



**PROPOSED ENHANCEMENT TO THE CENTRAL INTERMEDIARY SCHEME
FOR EMBEDDED GENERATION**

CONSULTATION PAPER

Closing date for submissions of comments and feedback:
7 Aug 2017, 5pm

11 Jul 2017

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BACKGROUND

1. Embedded generation (“**EG**”) refers to the onsite generation of electricity for direct supply to a consumer’s load facilities within his premises. This is allowed where:
 - a. the load facility, and the land on which the generation and load facilities are located, are majority (i.e. at least 50%) owned by the same consumer; and
 - b. the generation facility is located on land which is contiguous to the load facility except where there is insufficient contiguous land available for the consumer to accommodate both the generation and load facilities.
2. Such consumer is also allowed to connect his facilities to the grid for additional and/or backup electricity supply, as well as to inject any excess EG output into the grid for sale at the Singapore Wholesale Electricity Market (“**SWEM**”).
3. There are broadly two categories of EG facilities:
 - a. Intermittent generation source (“**IGS**”) which has power output that cannot be controlled or varied at will, e.g. solar and wind energy; and
 - b. Non-IGS which has power output that can be controlled or varied at will, e.g. conventional thermal generation facilities.

Existing Payment Schemes for Excess EG Output

4. **Table 1** summarises the existing schemes under which a consumer with EG can participate to get remunerated for injecting excess EG output into the grid. Specifically:¹

¹ The EG capacity (in MW) herein refers to the name-plate rating of each generation facility for non-IGS. For IGS, EG capacity refers to the aggregate of the output capacity (in MW_{ac}) of all the inverters that: (a) are used for converting direct current from the IGS to alternating current; (b) have the same owner; and (c) have the same connection point to the grid.

- a. A non-contestable consumer (“**NCC**”) with EG capacity (either IGS or non-IGS) below 1 MW can choose to join the **Simplified Credit Scheme (“SCS”)** administered by SP Services (“**SPS**”). Under the SCS, the NCC will be paid at the rate of the *prevailing regulated tariff less grid charge* for excess EG output injected into the grid.
- b. A contestable consumer (“**CC**”) with EG capacity (either IGS or non-IGS) below 1 MW can choose to register with the Energy Market Company (“**EMC**”) to be a Direct Market Participant (“**DMP**”) in the SWEM. Alternatively, he may appoint a third-party to register with EMC as a Market Participant (“**MP**”) and sell electricity in the SWEM on his behalf. The DMP or MP will be paid by EMC at the prevailing half-hourly wholesale energy price for excess EG output injected into the grid.
- c. If the CC has embedded IGS below 1 MW, he has another option which is to join the **Central Intermediary Scheme (“CIS”)**. Under the CIS, the CC will effectively be selling the excess IGS output in the SWEM through SPS at the prevailing half-hourly wholesale energy price. This avoids the need for the registration with EMC to be a market participant.
- d. For sizable EG capacity (either IGS or non-IGS) of 1 MW or more, it is mandatory for the consumer (either NCC or CC) to be a DMP, or appoint a third-party to register with EMC as a MP and sell electricity in the SWEM on his behalf. This is to ensure that all sizable generation facilities, which requires the support of system reserves, are allocated the cost of the reserves through the SWEM. The DMP or MP will be paid by EMC at the prevailing half-hourly wholesale energy price for excess EG output injected into the grid.

