DR Hub Update

DRS
Andrea Yeaton and Glenn Long
August 30, 2018
• **October Release**
  
  Train – Thursday, September 13th
  Prod – Tuesday, October 16th
  – Includes new Location fields, automated WPL calculation, bug fixes
  – **New XSD for Web Services**

• **November Release**
  – Includes Seasonal Aggregation updates and duplicate registration changes

• **Production Database Switchover** – first week of September, 30 minute outage
October 2018 Release – Location

- New Location fields:
  - Business Segment: Multiple Dwelling Unit added to dropdown
  - Registration Input section new field: Max Load (kW)
    - CSP’s best estimate of location’s highest annual monthly billed demand
  - Generators
    - Supports multiple generators (10 max)
    - New fields
      - Non-Retail BTMG – Required, dropdown (Yes/No)
      - Nameplate (kW) – Generator’s full capability
      - Backup Generator Only – Required, dropdown (Yes/No)
      - EIA 860 Plant Code - Generated and provided by EIA upon the initial submission of the Form EIA-860.
      - EIA 860 Generator ID - Unique generator identification should be the same as reported on the EIA 860 form to uniquely define the generator within the plant
      - Note (500 character limit)
New Business Segment

<table>
<thead>
<tr>
<th>Location</th>
<th>aly gen and battery examples</th>
<th>CSP</th>
<th>BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDC Account Number</td>
<td>4475653543</td>
<td>EDC</td>
<td>PE</td>
</tr>
<tr>
<td>Location ID</td>
<td>64372</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address Line 1</td>
<td>10 Yeaton Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>Andrea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>PA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Segment</td>
<td>Multiple Dwelling Unit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Utility Residential Participation? [ ]
### New Location Functionality

**New Field: Max Load (kW)**

<table>
<thead>
<tr>
<th>Registration Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Load Contribution (kW)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Load Reduction Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing (kW)</td>
</tr>
<tr>
<td>Lighting (kW)</td>
</tr>
</tbody>
</table>

**Click icon to open Generator Section**

<table>
<thead>
<tr>
<th>Generator Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actions</td>
</tr>
<tr>
<td>No records found.</td>
</tr>
</tbody>
</table>
Pop-up for Generator Information

<table>
<thead>
<tr>
<th>Registration Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Load Contribution (kW)</td>
</tr>
<tr>
<td>Winter Peak Load (kW)</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Load Reduction Method</th>
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</thead>
<tbody>
<tr>
<td>Manufacturing (kW)</td>
</tr>
<tr>
<td>HVAC (kW)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Generator Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Retail BTMG</td>
</tr>
<tr>
<td>Max Output (kW)</td>
</tr>
<tr>
<td>Nameplate (kW)</td>
</tr>
<tr>
<td>Backup Generator Only</td>
</tr>
<tr>
<td>Generator Type</td>
</tr>
<tr>
<td>Fuel Type</td>
</tr>
<tr>
<td>Vintage</td>
</tr>
<tr>
<td>Retrofit Year</td>
</tr>
<tr>
<td>Permit Status</td>
</tr>
<tr>
<td>Permit Type</td>
</tr>
<tr>
<td>EIA 860 Plant Code</td>
</tr>
<tr>
<td>EIA 860 Generator ID</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 characters remaining</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PERA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agea</td>
</tr>
<tr>
<td>PA</td>
</tr>
</tbody>
</table>

www.pjm.com
Batteries - New section

- Max Output (kW)
- Battery Capacity (kW 1C)
- Vintage
- Chemistry
  - Lithium-Ion, Lithium-Air, Lithium-Metal, Lithium-Sulfur, Lead Acid, Zinc-Ion, Sodium-Ion, Sodium-Metal Halide, Magnesium-Ion, Magnesium-Lithium Hybrid, Zinc-Manganese Oxide, Vanadium-Redox Flow, Zinc-Polyiodide Flow, Organic Aqueous Flow
- Type
  - Electric Vehicle, PV system, Stand alone
- Note (500 character limit)
Battery Attributes

