

Business Requirements Specification

EIM Base Schedule Submission Deadline

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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.

Background:

CAISO proposes moving the final market closing timeline for financially binding hourly resource plans from forty minutes prior to the operating hour (T-40) to thirty minutes prior to the operating hour (T-30). This is intended to provide EIM Scheduling Coordinators with additional flexibility to submit more accurate base schedules closer to the operating hour. Also, CAISO is updating Tariff rules and market systems to allow EIM Entities to submit base schedules with energy below a resource’s minimum load. This proposed modification will allow CAISO and EIM Entities to more accurately capture the startup energy of large conventional resources within their Resource Sufficiency Evaluations (RSE), thus increasing their ability to pass the RSE while lowering their exposure to uninstructed imbalance energy settlement.

Initiative Scope:


This initiative will examine updates to the base schedule submission timeline (Phase 2 in Fall 2021) as well as the inclusion of startup energy below a resource’s minimum load (Phase 1 in Spring 2021):

- Move market closing for the final binding EIM base schedule submissions from T-40 to T-30
 - Adding additional RSE at T-40
- Include startup energy in an EIM base schedule
 - Include startup energy in the Resource Sufficiency Evaluations (RSE)
 - Reduction of imbalance energy settlements

1.2 References

Information related to this initiative can be found on the following CAISO web page at:

<https://stakeholdercenter.caiso.com/StakeholderInitiatives/Western-EIM-base-schedule-submission-deadline>

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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 Guidelines

Intellectual Property ownership must be considered by all applicable stakeholders before the services are performed. The level of analysis is two-fold:

- One, the business owner must determine if the Intellectual Property necessary to perform the services is owned by the California ISO or whether it must be obtained from a third party. Once the California ISO has secured the proper Intellectual Property rights to perform the services (i.e., the Intellectual Property is owned by the California ISO or we have licensed it from a third party), the California ISO can undertake the next step.
- The second step in the analysis is to consider whether new Intellectual Property will be created as a result of the business requirements or service requirements to be performed, and how that Intellectual Property will be owned and protected by the California ISO.


In order to assist the business owner in the analysis previously described, refer to the California Intellectual Property Policy available at:

<http://www.caiso.com/rules/Pages/LegalPoliciesNotices/Default.aspx>, which provides a brief tutorial on what Intellectual Property is and how the California ISO can protect its Intellectual Property. Contact the Legal Department if you have any questions regarding Intellectual Property.


There are no impacts to intellectual property based on the requirements stated in this document.

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2.1 Acronyms and Definitions Table

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Acronym	Definition
AUX	Auxiliary Load
BS	Base Schedule
BSC	Base Scheduling Coordinator
CAISO	California Independent System Operator
DOT	Dispatch Operating Target
EIM	Energy Imbalance Market
HASP	Hour Ahead Scheduling Process
MSG	Multi-Stage Generating Resources
Pmin	Power Minimum
RSE	Resource Sufficiency Evaluations
RTD	Real-Time Dispatch
RTM	Real-Time Market
RTPD	Real-Time Pre-Dispatch
RTUC	Real-Time Unit Commitment
STUC	Short-Term Unit Commitment
TEE	Total Expected Energy
T-30	Thirty Minutes Prior to Operating Hour
T-40	Forty Minutes Prior to Operating Hour
UIE	Uninstructed Imbalance Energy

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3 Details of Business Need/Problem

3.1 Description


Business Opportunity/Problem Statement:	
What:	This proposed modification will allow CAISO and EIM Entities to more accurately capture the startup energy of large conventional resources within their Resource Sufficiency Evaluations (RSE), thus increasing their ability to pass the RSE while lowering their exposure to uninstructed imbalance energy settlement.
When:	Phase 1 in Spring 2021, Phase 2 in Fall 2021
Why do we have this opportunity/problem:	Moving the final market closing timeline from forty minutes prior to the operating hour (T-40) to thirty minutes prior to the operating hour (T-30) may provide EIM Scheduling Coordinators with additional flexibility to submit more accurate base schedules closer to the operating hour.
Who does this opportunity/problem impact:	Scheduling Coordinators, Market Operators, and Market Participants

