



California ISO

Technology User Group (TUG)

May 28, 2019

10:00 – 11:00 AM Pacific

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TUG Agenda

Web Conference Information		Conference Call Information	
<i>URL</i>	https://caiso.webex.com/meet/CAISO-TUG	<i>Domestic Call-In</i>	(866) 528-2256
<i>Meeting Number</i>	966 010 353	<i>International Call-In</i>	(216) 706-7052
<i>Access Code</i>	389 588 9	<i>Access Code</i>	389 588 9

Topic	Facilitator
Agenda and Roll Call	Indu Nambiar
System Interface Changes	Trang Deluca
MF Tech Spec Update	LuAnn Rivera
SIBR & BSAP Tech Spec Update	Wendell Tamblyn
DRRS & MRI-S Tech Spec Update	Nirmala Nikku/Eureka Cullado/Ramesh Dasari
CMRI & OASIS Tech Spec Update	Neela Alla / Arul Jayaraman
Proposed Tech Spec Template - Walkthrough	Indu Nambiar
Ongoing Initiatives	Indu Nambiar

System Interface Changes: MF

Release	Project	Change Type	API Service Name & Major Version, Artifacts	Minor Version	RDT	MAP Stage	Production Activation	Technical Specifications
Fall 2019	ESDER3A LMPME CCE3	Modify	RetrieveGeneratorRDT_MFRDv4 RetrieveGeneratorRDT_MFRDv4_DocAttach	20191001		Sep 3, 2019	Nov 13, 2019	5.0
Fall 2019	ESDER3A LMPME	Modify	SubmitGeneratorRDT_MFRDv4 SubmitGeneratorRDT_MFRDv4_DocAttach	20191001	GRDT v13.0	Sep 3, 2019	Nov 13, 2019	5.0

System Interface Changes: SIBR, BSAP

System	Release	Project	Change Type	API Service Name & Major Version, Artifacts	MAP Stage	Production Activation	Technical Specifications
SIBR	Fall 2019	CCDEBE1	Modify	RetrieveCleanBidSet_SIBRv5 RetrieveCleanBidSet_SIBRv5_DocAttach	Sep 3, 2019	Nov 13, 2019	v13
SIBR	Fall 2019	CCDEBE1	Modify	RetrieveCurrentBidResults_SIBRv5 RetrieveCurrentBidResults_SIBRv5_DocAttach	Sep 3, 2019	Nov 13, 2019	v13
SIBR	Fall 2019	CCDEBE1	Modify	SubmitRawBidSet_SIBRv5 SubmitRawBidSet_SIBRv5_DocAttach	Sep 3, 2019	Nov 13, 2019	v13
BSAP	Fall 2019	EIM 2019	Modify	RetrieveBalancingTestResults_BSAPv2 RetrieveBalancingTestResults_BSAPv2_DocAttach	Sep 3, 2019	Nov 13, 2019	1.5

System Interface Changes: CMRI

Release	Project	Change Type	Customer Impact	UI Change	API Service Name & Major Version, Artifacts	MAP Stage	Production Activation	Technical Specifications
2019	RCSI	New	RC	New Tab: Reliability Coordination New Report: Load Forecast	RetrieveRCLoadForecast_CMRI_v1 RetrieveRCLoadForecast_CMRI_v1_DocAttach	Feb 1, 2019	Jul 1, 2019	1.0.0
Fall 2019	CCDEBE1	Modify	CAISO Market	Tab: Default Bids Existing Report: Default Energy Bid Curves	RetrieveDefaultBidCurves_CMRIv2 RetrieveDefaultBidCurves_CMRIv2_DocAttach	Sep 3, 2019	Nov 13, 2019	3.9.0
Fall 2019	LMPME	Modify	CAISO Market	Tab: Default Bids Existing Report: Default Commitment Costs	RetrieveExternalDefaultCommitmentCost_CMRIv1 RetrieveExternalDefaultCommitmentCost_CMRIv1_DocAttach	Sep 3, 2019	Nov 13, 2019	3.9.0
Fall 2019	EIM 2019	New	EIM	Tab: Energy Imbalance Market New Report: Resource Operating Limits	RetrieveEIMResourceOperatingLimit_CMRIv1 RetrieveEIMResourceOperatingLimit_CMRIv1_DocAttach	Sep 3, 2019	Nov 13, 2019	3.9.0
Fall 2019	EIM 2019	New	CAISO Market	Tab: Real-Time New Report: Resource Operating Limits	RetrieveResourceOperatingLimit_CMRIv1 RetrieveResourceOperatingLimit_CMRIv1_DocAttach	Sep 3, 2019	Nov 13, 2019	3.9.0

