



# Energy Storage and Distributed Energy Resources Phase 2 Implementation

Customer Partnership Group

January 29, 2018

1:00 p.m. – 2:00 p.m. (Pacific Standard Time)

# Agenda

## Item

Project Schedule Update

Performance Evaluation Methodologies - Baseline  
Types Review

Data Submission Requirements and Proposed New  
Data Submission Requirements Review

Day Matching Baseline Type Example - Combined  
Residential and Non-Residential

Questions Received and ISO Answers

Next Steps

# Fall 2018 - ESDER Phase 2

Project Info	Details/Date
Business Process Changes	<ul style="list-style-type: none"> <li>• Develop Infrastructure (DI) (80001)</li> <li>• Manage Market &amp; Reliability Data &amp; Modeling (MMR) (80004)</li> <li>• Manage Operations Support &amp; Settlements (MOS) (80007)</li> <li>• Support Business Services (SBS) (80009)</li> <li>• Other</li> </ul>

Milestone Type	Milestone Name	Dates	Status
Board Approval	Obtain Board of Governors Approval	Jul 26, 2017	✓
BPMs	Post Draft BPM changes	May 14, 2018	
	Publish Final Business Practice Manuals	Jul 02, 2018	
External BRS	Post External BRS	Oct 17, 2017	✓
	Post Revised External BRS	Mar 01, 2018	
Tariff	Post Draft Tariff	Nov 17, 2017	✓
	Post Updated Draft Tariff (based on feedback)	Apr 20, 2018	
	File Tariff with FERC	Jun 15, 2018	
CPG	CPG Meeting	Jan 29, 2018	✓
Config Guides	Config Guides	May 18, 2018	
Tech Spec	Publish ISO Interface Spec (Tech spec)	May 18, 2018	
Market Sim	Market Sim Window	Jul 17, 2018 - Aug 31, 2018	
Production Activation	ESDER Phase 2	Oct 01, 2018	

# Review of ESDER2 Performance Evaluation Methodologies

## Baseline methodologies supported (SC calculated)

- Weather Matching Type
- Control Group Type
- Day Matching Type
  - 10 in 10 (as currently applied)
  - Highest 5/10
    - ✓ residential only
  - Combined
    - ✓ 5/10 residential
    - ✓ 10 in 10 non-residential
- Meter Generator Output (SC calculated)
  - Option B1 – load reduction only
  - Option B2 – generation offset only
  - Option B3 – load reduction and generation offset
    - ✓ Options B1 & B3 can use any of the types to develop load performance

## DRRS registration will reflect all baseline type options

- BRS changes under development – BRQ0100 impacted

# Data Submissions in MRI-S will include new Measurement Types which will be used in Settlements Calculations

## Requirements in current external BRS – Used in Settlements

- DREM as GEN measurement type
- Load data as LOAD measurement type
  - Represents the aggregated load value for the PDR/RDRR during the period of Spin or Non-Spin award/dispatch (event)
- Load data as MBMA measurement type
  - In addition to the LOAD measurement type data
  - when awarded Spin or Non-Spin, needed as separate data

See External BRS BRQs 0109,0112,0115,0118

# Additional Data Submission requirements in development will include **new** Measurement Types needed for analysis

## Day Matching and Weather Matching Baseline Types

- Baseline = load data (SQMD) used to develop the non-adjusted baseline
  - Measurement\_type = **BASELINE**
    - ✓ Data not needed for settlement, monitoring/analysis only
      - Data Submitted to the MRI\_S
      - Data not used in Settlement
      - Data used for monitoring/analysis
      - Continuous set of data needed from time resource ID becomes active to the trade date the event occurred with minimum set of days being 90 days
    - Submit on a daily basis **or** ability to submit full set of data once dispatch occurs
    - 24 hours, 5 minute granularity

*\*Currently only a proposed Measurement Type, BRQs in development therefore proposed requirement subject to change*

## Additional Data Submission requirements **in development** differ for the Control Group Baseline Type

Control Group Baseline methodology utilizes load data from two distinct groups to develop the Demand Response Energy Measurement (DREM)

- **Control Group** Load Data and **Treatment Group** Load Data

**Where DREM =**

(hourly avg of **control group load data**) – (hourly avg of **treatment group load data**) x (#locations in **treatment group**)

=

{(total load of control group/# locations in control group) – (total load of treatment group/#locations in treatment group)} x #locations in treatment group

- **Control Group** requires an additional set of data needing to be monitored

# Identification of Control Groups will be required in addition to Treatment Group represented in the Resource Registration

## Control Group Baseline

### **Assumption:**

- Monitoring and analysis will utilize DRRS data to scale load data represented by **Control** and **Treatment** groups.
- Service accounts (locations) representing the **Control Group** will be identified in the DRRS
  - Must not be included in a registration
  - Will need to go through LSE/UDC review
  - May require separate submittal of identified locations to PDR coordinator (manual process until DRRS can provide full identification functionality)
- Service accounts (locations) representing the **Treatment Group** would be identified as those in the effective registration of the resource.

