

Business Requirements Specification

FERC Order 881 – Track 3

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1 Introduction

1.1 Purpose

Disclaimer:

All information contained in this draft Business Requirements Specification (BRS) as provided by the California Independent System Operator Corporation (ISO) is prepared for discussion and information purposes only. The draft BRS is provided “as is” without representation or warranty of any kind, including, without limitation, a representation or warranty as to accuracy, completeness, or appropriateness for any particular purpose. The draft BRS shall be revised as the development and review of the business requirements progresses. The ISO assumes no responsibility for the consequences of any errors or omissions. The ISO may revise or withdraw all or part of this information at any time at its discretion without notice.

Background

On December 16, 2021, the Federal Energy Regulation Commission issued a final rule in RM20-16 – Managing Transmission Line Ratings (Order No. 881), which adopts various reforms pursuant to section 206 of the Federal Power Act. Order No. 881 directs public utility transmission providers, transmission owners, and regional transmission operators (RTOs) and independent system operators (ISOs) to implement the following reforms:

- **Ambient-adjusted ratings and seasonal ratings:** Public utility transmission providers (RTOs/ISOs and non-RTOs/ISOs) must implement ambient-adjusted ratings (AARs) and seasonal ratings. They must use ambient-adjusted ratings for evaluating requests for near-term transmission service (defined as transmission service that ends within 10 days of the date of the request). They must use seasonal ratings for evaluating other, longer-term transmission service requests.
- **Electronic updates to transmission ratings:** RTOs/ISOs must establish and implement the systems and procedures necessary to allow transmission owners to electronically update transmission line ratings at least hourly.
- **Use of emergency ratings:** Public utility transmission providers (RTOs/ISOs and non-RTOs/ISOs) must use uniquely determined emergency ratings for contingency analysis in the operations horizon and in post-contingency simulations of constraints.
- **Transparency:** Transmission owners must share transmission line ratings and transmission line rating methodologies with their respective transmission providers and, in RTOs/ISOs, with their respective market monitors. Order No. 881 requires transmission providers to maintain a database

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of each transmission owner's transmission line ratings and transmission line rating methodologies on the transmission provider's open access same-time information system website, or on another password-protected website.

Project Scope:

Track 1: Real Time Reliability Applications

- System updates include: EMS, EMMS, EMNA, RTM/DAM, PI

Track 2: Operational

- AAR submission and validations for CAISO TOPs and RCs.
- Seasonal ratings submission and validations for CAISO TOPs and RCs, based on reasonability limits (upper and lower limits) check
- Adjacent TOPs/RCs to have the capability to view ratings information in webLineR


Track 3: Market Applications and Look Ahead Applications

- Market updates/changes and downstream systems
- Align integration across market and look ahead system functionality, timing, and processes
- Meet reporting requirements
- Impacts to transmission scheduling priorities


2 Details of Business Need/Problem

2.1 Description

Business Opportunity/Problem Statement:	
What:	The primary scope of this initiative will allow the ISO to use regularly updated AARs for near-term transmission service requests and in market processes. AARs provide more accurate transmission line ratings, and regular updates will better reflect real-time weather conditions.
When:	<ul style="list-style-type: none"> • Implementation for all tracks required to be implemented no later than December 17, 2026. The CAISO is targeting implementation of its Order No. 881 tariff provisions for the

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Business Opportunity/Problem Statement:	
	<p>real-time market and day-ahead market applications in the first or second quarter of 2026.</p> <p>Refer to Release Users Group (RUG) for updated implementation timeline for individual tracks.</p>

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3 Project Impact Assessment (IA)

3.1 Business Practice Manuals (BPM)

BPM	Description of Impact(s)
BPM Change Management	Not Impacted
Candidate CRR Holder Registration	Not Impacted
Compliance Monitoring	Not Impacted
Congestion Revenue Rights	Updates to reflect shift from two to four seasonal ratings.
Credit Management and Market Clearing	Not Impacted
Demand Response	Not Impacted
Direct Telemetry	Not Impacted
Distributed Generation for Deliverability	Not Impacted
Energy Imbalance Market (EIM)	Not Impacted
Generator Interconnection and Deliverability Allocation Procedures	Not Impacted
Generator Interconnection Procedure (GIP)	Not Impacted
Generator Management	Not Impacted
Managing Full Network Model	Impacts FNM update processes.
Market Instruments	Not Impacted
Market Operations	Use of AARs and seasonal ratings in market processes.
Metering	Not Impacted
Outage Management	Changes to reflect AARs, seasonal ratings in outages
Reliability Coordinator Services	Not Impacted
Reliability Requirements	Not Impacted