System Interface Changes: OASIS

Release	Project	Change Type	Customer Impact	UI Change	API Service Name & Major Version, Artifacts	MAP Stage	Production Activation	Technical Specifications
Fall 2019	EIM 2019	New		Tab: ENERGY New Report: Transmission Loss	TBD	Sep 3, 2019	Nov 13, 2019	TBD

System Interface Changes: OMS

Release	Project	Change Type	API Service Name & Major Version	MAP Stage	Production Activation	Technical Specifications	Artifacts
2019	RCSI	Modify* <i>*While the CAISO supports two major versions of API, the CAISO strongly recommends moving to the latest one (v3)</i>	RetrieveAvailabilityResults_OMSv2 RetrieveAvailabilityResults_OMSv2_DocAttach RetrieveResourceOutage_OMSv3 RetrieveResourceOutage_OMSv3_DocAttach RetrieveResourceOutageChangeRequest_OMSv3 RetrieveResourceOutageChangeRequest_OMSv3_DocAttach RetrieveTransmissionOutage_OMSv3 RetrieveTransmissionOutage_OMSv3_DocAttach RetrieveTransmissionOutageChangeRequest_OMSv3 RetrieveTransmissionOutageChangeRequest_OMSv3_DocAttach SubmitResourceOutage_OMSv3 SubmitResourceOutage_OMSv3_DocAttach SubmitResourceOutageChangeRequest_OMSv3 SubmitResourceOutageChangeRequest_OMSv3_DocAttach SubmitTransmissionOutage_OMSv3 SubmitTransmissionOutage_OMSv3_DocAttach SubmitTransmissionOutageChangeRequest_OMSv3 SubmitTransmissionOutageChangeRequest_OMSv3_DocAttach	Feb 28, 2019	Jul 1, 2019	2.0	Artifacts

System Interface Changes: ALFS, RCBSAP, RCEIDE, STLMT

System	Release	Project	Change Type	API Service Name & Major Version	MAP Stage	Production Activation	Technical Specifications	Artifacts
ALFS	2019	RCSI	New	SubmitExternalEntity5MinLoadForecast_ALFSv1 SubmitExternalEntity5MinLoadForecast_ALFSv1_DocAttach SubmitExternalEntity15MinLoadForecast_ALFSv1 SubmitExternalEntity15MinLoadForecast_ALFSv1_DocAttach SubmitExternalEntity60MinLoadForecast_ALFSv1 SubmitExternalEntity60MinLoadForecast_ALFSv1_DocAttach	Feb 1, 2019	Jul 1, 2019	1.0.0	Artifacts
RCBSAP	2019	RCSI	New	RetrieveRCBaseScheduleResults_RCBSAPv1 RetrieveRCBaseScheduleResults_RCBSAPv1_DocAttach SubmitRCBaseSchedule_RCBSAPv1 SubmitRCBaseSchedule_RCBSAPv1_DocAttach	Feb 1, 2019	Jul 1, 2019	1.1	Artifacts
RCEIDE	2019	RCSI	New	PutSchedule_RC	Feb 1, 2019	Jul 1, 2019	1.0	Artifacts
STLMT	2019	RCSI	New	SubmitNetEnergyData_STLMTv1 SubmitNetEnergyData_STLMTv1_DocAttach *For RC Customers outside of the CAISO BA to submit Net Energy for Load and Net Generation	May 2019	TBD	1.0	1.0

Master File Tech Spec Update

ESDER 3A

- New **DR (Demand Response) Type** at Resource level
 - Valid Values : 'PDR' and 'RDRR'
 - PDRs and RDRRs will be updated (by MCI) with the appropriate DR Type upon ESDER 3A activation.
- New **Bid Dispatchable Option** at Resource level
 - Valid Values : 5, 15 (PDR only), 60 (PDR only)
 - All current and approved Gens and TGs will have Bid Dispatchable Option set to 5 upon ESDER 3A activation.