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4 Business Impacts

4.1 Business Practice Manual (BPM)

BPM	Description of Impact(s)
BPM Change Management	Not Impacted
Candidate CRR Holder Registration	Not Impacted
Compliance Monitoring	Not Impacted
Congestion Revenue Rights	Not Impacted
Credit Management and Market Clearing	Not Impacted
Definitions and Acronyms	Not Impacted
Demand Response	Not Impacted
Direct Telemetry	Not Impacted
Distributed Generation for Deliverability	Not Impacted
Energy Imbalance Market (EIM)	<ul style="list-style-type: none"> • Submission time of the final base schedule must be reflected • RSE process • Startup Energy considered for resources with regards to resource sufficiency tests, updates to BSAP to allow BSCs to submit base schedules below minimum load during startup (not shutdown). • Updates to RTM with regards to startup energy base schedules.
Generator Interconnection and Deliverability Allocation Procedures	Not Impacted
Generator Interconnection Procedure (GIP)	Not Impacted
Generator Management	Not Impacted
Managing Full Network Model	Not Impacted
Market Instruments	<ul style="list-style-type: none"> • Updating to reflect T-30 submission timeline.


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BPM	Description of Impact(s)
Market Operations	<ul style="list-style-type: none"> • RTUC time changes
Metering	Not Impacted
Outage Management	Not Impacted
Reliability Coordinator Services	Not Impacted
Reliability Requirements	Not Impacted
Rules of Conduct Administration	Not Impacted
Scheduling Coordinator Certification and Termination	Not Impacted
Settlements and Billing	Not Impacted
Transmission Planning Process	Not Impacted

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4.2 Other

Impact:	Description: (optional)
Market Simulation	Yes Unstructured market simulation with market runs and potential settlement scenarios depending on Bid Cost Recovery (BCR) impacts.
Market Participant Impact	Yes
User Acceptance Testing (UAT)	Yes - Real-Time Market Operator
Internal Training	Yes Real-Time Market Operator training
External Training	Yes Describing EIM base schedule changes, RSE process changes, and RTUC
Policy Initiative	Yes https://stakeholdercenter.caiso.com/StakeholderInitiatives/Western-EIM-base-schedule-submission-deadline
Vendor	Yes - Siemens
Architectural Framework and Roadmap	Design will follow existing architectural framework and will align with the roadmap.

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5 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.


5.1 Business Process: Manage Day Ahead Market - Real-Time Market (RTM)

5.1.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ001	<p>System shall shorten the run time of the current RTPD run that produces the binding results for the first interval of the hour to five and a half minutes.</p> <p>Note: Run time includes at least 90 seconds for review time.</p>	Core	RTM	Phase 2
BSSD – BRQ002	<p>System shall move the start of RTPD 5 from T-37.5 RTPD to T-29.33 (RTPD 5 run has to start once it has received the results of Internal System at T-29.5).</p>	Core	RTM	Phase 2
BSSD – BRQ003	<p>System must have RTPD 5 complete and publish results to ITS 90 seconds before the RTPD 4 start time.</p>	Core	RTM	Phase 2

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ005	<p>Real-Time Market shall support base schedules below minimum load (Pmin) as an indication of resource startup process (shutdowns will not be supported).</p> <p>Note: Applies to RTUC (HASP, STUC, RTPD, RTD).</p> <p>No changes will occur to the expected energy calculations or settlement; metered deviations shall be treated as Uninstructed Imbalance Energy (UIE).</p>	Core	RTM	Phase 1

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ006	<p>System shall dispatch applicable resources at its Internal DOT following its registered startup profile mapping the resource SE/telemetry on that profile, while the resource award will remain zero (per its external DOT) until the Pmin value is reached. DOT instructions to resources shall remain as external DOT.</p> <p>Note: Applies to RTUC (HASP, STUC, RTPD, RTD).</p> <p>No changes will occur to the expected energy calculations or settlement; metered deviations shall be treated as Uninstructed Imbalance Energy (UIE).</p>	Core	RTM	Phase 1
BSSD – BRQ009	<p>System shall run and publish reports for the base schedule reports for the T-30 run.</p>	Core	RTM	Phase 2

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ013	System shall have the capability for EIM RSEs to include energy below minimum load (startup energy) on balancing, flex ramp capacity and feasibility tests (pf). Note: Does not apply to bid range capacity test.	Core	RTM	Phase 1
Not Applicable	System must keep the capability for Resource Sufficiency Evaluations (RSE) to begin after the T-40 deadline.	Existing	RTM	Phase 2
BSSD – BRQ015	System shall have an additional RSE test after the T-30 deadline.	Core	RTM	Phase 2