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BPM	Description of Impact(s)
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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3.2 Other

Impact	Description (optional)
Market Simulation	Yes Refer to Market Sim Section 5.2 for more information.
Market Participant Impact	Yes TOP submission of data in Track 1 and Track 2, and usability of Track 2 User Interface.
User Acceptance Testing (UAT)	Yes Track 3: Usability of TLRs in downstream systems, UIs, and reports.
Customer Readiness Impact	<i>Yes, see below.</i>
<ul style="list-style-type: none"> External Communication Needed 	Yes External Communication is being managed through the stakeholder process, and visibility of externally facing items will be disclosed in publication of External BRS to CAISO.com.
<ul style="list-style-type: none"> External Onboarding and Maintenance 	No
<ul style="list-style-type: none"> External Training 	TBD
<ul style="list-style-type: none"> External Computer Based Training 	
Policy Initiative	Yes Refer to Policy Initiative site for more information.

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4 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.

4.1 Business Requirements: Track 3


4.1.1 Business Requirements: Transmission Registry (TR)

ID#	Business Feature	Req. Type	Potential Application(s) Impacted
F881 – BRQ101	System (TR) must support TOP submission of four seasons: <ul style="list-style-type: none"> • Spring • Summer • Fall • Winter. 	Core	TR
F881- BRQ395	TR Auto Approve Process System (TR) shall support an interim Autloader process for automatically approving new seasonal ratings for existing components.	Core	TR
F881- BRQ395a	Deprecate TR Auto Approve Process Once it is determined that the old seasonal ratings have been migrated to all new component versions, the Auto Approve Process will be deprecated	Process	TR

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ID#	Business Feature	Req. Type	Potential Application(s) Impacted
F881-BRQ395b	TR Auto Approve Reason Code System (TR) shall have an Change Request Reason code (FERC 881) for UI & Autoloader to process new seasonal ratings for existing components.	Core	TR
F881-BRQ395c	TR Manual Validation There will be a manual process to validate new seasonal ratings for existing components prior to the automated auto loader process described in F881-BRQ395. This process will complete the following validations: <ol style="list-style-type: none"> 1. Validate no changes from previous version except new 4 ratings 2. Compare/validate Spring and Fall ratings against Summer and Winter ratings 	Business Process	TR
F881-BRQ396	TR Display Ratings The system (TR) shall display the new ratings only on the details screen.	Core	TR
F881 – BRQ104	System (TR) must have standardized durations for TOP submission.	Core	TR
F881 – BRQ105	System (TR) must have additional seasonal rating columns on the Component Start Screen.	Existing	TR

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ID#	Business Feature	Req. Type	Potential Application(s) Impacted
F881 – BRQ106	System (TR) must have the following on lefthand side of Component Start Screen UI as a frozen pane: <ul style="list-style-type: none"> • ID • OWNER • ORG • STATION • EQUIPMENT TYPE 	Core	TR
F881 – BRQ107	System (TR) must have vertical line between Seasonal Rating Type groupings. Note: See mockup in Appendix C.	Core	TR
F881 – BRQ108	System (TR) must have different colors for Season Rating Type: <ul style="list-style-type: none"> • Summer (Light Yellow) • Spring (Light Green) • Fall (Light Orange) • Winter (Light Blue) Note: See mockup in Appendix C.	Core	TR
F881 – BRQ109	TR reports must be updated to reflect the additional seasonal rating types and corresponding data.	Core	TR

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ID#	Business Feature	Req. Type	Potential Application(s) Impacted
F881 – BRQ363	System (TR) must have the following search criteria for “Last Modified” field in “Find Components” screen: <ul style="list-style-type: none"> - Start Date (mandatory for search) - End Date (mandatory for search) Note: It is the responsibility of Transmission Owners and Operators to store this data within their own systems. NOTE: the CAISO will maintain the ratings data used in the market for at least 5 years.	Core	TR
F881 – BRQ364	System (TR) must have the following search criteria for “Date Created” on the “Find Change Requests” screen: <ul style="list-style-type: none"> - Start Date (mandatory for search) - End Date (mandatory for search) 	Core	TR
F881- BRQ397	System (TR) CSV/Autoloader export options on the Component search screen must include the new seasonal ratings	Core	TR

4.1.2 Business Requirements: HANA


ID#	Business Feature	Req. Type	Potential Application(s) Impacted
F881 – BRQ376	System (HANA) must have the capability to automatically calculate and update Remedial Action Schemas (RAS) based on received AARs for both RT user (from EMNA savecase) and Study user (from WebLineR for future up to 10 Days) .	Core	HANA

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ID#	Business Feature	Req. Type	Potential Application(s) Impacted