LMPME

- **New Hydro DEB** (Hydro Rank LMPM), **Max Storage Horizon**, and **Default Bilateral Energy Hub** at Resource level
 - COST/PRC/NEGO/HYDRO Rank LMPM : Valid Values 1-4 (mutually exclusive)
 - Max Storage Horizon (in months) : Valid Values are 1-12 (applies to Hydros only)
 - Default Bilateral Energy Hub : similar values as Power Price Hub; can be the same as Power Price Hub
- **Additional Bilateral Energy Hub** : new Resource subclass

CCE3

- New **Conditionally Available Resource (CAR) flag** at Resource level
 - Valid Values : 'YES' and 'NO'

* Note : **Blue** attributes are modifiable; **Red** attributes are Read-Only

Master File – 2 Supported Versions

Release	Project	Change Type	MP Action	Web Service	Major Version	Minor Version	MAP Stage	Tech Spec Version
Spring 2018	BRE-B CCE3 RSI	Modify	Required to provide CCE3 values	retrieveGeneratorRDT	4	20180501	March 2018	V4.1.3
Spring 2018	BRE-B CCE3 RSI	Modify	Required to provide CCE3 values	submitGeneratorRDT	4	20180501	March 2018	V4.1.3
Fall 2019	ESDER 3A LMPME CCE3	Modify	Required for PDRs/RDRRs and Hydro Resources	retrieveGeneratorRDT	4	20191001	September 2019	V5.0
Fall 2019	ESDER 3A LMPME	Modify	Required for PDRs/RDRRs and Hydro Resources	submitGeneratorRDT	4	20191001	September 2019	V5.0

SIBR and BSAP Tech Spec Update

EIM Enhancements 2019 BSAP

- New [RetrieveBalancingTestResults_BSAPv2_AP](#)
 - The v2 will now contain the Aggregated Base Deviation (if any) when the response is provided.
 - New element: **aggregatedBSDeviation** will be included in v2 response.
 - Both v1 and v2 versions of the RetrieveBalancingTestResults will be supported.

CCDEBE SIBR

- New **v5** versions for the below SIBR web services will support Ex Ante DEB costs.
 - New [RetrieveCleanBidSet_SIBRv5_AP](#) (also DocAttach)
 - New [RetrieveCurrentBidResults_SIBRv5_AP](#) (also DocAttach)
 - New [SubmitRawBidSet_SIBRv5_AP](#) (also DocAttach) Submission with bid, costs are for market period.
- Both v4 and v5 versions will be supported **after** CCDEBE deployment.
- **Participants using any of the v3 web services above will need to coordinate moving to one of the supported versions prior to Production deployment of CCDEBE as the v3 services will be deprecated.**
 - New elements for [ExAnteCosts.noLoadCost](#) DEB Minimum Load adjustment.
 - New elements for [ExAnteCosts.EnergyCostCurve](#) DEB Minimum Load adjustment.
 - New elements for [ExAnteCosts.StartUpCostCurve](#) DEB Start-Up cost adjustment.

* Note : **Blue** attributes are modifiable; **Red** attributes are Read-Only

System: Demand Response Registration System (DRRS)

- **ESDER3A scope: Demand Resource Aggregations**
 - DRP user no longer needs to specify an LSE nor a DLAP when submitting new registrations
 - Allow multiple locations with different LSEs under one registration
 - Default load adjustment (DLAs) is no longer applied as PDR bids will be required to be at or above the current net benefits test NBT price
- **Registrations**
 - *Currently existing records*: No need to re-register
 - *Going forward*: Apply ESDER3 – no need of LSE/DLAP

System: Demand Response Registration System (DRRS)

- **Fall 2019 release technical specifications**
 - DRRegistrationData_v1.xsd “*as is*”, no changes
 - All existing API services remain as “v1” versions
 - *RetrieveDRLocations + SubmitDRLocations*
 - *RetrieveDRRegistrations + SubmitDRRegistrations*

