



Business Requirements Specification

Energy Storage and Distributed Energy Resources Phase -2

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1. Introduction

1.1 Purpose

The central focus of the CAISO's energy storage and distributed energy resources (ESDER) initiative is to lower barriers and enhance the ability of transmission grid-connected energy storage and distribution-connected resources to participate in the CAISO market. The number and diversity of these resources is growing and represent an increasingly important part of the resource mix. Integrating these resources will help lower carbon emissions and add operational flexibility.

1.2 References

All references represent external requirements documents or stakeholder requests developed and submitted by the Business Units.

- Project Plan and other relevant documents that precede the BRS are located in:

Stakeholder Initiatives web page at:

http://www.caiso.com/informed/Pages/StakeholderProcesses/EnergyStorage_DistributedEnergyResourcesPhase2.aspx

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2. Intellectual Property Ownership

Intellectual property covers a broad array of information and materials, including written works, computer programs, software, business manuals, processes, symbols, logos, and other work products. Determining ownership of intellectual property is very important in preserving rights of the California ISO and helps to avoid intellectual property infringement issues. In considering the business requirements or service requirements to be performed, the business owner of the project must determine intellectual property Ownership.

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2.1 Guidelines

Intellectual property ownership must be considered by all applicable stakeholders before the services are performed. The level of analysis is two-fold. One, the business owner must determine if the intellectual property necessary to perform the services is owned by the California ISO or whether it must be obtained from a third party. Once it has been determined that the California ISO has secured the proper intellectual property rights to perform the services (i.e., the intellectual property is owned by the California ISO or we have licensed it from a third party), then the second step in the analysis is to consider whether new intellectual property will be created as a result of the business requirements or service requirements to be performed and how that intellectual property will be owned and protected by the California ISO. In order to assist the business owner in the analysis previously described, refer to the California Intellectual Property Policy available at <http://www.caiso.com/rules/Pages/LegalPoliciesNotices/Default.aspx>, which provides a brief tutorial on what Intellectual Property is and how the California ISO can go about protecting its intellectual property. Please contact the Legal Department if you have any questions regarding intellectual property.

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2.2 Checklist

There are no impacts to intellectual property based on the requirements stated in this document.

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3. Appendix: Acronym Definition

Acronym	Definition
AS	Ancillary Services
CBL	Customer Load Baseline
DLA	Default Load Adjustment
DR	Demand Response
DREM	Demand Response Energy Measurement
DRP	Demand Response Provider
DRRS	Demand Response Registration System
DRS	Demand Resource System
EIM	Energy Imbalance Market
GEN	Generator
LSE	Load Serving Entity
MBMA	Meter Before Meter After
MP	Market Participant
NBT	Net Benefit Test
NRI	New Resource Implementation
PDR	Proxy Demand Resource
RDRR	Reliability Demand Response Resource (RDRR)
SC	Scheduling Coordinator
SCME	Scheduling Coordinator Meter Entity
SQMD	Settlement Quality Meter Data

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Acronym	Definition
TEE	Total Expected Energy
UDC	Utility Distribution Company

4. Details of Business Need/Problem

4.1 Description

The ESDER 2 initiative addresses the following three main topics:

- **Alternative Baselines to Enhance DR** (Changes to PDR registration, auditing procedures and settlements, BPM, DRS retirement) :
 - Baseline Analysis Working Group (BAWG) has identified and proposed the following three types of customer load baseline methodologies, in addition to the 10 in 10 customer load baseline
 - **Control Groups:** A control group establishes the baseline of load patterns during curtailment events using non-dispatched customers with similar profiles.
 - **Day Matching:** Day-matching baselines estimate what electricity use would have been in absence of a DR dispatch, using electricity use data on non-event but similar days.
 - **Weather Matching:** Weather-matching baselines estimate what electricity use would have been in absence of dispatch during non-event days with most similar weather conditions.
 - Additionally, the CAISO is proposing that the Scheduling Coordinator—in lieu of the CAISO—be responsible for all Customer Load Baseline (CLB) calculations, including the current 10 in 10.
- **Distinguishing between charging energy and station power:**
 - The CAISO is proposing to revise the Station Power definition in consultation with stakeholders and will be something general that incorporates, by reference, the definitions of local regulatory authorities.
 - Resources will work with their retail energy provider to ensure that their metering configurations accurately account for station power, where and as required by local regulatory authorities.
- **Energy Imbalance Market (EIM) Net Benefits Test:**
 - The CAISO is proposing to replace the current list of specific gas price indices available for use in the calculation of the DR net benefits test with references to the relevant local gas price index. This will enable the use of the relevant local gas price index for EIM entities outside of California

