



DECISION PAPER

PROPOSED MODIFICATIONS TO THE MARKET SUPPORT SERVICES CODE AND THE METERING CODE

7 APRIL 2015

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1 Introduction

- 1.1 The Market Support Services (“MSS”) Code sets out the minimum standards of performance for the provision of market support services by the Market Support Services Licensee (“MSSL”). The MSS Code also sets out the rights and obligations of a Retail Electricity Licensee, a Generation Licensee, the Transmission Licensee and a contestable consumer with respect to market support services.
- 1.2 The Metering Code sets out the requirements relating to metering-related issues, such as meter specifications and meter data management that the Market Support Services Licensee, and the relevant Electricity Licensees who own meters, must comply with to support settlement under the Market Rules.

2 Enhancing the regulatory framework to facilitate the deployment of Intermittent Generation Sources (“IGS”)

- 2.1 On 1 July 2014, the Energy Market Authority (“EMA”) issued a Final Determination Paper on the ‘Enhancements to the Regulatory Framework for Intermittent Generation Sources in the National Electricity Market of Singapore’ (“Final Determination Paper”). The paper set out several regulatory enhancements to facilitate the deployment of IGS (such as solar PV systems) in Singapore.
- 2.2 Specifically, the paper clarified the licensing requirements for IGS, simplified the commissioning procedures for solar PV installations, streamlined market participation and settlement to make it easier for IGS to receive payments for excess electricity exported into the grid, and streamlined the monitoring requirements for IGS.

3 Proposed Modifications

- 3.1 The key modifications to the MSS Code and the Metering Code are to effect the following:
 - (i) To modify existing procedures to allow for net settlement for consumers with embedded IGS; and
 - (ii) To include requirements and procedures on data validation for IGS.
- 3.2 Pursuant to Section 1.6 of the MSS Code and Section 1.7 of the Metering Code, EMA conducted a public consultation on 9 March 2015 on the proposed modifications to the MSS Code and the Metering Code to implement the above changes. At the close of consultation on 6 April 2015, there were no objections to the proposed modifications to the MSS Code and the Metering Code as set out in [Appendix 1](#) and [Appendix 2](#) respectively.

4 EMA's Decision

- 4.1 EMA has decided to modify the MSS Code and Metering Code as set out in Appendix 1 and Appendix 2. The Code modifications will take effect on 7 April 2015.

~ End ~

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Appendix 1

PROPOSED MODIFICATIONS TO THE MARKET SUPPORT SERVICES CODE

Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MSSC/2015/2	1.3.1	NA	[To insert the following definition] <u>“intermittent generation facility” means any generation facility whose power output, in the course of its ordinary and proper operation, cannot be predicted or be directly controlled or varied at will;</u>	To include a definition for the Intermittent Generation Facility (IGF)
MSSC/2015/3	6.1.2	$E_h^{eg,r} = 0$, if there is no embedded generation facility that is a GRF or GSF and that provides power directly to consumer r , or Energy in kWh generated in half-hour h by any embedded generation facilities that is a GRF or GSF that provides power directly to consumer r as recorded by the meter measuring the embedded generation facility's direct supply of electricity to consumer r	$E_h^{eg,r} = 0$, if there is no embedded generation facility that is a GRF or GSF and that provides power directly to consumer r , or Energy in kWh generated in half-hour h by any embedded generation facilities that is a GRF or GSF <u>other than intermittent generation facility</u> that provides power directly to consumer r as recorded by the meter measuring the embedded generation facility's direct supply of electricity to consumer r	To revise the definition of $E_h^{eg,r}$ such that the electricity charges of a non-market participant IGS consumer will only take into account the net withdrawal quantity