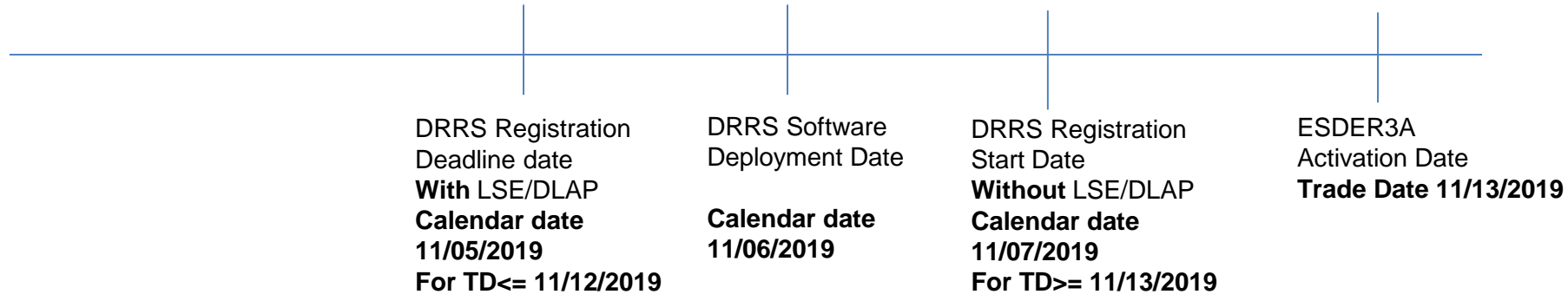
- **RegisteredGenerator/LoadServingEntity/mrid (LSE); required**

For records created under this project activation-	A user must submit a registration (Save/Submit/Modify), for a valid request xml-	DRRS will-	DRRS will respond-
ESDER2	With an "LSE"	Validate/save the "LSE"	With the "LSE"
ESDER3	With any "LSE" ; or	Ignore the "LSE"; not save	With a "NULL" string
ESDER3	With a "NULL" string	Ignore the "NULL"	With a "NULL" string

- **RegisteredGenerator/LoadAggregationPoint/mrid (DLAP); optional**

For records created under this project activation-	When the user submits a registration (Save/Submit/Modify)-	DRRS will-	DRRS will respond-
ESDER2	With a "DLAP"	Validate/save the "DLAP"	With the "DLAP"
ESDER3	With a "DLAP"; or	Ignore the "DLAP"; not save	Without any DLAP
ESDER3	Without any DLAP	Not error out; will not derive DLAP	Without any DLAP

DRRS Tentative Transition Timeline



Registration	Timeline
With LSE and DLAP requirement (ESDER2)	Up to a day before the DRRS Software Deployment date = 11/05/2019; Trade Date up to a day before ESDER3A activation = TD 11/12/2019
Without LSE and DLAP requirement (ESDER3A)	1 week lead time to start registering using new functionality; A day after the DRRS Software Deployment date = 11/07/2019; All new registrations must have an effective date on/after the ESDER3A activation date = TD 11/13/2019

MRI-S Tech Spec Update

BASE Data submission

- As part of the ESDER 3A project go-live, DRPs are able to submit Calculated Customer Load Baseline (BASE) data along with CBL and TMNT data.
- Similar to CBL and TMNT data, BASE data:
 - will be in hourly granularity
 - can only be submitted in XML format
 - will be used only for monitoring purposes
 - must include Registration ID during submission
 - cannot be retrieved by UI or API
- Technical Specification Document has been updated and published with this information.

MRI-S Tech Spec Update

Acceptable Use Policy

In order to ensure system stability and performance, ISO is planning to implement AUP for the MRI-S application:

- This AUP allows a user to submit/retrieve a single service request once every 30 seconds.
- This is applicable to only MRI-S related to submit/retrieve API services
- Participants can submit/retrieve other service requests within the same time period (*i.e.30 seconds*)
- The user will receive the following error message if the same service is submitted or retrieved within 30 seconds:
“CAISO MRI-S Acceptable Use Policy Violation. Please retry your request again in 30 seconds from now. Note: Time resets each time you request before expiration.”
- Technical Specification document will be updated with this information in the next release

System: Customer Market Results Interface (CMRI)

- **LMPME:**Updated Default Bid Curves
 - Request
 - Removed defaultBidTypeList and TimePeriodList
 - Response
 - Added publicationTimeStamp
 - Updated timePeriod, defaultBidType and segmentBidType
- **CCDEBE:**Updated Default Commitment Cost
 - Response
 - Added marketType and commitmentCostType
- **EIM 2019:** 2 New Reports
 - Resource Operating Limit
 - EIM Resource Operating Limit

System: Open Access Same-Time Information System (OASIS)

- **EIM2019: 1 New Report**
 - Real-Time Transmission Loss
 - Tech Specs will be updated in couple of weeks.

