Congestion Revenue Rights (CRR) Upgrade Project - Customer Partnership Group

Monthly Call – Feb 22, 2022

Congestion Revenue Rights Team

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Instructions for raising your hand to ask a question

- If you are connected to audio through your computer or used the "call me" option, select the raise hand icon located on the top right above the chat window. Note: #2 only works if you dialed into the meeting.
    - Please remember to state your name and affiliation before making your comment.
    - You may also send your questions via chat to Brenda Corona or to all panelists.

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Agenda

Time	Topic
10:00 – 10:05	Welcome
10:05 – 10:15	CRR Upgrade Project – Update / Overview
10:15 – 10:25	CRR Upgrade project – Get connected
10:25 – 10:55	CAISO B2B Improvements – Goals & Current Status
10:55 – 11:00	Next Steps

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CRR Upgrade Project - Overview

- The ISO has decided to upgrade the existing CRR system with a new system that adopts the latest technology stack aligned with the ISO's technology standards, consolidates all CRR related functions, minimizes human errors, reduces processing time, eliminates manual workarounds, and positions the system to accommodate policy changes down the road.

- This on-going Customer Partnership Group (CPG) will provide an overview of the schedule, review of external BRS and answer questions. Subsequent meetings will include detailed review and discussion of business process changes impacting market participants.

- http://www.caiso.com/Documents/BusinessRequirementsSpecification_CongestionRightsRevenueUpgrade.pdf

- The goal of this CPG is to ensure customer readiness as this project deploys to Production in 2024.

Timeline

CRR Upgrade Project– Updates

Updates

- B2B specifications final draft – 2/24/2023
- Updated BRS – 3/17/2023
- Draft Deployment plan – 3/17/2023

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CRR Upgrade Project– Overview of changes

- Load submission process
  - At the time of load submission participant will be notified of any failed validation per sink location based on the exceedance load and allow to resubmit
- OBAALSE process
  - EQ load election will be submitted through the UI during the OBAALSE load submission

- Consolidate data publishing in MUI and/or OASIS

  – Calendar: change from webpost to OASIS

  – Model data: change from webpost to MUI, including both NDA and non NDA files

  – Market Result data: from webpost to MUI

- Modeling data

  – Powerflow case to be released in PSSE v30

  – ITC definition will be modeled as source and sink

- Features added to enable user performing additional tasks

  – MT_TOR: user to submit through UI, currently performed by CRR group

- Changes to Load Migration and Source and Sink processes

- User access

  – User will be provisioned to specific functions within the system, based on the application access request approval process

- Webservices interface for interacting with MUI

CRR Upgrade Project– Overview of changes Cont.

- Source and Sink list release
  - Remove the existing 30 days ahead of allocation version
  - Will be released in v0, v1 and other updates within the active market period
- Retired resource mapping
  - Re-map the retired PNode to the closest electrically connected PNode that is also a biddable location in the CRR processes and has the same source/sink designation as the retired location
  - Baseloading CRR will be mapped based on the model used in the active market period to capture the most accurate topology
  - Mapping will be released for the corresponding market period
- Source and Sink islanded by outage
  - With baseloading CRR, sell offer allowed
  - No baseloading CRR, will not be biddable for the effective market

CRR Upgrade Project – Phase 2 BRQ

- BRQ00220 - The CRR system publishing of the calendar to OASIS shall be automatic. Published once per year and ability to edit before publication.
- BRQ03630 - Broadcast set aside value to OASIS
- BRQ05262 - Broadcast credit margin report to OASIS
- BRQ05264 - Broadcast 3 year historical expected value to OASIS
- BRQ05786 - Broadcast Retired Resource Name Change Mapping to OASIS
- BRQ06770 - Broadcast Binding Constraints to OASIS
- BRQ06871 - Broadcast CRR source and sink list to OASIS

Note: BRS update on 11/18/2022

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CAISO B2B Improvements – Goals & Current Status

- **Goals**
  - Enhance the developer experience working with CAISO Web API's
  - Provide API's in REST/JSON using OpenAPI 3.0 specification
  - Provide examples, mock services and tooling to generate client/server stubs and SDK
  - Provide tests for the API's using Postman collections
  - Collaboration using Git and forums on developer.caiso.com
  - Simplify authentication using mutual TLS and X.509 certificates

- **Update**
  - POC updates and notes and recording from meetings are posted on developer forum at https://developer.caiso.com/forum/topics.aspx?ForumID=4.
  - Documents uploaded to the Developer Forum: https://developer.caiso.com/forum/messages.aspx?TopicID=6119
    - PowerPoint presentation and webinar recording
    - Draft version of CRR Auction Service OpenAPI Specifications
    - Draft version of CRR business validate message bundle

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CAISO B2B Improvements – SOAP vs REST

