



Business Requirements Specification

Congestion Revenue Rights – Data Transparency Enhancements

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Revision History

Date	Version	Description
11/12/2019	1.0	Initial Issue

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1 Introduction

1.1 Purpose

Per FERC’s Order for daily settlement of CRRs, the CAISO systems perform several complex calculations which require sub-calculations. Some of the data produced in the sub-calculations are necessary to enable Market Participants to perform Shadow Settlements.

The implementation for CRR 1B provided a range of data to support Market Participants in their Shadow Settlements efforts. However, additional data types associated with the sub-calculations have been identified by the Market Participants as being required to support their Shadow Settlements processes.

The purpose of this initiative is to provide Market Participants additional data to enable them to perform Shadow Settlements for CRR payments and charges.

1.2 References

All references represent external requirements documents or stakeholder requests developed and submitted by the Business Units.

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

1. <http://www.caiso.com/informed/Pages/StakeholderProcesses/CongestionRevenueRightsAuctionEfficiency.aspx>
2. <http://www.caiso.com/market/Pages/ProductsServices/CongestionRevenueRights/Default.aspx>

Information for this initiative also can be found under the Release Planning Section on the CAISO web page at:

1. <http://www.caiso.com/informed/Pages/ReleasePlanning/Default.aspx>

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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 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.

The CAISO retains all intellectual property rights for the content of this Business Requirements Specification.

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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. Contact the Legal Department if you have any questions regarding intellectual property.

2.2 Checklist

Intellectual Property created per this BRS will be owned by the CAISO in accordance with existing contract provisions with the software developer.

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4 Details of Business Need/Problem

Per FERC’s Order for daily settlement of CRRs, the CAISO systems perform several complex calculations which require sub-calculations. Some of the data produced in the sub-calculations are necessary to enable Market Participants to perform Shadow Settlements.

The implementation for CRR 1B provided a range of data to support Market Participants in their Shadow Settlements efforts. However, additional data types associated with the sub-calculations have been identified by the Market Participants as being required to support their Shadow Settlements processes.

5 Business Process Impacts

The scope of this BRS involves current Day Ahead Market and existing Settlements and Dispute Management processes. There are no changes to these processes.

5.1 Business Practice Manual (BPM)

BPM	Description of Impact(s)
Managing Full Network Model	N/A
Congestion Revenue Rights	Yes: a) New data made available to market Participants b) Description for calculating the Clawback and Circular Scheduling MW from Revenue values presented in OASIS c) Description for rules for HVDC constraints
Market Instruments	Yes - Updates to market reports in OASIS
Outage Management	N/A

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BPM	Description of Impact(s)
Reliability Requirement	N/A
Market Operations	N/A
Compliance Monitoring	N/A
Metering	N/A
Scheduling Coordinator Certification & Termination	N/A
Rules of Conduct Administration	N/A
BPM Change Management	N/A
Definitions & Acronyms	N/A
Settlements & Billing	N/A
Credit Management	N/A
Candidate CRR Holder	N/A
Transmission Planning Process	N/A
Direct Telemetry	N/A
Distributed Generation for Deliverability	N/A
Energy Imbalance Market (EIM)	N/A
Generator Interconnection Procedure (GIP)	N/A
Generator Interconnection and Deliverability Allocation Procedures	N/A
Generator Management	N/A

5.2 Other

Impact:	Description: (optional)
Market Simulation	Yes
Market Participant Impact	Yes
External Training	Yes
Policy Initiative	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: Manage IFM Data

IFM calculated flow data is a value that is being made available to Market Participants to support performing shadow settlements of CAISO’s daily CRR Settlements.

In addition to the IFM flow value, a Directional Indicator is provided to reflect the direction of the calculated flow for each constraint and associated contingency.

6.1.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
CRRData-BRQ010	IFM Calculated Flows – Market Participants System shall make available to Market Participants IFM calculated flow data	Core	OASIS
CRRData-BRQ030	Directional Indicator – Market Participants For each hour and for each constraint and contingency, system shall make the Directional Indicator available to Market Participants. A Directional Indicator of +1 reflects IFM flow in the prevailing direction A Directional Indicator of -1 reflects IFM flow in the non-prevailing direction	Core	OASIS

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6.2 Business Process: Manage APNode Data

APNode shift factor data is being made available to Market Participants to support performing shadow settlements of CAISO's daily CRR Settlements.

Access to this new shift factor data will be restricted to users that have executed a Non-Disclosure Agreement (NDA) for access to CAISO Protected Data.