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Appendix 2

PROPOSED MODIFICATIONS TO THE METERING CODE

Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MC/2015/1	1.4.1	NA	[To insert the following definition] <u>“intermittent generation facility’ means any generation facility whose power output, in the course of its ordinary and proper operation, cannot be predicted or be directly controlled or varied at will;</u>	To include a definition for the Intermittent Generation Facility
MC/2015/2	4.6.2	For metering data from an interval meter other than a generation meter and intertie meter, if six or fewer consecutive intervals are not valid or missing, the MDM shall estimate the usage for those intervals using a linear interpolation between the two data points on either side of the missing intervals.	For metering data from an interval meter other than a generation meter, and intertie meter <u>and meter associated with an intermittent generation facility</u> , if six or fewer consecutive intervals are not valid or missing, the MDM shall estimate the usage for those intervals using a linear interpolation between the two data points on either side of the missing intervals.	To include IGF for MSSSL’s data validation procedures
MC/2015/3	4.6.3	For metering data from an interval meter other than a generation meter and intertie meter, if more than six but fewer than 49 intervals are not valid or missing, the MDM shall:	For metering data from an interval meter other than a generation meter, and intertie meter <u>and meter associated with an intermittent generation facility</u> , if more than six but fewer than 49 intervals are not valid or missing, the MDM shall:	To include IGF for MSSSL’s data validation procedures

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Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MC/2015/4	4.6.4	NA	<p>[To insert new clause]</p> <p><u>For metering data from meters associated with an intermittent generation facility, if any interval is not valid or missing, the MDM shall estimate the usage of all meters associated with the intermittent generation facility for the interval to zero and reconcile the usage after actual readings are obtained.</u></p>	To account for non-valid IGS metering data validation and reconciliation
MC/2015/5	4.6.5	<p>4.6.4</p> <p>For data from an interval meter that is read weekly, if more than 48 intervals are not valid or missing, the invalid or missing intervals shall be replaced by the same validated intervals from the previous week.”</p>	<p>4.6.4 <u>4.6.5</u></p> <p>For data from an interval meter that is read weekly, if more than 48 intervals are not valid or missing, the invalid or missing intervals shall be replaced by the same validated intervals from the previous week.</p>	Consequential change due to the proposed change to 4.6.4 above
MC/2015/6	4.6.6	<p>4.6.5</p> <p>For data from the following meters, the intervals deemed missing from the MR initial data validation tests stipulated in section 3.4 shall be replaced by estimated meter data derived from:</p>	<p>4.6.5 <u>4.6.6</u></p> <p>For data from the following meters, the intervals deemed missing from the MR initial data validation tests stipulated in section 3.4 shall be replaced by estimated meter data derived from:</p>	Consequential change due to the proposed change to 4.6.4 above

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Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MC/2015/7	4.6.7	<p>4.6.6</p> <p>For manually read kilowatt-hour meters, missing energy data shall be replaced by energy data from the previous meter read cycle after adjusting for any differences in the number of days in the meter read period.</p>	<p>4.6.6 <u>4.6.7</u></p> <p>For manually read kilowatt-hour meters, missing energy data shall be replaced by energy data from the previous meter read cycle after adjusting for any differences in the number of days in the meter read period.</p>	Consequential change due to the proposed change to 4.6.4 above
MC/2015/8	4.6.8	<p>4.6.7</p> <p>The MDM for a meter installation shall apply the procedures delineated in sections 4.6.1 through 4.6.6 until all data elements required for settlement purposes have been determined.</p>	<p>4.6.7 4.6.8</p> <p>The MDM for a meter installation shall apply the procedures delineated in sections 4.6.1 through 4.6.6 <u>4.6.7</u> until all data elements required for settlement purposes have been determined.</p>	Consequential changes due to the proposed change to 4.6.4 above
MC/2015/9	4.6.9	<p>4.6.8</p> <p>If any metering data referred to in this section 4.6 are not available because the intervals in question are prior to the date that the meter commenced operation or prior to the date this Code comes into force, then meter data may be based on the first 48 intervals of data and considered to be of settlement data quality.</p>	<p>4.6.8 4.6.9</p> <p>If any metering data referred to in this section 4.6 are not available because the intervals in question are prior to the date that the meter commenced operation or prior to the date this Code comes into force, then meter data may be based on the first 48 intervals of data and considered to be of settlement data quality.</p>	Consequential changes due to the proposed change to 4.6.4 above

