Enabling Demand Response: Demand Response Location Registration

Pre-Market Simulation Training Session
January 27, 2015 (updated with new screenshots on 3/19/15)

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Customer Service Department
Agenda

- Terms and acronyms
- Review business process changes
- New Demand Response Registration System
- Changes to existing Demand Response System
- Registration management
Terms and Acronyms
Terms and Acronyms

• Demand Response Provider (DRP)
• Load Serving Entity (LSE)
• Utility Distribution Company (UDC)
• Locations
  – Physical location of the demand response entity
  – Includes customer data such as service account number, physical service location, curtailable load amounts
Terms and Acronyms

• **Aggregate Location (ALOC)**
  – A grouping of one or more locations
  – Aggregate locations must be served by the same LSE and located in same Sub-LAP for approval by LSE and UDC

• **Service Account Number (SAN)**
  – Unique number assigned to a location by the UDC

• **Load Reduction Capacity Value (LRCV)**
  – total available kW load reduction
Terms and Acronyms

• Registration
  – May be comprised of a single location or an aggregation of many locations
  – Registration submitted for LSE, UDC review and ISO approval
  – Meter Data information submitted at registration level for baseline calculation prior to market participation

• PDR/RDRR Resource ID
  – Assigned by ISO
  – One ID per registration
  – Unique ID used for participation in the ISO wholesale markets (scheduling/bidding and settlement)
  – Resource specific information for the ID resides in the ISO Master File
Review Business Process Changes
As-Is Business Process

- Locations are created, registered, reviewed, verified, and approved in the Demand Response System (DRS)
- No API functionality

**Diagram:**
- DRP creates location(s) → DRP creates registration → Registration is reviewed by LSE, UDC, ISO → ISO assigns PDR/RDRR ID and effective date to registration
- DRP submits RDT form (master file) → PDR/RDRR ID and Pmax updated in ISO master file (master file) → ISO approves registration
To-Be Business Process

- Locations and aggregate locations are created in the Demand Response Registration System (DRRS) via user interface or API.
- Locations are registered, reviewed, verified, and approved in the Demand Response System (DRS) via user interface.

**Diagram:**
- DRP creates location(s)
- DRP creates aggregate location(s)
- ALOC is copied from DRRS to DRS as a new location
- DRP creates registration
- Registration is reviewed by LSE, UDC, ISO
- ISO assigns PDR/RDRR ID and effective date to registration
- DRP submits RDT form
- PDR/RDRR ID and Pmax updated in ISO master file
- ISO approves registration
New Demand Response Registration System (DRRS)

High-level Goals for DRRS Implementation
Application Access
DRRS Functionality
High-level Goals for DRRS Implementation

- New application to provide bulk upload/download of locations for market participants
- Provides scalability to accommodate input of the volume of locations participating in demand response programs
- Maintain duplication check of a location within active registrations
Application Access

• Work with your application access Point of Contact (POC) to obtain access to DRRS

• Access to DRRS is managed using the Access and Identity Management (AIM) application
  – Access for endorsed users is managed using the Application Access Request Form (AARF)

• Submit requests for access to DRRS in market simulation and production environments
  – Look for market notice with additional instructions

• Request DRS access if you do not have it today
  – DRS is a legacy application; access is managed using the Application Access Request Form (AARF)
Application Access

- Icons for both applications will be visible in the market simulation environment for users who have access.

### Market Applications

<table>
<thead>
<tr>
<th>Application Access</th>
<th>Metering</th>
<th>Renewables &amp; Demand Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIM</td>
<td>OMAR</td>
<td>DRS</td>
</tr>
<tr>
<td>CIDI</td>
<td>OASIS</td>
<td>DRRS</td>
</tr>
<tr>
<td>Market &amp; Operations</td>
<td>Outage Coordination</td>
<td>Settlements</td>
</tr>
<tr>
<td>CMRI</td>
<td>WebOMS</td>
<td>MRI-S</td>
</tr>
<tr>
<td>CRR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIBR</td>
<td>CIRA</td>
<td>Systems &amp; Resource Modeling</td>
</tr>
<tr>
<td>SIBR Reports</td>
<td>RAAM</td>
<td>TR</td>
</tr>
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</tbody>
</table>
DRRS Application Functionality

