



Meter Reading Submittal User Guide

Version 2.4

2023

ISO New England Inc.



About this user guide

The User Guide is grouped into independent sections arranged by topics. It is not necessary to read the guide from beginning to end.

You may:

- Select a topic from the [Table of contents](#) on page 5.
- Refer to the file formats provided in the [Appendix](#) from the table of contents or from the list on page 44.



CAUTION

- ❖ Company names and any numerical values are fictitious and not to be associated with any actual market customer.
- ❖ Though we strive to maintain this guide current, the screen views in this guide may not fully reflect the current production environment.

Change Summary

Revision	Date	Comments
Version 1.0	April 1, 2018	Initial draft for sandbox release.
Version 2.0	June 1, 2018	Updated for PRD/PFP release.
Version 2.1	August 27, 2018	Updated customer service email hyperlink and Ask ISO contact information.
Version 2.2	November 9, 2018	Added details describing meter readings download feature.
Version 2.3	November 2, 2022	Updated Participant Support contact information.
Version 2.4	April 1, 2023	Updated to include more troubleshooting examples

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1 Overview

Certain participants have the responsibility to submit meter readings to ISO New England for market settlement. The “Submit Meter Reading” user interface for this activity resides in the SMD Applications Home Page, which is accessed through Internet facilities with a web browser matching the following requirements:

- Google Chrome or Microsoft Edge
- Configured to execute JavaScript
- Capable of 128/256-bit TLS 1.2/TLS 1.3 encryption with permitted cipher-suite
- Capable of accepting cookies

Additional software and hardware requirements for accessing the ISO-NE SMD marketplace are listed on the ISO-NE web page at: <https://www.iso-ne.com/participate/support/web-browser-support>

Users need to register with ISO-NE Participant Support in order to submit, search for, and upload Metering information in the SMD Application.

Registration for market system users can be done by going to the registration area of the ISO-NE web page at: <https://www.iso-ne.com/participate/applications-status-changes/new-registration>

Once registered, market system users will be provided with the link to access the SMD Applications Home Page, which will then allow direct access to SMD software applications.

Access to the SMD Sandbox will also be restricted to registered market system users. Questions or inquiries about market access should be addressed to ISO-NE Participant Support.

Summary: The Use of Meter Readings

Meter reading is a crucial component of the wholesale energy market settlements and is required for accurate and timely settlements of the ISO New England wholesale markets.

- Meter readers have the options of submitting hourly or five-minute meter readings.
- For meter readers who continue to submit hourly data values, meter readings will be **profiled** to the 12 five-minute intervals in an hour.
 - Generator telemetry is used to “profile” generation megawatt-hour (MWh) by applying the hourly Revenue Quality Metering (RQM) to the intervals in which the resource is generating.
 - Load is calculated by “flat profiling” the hourly RQM to be the same output level for all five-minute intervals.
- Meter readers also have the option to submit five-minute meter readings. This option requires the host participant meter reader’s authorization to change from hourly submittals to five-minute submittals.
 - The option to submit five-minute meter reads is a permanent decision.
 - Once the five-minute meter reading submittal option has been initiated, the submittal interval cannot revert back to hourly.
- The deadline for meter reading submittal for the initial settlement is 1:00 p.m. on the second business day after the operating day.

- In the rare circumstance where a meter reader is unable to process and submit meter readings by the obligated deadline, the ISO will estimate the meter readings for those assets that are missing meter readings.
- The deadlines for meter reading submittal for Data Reconciliation Process using the SMD Application's user interface are as follows:
 - Directly Metered Assets – 5:00pm on the 45th day
 - Preliminary Profiled Load Assets – 5:00pm on the 65th day
 - Profiled Load Assets – 5:00pm on the 85th day
- A calendar which details these deadlines by precise date for each operating month is located [here](#).

Summary: The Mechanics of Meter Reading Submittals

- Submit meter readings via web services, upload or manually.
- Optional download of meter readings in XML format.

2 How to:

2.1 Get started



2.1.1 Layout

2.1.1.1 Submit Meter Reading UI Layout

- After the user has clicked on the Submit Meter Reading button, the default Metering page will display.
- There are two tabs on the Metering page:
 - Energy Assets
 - FCM Demand Assets
- This page defaults to opening on the Energy Assets tab.

Energy Assets FCM Demand Assets

Meter Reader: ...

Begin Date:

End Date:

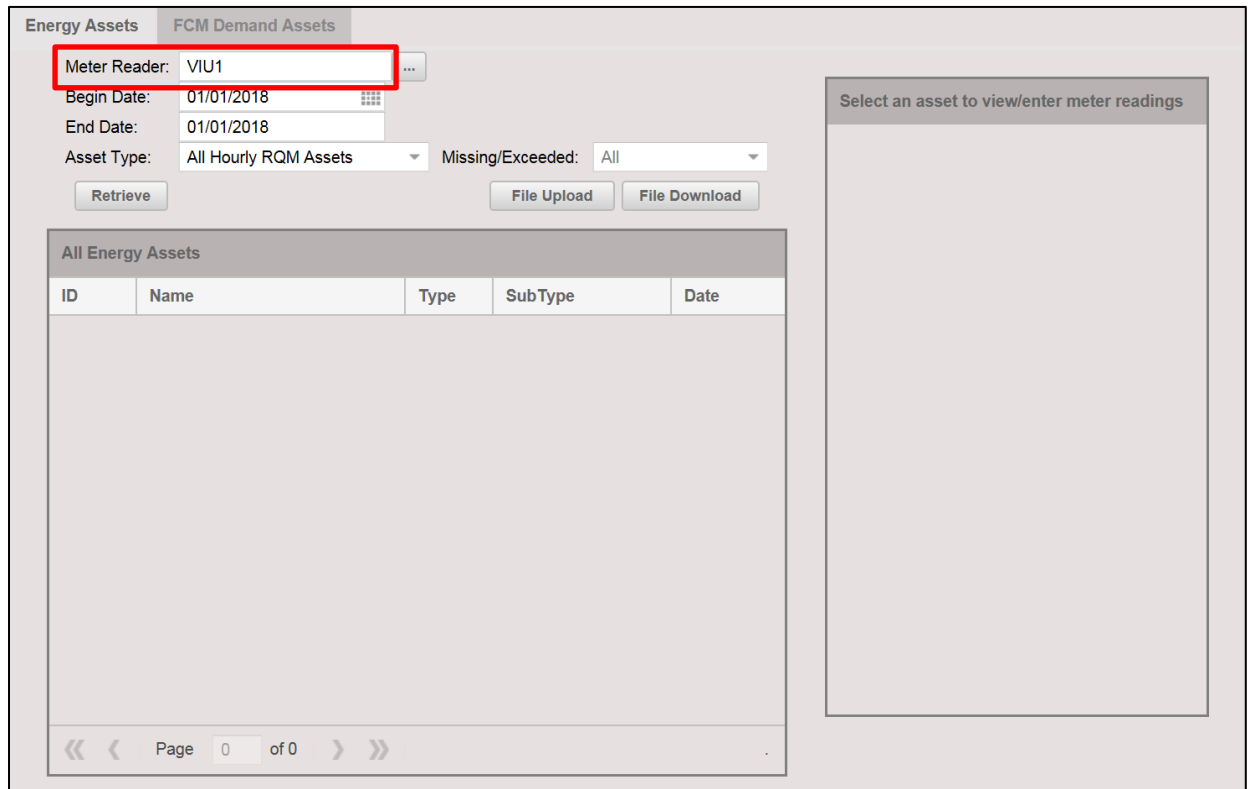
Asset Type: Missing/Exceeded:

Retrieve File Upload File Download

2.2 Submit Meter Readings for Energy Assets

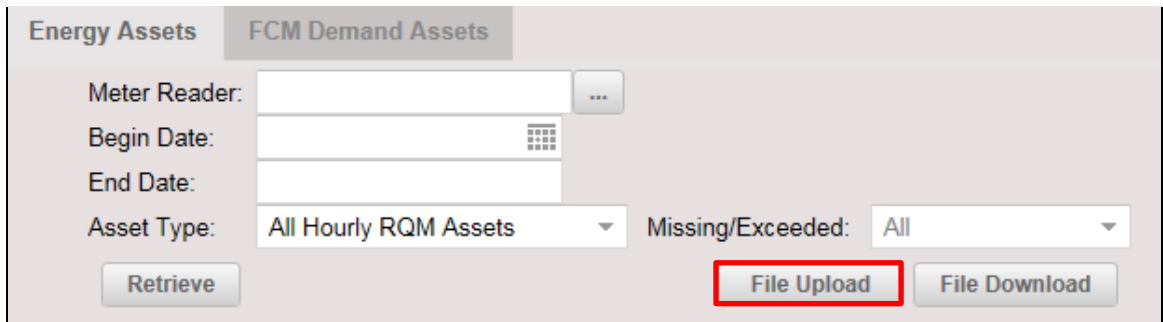
2.2.1 Submittal via File Upload

1. The Meter Reader field automatically defaults to the login digital certificate information.



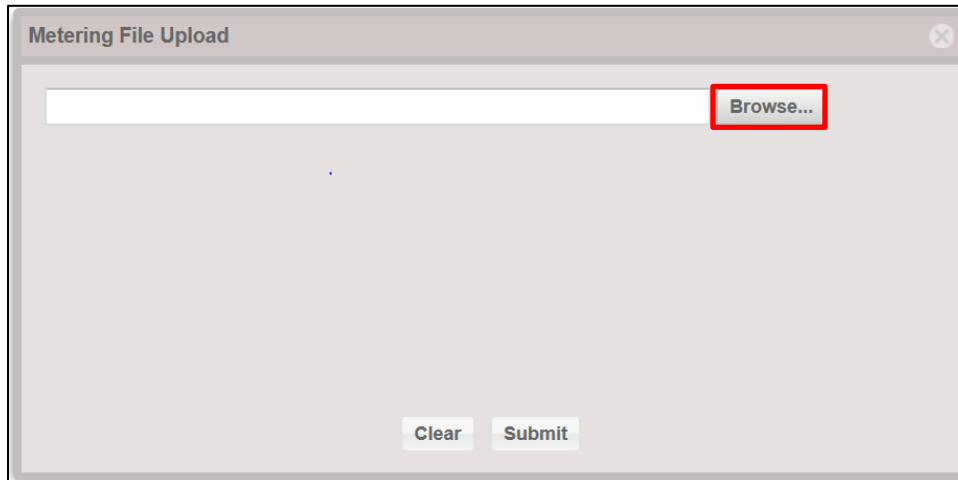
The screenshot shows the 'Energy Assets' tab selected. The 'Meter Reader' field is highlighted with a red box and contains the value 'VIU1'. Below it are fields for 'Begin Date' (01/01/2018) and 'End Date' (01/01/2018). The 'Asset Type' is set to 'All Hourly RQM Assets' and 'Missing/Exceeded' is set to 'All'. There are buttons for 'Retrieve', 'File Upload', and 'File Download'. A table titled 'All Energy Assets' is visible below the form, but it is empty. To the right, there is a placeholder box that says 'Select an asset to view/enter meter readings'. At the bottom, there is a pagination control showing 'Page 0 of 0'.

