



California ISO


Congestion Revenue Rights (CRR) Upgrade Project Customer Partnership Group

July 25th, 2024

10:00 a.m.–11:00 a.m. (Pacific Time)

Web Conference Information	Conference Call Information
<p>Web Address: https://caiso.webex.com/caiso/j.php?MTID=m4c62047c8ca3c36c50e2d1182518f8f9</p> <p>Audio connection instructions will be available after connecting to the web conference. When prompted, select "Call me" and enter the phone number you will use during the call. You will be called by the conference shortly.</p>	<p>1-844-621-3956 United States Toll Free +1-650-479-3208 United States Toll</p> <p>Access code: 248 7236 5119 password: CRRCPG</p>
<p>Calls and webinars are recorded for stakeholder convenience, allowing those who are unable to attend to listen to the recordings after the meetings. The recordings will be publicly available on the ISO web page for a limited time following the meetings. The recordings, and any related transcriptions, should not be reprinted without the ISO's permission.</p>	
<p>https://www.caiso.com/meetings-events/topics/congestion-revenue-rights-crr-settlement-upgrade-project-customer-partnership-group</p>	

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 Yelena Kopylov-Alford or to all panelists.

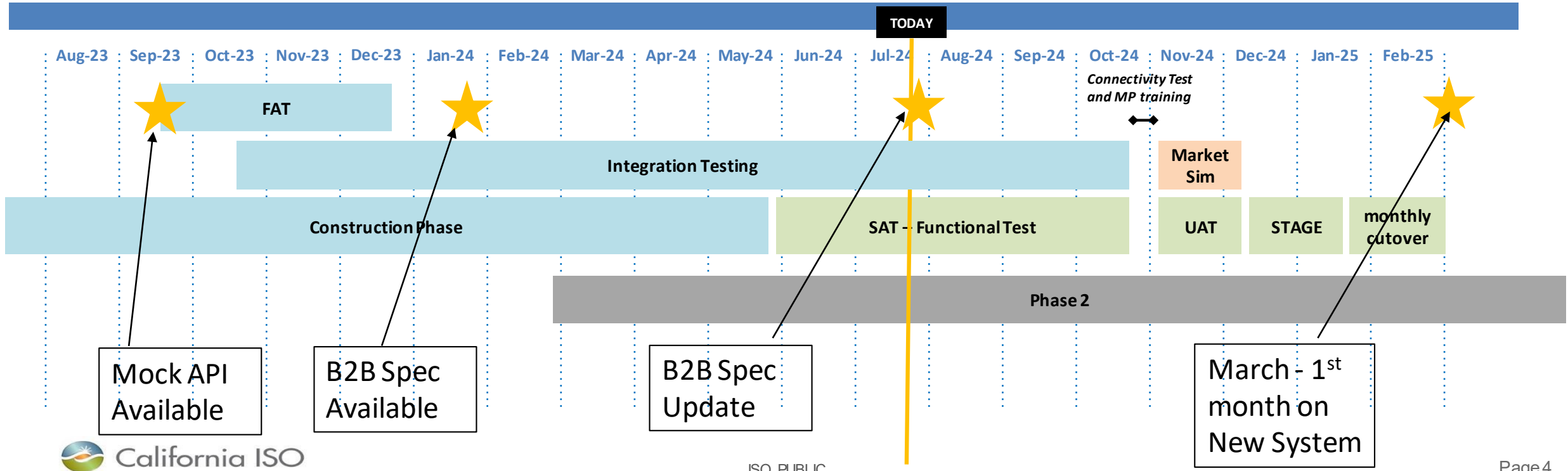
Agenda

Time (PST)	Topic
10:00 – 10:05	Welcome
10:05 – 10:15	CRR Upgrade Project timeline Update
10:15 – 10:35	B2B Spec Updates
10:35 – 10:45	Market Sim plan
10:45 – 11:00	Questions and Next steps