- DRRS is built using the common UI framework
- Application functionality
  - Create new location
  - Create new aggregate location (ALOC)
  - Manage locations and ALOCs
- ALOCs are copied to DRS once completed
DRRS Application Functionality

- Application functionality
  - Create new location
Role-based Tabs

- Users will see one or more tab(s) based on their roles
- Users with multiple tabs should select the tab that corresponds with the role they are performing at that moment
  - For example, select **UDC VIEW** to see all locations that are assigned to you as the UDC
DRRS Application: Create New Location

- Functionality for DRP only

Select **Locations** from the **DRP VIEW** Tab

Click **Create New Location**
# DRRS Application: Create New Location

## Create New Location

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the location</td>
<td></td>
</tr>
<tr>
<td>SAN</td>
<td>Site Address Number</td>
<td></td>
</tr>
<tr>
<td>Start Date</td>
<td>Start date of the location</td>
<td></td>
</tr>
<tr>
<td>End Date</td>
<td>End date of the location</td>
<td></td>
</tr>
<tr>
<td>Address 1</td>
<td>Street address 1</td>
<td></td>
</tr>
<tr>
<td>Address 2</td>
<td>Street address 2</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>City</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>State</td>
<td>CA</td>
</tr>
<tr>
<td>Zip</td>
<td>Zip code</td>
<td></td>
</tr>
<tr>
<td>Business Segment</td>
<td>Business segment of the location</td>
<td></td>
</tr>
</tbody>
</table>

* Required fields

## Load Reduction Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup Generator</td>
<td>Load reduction type</td>
<td></td>
</tr>
<tr>
<td>HVAC</td>
<td>HVAC load reduction type</td>
<td></td>
</tr>
<tr>
<td>Refrigeration</td>
<td>Refrigeration load reduction type</td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td>Lighting load reduction type</td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Manufacturing load reduction type</td>
<td></td>
</tr>
<tr>
<td>Water Heating</td>
<td>Water heating load reduction type</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Other load reduction type</td>
<td></td>
</tr>
</tbody>
</table>

* Required fields

**Load Reduction Types**

- **Backup Generator**
- **HVAC**
- **Refrigeration**
- **Lighting**
- **Manufacturing**
- **Water Heating**
- **Other**
Choices in **SUBLAP** field are determined by **Start Date/End Date**
A location is Non-Participating if it does not belong to an ALOC.
Status changes to Participating Active or Participating Inactive when added to an ALOC.

Status set to Non-Participating when location is first created.
DRRS Application: Locations menu option (full screen)

- This screen displays a list of locations
- DRP can create new locations
- DRP can modify information (in some cases)
- LSE and UDC have read-only access
DRRS Application: Locations menu option (full screen)

- Locations are displayed on the left
- Click on a location to see
  - What aggregate location it belongs to (if any) – right side
  - Site Information (address) – bottom
  - Profile (type of load reduction) – bottom
• Edit buttons are available to DRP based on location status

• Green edit button allows editing of required fields
• Available for:
  • Non-Participating
  • Participating Inactive
• Not available for end dated
DRRS Application: Locations menu option (left side)

- Edit buttons are available to DRP based on location status
  - Yellow edit button allows editing of optional fields
  - Available for:
    - Participating active
DRRS Application Functionality

- Application functionality
  - Create new aggregate location (ALOC)

- An aggregate location must be created for all locations, even if there is only one location to register
DRRS Application: Create New ALOC

- Functionality for DRP only

Select **Aggregate Locations** from the **DRP VIEW** Tab

Click **Create New ALOC**
DRRS Application: Create New ALOC

• Fill out all fields and click Continue
All available locations that match the combination of DRP/UDC/LSE/SUBLAP will be shown here.
DRRS Application: Create New ALOC