2. Click the File Upload button to upload a file containing meter readings for the operating day.

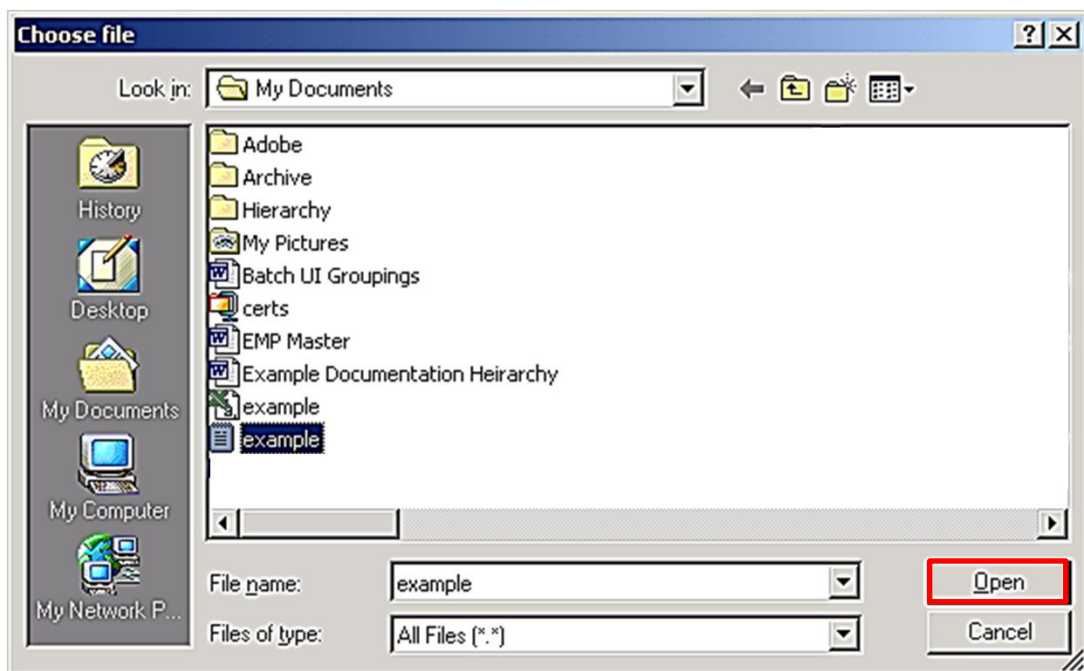


This is a close-up view of the form area from the previous screenshot. The 'File Upload' button is highlighted with a red box. The 'Meter Reader' field is empty. The 'Begin Date' and 'End Date' fields are also empty. The 'Asset Type' is 'All Hourly RQM Assets' and 'Missing/Exceeded' is 'All'. The 'Retrieve', 'File Upload', and 'File Download' buttons are visible.

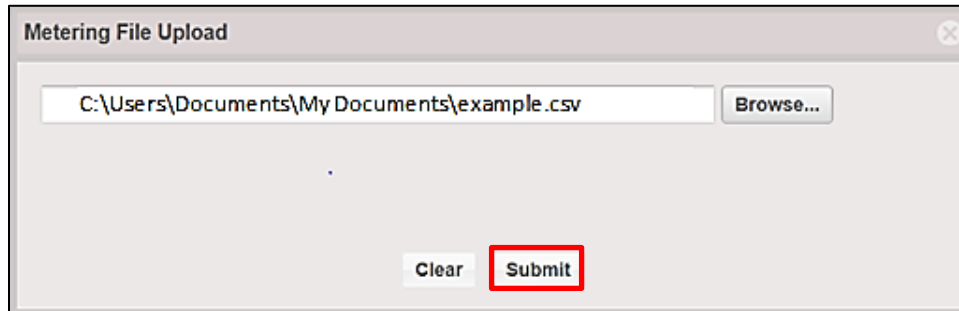
3. Click the Browse button to locate the file containing the set of meter readings for the operating day.



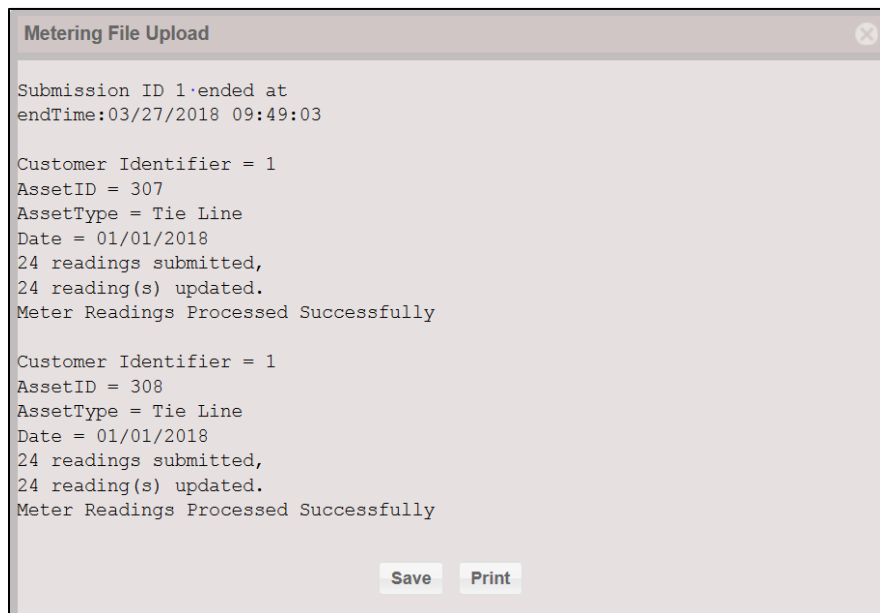
4. Browse and navigate to the appropriate path/file and select the upload file of choice. Click the Open button.



5. Text box containing the chosen upload path/file is displayed. Click the Submit button to upload the meter readings file to ISO-NE.



6. When the file upload is complete, the message “Meter Readings Processed Successfully” is displayed. (The file must be in an acceptable format. See section: 2.2.1.1 [Acceptable File Formats for File Upload](#). See the [Appendix](#) for file examples.)



7. The user may either save or print the confirmation for record keeping.



IMPORTANT

- ❖ Daily meter data submittal deadline is 1:00 p.m. on the second business day after the operating day.
- ❖ For information about the due dates for revised meter data for resettlements, please refer to the [Metering and Resettlement Deadlines](#) on the web.

2.2.1.1 Acceptable File Formats for File Upload

2.2.1.1.1 CSV Meter Reading File Upload Format

```
<Component>
<FileType>
***
<Customer Identifier>,<Asset ID>,<Asset Type>,<Date>
<hour ending>,<meter reading>
<hour ending>,<meter reading>
<hour ending>,<meter reading>
<hour ending>,<meter reading>
<hour ending>,<meter reading> (can be up to 25 of these meter readings per entry)
***
<Customer Identifier>,<Asset ID>,<Asset Type>,<Date>
<hour ending>,<meter reading>
<hour ending>,<meter reading>
<hour ending>,<meter reading>
<hour ending>,<meter reading>
<hour ending>,<meter reading> (can be up to 25 of these meter readings per entry)
***
```

Note: The <Component> field is always “Meter” (not case-sensitive) and <File Type> field is always “Daily” (not case-sensitive) for the file uploads described in this user guide.

2.2.1.1.2 XML Meter Reading File Upload Format

- Every XML upload file is expected to start with two lines: the ISO New England-defined XML character encoding, and the ISO New England-defined XML Schemas. For instance, an XML Daily Metering file must begin with these two lines:

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
```

- General format:

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>ID</asset_id>
    <reading_block_begin>YYYY-MM-DDThh:mm:ssZ</reading_block_begin>
    <asset_type_desc>Type</asset_type_desc>
    <meter_interval_type>IntervalType</meter_interval_type>
    <meter_reader_id>ID</meter_reader_id>
    <energy_reading><begin>YYYY-MM-DDThh:mm:ssZ</begin><mw>###</mw></energy_reading>
    <energy_reading><begin>YYYY-MM-DDThh:mm:ssZ</begin><mw>###</mw></energy_reading>
    ...22 more lines...
  </reading_block>
</reading_blocks>
```

Note: XML file uses Hour Begin instead of Hour End.



IMPORTANT

- ❖ Option to submit data files in compressed “GZIP” format is available. This compression will prevent timeout errors on large files.
- ❖ This compression option is especially useful for any file with a large volume of meter data, as in submittals for the Data Reconciliation Process (DRP) resettlement.

2.2.2 Submittal via Web Services

- Web services is designed to allow machine to machine communication.
- A comprehensive guide explaining this process is available and provided on the ISO-NE website in the [Meter Reading Web Services Data Exchange Specification](#).



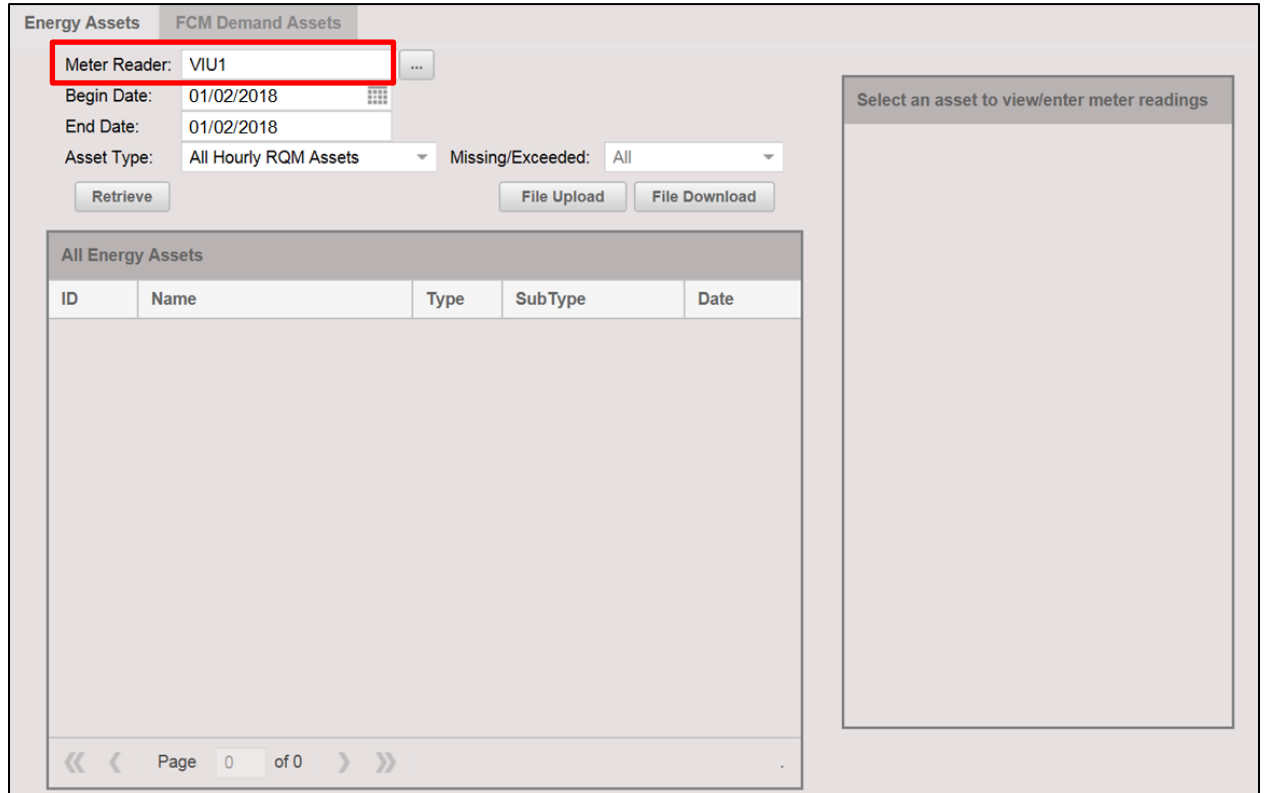
IMPORTANT

- ❖ Web services allow the user to program rules for communication between the electronic devices.
- ❖ Daily meter data submittal deadline is 1:00 p.m. on the second business day after the operating day.
- ❖ For information about the timing of meter data due dates, please refer to the [Metering and Resettlement Deadlines](#) on the web.