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ016	<p>System shall support participating and non-participating resource base schedules below registered Pmin being accounted for in the balancing, flex ramp capacity and feasibility tests (pf) in the Resource Sufficiency Evaluation (RSE) for each trade hour.</p> <p>Note: This would not impact the Bid Range Capacity test. Base schedules will be assumed as accurate on the basis of BSC submission.</p>	Core	RTM	Phase 1
BSSD – BRQ017	System shall set all resource base schedules below their minimum load as fixed for the entire trade hour.	Core	RTM	Phase 1

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5.2 Business Process: Manage Market Quality System – Market Quality System (MQS)

5.2.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ021	<p>If a resource base schedule is submitted that is below the resource Pmin and greater than zero, system shall calculate expected energy as follows (with one exception for the last two intervals of the hour as stated below):</p> <ul style="list-style-type: none"> • BASE energy shall be calculated per existing formula (i.e. base schedule/12). • TEE shall be set to BASE energy (RTPD energy type). • No other energy type shall be calculated (no RTPD, RTD expected energies). <p>Exception: For last two intervals of the hour, and if a base schedule is submitted in the adjacent hour at or above the resource Pmin, System shall calculate Expected Energies per existing formulas to account for Standard Ramping Energy.</p> <p>Note: See example and note in Appendix D.</p>	Core	MQS/PCA	Phase 1

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ022	<p>System shall not pre-qualify commitment costs for purposes of BCR (i.e. calculate AUX results) for periods where a resource base schedule is submitted that is below the resource Pmin and greater than zero,</p> <p>Example:</p> <ul style="list-style-type: none"> • For HE 10, a base schedule of 5 MW is submitted for a resource with a 10 MW Pmin. • System shall not produce AUX output for that hour. <p>Note: See note in Appendix D section 14.2.</p>	Core	MQS/PCA	Phase 1

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5.3 Business Process: Manage Day Ahead Market – Base Schedule Aggregation Portal (BSAP)

5.3.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ024	System must allow for startup energy to be submitted (anything below Pmin) as part of an EIM entity’s base schedule.	Core	BSAP	Phase 1
BSSD – BRQ026	<p>Via centralized activation/de-activation means of this functionality:</p> <ul style="list-style-type: none"> • System shall remove any bid/schedule submission validation rules that prohibit EIM Base SCs (BSCs) from submitting base schedules below their minimum load (Pmin) for either participating or non-participating resources. • System shall not validate base schedules in start-up against the resource’s registered start-up profile. Instead, start-up validation of the base schedule shall reside with the BSC. <p>Notes: See additional notes and explanations in Appendix D section 14.3.</p>	Core	BSAP	Phase 1

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted	Phase
BSSD – BRQ027	<p>System shall perform the following validations for resources during trade hours where their base schedules are below registered Pmin:</p> <ul style="list-style-type: none"> • System shall not allow base schedules for ancillary services. • System shall not allow bid submission. • System shall not allow base schedules in operating region between MSG configurations (MSG transitions). 	Core	BSAP	Phase 1

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6 Appendix

Appendix D – Examples

6.1 Example for BRQ022

For HE 10, a base schedule of 5 MW is submitted for a resource with a 10 MW Pmin.

For HE 10 intervals 1-10, system shall produce BASE and TEE (RTPD) energy at 0.41667 (5/12).

System shall not produce any other RTPD or RTD energy types.

For HE 10 intervals 11 and 12,

- System shall produce BASE energy at 0.41667 (5/12).
- System may produce other energy types if a base schedule of 10 MW or higher is submitted for HE 11. Otherwise the only other energy type produced is TEE (RTPD) energy at 0.41667.

6.2 Notes for BRQ021/22

Note: Settlements System shall treat startup energy as part of an EIM base schedule (not paid/charged for energy). This modification should be seamless to the settlements system. MQS would send the start-up base schedule as part of expected energy and expected energy allocation payloads (Existing functionality).

6.3 Notes for BRQ026

Submission of a base schedule below Pmin by the BSC will signal the resource is in start-up during the relevant trade hour

There are several reasons not to have the system perform start-up validation of base schedules, including:

- Resource may not be participating (no start-up profile is available).
- System may not have certainty of exact time when startup is scheduled.

Note: All appendices are considered optional and will be leveraged based on the need of the project.