

# Power Meter Command Line Interface (CLI) Document



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# Power Meter File Format Specification

**\*NOTE\***: File Formats are not final and are subject to change. If a change occurs, updated information will be made available in this document via the PJM Home Page.

## Purpose

This document defines the different types of XML files participants may use to electronically exchange data with the Power Meter application. It also defines the detailed output files that may be exchanged with the application and provides examples of well-formatted XML for each.

## Power Meter Values Upload Namespace

The goal of XML is to represent data along with its metadata (structure). The following namespaces must be included in each file uploaded to the Power Meter application for the submission of daily meter values, load submission, and Monthly Correction.

### Hourly Load Submission namespace

```
<?xml version="1.0" encoding="UTF-8"?>
<pm:HourlyLoadValues xsi:schemaLocation="http://www.pjm.com/soa/schemas/external/pm/v1 powermeter.xsd"
xmlns:pm="http://www.pjm.com/soa/schemas/external/pm/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

### Hourly Meter Submission namespace

```
<?xml version="1.0" encoding="UTF-8"?>
<pm:SubmittedMeterValues xsi:schemaLocation="http://www.pjm.com/soa/schemas/external/pm/v1 powermeter.xsd"
xmlns:pm="http://www.pjm.com/soa/schemas/external/pm/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

### Monthly Correction namespace

```
<?xml version="1.0" encoding="UTF-8"?>
<pm: SubmittedMeterValues xsi:schemaLocation="http://www.pjm.com/soa/schemas/external/pm/v1 powermeter.xsd"
xmlns:pm="http://www.pjm.com/soa/schemas/external/pm/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

## Upload Submission Deadline

Submission deadline information can be found at [here](#).

## Power Meter XSD

The Power Meter XSD can be found at [here](#).

## Interval Definition

All interactions (uploads and downloads) use a time interval. For Power Meter, the following interval definition will apply:

Data Element	Description	Type
intervalValue	The top level hierarchy for a interval	N/A
startDate	Defines the actual time the interval begins	xs:dateTime
endDate	Defines the actual time the interval ends	xs:dateTime
mw	meter value submitted in megawatts for given interval	xs:decimal(3)

## Requirements:



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The dateTime data type is used to specify a date and a time. The start and end date is specified in ISO format, which is as follows:

"YYYY-MM-DDThh:mm:ss(Z or ±hh:mm)" where:

Field	Description
YYYY	Indicates the year
MM	Indicates the month
DD	Indicates
T	Indicates the start of the required time section
Hh	Indicates the hour
Mm	Indicates the minute
Ss	Indicates the second
Z or ± hh:mm	UTC 'Zulu' time or timezone offset

**Note:** All components are required!

The user can submit both a startDate and endDate, or just a startDate or endDate. All hours specified are hour ending values and the effective period is one hour.

When receiving downloads from the application, both a startDate and endDate will be specified.

To specify a MWh value for a single hour, hour starting 12, the user may submit either of the following examples.

### Example A:

```
<intervalValue>  
  <startDate>2013-08-01T12:00:00-04:00</startDate>  
  <endDate>2013-08-01T13:00:00-04:00</endDate>  
  <mw>50</mw>  
</intervalValue>
```

### Example B:

```
<interval>  
  <startDate>2013-08-01T12:00:00-04:00</startDate>  
  <mw>50</mw>  
</interval>
```

### Example C:

```
<interval>  
  <endDate>2013-08-01T13:00:00-04:00</endDate>  
  <mw>50</mw>  
</interval>
```



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To specify a MWh value for two hours, hour starting 12 and 13, the user may submit either of the following examples:

### Example A:

```
<intervalValue>
  <startDate>2013-08-01T12:00:00-04:00</startDate>
  <endDate>2013-08-01T13:00:00-04:00</endDate>
  <mw>50</mw>
</intervalValue>
<intervalValue>
  <startDate>2013-08-01T13:00:00-04:00</startDate>
  <endDate>2013-08-01T14:00:00-04:00</endDate>
  <mw>50</mw>
</intervalValue>
```

### Example B:

```
<intervalValue>
  <startDate>2013-08-01T12:00:00-04:00</startDate>
  <endDate>2013-08-01T14:00:00-04:00</endDate>
  <mw>50</mw>
</intervalValue>
```

### Day Light Savings Time Examples:

#### Short Day Example:

```
<intervalValue>
  <startDate>2013-03-10T00:00:00-05:00</startDate>
  <endDate>2013-03-10T01:00:00-05:00</endDate>
  <mw>100</mw>
</intervalValue>
<intervalValue>
  <startDate>2013-03-10T01:00:00-05:00</startDate>
  <endDate>2013-03-10T03:00:00-04:00</endDate>
  <mw>100</mw>
</intervalValue>
<intervalValue>
  <startDate>2013-03-10T03:00:00-04:00</startDate>
  <endDate>2013-03-10T04:00:00-04:00</endDate>
  <mw>100</mw>
</intervalValue>
```



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### Long Day Example:

```

<intervalValue>
  <startDate>2013-11-03T00:00:00-04:00</startDate>
  <endDate>2013-11-03T01:00:00-04:00</endDate>
  <mw>100</mw>
</intervalValue>
<intervalValue>
  <startDate>2013-11-03T01:00:00-04:00</startDate>
  <endDate>2013-11-03T01:00:00-05:00</endDate>
  <mw>100</mw>
</intervalValue>
<intervalValue>
  <startDate>2013-11-03T01:00:00-05:00</startDate>
  <endDate>2013-11-03T02:00:00-05:00</endDate>
  <mw>100</mw>
</intervalValue>

```

### Results File

All uploads will return a results file back to the user. Upload Status indicates if all the values in the upload were saved successfully. If any value fails to upload the status will be 'Failure'. If all the values are saved correctly the status will be 'Success'. There can be warning messages associated with a successful save. The results will have either a Meter Account Id or Zone Id depending on which type of upload was performed.

Data Element	Description	Type
uploadResults	The top level hierarchy for the success and error messaging	N/A
meterAccountID	The id of the meter account	xs:nonNegativeInteger
zoneID	The id of the zone, as defined by PJM	xs:nonNegativeInteger
uploadStatus	Indicates success with "Success" and failure with "Failure"	xs:string
uploadStatusDescription	Describes the success or failure of the named process	xs:string

### Example Output:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<UploadResults>
  <uploadResult>
    <meterAccountID>1308</meterAccountID>
    <uploadStatus>Failure</uploadStatus>
    <uploadStatusDescription>
      Saved the value 10 for meter 1308 and hour 2013-08-01T00:00:00-04:00
    </uploadStatusDescription>
    <uploadStatusDescription>
      Saved the value 20 for meter 1308 and hour 2013-08-01T01:00:00-04:00
    </uploadStatusDescription>
  </uploadResult>
</UploadResults>

```



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```

    <uploadStatusDescription>
        MW Values can not have more than three decimal places. You submitted: 10.1234 for 2013-08-
        01T02:00:00-04:00
    </uploadStatusDescription>
</uploadResult>
</UploadResults>

```

### Upload Files

#### Upload Hourly Load Values

*Description: This action is used to upload hourly load values to the Power Meter application.*

#### Input Data Values:

Data Element	Description	Type
HourlyLoadValues	The top level hierarchy for an individual load value	N/A
zoneID	<ul style="list-style-type: none"> <li>- The id of the zone being submitted, as defined by PJM</li> <li>- Each PJM EDC may only upload hourly load values for its zone.</li> </ul>	xs:nonNegativeInteger
loadValues	Grouping of all the hourly load values for an EDC's load	N/A
intervalValue	Defines the time interval and megawatt value	pm:intervalValue

#### Example Input:

```

<?xml version="1.0" encoding="UTF-8"?>
<pm:HourlyLoadValues xsi:schemaLocation="http://www.pjm.com/soa/schemas/external/pm/v1 powermeter.xsd"
xmlns:pm="http://www.pjm.com/soa/schemas/external/pm/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <zoneID>13</zoneID>
  <loadValues>
    <intervalValue>
      <startDate>2013-08-01T00:00:00-04:00</startDate>
      <endDate>2013-08-01T01:00:00-04:00</endDate>
      <mw>4598.001</mw>
    </intervalValue>
    <intervalValue>
      <startDate>2013-08-01T02:00:00-04:00</startDate>
      <mw>4237.128</mw>
    </intervalValue>
    <intervalValue>
      <endDate>2013-08-01T04:00:00-04:00</endDate>
      <mw>4267.008</mw>
    </intervalValue>
  </loadValues>
</pm:HourlyLoadValues>

```



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</HourlyLoadValues>

### Upload Hourly Meter Values

**Description:** This action is used to upload hourly meter values to the Power Meter application.

#### Input Data Values:

Data Element	Description	Type
SubmittedMeterValues	The top level hierarchy for the hourly meter values	
meterAccount	The top level hierarchy for an individual meter account	N/A
meterAccountID	- The id of the meter account, as defined by PJM - Only accounts for which you are the submitter are acceptable for upload	xs:nonNegativeInteger
meterValues	Grouping of all the meter values for an individual meter account	N/A
intervalValue	Defines the time interval and megawatt value	pm:interval Value

#### Example Input:

```
<?xml version="1.0" encoding="UTF-8"?>
<pm:SubmittedMeterValues xsi:schemaLocation="http://www.pjm.com/soa/schemas/external/pm/v1 powermeter.xsd"
xmlns:pm="http://www.pjm.com/soa/schemas/external/pm/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <meterAccount>
    <meterAccountID>1308</meterAccountID>
    <meterValues>
      <intervalValue>
        <startDate>2013-08-01T00:00:00-04:00</startDate>
        <mw>10.125</mw>
      </intervalValue>
      <intervalValue>
        <endDate>2013-08-01T02:00:00-04:00</endDate>
        <mw>20.545</mw>
      </intervalValue>
    </meterValues>
  </meterAccount>
  <meterAccount>
    <meterAccountID>1307</meterAccountID>
    <meterValues>
      <intervalValue>
        <startDate>2013-08-01T00:00:00-04:00</startDate>
        <endDate>2013-08-01T01:00:00-04:00</endDate>
        <mw>15.989</mw>
      </intervalValue>
    </meterValues>
  </meterAccount>
</pm:SubmittedMeterValues>
```





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</HourlyMeterValues>

### Upload Monthly Corrections

**Description:** *This action is used to upload monthly meter corrections to the Power Meter application.*

#### Input Data Values:

Data Element	Description	Type
SubmittedMeterValues	The top level hierarchy for the hourly meter values	
meterAccount	The top level hierarchy for an individual meter account	N/A
meterAccountID	- The id of the meter account, as defined by PJM - Only accounts for which you are the submitter are acceptable for upload	xs:nonNegativeInteger
correctionValue	The top level hierarchy for the correction value	N/A
date	Defines the month of the correction. Format is 'YYYY-MM'	xs:string
mw	correction value submitted in megawatts	xs:decimal(3)

#### Example Input:

```
<?xml version="1.0" encoding="UTF-8"?>
<pm:SubmittedMeterValues xsi:schemaLocation="http://www.pjm.com/soa/schemas/external/pm/v1 powermeter.xsd"
xmlns:pm="http://www.pjm.com/soa/schemas/external/pm/v1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <meterAccount>
    <meterAccountID>1308</meterAccountID>
    <correctionValue>
      <date>2013-08</date>
      <mw>104.123</mw>
    </correctionValue>
  </meterAccount>
  <meterAccount>
    <meterAccountID>1307</meterAccountID>
    <correctionValue>
      <date>2013-08</date>
      <mw>502.565</mw>
    </correctionValue>
  </meterAccount>
</HourlyMeterValues>
```

#### Download Files

Users have the ability to specify parameters such as start and end dates, meter type, and meter ids in downloads. On all downloads except for Meter Account and Meter Accounts the user can download using a date range. All downloads except Load Submission and Meter Account have the meter account type (all, tie, or gen) option.



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### Retrieve Daily Meter Values

**Description:** *Retrieves meter accounts, hourly meter values as well as EHV area losses and Total inadvertent. These values can be obtained from the Power Meter application (specific date) or by utilizing the command line interface.*

### Output Data Values:

Data Element	Description	Type
MeterValues	The top level hierarchy for all meter account values downloaded	N/A
meterAccount	The top level hierarchy for an individual meter account (multiple accounts may be present in the same file)	N/A
meterAccountID	- The id of the meter account, as defined by PJM - Only meter accounts for which you are the submitter or are a party to may be downloaded	xs:nonNegativeInteger
meterAccountName	The name of the meter account	xs:string
meterType	The type of the meter account, either Gen or Tie	xs:string
ehv	A tag indicating EHV account (YES/NO)	xs:string
counterParty	- The name of the counter party of the meter account - For account of type EHV tie, counter party is "EHV" - For account of type external tie, internal tie, external EHV tie, and Generator, counter party is the opposite participant of the reported or allocated to. ex: If you are the reporting participant, the allocated to participant will be downloaded - If the participant is neither the reporter nor allocated to party, the allocated participant is the counter party. If more than one participant is the allocated to party, counter party is joint-owned (J-O).	xs:string
hourlyMeterValues	- Grouping of all the meter values for an individual meter account - Hourly meter values are subject to change by the submitter until the accounting deadline	N/A
intervalValue	Defines the time interval and megawatt value	pm:intervalValue
totalLoss	The top level hierarchy for EHV Losses	N/A
totalLoss - area	The top level hierarchy for ehv areas	N/A
totalLoss - ehvAreaName	The ehv Area Name	xs:string
totalLoss - intervalValues	Grouping of all interval values	N/A
totalLoss - intervalValue	Defines the time interval and megawatt value	pm:intervalValue
totalInadvertent	The top level hierarchy for Inadvertent	N/A
totalInadvertent - area	The top level hierarchy for inadvertent areas	N/A



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totalInadvertent – controlAreaName	The control area name	xs:string
totalInadvertent - intervalValues	Grouping of all interval values	N/A
totalInadvertent - intervalValue	Defines the time interval and megawatt value	pm:intervalValue

### Example Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<MeterValues>
  <meterAccount>
    <meterAccountID>1308</meterAccountID>
    <meterAccountName>PJM Test</meterAccountName>
    <meterType>TIE</meterType>
    <ehv>NO</ehv>
    <counterParty>PJM</counterParty>
    <hourlyMeterValues>
      <intervalValue>
        <startDate>2013-08-01T00:00:00-04:00</startDate>
        <endDate>2013-08-01T01:00:00-04:00</endDate>
        <mw>15.432</mw>
      </intervalValue>
      <intervalValue>
        <startDate>2013-08-01T01:00:00-04:00</startDate>
        <endDate>2013-08-01T02:00:00-04:00</endDate>
        <mw>23.434</mw>
      </intervalValue>
    </hourlyMeterValues>
  </meterAccount>
  <totalLoss>
    <area>
      <ehvAreaName>PJM-EAST</ehvAreaName>
      <intervalValues>
        <intervalValue>
          <startDate>2013-08-01T01:00:00-04:00</startDate>
          <endDate>2013-08-01T02:00:00-04:00</endDate>
          <mw>177.454</mw>
        </intervalValue>
        <intervalValue>
          <startDate>2013-08-01T02:00:00-04:00</startDate>
          <endDate>2013-08-01T03:00:00-04:00</endDate>
          <mw>151.116</mw>
        </intervalValue>
      </intervalValues>
    </area>
  </totalLoss>
</MeterValues>
```