4.1.3 Business Requirements: BAAOP

ID#	Business Feature	Req. Type	Potential Application(s) Impacted
F881-BRQ332a	<p>BAAOP must have UI to display received AARs and all rating sets as outlined in BRQ385.</p> <p>The display will include all equipment types (lines, xfers, etc) and it will have inline as well as global filters for date, hour, BAA, STATION, voltage, equipment name, rating type.</p> <p>Only equipment that belongs to logged in BAA will be displayed.</p>	Core	BAAOP
F881 – BRQ385	<p>System (RTM) must have the following priorities set for receiving and utilizing rating data:</p> <p><i>Priority 1: webOMS</i></p> <p><i>Priority 2: webLineR</i></p> <p><i>Priority 3: Seasonal Rating</i></p>	Core	RTM

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4.2 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, Energy Imbalance Market (EIM) implementations, and Reliability Coordination (RC) service implementations. If the project team has deemed that no structured testing is needed, an end-to-end test case must be specified.

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 an EIM 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.

4.2.1 Business Requirements

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ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario	BRQ Traceability
F881 – MSIM107	TOPs must be able to submit for four seasons within a specific timeframe	N/A	TR	Interface Changes	BRQ101 BRQ104
F881-MSIM-108	TOPS must be able to view and retrieve information	N/A	TR	Interface Changes	BRQ105 BRQ106 BRQ107 BRQ364 BRQ396 BRQ397
F881-MSIM-120	Balancing Authorities must be able to view the AAR information and all rating sets	RTM	BAAOP	Interface Changes	BRQ332a


Appendix C: Display Mockup and Report Questionnaire

Provide any display mockups that may help the implementation team in the design of the solution.

Display Mockups

This section contains mockups for graphs, charts, and report display that is specific to this project.

TR UI Mockup BRQ108

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ID	OWNER	ORG	STATION	EQUIPMENT TYPE	DESCRIPTION	HIGH KV	LOW KV	TERTIARY KV	ISO LAST MODIFIED	EFFECTIVE DATE	LINE #	LEN	SUMMER NORMAL					SUMMER EMERGENCY					WINTER NORMAL					WINTER EMERGENCY									
													RATING	AVAR	MIAS	MIASR	MIASR	DUR	CON	NOTES	RATING	AVAR	MIAS	MIASR	MIASR	DUR	CON	NOTES	RATING	AVAR	MIAS	MIASR	MIASR	DUR	CON	NOTES	RATING
10758	PG&E	PG&E	BALLARD	COND	NC TEST for WVED CR REASONS	66			Y	08/28/2023 12:02 PM	08/28/2023		3350	291.5	0	0	0	4			3350	340.1	0	0	0	4			3340	404.7	0	0	0	4			
10757	PG&E	PG&E	BALLARD	TECH	NC TEST for WVED CR REASONS	66			Y	08/28/2023 12:02 PM	08/28/2023		3330	254.9	0	0	0	4			3330	342.9	0	0	0	0.8	23			3330	342.9	0	0	0	0	23	
10756	PG&E	PG&E	COTTONWOOD	COND	COTTONWOOD, NC AUTOLOADER - SW 63 TO SW 103	230			Y	09/01/2023 9:00 AM	09/01/2023		3350	105.8	0	0	0				3350	1254.8	0	0	0	4			3340	1602	0	0	0	4			
10755	PG&E	PG&E	COTTONWOOD	COND	COTTONWOOD, NC AUTOLOADER - SW 63 TO SW 103	230			Y	09/01/2023 9:00 AM	09/01/2023		3350	105.8	0	0	0				3350	1254.8	0	0	0	4			3340	1602	0	0	0	4			
10754	PG&E	PG&E	BELLOTA	COND	BELLOTA, NC AUTOLOADER - CB 53 TO SW 53 AND SW 93	230			Y	09/01/2023 9:00 AM	09/01/2023		3350	105.8	0	0	0				3350	1254.8	0	0	0	4			3340	1602	0	0	0	4			
10753	PG&E	PG&E	BELLOTA	COND	BELLOTA, NC AUTOLOADER - CB 53 TO SW 53 AND SW 93	230			Y	09/01/2023 9:00 AM	09/01/2023		3350	105.8	0	0	0				3350	1254.8	0	0	0	4			3340	1602	0	0	0	4			
10752	PG&E	PG&E	BELLOTA	TECH	BELLOTA, NC AUTOLOADER	230			Y	09/01/2023 9:00 AM	09/01/2023		3330	888.3	0	0	0	4			3330	198.1	0	0	0	0.8	23			3330	198.1	0	0	0	0	23	
BANCHERS													08/16/2023																								