CRR System Upgrade – Project Update & Timeline

Updated July 2024

- Functional Site Acceptance Testing, B2B integration and security testing continues
- Connectivity Testing – 1 week after above testing, starting in late October, just before Market SIM
- Training – 1 week before Market SIM in late October
- Market SIM - 2 week structured, then 3 week unstructured starting in early November
- 2025 Annual Cycle, carried out in 2024, will occur on the current Production CRR application
- Cutover to new CRR application - 2025 March Monthly Allocation and Auction Market, carried out in February 2025



B2B Spec Updates

- YAML file name/version updated
 - Version Numbering Format: **MAJOR.MINOR.MINI** – caiso_crr_auction_v1.0.0.yaml
- Multiple versions of YAML/HTML/JSON Schemas are now available on Developer Site
- Mock services updated
- Documentation: fixed typos or edited description/summary for different elements
- Made **summary** a very high level preview of what the endpoint achieves and the **description** explains it a bit further
- Other spec edits

B2B Spec Updates - Details

- **operationId** changed for some endpoints
 - **CRR Load Migration**: getLoadMigrationTransfers to getLoadMigrationCRRs
 - **CRR Market Status**: getmarketstatus to getMarketInfo
- Changed delete portfolio endpoint/path (URI) implementation
 - **CRR Auction**: removed path params ({marketName}/{portfolioName}) and replaced with headers
- Added a **required** element
 - **CRR Load Migration**: schemas: > PostDASRsummaryset: > effectiveDate
- Added new enum value
 - **CRR Market Data**: components: > parameters: > PublicMarketDownloadType: > **SET_ASIDE**
- Standardized error class
 - **CRR Messages**: ApiException to CRRServiceException
- Renamed response schema object
 - **CRR Nomination**: PortfolioStatus to Portfolio
- Adjusted RegEx for some string elements or added new regex
 - **CRR Nomination**: NewNomination:/NewPortfolio:/Nomination:/PortfolioStatus: > pattern
 - **CRR Nomination**: + portfolioIdentifier: > portfolioName:/marketName: > pattern

JSON Schema Updates

- JSON file/version updated
- Documentation: fixed typos in different elements description
- Added **PublicMarket/CRRSetAside_v1.draft-07.schema.json**
- Some elements changed from **required** to **optional**
 - **CRRInterface_v1.draft-07.schema.json**: OperatingPositiveLimit and OperatingNegativeLimit
 - **CRRLineAndTransformer_v1.draft-07.schema.json**: OperatingEmergencyRating & OperatingNormalRating
 - **CRRSEQResult_v1.draft-07.schema.json**: TotalSEQ
- Fixed typos
 - Multiple JSON schemas: maxlenth to maxLength
- Added new enum value
 - **CRRSourceSink_v1.draft-07.schema.json**: added **CONTRACT** to NodeType enum
- JSON Schema Refactored
 - **CRROutage_v1.draft.-07.schema.json**: multiple changes

