT1	DAPT			0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	DEF	DEF_E_RESOURCE_1	DEF_SCH_POINT1	ETC /TOR	DEF_1234	TOR	0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	DEF	DEF_E_RESOURCE_2	DEF_SCH_POINT2	DALPT			300.00	200.00	200.00	200.00	...	300.00	
06/22/2023	DEF	DEF_E_RESOURCE_2	DEF_SCH_POINT2	DAPT			0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	DEF	DEF_E_RESOURCE_2	DEF_SCH_POINT2	ETC /TOR	DEF_5678	TOR	0.00	0.00	0.00	0.00	...	0.00	
06/22/2023	DEF	DEF_E_RESOURCE_3	DEF_SCH_POINT3	DALPT			0.00	0.00	0.00	0.00	...	0.00	

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7.4.1.2 New CMRI -> Real-Time -> Real-Time Export Schedules by Market Priority Types Report UI Mockup

Reference

- RSEE2-BRQ-08580 (Track-2) – Item2A

This report shall be the same structure as the Existing CMRI -> Real-Time -> Real-Time Unit Commitment (RTUC) Advisory Schedules report, except adding CRN and CRN Type columns and only report binding intervals for export resources and the Schedule Type column shall be replaced with “Market Priority Type” and its data enumeration shall be:

- ~~ETC~~
- TOR
- DAPT
- DALPT (this includes rolled-over DAECOM)
- RTPT
- RTLPT
- RTECON



Real-Time -> Real-Time Export Schedules by Market Priority Types

Trade Date: MM/DD/YYYY Entity: [Entity] Resource: [ALL] Scheduling Point: [ALL] Hour: [ALL]

Trade Date	SC ID	Resource	Scheduling Point	Effective Intertie	Market Priority Type	CRN	CRN Type	Hour Ending	Interval 1 MW	Interval 2 MW	Interval 3 MW	Interval 4 MW
6/5/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ABC_EFF_INTERTIE_1	DALPT			1	50.00	50.00	50.00	50.00
6/5/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ABC_EFF_INTERTIE_1	DAPT			1	0.00	0.00	0.00	0.00
6/5/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ABC_EFF_INTERTIE_1	ETC/TOR	ABC_5092	TOR	1	0.00	0.00	0.00	0.00
6/5/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ABC_EFF_INTERTIE_1	RTECON			1	25.00	25.00	25.00	25.00
6/5/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ABC_EFF_INTERTIE_1	RTLPT			1	0.00	0.00	0.00	0.00
6/5/2023	ABC	ABC_E_RESOURCE_1	ABC_SCH_POINT1	ABC_EFF_INTERTIE_1	RTPT			1	44.00	44.00	44.00	44.00
6/5/2023	ABC	ABC_E_RESOURCE_2	ABC_SCH_POINT1	ABC_EFF_INTERTIE_2	DALPT			1	0.00	0.00	0.00	0.00
6/5/2023	ABC	ABC_E_RESOURCE_2	ABC_SCH_POINT1	ABC_EFF_INTERTIE_2	RTLPT			1	0.00	0.00	0.00	0.00
6/5/2023	ABC	ABC_E_RESOURCE_2	ABC_SCH_POINT1	ABC_EFF_INTERTIE_2	RTPT			1	100.00	100.00	100.00	100.00
6/5/2023	DEF	DEF_E_RESOURCE_1	ABC_SCH_POINT2	DEF_EFF_INTERTIE_1	DALPT			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_1	ABC_SCH_POINT2	DEF_EFF_INTERTIE_1	DAPT			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_1	ABC_SCH_POINT2	DEF_EFF_INTERTIE_1	ETC/TOR	DEF_1234	TOR	1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_1	ABC_SCH_POINT2	DEF_EFF_INTERTIE_1	RTECON			1	44.00	44.00	44.00	44.00
6/5/2023	DEF	DEF_E_RESOURCE_1	ABC_SCH_POINT2	DEF_EFF_INTERTIE_1	RTLPT			1	150.00	150.00	150.00	150.00
6/5/2023	DEF	DEF_E_RESOURCE_1	ABC_SCH_POINT2	DEF_EFF_INTERTIE_1	RTPT			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_2	ABC_SCH_POINT2	DEF_EFF_INTERTIE_2	DALPT			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_2	ABC_SCH_POINT2	DEF_EFF_INTERTIE_2	DAPT			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_2	ABC_SCH_POINT2	DEF_EFF_INTERTIE_2	ETC/TOR	DEF_5678	TOR	1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_2	ABC_SCH_POINT2	DEF_EFF_INTERTIE_2	RTECON			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_2	ABC_SCH_POINT2	DEF_EFF_INTERTIE_2	RTLPT			1	0.00	0.00	0.00	0.00
6/5/2023	DEF	DEF_E_RESOURCE_2	ABC_SCH_POINT2	DEF_EFF_INTERTIE_2	RTPT			1	0.00	0.00	0.00	0.00