

## **Guide to Meter Data Manager Requirements for Distributed Generators**

### **Purpose:**

This document defines the requirements of Distributed Generators in meeting obligations to the Load Settlement Agent (LSA). It does not deal with physical meter issues and specifications. It addresses only the management of the meter data from those meters.

### **Background:**

The Settlement System Code (SSC) requires that the LSA perform the load settlement function and that Meter Data Managers (MDMs) provide the necessary input metering data to the LSA. These inputs include the net load and net generation of Distributed Generators. All references to the SSC in the text that follow refer to System Settlement Code Version 9.6, dated May 19, 2004.

ATCO Electric also utilizes the Distributed Generator's metering data in wire services billing and credit calculations. Distributed Generators will receive credits and charges as per the approved Distribution Tariff.

Distributed Generators receive payments from the ISO based on their net generation in each hour and the hourly pool price. These payments are based on data sent to the ISO by the MDM. It is not the intent of this document to alter the relationship between the MDM and the ISO in any way.

### **Distributed Generator Responsibility:**

The SSC Section 4.6.1 b requires the Distributed Generator to deliver all data requirements defined by the Wire Service Provider (WSP) where the WSP does not own the metering systems. Where a bi-directional interval meter exists on the distribution system, the SSC Appendix B 2.1 c2. requires the distribution system owner to appoint the MDM. The Distributed Generator (Generating Customer) is automatically appointed as the MDM by ATCO Electric's Terms and Conditions for Distribution Service Connections (Article 9.5.4) unless Distributed Generator explicitly requests to purchase this service from ATCO Electric. In instances where the Distributed Generator is appointed to be the MDM, the Distributed Generator is responsible for providing data to the LSA in conformance with the SSC. MDM is defined in the SSC Section G1 Definitions. SSC Appendix B, 3.1

requires the MDM to provide both generation and load data. The SSC outlines further MDM responsibilities that are applicable in this context. They include but are not limited to estimation for missing data (Section 2.5 a), performing “net” calculations (Section 4.6.1 c1), file formatting (Section B.6.1.1, Section B.6.2.4, Appendix B 3.5), file naming (Section B.4.2), sending data (Section 7.2) and sending data at the appropriate time (Appendix B 3.4 and 3.5). Further requirements are contained in Appendix B 3.

If a Distributed Generator does not fulfill these responsibilities their facilities may be disconnected from the distribution system according to Article 14.3 (a) of ATCO Electric’s Terms and Conditions for Distribution Service Connections.

### **Registration as a MDM:**

In order to satisfy file naming conventions the company providing metering data to the LSA needs to be registered as a MDM. Should the Distributed Generator elect to have a currently registered MDM submit the data to the LSA no further action is required in this step. A list of registered MDM companies can be found in the SSC, Section B.4.6.8.

To register as a MDM, contact Raymond Lee at the ISO at (403) 705-3186 (raymond.lee@aeso.ca) to be assigned a MDM ID.

Step 1 – Assign or Register as an MDM.
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### **Unit Information:**

The ISO is responsible for assigning an Asset ID (Unit Identifier) to each Distributed Generator, as well as a Company Code for each Participant company (unless a Company Code has already been previously assigned). This identifier uniquely identifies each generating unit and is used by the ISO to determine the company to be paid.

Distributed Generators must contact Ron Smith at the ISO at (403) 705-3192 (ron.smith@aeso.ca) or Susan Heming at (403) 705-5315 (susan.heming@aeso.ca) to have an Asset ID and a Company Code assigned. These identifiers are required in the information provided to the LSA.

Step 2 – Contact the ISO to become a Market Participant and obtain an Asset ID (Unit Identifier) and a Company Code.
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**LSA Required Information:**

LSA has set up a database to receive metering data from the Distributed Generators. Information to be included in the database is detailed in Schedule 4. ATCO Electric will work with the Distributed Generators to complete this schedule.

Step 3 - Work with ATCO Electric to complete Schedule 4 with the LSA required information.

**Data Requirements:**

The MDM must net the energy consumed at the site with the energy generated in each quarter hour and provide the result to the LSA.

Section 4.6.1 c1 of the Settlement System Code (SSC) describes how the MDM is to calculate "net generation" and "net load" for each quarter hour. Section 4.7.1 c2 to c4 describes how hourly generation is calculated from the quarter hour values and used by the LSA and the ISO. An example of how the MDM is to perform the net calculations from the metered data and format the results is provided in Schedule 3. The format in which "net generation" is to be provided to the LSA is provided in the SSC, Section B.6.2.4 (See Schedule 1). The format in which "net load" is to be provided to the LSA is provided in the SSC, Section B.6.1.1 (See Schedule 2).

Section 7.3 a1 of the SSC states that all interval data must be submitted on a daily basis and must be submitted in accordance with Appendix B 3.4 and 3.5. Section 2.5 a of the SSC allows for estimates to be provided in the case that actual data is unavailable.