- Click **Add** or **Add All** to select available locations
- Locations move to **Selected Locations** list
- Click **Confirm ALOC Association** to continue
DRRS Application: Create New ALOC

- Aggregate location status set to New upon creation
- Location status changes to Participating Inactive when added to a new ALOC

Status set to New when aggregate location is first created
DRRS Application: Aggregate Locations menu option (full screen)

- This screen displays a list of aggregate locations
- DRP can create new aggregate locations
- DRP can modify information (in some cases)
- LSE and UDC have read-only access
DRRS Application: Aggregate Locations menu option (full screen)

- Aggregate locations are displayed on the left
- Click on an aggregate location to see
  - What location(s) are included (if any) – right side
DRRS Application: Aggregate Locations menu option (left side)

- Edit button is available to DRP based on status

- Green edit button allows editing of required fields
- Available for:
  - New
  - Inactive
- Not available for:
  - Active
  - Terminated
• ALOCs are copied to DRS once completed
Changes to Existing Demand Response System (DRS)
As-Is DRS Functionality

- Create & modify locations
- Create & modify registrations
- Review and comment by LSE and UDC
- ISO review and assignment of PDR/RDRR ID
- Upload & download meter data
- Calculate & download customer baseline information
- Evaluate compliance and event information
To-Be DRS Functionality

- View aggregate locations
- Create & modify registrations
- Review and comment by LSE and UDC
- ISO review and assignment of PDR/RDRR ID
- Upload & download meter data
- Calculate & download customer baseline information
- Evaluate compliance and event information
DRS Application Functionality

1. DRP creates registration
2. LSE, UDC review of registration
3. ISO review of registration
4. ISO assigns PDR/RDRR ID and effective date to registration
5. DRP submits RDT form
6. PDR/RDRR ID and Pmax updated in ISO master file
7. ISO approves registration

(standard master file)
- Click the hyperlink in the **Loc ID** or **Name** field

Note: the Action button has been removed from the location screen. Locations are no longer created in DRS.
DRS Application: Create Registration

- Select **Register** from the Actions menu

- Note: Register will be available for locations that are New or Inactive
Complete all fields
Select **Submit** from the Actions menu
DRS Application: Registration in Pending Status

- Registration is now Pending
Note: DRRS/DRS ID Numbers

- ALOC ID from DRRS matches the Loc ID and UDC Account # in DRS
- Service Account Number (SAN) is only visible in DRRS
A registration is active if the registration status is either Confirmed or Pending in DRS.

- ALOC is set to **Active**
- Location(s) set to **Participating Active**
DRS Application Functionality

- The remaining functions have not changed
- Step-by-step instructions are provided in the demand response user guide
Registration Management

Registration Management

DRRS Application: TR Override Function
Registration Management

• Registration cannot be modified once the DRP has submitted it

• Locations cannot be added to or removed from a registration once confirmed

• If a change is necessary, terminate the registration and create a new one to replace it

• Note: copy registration function has been removed from DRS
The **TR Override** button immediately terminates the registration in DRS.

- Aggregate locations cannot be changed once registered.
- Terminate registration in order to make changes.
DRRS Application: TR Override

• Reminder message that the override process is immediate and cannot be undone

This Aggregate location is currently locked and cannot be edited. In order to make changes to this alloc, you must deactivate the associated registration. Deactivating a Registration cannot be undone.

Please review the information below and click on the "TR Override Alloc" to continue.

<table>
<thead>
<tr>
<th>Aggregate Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration ID:</td>
</tr>
<tr>
<td>Aloc ID:</td>
</tr>
<tr>
<td>Aloc Name:</td>
</tr>
</tbody>
</table>

[Buttons: Cancel, TR Override Alloc]
When the registration and ALOC are terminated, DRRS makes a copy of the ALOC so changes can be made. This screen is displayed after termination is completed.

