



California ISO

Day in the Life Energy Imbalance Market

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Day in the Life Energy Imbalance Market

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1 Introduction

This document provides an overall view of ISO applications, application functional testing and application integration testing for a participant in the Energy Imbalance Market.

2 Background

The Day in the Life Energy Imbalance Market (EIM) document was created to identify specific business functionality and its relevant software integration touch points between the California Independent System Operator (ISO) the EIM operator and the EIM entity.

3 ISO Applications and Functionality

The systems listed below will be validated by the EIM participant by performing functional and system testing against the EIM operator's applications.

ISO Application	Application Functionality
Balancing Authority Area Operations Portal (BAAOP)	ISO BAAOP market user interface. BAAOP will send the following information to the EIM Entity - * Load forecast bias – Graphical User Interface (GUI) * Dispatch instruction approve/decline – GUI * Dynamic limits: interties – Application Program Interface (API) * Intertie changes - API
ISO Automated Dispatch System (ADS)	ISO ADS displays commitment (start – up / shut down / transition) instructions, energy instructions, and ancillary services awards from the real-time market application. The energy instructions include 5 minute dispatch operating targets (DOT) from the RTED, 10 minute contingency dispatch (RTCD/RTDD), Exceptional Dispatch, and Hourly Intertie Instructions from the Hourly Scheduling Process (HASP).
Market Results Interface Settlements (MRI-S)	ISO Settlements are the calculation, billing, and invoicing of charges and payments for market and transmission-related activities between market participants and the ISO. The settlement cycle follows a specific timeline and processes for publication of statements, invoices and payment advices, dispute submittals and payments. Market Results interface(MRI) includes all Settlements related files, including Statements, Bill Determinants (BD), Invoices, Configuration Output file etc. The files that are accessible are results of running the Settlements calculations. This Interface allows Scheduling Coordinators to retrieve read only files containing Settlements data related to market transactions specific to their resources.
Open Access Same Time Information System (OASIS)	ISO OASIS provides energy market and power grid information to the public and market participants, through reports with real time updates. This information includes the following: * System load requirements * Market Price information * Transmission availability * System demand conditions

ISO Application	Application Functionality
Market Results Interface Settlements (MRI-S) for Metering	Shared MRI-s web-based application that allows users to view, download, graph, and submit settlement quality meter data.
Enterprise Model Management System (EMMS)	ISO EMMS manages the FNM (Full Network Model) includes a combination of physical network data and commercial data required to support Integrated Forward Market, the Real Time Market, and the CRR Auction and Allocation processes (Different kinds of markets CAISO participates in).
Outage Management System (WebOMS)	ISO WebOMS the outage management will help enable CAISO to coordinate transmission and generation maintenance outages in advance to maintain system reliability, avoid congestion and increase the demand. This will also facilitate the market participants to effectively plan for the operation of their resources.
California Market Results Interface (CMRI)	ISO CMRI is a reporting interface that contains private market information, resulting from the California ISO EIM processes: Hour Ahead Scheduling Process (HASP), Fifteen Minute Market (FMM), and Five Minute Market and EIM Test results. This includes schedules and awards, resource-specific prices, default and mitigated bids, unit commitments, instructions, intertie resource transaction id, EIM transfer, flex ramp requirement sufficiency test, transmission violation test results, bid range capacity test results and balancing test results.
Energy Management System (EMS)	ISO EMS is a system of computer-aided tools used by operators of electric utility grids to monitor, control, and optimize the performance of the generation and/or transmission system.
Master File (MF)	ISO MF functions are applicable for the following - * Register resource information * Identify variable energy resources. * Continue to identify PIRP participation. * Allow variable energy resources to select the ISO forecast or their own forecast. * Establish business process to be able to validate and disapprove request for using the resources' own forecast if the forecast is not accurate. * Define eligibility of DS and PTG eligibility to provide an external 5 minute resource forecast, and allow ISO to retrieve it; * Define ITCs: An ITC could include one or more interties. * Associate and define the DS/PTG map to one or multiple ITCs, and indicate one ITC as the designated primary ITC. Optionally, define the DS/PTG map to one alternative ITC that will be used when the primary ITC is open. * For ETC/TOR, indicate the ITC (at the highest aggregation level) for relevant ETC/TOR rights.
Automated Load forecast System (ALFS)	ISO ALFS provides load and renewable generation forecasts to the market systems. The EIM entity can opt to use the ISO forecasts or provide its own renewable generation forecast. If electing to provide its own, the EIM entity will act as a forecast service provider for its BAA.