Should data not be received for any quarter-hour interval the data for that interval will be flagged as missing and receive a default value of zero.

**Data Exchange:**

Data is exchanged in 2 file formats. The DSM (Daily System Measurement Data) format is used for the exchange of generation data and the DIM (Daily Interval Meter Readings) format is used for the exchange of site load data. The general

naming convention for data files being exchanged is found in the SSC, Section B.4.2. Specifically for this application the file naming convention is:

DSM\_From\_1010\_YYYYMMDDHHMI SS.CSV

where,

- From            ID of the sender, the MDM ID in this case
- YYYYMMDD    Date the file was created
- HHMI SS       Time the file was created on a 24 hour clock

Data files submitted by the MDM to the LSA must be submitted via DropChute™. DropChute™ is a data exchange program used by the LSA to ensure that all data is exchanged securely over the Internet and data is authenticated using a Verisign Digital Certificate. The MDM must then setup, and test DropChute™ prior to submitting live data to the LSA.

ATCO Electric will provide assistance to test communications from the MDM to the LSA using DropChute. Installation and setup of DropChute is the responsibility of the MDM.

Step 4 - Purchase appropriate software, setup and contact Canny Tong at ATCO Electric (780) 420-7816 or Sylvia Maciborski (780) 420-7649 to set up a test for the DropChute interface to LSA systems.

**Schedules:**

1. Daily System Measurement Data (DSM) File Format Specification
2. Daily Interval Meter Readings (DIM) File Format Specification
3. Sample Files and Net Calculation Example
4. LSA Required Information

Schedule 1. DSM File Format Specification (SSC Section B.6.2.4)

DSM Files are simple comma separated variable files. All character codes are to be in upper case.

Transaction (Abbreviation)	Element (in sequence)	Datatype/Size	Description
	Record Type	Char (3)	Metering data transaction type – GEN
	Transaction Date	Date format YYYYMMDD	Meter reading date

	Hour	Number (2,0)	Meter reading hour – hour ending 01 to 25 for the day of the October time change, 01 to 23 for the day of the April time change and 01 to 24 for all other days.
	Interval	Number (2,0)	A number that identifies the portion of an hour. There are to be four intervals within an hour from 1 to 4 – 1 being the first fifteen minutes and 4 being the last.
	Company	Char (4)	Company Code assigned by the ISO.
	Measurement Point ID	Char (10)	Asset ID (Unit ID) assigned by the ISO.
	Net MWh	Number (9,4)	Net generation or load in MWh. Positive values only
	Net MWh Source	Char (1)	Net generation quality – M (metered), E (estimated)
	Net MVARh	Signed Number (9,4)	Positive or negative values allowed. Positive – Lagging PF. Negative – Leading PF
	Net MVARh Source	Char (1)	Net MVARh quality – M (metered), E (estimated)

Schedule 2. DIM File Format Specification (SSC Section B.6.1.1)

Transaction (Abbreviation)	Element (in sequence)	Datatype/Size	Description
Daily Interval Meter Readings (DIM)	Transaction Abbreviation	'DIM'	Abbreviation for the transaction name
	Transaction Date time	Date time format	Latter of the time the transaction was created or last modified
	MDM ID	MDM ID format	Sender (MDM responsible to read the meter)
	Retailer ID	Retailer ID format	Recipient (Retailer/RRP currently associated to the Site)
	Business Function ID	Varchar (2)	Optional at the discretion of the WSP
	Settlement ID	Settlement ID format	Recipient (LSA responsible to settle the load within the Zone)
	Site ID	Site ID format	See definition in Universal Standard section of this document
	Socket ID	Socket ID format	See definition in Universal Standard section of this document
	Load Research Flag	Character(1)	A Yes(Y) or No(N) flag noting a customer in the load research sample.
	Profiling class	Varchar(20)	The customer's load profiling class.
	kW	Number(10,4)	Kilowatt demand for the interval period
	kWh	Number(10,4)	Kilowatt hour consumption for the interval period
	kVA	Number(10,4)	Kilovolt-ampere (Demand) for the interval period
	kVAh	Number(10,4)	Kilovolt-ampere hour (Consumption) for the interval period
	kVAR	Number(10,4)	Kilovolt-ampere Reactive (Demand) for the interval period