Market Sim plan

Calendar layout of proposed CRR monthly and Annual Market Sim plan

Market Sim 2024

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
week 1 T-2w - Connectivity Prior to Market Sim - Kickoff and Overview	<ul style="list-style-type: none"> Market Sim Plan High level overview of new system Uploading and Downloading <ul style="list-style-type: none"> Manual Entry, File Upload, API Public/Private Downloads Messages Sorting and Filtering Documentation and Resources Contact Information data setup of multiple markets	<u>Allocation Monthly Participants</u> <ul style="list-style-type: none"> Submit Nominations for Tier 1 Monthly Market (dummy MEQ) Windows Close on Wednesday Submit Historical/Forecast Load Download Nomination Cap data Download Allocation Market Results Market Sim Webex	<u>Auction Monthly Participants</u> <ul style="list-style-type: none"> Submit Auction Portfolios Monthly Auction Market <ul style="list-style-type: none"> Buy Bids, Sell Offers Credit - provide \$10mil to all MPs for testing Windows Close on Thursday Download Auction Market Results Market Sim Webex	<u>Miscellaneous Monthly process</u> <ul style="list-style-type: none"> UDC Load Migration Submissions CEC Load Forecast Submissions LT Re-nomination Secondary Market MT_TOR CRR Approvals Market Sim Webex 3-4pm PST	Reserved for CRR team data processing and participant responses Environment Patching
week 2 Reserved for CRR team data processing and participant responses CRR team setup for Monthly Mini Auction		<u>Allocation Annual Participants</u> <ul style="list-style-type: none"> Submit Nominations for Tier 1 Annual Market (dummy SEQ/UB/Signature Pair) Market Sim Webex	<u>Auction Annual Participants</u> <ul style="list-style-type: none"> Submit Auction Portfolios Annual Auction Market <ul style="list-style-type: none"> Buy Bids, Sell Offers Credit - provide \$10mil to all MPs for testing Re-submit for any processes or scenarios which had issues previously Market Sim Webex	<u>Miscellaneous Annual process</u> <ul style="list-style-type: none"> Submit Auction Portfolios for Participant requested scenarios View results from Week 1 submissions Market Sim Webex	Reserved for Q&A sessions, issue reporting, etc. Environment Patching

Market Sim 2024

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
week 3	Unstructured Week 1	Unstructured <ul style="list-style-type: none"> Re-submit for any process of scenarios for customer specific testing Market Sim Webex	Unstructured	Unstructured Market Sim Webex	Reserved for CRR team data processing and participant responses Environment Patching
week 4	Unstructured Week 2	Unstructured	Unstructured Market Sim Webex	Unstructured	Reserved for CRR team data processing and participant responses Environment Patching
week 5		Unstructured Cont.	Unstructured Cont.	Unstructured Cont. Market Sim Webex	Reserved for CRR team data processing and participant responses Environment Patching

Month 2024

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
California ISO	<div>week 6</div> <div>Resolve any defects found during market Sim / UAT</div> <div>Move to stage L&P testing BU complete UAT</div>	<div>L&P Testing</div> <div>BU UAT</div>	<div>L&P Testing</div> <div>BU UAT</div>	<div>L&P Testing</div> <div>BU UAT</div>	<div>1</div> <div>L&P Testing</div> <div>BU UAT</div>
	<div>week 7</div> <div>L&P Testing</div> <div>BU UAT</div>	<div>5</div> <div>L&P Testing</div> <div>BU UAT</div>	<div>6</div> <div>L&P Testing</div> <div>BU UAT</div>	<div>7</div> <div>L&P Testing</div> <div>BU UAT</div>	<div>8</div> <div>L&P Testing</div> <div>BU UAT</div>
	<div>week 8</div> <div>Buffer week</div>	<div>12</div> <div>Buffer week</div>	<div>13</div> <div>Buffer week</div>	<div>14</div> <div>Buffer week</div>	<div>15</div> <div>Buffer week</div>
	<div>week 9</div> <div>Deploy to Production Initiate Data Migration plan from RI</div>	<div>19</div> <div>Initiate Data Migration plan</div>	<div>20</div> <div>Initiate Data Migration plan</div>	<div>21</div> <div>Initiate Data Migration plan</div>	<div>22</div>
	<div>week 10</div> <div>[Add monthly cutover Plan]</div>	<div>26</div>	<div>27</div>	<div>28</div>	<div>29</div> <div><div><div></div></div><div>Market Sim /UAT</div></div> <div><div></div><div>Production</div></div>

QUESTIONS?