OASIS Production Data Retrieval Issues

Functional variance for Groupzip files starting 2/19/2019 that resulted in market participants being unable to retrieve complete price information.

- Issues encountered:
 - Corrupt files - Production deployment planned for 5/24.
 - Empty files - Production deployment planned for 5/24.
 - Partial files - Resolved for trade dates 4/19 and going forward.
 - Missing Intervals - Resolved for trade dates 4/19 and going forward.
 - Files >300MB - Resolved for trade dates 5/9 and going forward.
- We have been regenerating the files reported via CIDI tickets and making the data available within 3 business days.
- If this message is returned: “<m:ERR_DESC> GroupZip DownLoad is in Processing, Please Submit request after Sometime</m:ERR_DESC>”, the API file generation process has initiated, and the users must retry the request to retrieve the completely generated file at a later time.
- With these changes, there is NO impact to any of the existing reports data or functionality.
- CAISO requests to use the latest supported version as mentioned in the Tech Specs for application programming interfaces (API)

Please refer to latest tech specs on <https://developer.caiso.com>

Coming soon....

CAISO Technical Specification template changes

- Standardization
- Efficient
- Lean

Proposed changes include:

- Document release notes with service level change details
- Links to sample XML
- Simplified element table to remove redundant information
- Section for service specific use model

Please send suggestions to inambiar@caiso.com

Revised Technical Specification Template

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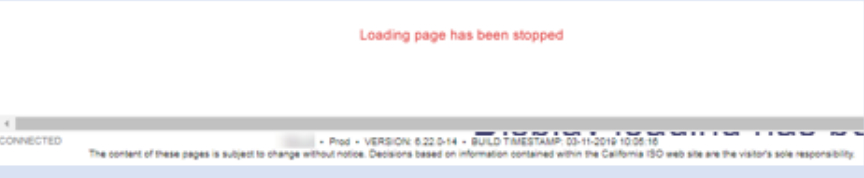



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Ongoing Initiatives

CMRI Improvements

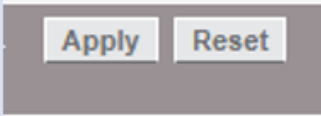

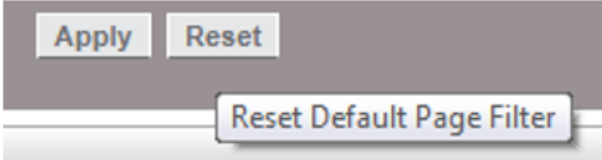
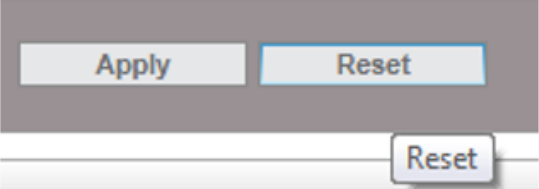
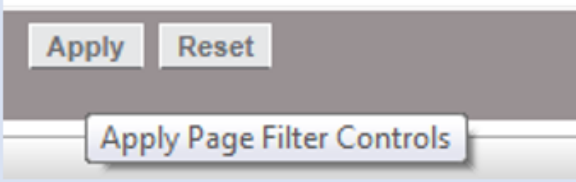
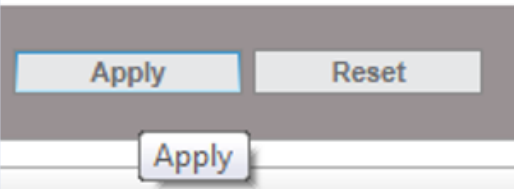
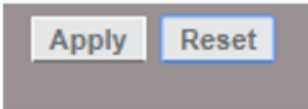

CAISO is planning CMRI UI Upgrade & Performance Improvements

- Graphical User-Interface update v7.0.0
 - Look-and-Feel: Text color, command buttons, icons, drop-down
 - Similar to OASIS changes currently in Production

	Existing	New Release
Page Header:	Blue line 	No Blue line 
Hover-over App header icons:	Icon: Blue Highlight 	Icon: Yellow/Black Pointer 
Stop Loading:	“Display loading has been stopped. Click here to refresh” does not appear 	“Display loading has been stopped. Click here to refresh” appears at the bottom of the page 
Report Name:	Black Font 	Dark Grey Font 

