MSRS Roadmap

As of December 19, 2018
<table>
<thead>
<tr>
<th>Product - Action Required</th>
<th>Deadline</th>
<th>Who May Be Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSRS - Update processes to use basic authentication</td>
<td>January 24</td>
<td>All MSRS Users. Change is <strong>required</strong> for continued use of browserless.</td>
</tr>
<tr>
<td>MSRS - Org parameter added for SUMA requests via browserless</td>
<td>January 24</td>
<td>MSRS Browserless SUMA Users. Change is <strong>optional</strong>.</td>
</tr>
</tbody>
</table>
## MSRS Roadmap

<table>
<thead>
<tr>
<th>Browserless Authentication</th>
<th>SUMA Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Start Date</strong></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td>Train: Oct 1</td>
<td>Train: Oct 1</td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td>Production: Jan 24</td>
<td>Production: Jan 24</td>
</tr>
</tbody>
</table>

### Legend
- Green diamond: Start Date
- Yellow diamond: End Date
Browserless Authentication Release Background

- The MSRS browserless reporting interface requires username and password in the URL. Example:

- Current format fully encrypted via HTTPS in transport

- However -- deprecated practice due to security issues
  - Any visible passwords create a risk
• Browserless requests must change to post credentials using basic authentication

• The filetransfer.jar interface will no longer work for MSRS

  This will no longer work: java -cp oreilly.jar;filetransfer.jar; com.pjm.FileTransfer
debug=true username="YourUsername"  password="YourPassword" app=msrs
action=download format=x version=l report="Billing" start=01/01/2012 stop=01/31/2012
result="billing.csv"

• Easy replacements for filetransfer.jar include curl and wget, available on both Windows and Linux

• PJM also provides examples in Java 8 and Python 3
MSRS Browserless Basic Authentication Examples

Browser Popup (IE, Chrome, Firefox)

Java Code Snippet

```java
String username = "MyUsername";
String password = "MyPassword";
String authString = username + ":" + password;
String basicAuth = "Basic " + java.util.Base64.getEncoder().encodeToString(authString.getBytes());

URL url = new URL(webURL);
HttpsURLConnection urlConnection = (HttpsURLConnection)url.openConnection();
urlConnection.setRequestProperty("Authorization", basicAuth);
BufferedReader responseBuffer = new BufferedReader(new InputStreamReader(urlConnection.getInputStream()));
String reportOutput;
while ((reportOutput = responseBuffer.readLine()) != null) {
    System.out.println(reportOutput);
}
System.out.println("*** END ***");
```

Command Line using curl

```
Enter host password for user 'MyUsername':
```

Full examples can be found [here](https://www.pjm.com/markets-operations/billing-settlements-credit/msrs-reports-documentation).

PJM.com → Markets & Operations → Billing, Settlements & Credit → MSRS Reports Documentation
• No change to user interface logins from PJM.com and PJM Tools
• Browserless documentation is currently up to date on pjm.com
• Implemented with Single User Multi-Account (SUMA) changes to allow users to make changes for both at the same time

<table>
<thead>
<tr>
<th>Impact</th>
<th>Action Required</th>
<th>Outage</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Interface</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Browserless</td>
<td>Members will need to update their processes to use basic authentication</td>
<td>1 hour</td>
</tr>
</tbody>
</table>
MSRS - SUMA Functionality
User Interface Updates

• Customer dropdown
  – Visible only for SUMA users
  – Displays customer accounts in which the SUMA user has active MSRS access
• Customers may add reports for multiple accounts to their shopping cart
Browserless Updates

• Optional ORG parameter available for SUMA browserless
  – Can specify single org shortname (org=PJMTST)
  – Retrieve all associated accounts in one request (org=ALL)

• Currently:
  &start=07/01/2018&stop=07/01/2018&username=_______&password=________

• Updated:
  &version=L&format=C&start=07/01/2018&stop=07/01/2018&org=PJMTST
MSRS Report Dictionary

• MSRS Report Dictionary is updated with report specific SUMA information
  – SUMA = Y denotes ability to request report for multiple accounts
  – Max Orgs denotes the maximum number of accounts tied to a SUMA user
• PJM.com → Markets & Operations → Billing, Settlements & Credit → MSRS Reports Documentation