2.2.3 Manually Enter Meter Readings

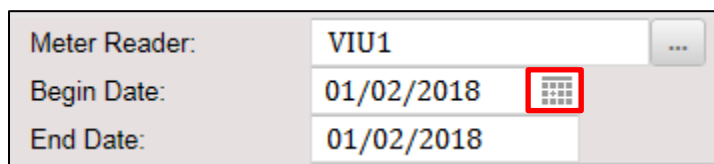
- Most users will use 2.2.1 or 2.2.2 to submit meter readings. To manually submit meter readings for individual assets, use the following steps:

1. The Meter Reader field automatically defaults to the login digital certificate information. The Begin Date and End Date default to the most current Operating Day to be submitted.



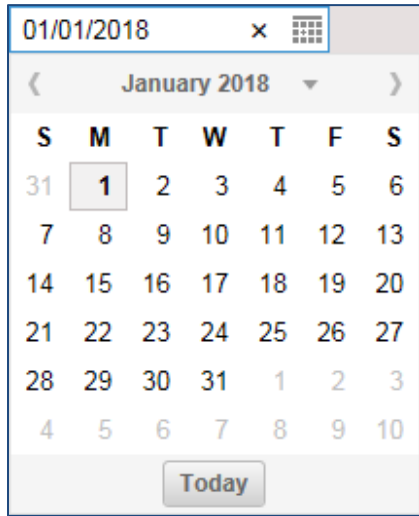
The screenshot shows the 'Energy Assets' interface. At the top, there are two tabs: 'Energy Assets' and 'FCM Demand Assets'. Below the tabs, there is a form with the following fields: 'Meter Reader' (containing 'VIU1'), 'Begin Date' (containing '01/02/2018'), 'End Date' (containing '01/02/2018'), 'Asset Type' (a dropdown menu set to 'All Hourly RQM Assets'), and 'Missing/Exceeded' (a dropdown menu set to 'All'). There are three buttons: 'Retrieve', 'File Upload', and 'File Download'. Below the form is a table titled 'All Energy Assets' with columns for 'ID', 'Name', 'Type', 'SubType', and 'Date'. The table is currently empty. To the right of the table is a large empty box with the text 'Select an asset to view/enter meter readings'. At the bottom of the interface, there is a pagination control showing 'Page 0 of 0'.

2. To select a different begin date for the data submittal, click on the the “calendar” icon.



This is a close-up screenshot of the 'Begin Date' field. The field contains the date '01/02/2018'. To the right of the date is a small calendar icon, which is highlighted with a red box. The 'Meter Reader' field above it contains 'VIU1'.

3. Select the desired Begin Date by either scrolling (forward or back) through the months to locate the applicable date or selecting the month and year using the drop-down box.
 - The End Date automatically defaults to the date of the Begin Date for the Energy Assets.



4. Click and choose the Asset Type from the drop-down. Click the Retrieve button to get list for this Asset Type.

The screenshot shows the 'Energy Assets' section of a web application. The 'FCM Demand Assets' tab is active. Search filters include:

- Meter Reader: VIU1
- Begin Date: 01/01/2018
- End Date: 01/01/2018
- Asset Type: Hourly RQM Generating Unit (highlighted with a red box)
- Missing/Exceeded: All

 A 'Retrieve' button is located below the Asset Type dropdown. To the right, there are 'File Upload' and 'File Download' buttons. Below the filters is a table titled 'Hourly RQM Generating Units' with the following data:

ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018

At the bottom of the interface, there is a pagination control showing 'Page 1 of 1' and '1 - 2 of 2'.

- Click to choose an asset from the list .

Hourly RQM Generating Units				
ID	Name	Type	Sub Type	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018

- Click on the Helper button to manually enter a new set of meter readings for the asset/day.

Energy Assets
FCM Demand Assets

Meter Reader: VIU1 ...

Begin Date: 01/01/2018 📅

End Date: 01/01/2018 📅

Asset Type: Hourly RQM Generating Unit Missing/Exceeded: All ▼

Retrieve
File Upload
File Download

Hourly RQM Generating Units				
ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018

Meter Readings Have NOT Been Submitted
Asset: 102, GENERATOR 102
Meter Date: 01/01/2018 {New Year's Day }

Hour Ending	Meter Reading	Hour Ending	Meter Reading
0100		1300	
0200		1400	
0300		1500	
0400		1600	
0500		1700	
0600		1800	
0700		1900	
0800		2000	
0900		2100	
1000		2200	
1100		2300	
1200		2400	
Total:		0	

Helper
Reset
Submit

⏪ < Page 1 of 1 > ⏩ 1 - 2 of 2

- The Helper window is used to automatically enter the same value for all meter readings. The From Hour and To Hour default to hours 1 and 24, respectively.

The screenshot shows the 'Energy Assets' interface with the 'FCM Demand Assets' tab selected. The 'Meter Reader' is set to 'VIU1', and the 'Begin Date' and 'End Date' are both '01/01/2018'. The 'Asset Type' is 'Hourly RQM Generating Unit' and 'Missing/Exceeded' is set to 'All'. A 'Retrieve' button is visible. Below this is a table titled 'Hourly RQM Generating Units' with the following data:

ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018

At the bottom of the interface, it shows 'Page 1 of 1' and '1 - 2 of 2'. On the right side, a helper window is open with a red border. The window title is 'Meter Readings Have NOT Been Submitted Asset: 102, GENERATOR 102 Meter Date: 01/01/2018 {New Year's Day}'. It contains the following fields:

- 'From Hour Ending:' dropdown menu with '0100' selected.
- 'To Hour Ending:' dropdown menu with '2400' selected.
- 'Mwh Value:' text input field.
- 'Close' and 'Apply' buttons.

- Click and type in the desired value. Click the Apply button.

This is a close-up of the helper window from the previous screenshot. The title bar reads 'Meter Readings Have NOT Been Submitted Asset: 102, GENERATOR 102 Meter Date: 01/01/2018 {New Year's Day}'. The 'From Hour Ending:' dropdown is set to '0100' and the 'To Hour Ending:' dropdown is set to '2400'. The 'Mwh Value:' text input field contains the number '3'. The 'Apply' button is highlighted with a red box.

9. The same meter reading value has been applied to all 24 hours of the day.

Energy Assets **FCM Demand Assets**

Meter Reader: VIU1
 Begin Date: 01/01/2018
 End Date: 01/01/2018
 Asset Type: Hourly RQM Generating Unit Missing/Exceeded: All

Retrieve File Upload File Download

Meter Readings Have NOT Been Submitted
 Asset: 102, GENERATOR 102
 Meter Date: 01/01/2018 {New Year's Day }

Hour Ending	Meter Reading	Hour Ending	Meter Reading
0100	3.000	1300	3.000
0200	3.000	1400	3.000
0300	3.000	1500	3.000
0400	3.000	1600	3.000
0500	3.000	1700	3.000
0600	3.000	1800	3.000
0700	3.000	1900	3.000
0800	3.000	2000	3.000
0900	3.000	2100	3.000
1000	3.000	2200	3.000
1100	3.000	2300	3.000
1200	3.000	2400	3.000
Total:			72

Helper Reset Submit

Hourly RQM Generating Units

ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018


Page 1 of 1 1 - 2 of 2

10. Click Submit. A success message will display.

Meter Readings Submittal Confirmation

Customer Identifier = 1
 AssetID = 102
 AssetType = Unit
 Date = 01/01/2018
 24 readings submitted,
 24 reading(s) updated.
 Meter Readings Processed Successfully

Save Print

11. Click the X button  to return to the home screen.

Energy Assets **FCM Demand Assets**

Meter Reader: VIU1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: Hourly RQM Generating Unit Missing/Exceeded: All

Retrieve File Upload File Download

Hourly RQM Generating Units				
ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018

Page 1 of 1 1 - 2 of 2

2.2.4 Search and Retrieve Function

2.2.4.1 Search for Energy Assets with missing data

1. Select desired Begin Date using the calendar function.
2. Click and choose the Asset Type from the drop-down.

Energy Assets **FCM Demand Assets**

Meter Reader: VIU1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets Missing/Exceeded: All

Retrieve

All Energy Ass

Hourly RQM Assets

Hourly RQM Generating Units

Hourly RQM Load Assets

Hourly RQM Tie Lines

- Use Missing/Exceeded drop-down to filter the list to Missing Readings.

Energy Assets FCM Demand Assets

Meter Reader: VIU1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets

Missing/Exceeded: **Missing Readings**

Retrieve

All Energy Assets

- Click Retrieve to display assets that meet the filter choice.

Energy Assets FCM Demand Assets

Meter Reader: VIU1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets

Missing/Exceeded: Missing Readings

Retrieve File Upload File Download

Select an asset to view/enter meter readings

ID	Name	Type	SubType	Date
120	GENERATOR 120	Unit	COAL	01/01/2018
201	Metered Load at Domain 502	Load	NORMAL	01/01/2018
203	Metered Load at Domain 503	Load	MOTORING HYD...	01/01/2018
204	Loss Load at Domain 502	Load	LOSSES	01/01/2018
301	501 to 502	Tie Line	EHV	01/01/2018
302	501 to 505	Tie Line	LV	01/01/2018
303	502 to 505	Tie Line	EHV	01/01/2018
304	504 to 505	Tie Line	EHV	01/01/2018
305	502 to 503	Tie Line	EHV	01/01/2018

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2.2.4.2 Search for Energy Assets with data submittal that exceed threshold

- The meter reading application will issue a warning message to the user if successfully uploaded meter data exceeds a validation threshold. Generator data will exceed the threshold if an hourly reading is greater than 125% of the unit's Summer/Winter Max Net.

1. Select desired Begin Date using the calendar function.
2. Select Asset Type using the drop-down.

The screenshot shows the 'Energy Assets' search interface. The 'Asset Type' dropdown menu is open, displaying the following options: 'All Hourly RQM Assets', 'Hourly RQM Generating Units', 'Hourly RQM Load Assets', and 'Hourly RQM Tie Lines'. The 'Missing/Exceeded' dropdown menu is set to 'All'. A red box highlights the 'Asset Type' dropdown menu.

3. Use Missing/Exceeded drop-down to filter the list to Exceeds Threshold.

The screenshot shows the 'Energy Assets' search interface. The 'Missing/Exceeded' dropdown menu is open, displaying the following options: 'All', 'Missing Readings', and 'Exceeds Threshold'. The 'Exceeds Threshold' option is highlighted with a red box. The 'Asset Type' dropdown menu is set to 'All Hourly RQM Assets'.

- Click Retrieve to display assets that meet the filter choice.

Energy Assets **FCM Demand Assets**

Meter Reader: VIU1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets Missing/Exceeded: Exceeds Threshold

Retrieve File Upload File Download

Select an asset to view/enter meter readings

All Hourly RQM Assets

ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018

Page 1 of 1 1 - 1 of 1

- Click and choose an asset from the list. The meter readings submitted for the asset are displayed; values that exceed threshold are highlighted in yellow.