- Change ALOC details if desired and click Update ALOC Attributes.
DRRS Application: TR Override > Edit ALOC

- Select multiple locations using Shift + Down Arrow or Ctrl + Click and click Add.
DRRS Application: TR Override > Edit ALOC

- Click Confirm ALOC Association to create the new aggregate location
- From here, the ALOC is copied to DRS as a Location and is ready for registration
Review Demand Response Location Registration
Demand Response Location Registration

- Locations and aggregate locations are created in the Demand Response Registration System (DRRS) via user interface or API.

```
DRP creates location(s) → DRP creates aggregate location(s) → ALOC is copied from DRRS to DRS as a new location
```

```
DRP creates registration → Registration is reviewed by LSE, UDC, ISO → ISO assigns PDR/RDRR ID and effective date to registration
```

```
DRP submits RDT form (master file) → PDR/RDRR ID and Pmax updated in ISO master file (master file) → ISO approves registration
```

- Locations are registered, reviewed, verified, and approved in the Demand Response System (DRS) via user interface.
Questions?

• Registration questions:
  – Email the PDR Coordinator (pdr@caiso.com)

• Support during market simulation:
  – Contact the ISO Help Desk at (888) 889-0450 or helpdesk@caiso.com
  – Submit a CIDI ticket (select the market sim environment)

• Support after production release:
  – Contact the ISO Help Desk at (888) 889-0450 or helpdesk@caiso.com
  – Submit a ticket in CIDI (select the Production environment)
Reference Material

Features of User Interface
Reference Material (documentation)
Acronyms
Features of User Interface: Application Toolbar

- The application toolbar contains the application or browser-based functions

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔁</td>
<td>Goes to the previous display in browsing history</td>
</tr>
<tr>
<td>►</td>
<td>Goes to the next display in browsing history</td>
</tr>
<tr>
<td>🔞</td>
<td>Stops loading the current display</td>
</tr>
<tr>
<td>🔁</td>
<td>Refreshes the display in the current window</td>
</tr>
<tr>
<td>🔡</td>
<td>Zoom out</td>
</tr>
<tr>
<td>🔢</td>
<td>Zoom in</td>
</tr>
<tr>
<td>🔦</td>
<td>Log out</td>
</tr>
</tbody>
</table>
Features of User Interface: Locations Tab

- The filter toolbar contains the filtering options for locations

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apply</strong></td>
<td>Refreshes location data with the filters</td>
</tr>
<tr>
<td><strong>Reset</strong></td>
<td>Restores filters to default settings</td>
</tr>
</tbody>
</table>

**Note re: wildcard search**

There is no need to use an asterisk (*) wildcard symbol to search for information. The filter functionality has been pre-set to include an implied wildcard. (e.g. Enter 1234 in the **SAN** field and click the **Apply** button to display a list of all locations that contain that string of numbers in the SAN)
Features of User Interface: Aggregate Locations Tab

- The filter toolbar contains the filtering options for aggregate locations

<table>
<thead>
<tr>
<th>ALOC NAME</th>
<th>ALOC ID</th>
<th>SAN</th>
<th>DRP</th>
<th>UDC</th>
<th>LSE</th>
<th>SUBLAP</th>
<th>REG ID</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apply</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refreshes aggregate location data with the filters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reset</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restores filters to default settings</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note re: wildcard search

There is no need to use an asterisk (*) wildcard symbol to search for information. The filter functionality has been pre-set to include an implied wildcard. (e.g. Enter lake in the ALOC Name field and click the Apply button to display a list of all aggregate location names that contain that string of letters)
Features of User Interface: Multiple Column Sorting

- Clicking on a column in the results window enables sorting in ascending or descending order

How to use multiple column sorting:
- Click a column header. The data is sorted in ascending order and the following icon appears in the column header: \(^1\). This indicates the first level sorting.

- Click another column. The data is sorted in ascending order. The icon in the first column changes to: \(^1\). The following icon appears in the second column: \(^2\). This indicates the second level sorting.

- Click another column. The data is sorted in ascending order and the following icon appears in the column header: \(^3\).

- Click the same column again. The data is sorted in descending order. The icon in the column header is changed to: \(^3\).

