

1 Introduction

EDMI welcomes the Australian Energy Market Commission's (AEMC) Draft Rule Determination: National Electricity Amendment (Five Minute Settlement) Rule 2017 – 5 September 2017. EDM I continues to appreciate the work and supports the policy direction of the AEMC to deliver robust market-based solutions to industry challenges.

In our response, EDM I has focused on providing feedback and advice relating to metering technology including the meter itself, typical communication systems used for Type 4 meter and EDM I data collection and meter configuration software. **We cannot comment about downstream software or operational costs related to our customers who are the accredited Meter Data Providers.**

The EDM I meters that have been reviewed for the purpose of this assessment are the EDM I Genius Mk6E and the EDM I Series 2 Atlas Meters including Mk7C, Mk7A, Mk10A, Mk10D and Mk10E (EDMI meters).

EDMI believes that market systems which support new services and technologies will build a more vigorous market, deliver greater choice to the consumer, encourage innovation, power next generation services and provide a strong framework for the implementation of new technologies well into the future.

2 Capability of meters

2.1 Assessment

All EDM I meters sold since 2010 are capable of being configured to deliver 5-minute (or more frequent) revenue-grade data with enough storage to meet the requirements of both Type 4 and Type 4A market obligations. While recording and storing data at 5 minute intervals does reduce the total number of days of data that can be stored by the meter, EDM I meters are still able to store more than 200 days of 5-minute data for even complex setups (see Table 1.).

Based on EDM I's understanding of the current National Measurements Institute (NMI) and the assessment process to validate that a meter design as being fit for purpose, and able to operate in the environment in which it is expected to be used, EDM I believes moving to a 5-minute settlement will have no impact on the pattern approval for EDM I meters.

Table 1 shows a representative sample of different configurations used in the National Electricity Market (NEM). The table provides a comparison between the maximum number of days of data that can be stored for the specific channel configurations when using the existing 30-minute interval data storage configuration, as used in the market today, and the same channel configurations updated to a 5-minute interval setting.

The data points in Table 1 are estimates only and cannot be used to calculate values for other setups.

Meter Type	Mandatory Revenue Channels	Value-add channels	30–Minute Settlement (Max Recording Days)		5–Minute Settlement (Max Recording Days)	
			Revenue	Value add	Revenue	Value add
Dual Element (Example A)	Imp Main kWh Exp Main kWh Imp Load kWh Exp Load kWh Imp Main kVar Exp Main kVar Imp Load kVar Exp Load kVar	6 value added channels	2204	2801	252	248
Dual Element (Example B)	Imp kWh Exp kWh	14 value added channels	7609	1334	978	190
Single Element (Example A)	Imp kWh Exp kWh Imp kVar Exp kVar	4 value added channels	4246	4246	557	557
Single Element (Example B)	Imp kWh Exp kWh Imp kVar Exp kVar + 2 other channels	9 value added channels	2976	2055	423	308
3-phase (WC) (Example A)	Imp kWh Exp kWh Imp kVar Exp kVar	3 value added channels	4133	5209	452	477
3-phase (WC) (Example B)	Imp kWh Exp kWh	19 value added channels	7731	1044	638	135
3-phase (Min Services Spec) (Example A)	Imp kWh Exp kWh Imp kVar Exp kVar	9 value added channels	4005	1982	350	251
3-phase (CT) (Example A)	Imp kWh Exp kWh Imp kVar Exp kVar	9 value added channels	4652	2298	458	312
3-phase high spec (CT)	Imp kWh Exp kWh Imp kVar Exp kVar	19 value added channels	4167	1007	477	156
3-phase high spec	Imp kWh Exp kWh Imp kVar Exp kVar	9 value added channels	4651	2297	458	311

Table 1

All EDM I meter types offer, at minimum, two separate surveys that can be configured to contain a number of data channels. The first survey includes mandatory revenue data that must be retained for 35 days in the case of Type 4 meters and 200 days in the case of Type 4A meters. We have listed the channels that are stored in the survey used for mandatory revenue data. The second survey is used for value added data (for example, Power Quality, etc.) which does not attract regulatory storage requirements.