Energy Assets **FCM Demand Assets**

Meter Reader: VIU1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets Missing/Exceeded: Exceeds Threshold

Retrieve File Upload File Download

Meter Readings Have Been Submitted
Asset: 102, GENERATOR 102
Meter Date: 01/01/2018 {New Year's Day }

Hour Ending	Meter Reading	Hour Ending	Meter Reading
0100	100.000	1300	100.000
0200	5000.000	1400	100.000
0300	100.000	1500	100.000
0400	100.000	1600	100.000
0500	100.000	1700	100.000
0600	100.000	1800	100.000
0700	100.000	1900	100.000
0800	100.000	2000	100.000
0900	100.000	2100	100.000
1000	100.000	2200	100.000
1100	100.000	2300	100.000
1200	100.000	2400	100.000
Total:		7300	

Helper Reset Submit

All Hourly RQM Assets

ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018

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2.2.4.3 Retrieve and view Energy Asset's meter reading data submittal

1. Select desired Begin Date using the calendar function.
2. Click and choose the Asset Type from the drop-down.

Energy Assets | FCM Demand Assets

Meter Reader: VIU1

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets

Missing/Exceeded: All

Retrieve

All Energy Ass

ID	Name
----	------

3. Click Retrieve to display assets that meet the filter choice.
4. Click and choose an asset from the list .

Energy Assets | FCM Demand Assets

Meter Reader: VIU1

Begin Date: 01/01/2018

End Date: 01/01/2018

Asset Type: All Hourly RQM Assets

Missing/Exceeded: All

Retrieve

File Upload

File Download

All Hourly RQM Assets

ID	Name	Type	SubType	Date
102	GENERATOR 102	Unit	COMPOSITE	01/01/2018
120	GENERATOR 120	Unit	COAL	01/01/2018
201	Metered Load at Domain 502	Load	NORMAL	01/01/2018
203	Metered Load at Domain 503	Load	MOTORING HYD...	01/01/2018
204	Loss Load at Domain 502	Load	LOSSES	01/01/2018
301	501 to 502	Tie Line	EHV	01/01/2018
302	501 to 505	Tie Line	LV	01/01/2018
303	502 to 505	Tie Line	EHV	01/01/2018
304	504 to 505	Tie Line	EHV	01/01/2018
305	502 to 503	Tie Line	EHV	01/01/2018
307	506 to 501	Tie Line	EHV	01/01/2018
308	507 to 503	Tie Line	EHV	01/01/2018

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5. The display on the right will return previously submitted meter reading information.

ded:

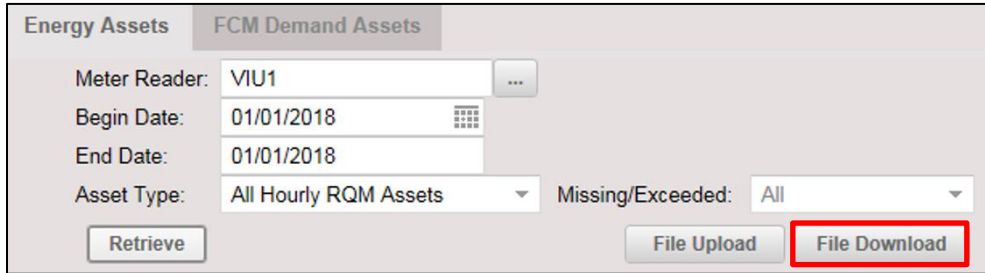
Type	Date
POSITE	01/01/2018
L	01/01/2018
MAL	01/01/2018
ORING HYD...	01/01/2018
SES	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018
	01/01/2018

Meter Readings Have Been Submitted
 Asset: 102, GENERATOR 102
 Meter Date: 01/01/2018 {New Year's Day }

Hour Ending	Meter Reading	Hour Ending	Meter Reading
0100	100.000	1300	100.000
0200	100.000	1400	100.000
0300	100.000	1500	100.000
0400	100.000	1600	100.000
0500	100.000	1700	100.000
0600	100.000	1800	100.000
0700	100.000	1900	100.000
0800	100.000	2000	100.000
0900	100.000	2100	100.000
1000	100.000	2200	100.000
1100	100.000	2300	100.000
1200	100.000	2400	100.000
Total:			2400

2.2.4.4 Download Energy Asset's meter reading data submittal

1. Select File Download from the Energy Assets tab.



The screenshot shows the 'Energy Assets' tab selected. The 'FCM Demand Assets' sub-tab is active. The form contains the following fields: 'Meter Reader' with the value 'VIU1', 'Begin Date' with '01/01/2018', 'End Date' with '01/01/2018', 'Asset Type' with 'All Hourly RQM Assets', and 'Missing/Exceeded' with 'All'. There are three buttons: 'Retrieve', 'File Upload', and 'File Download'. The 'File Download' button is highlighted with a red rectangle.

2. A new window "Metering File Download" will be displayed. The user may select the data to be downloaded by filtering the selections. Click Download after completing the selections.

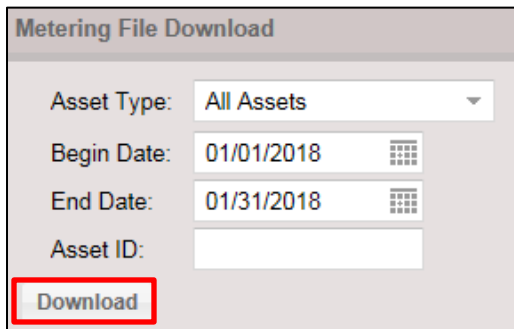
Available selections:

Asset Type – All Assets, Generating Unit, Load Facility, Tie Line

Begin Date – Date range begin date

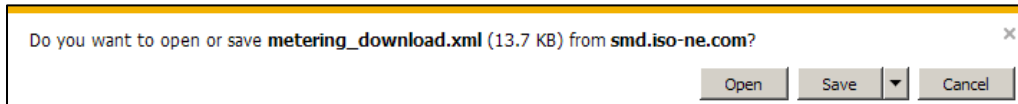
End Date – Date range end date

Asset ID – Enter specific Asset ID (only one asset allowed) or leave blank



The screenshot shows the 'Metering File Download' dialog box. It contains the following fields: 'Asset Type' with 'All Assets', 'Begin Date' with '01/01/2018', 'End Date' with '01/31/2018', and 'Asset ID' which is empty. A 'Download' button is highlighted with a red rectangle.

3. A file "metering_download.xml" will be created. The user may open or save the file for record keeping.



The screenshot shows a file dialog box with the text: 'Do you want to open or save metering_download.xml (13.7 KB) from smd.iso-ne.com?'. The 'Open' button is selected.

```
<?xml version="1.0"?>
- <reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
- <reading_block>
  <asset_id>102</asset_id>
  <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
- <energy_reading>
  <begin>2018-01-01T04:00:00Z</begin>
  <mw>0.521</mw>
  </energy_reading>
- <energy_reading>
  <begin>2018-01-01T05:00:00Z</begin>
  <mw>0.523</mw>
  </energy_reading>
</reading_block>
</reading_blocks>
```

2.3 Submit Meter Readings for FCM Demand Assets

2.3.1 Submittal via File Upload

1. The Meter Reader field automatically defaults to the login digital certificate information. Choose the FCM Demand Assets tab.

Energy Assets **FCM Demand Assets**

Meter Reader: LSE1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: All

Reading Exception: All

Retrieve File Upload

ID	Name	Type	SubType	Date
----	------	------	---------	------

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2. Click the File Upload button to upload a file containing meter readings for the operating day.

Energy Assets **FCM Demand Assets**

Meter Reader: LSE1 ...

Begin Date: 01/01/2018

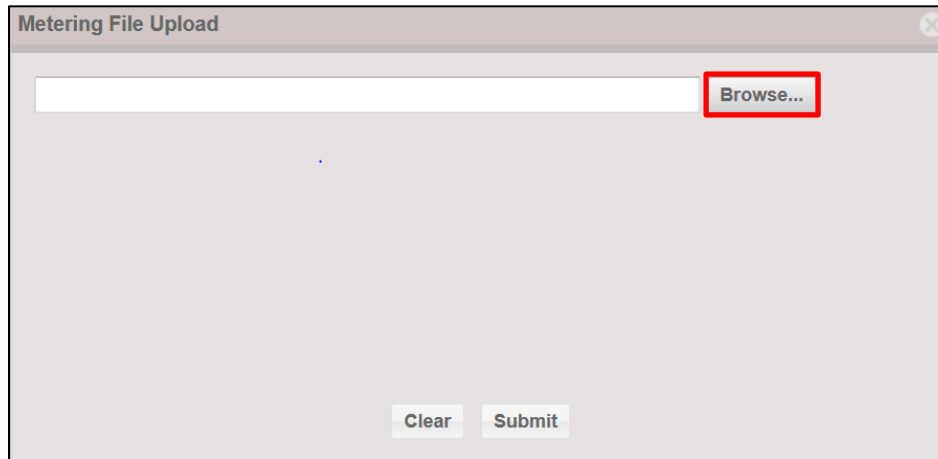
End Date: 01/01/2018

Demand Asset Type: All

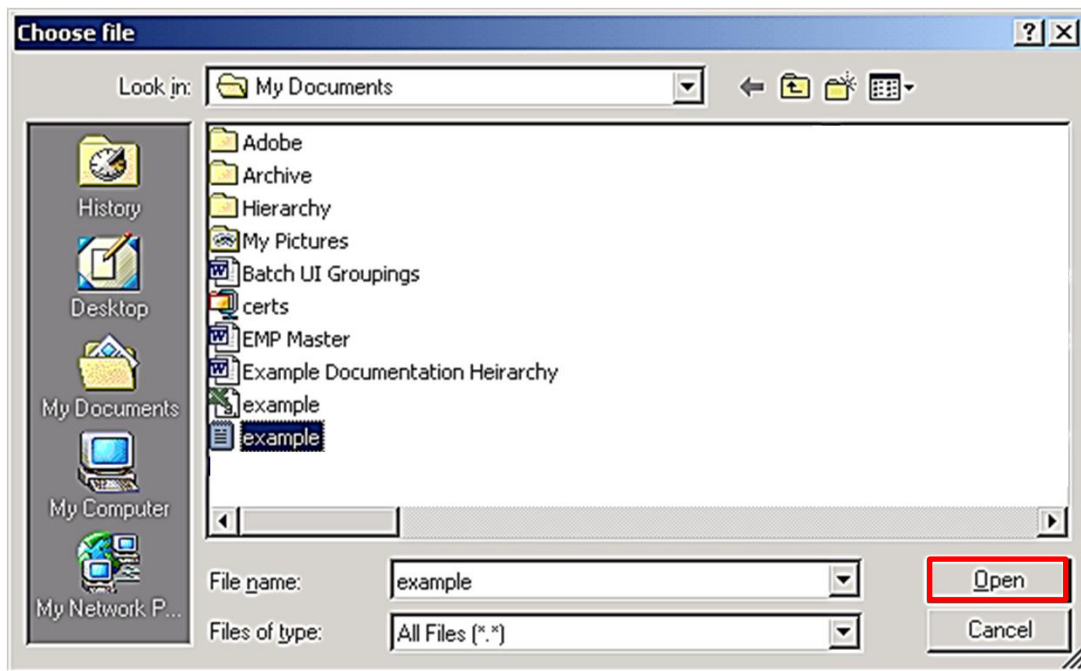
Reading Exception: All

Retrieve File Upload

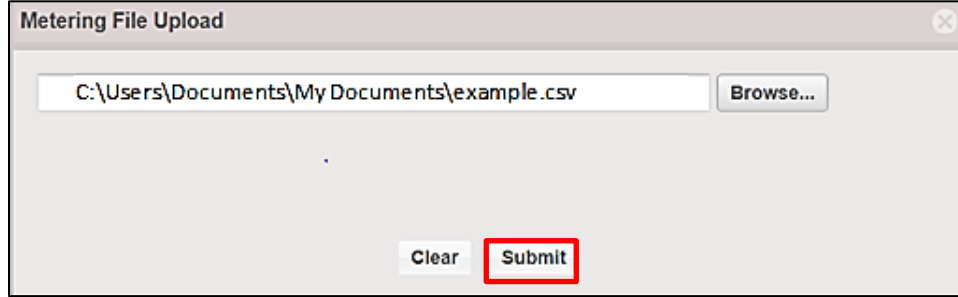
3. Click on the Browse button to locate the file containing the set of meter readings for the operating day.