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5. Business Process Impacts

5.1 Business Practice Manual (BPM)

BPM	Description of Impact(s)
Managing Full Network Model	N/A
Congestion Revenue Rights	N/A
Market Instruments	EIM Net Benefits Testing: <ul style="list-style-type: none"> Changes will include addition of all gas price indices used in calculation. For any new EIM entity, the delivery point of the new EIM won't be included in the report published in their activation month.
Outage Management	N/A
Reliability Requirement	N/A
Market Operations	N/A
Compliance Monitoring	N/A
Metering	Alternative Baselines: <ul style="list-style-type: none"> Need to revise the BPM to explain new baselines and changes to existing systems. Identify the means to determine DR Event Submittal of SQMD for DREM. Station Power: <ul style="list-style-type: none"> Need to revise BPM to provide examples of wholesale/retail uses for generation and storage Need to revise BPM to clarify permitted/prohibited netting rules. Update Demand Response Resource User Guide
Scheduling Coordinator Certification & Termination	N/A
Rules of Conduct Administration	N/A
BPM Change Management	N/A
Definitions & Acronyms	Station Power: <ul style="list-style-type: none"> Revision of Station Power definition to match Tariff language.

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BPM	Description of Impact(s)
Settlements & Billing	Alternative Baselines: <ul style="list-style-type: none"> Possible changes to reflect settlements configuration changes.
Credit Management	N/A
Candidate CRR Holder	N/A
Transmission Planning Process	N/A
Direct Telemetry	N/A
Distributed Generation for Deliverability	N/A
Energy Imbalance Market (EIM)	N/A
Generator Interconnection Procedure (GIP)	N/A
Generator Interconnection and Deliverability Allocation Procedures	N/A
Generator Management	N/A
Managing Full Network Model	N/A

5.35.2 Other

Impact:	Description: (optional)
Market Simulation	Yes – DRS System, DRRS and MRI-S
Market Participant Impact	Yes
Internal Training	Yes Alternative Baselines: <ul style="list-style-type: none"> Market Services Support training for new validation procedure. Market Services Support training for new audit procedures.
External Training	Yes Alternative Baselines: <ul style="list-style-type: none"> Possible training on how to submit CLB calculations through data collection templates. Training on DREM submittal process. DR user guide MRI-S Users – Submittal processes using UI and API
Policy Initiative	Yes
Vendor	N/A
Architectural Framework and Roadmap	Yes
DRS Decommissioning	Refer to BRQ091 and BRQ094

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6. Business Requirements

The sections below describe the Business Processes and the associated Business Requirements involved in the project. These may represent high level functional, non-functional, reporting, and/or infrastructure requirements. These business requirements directly relate to the high level scope items determined for the project.

6.1 Business Process: Manage Transmission & Resource Implementation

6.1.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ001	New Resource Implementation (NRI) customers shall work with their Utility Distribution Company (UDC) to ensure that their station power is properly metered and settled at the UDC approved point.	BPM Requirement	N/A

6.2 Business Process: Manage Operations Support & Settlements

6.2.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ028	<p>The automated Monthly Demand Response Net Benefits Test Results report shall undergo modification in Table 2: Gas prices and Gas Scalars to include:</p> <ul style="list-style-type: none"> Listing historical gas price indices of each EIM identity <u>Gas Price Delivery Point</u> Calculated gas scalar of each EIM entity <u>Gas Price Delivery Point</u>. 	Core	www.caiso.com

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6.3 Business Process: Manage Demand Response Registration System (DRRS)

6.3.1 Business Requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ049	The System shall display only the approved baseline methods for the specific DRP to select while creating registrations.	Core	DRRS
ESDER2-BRQ052	The System shall reject submissions of any registrations that does not have an approved baseline method selected.	Core	DRRS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ053	<p>For DRPs that are approved for Control Group Baseline Methodology:</p> <p>System will allow the user to identify the location(s) within a registration as belonging to a control group or treatment group.</p> <p>System will allow any number of locations within a registration to be identified as a treatment group.</p> <p>Systems will validate that if there are any locations within a registration identified as belonging to a control group, there shall be at least 150 such locations. In other words, if a DRP selects a location within a registration to belong to a control group, the System will reject any registrations submitted with less than 150 such locations identified.</p> <p>If a location is identified as a treatment group location within a registration, the system shall not allow that location to be used in other registrations with overlapping dates</p> <p>If a location is identified as a control group location within a registration, the system shall allow that location to be used in other registrations with overlapping dates as long as they are identified as a control group location in all such registrations</p> <p>System shall allow control group locations across the sub-laps.</p>	<p>Core</p>	<p>DRRS</p>

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6.4 Process: Manage Meter Data