*\*BRQs and business process to support Control Group identification in development therefore proposed requirement subject to change*



# Additional requirements in development will include submission of **Control Group** load data

## Control Group Baseline Type

- Baseline = load data (SQMD) used to develop the **Control Group** baseline
  - Measurement\_type = **BASELINE**
    - ✓ Data not needed for settlement, monitoring/analysis only
      - Data Submitted to the MRI\_S
      - Data not used in Settlement
      - Data used for monitoring/analysis
      - Continuous set of data needed from time resource ID becomes active to the trade date the event occurred with minimum set of days being 90 days
  - Submit on a daily basis **or** ability to submit full set of data once dispatch occurs
  - 24 hours, 5 minute granularity

*\*Currently only a proposed Measurement\_Type, BRQs in development therefore proposed requirement subject to change*

# Additional requirements **in development** will include submission of **Treatment Group** load data

## Control Group Baseline Type

- Treatment Group = aggregated load of service accounts responding to a dispatch = load data (SQMD)
  - Measurement\_type = **TREATMENT**
    - ✓ Data not needed for settlement, monitoring/analysis only
      - Data Submitted to the MRI\_S
      - Data not used in Settlement
      - Data used for monitoring/analysis
      - Continuous set of data needed from time resource ID becomes active to the trade date the event occurred with minimum set of days being 90 days
  - Submit on a daily basis **or** ability to submit full set of data once dispatch occurs
  - 24 hours, 5 minute granularity

*\*Currently only a proposed Measurement\_Type, BRQs in development therefore proposed requirement subject to change*

# Market Participant Business Process Questions

MARKET PARTICIPANT QUESTION	ISO RESPONSE
<p>On behalf of residential demand response aggregations, the primary reason to shift baselines would be when we aggregated sufficient customers to justify a shift from the like-weather-day baseline to a random control test baseline, which would be more accurate. WE might have some customers on both as volume is built in different zones</p>	<p>The ISO would like to propose no less than a 30 day switch between baselines</p>
<p>I assume that residential aggregations would be automatically allowed to participate in random control test baseline once some volume is crossed in each zone?</p>	<p>DRP must first obtain approval for use of the control group baseline performance methodology – which will require identification of control group participants. Therefore, obtaining use of that baseline type would need to go through that process once the volume is crossed.</p>

# Market Participant Questions

## Technical Questions

MARKET PARTICIPANT QUESTION	ISO RESPONSE
<b>SUBMITTING METER DATA</b>	
Confirm required/not required column is identical for DR and non-DR for all interfaces	Yes, they are identical. The required/not required details for all the elements are described in the technical specification.
<b>4.4 Message Type: Submit Meter Data</b>	
measurementType : what is the DR entry in the table (p. 13)	It can be LOAD, GEN or MBMA as specified in the business requirements specification that can be found at:  <a href="http://www.caiso.com/Documents/BusinessRequirementsSpecification-EnergyStorage_DistributedEnergyResourcesPhase2.pdf">http://www.caiso.com/Documents/BusinessRequirementsSpecification-EnergyStorage_DistributedEnergyResourcesPhase2.pdf</a>
MessagePayload.MeterMeasurementData.DemandResponseRegistration : confirm this is required for DR (p. 14)	No, it is not required as the meter data will be submitted at the resource level and not at the registration level
measurementQuality : what is the DR value (p. 14)	It depends on whether the meter data being submitted is ACTUAL or ESTIMATED
Which resource type classification should be used for DR (p. 15/16)	All DR resources are defined as Generator in the master file, therefore RegisteredGenerator should be used.
Confirm/Correct the following examples: MessagePayload.MeterMeasurementData.DemandResponseRegistration. mRID: 5432123  MessagePayload.MeterMeasurementData.RegisteredLoad.mRID: ABC4_3_RDRR01	Registration ID is not required  This should be under the RegisteredGenerator element
<b>4.4.3 Example XML File</b>	
Please provide an Example XML for DR	There is no difference in the submission between DR and non-DR resources. Please use the same example and substitute the resource ID with a DR resource ID.
<b>4.5 Message Type: Standard Output</b>	
Confirm no change at all for DR (same 2 statuses, no need for an XML example, etc.)	Yes, that is correct.