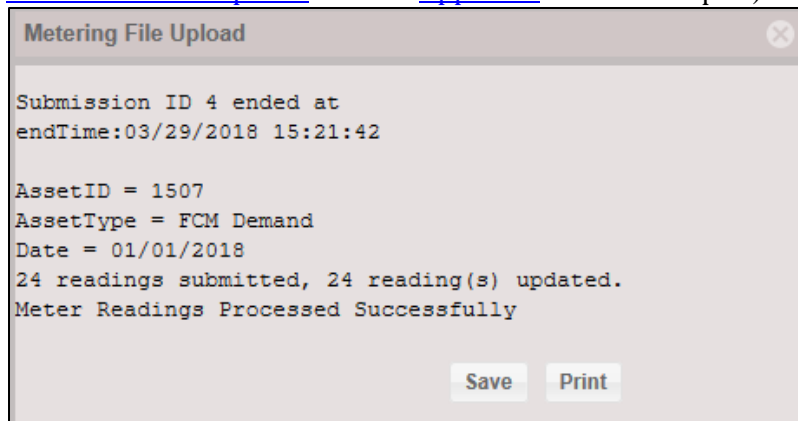
4. Browse and navigate to the appropriate path/file and select the file of choice. Click the Open button.



- Text box containing the chosen upload path/file is displayed. Click the Submit button to upload the meter readings file to ISO-NE .



- When the file is upload is complete, the message “Meter Readings Processed Sucessfully” is displayed. (The file must be in an acceptable format. See section 2.3.1.1 [Acceptable File Formats for File Upload](#). See the [Appendix](#) for file examples).



- The user may either save or print the confirmation for record keeping.



IMPORTANT

- ❖ Effective with the June 1, 2018 Forward Capacity Market (FCM) Pay-For-Performance implementation, meter readings are required for all hours of a day for FCM Demand Assets.
- ❖ Daily meter data submittal deadline is 1:00 p.m. on the second business day after the operating day.
- ❖ For information about the timing of meter data due dates, please refer to the [Metering and Resettlement Deadlines](#) on the web.
- ❖ Option to submit data files in compressed “GZIP” format is available. This compression will prevent timeout errors on large files.

2.3.1.1 Acceptable File Formats for File Upload

2.3.1.1.1 CSV FCM Demand Asset Meter Reading File Upload Format

```
<Component>
<FileType>
***
<Customer Identifier>,<Asset ID>,<Asset Type>,<Date>,<Asset Sub Type>
<hour ending>,<meter reading>,<meter reading>           (...for Asset Sub Type = DG)
<hour ending>,<meter reading>,<meter reading>
<hour ending>,<meter reading>,<meter reading>
           (can be up to 25 of these meter readings per entry)
***
<Customer Identifier>,<Asset ID>,<Asset Type>,<Date>,<Asset Sub Type>
<hour ending>,<meter reading>           (...for Asset Sub Type = LM)
<hour ending>,<meter reading>
<hour ending>,<meter reading>
           (can be up to 25 of these meter readings per entry)
***
```

Note: The <Component> field is always “Meter” (not case-sensitive) and <File Type> field is always “Daily” (not case-sensitive) for the file uploads described in this user guide.

2.3.1.1.2 XML Meter Reading File Upload Format

- Every XML upload file is expected to start with two lines: the ISO New England-defined XML character encoding, and the ISO New England-defined XML Schemas. For instance, an XML Daily Metering file must begin with these two lines:

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
```

- General format:

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>ID</asset_id>
    <reading_block_begin>YYYY-MM-DDThh:mm:ssZ</reading_block_begin>
    <asset_type_desc>Type</asset_type_desc>
    <fcm_demand_asset_sub_type>Demand Asset Sub Type</fcm_demand_asset_sub_type>
    <meter_interval_type>Interval Type</meter_interval_type>
    <meter_reader_id>ID</meter_reader_id>
    <fcm_demand_reading><begin>YYYY-MM-DDThh:mm:ssZ</begin>
      <tfl_mw>###</tfl_mw><dgo_mw>###</dgo_mw></fcm_demand_reading>
    ...22 more lines...
    <fcm_demand_reading><begin>YYYY-MM-DDThh:mm:ssZ</begin>
      <tfl_mw>###</tfl_mw><dgo_mw>###</dgo_mw></fcm_demand_reading>
  </reading_block>
  <reading_block>
    <asset_id>ID</asset_id>
    <reading_block_begin>YYYY-MM-DDThh:mm:ssZ</reading_block_begin>
    <asset_type_desc>Type</asset_type_desc>
    <fcm_demand_asset_sub_type>Demand Asset Sub Type</fcm_demand_asset_sub_type>
    <meter_interval_type>Interval Type</meter_interval_type>
    <meter_reader_id>ID</meter_reader_id>
    <fcm_demand_reading><begin> YYYY-MM-DDThh:mm:ssZ</begin>
      <lr_mw>###</lr_mw></fcm_demand_reading>
    ...22 more lines...
    <fcm_demand_reading><begin> YYYY-MM-DDThh:mm:ssZ</begin>
      <lr_mw>###</lr_mw></fcm_demand_reading>
  </reading_block>
</reading_blocks>
```

Note: XML file uses Hour Begin instead of Hour End.

2.3.2 Submittal via Web Services

- Web services is designed to allow machine to machine communication.
- A more comprehensive guide explaining process is available and provided online under the [Meter Reading Web Services Data Exchange Specification](#).



IMPORTANT

- ❖ Web services allow the user to program rules for communication between the electronic devices.
- ❖ Effective with the June 1, 2018 Pay-For-Performance implementation, meter readings are required for all hours of a day for FCM Demand Assets.
- ❖ Daily meter data submittal deadline is 1:00 p.m. on the second business day after the operating day.
- ❖ For information about the timing of meter data due dates, please refer to the [Metering and Resettlement Deadlines](#) on the web.

2.3.3 Manually Enter FCM Demand Assets Meter Readings

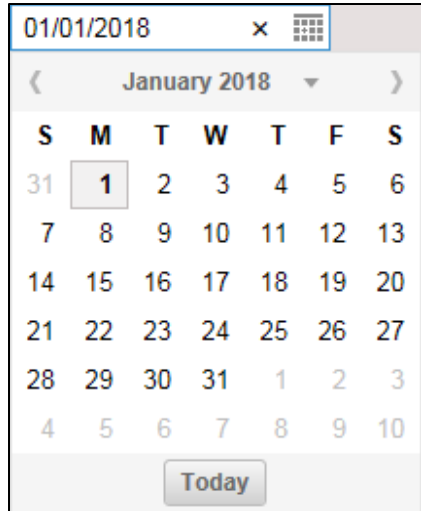
- Most users will use 2.3.1 or 2.3.2 to submit meter readings. To submit meter readings manually for individual assets, use the following steps:
1. The Meter Reader field automatically defaults to the login digital certificate information. Choose the FCM Demand Assets tab. The Begin Date and End Date default to the most current Operating Day to be submitted.

The screenshot shows the 'FCM Demand Assets' tab in a web application. The 'Meter Reader' field is set to 'LSE1'. The 'Begin Date' and 'End Date' are both set to '01/02/2018'. Below these fields are dropdown menus for 'Demand Asset Type' (set to 'All') and 'Reading Exception' (set to 'All'). There are 'Retrieve' and 'File Upload' buttons. A table below shows a single row with columns for ID, Name, Type, SubType, and Date. The table is currently empty. A pagination bar at the bottom indicates 'Page 1 of 1' and '1 - 2 of 2'. On the right side, there is a large empty box with the text 'Select an asset to view/enter meter readings'.

2. To select a different begin date for the data submittal, click on the the “calendar” icon.

This close-up shows the 'Begin Date' field with the date '01/02/2018'. A small calendar icon is visible to the right of the date field, highlighted with a red box. The 'Meter Reader' field above it is set to 'LSE1'.

3. Select the desired Begin Date by either scrolling (forward or back) through the months to locate the applicable date or selecting the month and year using the drop-down box.
 - The End Date automatically defaults to the date of the Begin Date for the FCM Demand Assets.



4. Select the Demand Asset Type from the drop-down. Click the Retrieve button to get list for this asset type.

Energy Assets FCM Demand Assets

Meter Reader: LSE1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: Load Management

Reading Exception: All

Retrieve File Upload

Load Management				
ID	Name	Type	SubType	Date
1501	Demand Response Asset 1501	FCM Demand	Load Ma...	01/01/2018

Page 1 of 1 1 - 1 of 1

Select an asset to view/enter meter readings

- Click and choose an asset from the list.

Load Management				
ID	Name	Type	SubType	Date
1501	Demand Response Asset 1501	FCM Demand	Load Ma...	01/01/2018

- Click on the Helper button to manually enter a new set of meter readings for the asset/day.

Energy Assets FCM Demand Assets

Meter Reader: ...

Begin Date:

End Date:

Demand Asset Type: ▾

Reading Exception: ▾

Load Management				
ID	Name	Type	SubType	Date
1501	Demand Response Asset 1501	FCM Demand	Load Manage...	01/01/2018

Page 1 of 1 1 - 1 of 1

Meter Readings Have NOT Been Submitted
Asset: 1501, Demand Response Asset 1501
Meter Date: 01/01/2018 {New Year's Day }

Hour Ending	Load Reduction MW	Hour Ending	Load Reduction MW
0100		1300	
0200		1400	
0300		1500	
0400		1600	
0500		1700	
0600		1800	
0700		1900	
0800		2000	
0900		2100	
1000		2200	
1100		2300	
1200		2400	
Total:			0

7. The Helper window is used to automatically enter the same value for all meter readings. The From Hour and To Hour default to hours 1 and 24, respectively.

The screenshot shows the 'Energy Assets' interface for 'FCM Demand Assets'. The main area contains a table with the following data:

ID	Name	Type	SubType	Date
1501	Demand Response Asset 1501	FCM Demand	Load Manage...	01/01/2018

Below the table, it indicates 'Page 1 of 1' and '1 - 1 of 1'. To the right, a helper window is open, titled 'Meter Readings Have NOT Been Submitted Asset: 1501, Demand Response Asset 1501 Meter Date: 01/01/2018 {New Year's Day}'. The helper window contains the following fields:

- From Hour Ending: 0100
- To Hour Ending: 2400
- Load Reduction MW: (empty)

Buttons for 'Close' and 'Apply' are visible at the bottom of the helper window.

8. Click and type in the desired value. Click the Apply button.

This is a close-up of the helper window. The title bar reads: 'Meter Readings Have NOT Been Submitted Asset: 1501, Demand Response Asset 1501 Meter Date: 01/01/2018 {New Year's Day}'. The fields are:

- From Hour Ending: 0100
- To Hour Ending: 2400
- Load Reduction MW: 0.685

The 'Load Reduction MW' field and the 'Apply' button are highlighted with red boxes.