ISO Application	Application Functionality
Scheduling Infrastructure Business Rules (SIBR)	ISO SIBR allows variable energy resources to submit a configurable multi-hour rolling forecast with a granularity as low as 5 minutes and broadcast the forecast to ALFS and RTM. Be able to support submission each 5 minutes. A system that validates and publishes Bids for consumption by other CAISO applications within a stipulated time period after Market Close.
Base Schedule Aggregation Portal (BSAP)	ISO BSAP will receive hourly Base Schedules from all resources within the EIM balancing authority area and interchange transactions five hours prior to the operating hour, in order to provide an input for all Real-Time processes including the longer-term Short-Term Unit Commitment (STUC) as well as Real-Time Unit Commitment (RTUC) and Real-Time Dispatch (RTD). These hourly Base Schedules will balance against the load forecast and serve as the baseline for settling imbalance energy in the EIM. The combination of load forecasts, Base Schedules, and the bid range from Participating Resources will become the hourly Resource Plan for the EIM balancing authority. CAISO has based the EIM on the Real-Time Market design, which was developed in part to comply with FERC Order No. 764, and consists of a 15-minute market and a 5-minute dispatch. Each of these market runs will produce schedules and locational marginal prices for resources.
Market Quality System (MQS)	ISO MQS is a series of applications which perform post processing of market results, supplying the settlements system with additional required data. Some of the major processes are: expected energy calculation, bid cost recovery qualification, and data fills for failed market runs.

4 Market Timeline and Functions Validation

EIM participant and EIM operator integration testing functions are identified below, each function is a data transfer between the EIM participant and the EIM operator and vice versa. The functions identified below are validated by the EIM participant and EIM operator.

ISO markets are based on 24 hour days, identified as a Trade Date (TD), markets are run for a specific time period (T).

Resource data attributes and network model changes are not driven by market timelines, they occur on a as needed basis as part of the ISO full network model upgrade process.

4.1 Non Market Timeline Driven Functions

Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Review/Retrieve – EIM Participant PNode Definition	OASIS	http://oasimap.caiso.com	oasimap.caiso.com/oasisapi/SingleZip
Submit/Update – Resource Data Template Generation (GRDT)	Master File	https://portalmap.caiso.com/mf	UI Upload
Review/Retrieve - Generation Outages	WebOMS	https://idpmap.caiso.com/weboms	RetrieveResourceOutage_OMSv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Review/Retrieve – Generator Resource Data Template	Master File	https://portalmap.caiso.com/mf	RetrieveGeneratorRDT_MFRDv3
Submit/Update - Outages Generation	WebOMS	https://idpmap.caiso.com/weboms	SubmitResourceOutage_OMSv1
Submit/Update - Outages Transmission	WebOMS	https://idpmap.caiso.com/weboms	SubmitTransmissionOutage_OMSv1
Submit/Update - Outage Change Request, Generation and Transmission	WebOMS	https://idpmap.caiso.com/weboms	SubmitResourceOutageChangeRequest_OMSv1
Submit/Update - Outages Transmission Request	WebOMS	https://idpmap.caiso.com/weboms	SubmitTransmissionOutageRequest_OMSv1
Review/Retrieve - Accurate Outages Generation Availability	WebOMS	https://idpmap.caiso.com/weboms	RetrieveAvailability_OMSv1
Review/Retrieve - Accurate Outages Generation	WebOMS	https://idpmap.caiso.com/weboms	RetrieveResourceOutage_OMSv1
Review/Retrieve - Accurate Outages Transmission	WebOMS	https://idpmap.caiso.com/weboms	RetrieveTransmissionOutage_OMSv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Review/Retrieve - Static CIM File and Supplemental Info	EMMS	EMMS Internal ISO GUI	N/A
Review/Retrieve – EIM Participant PNode Definition	OASIS	http://oasimap.caiso.com	oasimap.caiso.com/oasisapi/SingleZip

Energy Imbalance Market Operator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
ISO Operator - Review outages	WebOMS	https://idpmap.caiso.com/weboms	
Receive/Process - Resource Data Template Generation (GRDT)	Master File	https://portalmap.caiso.com/mf	
Receive/Process – Resource Data Template Intertie (IRDT)	Master File	https://portalmap.caiso.com/mf	

Premarket functions are focused on resource data characteristics, balancing area outages, base schedule and bid submissions.