# Market Participant Questions

## Technical Questions (cont'd)

MARKET PARTICIPANT QUESTION	ISO RESPONSE
<b>5.4 Message Type retrieveBatchValidationStatusReport</b>	
Request mixed up with Response: hard to understand. Can you improve, even if it means duplicating in 2 sections Request/Response or adding a column req/resp?	Request is the same for all statuses since the request is based on the batch ID. Depending on the status, it is only the response that will be different.
(REQUEST) MessagePayload.BatchStatus (optional): is this really optional, especially in the request since mRID seems required? (p. 27)	The request and the response uses the same XSD, hence it is marked as optional as it may not be populated in the response when a generic error is encountered. However, the batch ID is required for requesting the status of a submission.
(REPONSE) Description: confirm same set of statuses (p. 28)	Yes, same set of statuses
(REPONSE) MessagePayload.RegisteredResource: is it used at all in DR?  If yes, which classification?  If yes confirm the example mRID value: ABC4_3_RDRR01	Yes, this will be used to populate the resource ID that has the error and/or WARNING  All DR resources are defined as Generator in the master file, therefore RegisteredGenerator should be used.  Yes
<b>5.4.3 Example XML File</b>	
Example of retrieveBatchValidationStatus Response(s) for DR?	There is no difference in the submission between DR and non-DR resources. Please use the same example and substitute the resource ID with a DR resource ID.
7. Appendix – dateTime Data Type: confirm all formats apply to DR	Yes
8. Appendix – Validation Errors: will there be additional Error codes for DR	No

# Market Participant Questions

## Technical Questions (cont'd)

MARKET PARTICIPANT QUESTION	ISO RESPONSE
<b>RETRIEVE METER DATA</b>	
Is retrieveBatchValidationStatusRequest needed for DRS?	No, it is not needed for DRS. It is needed to retrieve the status of batch submissions to DRRS and MRI-S.
Is there going to be a separate table for DR data in MRIS?	No
Are there going to be any additional DR changes to the existing API <b>RetrieveMeterDataRequest</b>	No
If the element <b>a</b> is populated when DRS implemented, then there will be two mRIDs as below? mRID – Master resource identifier of the registration (Registration ID) mRID – Master resource identifier of the Generator, or Intertie, or Load, or FlowGate resources as specified by master file.	This will not be populated This is used for the resource ID
Provide sample of DR response xml	There is no difference in the response for DR and non-DR resources. Please use the same example and substitute the resource ID with a DR resource ID.

# Follow-up Question from Dec 13, 2017 CPG

Question	CAISO Answer
<p>If there are residential and non-residential customer segments within the same resource ID, is there an option to choose <b>different baseline types</b> (weather matching, day matching or control group)?</p> <p>For example: Can a resource ID (registration) have two different baseline type (1) residential customers using weather matching and (2) non-residential using day matching?</p>	<p>No</p>
<p>If there are residential and non-residential customer segments within the same resource ID, can a resource ID use one baseline type – e.g day matching but utilize different methodologies?</p> <p>For example: Can a resource ID (registration) utilize two <b>different <u>Day Matching</u> baseline type methodologies</b> (1) residential customers using <b>day matching</b> (5/10) and (2) non-residential using <b>day matching</b> (10/10)?</p>	<p>Yes, only applicable for Day Matching</p>

# Combined residential and non-residential Day Matching Baseline Type Simplified Example

Example: PDR Event HE12 Intervals 1 – 6 (TEE>0)

- Resource Registration includes both residential and non-residential locations
- **Day Matching** Baseline Type selected

Baseline values assume adjustment has been applied:

HE12	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6
10/10 non-residential	1.5 MW	1.75 MW	1.75 MW	2.0 MW	2.0 MW	2.0 MW
5/10 residential	.25 MW	.50 MW	.50 MW	.50 MW	.65 MW	.75 MW
<b>BASELINEadj Data Submitted</b>	<b>1.75 MW</b>	<b>2.25 MW</b>	<b>2.25 MW</b>	<b>2.50 MW</b>	<b>2.75 MW</b>	<b>2.75 MW</b>

Actual load values for resource during dispatch:

HE12	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6
10/10 non-residential Load	1.25 MW	1.25 MW	1.00 MW	1.00 MW	1.00 MW	2.00 MW
5/10 residential Load	.10 MW	.10 MW	.25 MW	.50 MW	.75 MW	1.00 MW
<b>LOAD Data Submitted</b>	<b>1.35 MW</b>	<b>1.35 MW</b>	<b>1.25 MW</b>	<b>1.50 MW</b>	<b>1.75 MW</b>	<b>3.00 MW</b>

Demand Response Energy Measurement (DREM) = Baseline - Actual:

HE12	Interval 1	Interval 2	Interval 3	Interval 4	Interval 5	Interval 6
10/10 non-residential Load	.25 MW	.50 MW	.75 MW	1.00 MW	1.00 MW	0 MW
5/10 residential Load	.15 MW	.40 MW	.25 MW	0 MW	0 MW <sup>[1]</sup>	-.25 MW
<b>DREM Data Submitted = BASELINEadj – Actual Load</b>	<b>.40 MW</b>	<b>.90 MW</b>	<b>1.00 MW</b>	<b>1.00 MW</b>	<b>1.00 MW</b>	<b>0 MW <sup>[1]</sup></b>

<sup>[1]</sup> Note, DREM = max (0, BASELINEadj – Actual Load)





# Questions?

# Next Steps

- Please submit further questions or comments to:

Elaine Siegel  
[esiegel@caiso.com](mailto:esiegel@caiso.com)

- Customer Partnership Groups webpage available at:  
<http://www.caiso.com/informed/Pages/MeetingsEvents/CustomersPartnershipGroups/Default.aspx>

Thank you!