9. The same meter reading value has been applied to all 24 hours of the day.

Energy Assets FCM Demand Assets

Meter Reader: LSE1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: Load Management

Reading Exception: All

Retrieve File Upload

Meter Readings Have NOT Been Submitted
Asset: 1501, Demand Response Asset 1501
Meter Date: 01/01/2018 {New Year's Day }

Hour Ending	Load Reduction MW	Hour Ending	Load Reduction MW
0100	0.685	1300	0.685
0200	0.685	1400	0.685
0300	0.685	1500	0.685
0400	0.685	1600	0.685
0500	0.685	1700	0.685
0600	0.685	1800	0.685
0700	0.685	1900	0.685
0800	0.685	2000	0.685
0900	0.685	2100	0.685
1000	0.685	2200	0.685
1100	0.685	2300	0.685
1200	0.685	2400	0.685
Total:			16.44

Load Management

ID	Name	Type	SubType	Date
1501	Demand Response Asset 1501	FCM Demand	Load Manage...	01/01/2018

Page 1 of 1 1 - 1 of 1


Helper Reset Submit

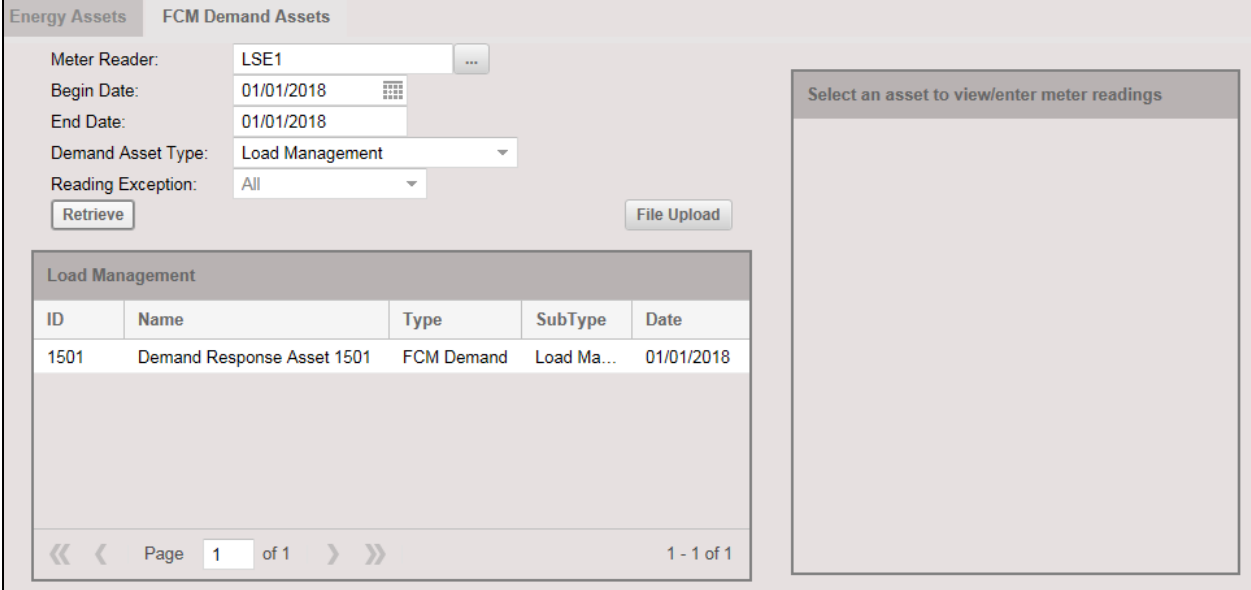
10. Click Submit. A success message will display.

Meter Readings Submittal Confirmation

AssetID = 1501
AssetType = FCM Demand
Date = 01/01/2018
24 readings submitted, 24 reading(s) updated.
Meter Readings Processed Successfully

Save Print

11. Click the X button  to return to the home screen.



Energy Assets FCM Demand Assets

Meter Reader: LSE1 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: Load Management

Reading Exception: All

Retrieve File Upload

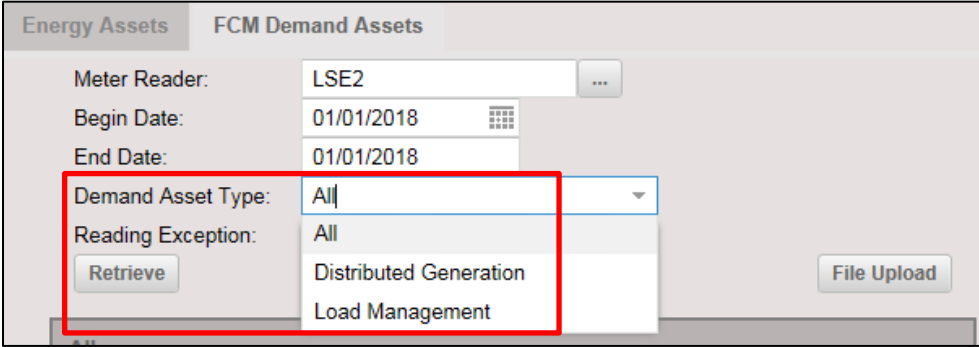
ID	Name	Type	SubType	Date
1501	Demand Response Asset 1501	FCM Demand	Load Ma...	01/01/2018

Page 1 of 1 1 - 1 of 1

2.3.4 Search and Retrieve Function

2.3.4.1 Search for FCM Demand Assets with missing data

1. Select desired Begin Date using the calendar function.
2. Click and choose the Demand Asset Type from the drop-down.



Energy Assets FCM Demand Assets

Meter Reader: LSE2 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: All

Reading Exception: All

Retrieve File Upload

Distributed Generation

Load Management

3. Use Reading Exception drop-down list to select Missing Readings.

Energy Assets FCM Demand Assets

Meter Reader: LSE2 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: Load Management

Reading Exception: |

Retrieve

All

- All Readings
- Exceeds Threshold
- Missing Readings

4. Click Retrieve to display assets that meet the filter choice.

Energy Assets FCM Demand Assets

Meter Reader: LSE2 ...

Begin Date: 01/01/2018

End Date: 01/01/2018

Demand Asset Type: All

Reading Exception: Missing Readings

Retrieve File Upload

All

ID	Name	Type	SubType	Date
1508	Demand Response Asset 1508	FCM Demand	Distribute...	01/01/2018

<< < Page 1 of 1 > >> 1 - 1 of 1

2.3.4.2 Retrieve and view FCM Demand Asset's meter reading data submittal

1. Select desired Begin Date using the calendar function.
2. Use Demand Asset Type to choose filter from drop-down list.

The screenshot shows a web interface for filtering FCM Demand Assets. The 'Demand Asset Type' dropdown menu is open, displaying three options: 'All', 'Distributed Generation', and 'Load Management'. The 'Retrieve' button is highlighted with a red rectangular box.

3. Click Retrieve to display all assets accessible by the user.
4. Click and chose the FCM Demand Asset from the list.

The screenshot shows the results of the search. The 'Retrieve' button is highlighted with a red rectangular box. Below the form is a table with the following data:

ID	Name	Type	SubType	Date
1507	Demand Response Asset 1507	FCM Demand	Load Man...	01/01/2018
1508	Demand Response Asset 1508	FCM Demand	Distribute...	01/01/2018

At the bottom of the page, there is a pagination control showing 'Page 1 of 1' and '1 - 2 of 2'.

5. The display on the right will return previously submitted meter reading information.

File Upload

SubType	Date
Load Man...	01/01/2018
Distribute...	01/01/2018

1 - 2 of 2

Meter Readings Have Been Submitted
Asset: 1507, Demand Response Asset 1507
Meter Date: 01/01/2018 {New Year's Day }

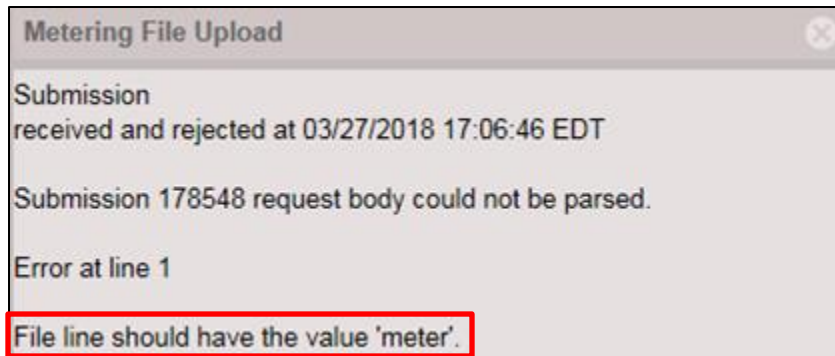
Hour Ending	Load Reduction MW	Hour Ending	Load Reduction MW
0100	0.687	1300	0.687
0200	0.687	1400	0.687
0300	0.687	1500	0.687
0400	0.687	1600	0.687
0500	0.687	1700	0.687
0600	0.687	1800	0.687
0700	0.687	1900	0.687
0800	0.687	2000	0.687
0900	0.687	2100	0.687
1000	0.687	2200	0.687
1100	0.687	2300	0.687
1200	0.687	2400	0.687
Total:			16.488

Helper Reset Submit

3 Troubleshooting

3.1 Uploading an Incorrectly Formatted File

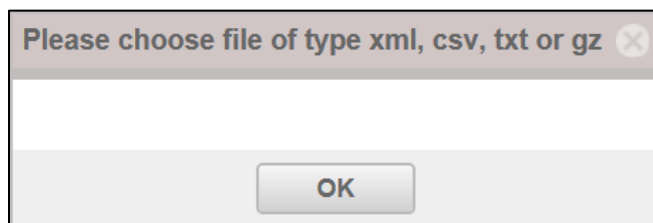
- The upload file will be rejected if it is not properly formatted. Below is an example of error message that may be displayed.



- Read the error message for possible errors.
- Review the file for extra spaces or missing delimiter, incorrect file tag and asset type.
- Correct the file format to continue with the upload.

3.2 Uploading Wrong File Types

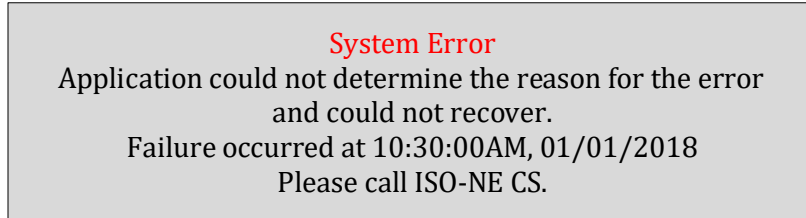
- The Metering UI only accepts the following types of files:
 - Extensible Markup Language (.xml)
 - Comma-Separated Values (.csv)
 - Text file (.txt)
 - Gzip file (.gz)



- Correct the file type to continue with the upload.

3.3 Metering UI Times Out

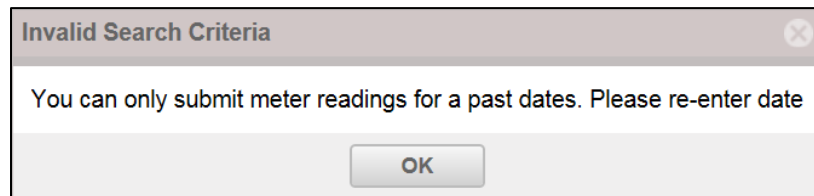
- Uploading a large file, especially a complete month of DRP data, may cause the application to time out.



- The GZIP compression option can prevent timeout errors on large files.

3.4 Error Caused by Submitting Future Meter Readings

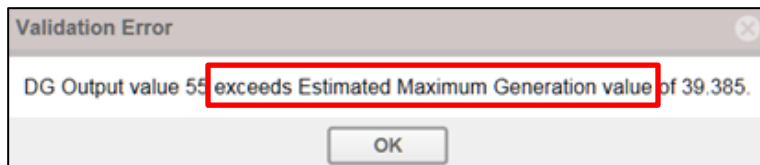
- Meter readings are accepted by 1300 on the second Business Day after the Operating Day Data cannot be pre-populated for future dates.