4.2 TD-7 through TD-1

Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Submit/Update - Generation and InterTie Base Schedule	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1
Review/Retrieve - Generation and InterTie Base Schedule	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1
Submit/Update - Generation and InterTie Bids	SIBR	https://portalmap.caiso.com/sibr	SubmitRawBidSet_SIBRv3
Review/Retrieve - Generation Bids	SIBR	https://portalmap.caiso.com/sibr	RetrieveCleanBidSet_SIBRv3
Review/Retrieve- Generation Bids Processed	SIBR	https://portalmap.caiso.com/sibr	RetrieveCurrentBidResults_SIBRv3

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Submit/Update - Base Schedule	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Registered Generation			
Submit/Update - Base Schedule Transaction ID	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1
Submit/Update - Base Schedule Registered Intertie	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1
Review/Retrieve - Base Schedule Transaction ID	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1
Review/Retrieve - Base Schedule Registered Intertie	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv2
Submit/Update – Variable Energy Resource Forecast	ALFS	N/A	Submit5MinFSPVERForecast_ALFSv1
Review - Load forecast BAA	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBalancingTestResults_BSAPv1

Energy Imbalance Market Operator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
ISO Operator - Review outages	WebOMS	https://idpmap.caiso.com/weboms	
Receive/Process - Base Schedules	BSAP	https://portaleimmap.caiso.com/bsap	
Receive/Process - Bids	SIBR	https://portalmmap.caiso.com/sibr	

Energy Imbalance Market Operator Functions			
Receive/Process - Bids with Green House Gas (GHG) Component	SIBR	https://portalmap.caiso.com/sibr	
Day Ahead Market - Transmission Constraint Feasibility Test	CMRI	https://portalmap.caiso.com/cmri	
BSAP Balancing - Resources Base Schedules	BSAP	https://portaleimmap.caiso.com/bsap	
BSAP Balancing- Imbalance between Base Schedule and Load Forecasts	BSAP	https://portaleimmap.caiso.com/bsap	
BSAP Balancing - Transmission Overloads	CMRI	https://portalmap.caiso.com/cmri	

t-75 Realtime bid market closure through t-37.5 when the EIM market first real time pre dispatch (RTPD) process including the Fifteen Minute Market (FMM) runs, is focused on balancing the EIM participants base schedule with load and economically bidding in to the EIM market.

4.3 T-75 through T-37.5

Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Submit/Update - Generation and Intertie Base Schedule prior to t-75	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1
Submit/Update - Generation and InterTie Bids prior to t-75	SIBR	https://portalmap.caiso.com/sibr	SubmitRawBidSet_SIBRv3
Review/Retrieve - Bases Schedule prior to t-75	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1
Review/Retrieve - Balance Results t-75	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1
Review/Retrieve - Raw Economic Bids prior to t-75	SIBR	https://portalmap.caiso.com/sibr	RetrieveCurrentBidResults_SIBRv3
Review/Retrieve - Processed Economic Bids prior to t-75	SIBR	https://portalmap.caiso.com/sibr	RetrieveCleanBidResults_SIBRv3
Review/Retrieve - Sufficiency test results from t-75 Balancing Test Results	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResultsv1
Review/Retrieve - Sufficiency test results from t-75 Flex Ramp Sufficiency Test Results	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResultsv1