<table>
<thead>
<tr>
<th>Actions</th>
<th>ID</th>
<th>Max Output (kW)</th>
<th>Battery Capacity (kW 1C)</th>
<th>Vintage</th>
<th>Chemistry</th>
<th>Type</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>No records found.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Add Battery Details

Add Battery
Hide Battery Details
### Generator Attributes

<table>
<thead>
<tr>
<th>Actions</th>
<th>ID</th>
<th>Name</th>
<th>Non-Retail RTMG</th>
<th>Max Output (kW)</th>
<th>Nameplate (kW)</th>
<th>Backup Generator Only</th>
<th>Generator Type</th>
<th>Fuel Type</th>
<th>Vintage</th>
<th>Retrofit Year</th>
<th>Permit Status</th>
<th>Permit Type</th>
<th>EIA 860 Plant Code</th>
<th>EIA 860 Generator ID</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41628</td>
<td>Gen 1</td>
<td>false</td>
<td>750</td>
<td>900</td>
<td>false</td>
<td>Internal Combustion Engine</td>
<td>Diesel</td>
<td>2011</td>
<td></td>
<td>Available</td>
<td>Non Emergency</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>41629</td>
<td>Gen 2</td>
<td>false</td>
<td>250</td>
<td>1000</td>
<td>false</td>
<td>Internal Combustion Engine</td>
<td>Diesel</td>
<td>1999</td>
<td>2017</td>
<td>Available</td>
<td>Non Emergency</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Battery Attributes

<table>
<thead>
<tr>
<th>Actions</th>
<th>ID</th>
<th>Max Output (kW)</th>
<th>Battery Capacity (kW 1h)</th>
<th>Vintage</th>
<th>Chemistry</th>
<th>Type</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>543</td>
<td>500</td>
<td>20</td>
<td>2015</td>
<td>Lithium-Ion</td>
<td>Stand Alone</td>
<td>No</td>
</tr>
</tbody>
</table>
Creating a Generator and Battery for a Location via XML

XML Snippet used to Create a New Location with a single Generator and Battery.

```xml
<!-- Battery and Generator Reduction Info Fields/Values are not required when adding a battery or generator(s) -->
<!-- <reductionInfo>
   <reductionType>BATTERIES</reductionType>
   <reductionValue>0</reductionValue>
</reductionInfo>
<!-- <reductionInfo>
   <reductionType>GENERATOR</reductionType>
   <reductionValue>0</reductionValue>
</reductionInfo> -->
<!-- <generatorCount>0</generatorCount> --> <!-- Count not required when adding generator(s) -->

<generatorInfo>
   <name>Big Gen 1</name>
   <nonRetailBtag>true</nonRetailBtag>
   <maxOutput>500</maxOutput>
   <nameplate>550</nameplate>
   <backupGeneratorOnly>true</backupGeneratorOnly>
   <generatorType>Internal Combustion Engine</generatorType>
   <fuelType>Diesel</fuelType>
   <vintage>2012</vintage>
   <retrofitYear>2018</retrofitYear>
   <permitStatus>AVALIABLE</permitStatus>
   <permitType>EMERGENCY_ONLY</permitType>
   <eia860PlantCode>345679</eia860PlantCode>
   <eia860GeneratorId>33439</eia860GeneratorId>
   <note>Test Generator with a note.</note>
</generatorInfo>

<!-- Sample Battery -->

<batteryInfo>
   <maxOutput>100</maxOutput>
   <capacity>125</capacity>
   <vintage>2017</vintage>
   <chemistry>LITHIUM_AIR</chemistry>
   <type>STAND ALONE</type>
   <note>Test Battery with a note.</note>
</batteryInfo>
```
Resulting XML download of the new Location. Note the ID, fields, Count and Reduction Values.

```xml
<reductionInfo>
  <reductionType>BATTERIES</reductionType>
  <reductionValue>100</reductionValue>
</reductionInfo>
<reductionInfo>
  <reductionType>GENERATOR</reductionType>
  <reductionValue>500</reductionValue>
</reductionInfo>
<generatorCount>1</generatorCount>
<generatorInfo>
  <id>41630</id>
  <name>Big Gen 4</name>
  <nonRetailBtmg>true</nonRetailBtmg>
  <maxOutput>500</maxOutput>
  <nameplate>550</nameplate>
  <backupGeneratorOnly>true</backupGeneratorOnly>
  <generatorType>Internal Combustion Engine</generatorType>
  <fuelType>Diesel</fuelType>
  <vintage>2012</vintage>
  <retrofitYear>2018</retrofitYear>
  <permitStatus>AVAILABLE</permitStatus>
  <permitType>EMERGENCY_ONLY</permitType>
  <eia860PlantCode>3456789</eia860PlantCode>
  <eia860GeneratorId>33449</eia860GeneratorId>
  <note>Test Generator with a note.</note>
</generatorInfo>
<batteryInfo>
  <id>544</id>
  <maxOutput>100</maxOutput>
  <capacity>125</capacity>
  <vintage>2017</vintage>
  <chemistry>LITHIUM_AIR</chemistry>
  <type>STAND_ALONE</type>
  <note>Test Battery with a note.</note>
</batteryInfo>
```
Automated Winter Peak Load Calculation