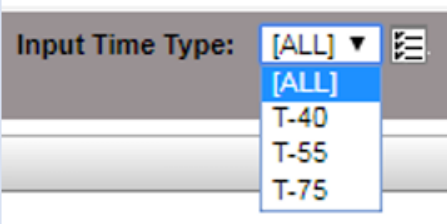
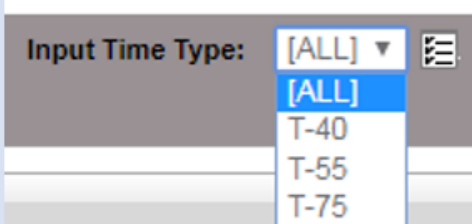
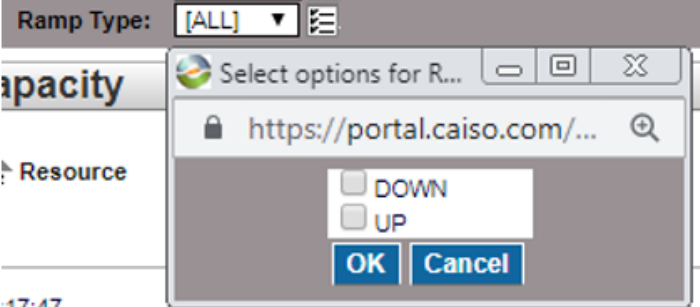
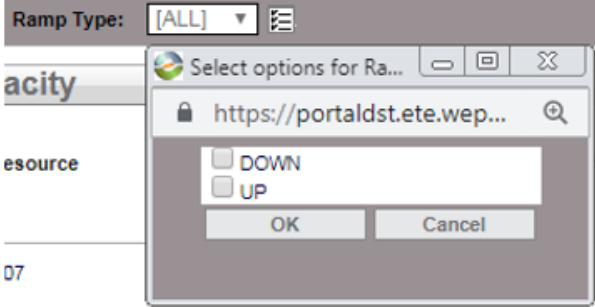
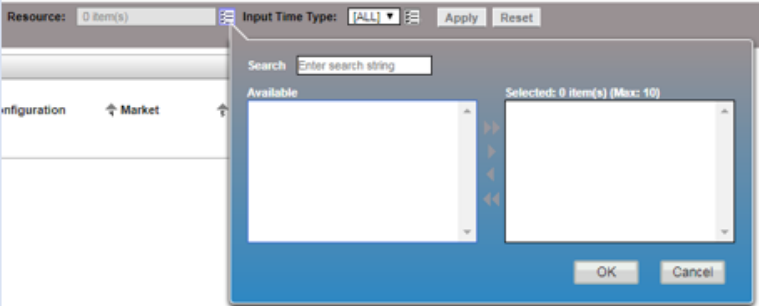
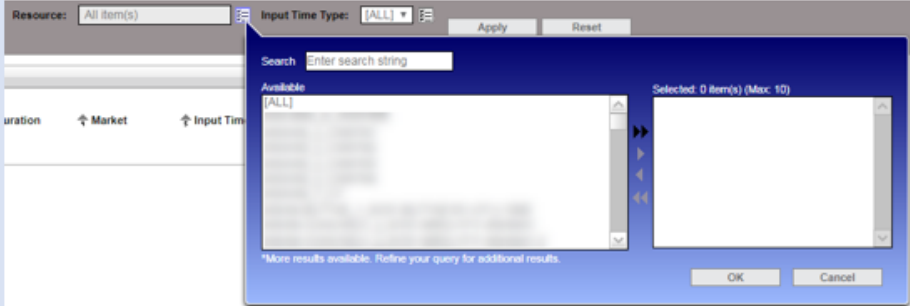
CMRI Improvements

– Graphical User-Interface update v7.0.0

Buttons:	Aligned: Top 	Aligned: Center 
Hover-over:	Tool Tip: Reset Default Page Filter 	Tool Tip: Reset 
Hover-over:	Tool Tip: Apply Page Filter Controls 	Tool Tip: Apply 
Click:	Border: Blue Line 	Border: Dotted Line 