	kVARh	Number(10,4)	Kilovolt-ampere Reactive hour (Consumption) for the interval period
	Datetime	Datetime format	END Date and Time for the reading
	Interval Period	Number(4)	Number of minutes between readings
	Hour Ending	Char(3)	See definition. Third character is to be used for asterisk as described in the definition, but otherwise blank.
	Demand (kW) status	Char(2)	Describes the type of meter reading. ME – Actual from meter ES - Estimated
	Consumption (kWh) Status	Char(2)	Describes the type of meter reading. ME – Actual from meter ES - Estimated
	Demand (kVA) Status	Char(2)	Describes the type of meter reading. ME – Actual from meter ES - Estimated
	Demand (kVAh) Status	Char(2)	Describes the type of meter reading. ME – Actual from meter ES - Estimated
	Demand (kVAR) Status	Char(2)	Describes the type of meter reading. ME – Actual from meter ES - Estimated
	Demand (kVARh) Status	Char(2)	Describes the type of meter reading. ME – Actual from meter ES - Estimated
	Transaction Status Code	Char(4)	Used by the recipient to notify the sender of problems with the transaction. . When this field is used it must be dealt with at a minimum, in a manual fashion. The use of this electronic transaction in an automated fashion (in case of problems) is subject to the T's and C's.  When using transaction status codes, the codes in Section B.9 must be used.

Schedule 3. Sample Files and Net Calculation Example

Below are sample files as well as the metered data on which the sample files are based. If this document is being viewed online the spreadsheet containing metered data and the associated net calculations can be viewed. The spreadsheet contains 2 tabs. One contains the meter data and the other the net calculations. Double click on the spreadsheet to open it up. Double click on a “Net MWh” or “Net MVARh” cell under the net calculation tab to display the formula used to perform the net calculation for the cell.

**Meter Channels**

Date	Hour	Interval	+kWh	+kVARh	-kWh	-kVARh
20010501	1	1	12	2	0	1
20010501	1	2	14	3	0	0
20010501	1	3	13	2	5	3
20010501	1	4	0	0	9	2
20010501	2	1	0	1	11	0
20010501	2	2	6	0	6	1
20010501	2	3	12	2	0	0
20010501	2	4	13	0	0	1

Note: The +kWh channel measures generation and the -kWh channel measures load

**Sample DSM File**

```

GEN,20010501,01,01,COCD,ID01,0.0120,M,0.0010,M
GEN,20010501,01,02,COCD,ID01,0.0140,M,0.0030,M
GEN,20010501,01,03,COCD,ID01,0.0080,M,-0.0010,M
GEN,20010501,01,04,COCD,ID01,0.0000,M,0.0000,M
GEN,20010501,02,01,COCD,ID01,0.0000,M,0.0000,M
GEN,20010501,02,02,COCD,ID01,0.0000,M,-0.0010,M
GEN,20010501,02,03,COCD,ID01,0.0120,M,0.0020,M
GEN,20010501,02,04,COCD,ID01,0.0130,M,-0.0010,M
    
```

**Sample DIM File**

```

DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000000.0000,
000000.0000,000000.0000,000000.0000,000000.0000,000000.0000,20010501001500
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000000.0000,
000000.0000,000000.0000,000000.0000,000000.0000,000000.0000,20010501003000
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000000.0000,
000000.0000,000000.0000,000000.0000,000000.0000,000000.0000,20010501004500
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000036.0000,
000009.0000,000036.8782,000009.2195,000008.0000,000002.0000,20010501010000
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000044.0000,
000011.0000,000044.1814,000011.0454,-00004.0000,-00001.0000,20010501011500
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000000.0000,
000000.0000,000000.0000,000000.0000,000000.0000,000000.0000,20010501013000
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000000.0000,
000000.0000,000000.0000,000000.0000,000000.0000,000000.0000,20010501014500
,15,01,ME,ME,ME,ME,ME,ME,
DIM,20010615192357,2170,870024940,,1010,0010417323112,,N,INTV,000000.0000,
000000.0000,000000.0000,000000.0000,000000.0000,000000.0000,20010501020000
,15,01,ME,ME,ME,ME,ME,ME,
    
```

Schedule 4. LSA Required Information

Distributed Generators are required to supply the following information to the Load Settlement Agent. Complete the schedule and send to your ATCO Electric Industrial Sales Representative.

Site Name	
Owner Name (Name of company owning the generator)	
Company Code (Assigned by the ISO)	
Location of generating site (Legal Land Description)	
Number of Units (Physical units at the site)	
Total Generation Capacity (Total capacity in kW of all units)	
Service Voltage (Voltage at which the service is metered)	
Asset Identifier (Assigned by the ISO)	
Facility Energization Date * (mm/dd/yyyy)	
MDM (Name of MDM for this site)	
MDM ID (MDM ID from the SSC Section B.4.6.8)	
ATCO Electric District ** (Grande Prairie, Ft McMurray, etc)	
ATCO Electric Substation Number ** (Substation the generator is connected to)	
ATCO Electric Distribution Line Number ** (Distribution Line Number the generator is connected to)	

\* - MDM is responsible for providing data to the LSA as of this date. It is preferable that this be a definitive date but an anticipated date is acceptable if a definitive one is not available.

\*\* - ATCO Electric will work with the Distributed Generator to supply this information.