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```

    </area>
  </totalLoss>
  <totalInadvertent>
    <area>
      <controlAreaName>PJM </controlAreaName>
      <intervalValues>
        <intervalValue>
          <startDate>2013-08-01T01:00:00-04:00</startDate>
          <endDate>2013-08-01T02:00:00-04:00</endDate>
          <mw>-78.347</mw>
        </intervalValue>
        <intervalValue>
          <startDate>2013-08-01T02:00:00-04:00</startDate>
          <endDate>2013-08-01T03:00:00-04:00</endDate>
          <mw>-24.368</mw>
        </intervalValue>
      </intervalValues>
    </area>
  </totalInadvertent>
</MeterValues>

```

### Retrieve Daily Meter Value Allocation

**Description:** *Retrieves your share of daily meter values, and for EDC accounts their share of EHV area losses and de-rated loss MWh.*

### Output Data Values:

Data Element	Description	Type
MeterValueAllocation	The top level hierarchy for meter allocation	N/A
meterAccount	The top level hierarchy for an individual meter account	
meterAccountID	- The id of the meter account, as defined by PJM - Only meter accounts for which you are the submitter or are a party to may be downloaded	xs:nonNegativeInteger
meterAccountName	The name of the meter account	xs:string
meterType	The type of the meter account, either Gen or Tie	xs:string
ehv	A tag indicating EHV account (YES/NO)	xs:string
counterParty	- The name of the counter party of the meter account - For account of type EHV tie, counter party is "EHV" - For account of type external tie, internal tie, external EHV tie, and Generator, counter party is the opposite participant of the reported or allocated to. ex: If you are the reporting participant, the allocated to participant will be downloaded	xs:string



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	- If the participant is neither the reporter nor allocated to party, the allocated participant is the counter party. If more than one participant is the allocated to party, counter party is joint-owned (J-O).	
hourlyAllocatedValues	- Grouping of all the allocated values for an individual meter account - Allocated values that are downloaded before the accounting deadline are subject to change	N/A
hourlyAllocatedValues - intervalValue	Defines the time interval and megawatt value	pm:intervalValue
actualNmi	A tag whose presence represents Actual Net Metered Interchange	N/A
actualNmi – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
tga	A tag whose presence represents Total Generation Adjustment	N/A
tga – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
adjustedNmi	A tag whose presence represents Adjusted Net Metered Interchange	N/A
adjustedNmi – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
shareLosses	A tag whose presence represents EDC's MW share of related EHV Area	N/A
shareLosses - area	The top level hierarchy for ehv areas	N/A
shareLosses – ehvAreaName	The ehv area name	xs:string
shareLosses - intervalValues	Grouping of all interval values	N/A
shareLosses – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
deratedLossAdjustment	A tag whose presence represents Derated Loss Adjustment for an EDC	N/A
deratedLossAdjustment – intervalValue	Defines the time interval and megawatt value	pm:intervalValue



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### Example Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<MeterValueAllocation>
  <meterAccount>
    <meterAccountID>1308</meterAccountID>
    <meterAccountName>PJM Test</meterAccountName>
    <meterType>TIE</meterType>
    <ehv>NO</ehv>
    <counterParty>PJM</counterParty>
    <hourlyAllocatedValues>
      <intervalValue>
        <startDate>2013-08-01T00:00:00-04:00</startDate>
        <endDate>2013-08-01T01:00:00-04:00</endDate>
        <mw>320.995</mw>
      </intervalValue>
      <intervalValue>
        <startDate>2013-08-01T01:00:00-04:00</startDate>
        <endDate>2013-08-01T02:00:00-04:00</endDate>
        <mw>1498.345</mw>
      </intervalValue>
    </hourlyAllocatedValues>
  </meterAccount>
  <actualNmi>
    <intervalValue>
      <startDate>2013-08-01T00:00:00-04:00</startDate>
      <endDate>2013-08-01T01:00:00-04:00</endDate>
      <mw>-1363.399</mw>
    </intervalValue>
    <intervalValue>
      <startDate>2013-08-01T01:00:00-04:00</startDate>
      <endDate>2013-08-01T02:00:00-04:00</endDate>
      <mw>-2421.541</mw>
    </intervalValue>
  </actualNmi>
  <tga>
    <intervalValue>
      <startDate>2013-08-01T00:00:00-04:00</startDate>
      <endDate>2013-08-01T01:00:00-04:00</endDate>
      <mw>5939.457</mw>
    </intervalValue>
    <intervalValue>
      <startDate>2013-08-01T01:00:00-04:00</startDate>
      <endDate>2013-08-01T02:00:00-04:00</endDate>
      <mw>4390.234</mw>
    </intervalValue>
  </tga>
</MeterValueAllocation>
```