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Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MC/2015/10	4.6.10	4.6.9 For invalid or missing data for which the MDM has applied data estimation procedures, as described in sections 4.6.1 to 4.6.8, the intervals shall be deemed valid for future validation and estimation procedures, and considered to be settlement-ready data.	4.6.9 4.6.10 For invalid or missing data for which the MDM has applied data estimation procedures, as described in sections 4.6.1 to 4.6.8 4.6.9, the intervals shall be deemed valid for future validation and estimation procedures, and considered to be settlement-ready data.	Consequential changes due to the proposed change to 4.6.4 above
MC/2015/11	4.7.1	The MDM for a meter installation shall obtain site-specific adjustment factors for losses, if relevant, from the MESP for that meter installation.	The MDM for a meter installation <u>other than intermittent generation facility</u> , shall obtain site-specific adjustment factors for losses, if relevant, from the MESP for that meter installation. <u>The Authority shall inform the MDM the site-specific adjustment factors for the intermittent generation facilities.</u>	To include IGF for MSSL's data validation procedures
MC/2015/12	4.8.1	WEQ_h^a = Loss adjusted, withdrawal energy quantity (in MWh), deemed to be withdrawn at the Singapore HUB, by all load facilities associated with the settlement account a for settlement interval h, grossed up to include injection energy quantities for all groups of embedded generation facilities.	WEQ_h^a = Loss adjusted, withdrawal energy quantity (in MWh), deemed to be withdrawn at the Singapore HUB, by all load facilities associated with the settlement account a for settlement interval h, grossed up to include injection energy quantities for all groups of embedded generation facilities <u>other than intermittent generation facilities.</u>	To revise the definition of WEQ_h^a such that only the net withdrawal of IGS load is used to calculate WEQ_h^a

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Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MC/2015/13	4.8.2	$E_{h,mp}^{nmpc \geq 66kV}$ = Gross energy withdrawn at load facilities, as defined in the market rules, other than through pool meters and intertie meters, by non-market participant consumers and non-contestable consumers connected to the transmission system at 66kV or above for settlement interval h at non-pool meter point mp	$E_{h,mp}^{nmpc \geq 66kV}$ = Gross energy withdrawn at load facilities <u>that are not associated with intermittent generation facilities, and net withdrawal energy quantities for the load facilities associated with intermittent generation facilities</u> , as defined in the market rules, other than through pool meters and intertie meters, by non-market participant consumers and non-contestable consumers connected to the transmission system at 66kV or above for settlement interval h at non-pool meter point mp	To revise the definition of $E_{h,mp}^{nmpc \geq 66kV}$ to exclude IGF generation
MC/2015/14	4.8.2	$E_{h,mp}^{mpc < 66kV}$ = Gross energy withdrawn at load facilities by Market Participant Consumers connected to the transmission system at a level below 66kV for settlement interval h at non-pool meter point mp	$E_{h,mp}^{mpc < 66kV}$ = Gross energy withdrawn at load facilities <u>that are not associated with intermittent generation facilities and net energy withdrawn at load facilities associated with intermittent generation facilities</u> by Market Participant Consumers connected to the transmission system at a level below 66kV for settlement interval h at non-pool meter point mp	To revise the definition of $E_{h,mp}^{mpc < 66kV}$ to exclude IGF generation

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Modification Ref. No.	Clause	Original text	Modified text or addition	Reasons
MC/2015/15	4.8.2	$E_{h,f}^G$ = The generation at the embedded generation facility f (this is different to E_h^{GF} used to calculate WEQ which is defined in 4.8.2 to be with respect all generation embedded or otherwise, at voltages less than 66 kV)	$E_{h,f}^G$ = The generation at the embedded generation facility f <u>other than intermittent generation facility</u> (this is different to E_h^{GF} used to calculate WEQ which is defined in 4.8.2 to be with respect all generation embedded or otherwise, at voltages less than 66 kV)	To revise the definition of $E_{h,f}^G$ to exclude IGF generation