It is possible to manipulate the surveys separately, perhaps storing revenue data in one and additional data in the other. In addition, the data in each survey is saved separately, so that **it is possible to complete fill the data allocation for one survey, without affecting the data storage available for the other.**

2.2 Impact

We can conclude from the data:

- EDM I meters store well in excess of the 200 days required for Type 4A metering for revenue data.
- EDM I meters also store in excess of 200 days of data for value-added channels.
- Meter setups that do not store more than 200 days of data for value added channels are used in environments where communications are standard.

All EDM I meters installed since 2010 can deliver five-minute data. **There is no meter cost impact.** *

3 Capability of Communications

3.1 Assessment

EDM I solutions are cellular or other IP-based solutions across 3G, 4G Cat 1 and Cat M.

Based on assumptions of

- 2 events per day across a year
- Time synchronisation only updates ~5% of the time (2 per month – 24 per year)
- 6 channels of data

the comparative data requirements are as follows:

Measurement and Recording frequency	Data requirements
30 minutes	113,454 bytes per month
5 minutes	196,038 bytes per month

Table 2.

3.2 Impact

While there is an increase in the amount of data to be transferred required, the total data of volumes for each transfer do not increase linearly with the increased measurement and recording frequency. Each transfer of data includes several other components than the meter data, including handshake, security and other overhead. This is why the table above shows only a 70% increase and not a 500% increase.

In each transfer of data, the overhead components are often much larger than the meter data components. This means that, so long as read frequency does not change, the actual increase in data volume transferred is not great.

Based on this increased data requirement, the existing communications solutions can more than adequately handle the extra data load. Therefore, no changes to the deployed communications technology will be required for a change to 5-minute data settlement.

EDMI's MDP partners are best placed to comment on the operational cost increase associated with telecommunications data charges for the increase in data as described in Section 3.1.

4 Capability of Reading Software

4.1 Assessment

EDMI's meter reading software make use of cloud-based computing technology and automation to achieve a highly scalable reading solution. Because our head-end maps directly to meter channels, changes to meter configuration to allow for 5-minute data is simple and straightforward and can be completed without upgrades in the back-office or significant reconfiguration of the platform.

4.2 Impact

While increasing reading and storage requirements at the meter to allow for 5-minute data does increase the size of each data transfer and the amount of storage required for downstream systems, the impact to meter reading processing costs are minimal.

It is important to note that this is the case where the read **frequency** does not change. Increasing the read frequency will increase cloud computing costs for meter reading.

Where EDMl meters, communications and reading systems are utilised, there is **no significant additional reading system cost at the same read frequency**.*

5 Reconfiguration Process (for five-minute data)

5.1 Assessment

Moving to five-minute settlement would require an update of meter configuration for existing EDM I meters in the field. Where the meters are remotely read, this can be completed over the air.

A typical update process follows the following steps:

1. Read the meter data.
2. Save the meter data.
3. Clear the meter data and re-zero the meter.
4. Update configuration.
5. The meter is ready to go.

In addition, EDM I have also considered the case where Type 4 meters are converted to Type 4A meters and vis-versa. In these cases, the examples shown in Table 1 indicate that it would be possible to undertake such a change without making a change to the meter setup: the data storage capacity remaining over 200 days, for all meter types likely to be used as type 4 meters.

5.2 Impact

Where EDM I meters, communications and reading systems are used, no meter firmware updates are required. The operational process costs for the conversion to 5-minute configurations is best estimated by our partner MDPs.

*EDMI reiterates that this feedback relates to the financial implications for the metering technology including communications and head ends, **we cannot comment about downstream software or operational costs for MDPs.**

6 Conclusion

In our response, EDM I has focused on providing feedback and advice relating to metering and metering systems (including meter data). We can provide feedback around the financial implications for the metering technology including communications and head ends, **we cannot comment about downstream software or operational costs for MDPs.**

With this in mind, we have assessed EDM I meters, communications and meter reading systems, and our entire end-to-end solution and are able to advise that:

1. All EDM I meters installed since 2010 provide 100% support for five-minute data reading, storage and transfer.
2. Configuration a meter to read and store five-minute data does not require a firmware upgrade and is entirely straightforward.
3. Reading, transmitting and storing five-minute settlement data has no significant impact on costs so long as read frequency is not also increased.