Next Steps

- Next meeting is Thursday August 22nd, 2024
- Discuss following topics
- Visit CPG webpage for more information: <https://www.caiso.com/meetings-events/topics/congestion-revenue-rights-crr-settlement-upgrade-project-customer-partnership-group>



REGISTRATION IS OPEN

2024 STAKEHOLDER SYMPOSIUM

Welcome reception - Oct. 29
at Kimpton Sawyer Hotel, Sacramento, CA

Symposium program - Oct. 30
SAFE Credit Union Convention Center
Sacramento, CA

Visit the event website: www.reg.eventmobi.com/2024stakeholdersymposium

SPONSORSHIP OPPORTUNITIES AVAILABLE

Save the Date - Resource Interconnection Standards Fair on 9/17/24

The objective of this educational forum is to provide stakeholders with an opportunity to learn more about the ISO's [interconnection process](#) and recent changes affecting Cluster 15. If you plan to attend the meeting in person, please [register](#) by end of day Sept. 13, 2024.

The forum will include a series of presentations and discussions that outline the interconnection requirements for a new resource to be able to connect to the ISO grid. Presentations will cover a range of topics from submitting an interconnection request application to declaration of commercial operation. Transmission projects will not be addressed at this fair.

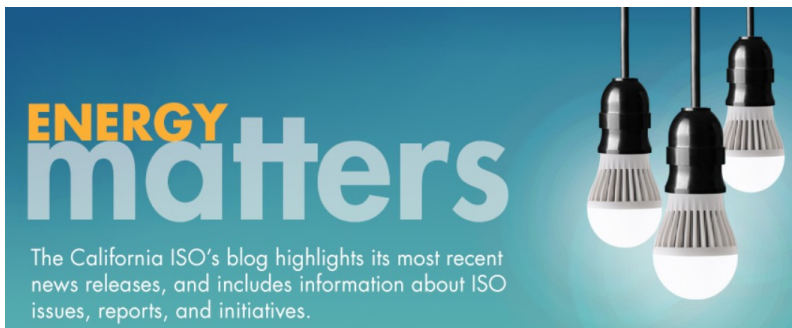
The following stakeholders are encouraged to participate:

- Individuals who have submitted an interconnection request application for Cluster 15
- New and existing interconnection customers
- Regulatory agencies
- Consultants
- Trade associations
- Participating Transmission Owners

Stakeholders are invited to submit questions in advance to be addressed during the meeting. Please send questions to isostakeholderaffairs@caiso.com. Stakeholders will also have an opportunity to ask question after each topic is presented during the event.

The final agenda and presentations will be posted prior on the [meetings webpage](#).





Energy Matters blog provides timely insights into ISO grid and market operations as well as other industry-related news.

<https://www.caiso.com/about/news/energy-matters-blog>

The graphic shows a stylized map of the Western United States in blue, with the text "WESTERN ENERGY MARKETS" and "WEM" overlaid.

Story | Western Energy Imbalance Market

Western Energy Imbalance Market Governing Body adopts new name to reflect evolving role

By: Robert Kondziolka

07/18/2024

The graphic shows a silhouette of high-voltage power lines against a bright orange and yellow sunset sky.

Story | Summer Conditions

Managing the July 2024 heat wave with our partners in California and the West

By: Dede Subakti

07/15/2024

Subscribe to [Energy Matters blog monthly summary](#)

New Policy Initiatives Timeline

The California ISO has launched the Policy Initiatives Timeline to offer stakeholders a concise overview of ongoing policy initiatives. At a glance, it offers a snapshot view of key details such as the status of each initiative, projected timelines, and the current phase of the stakeholder engagement process. Updates to this timeline will be made weekly and posted on the [policy initiatives landing page](#). For more information, stakeholders are encouraged to reach out to ISOStakeholderAffairs@caiso.com.



