


Business Requirements Specification

Subscriber Participating Transmission Ownership Model

Document Version: 1.0

Current Version Date: 7/25/2024

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

Disclaimer and Understanding

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.


 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

Table of Contents

1 Introduction 4

 1.1 Purpose 4

 1.2 Scope 4

2 Details of Business Need/Problem 6

 2.1 Description 6

3 Project Information 7

 3.1 Business Practice Manuals (BPM) 7

 3.2 Other 8

4 Business Requirements 9

 4.1 Business Process: Manage Model & Contract Implementation (MF) 9

 4.1.1 Business Requirements 9

 4.2 Business Process: Manage Resource Adequacy Requirements (CIRA) 11

 4.2.1 Business Requirements 11

 4.3 Business Process: Manage Bid Submission (SIBR) 12

 4.3.1 Business Requirements 12

 4.4 Business Process: Manage Interchange Transaction Schedules (ITS) 13

 4.4.1 Business Requirements 13

 4.5 Business Process: Manage Day-Ahead Market, Manage Real-Time Market 14


 4.5.1 Business Requirements 14

 4.6 Business Process: Manage Market Billing & Settlements (Settlements/DReAMS) 15

 4.6.1 Business Requirements 15

 4.7 Business Process: Market/Business Simulation 17

 4.7.1 Business Requirements 17

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

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 (SRS) 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).


Project Background

The Subscriber Participating Transmission Owner (Subscriber PTO) model is a new transmission development option available for transmission projects with generation development opportunities outside the CAISO balancing area to bring generation to meet California’s policy initiatives (e.g. renewable portfolio standards, GHG emissions, etc.). The model specifically supports CPUC generation portfolios required by the memorandum of understanding (MOU) with the California State agencies and the CAISO. Accordingly, the Subscriber PTO model allows for additional transmission to be developed to connect the CAISO BAA with out-of-state generation (e.g. Wyoming, New Mexico) that currently lack the necessary transmission to provide electricity to the CAISO BAA. The Subscriber PTO model thereby provides an option for projects not chosen in the transmission planning process to solicit Subscribers who then pay for the project (generation and transmission) and join the CAISO balancing area.


For purposes of this document, the new Subscriber PTO Model enables a subscriber PTO to develop its project without recovering the costs for its project through a transmission revenue requirement. At the same time, those who have paid for the project, *i.e.*, the subscribers, are exempt from congestion and other related costs on the subscriber PTO line because the subscribers will receive similar treatment and priority to existing contract rights holders (ETCs). Additionally, the Subscriber PTO model provides a mechanism for subscribers that financed the project and associated network upgrades the ability to receive reimbursement for those costs from non-subscribers that use the Subscriber PTO transmission facilities.

1.2 Scope

- Develop Subscriber PTO Model: account for a new PTO model that does not increase the Transmission Revenue Requirement (TRR) of the Transmission Access Charge / Wheeling Access Charge (TAC/WAC) and provides those who funded the project (“subscribers”) with Existing Transmission Contract (ETC) designation to account for their rights on the CAISO controlled grid
- Updated the Transmission Planning Process (TPP) to incorporate Subscriber PTO generation and transmission
- Updated the Generator Interconnection and Deliverability Allocation Process to allocate deliverability to the Subscriber consistent with the Tariff

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024


- Revise the TAC allocation process to fund the non-Subscriber usage payment amount ahead of allocation to the non-load serving PTOs
- Charge non-subscribers for use of the Subscriber PTO line the applicable non-subscriber usage rate (\$/MWH)
- Create a mechanism that allows for the payment to the Subscriber PTO for non-subscriber usage of the Subscriber PTO transmission facility:
 - Compare the Non-Subscriber Usage rate(s) (\$/MWh rate approved by FERC) to the TAC rate and pay the Subscriber PTO the lower of the two values
 - Create a flag to denote when the Non-Subscriber Usage Rate is higher than the TAC rate and publish results in the ISO bill determinant file
 - Indicate monthly gross exports and imports for Non-Subscriber usage of the Subscriber PTO transmission line
 - Indicate the TAC rate and the Non-Subscriber Usage Rate(s) as part of the Settlements TAC reports
- Develop methodology to address economic BAA to BAA transfers at new scheduling points created by Subscriber PTO transmission lines