SOAP

```
POST /GetStock HTTP/1.1
Host: www.example.org
Content-Type: application/soap+xml

<?xml version="1.0"?>
<soap:Envelope
xmlns:soap="http://www.w3.org/2001/12/soap-
envelope"
soap:encodingStyle="http://www.w3.org/
2001/12/soap-encoding">

<soap:Body xmlns:m="http://www.example.org/
stock">
 <m:GetStockPrice>
  <m:StockName>IBM</m:StockName>
 </m:GetStockPrice>
</soap:Body>
</soap:Envelope>
```

REST

```
GET http://example.org/stock/IBM
```

- SOAP (Simple Object Access Protocol) provides the following advantages when compared to REST:
  – Language, platform, and transport independent (REST requires use of HTTP)
  – Works well in distributed enterprise environments (REST assumes direct point-to-point communication)
  – Standardized
  – Provides significant pre-build extensibility in the form of the WS* standards
  – Built-in error handling
  – Automation when used with certain language products
- REST (Representational State Transfer) is easier to use for the most part and is more flexible. It has the following advantages when compared to SOAP:
  – Uses easy to understand standards like swagger and OpenAPI Specification 3.0
  – Smaller learning curve
  – Efficient (SOAP uses XML for all messages, REST mostly uses smaller message formats like JSON)
  – Fast (no extensive processing required)
  – Closer to other Web technologies in design philosophy
  – As one REST API tutorial put it: SOAP is like an envelope while REST is just a postcard

https://www.soapui.org/learn/api/soap-vs-rest-api/

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CAISO B2B Improvements – OpenAPI Overview

https://www.openapis.org/
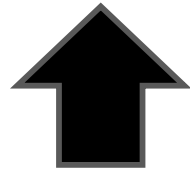
REST API

- The OpenAPI Specification is a specification describing, producing, consuming, and visualizing RESTful web services.

- OpenAPI is known to many developers as a standard that enables API reference documentation to be generated automatically from the specification document.

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CAISO B2B Improvements – OpenAPI Specification File

XSD

.WSDL
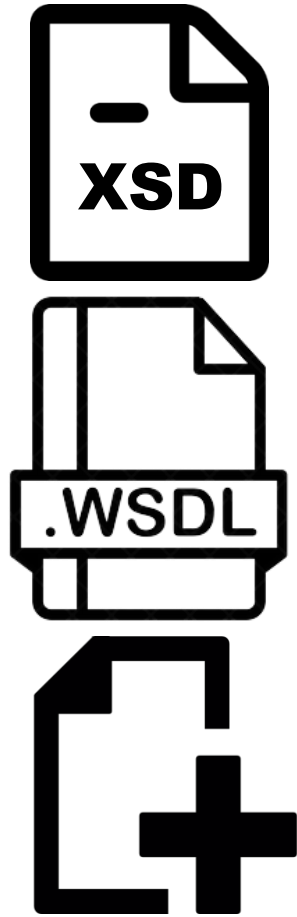
Consolidates technical specifications into a single document

OPENAPI

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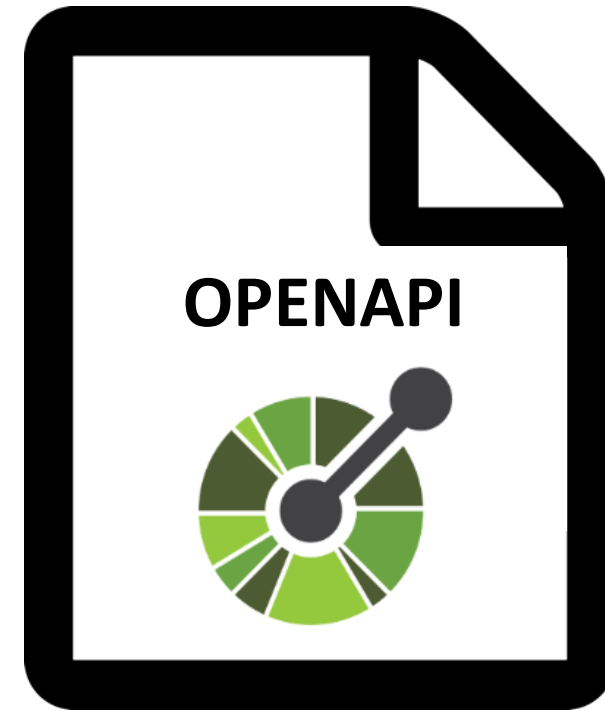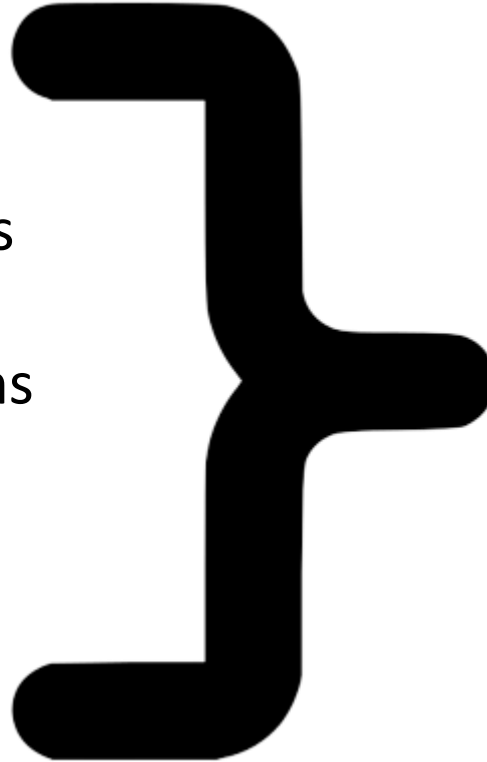
CAISO B2B Improvements – CRR Developer Forum