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```
</intervalValue>
</tga>
<adjustedNmi>
  <intervalValue>
    <startDate>2013-08-01T00:00:00-04:00</startDate>
    <endDate>2013-08-01T01:00:00-04:00</endDate>
    <mw>2346.345</mw>
  </intervalValue>
  <intervalValue>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <mw>1233.345</mw>
  </intervalValue>
</adjustedNmi>
<shareLosses>
  <area>
    <ehvAreaName>PJM-EAST</ehvAreaName>
    <intervalValues>
      <intervalValue>
        <startDate>2013-08-01T00:00:00-04:00</startDate>
        <endDate>2013-08-01T01:00:00-04:00</endDate>
        <mw>29.001</mw>
      </intervalValue>
      <intervalValue>
        <startDate>2013-08-01T01:00:00-04:00</startDate>
        <endDate>2013-08-01T02:00:00-04:00</endDate>
        <mw>32.564</mw>
      </intervalValue>
    </ intervalValues >
  </area>
</shareLosses>
<deratedLossAdjustment>
  <intervalValue>
    <startDate>2013-08-01T00:00:00-04:00</startDate>
    <endDate>2013-08-01T01:00:00-04:00</endDate>
    <mw>67.066</mw>
  </intervalValue>
  <intervalValue>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <mw>59.045</mw>
  </intervalValue>
</deratedLossAdjustment>
</MeterValueAllocation>
```



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### Retrieve Monthly Meter Correction Submissions

**Description:** This action will allow you to retrieve monthly meter correction related values for the accounts on which you a submitter, reporter, or have been allocated to.

### Output Data Values:

Data Element	Description	Type
MonthlyCorrection	The top level hierarchy for Monthly Meter Corrections	N/A
meterAccount	The top level hierarchy for an individual meter account (multiple accounts may be present in the same file)	N/A
meterAccountID	-The id of the meter account, as defined by PJM - Only meter accounts for which you are the submitter, or party to may be downloaded	xs:nonNegativeInteger
meterAccountName	The name of the meter account	xs:string
meterType	The type of the meter account, either Gen or Tie	xs:string
ehv	A tag that represents an EHV account	xs:string
counterParty	Name of the counter party on the meter account	xs:string
originalTotal	Summmariiong of account's hourly MW values for the entire month	xs:decimal(3)
revisedTotal	Account's original total mw values plus total correction amount	xs:decimal(3)
correctionTotal	Participant's submitted Monthly MW meter correction amount	xs:decimal(3)
dailyMeterValues	Grouping of all the daily meter values for an individual account	N/A
dailyMeterValues – intervalValue	Defines the time interval and megawatt value	pm:intervalValue

### Example Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<MonthlyCorrection>
  <meterAccount>
    <meterAccountID>1308</meterAccountID>
    <meterAccountName>PJM Test</meterAccountName>
    <meterType>TIE</meterType>
    <ehv>NO</ehv>
    <counterParty>PJM</counterParty>
    <originalTotal>23300.000</originalTotal>
    <revisedTotal>23400.123</revisedTotal>
    <correctionTotal>100.123</correctionTotal>
    <dailyMeterValues>
      <intervalValue>
        <startDate>2013-08-01T00:00:00-04:00</startDate>
        <endDate>2013-08-02T00:00:00-04:00</endDate>
      </intervalValue>
    </dailyMeterValues>
  </meterAccount>
</MonthlyCorrection>
```





## Power Meter File Format Specification

```

        <mw>34.234</mw>
    </intervalValue>
    <intervalValue>
        <startDate>2013-08-02T00:00:00-04:00</startDate>
        <endDate>2013-08-03T00:00:00-04:00</endDate>
        <mw>53.234</mw>
    </intervalValue>
    <intervalValue>
        <startDate>2013-08-03T00:00:00-04:00</startDate>
        <endDate>2013-08-04T00:00:00-04:00</endDate>
        <mw>12.323</mw>
    </intervalValue>
</dailyMeterValues>
</meterAccount>
</MonthlyCorrection>

```

### Retrieve Meter Account Details

**Description:** *Retrieves details on all accounts for which you are a submitter, reporter, or have been allocated to.*

### Output Data Values:

Data Element	Description	Type
MeterAccountDetails	The top level hierarchy for all meter account	N/A
meterAccountDetails	The top level hierarchy for an individual meter account	N/A
meterAccountID	-The id of the meter account, as defined by PJM - Only meter accounts for which you are the submitter, or party to may be downloaded	xs:nonNegativeInteger
meterAccountName	The name of the meter account	xs:string
meterType	The type of the meter account, either Gen or Tie	xs:string
ehv	A tag that represents an EHV account	xs:string
pNode	A tag whose presence represents the meter accounts pnode information (may not exist)	N/A
pNode - id	The id of the pnode	xs:string
pNode – name	The name of the pnode	xs:string
submitter	The party who is responsible for submitting the meter values for the account.	xs:string
effectiveDate	The original effective date of the account.	xs:dateTime
terminateDate	The date of account termination	xs:dateTime
allocatedOwnership	A tag whose presence represents allocated ownership	N/A



## Power Meter File Format Specification

allocatedOwnership - assignedTo	Party receiving the opposite adjustment to Net Metered Interchange for the account	xs:string
allocatedOwnership - controlArea	Control area the account belongs to	xs:string
allocatedOwnership - ownershipFactorValue	The Allocated To party's opposite adjustment amount, expressed as a percentage	xs:decimal
allocatedOwnership - effectiveDate	Effective date of allocated ownership record	xs:dateTime
allocatedOwnership - terminateDate	Terminate date of the allocated ownership record	xs:dateTime
reportedOwnership	A tag whose presence represents reported ownership	N/A
reportedOwnership - assignedTo	Party receiving the adjustment to Net Metered Interchange for the account	xs:string
reportedOwnership - controlArea	Control area the account belongs to	xs:string
reportedOwnership - ownershipFactorValue	The Allocated To party's adjustment amount, expressed as a percentage	xs:decimal
reportedOwnership - effectiveDate	Effective date of reported ownership record	xs:dateTime
reportedOwnership - terminateDate	Terminate date of the reported ownership record	xs:dateTime