Table 1: Existing payment schemes for consumers with EG

	EG with capacity of ‘X’ MW	
	X < 1 MW	X ≥ 1 MW
Non-Contestable Consumer	Voluntary: <ul style="list-style-type: none"> • Simplified Credit Scheme 	Mandatory: <ul style="list-style-type: none"> • Register with EMC as a DMP, or appoint a third-party as the MP
Contestable Consumer	Voluntary: <ul style="list-style-type: none"> • Central Intermediary Scheme – <i>for IGS only</i>; or • Register with EMC as a DMP or appoint a third-party as the MP 	

PROPOSED ENHANCEMENT TO THE CIS

5. The EMA has reviewed the CIS. To reduce regulatory compliance cost and give consumers more flexibility to manage their electricity requirements, we intend to enhance the scheme by extending it to all CCs with EG capacity (either IGS or non-IGS) below 10 MW (“**Enhanced CIS**” or “**ECIS**”):

- a. Today, each CC already has the option to sell electricity in the SWEM either as a DMP, or they could appoint a third-party as the MP to sell electricity on their behalf. With the proposed ECIS, a CC with EG capacity below 10 MW will be able to sell and get paid for electricity in the SWEM through SPS, thus avoiding the need to register with EMC and be bound by the SWEM Rules.
- b. Under the ECIS, the CC will also be able to choose to have its embedded IGS output estimated based on the IGS Generation Profile² determined by EMA (instead of installing meters to measure the actual IGS output) for the purpose of paying market-related charges, including the allocated cost of system reserves.

6. **Table 2** shows the payment schemes for consumers with EG if the proposed ECIS is implemented. The proposed ECIS is not applicable to EG capacity above 10 MW as such generation facilities are required to be centrally dispatched and monitored by the Power System Operator (“**PSO**”) to ensure system security and reliability.

² Refer to [Addendum to Enhancements to the Regulatory Framework for IGS in the National Electricity Market of Singapore](#) dated 9 Dec 2015 published at the EMA’s website for more information.

Table 2: Proposed revision to payment schemes for consumers with EG

	EG with capacity of 'X' MW		
	X < 1 MW	1 MW ≤ X < 10 MW	X ≥ 10 MW
Non-Contestable Consumer	<p>Voluntary:</p> <ul style="list-style-type: none"> Simplified Credit Scheme 	<p>Mandatory:</p> <ul style="list-style-type: none"> Register with EMC as a DMP or appoint a third-party as the MP 	<p>Mandatory:</p> <ul style="list-style-type: none"> Register with EMC as a DMP or appoint a third-party as the MP
Contestable Consumer	<p>Voluntary:</p> <ul style="list-style-type: none"> Enhanced Central Intermediary Scheme*; or Register with EMC as a DMP or appoint a third-party as the MP 	<p>Mandatory:</p> <ul style="list-style-type: none"> Enhanced Central Intermediary Scheme*; or Register with EMC as a DMP or appoint a third-party as the MP 	

* As residential consumers are not likely to have embedded non-IGS, the proposed Enhanced Central Intermediary Scheme or ECIS will not be extended to such consumers in the first instance.

REQUEST FOR COMMENTS

- The EMA would like to invite comments on the proposed ECIS. Please submit all written feedback via email to: ema_mdscd@ema.gov.sg
- All feedback should reach the EMA by **5pm on 7 Aug 2017 (Monday)** in the format as shown in the **Appendix**. Please include a softcopy of your comments in both **PDF and Microsoft Word** format in your submission.
- The EMA will acknowledge receipt of all submissions via email. Please contact Mr Lee Guo Rui at 6376 7830 or Ms Karyn Goh at 6376 7698, if you do not receive an acknowledgement of your submission within two business days.
- Please note that the EMA will not consider anonymous submissions. The EMA reserves the right to make public all or part of any written submissions made in response to this consultation paper and to disclose the identity of the source. Any part of the submission, which is considered by respondents to be confidential, should be clearly marked and placed as an annex (with justification on the need to maintain confidentiality). The EMA will take this into account in the disclosure of the information submitted.

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FORMAT FOR SUBMISSION OF COMMENTS AND FEEDBACK

PROPOSED ENHANCEMENT TO THE CENTRAL INTERMEDIARY SCHEME FOR EMBEDDED GENERATION

S/No.	Please indicate in each cell in this column, the section/paragraph in the Consultation Paper to which your comment/feedback refers	Comments
1		
2		
3		
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Any other comments and feedback		

Comments/Feedback submitted by

Name :
 Designation :
 Company :
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