6.4.1 Business Requirements

ID	Business Feature	Requirement type	Potential Applications impacted
ESDER2-BRQ055	The System shall only accept Demand Response Energy Measurement (DREM) for the DR event at a 5 minute granularity.	Core	MRI-S

6.5 Business Process: Managing DRS Decommission

6.5.1 Business Requirements

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ091	<p>The existing DRS system shall be retired only after the completion of the payment calendar timeline for last trade date prior to go-live (T+9 Months).</p> <p><u>The DRP/SC shall be allowed to submit Meter data to DRS for trade dates prior to this project activation date up to 172 business days from the last day prior to this project activation date.</u></p> <p><u>For example, if the project activation date is 10/1/2018, the DRP shall be allowed to submit meter data for trade dates prior to 10/1/2018 until the T+172B meter data deadline for those trade dates.</u></p> <p><u>Note: This applies to both UI and API submissions.</u></p> <p>The PDR/RDRR DREM <u>and values</u> for go-live forward shall be submitted to the CAISO by the SC as SQMD in the Market Results Interface-Settlements (MRI-S).</p>	Core	DRS

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ094	<p>The DRP/SC shall submit Meter data to DRS for trade dates prior to Project activation date.</p> <p><u>After the meter data submission deadline (currently 172 business days) has occurred for the last date prior to this project activation date, DRS shall not allow any submission of meter data using the UI or API.</u></p> <p><u>After the meter data submission deadline (currently 172 business days) has occurred for the last date prior to this project activation date, DRS shall remain available to users in Read Only mode for a period of 3 years from the project activation date.</u></p> <p><u>For example, if the project activation date is 10/1/2018, DRS shall remain in read only mode until 9/30/2021.</u></p>	Core	DRS

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6.6 Business Process: DRP Responsibility

6.6.1 Business requirements

ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ083	<p>DRP shall submit hourly data by Resource ID and Registration ID for analysis and monitoring purposes. New measurement types will be:</p> <p>For Day matching, Weather matching and Control Group methodologies:</p> <ul style="list-style-type: none"> • Baseline Load Data (.CBL) <p>In addition, for those electing Control group methodology:</p> <ul style="list-style-type: none"> • Treatment Group Load Data (.TMNT) 	Core	DRP Responsibility
ESDER2-BRQ097	<p>The DRP/SC shall determine a Demand Response (DR) event interval as beginning with a first interval of non-zero Total Expected Energy (TEE) and end when the TEE returns to zero.</p> <p>Notes:</p> <p>The TEE values can be retrieved by the DRP from CMRI.</p> <p>DREM submitted for zero TEE intervals will not be used for settlements</p>	Core	DRP Responsibility



ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ0100	<p>The DRP/SC shall perform the baseline calculations for the new and existing methods as listed below:</p> <ul style="list-style-type: none"> • Control Group (Residential) • Control Group (Non-Residential) • Day Matching 5/10 (Residential <u>Only</u>) • Day Matching 10/10 (Non-Residential) • <u>Day Matching Combined</u> • Weather Matching 4-Day (Residential) • Weather Matching • 10 in 10 (Already Existing) • Hourly Gen (Already Existing) • Meter Generation Output (Already Existing) • Meter Generation Output with 10 in 10 (Already Existing) • Statistical Sampling (Already Existing) 	Core	DRP Responsibility
ESDER2-BRQ0103	The DRP/SC shall follow the guidelines outlined in the Tariff, Business practice Manual and/or DR User guide for calculation of DREM.	Core	DRP Responsibility
ESDER2-BRQ0106	The DRP/SC shall only submit DREM for the DR event at a 5 minute granularity.	Core	DRP Responsibility
ESDER2-BRQ0109	During Non-Zero TEE, the DRP/SC shall submit DREM as GEN measurement type to MRI-S, and the submitted SQMD shall only represent the non-zero TEE intervals.	Core	DRP Responsibility

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ID#	Business Feature	Requirement Type	Potential Application(s) Impacted
ESDER2-BRQ0112	The DRP/SC shall submit load data for the period of any AS award as LOAD measurement type in MRI-S. <u>Load data for AS awards to be at 5-minute granularity</u>	Core	DRP Responsibility
ESDER2-BRQ0115	The DRP/SC shall use a new measurement type of MBMA to submit load data for resources that are AS certified to allow for appropriate AS No-pay calculation. <u>Load data for resources that are AS certified to be at 5-minute granularity</u>	Core	DRP Responsibility
ESDER2-BRQ0118	The DRP/SC shall submit Load data for one interval prior to the DR Event and one interval after the DR event for Meter before Meter after (MBMA) value for the period of any AS award as MBMA measurement type in MRI-S.	Core	DRP Responsibility