### Example Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<MeterAccountDetails>
  <meterAccountDetails>
    <meterAccountID>1308</meterAccountID>
    <meterAccountName>PJM Test</meterAccountName>
    <meterType>TIE</meterType>
    <ehv>NO</ehv>
    <pNode>
      <id>123456</id>
      <name>PJM pNode Name</name>
    </pNode>
    <submitter>PJM3</submitter>
    <effectiveDate>1990-08-01T00:00:00-04:00</effectiveDate>
    <terminateDate>9999-08-01T00:00:00-04:00</terminateDate>
    <allocatedOwnership>
      <assignedTo>PJM Test 1</assignedTo>
      <controlArea>PJM1</controlArea>
      <ownershipFactorValue>0</ownershipFactorValue>
    </allocatedOwnership>
  </meterAccountDetails>
</MeterAccountDetails>
```



## Power Meter File Format Specification

```

    <effectiveDate>2000-08-01T00:00:00-04:00</effectiveDate>
    <terminateDate>9999-08-01T00:00:00-04:00</terminateDate>
  </allocatedOwnership>
  <reportedOwnership>
    <assignedTo>PJM Test 2</assignedTo>
    <controlArea>PJM2</controlArea>
    <ownershipFactorValue>1</ownershipFactorValue>
    <effectiveDate>2000-08-01T00:00:00-04:00</effectiveDate>
    <terminateDate>9999-08-01T00:00:00-04:00</terminateDate>
  </reportedOwnership>
</meterAccountDetails>
</MeterAccountDetails>

```

### Retrieve Daily Load Submission Values

*Description: Specific to EDC accounts only, retrieves daily load submission values.*

### Output Data Values:

Data Element	Description	Type
LoadSubmissionDetails	The top level hierarchy for an individual meter account	N/A
actualNmi	A tag whose presence represents Actual Net Metered Interchange	N/A
actualNmi – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
totalInternalGen	A tag whose presence represents Total Internal Generation	N/A
totalInternalGen – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
shareLosses	A tag whose presence represents EDC's MW share of related EHV Area	N/A
shareLosses - area	The top level hierarchy for ehv areas	N/A
shareLosses – ehvAreaName	The ehv area name	xs:string
shareLosses - intervalValues	Grouping of all interval values	N/A
shareLosses – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
loadWithLosses	A tag whose presence represents Load with Losses	N/A
loadWithLosses – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
deratedLossAdjustment	A tag whose presence represents Derated Loss Adjustment (sum of both EHV and Non-EHV Losses)	N/A
deratedLossAdjustment – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
loadWithoutLosses	A tag whose presence represents Load without Losses	N/A
loadWithoutLosses – intervalValue	Defines the time interval and megawatt value	pm:intervalValue
derationFactor	A tag whose presence represents Deration Factor	N/A



## Power Meter File Format Specification

derationFactor – intervalFactor	Defines the time interval and megawatt value	pm:intervalFactor
EDCSubmittedLoad	A tag whose presence represents the load submitted by the EDC	N/A
EDCSubmittedLoad - zoneID	The id of the zone, as defined by PJM	xs:nonNegativeInteger
EDCSubmittedLoad - companyName	The name of the company	xs:string
EDCSubmittedLoad - intervalValues	Grouping of all interval values	N/A

### Example Output:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<LoadSubmissionDetails>
  <actualNmi>
    <intervalValue>
      <startDate>2013-08-01T00:00:00-04:00</startDate>
      <endDate>2013-08-01T01:00:00-04:00</endDate>
      <mw>-1653.353</mw>
    </intervalValue>
    <intervalValue>
      <startDate>2013-08-01T01:00:00-04:00</startDate>
      <endDate>2013-08-01T02:00:00-04:00</endDate>
      <mw>-1893.009</mw>
    </intervalValue>
  </actualNmi>
  <totalInternalGen>
    <intervalValue>
      <startDate>2013-08-01T00:00:00-04:00</startDate>
      <endDate>2013-08-01T01:00:00-04:00</endDate>
      <mw>6078.345</mw>
    </intervalValue>
    <intervalValue>
      <startDate>2013-08-01T01:00:00-04:00</startDate>
      <endDate>2013-08-01T02:00:00-04:00</endDate>
      <mw>7890.234</mw>
    </intervalValue>
  </totalInternalGen>
  <shareLosses>
    <area>
      <ehvAreaName>PJM-EAST</ehvAreaName>
      <intervalValues>
        <intervalValue>
          <startDate>2013-08-01T00:00:00-04:00</startDate>
          <endDate>2013-08-01T01:00:00-04:00</endDate>
```



