California ISO

Business Requirements Specification

Imbalance Conformance Enhancements

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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 determining the scope of projects and to 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 delivery, satisfy or meet the business requirements (what). The Initial BRS will provide sufficient information to determine the scope of the project and will provide the functional business requirements so that the Architecture Decision can be made. Following the Architecture Decision, the remaining non-functional business requirements, such as data, performance, web services, and security can be added to complete the Final BRS.

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 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 it has been determined that 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), then 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 go about protecting its intellectual property. Please contact the Legal Department if you have any questions regarding intellectual property.

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2.2 Checklist

Task	*Outcome*
Identify the type of Intellectual Property (copyright, trademark, patent, and/or trade secret) to be used in performing the services, including ownership of the work in the business requirements section	*© California ISO, 2018. All rights reserved.*
Determine if California ISO should claim ownership to any works created as a result of the services performed	*Intellectual ownership of included business requirements is retained by California ISO.*
Determine the level of protection the California ISO will seek for any new works created if it is to be owned by the California ISO (i.e., notice requirements, federal registration of the work). For example, place © 2010 California ISO on the cover of this requirements document to claim copyright to the software codes provided in the business requirements section.	*© California ISO, 2018. All rights reserved.*

3 Details of Business Need/Problem

3.1 Description

The ISO conformance limiter uses simple logic to identify scenarios in which the conformance value is greater than the ramping capacity for the corresponding interval. A dispatch requirement greater than the ramping capability is known as an infeasibility. When the limiter is triggered, the market will use the maximum ramping capability available without exceeding that amount. This results in a feasible market solution and pricing that is not skewed by an estimated input. The limiter allows for consistent pricing when conforming is used to maintain reliability.

The current logic used to trigger the limiter is simple and is only used in the real time markets. The limiter will trigger when the following conditions exist for the applicable market interval:

- The conformance requirement is greater than the magnitude of the infeasibility (positive or negative), and
- The infeasibility is in the same direction as the conformance.

Because the logic is over-simplified, situations exist in which the limiter can falsely trigger or not trigger at all. For example, the limiter may trigger if the conformance exists from a previous interval or has changed direction (negative to positive or vice versa). It is also recognized that conformance values input by operators are sometimes based on pre-market optimization factors.

This initiative will explore enhancements to ensure the limiter triggers correctly. Proposed limiter logic will have the following characteristics:

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- Will recognize conformance from previous intervals,
- Is not limited to rely on information from the current interval,
- Will recognize direction changes for infeasibility and conformance, and
- Will build a memory of the change in load from a previous solution.

4 Business Impacts

4.1 Business Practice Manual (BPM)

BPM	Description of Impact(s)
BPM Change Management	N/A
Candidate CRR Holder	N/A
Compliance Monitoring	N/A
Congestion Revenue Rights	N/A
Credit Management and Market Clearing	N/A
Definitions & Acronyms	Change 'load biasing' term to 'imbalance conformance'
Direct Telemetry	N/A
Distributed Generation for Deliverability	N/A
Energy Imbalance Market (EIM)	New language clarifies EIM authority to conform

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Generator Interconnection and Deliverability Allocation Procedures	N/A
Generator Interconnection Procedure (GIP)	N/A
Generator Management	N/A
Managing Full Network Model	N/A
Market Instruments	N/A
Market Operations	N/A
Metering	N/A
Outage Management	N/A
Reliability Requirement	N/A
Rules of Conduct Administration	N/A
Scheduling Coordinator Certification & Termination	N/A
Settlements & Billing	N/A
Transmission Planning Process	N/A

4.2 Other

Impact:	Description: (optional)
Market Simulation	Yes
Market Participant Impact	Yes
User Acceptance Testing (UAT)	Yes
Internal Training	Yes
External Training	No
Policy Initiative	Yes
Vendor	Siemens

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Architectural Framework and Roadmap	No

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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 Markets & Grid

5.1.1 Business Requirements

ID#	Business Feature	Requirement Type	Business Unit(s) Affected	Potential Application(s) Impacted
ICE-BRQ001	System shall revise PBC requirement adjustment in relation to manual conformance to more accurately solve for under-generation infeasibility. Revised formula (formula is in blue text): C_i = (PBC_inf_i - PBC_inf_i-1) - (Bias_i - Bias_i-1) + max(0,C_i-1) Where i is the index for current interval and i-1 is previous interval C_i is the criteria to decide if the Load Bias Limiter feature should activate. When C_i is negative, the feature should activate; otherwise, the feature should not activate (PBC_inf_i - PBC_inf_i-1) is the change of PBC infeasibility between current and previous interval (Bias_i - Bias_i-1) is the change of load bias between current and previous interval In any given interval when the PBC infeasibility is 0, C_i is reset to 0	Core	Power Systems Technology Division	RTD RTPD STUC

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ID#	Business Feature	Requirement Type	Business Unit(s) Affected	Potential Application(s) Impacted
ICE-BRQ002	System shall revise PBC requirement adjustment in relation to manual conformance to more accurately solve for over-generation infeasibility. Revised formula (formula is in blue text): C_i = (PBC_inf_i - PBC_inf_i-1) - (Bias_i - Bias_i-1) + min(0,C_i-1) Where i is the index for current interval and i-1 is previous interval C_i is the criteria to decide if the Load Bias Limiter feature should activate. When C_i is positive, the feature should activate; otherwise, the feature should not activate (PBC_inf_i - PBC_inf_i-1) is the change of PBC infeasibility between current and previous interval (Bias_i - Bias_i-1) is the change of load bias between current and previous interval In any given interval when the PBC infeasibility is 0, C_i is reset to 0	Core	Power Systems Technology Division	RTD RTPD STUC
ICE-BRQ003	System shall apply the formulas in ICE-BRQ001 and ICE-BRQ002 recursively; for every RTD/RTPD/STUC run, PBC_inf_i-1, Bias_i-1, and C_i-1 should be kept on BAA (including CISO) level from previous run as an initial value for current run first interval	Core	Power Systems Technology Division	RTD RTPD STUC

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