Participating Resource Scheduling Coordinator Functions			
Submit/Update - Base Schedule for t-55 (if necessary)	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1
Review/Retrieve - Bases Schedule prior to t-55 (if necessary)	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1
Review/Retrieve - Balance Results t-55 (if necessary)	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1
Review/Retrieve - Transaction ID	CMRI	https://portalmap.caiso.com/cmri	RetrieveCMRIIntertieTieResourceTransactionID_v1
Review/Retrieve - Generation Outages prior to t-75	WebOMS	https://idpmap.caiso.com/weboms	RetrieveResourceOutage_OMSv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Review/Retrieve - Accurate outages Generation Availability	WebOMS	https://idpmap.caiso.com/weboms	RetrieveAvailability_OMSv1
Review/Retrieve - Accurate outages Generation	WebOMS	https://idpmap.caiso.com/weboms	RetrieveResourceOutage_OMSv1
Review/Retrieve - Accurate outages Transmission	WebOMS	https://idpmap.caiso.com/weboms	RetrieveTransmissionOutage_OMSv1
Review/Retrieve - Bases Schedule prior to t-75	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBaseScheduleResults_BSAPv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Review/Retrieve - Sufficiency test results from t-75 Transmission Overloads	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results from t-75 Base Schedules	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results from t-75 Load Mismatch	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results from t-75 Flex Ramp Mismatch	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results from t-75 Dynamic Schedules per InterTie	CMRI	https://portalmap.caiso.com/cmri	RetrieveMarketSchedules_CMRIv2
Review/Retrieve - Base Schedule prior to t-55	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBalancingTestResults_BSAPv1
Review/Retrieve - Sufficiency test results from t-55 Transmission Overloads	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results from t-55 Base Schedules	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
from t-55 Load Mismatch			
Review/Retrieve - Sufficiency test results from t-55 Flex Ramp Mismatch	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results from t-55 Dynamic Schedules per InterTie	CMRI	https://portalmap.caiso.com/cmri	RetrieveMarketSchedules_CMRIv2
Submit/Update - EIM Dynamic Limits, EIM Transfer Limit, Interchanges Scheduling Limit and Path Limit	BAAOP	https://portaleimmap.caiso.com/baaop	SubmitEIMDynamicLimitData_RT Mv1
Submit/Update - InterTie Schedule Changes for BAA	BAAOP	https://portaleimmap.caiso.com/baaop	SubmitEIMRTInterchangeScheduleData_RT Mv2
Review/Retrieve - Base Schedule for t-40 (if necessary)	BSAP	https://portaleimmap.caiso.com/bsap	RetrieveBalancingTestResults_BS APv1
Review/Retrieve - Base Schedules prior to t-40	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMEntityMarketBaseSchedules_CMRIv1
Submit/Update - Bases Schedule prior to t-40 (if necessary)	BSAP	https://portaleimmap.caiso.com/bsap	SubmitBaseSchedule_BSAPv1
Submit/Update - Outages Generation	WebOMS	https://idpmap.caiso.com/weboms	SubmitResourceOutage_OMSv1
Submit/Update - Transmission	WebOMS	https://idpmap.caiso.com/weboms	SubmitTransmissionOutage_OM Sv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Review - Account for any Manual Dispatch's for operating hour	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access
Review – Previous FMM/RTPD Commitments	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access

Energy Imbalance Market Operator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Receive/Process - Base Schedules	BSAP	https://portaleimmap.caiso.com/bsap	
Receive/Process - Bids	SIBR	https://portalmap.caiso.com/sibr	
Receive/Process - Bids with GHG Component	SIBR	https://portalmap.caiso.com/sibr	
EIM BAA Test (RTBS) - Flex Ramp Results and Sufficiency Test Runs t-75, t-55 and t-40	CMRI	https://portalmap.caiso.com/cmri	
FMM/RTPD - EIM Dynamic Transfer Schedules Results	CMRI	https://portalmap.caiso.com/cmri	
EIM BAA Test (RTBS) - Resources Base Schedules	CMRI	https://portalmap.caiso.com/cmri	
EIM BAA Test (RTBS)- Imbalance between Base Schedule and Load Forecasts	CMRI	https://portalmap.caiso.com/cmri	

Energy Imbalance Market Operator Functions			
EIM BAA Test (RTBS) - Transmission Overloads	CMRI	https://portalmap.caiso.com/cmri	

t-37.5 when the EIM market first RTPD process including the FMM runs through t-7.5 the Real Time Dispatch (RTD), is focused on FMM outputs and updating the data for the RTD process including the 5 minute market and its outputs.