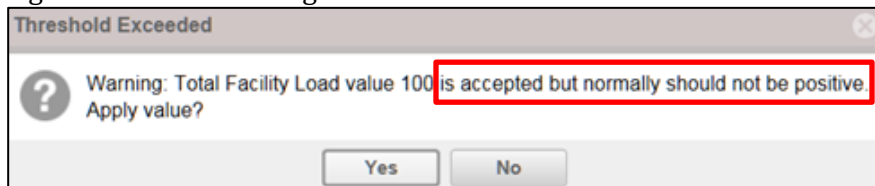
- File contains data for future date which cannot be processed.
- Correct the file content to continue with the upload.

3.5 FCM Demand Assets Threshold Validation

- Meter readers for FCM Demand Assets must not exceed 125% of maximum value.



- User is prevented from entering values outside of the acceptable value range.
- Sign convention warning.



- Verify submitted values for asset subtype for proper sign convention. [Load (-), Generation (+)]

3.6 Potential Warning Messages

- The meter reading application will issue a warning message to the user for a variety of reasons. In the case of a warning message, the meter reads will still be uploaded to the system and the user may use the information for further analysis.
- The meter reading application will issue a warning message to the user if successfully uploaded meter data exceeds a validation threshold. Generator data will exceed the threshold if an hourly reading is greater than 125% of the unit's Summer/Winter Max Net.

```
Customer Identifier = ###  
AssetID = #####  
AssetType = Load  
Date = 06/19/2022  
24 readings submitted,  
24 reading(s) updated.  
Warning: Hour Ending 01:00 Exceeds threshold  
mw=-17.261 threshold=-12.500
```

- The meter reading application will issue a warning message to the user if duplicate information for an asset has been uploaded. "0 reading(s) updated." indicates the information uploaded has already been processed.

```
24 readings submitted,  
0 reading(s) updated.
```

3.7 Error Caused by Asset ID or Asset Ownership

- User is prevented from entering values for assets they do not have permissions for.

```
Error submitting meter readings.  
Meter readings not submitted.  
Error: User Does Not Have Permission To Modify Readings For This Asset.  
Or Possibly Asset Does Not Exist.
```

4 Appendix

4.1 Information on CSV File

- Hourly data can be submitted using local hour or GMT.
- Subhourly data can only be submitted using GMT.

4.1.1 Comprehensive List of CSV File Examples

4.1.1.1 **CSV Using Local Hour Format**

Unit (Hourly) Metering Example File

```
Meter
Daily
***
2,102,Unit,1/1/2018
1,10
2,10
3,10
4,10
5,10
6,10
7,10
...16 more lines...
24,10
***
```

Load Metering Example File

```
Meter
Daily
***
2,206,Load,1/1/2018
1,-1.0
2,-1.0
3,-1.0
4,-1.0
5,-1.0
6,-1.0
7,-1.0
...16 more lines...
24,-1.0
***
```

Tie Line Metering Example File

```
Meter
Daily
***
2,302,Tie Line,1/1/2018
1,110
2,110
3,110
4,110
5,110
6,110
7,110
...16 more lines...
24,110
***
```

FCM Demand Asset Metering Example File

```
Meter
Daily
***
1,3000,FCM Demand,01/01/2018,DG
01,1.2,0.84
02,1.2,0.84
03,1.2,0.84
04,1.2,0.84
05,1.2,0.84
06,1.2,0.84
07,1.2,0.84
...16 more lines...
24,1.1,0.84
***
1,3001,FCM Demand,01/01/2018,LM
01,1.02
02,1.02
03,1.02
04,1.02
05,1.02
06,1.02
07,1.02
...16 more lines...
24,1.01
***
```

4.1.1.2 CSV Using GMT Hour Format

Unit (Hourly) Metering Example File for Hourly data

```
Meter
Daily
***
1,2000,Unit,Hourly,2018-01-01T04:00:00Z
2018-10-20T04:00:00Z,0.13
2018-10-20T05:00:00Z,0.2
...17 more lines...
2018-01-01T23:00:00Z,0
2018-01-02T00:00:00Z,0
2018-01-02T01:00:00Z,0
2018-01-02T02:00:00Z,0
2018-01-02T03:00:00Z,0
***
```

Unit (Five Minute) Metering Example File for Subhourly data

```
Meter
Daily
***
1,2002,Unit,Five Minute,2018-01-01T04:00:00Z
2018-01-01T04:00:00Z,0.013
2018-01-01T04:05:00Z,0.02
2018-01-01T04:10:00Z,0.02
2018-01-01T04:15:00Z,0.02
2018-01-01T04:20:00Z,0.03
2018-01-01T04:25:00Z,0.03
2018-01-01T04:30:00Z,0.03
2018-01-01T04:35:00Z,0.03
2018-01-01T04:40:00Z,0.021
2018-01-01T04:45:00Z,0.021
2018-01-01T04:50:00Z,0.021
2018-01-01T04:55:00Z,0.021
2018-01-01T05:00:00Z,0.021
2018-01-01T05:05:00Z,0.021
...273 more lines...
2018-01-02T03:55:00Z,0
***
```

Unit (Hourly and Five Minute) Metering Example File

- Combination of hourly and five minute metering submittal for different Energy assets with the same file is supported in GMT Hour format.

```
Meter
Daily
***
1,2000,Unit,Hourly,2018-01-01T04:00:00Z
2018-01-01T04:00:00Z,0.13
2018-01-01T05:00:00Z,0.2
...20 more lines...
2018-01-02T02:00:00Z,0
2018-01-02T03:00:00Z,0
***
1,2002,Unit,Five Minute,2018-01-01T04:00:00Z
2018-01-01T04:00:00Z,0.013
2018-01-01T04:05:00Z,0.02
2018-01-01T04:10:00Z,0.02
2018-01-01T04:15:00Z,0.02
2018-01-01T04:20:00Z,0.03
2018-01-01T04:25:00Z,0.03
2018-01-01T04:30:00Z,0.03
2018-01-01T04:35:00Z,0.03
2018-01-01T04:40:00Z,0.021
2018-01-01T04:45:00Z,0.021
2018-01-01T04:50:00Z,0.021
2018-01-01T04:55:00Z,0.021
2018-01-01T05:00:00Z,0.021
2018-01-01T05:05:00Z,0.021
...273 more lines...
2018-01-02T03:55:00Z,0
***
```


FCM Demand Asset Metering Example File

```
Meter
Daily
***
1,3000,FCM Demand,Hourly,2018-01-01T04:00:00Z,DG
2018-01-01T04:00:00Z,1.2,0.84
2018-01-01T05:00:00Z,1.2,0.84
2018-01-01T06:00:00Z,1.2,0.84
2018-01-01T07:00:00Z,1.2,0.84
2018-01-01T08:00:00Z,1.2,0.84
2018-01-01T09:00:00Z,1.2,0.84
2018-01-01T10:00:00Z,1.2,0.84
...16 more lines...
2018-01-02T03:00:00Z,1.1,0.84
***
1,3001,FCM Demand,Hourly, 2018-01-01T04:00:00Z,LM
2018-01-01T04:00:00Z,1.02
2018-01-01T05:00:00Z,1.02
2018-01-01T06:00:00Z,1.02
2018-01-01T07:00:00Z,1.02
2018-01-01T08:00:00Z,1.02
2018-01-01T09:00:00Z,1.02
2018-01-01T10:00:00Z,1.02
...16 more lines...
2018-01-02T03:00:00Z,1.01
***
```

4.1.2 CSV File Definitions

Optional	Field	Data Type; Format	Comments
No	Asset ID	Number; 999999999	ISO New England-specified unique numeric asset ID for an individual Reading Block.
No	Reading Block Begin	Date/time; Internet date/time format with a time zone	Operating day begin date/time for an individual Reading Block.
No	Asset Type Desc	String; not case-sensitive	Meter Reading application description of asset's type: <ul style="list-style-type: none"> • Unit • Load (for Load Facility and Asset Related Demand assets) • Tie Line • FCM Demand Each Reading Block must specify this field for message consistency checking, and its value must match the asset's real value in the Meter Reading application.
No	Meter Interval Type	String	Asset's meter interval type (metering submittal indicator) as of the operating day: <ul style="list-style-type: none"> • Hourly • Five Minute Each Reading Block must specify this field for message consistency checking, and its value must match the asset's real value in the Meter Reading application as of the operating day.
Yes	FCM Demand Asset Sub Type	String; not case-sensitive	FCM Demand asset's sub-type as of the operating day: <ul style="list-style-type: none"> • DG • LM Reading Block for an FCM Demand asset must specify this field for message consistency checking, and its value must match the asset's real value in the Meter Reading application as of the operating day. Reading Block for an Energy asset must not specify this field.
No	Meter Reader ID	Number; 999999999	Must be Meter Reader's unique numeric ID at ISO New England.
No	Begin	Date/time; Internet date/time format with a time zone	Date/time beginning the meter interval for an individual reading and its MW value(s). For a Reading Block with Hourly Meter Interval Type, this is the date/time beginning a specific hour. For a Reading Block with Five Minute Meter Interval Type, this is the date/time beginning a specific five minute interval.
No	MW	Number; 9999999.999	Reading Block for an Energy asset must specify this field for each reading, containing the MW value.

Optional	Field	Data Type; Format	Comments
Yes	TFL MW	Number/blank/"null"; 9999999.999	<p>Reading Block for an FCM Demand asset with DG FCM Demand Asset Sub Type must specify this field for each reading, containing the Hourly Total Facility Load MW value. A field with blank "" or the word "null" represents a reading with no value for this field.</p> <p>Reading Block for an FCM Demand asset with other FCM Demand Asset Sub Type must not specify this field.</p> <p>Reading Block for an Energy asset must not specify this field.</p>
No	DGO MW	Number; 9999999.999	<p>Reading Block for an FCM Demand asset with DG FCM Demand Asset Sub Type must specify this field for each reading, containing the Hourly DG Output MW value.</p> <p>Reading Block for an FCM Demand asset with other FCM Demand Asset Sub Type must not specify this field.</p> <p>Reading Block for an Energy asset must not specify this field.</p>
No	LR MW	Number; 9999999.999	<p>Reading Block for an FCM Demand asset with LM FCM Demand Asset Sub Type must specify this field for each reading, containing the Hourly Load Reduction MW value.</p> <p>Reading Block for an FCM Demand asset with other FCM Demand Asset Sub Type must not specify this field.</p> <p>Reading Block for an Energy asset must not specify this field.</p>

4.2 Information on XML File

4.2.1 Comprehensive List of XML File Examples

Unit (Hourly) Metering Example File

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>102</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>Unit</asset_type_desc>
    <meter_interval_type>Hourly</meter_interval_type>
    <meter_reader_id>2</meter_reader_id>
    <energy_reading><begin>2018-01-01T04:00:00Z</begin><mw>0.13</mw></energy_reading>
    <energy_reading><begin>2018-01-01T05:00:00Z</begin><mw>0.2</mw></energy_reading>
    ...17 more lines...
    <energy_reading><begin>2018-01-01T23:00:00Z</begin><mw>0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T00:00:00Z</begin><mw>0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T01:00:00Z</begin><mw>0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T02:00:00Z</begin><mw>0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T03:00:00Z</begin><mw>0</mw></energy_reading>
  </reading_block>
</reading_blocks>
```

Load Metering Example File

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>206</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>Load</asset_type_desc>
    <meter_interval_type>Hourly</meter_interval_type>
    <meter_reader_id>2</meter_reader_id>
    <energy_reading><begin>2018-01-01T04:00:00Z</begin><mw>-1.0</mw></energy_reading>
    <energy_reading><begin>2018-01-01T05:00:00Z</begin><mw>-1.0</mw></energy_reading>
    ...17 more lines...
    <energy_reading><begin>2018-01-01T23:00:00Z</begin><mw>-1.0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T00:00:00Z</begin><mw>-1.0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T01:00:00Z</begin><mw>-1.0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T02:00:00Z</begin><mw>-1.0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T03:00:00Z</begin><mw>-1.0</mw></energy_reading>
  </reading_block>
</reading_blocks>
```