6.2.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
CRRData-BRQ106	APNode Shift Factors – Market Participants System shall make APNode shift factors available to Market Participants authorized to access this data. Data will be made available for DA, HASP and RTD markets	Core	Market Participant Portal
CRRData-BRQ120	Retention Period – Active System to provide on-line access to shift factors noted in BRQ106 for thirty (30) days from scheduled posting Note: Scheduled posting of this is three (3) days after applicable Trading Day	Core	Market Participant Portal

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6.3 Business Process: Manage Clawback and Circular Scheduling Data

Market Participants will have Clawback Data and Circular Scheduling data available to support performing shadow settlements of CAISO’s daily CRR Settlements.

The aggregated value for Clawback Revenue and Circular Scheduling Revenue for each constraint and contingency will be available.

Market Participants should refer to the Congestion Revenue Rights BPM for directions on using these aggregated revenue values in their shadow settlement activities.

6.3.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
CRRData-BRQ203	<p>Clawback & Circular Scheduling Revenue – Market Participant</p> <p>For each hour and for each constraint and contingency, system shall make available to Market Participants aggregated value for each of the following:</p> <ul style="list-style-type: none"> • Clawback Revenue • Circular Scheduling Revenue 	Core	OASIS

6.4 Business Process: Manage HVDC Constraints

The HVDC constraint shadow price does not reflect a traditional flow-based AC transmission constraint, but instead a modeling artifact allowing the modeling of a DC line in an AC network. To be clear, the DC line is modeled using a couple of constraints: 1) an ITC constraint which will continue to be explicitly settled under CRR1B; and 2) the HVDC modeling artifacts IMT-A and PDCI, which will no longer be explicitly settled. The MCC component representing the HVDC modeling artifacts will be settled at the shadow prices on the opposite pole, ensuring that the total notional revenue for an affected CRR remains the same.

6.4.1 Business Requirements

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ID#	Business Feature	Requirement Type	Business Unit(s) Affected	Potential Application(s) Impacted
CRRData-BRQ301	<p>Alternative Settlement for HVDC constraints</p> <p>System shall not explicitly settle HVDC constraints, but instead calculate an alternate settlement using the binding constraints on the other side of the HVDC transmission line. Effectively this means for the northern tie points associated with each HVDC line, replace any non-ITC shift factors with the shift factors from the southern terminus. This shall occur only when there is a binding HVDC constraint. The functionality shall be enabled via a date driven software switch. Date entry shall be configurable. For trade dates prior to the entered date, the system shall explicitly settle HVDC constraints per the current practice.</p> <p>The southern terminus is currently named 'DC_SYLMAR-APND' for PDCI, and 'DC_INTMNT-APND' for IMT-A</p>	Core	PSTD	CRRS

6.5 Business Process: Market Simulation

The following Identifiers are used as a guide to indicate the reason for Potential Structured or Unstructured Scenarios.

- 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.

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- 5. New/Modified model data:** Addition or substantial modification of model data as a market solution provided by the ISO (e.g. BANC split into SMUD and non-EIM BAAs, PowerEx Overlapping Resource Aggregation).
- 6. New user role:** The addition or modification of access permissions for a user role applied to specific business units within an EIM entity or market participant organization (e.g. Load Serving Entity (LSE) as a Local Regulatory Authority (LRA) role). Structured Scenarios would be beneficial for market participants taking on a new function or process within their organization.

6.5.1 Business Requirements

ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
CRRData-MKTSIM-000	Verify ability to retrieve IFM calculated flow data	OASIS	Market Participant	2. Interface Changes
CRRData - MKTSIM-005	Verify ability to retrieve IFM flow Directional Indicator value	OASIS	Market Participant	2. Interface Changes
CRRData - MKTSIM-010	Verify ability to retrieve APNode shift factors	Market Participant Portal	Market Participant	2. Interface Changes
CRRData - MKTSIM-015	Verify ability to retrieve aggregated Clawback Revenue value	OASIS	Market Participant	2. Interface Changes
CRRData - MKTSIM-020	Verify ability to retrieve aggregated Circular Scheduling Revenue value	OASIS	Market Participant	2. Interface Changes
CRRData - MKTSIM-025	Verify CMRI does not display any HVDC constraints	CMRI	Market Participant	1. Rules Impact
CRRData - MKTSIM-030	Verify ability to use new IFM flow and Directional Indicator data for shadow settlements	OASIS	Market Participant	2. Interface Changes
CRRData - MKTSIM-035	Verify ability to use new APNode shift factor data for shadow settlements	Market Participant Portal	Market Participant	2. Interface Changes
CRRData - MKTSIM-040	Verify ability to use new Clawback and Circular Scheduling data for shadow settlements	OASIS	Market Participant	2. Interface Changes