REFERENCE SLIDES

CRR Service Endpoint Details

#	Service	GET	POST	Likelihood that file submission may be greater than > 1 MB filesize	CRR System (UI / API)
1	CRR Historical & Forecasted Load	x	x	Yes	Phase 1: Use UI for submission for now, no API available Phase 2: API submission pattern - TBD
2	CRR Auction	x	x	Yes	Maximum 500 recs for any file submission to the system 20 bid segments per bid (business rule)
3	CRR Load Migration	x	x	No	-
4	CRR Nomination	x	x	Yes	Maximum 500 recs for any file submission to the system
5	CRR Secondary Market	x	x	No	Maximum 500 recs for any file submission to the system

CRR Service Endpoint Details

#	Service	GET	POST	Potential submission for >1mb filesize	Comments
1	CRR App Status	x	n/a	n/a	Only retrieve data, no submission
2	CRR Market Data	x			
3	CRR Market Status	x			
4	CRR Messages	x			

RECAP: 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.

RECAP: 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 NDAfiles
 - 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**

Market Sim - Overview

- Market participant training will complete prior to last week of connectivity, and one week before start of Market Sim
- 4 weeks connectivity
 - Week two CAISO will provide ability for allocation and auction API upload
 - No functionality will be available to test until the start of Market Sim
- 3 week structured scenario execution
- 2 week unstructured
- CAISO will request all interested CRR market participants sign up to participate in Market Sim
- All current user profiles will be migrated into Map-stage for Market Sim, new participants will need to request to be provisioned

RECAP: 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 marketperiod

- **Source and Sink islanded by outage**

- With baseloading CRR, sell offer allowed
- No baseloading CRR, will not be biddable for the effective market

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

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/>

CAISO B2B Improvements – CRR Developer Forum

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

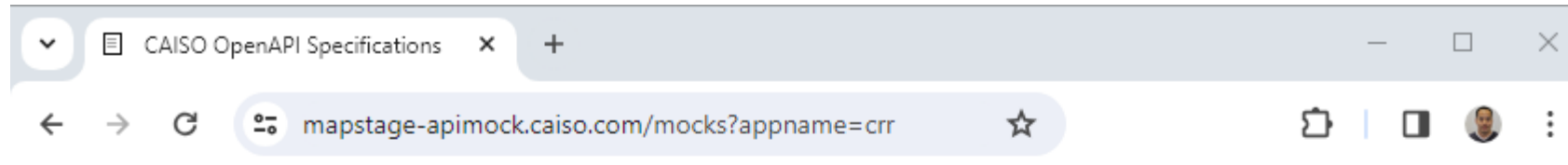
RESTful services

 About status

<div>Search RESTful services</div> <div>Filter</div>					
SERVICE	SPECIFICATION	DOCUMENTATION	STATUS	RELEASE	EFFECTIVE DATE
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

CAISO CRR API Mock Services

<https://mapstage-apimock.caiso.com/mocks?appname=crr>



Specifications:

- [mock_caiso_crr_auction_v1.0.0.html](#)
- [mock_caiso_crr_historical_and_forecasted_load_v1.0.0.html](#)
- [mock_caiso_crr_market_data_v1.0.0.html](#)
- [mock_caiso_crr_market_status_v1.0.0.html](#)
- [mock_caiso_crr_message_v1.0.0.html](#)
- [mock_caiso_crr_nomination_v1.0.0.html](#)
- [mock_caiso_crr_secondary_market_v1.0.0.html](#)
- [mock_caiso_crr_tor_conversion_v1.0.0.html](#)

CAISO B2B Improvements – Example: CRR Auction API

```
+ 1 openapi: 3.0.0
+ 2 servers:
+ 3   - url: https://virtserver.swaggerhub.com/RI-GM/caiso_crr_auction_v1.0.0_openapi/1.0.0
+ 4
+ 5 info:
+ 6   description: This includes all openapi services for CRR bids and offers
+ 7   version: "1.0.0"
+ 8   title: CRR Auction API
+ 9   contact:
+ 10    email: ihedge-support@resource-innovations.com
+ 11
+ 12 tags:
+ 13   - name: write
+ 14     description: require read/write access
+ 15   - name: read
+ 16     description: requires read only
+ 17
+ 18 paths:
+ 19   /auction/v1.0/portfolio:
+ 20     get:
+ 21       tags:
+ 22         - read
+ 23       summary: gets bids and offers for given market name
+ 24       operationId: getPortfolio
+ 25       description: |
+ 26         By passing in the appropriate market name, portfolio name, and participant name, the auction portfolio will be returned.
+ 27       parameters:
+ 28         - $ref: '#/components/parameters/MarketName'
+ 29         - $ref: '#/components/parameters/PortfolioName'
+ 30         - $ref: '#/components/parameters/ParticipantName'
+ 31
+ 32       responses:
+ 33         '200':
+ 34           description: search results matching criteria
+ 35           content:
+ 36             application/json:
+ 37               schema:
+ 38                 $ref: '#/components/schemas/Portfolio'
```