- **Winter Peak Load Calculation**
  - PJM is automating the Winter Peak Load (WPL) calculation for Capacity Performance and Base registrations based on meter data uploaded by CSP
    - Ensures calculation is done correctly
    - Transparency of calculation and meter data used
  - CSP uploads the meter data for the 5 Winter Peak Load days for DY-2
  - When all meter data is available, WPL calculation field is automatically updated at any of the following times:
    - Registration is saved
    - Meter Data upload is flagged for WPL calculation
– If meter data is not available for DY-2, contact PJM for approval to use DY-1 meter data.
  • PJM enters approved registration ID in DR Hub which then performs WPL calculation using DY-1 dates
– New “DY” field shows which meter data was used to calculate WPL (DY-2, DY-1, Manual)
– WPL Calculation Report will show meter data used and WPL calculation, visible to CSP and EDC
  • For Web Services, new endpoint to retrieve report
– WPL field on the Location is still editable by CSP, but does not copy to registrations
  • Will be used for economic registrations if eligible for bonus payment
New “DY” field

“2” = DY – 2 meter data used
“1” = DY – 1 meter data used
“M” = value was calculated outside of DY-2 or DY-1 data
Click icon to get Winter Peak Load Calculation report
### Calculated Winter Peak Load for Location

| Winter Peak Date | Status | HE1 | HE2 | HE3 | HE4 | HE5 | HE6 | HE7 | HE8 | HE9 | HE10 | HE11 | HE12 | HE13 | HE14 | HE15 | HE16 | HE17 | HE18 | HE19 | HE20 | HE21 | HE22 | HE23 | HE24 | Avg | Peak | 20 |
|-----------------|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|
|                 |        | 45  | 47  | 43  | 48  | 46  | 73  | 128 | 120 | 120 | 106  | 128  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  |
|                 | Included| 45  | 47  | 43  | 48  | 46  | 73  | 128 | 120 | 120 | 106  | 128  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  | 120  |
|                 |        | 36  | 33  | 34  | 35  | 32  | 34  | 35  | 35  | 34  | 34   | 35   | 35   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   |
|                 |        | 37  | 35  | 36  | 37  | 35  | 35  | 35  | 35  | 35  | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   |

### 5 Dates used and Included/Excluded

- **Winter Peak Date:** The dates used for the calculation are included.
- **Status:** The status indicates whether the date is included or excluded.
- **Averages:** The average values are calculated for each date.

### 5 Dates used and Included/Excluded

- **Average:** The overall average values are calculated.
- **Peak:** The peak values are highlighted.
• Bugs
  – EDC Registration Review: 2 Day warning email to small EDCs incorrectly stated the registration would auto-confirm in 2 days instead of auto-deny
  – Base registration incorrectly requiring a Winter Peak Load when updating the Summer Managed Load