Tie Line Metering Example File

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>302</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>Tie Line</asset_type_desc>
    <meter_interval_type>Hourly</meter_interval_type>
    <meter_reader_id>2</meter_reader_id>
    <energy_reading><begin>2018-01-01T04:00:00Z</begin><mw>110</mw></energy_reading>
    <energy_reading><begin>2018-01-01T05:00:00Z</begin><mw>110</mw></energy_reading>
    ...17 more lines...
    <energy_reading><begin>2018-01-01T23:00:00Z</begin><mw>110</mw></energy_reading>
    <energy_reading><begin>2018-01-02T00:00:00Z</begin><mw>110</mw></energy_reading>
    <energy_reading><begin>2018-01-02T01:00:00Z</begin><mw>110</mw></energy_reading>
    <energy_reading><begin>2018-01-02T02:00:00Z</begin><mw>110</mw></energy_reading>
    <energy_reading><begin>2018-01-02T03:00:00Z</begin><mw>110</mw></energy_reading>
  </reading_block>
</reading_blocks>
```

Unit (Five Minute) Metering Example File

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>2002</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>Unit</asset_type_desc>
    <meter_interval_type>Five Minute</meter_interval_type>
    <meter_reader_id>1</meter_reader_id>
    <energy_reading><begin>2018-01-01T04:00:00Z</begin><mw>0.013</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:05:00Z</begin><mw>0.02</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:10:00Z</begin><mw>0.02</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:15:00Z</begin><mw>0.02</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:20:00Z</begin><mw>0.03</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:25:00Z</begin><mw>0.03</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:30:00Z</begin><mw>0.03</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:35:00Z</begin><mw>0.03</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:40:00Z</begin><mw>0.021</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:45:00Z</begin><mw>0.021</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:50:00Z</begin><mw>0.021</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:55:00Z</begin><mw>0.021</mw></energy_reading>
    <energy_reading><begin>2018-01-01T05:00:00Z</begin><mw>0.021</mw></energy_reading>
    <energy_reading><begin>2018-01-01T05:05:00Z</begin><mw>0.021</mw></energy_reading>
    ...273 more lines...
    <energy_reading><begin>2018-01-02T03:55:00Z</begin><mw>0</mw></energy_reading>
  </reading_block>
</reading_blocks>
```

Unit (Hourly and Five Minute) Metering Example File

- Combination of both hourly and five minute metering submittal for different Energy assets within the same file is supported by XML format.

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>2000</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>Unit</asset_type_desc>
    <meter_interval_type>Hourly</meter_interval_type>
    <meter_reader_id>1</meter_reader_id>
    <energy_reading><begin>2018-01-01T04:00:00Z</begin><mw>0.13</mw></energy_reading>
    <energy_reading><begin>2018-01-01T05:00:00Z</begin><mw>0.2</mw></energy_reading>
    ..20 more lines...
    <energy_reading><begin>2018-01-02T02:00:00Z</begin><mw>0</mw></energy_reading>
    <energy_reading><begin>2018-01-02T03:00:00Z</begin><mw>0</mw></energy_reading>
  </reading_block>
  <reading_block>
    <asset_id>2002</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>Unit</asset_type_desc>
    <meter_interval_type>Five Minute</meter_interval_type>
    <meter_reader_id>1</meter_reader_id>
    <energy_reading><begin>2018-01-01T04:00:00Z</begin><mw>0.013</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:05:00Z</begin><mw>0.02</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:10:00Z</begin><mw>0.02</mw></energy_reading>
    <energy_reading><begin>2018-01-01T04:15:00Z</begin><mw>0.02</mw></energy_reading>
    ...283 more lines...
    <energy_reading><begin>2018-01-02T03:55:00Z</begin><mw>0</mw></energy_reading>
  </reading_block>
</reading_blocks>
```

FCM Demand Asset Metering Example File

```
<?xml version="1.0" encoding="UTF-8"?>
<reading_blocks xmlns="http://xmlns.iso-ne.com/metering/reading_blocks">
  <reading_block>
    <asset_id>3000</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>FCM Demand</asset_type_desc>
    <fcm_demand_asset_sub_type>DG</fcm_demand_asset_sub_type>
    <meter_interval_type>Hourly</meter_interval_type>
    <meter_reader_id>1</meter_reader_id>
    <fcm_demand_reading><begin>2018-01-01T04:00:00Z</begin>
      <tfl_mw>1.2</tfl_mw><dgo_mw>0.84</dgo_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T05:00:00Z</begin>
      <tfl_mw>1.2</tfl_mw><dgo_mw>0.84</dgo_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T06:00:00Z</begin>
      <tfl_mw>1.2</tfl_mw><dgo_mw>0.84</dgo_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T07:00:00Z</begin>
      <tfl_mw>1.2</tfl_mw><dgo_mw>0.84</dgo_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T08:00:00Z</begin>
      <tfl_mw>1.2</tfl_mw><dgo_mw>0.84</dgo_mw></fcm_demand_reading>
    ...18 more lines...
    <fcm_demand_reading><begin>2018-01-02T03:00:00Z</begin>
      <tfl_mw>1.1</tfl_mw><dgo_mw>0.84</dgo_mw></fcm_demand_reading>
  </reading_block>
  <reading_block>
    <asset_id>3001</asset_id>
    <reading_block_begin>2018-01-01T04:00:00Z</reading_block_begin>
    <asset_type_desc>FCM Demand</asset_type_desc>
    <fcm_demand_asset_sub_type>LM</fcm_demand_asset_sub_type>
    <meter_interval_type>Hourly</meter_interval_type>
    <meter_reader_id>1</meter_reader_id>
    <fcm_demand_reading><begin>2018-01-01T04:00:00Z</begin><lr_mw>1.02</lr_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T05:00:00Z</begin><lr_mw>1.02</lr_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T06:00:00Z</begin><lr_mw>1.02</lr_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T07:00:00Z</begin><lr_mw>1.02</lr_mw></fcm_demand_reading>
    <fcm_demand_reading><begin>2018-01-01T08:00:00Z</begin><lr_mw>1.02</lr_mw></fcm_demand_reading>
    ...18 more lines...
    <fcm_demand_reading><begin>2018-01-02T03:00:00Z</begin><lr_mw>1.01</lr_mw></fcm_demand_reading>
  </reading_block>
</reading_blocks>
```

4.2.2 XML File Definitions

Optional	Element	Data Type; Format	Comments
No	asset_id	xs:nonNegativeInteger	ISO New England-specified unique numeric asset ID for an individual Reading Block.
No	reading_block_begin	xs:dateTime; Internet date/time format with a time zone	Operating day begin date/time for an individual Reading Block.
Yes	reading_block_end	xs:dateTime; Internet date/time format with a time zone	Operating day end date/time for an individual Reading Block. Returned by GET. Ignored by POST.
No	begin	xs:dateTime; Internet date/time format with a time zone	Date/time beginning the meter interval for an individual reading and its MW value(s). This is the date/time beginning a specific hour.
No (for Energy asset)	mw	xs:decimal; 9999999.999	Reading Block for an Energy asset must specify this element for each reading, containing the MW value. Reading Block for an FCM Demand asset must not specify this element.
Yes	tfl_mw	xs:decimal; 9999999.999	Reading Block for an FCM Demand asset with DG sub-type <i>may</i> specify this element for each reading, containing the Hourly Total Facility Load MW value. An hour without tfl_mw is considered to be a reading with Hourly Total Facility Load undefined. Reading Block for an FCM Demand asset with other sub-type must not specify this element. Reading Block for an Energy asset must not specify this element.
No (for FCM Demand DG asset)	dgo_mw	xs:decimal; 9999999.999	Reading Block for an FCM Demand asset with DG sub-type <i>must</i> specify this element for each reading, containing the Hourly DG Output MW value. Reading Block for an FCM Demand asset with other sub-type must not specify this element. Reading Block for an Energy asset must not specify this element.

Optional	Element	Data Type; Format	Comments
No (for FCM Demand LM asset)	lr_mw	xs:decimal; 9999999.999	<p>Reading Block for an FCM Demand asset with LM sub-type must specify this element for each reading, containing the Hourly Load Reduction MW value.</p> <p>Reading Block for an FCM Demand asset with other sub-type must not specify this element.</p> <p>Reading Block for an Energy asset must not specify this element.</p>
No (for FCM Demand asset)	version	xs:dateTime; Internet date/time format with a time zone	<p>Reading Block for an FCM Demand asset must specify this element for each reading, containing the version timestamp received in the previous GET response. This timestamp is required for a concurrency check preventing concurrent updates by other users or sessions.</p> <p>Reading Block for an Energy asset must not specify this element.</p>

5 Participant Support

5.1 By Internet



<http://www.iso-ne.com/support/index.html>

5.2 By Telephone



Days of Operation

During Regular Business Hours, Monday through Friday: 8:00 A.M. to 5:00 P.M. ET:
(413) 540-4220

The Participant Support Hotline is **NOT** staffed on the following days:

New Year's Day	Labor Day
Martin Luther King Day	Columbus Day
Presidents Day	Veterans Day
Good Friday	Thanksgiving Day
Patriots Day	Day After Thanksgiving
Memorial Day	Christmas Eve Afternoon (12:00 to 17:00)
Juneteenth	Christmas Day
Independence Day	

For after-hours business emergencies, contact Participant Support at **(877) 226-4814** (pager).

5.3 By Email



AskISO@iso-ne.com

5.4 Ask ISO Manager

Ask ISO is available to anyone that wants to submit an inquiry or information to ISO New England. The Ask ISO Manager role is managed in CAMS and is granted access to users by their company security administrator. This role allows the user to view all cases for all users within their organization. Ask ISO can be accessed by clicking the link on the ISO New England [Participant Support landing page](#) or for those with active digital certificates via a link at the left of the [SMD homepage](#).

6 Links

6.1 ISO New England Home Page

<http://www.iso-ne.com/index.html>

6.2 ISO New England Training Page

<http://www.iso-ne.com/support/training/index.html>

6.3 ISO New England FAQ Page

<http://www.iso-ne.com/support/faq/index.html>

6.4 SMD Site for ISO Applications

<https://smd.iso-ne.com/>

6.5 SMD Site for ISO Sandbox Applications

<https://sandboxsmd.iso-ne.com/>

6.6 ISO New England Glossary and Acronyms

<http://www.iso-ne.com/participate/support/glossary-acronyms>

6.7 References used in this Guide

Manual 28 - Data Submission Timing and Responsibilities:

<https://www.iso-ne.com/participate/rules-procedures/manuals/>

Metering and Resettlement Deadlines:

<https://www.iso-ne.com/markets-operations/settlements/deadlines/>

Meter Reading Web Services Data Exchange Specification:

https://www.iso-ne.com/static-assets/documents/2018/03/meter_reading_web_services_data_exchange_specification.docx