



Smart Energy, Sustainable Future

CHANGES TO THE MARKET PARTICIPATION THRESHOLD FOR GENERATION FACILITIES

INFORMATION PAPER

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1 Background

- 1.1 Intermittent Generation Sources (“IGS”) typically comprise renewable energy generation such as solar photovoltaic (“PV”) and wind energy, where the power output fluctuates depending on weather and environmental factors. Based on current technologies, solar PV offers the greatest potential for deployment in Singapore. Solar PV brings about multiple benefits, as it generates zero carbon emissions and requires no fuel imports. This will contribute towards meeting Singapore’s overall climate change goals. Recognising these benefits, the Government plans to raise the adoption of solar power to at least 2 GWp by 2030.
- 1.2 The Energy Market Authority (“EMA”) supports greater solar PV growth in Singapore, while also keeping to our core principle of pricing energy right to ensure fair and sustainable growth with long term benefits to consumers. To this end, the EMA has been making several regulatory enhancements to facilitate the entry of solar PV into the electricity market of Singapore. These include providing more payment options for consumers to sell the excess solar electricity back to the grid, such as through the implementation of the Enhanced Central Intermediary Scheme (“ECIS”). The intention of this scheme is to allow consumers with embedded IGS and non-IGS below 10MW to sell excess electricity via an intermediary (i.e. SP Services (“SPS”)) instead of going through the Energy Market Company (“EMC”).
- 1.3 However, as there has been an increase in the number of small and distributed generation that prefer to register with the EMC, the settlement engine has experienced a longer settlement run time. This will impact the settlement operations of the wholesale electricity market. As such, EMA will be working with EMC and SPS to review the existing process and develop solutions. In the interim, **(a) all new embedded IGS and (b) all new embedded non-IGS, with installed capacity below 10MW can only be registered under ECIS.** Generation facilities which want to be registered as (a) non-embedded; or (b) Generation Registered Facilities (“GRF”); or (c) Non-Exporting Intermittent Generation Facilities (“NEIGF”)¹, can continue to do so with EMC.

¹ Refer to the Final Determination Paper for more information: <https://www.ema.gov.sg/cmsmedia/Consultations/Electricity/Determination%20paper%202017%20-%20Enhancements%20to%20the%20regulatory%20framework%20vf.pdf>

2 Registration under the Enhanced Central Intermediary Scheme

- 2.1 Currently, contestable consumers with embedded IGS and non-IGS generation below 10MW can choose to register with SPS under the ECIS or to register with EMC as a Generation Settlement Facility (“GSF”). The excess generation that is sold to the grid at each half-hourly period will be paid the weighted average nodal price and the nodal price respectively. The ECIS was launched to make it easier for contestable consumers to sell excess electricity through an intermediary.
- 2.2 The EMA has received feedback from companies that they prefer to register with EMC, especially when they have multiple generation facilities. This is because the EMC provides a consolidated invoice for the Market Participant and has a shorter billing cycle. In the case of ECIS, SPS bills and pays the consumer as it is tagged to the consumer premise and the generation billing cycle follows the consumer’s monthly billing cycle.
- 2.3 This poses a challenge as the EMC settlement engine was originally designed to cater to a small number of large generation facilities. However, the number of small and distributed generation has grown to comprise nearly half of the current number of settlement accounts. This places stress on the settlement engine and has led to a two-fold increase in settlement run time. If the number of settlement accounts continue to grow, the operations of the settlement engine will be impacted. The settlement engine ensures that individual settlement accounts are settled and billed based on the half-hourly clearing prices and dispatched schedule quantities.
- 2.4 EMA has thus decided to take a proactive approach through:
 - 2.4.1 Working with EMC to review the settlement engine to cater to future increase of generation accounts to support new technologies (e.g. energy storage systems) and new business models (e.g. Vehicle-to-grid) that want to participate in the energy market.
 - 2.4.2 Exploring an aggregation model to allow aggregators besides SPS to register on behalf of individual generation facilities to reduce the number of accounts that will be registered with EMC.
 - 2.4.3 Reviewing the ECIS process with SPS if it can be further enhanced.
- 2.5 EMA notes that the initiatives stated in para 2.4 can only be implemented in the longer horizon due to the time needed to review and make system changes. **In the interim, the following groups of new generation facilities can only register under ECIS with immediate effect:**
 - 2.5.1 **All embedded IGS below 10MWac; and**

2.5.2 All embedded non-IGS below 10MW.

- 2.6 Existing embedded generation facilities that are already registered under EMC will not be affected. For embedded IGS below 10MWac who will not be selling any electricity to the market, they can choose to register as a NEIGF under EMC. For new embedded generation facilities (regardless of capacity) who want to bid into the market to provide energy and/or regulation/reserves product and to be subject to dispatch, they will continue to register with EMC as a GRF.
- 2.7 An overview of the revised payment schemes available for embedded and standalone generation facilities in the interim period can be found in Appendix 1.

Overview of Payment Schemes for Embedded Generator

I am a	With an embedded capacity, X: [^]	Register with?		How much will I receive for excess energy exported to grid?
		Selling back	Not Selling back	
Contestable Consumer (CC)	≥ 10MW	EMC as MP		Nodal Price
	1MW ≤ X < 10MW	SPS under ECIS (profile* or metered)	<ul style="list-style-type: none"> SPS under ECIS (profile* or metered) EMC as MP (IGS Non-Exporting)* 	Weighted Average Nodal Price
	< 1MW	SPS under ECIS (profile* or metered)	Not required	Weighted Average Nodal Price
Non-Contestable Consumer (NCC)	≥ 10MW	Consider switching to be a CC		-
	1MW ≤ X < 10MW	Consider switching to be a CC		-
	< 1 MW (High- Tension)	Consider switching to be a CC	Not required	-
	< 1MW (Low-Tension)	SPS under Simplified Credit Treatment	Not required	Prevailing Tariff minus Grid charge

[^]For IGS, the installed capacity is in MWac.

*Option only available to IGS embedded installations.