<table>
<thead>
<tr>
<th>Report Long Name</th>
<th>Query Interval</th>
<th>SUMA</th>
<th>Max Orgs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Secondary Control Center Charge Details</td>
<td>D</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>ARR Target Credits</td>
<td>D</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Auction Specific MW Transaction Charges and Credits (formerly Non-Unit Specific</td>
<td>D</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Capacity Transaction Charges and Credits)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Voltage Network Integration Transmission Service Charge Summary</td>
<td>D</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>LCE InSchedule and NSPL Activity Summary</td>
<td>M</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>Market-to-Market Adjustment to Transmission Congestion Credit Details</td>
<td>M</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Meter Correction Allocation Charge Summary</td>
<td>M</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Meter Correction Charge Summary</td>
<td>M</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Monthly Billing Statement - CSV and XML</td>
<td>M</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>Monthly Billing Statement - Online and PDF</td>
<td>M</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Monthly Billing Statement Recipients</td>
<td>BM</td>
<td>N</td>
<td>1</td>
</tr>
<tr>
<td>Monthly Congestion Credit Summary</td>
<td>M</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Monthly Load Reconciliation Billing Determinants</td>
<td>M</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Month-to-Date Billing Summary - CSV and XML</td>
<td>BD</td>
<td>Y</td>
<td>25</td>
</tr>
<tr>
<td>Month-to-Date Billing Summary - Online</td>
<td>BD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Report Changes

• No changes for non-SUMA users
• SUMA users will see slight changes in their report headers
  – Login account displayed
  – Requested account(s) displayed
• CSV/XML for Weekly and Monthly Invoice
  – No changes for non-SUMA
  – New reports created for SUMA with account specific data denoted in the body
CSV Example

- No change to non-SUMA CSV format
- Requested Customer Account will display a comma separated list of the orgs in which the SUMA user has MSRS access
- Employer (from Account Manager) is displayed in the header as Customer Account
XML Example

- No change to non-SUMA XML
- `<REQUEST_CUSTOMER_ACCOUNT>` tag added to header for SUMA requests
PDF Example

- No change to non-SUMA PDF
- SUMA accounts can retrieve multiple invoices in one PDF file
MSRS SUMA - Sorting

• Issue
  – MSRS requests become very resource intensive when sorting large quantities of data
    • If unchanged, SUMA reports require Maximum Orgs and Maximum Days limits
• Proposed solution
  – Eliminate sorting on all 5-min reports and large hourly reports such as ARR and FTR Target Credits
• Impacts
  – Any application that expects sorted data will be impacted
  – Increase or possibly remove the Maximum Orgs restriction on SUMA reports
• TBD. Any 5 minute interval and some hourly reports will have the sorting removed to increase system throughput
  – MSRS Report Dictionary will be updated
  • Remove Max Orgs column, add Sorting designation
MSRS requests become very resource intensive when sorting large quantities of data. PJM is proposing a solution of eliminating sorting on some of the larger data reports. If sorting is removed, any application that expects sorted data will be impacted. If unchanged, SUMA reports will require Maximum Orgs and Maximum Days limits.

**Question:** Would you be in favor of removing sorting from some reports in order to minimize or possibly remove the Maximum Orgs and Maximum Days limitations?

- Yes
- No
- (Optional Comment Field)

**Results:**
- Yes – 15
- No – 4
• MSRS UI
  – esuitetrain.pjm.com

• Browserless
  – msrstrrain.pjm.com

• Sandbox usernames and passwords are separate from production
  – Work with your Company Account Manager to establish SUMA access
  – Employer account must have MSRS access

• Sandbox currently available for testing
  – All SUMA enabled reports are available for August 2018
Timeline

- Training Environment - October 1st
- Additional discussion at Tech Change Forums and Market Settlement Subcommittee meetings
- Production – January 24, 2019
- Email mss@pjm.com with questions/comments
  - FAQs are available on MSRS Reports Documentation page
Market Settlements Reporting System (MSRS) is a tool used by market participants to retrieve market settlements reports and monthly billing statements.

**Key Product Features**

- 200+ settlement reports
- Provide settlement and billing details
- Viewable in the browser
- CSV and XML download capability