API SUMMARY

API METHODS - READ

getPortfolio
getPortfolioList
getPortfolioRequiredCredit
getPortfolioStatus

API METHODS - STATUS

getStatus

API METHODS - WRITE

deletePortfolio
portfolioCreation
portfolioSubmission
postPortfolioRetraction

CRR Auction API

API and SDK Documentation

Version: 1.0.0

This includes all openapi services for CRR bids and offers

Read

getPortfolio

gets bids and offers for given market name, portfolio name, and logged-in user

By passing in the appropriate market name, portfolio name, and participant name, the auction portfolio will be returned.

GET

/auction/v1.0/portfolio

Usage and SDK Samples

Curl Java Android Obj-C JavaScript C# PHP Perl Python

```
curl -X GET \
-H "Accept: application/json" \
"https://virtserver.swaggerhub.com/RI-GM/caiso_crr_auction_v1.0.0_openapi/1.0.0/auction/v1.0/portfolio?marketName=&portfolioName=&participantName="
```

CAISO B2B Improvements – Free Swagger Editor Tool

<https://editor.swagger.io/>

The screenshot displays the Swagger Editor web application. The left pane shows the OpenAPI definition in JSON format, and the right pane shows the rendered API documentation.

Swagger Editor Interface:

- Left Pane (JSON Definition):**

```
1 openapi: 3.0.0
2 servers:
3   - url: https://virtserver.swaggerhub.com/RI-GM/
      /caiso_crr_auction_v1.0.0_openapi/1.0.0
4
5 info:
6   description: This includes all openapi services for CRR bids and
      offers
7   version: "1.0.0"
8   title: CRR Auction API
9   contact:
10    email: ihedge-support@resource-innovations.com
11
12 tags:
13   - name: write
14     description: require read/write access
15   - name: read
16     description: requires read only
17
18 paths:
19   /auction/v1.0/portfolio:
20     get:
21       tags:
22         - read
23       summary: gets bids and offers for given market name, portfolio
24         name, and logged-in user
25       operationId: getPortfolio
26       description: |
27         By passing in the appropriate market name, portfolio name,
28         and participant name, the auction portfolio will be
29         returned.
30       parameters:
31         - $ref: '#/components/parameters/MarketName'
32         - $ref: '#/components/parameters/PortfolioName'
33         - $ref: '#/components/parameters/ParticipantName'
```
- Right Pane (Rendered API):**
 - Header:** CRR Auction API 1.0.0 OAS3
 - Description:** This includes all openapi services for CRR bids and offers. [Contact the developer](#)
 - Servers:** https://virtserver.swaggerhub.com/RI-GM/caiso_crr_auction_v1.0.0_openapi/
 - Tags:** write (require read/write access)
 - Endpoints:**
 - POST** /auction/v1.0/portfolioCreation: creates a new auction portfolio
 - POST** /auction/v1.0/portfolioSubmission: submits portfolio to the specified auction
 - POST** /auction/v1.0/portfolioRetraction: retracts portfolio from being submitted to the specified auction

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.

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 ReleaseNotes

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
v2.0.0	Added a Major version for a service
v2.0.1	Edits were made to documentations, no functional changes
v3.0.0	Added a new service