## Power Meter File Format Specification

---

```
        <mw>12.645</mw>
      </intervalValue>
    </intervalValue>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <mw>28.324</mw>
  </intervalValue>
</ intervalValues >
</area>
</shareLosses>
<loadWithLosses>
  <intervalValue>
    <startDate>2013-08-01T00:00:00-04:00</startDate>
    <endDate>2013-08-01T01:00:00-04:00</endDate>
    <mw>6098.234</mw>
  </intervalValue>
  <intervalValue>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <mw>7902.234</mw>
  </intervalValue>
</loadWithLosses>
<deratedLossAdjustment>
  <intervalValue>
    <startDate>2013-08-01T00:00:00-04:00</startDate>
    <endDate>2013-08-01T01:00:00-04:00</endDate>
    <mw>65.345</mw>
  </intervalValue>
  <intervalValue>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <mw>56.323</mw>
  </intervalValue>
</deratedLossAdjustment>
<loadWithoutLosses>
  <intervalValue>
    <startDate>2013-08-01T00:00:00-04:00</startDate>
    <endDate>2013-08-01T01:00:00-04:00</endDate>
    <mw>4567.345</mw>
  </intervalValue>
  <intervalValue>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <mw>7635.234</mw>
```



## Power Meter File Format Specification

---

```
</intervalValue>
</loadWithoutLosses>
<derationFactor>
  <intervalFactor>
    <startDate>2013-08-01T00:00:00-04:00</startDate>
    <endDate>2013-08-01T01:00:00-04:00</endDate>
    <factor>0.000234765</factor>
  </intervalFactor>
  <intervalFactor>
    <startDate>2013-08-01T01:00:00-04:00</startDate>
    <endDate>2013-08-01T02:00:00-04:00</endDate>
    <factor>0.013575346</factor>
  </intervalFactor>
</derationFactor>
<EDCSubmittedLoad>
  <zoneID>1</zoneID>
  <companyName>PJM Test</companyName>
  <intervalValues>
    <intervalValue>
      <startDate>2013-08-01T00:00:00-04:00</startDate>
      <endDate>2013-08-01T01:00:00-04:00</endDate>
      <mw>4986.093</mw>
    </intervalValue>
    <intervalValue>
      <startDate>2013-08-01T01:00:00-04:00</startDate>
      <endDate>2013-08-01T02:00:00-04:00</endDate>
      <mw>4965.345</mw>
    </intervalValue>
  </intervalValues>
</EDCSubmittedLoad>
</LoadSubmissionDetails>
```

### Validation/Business Rules:

#### Sign conventions for meter values:

- For accounts of type Tie, if the energy is “going out” from the submitter’s perspective, a negative meter value should be submitted. Tie values “going in” to the submitter should be positive.
- For accounts of type Gen, if the unit is generating, a positive meter value should be submitted. If the unit is consuming energy (i.e., station service) the meter value should be negative.

#### Additional Validation/Business rules:

- Megawatt values can be specified to three decimal places. Specifying to more than three decimals will result in an error.
- For updates, enter the new total MW value, not the incremental change.



## Power Meter File Format Specification

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- When uploading values to Power Meter using the Eastern Time Zone, and transitioning to Standard Time from Daylight Savings Time (25-hour day), you can denote the hours of the day in either of the following ways:
  1. GMT 2013-11-03T04:00:00.00Z, 2013-11-03T05:00:00.00Z, 2013-11-03T06:00:00.00Z ... 2013-11-04T04:00:00.00Z
  2. EPT Offset (startDate) 2013-11-03T00:00:00-04:00, 2013-11-03T01:00:00-04:00, 2013-11-03T02:00:00-05:00 ... 2013-11-03T23:00:00-05:00
  3. EPT Offset (endDate) 2013-11-03T01:00:00-04:00, 2013-11-03T02:00:00-04:00, 2013-11-03T03:00:00-05:00 ... 2013-11-04T00:00:00-05:00
- When transitioning to Daylight Savings Time (23-hour day), the hours of the day can be submitted as:
  1. GMT 2013-11-03T05:00:00.00Z, 2013-11-03T06:00:00.00Z, 2013-11-03T07:00:00.00Z ... 2013-11-03T03:00:00.00Z
  2. EPT Offset (startDate) 2013-11-03T00:00:00-05:00, 2013-11-03T01:00:00-05:00, 2013-11-03T02:00:00-04:00 ... 2013-11-03T23:00:00-04:00
  3. EPT Offset (endDate) 2013-11-03T01:00:00-05:00, 2013-11-03T02:00:00-05:00, 2013-11-03T03:00:00-04:00 ... 2013-11-04T00:00:00-04:00
- When downloading hourly information from Power Meter, all dates are shown in GMT time.

### XML Validation

All files are subjected to three validation routines:

1. XML Format: The first check validates that the syntax of the file is correct. It checks that the XML tags are valid and that the data elements are of the correct type.
2. Data Format: Second, the format of data within the tags is evaluated. These include date and month formats as well as number formats. If any part of the file fails the data format check, the file is aborted and the user receives a message describing the nature of the error.
3. Power Meter Business Validation: The final check applies all business rules. This includes ownership of the meter account, submission deadlines. Parts of the file failing business validation will be noted in a response file, with a descriptive error message. Those parts that pass this level of validation will be successfully processed and noted in the response file.

### Possible Errors

#### XML Format Errors:

- If any part of the file fails the syntax check, the file is aborted and the user receives an 'XML upload expected so checking for well formed XML... [Fatal Error] : 17:4:' message detailing the line number where the error occurred.