4.4 T-37.5 through T-7.5

Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Review/Retrieve – Dispatch Operating Target and Dispatch Operating Point	ADS	N/A	ADS/APIWebService/v7
Review - Dispatch Operating Target and Dispatch Operating Point	ADS	ADS Desktop Client	ADS Client UI Access
Review/Retrieve - RTPD Commitments	CMRI, ADS	https://portalmap.caiso.com/cmri	RetrieveUnitCommitments_CMRIv1_AP UI Access
Review/Retrieve - Market Nodal Locational Marginal Prices'	OASIS	http://oasismap.caiso.com	oasismap.caiso.com/oasisapi/SingleZip
Review/Retrieve - 5 min and 15 min BAA LF	OASIS	http://oasismap.caiso.com	oasismap.caiso.com/oasisapi/SingleZip
Review/Retrieve - Market Awards Generation and Intertie	CMRI	https://portalmap.caiso.com/cmri	RetrieveMarketAwards_CMRIv3
Review/Retrieve - Market Prices Generation and Intertie	CMRI	https://portalmap.caiso.com/cmri	RetrieveSchedulePrices_CMRIv3
Review/Retrieve - Market Schedule Generation and Intertie	CMRI	https://portalmap.caiso.com/cmri	RetrieveMarketSchedules_CMRIv2

Review/Retrieve - ADS Dispatch to EMS to ICCP	ADS	N/A	ADS/APIWebService/v7
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Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Submit/Update - Load Forecast	ALFS	N/A	Submit5MinFSPVERForecast_ALF Sv1
Initiate - Manual Dispatch (if necessary)	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access
Review/Conform - Market Binding Constraints Transmission and InterTie (if necessary)	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access
Review - 5 min and 15 min EIM BAA Net Schedule Interchange (NSI)	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access
Update - 5 min and 15 min BAA Load Forecast (if necessary)	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access
Submit/Update - EIM Dynamic Limits, EIM Transfer Limit, Interchanges Scheduling Limit and Path Limit	BAAOP	https://portaleimmap.caiso.com/baaop	SubmitEIMDynamicLimitData_RT Mv1
Submit/Update - InterTie Schedule Changes for BAA	BAAOP	https://portaleimmap.caiso.com/baaop	SubmitEIMRTInterchangeScheduleData_RT Mv2

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Submit/Update - Outages Generation	WebOMS	https://idpmap.caiso.com/weboms	SubmitResourceOutage_OMSv1
Submit/Update - Outages Transmission	WebOMS	https://idpmap.caiso.com/weboms	SubmitTransmissionOutage_OMSv1
Review - RTD Dispatch	BAAOP	https://portaleimmap.caiso.com/baaop	BAAOPUI Access
Review/Retrieve - DOT's, DOP's, EIM BAA and NSI	ADS	N/A	ADS/APIWebService/v7
Monitor - Telemetry/SCADA Measurements	EMS	N/A	Telemetry/SCADA measurements
Review - DOT's, DOP's and EIM BAA NSI	ADS	ADS Desktop Client	ADS Client UI Access
Review/Retrieve - ADS Dispatch	ADS	N/A	ADS/APIWebService/v7
Review/Retrieve - Market Awards Generation and Intertie	CMRI	https://portalmap.caiso.com/cmri	RetrieveMarketAwards_CMRIv3
Review/Retrieve - Market Prices Generation and Intertie	CMRI	https://portalmap.caiso.com/cmri	RetrieveSchedulePrices_CMRIv3
Review/Retrieve - Base Schedules post t-40	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMEntityMarketBaseSchedules_CMRIv1
Review/Retrieve - VER Resource RT Forecast	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIRForecast_CMRIv1
Review/Retrieve - Sufficiency test results post t-40 -Transmission Overloads	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Review/Retrieve - Sufficiency test results post t-40 - Base Schedules	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results post t-40 - Load Mismatch	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results post t-40 - Flex Ramp Mismatch	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Sufficiency test results post t-40 - Dynamic Schedules per InterTie	CMRI	https://portalmap.caiso.com/cmri	RetrieveMarketSchedules_CMRI v2
Review/Retrieve - Market Nodal LMP's	OASIS	http://oasimap.caiso.com	oasimap.caiso.com/oasisapi/SingleZip

Energy Imbalance Market Operator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
15 Minute Dispatch (RTPD) - EIM Dynamic Transfer Schedules	BAAOP	https://portaleimmap.caiso.com/baaop	
5 Minute Dispatch (RTD) - Update Demand Forecast	BAAOP	https://portaleimmap.caiso.com/baaop	
5 Minute Dispatch (RTD) - Transfer State Estimator	BAAOP	https://portaleimmap.caiso.com/baaop	