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

2 Details of Business Need/Problem

2.1 Description


Business Opportunity/Problem Statement:	
What:	<p>The Subscriber Participating Transmission Owner (Subscriber PTO) Model is a new service the CAISO is making available to transmission with generation projects outside the CAISO balancing area to bring generation to meet California’s policy initiatives. The model will support CPUC generation portfolios required by the memorandum of understanding (MOU) with the state agencies and the CAISO. In addition, the Subscriber PTO model will allow for additional transmission to be developed to connect the CAISO BAA with out-of-state generation.</p>
Why do we have this opportunity/problem:	<p>New transmission is required to access out-of-state generation to meet CPUC resource portfolios. The new Subscriber PTO Model will support development of new transmission while also providing an interconnection method better suited to support imports into the CAISO BAA than the existing pseudo-tie arrangement. Additionally, the Subscriber PTO Model will accommodate FERC policies to support development of transmission projects through an approach where subscribers agree to fund transmission project in exchange for long-term transmission service rights.</p>

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

3 Project Information

3.1 Business Practice Manuals (BPM)


BPM	Description of Impact(s)
Definitions and Acronyms	<ul style="list-style-type: none"> • New Term: Applicant Participating Transmission Owner Agreement (APTOA) • New Term: Non-Subscriber • New Term: Non-Subscriber Usage Rate • New Term: Subscriber • New Term: Subscriber Encumbrance • New Term: Subscriber Participating TO • New Term: Subscriber Rights • New Term: Subscription Agreement • Updates to: <ul style="list-style-type: none"> ○ Existing Rights ○ Existing Transmission Contract (ETC) or Existing Contracts ○ New Participating TO ○ Participating TO or Participating Transmission Owner (PTO) ○ Transmission Revenue Requirement (TRR) ○ Transmission Revenue Balancing Account (TRBA)
Generator Interconnection and Deliverability Allocation Procedures	<ul style="list-style-type: none"> • Subscriber PTO generators that have been studied must apply for deliverability once: <ul style="list-style-type: none"> ○ The transmission studies with all impacted transmission owners are completed ○ Subscribers have executed a 3-party GIA that includes the ISO ○ The Subscriber PTO has committed to proceed with construction ○ The applicant provides a notice in writing to the applicable interconnecting TOs that it is proceeding with Construction Activities • Update TPD process to allocate deliverability to subscribers (subscribers must submit TP Deliverability requests) <ul style="list-style-type: none"> ○ Text Addition to First Component/Prior Commitments: and commitments established due to Subscriber rights
Market Instruments	<ul style="list-style-type: none"> • Define penalty level for applicable scheduling priority for subscriber rights (Subscriber self-schedules receive equal priority to ETCs)
Market Operations	<ul style="list-style-type: none"> • Describe details surrounding transfers at Subscriber PTO scheduling points
Reliability Requirements	<ul style="list-style-type: none"> • Impacts to Maximum Import Capability (MIC): Subscriber generation waiting for upgrades to receive deliverability can be

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

BPM	Description of Impact(s)
	counted in the interim for RA through MIC until deliverability is made available
Settlements and Billing	<ul style="list-style-type: none"> • Define Non-Subscriber Usage Rate • Update TAC/WAC revenue charge codes
Transmission Planning Process	<p>Detail the criteria for Subscriber PTO to be added to transmission planning process:</p> <ul style="list-style-type: none"> • The Subscriber PTO has executed the Applicant Participating TO Agreement • The generator interconnection agreement with the Subscriber • The Subscriber Participating provides the written notice to CAISO it is beginning Construction Activities • Transmission interconnection studies required by Transmission Owners have begun.

3.2 Other

Impact	Description (optional)
Market Participant Impact	Yes
External Bid Publication	No Impacts

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

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 Process: Manage Model & Contract Implementation (MF)

4.1.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-001	Define a new participant type: Subscriber Participating Transmission Owner (Subscriber PTO)	Core	MF
NSPTO-BRQ-002	Register new Subscriber PTOs that join the ISO BA	Process	MF
NSPTO-BRQ-003	Establish a new TAC area for each Subscriber PTO	Process	MF
NSPTO-BRQ-004	Register new interties and scheduling points on Subscriber PTO transmission lines	Process	MF
NSPTO-BRQ-005	Map new interties to the associated Subscriber PTO	Process	MF
NSPTO-BRQ-006	Register Subscriber PTO HVDC links for static percentage loss modeling and/or dynamic loss modeling defined DDR at HVDC inverter location and associated to ZISO <ul style="list-style-type: none"> Different Subscriber PTOs may choose different models 	Process	MF
NSPTO-BRQ-007	Map subscriber generating resources to the associated Subscriber PTO	Process	MF
NSPTO - BRQ-008	Create and broadcast a new resource flag to identify subscriber generating resources that are subject to MIC <ul style="list-style-type: none"> Flag should be sunset in the future when deliverability is made available to these resources 	Core	MF




ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-009	Map generators with new MIC flag (refer to BRQ-008) to the associated intertie and ITC	Process	MF
NSPTO-BRQ-011	Map subscriber generating resources to the associated CRN <ul style="list-style-type: none"> Subscribers may elect ETC designation 	Process	MF
NSPTO-BRQ-012	System shall create a new field to define Subscribed Capacity <ul style="list-style-type: none"> Subscribed Capacity shall be defined as the registered MW quantity of resource generation associated with a Subscriber PTO transmission line Subscribed capacity cannot exceed a resource's Pmax <p>Note: Subscribed Capacity is a representation of "Subscriber Rights" defined in the Tariff</p>	Core	MF
NSPTO-BRQ-016	Establish new Utility Distribution Company (UDC) area for each new Subscriber PTO area and broadcast to downstream systems <ul style="list-style-type: none"> All subscriber generating resources, interties, and loads (if any) shall be mapped to the associated UDC 	Core	MF

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

4.2 Business Process: Manage Resource Adequacy Requirements (CIRA)

4.2.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-022	Map new interties and scheduling points created by new Subscriber PTO transmission lines <ul style="list-style-type: none"> • New Subscriber PTO transmission lines may have multiple points to be mapped 	Existing Process	CIRA
NSPTO-BRQ-023	Establish MIC at every new Subscriber PTO scheduling point and intertie	Existing Process	CIRA
NSPTO-BRQ-024	RA obligation shall be defined at the Import Intertie Resource OR at the generator for Subscriber resources <ul style="list-style-type: none"> • Requires coordination with Subscriber PTOs and SCs to elect obligation definition 	Process	CIRA

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

4.3 Business Process: Manage Bid Submission (SIBR)

4.3.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-040	System shall receive ETC designation for subscriber generating resources and allow SCs to submit corresponding bids and self-schedules with source and sink (per existing ETC rules). <ul style="list-style-type: none"> • Apply existing rules for resource MW and entitlement validation 	Existing	SIBR

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

4.4 Business Process: Manage Interchange Transaction Schedules (ITS)

4.4.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-050	System shall consume new tie points and/or ITCs created by new Subscriber PTO transmission line interties	Existing	ITS
NSPTO-BRQ-051	Add Subscriber PTO Loss Resource IDs to ITS loss table	Process	ITS

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

4.5 Business Process: Manage Day-Ahead Market, Manage Real-Time Market

4.5.1 Business Requirements


ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-057	The system shall calculate ASRS as follows: Final Req = Max(calculated Req, Single Largest Contingency, max(Hourly MSSC (between any Trans Line in same hour)))	Core	IFM and RTM
NSPTO-BRQ-058	The system shall consume all hourly MSSC from all the inputs in the IFM	Core	RTM
NSPTO-BRQ-058A	The system shall consume all hourly MSSC values from all the Transmission lines from IFM	Core	RTM

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024


4.6 Business Process: Manage Market Billing & Settlements (Settlements/DReAMS)

4.6.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
NSPTO-BRQ-071	Develop new bill determinant to identify Subscriber PTO participant types separately from other participant types	Core	Settlements
NSPTO-BRQ-072	Consume Non-Subscriber Usage Rate (\$/MWh) <ul style="list-style-type: none"> Rates are registered with and approved by FERC 	Core	Settlements
NSPTO-BRQ-073	Map new Non-Subscriber Usage Rate (\$/MWh) to Subscriber PTO participant type in static data table <ul style="list-style-type: none"> Same rate for imports and exports Note: there may be different non-subscriber usage rates by intertie for the same Subscriber PTO	Core	Settlements
NSPTO-BRQ-075	System shall distinguish between Subscriber PTO Loss Resource IDs and other Loss Resource IDs <ul style="list-style-type: none"> Methodology for settling financial loss return for Subscriber PTO is described in BRQ-076 	Core	Settlements
NSPTO-BRQ-076	Calculate financial loss return using loss tags across CAISO entitlements and pay to Subscriber PTO and allocate to measured demand	Core	Settlements
NSPTO-BRQ-077	Exclude subscriber rights from BCR, offsets, IFM Congestion allocation (Existing process: same as other ETCs, up to the valid and balanced portion of their schedule, and has a financial right at the sink location)	Existing	Settlements
NSPTO-BRQ-078	System configuration changes to reflect updates to TAC/WAC rate calculation: <ul style="list-style-type: none"> LSEs without ETCs will pay the TAC Export SCs without ETCs will pay the WAC 	Core	Settlements
NSPTO-BRQ-079	System shall pay the Subscriber PTO the export schedule associated (WAC)portion of the Non-Subscriber Usage Payment Amount as defined below: <ul style="list-style-type: none"> The WAC portion of the Non-Subscriber Usage Payment Amount is calculated as the minimum 	Core	Settlements