#### Example Data Format Errors:

- **Missing Meter AccountId Tag** – "SAXParseException: cvc-complex-type.2.4.a: Invalid content was found starting with element 'meterValues'. One of '{meterAccountID}' is expected."
- **Missing zoneId Tag** – "SAXParseException: cvc-complex-type.2.4.a: Invalid content was found starting with element 'loadValues'. One of '{zoneID}' is expected."
- **Missing startDate Tag** – "SAXParseException: cvc-complex-type.2.4.a: Invalid content was found starting with element 'endDate'. One of '{startDate}' is expected."



## Power Meter File Format Specification

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- **Missing mw Tag** – “SAXParseException: cvc-complex-type.2.4.b: The content of element 'intervalValue ' is not complete. One of '{mw}' is expected.”
- **Invalid or null value in startDate or endDate Tag** - "SAXParseException: cvc-datatype-valid.1.2.1: '2013-09-10T00:00-04:00' is not a valid value for 'dateTime'.”
- **Invalid or null value in date Tag (Monthly Correction)** – “SAXParseException: cvc-datatype-valid.1.2.1: '11-2013' is not a valid value for 'gYearMonth'.”
- **Invalid or null value in Meter Account ID field** - “SAXParseException: cvc-datatype-valid.1.2.1: " is not a valid value for 'integer'.”
- **Invalid or null value in MW field** - “SAXParseException: cvc-datatype-valid.1.2.1: 'a' is not a valid value for 'decimal'.”
- **Invalid number of decimals in MW field** – “SAXParseException: cvc-fractionDigits-valid: Value '1000.9999' has 4 fraction digits, but the number of fraction digits has been limited to 3.”

### **Business Validation Errors:**

- **Missing Start and End Date Time** – “The start time and end time cannot be null.”
- **Invalid Start/End DateTime** - "The start time: {startDate} cannot be after the end time: {endDate}.”
- **Other exception (DB, Network, etc.)** - "Failed to save the value: {MW} for Meter Account Id: {meterId} at {startDate}.”

### **Hourly Meter Submission Business Rules:**

1. Types of Business Validations:
  - Valid Meter Id
  - MW value between  $\pm 10,000$
  - Organization is the submitter for the Meter
  - Upload is not after deadline or future date or time





## Power Meter File Format Specification

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2. Message Formats '{XXX}' indicates values enter by user:
  - **Meter not found** - "Meter Account Id: {meterId} is not effective, or does not exist, at hour: {startDate}."
  - **MW value >= 10,000** - "MW Values must be less than 10,000. You submitted: {MW} for hour: {startDate}."
  - **MW value <= -10,000** - "MW Values must be greater than -10,000. You submitted: {MW} for hour: {startDate}."
  - **Unable to submit for Meter** - "{organizationName} is not the submitter for Meter Account Id: {meterAccountId} for hour: {startDate}."
  - **Submit outside of deadline** - "Cannot submit a value for hour: {startDate}, this is outside of the submission interval."
  - **Successful import** - "Saved the value: {MW} for Meter Account Id: {meterId} and hour: {startDate}."

### **Hourly Load Submission Business Rules:**

1. Types of Business Validations:
  - Valid Zone Id
  - MW value between 0 and +33,000
  - Organization is the submitter for the Zone
  - Upload is not after deadline or for future date or time
2. Message Formats:
  - **Zone not found** - "Zone Id: {zoneId} is not effective, does not exist, or is not associated with your Organization."
  - **MW value >= 33,000** - "MW Values must be less than 33,000. You submitted: {MW} for hour: {startDate}."
  - **MW value < 0** - "MW Values must be greater than or equal 0. You submitted: {MW} for hour: {startDate}."
  - **Submit outside of deadline** - "Cannot submit a value for hour: {startDate}, this is outside of the submission interval."
  - **Successful import** - "Saved the value: {MW} for Zone Id: {zoneId} for hour: {startDate}."



## Power Meter File Format Specification

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### **Monthly Correction Business Rules:**

#### 1. Types of Business Validations:

- Valid Meter Id
- MW Correction value between  $\pm 10,000,000$
- Warning message if MW Correction value greater than  $\pm 50,000$
- Organization is the submitter for the Meter
- Upload is not after deadline or for future date or time

#### 2. Example messages:

- **Meter not found** - "Meter Account Id: {meterId} is not effective, or does not exist, for month: {month}."
- **MW value  $\geq 10,000,000$**  - "MW Values must be less than 10,000,000. You submitted: {MW} for month: {month}."
- **MW value  $\leq -10,000,000$**  - "MW Values must be greater than -10,000,000. You submitted: {MW} for month: {month}."
- **MW value  $\geq 50,000$**  - "Warning, the value entered was greater than 50,000."
- **MW value  $\leq -50,000$**  - "Warning, the value entered was less than -50,000."
- **Unable to submit for Meter** - "{organizationName} is not the submitter for Meter Account Id: {meterAccountId} for month: {month}."
- **Submit outside of deadline** - "Cannot submit a value for month: {month}, this is outside of the submission interval."
- **Successful import** - "Saved - Meter Account Id: {meterId}, Meter Correction value: {meterCorrection} submitted. Original total: {originalTotal} + {meterCorrection} = Revised {revisedTotal}"