Energy Imbalance Market Operator Functions			
5 Minute Dispatch (RTD) - Updated Variable Energy Forecast	BAAOP	https://portaleimmap.caiso.com/baaop	
5 Minute Dispatch (RTD) - Security Constraint Economic Dispatch	BAAOP	https://portaleimmap.caiso.com/baaop	
Publish - Dispatch Instructions	ADS	ADS Desktop Client	ADS Client UI Access or ADS/APIWebService/v7
Publish - Prices	OASIS	http://oasismap.caiso.com	oasismap.caiso.com/oasisapi/SingleZip
Publish - Net Schedule Interchange	ADS	ADS Desktop Client	ADS Client UI Access or ADS/APIWebService/v7

The ISO post market process focus is on the validation of expected energy, ISO settlements and EIM participant meter data submission. EIM participants will also retrieve any additional data necessary for their post market functions.

4.5 TD+1 through TD+55B

Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Review/Retrieve - Actual Load From EMS (not used in Settlements)	OASIS	http://oasimap.caiso.com	oasimap.caiso.com/oasisapi/SingleZip
Review/Retrieve - EIM Test Results	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - ExpectedEnergyAllocation Details	CMRI	https://portalmap.caiso.com/cmri	RetrieveExpectedEnergyAllocationDetails_CMRIv2_AP
Review/Retrieve - ExpectedEnergy	CMRI	https://portalmap.caiso.com/cmri	RetrieveExpectedEnergy_CMRIv2_AP
Review/Retrieve - GHG Prices	OASIS	http://oasimap.caiso.com	oasimap.caiso.com/oasisapi/SingleZip
Review/Retrieve - Internal Meter Data	MRI-S	https://portalmap.caiso.com/settlements	RetrieveMeterData_STLMTv1_AP
Submit/Update - Revenue Internal Meter Data	MRI-S	https://portalmap.caiso.com/settlements	SubmitMeterData_STLMTv1_AP
Review/Retrieve - Initial Statement	MRI-S	https://portalmap.caiso.com/settlements	N/A
Review/Retrieve - Recalc Statement	MRI-S	https://portalmap.caiso.com/settlements	N/A
Review/Retrieve - Monthly Statement	MRI-S	https://portalmap.caiso.com/settlements	N/A

Energy Imbalance Market Entity + Non-Participating Resource Scheduling Coordinator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Review/Retrieve - Internal Meter Data	MRI-S	https://portalmap.caiso.com/settlements	RetrieveMeterData_STLMTv1_AP
Submit/Update - Revenue Internal Meter Data	MRI-S	https://portalmap.caiso.com/settlements	SubmitMeterData_STLMTv1_AP
Review/Retrieve - EIM Test Results	CMRI	https://portalmap.caiso.com/cmri	RetrieveEIMTestResults_CMRIv1
Review/Retrieve - Expected Energy	CMRI/OA SIS	https://portalmap.caiso.com/cmri	RetrieveExpectedEnergy_CMRIv2_AP
Review/Retrieve - Expected Energy Allocation Details	CMRI/OA SIS	https://portalmap.caiso.com/cmri	RetrieveExpectedEnergyAllocationDetails_CMRIv2_AP
Review/Retrieve - Initial Statement	MRI-S	https://portalmap.caiso.com/settlements	N/A
Review/Retrieve - Recalc Statement	MRI-S	https://portalmap.caiso.com/settlements	N/A
Review/Retrieve - Monthly Statement	MRI-S	https://portalmap.caiso.com/settlements	N/A
Submit/Update - EIM Dynamic Transfer Energy Profile for previous hour	BAAOP	https://portaleimmap.caiso.com/baaop	SubmitEIMDynamicLimitData_RT Mv1

Energy Imbalance Market Operator Functions			
Data Transfer/Business Function	ISO Interface	ISO URL GUI	ISO URL's API
Publish - Initial Statement T+3b	MRI-S		
Publish - Recalc Statement T+12b	MRI-S		
Publish - Recalc Statement T+55b	MRI-S		
Publish - Post Processing TD +1	CMRI	https://portalmap.caiso.com/cmri	