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
	of the WAC rate and the Non-Subscriber Usage rate for exports (MWh) at Subscriber PTO Scheduling Points without ETCs		
NSPTO-BRQ-080	System shall pay the Subscriber PTO the import and demand served schedule (TAC) portion of the Non-Subscriber Payment Amount as formulated below: <ul style="list-style-type: none"> The TAC portion of the Non-Subscriber Usage Payment Amount is calculated as the minimum of the HVAC rate and the Non-Subscriber Usage rate for imports at Subscriber PTO Scheduling Points without ETCs plus generation not associated with Subscribed Capacity (See BRQ-083 for consumption of Subscribed Capacity) 	Core	Settlements
NSPTO-BRQ-080a	Non-Subscriber Usage Payment Amount The Non-Subscriber Usage Payment Amount is equal to the sum of the WAC portion of the non-Subscriber Usage Payment Amount plus TAC portion of the non-Subscriber Usage Payment Amount	Core	Settlements
NSPTO-BRQ-081	System shall update Settlement Configuration guides for TAC Allocation: <ul style="list-style-type: none"> Indicate Non-Subscriber usage rate on the Settlement TAC reports 	Core	Settlements
NSPTO-BRQ-082	System shall publish the following in the ISO bill determinant file: <ul style="list-style-type: none"> Intervals for which non-subscriber rate was higher than the TAC rate Monthly gross exports and imports for Non-Subscriber usage of the Subscriber PTO line 	Core	Settlements
NSPTO-BRQ-086	System shall set UFE exclusion flag to exclude Subscriber PTO UDC areas from UFE	Core	Settlements

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

4.7 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.

4.7.1 Business Requirements

ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
NSPTO-MSIM-001	<ul style="list-style-type: none"> • Subscriber PTO generating resource SCs submit self-schedules using ETC/TOR rights • Subscriber PTO resource ETC/TORs receive the perfect 	SIBR IFM/RTM	Settlements	Verify that Subscriber PTO generating resource



	hedge and are excluded from TAC/WAC collection/allocation process			contract rights are observed
NSPTO-MSIM-002	<ul style="list-style-type: none"> Non-Subscriber generating resource SCs submit economic energy bids. Market awards and dispatches these resources (i.e. non-subscriber usage) Non-Subscriber generating resource SCs submit economic import/export bids at new Subscriber PTO interties. Settlements system collects revenues for non-subscriber usage and allocates revenues to the Subscriber PTO: compare the non-subscriber usage rate with the applicable TAC/WAC rate and pay Subscriber PTO the minimum. <ul style="list-style-type: none"> Non-subscriber usage rate(s) must be defined for each Subscriber PTO 	SIBR IFM/RTM	Settlements	Verify that Subscriber PTOs are properly compensated for non-subscriber usage of their transmission lines
NSPTO-MSIM-003	<ul style="list-style-type: none"> Subscriber resource SCs interconnected to non-contiguous Subscriber PTO transmission lines submit tag Verify any specific tagging criteria established specifically for Subscriber PTO generation tags is functioning properly 	Participant tagging systems	ITS WebSmart Tag	Tagging Validation
NSPTO-MSIM-004	<ul style="list-style-type: none"> Subscriber generating resource SCs submit self-schedules using their ETC/TOR rights for Subscriber PTO transmission lines Market applies scheduling limits and determines awards. Awards cannot exceed physical 	SIBR	IFM/RTM	Market awards cannot exceed transmission constraints

 California ISO	Technology	Template Version:	7.1
		Document Version:	1.0
Subscriber Participating Transmission Ownership Model Business Requirements Specification		Date Created:	7/18/2024

	transmission constraints that define what can be scheduled into the main CAISO BAA			
NSPTO-MSIM-005	<ul style="list-style-type: none"> Metering system or ITS broadcasts intertie mirror to Settlements Subscriber PTO UDC is NOT settled for UFE 	EDAS ITS	Settlements	Verify that UFE is not calculated for Subscriber PTO UDC