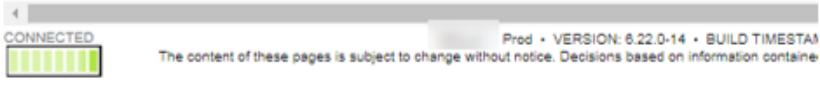
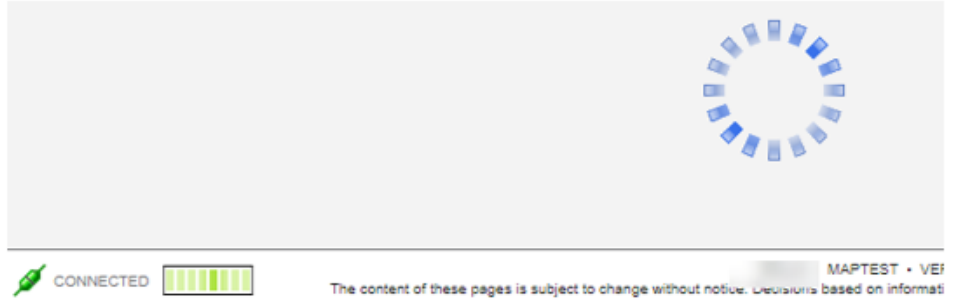
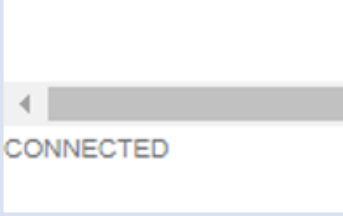


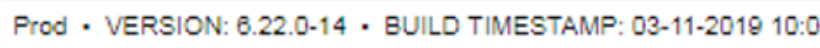
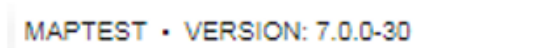
CMRI Improvements

- Graphical User-Interface update v7.0.0

<p>Drop-down list of values:</p>	<p>Black Font</p> 	<p>Dark Grey Font</p> 
<p>Multi select:</p>	<p>Blue Buttons with White Font</p> 	<p>Grey buttons with Black Font</p> 
<p>Dynamic multi select:</p>	<p>No list of values by default; Gradient grey-to-blue background</p> 	<p>List of values appear by default; Gradient navy blue-to-blue background</p> 

CMRI Improvements

– Graphical User-Interface update v7.0.0

Processing:	<p>No page loading animation</p> 	<p>Page loading animation</p> 
Scroll bar:	<p>Scroll bar comes up on page load</p> 	<p>Scroll bar does not come up on page load</p>  <p>Scroll bar comes up when needed</p> 
Build Timestamp:	<p>Displayed in Application Footer</p> 	<p>No longer Available</p> 
Data	Copy Paste	No Copy Paste

CMRI Improvements

CAISO is planning CMRI UI Upgrade & Performance Improvements

- Performance Improvements
 - Technology/Infrastructure Upgrade
 - Data Model Normalization
 - Due to data model normalization there will be data migration effort from old model to new model.
 - Data migration process is being tested in Non-Production environment. Current Plan:
 - » Complete the data migration and cut over to new UI and performance improvements.
 - » After cutover, users will have access to all the data.
 - » ISO will communicate CMRI performance improvements patch deployment time line.
- Market Participant Testing prior to Production deployment.
- NO API interface changes and NO functionality changes.
- CAISO requests to use the latest supported version as mentioned in the Tech Specs for application programming interfaces (API)

Please refer to latest tech specs on <https://developer.caiso.com>

Standardization of time format for data submissions & data requests

- ISO is implementing the use of standard date time format for all B2B data submissions
- Current formats that are accepted:
 - 2019-07-10T00:00:00-07:00 – offset of 7 hours based on Pacific Daylight Time
 - 2019-01-20T00:00:00-08:00 – offset of 8 hours based on Pacific Standard Time
 - 2019-01-20T08:00:00-00:00 – Timestamp in GMT/UTC
 - 2019-07-10T07:00:00Z – Timestamp in GMT/UTC
- Future acceptable formats (to match the response from ISO):
 - 2019-04-20T07:00:00-00:00 – Timestamp in GMT/UTC
 - 2019-04-20T07:00:00Z – Timestamp in GMT/UTC
 - OR
 - 2019-12-20T08:00:00-00:00 – Timestamp in GMT/UTC
 - 2019-12-20T08:00:00Z – Timestamp in GMT/UTC
- Implementation Plan
 - Technical Specifications Updated with accepted format - Fall 2019 Release
 - Enforcement of new format - **Fall 2020 Release**

Next TUG: June 11, 2019

Contact for Questions & Agenda Requests: Indu Nambiar, inambiar@caiso.com

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