- Continue to click column headers to deselect and then reprioritize the sorting order.
Features of User Interface: Multiple Column Sorting

• This image shows the example explained on the previous slide
Features of User Interface: Results Window

- The results window provides inline filtering and export functionality

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Icon" /></td>
<td>Restore sort to default setting (removes user-created multiple column sorting)</td>
</tr>
<tr>
<td><img src="image2" alt="Icon" /></td>
<td>The Inline Filter works as a toggle. Click the icon to filter data based on the content of a particular column. Press <strong>Enter</strong> after inputting the filter criteria. (Note: Wildcard symbols can be used in this column, but they are not necessary. For example, searching for <em>lake</em> or lake will provide the same results.)</td>
</tr>
<tr>
<td><img src="image3" alt="Icon" /></td>
<td>Exporting (to Excel, Word, CSV)</td>
</tr>
</tbody>
</table>
Features of User Interface: Export Menu

- The export menu allows the user to customize the data export

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export All</td>
<td>All data points will be exported to Excel</td>
</tr>
<tr>
<td>Export Page</td>
<td>The current page will be exported to Excel</td>
</tr>
<tr>
<td>Export Wizard</td>
<td>The user can customize the data export</td>
</tr>
</tbody>
</table>
Features of User Interface: Results Window

- The results window provides data in multiple pages

<table>
<thead>
<tr>
<th>Key</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>◀◀</td>
<td>Navigate to the first page of data</td>
</tr>
<tr>
<td>◀</td>
<td>Navigate to the previous page of data</td>
</tr>
<tr>
<td>▶</td>
<td>Navigate to the next page of data</td>
</tr>
<tr>
<td>▶▶</td>
<td>Navigate to the last page of data</td>
</tr>
<tr>
<td>🔊</td>
<td>Go to specific line item entered in search box</td>
</tr>
</tbody>
</table>
Reference Material

- External Business Requirements Specification for Demand Response Location Registration Enhancement:
  - Appendix A – Demand Response Locations, Aggregate Locations, Registrations and Resource IDs
    - [http://www.caiso.com/Documents/AppendixA-DemandResponseLocations_AggregateLocations_Registrations_ResourceIDs.pdf](http://www.caiso.com/Documents/AppendixA-DemandResponseLocations_AggregateLocations_Registrations_ResourceIDs.pdf)
  - Appendix B – Demand Response High-Level As-Is and To-Be Use Cases
    - [http://www.caiso.com/Documents/AppendixB-DemandResponseHigh-LevelAs-Is_To-Be_UseCases.pdf](http://www.caiso.com/Documents/AppendixB-DemandResponseHigh-LevelAs-Is_To-Be_UseCases.pdf)
Reference Material

- Draft Demand Response User Guide:
  - Use Cases:

- Web Service Data Requirements:
  - [http://www.caiso.com/Documents/DemandResponseLocationRegistrationEnhancement-CombinedAggregationLocationAndLocation-v1_1.xlsx](http://www.caiso.com/Documents/DemandResponseLocationRegistrationEnhancement-CombinedAggregationLocationAndLocation-v1_1.xlsx)
## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALOC</td>
<td>Aggregate Location</td>
</tr>
<tr>
<td>API</td>
<td>Application Programming Interface</td>
</tr>
<tr>
<td>DRP</td>
<td>Demand Response Provider</td>
</tr>
<tr>
<td>DRRS</td>
<td>Demand Response Registration System</td>
</tr>
<tr>
<td>DRS</td>
<td>Demand Response System</td>
</tr>
<tr>
<td>LRCV</td>
<td>Load Reduction Capacity Value</td>
</tr>
<tr>
<td>LSE</td>
<td>Load Serving Entity</td>
</tr>
<tr>
<td>PDR</td>
<td>Proxy Demand Response Resource</td>
</tr>
<tr>
<td>RDT</td>
<td>Resource Data Template</td>
</tr>
<tr>
<td>SAN</td>
<td>Service Account Number (in DRS this is the UDC Account Number)</td>
</tr>
<tr>
<td>UDC</td>
<td>Utility Distribution Company</td>
</tr>
</tbody>
</table>