https://developer.caiso.com/pages/application.aspx?app=CRR

RESTful services

About status

Search RESTful services

Filter

SERVICE	SPECIFICATION	DOCUMENTATION	STATUS	RELEASE	EFFE(
CRR Auction	crr_auction_1.0.0.yaml	crr_auction_1.0.0.html	NA	NA	NA
CRR Historical and Forecasted Load	crr_historical_and_forecasted_load_1.0.0.yaml	crr_historical_and_forecasted_load_1.0.0.html	NA	NA	NA
CRR Market Data	crr_market_data_1.0.0.yaml	crr_market_data_1.0.0.html	NA	NA	NA
CRR Market Status	crr_market_status_v1.0.0.yaml	crr_market_status_v1.0.0.html	NA	NA	NA
CRR Message	crr_message_1.0.0.yaml	crr_message_1.0.0.html	NA	NA	NA
CRR Nomination	crr_nomination_1.0.0.yaml	crr_nomination_1.0.0.html	NA	NA	NA
CRR Secondary Market	crr_secondary_market_1.0.0.yaml	crr_secondary_market_1.0.0.html	● PROD_LATEST	Spring 2020	NA
	crr_secondary_market_0.0.0.yaml	crr_secondary_market_0.0.0.html	● MAP_STAGE	DRAFT	NA
CRR Tor Conversion	crr_tor_conversion_1.0.0.yaml	crr_tor_conversion_1.0.0.html	NA	NA	NA

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CAISO B2B Improvements – Example: CRR Auction API

CAISO B2B Improvements – Free Swagger Editor Tool

https://editor.swagger.io/

CAISO B2B Improvements – New Web Services for CRR

Service	Operation
Allocation Nomination Portfolio	POST/GET
Auction Bid Portfolio	POST/GET
Historical and Forecasted Load	POST/GET
Existing CRRs (CRR Market Data)	GET
Market Data (CRR Market Data)	GET
Market Results (CRR Market Data)	GET
Private Allocation Results (CRR Market Data)	GET
Private Auction Results (CRR Market Data)	GET
Load Migration Data	POST/GET
Market Status (Market Info)	GET
CRR Messages	GET
Secondary Market	POST/GET
TOR Conversion	POST/GET

CAISO B2B Improvements – File Naming Convention

A2A/B2B OpenAPI File Naming Conventions for versioning:

File name example: **caiso_crr_market_info_v1.0.0_openapi.yaml**

Version Numbering Format: **MAJOR.MINOR.MINI**

> MAJOR version of the file name will be incremented if there are any new services added or any major version update to any of the existing services

> MINOR version of the file name will be incremented if there any minor version update to any of the existing services

> MINI version of the file name will be incremented if there are only documentation changes/corrections, with no service changes.

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CAISO B2B Improvements

Each version update of the file name will reset the version numbers on the right

Version numbers will be tracked into the YAML file as part of the Release Notes

Example:
v1.0.0   File is published to market participants
v1.0.**1**   Edits were made to documentations, no functional changes
v1.0.**2**   Edits were made to documentations, no functional changes
v1.0.**3**   Edits were made to documentations, no functional changes
v1.**1**.0   Added a Minor version for a service
v1.1.**1**   Edits were made to documentations, no functional changes
v1.**2**.0   Added a Minor version for a service
v1.**3**.0   Added a Minor version for a service
v**2**.0.0   Added a Major version for a service
v2.0.**1**   Edits were made to documentations, no functional changes
v**3**.0.0   Added a new service

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Next Steps

- Next meeting is March 22, 2023

- Discuss following topics

  – B2B specs

  – Updated Ext. BRS

  – Draft deployment plan

- Visit CPG webpage for more information:
  http://www.caiso.com/informed/Pages/MeetingsEvents/CustomerPartnershipGroups/Default.aspx