



## **CONSULTATION PAPER**

### **REVIEW OF POLICY ON DIRECT SUPPLY OF ELECTRICITY FROM GENERATING UNITS**

**Closing date for submissions of comments and feedback:  
18 June 2007**

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The information in this Consultation Paper is not to be treated by any person as any kind of advice. The Energy Market Authority shall not be liable for any damage or loss suffered as a result of the use of or reliance on the information given in this Consultation Paper.

## 1 Background

1.1 A number of business consumers have requested changes to current rules for the direct supply of electricity to them from generating units.

1.2 EMA adopts the “user-pays” principle. One corollary to this is that no business consumer should be compelled to use and pay for power system resources which the consumer does not require. The consumer therefore is allowed to provide an onsite source of power for its own use on the same site, without connecting to the power system. The consumer may also choose to connect its facilities to the power system for additional or backup supply, but it must pay for the system resources. In Singapore, such direct sources of power are called *embedded generation*.

1.3 To ensure the company’s embedded generation is for its own use on the same site, EMA currently imposes the following conditions for direct supply of electricity from embedded generating units:

- (a) the generating units and the load facilities must be located within the same contiguous piece of land; and
- (b) the generating units and the load facilities, and the land within which they are located, must be majority (i.e. at least 50%) owned by the same company.<sup>1</sup>

## 2 Proposed changes by companies

2.1 A number of companies / large business consumers have proposed the following changes to the current conditions for direct supply of electricity from embedded generating units:

- (a) The first proposed change is to allow a company to *outsource* its embedded generating units. This is to enable the company to engage third parties to develop, own and operate the generating units within the company’s premises to generate electricity for its own use on the same site.
- (b) The second proposed change is to allow a company to generate electricity for direct supply to its load facilities, but the company’s generating units and load facilities are located on *separate and non-contiguous* pieces land owned by the company.

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<sup>1</sup> EMA had put in place these conditions since April 2002. They are published in the EMA paper entitled “Policy on Direct Supply of Electricity by Generating Sets to On-site Loads”, which is available at the following EMA website: <<http://www.ema.gov.sg/Consultation/consultation.php>>.

- (c) The third proposed change is a power park concept allowing an independent generation company to supply electricity directly to a cluster of companies.

2.2 The proposed changes would remove the current conditions to the extent as shown in Table 1. EMA's preliminary assessment, which we discuss in detail below, is that all the current conditions *except for the one on contiguous land* could be removed under the existing grid charge structure. To further remove the contiguous land condition, the grid charges would have to be modified to avoid inefficient investment in generation and grid assets.

*Table 1: Conditions on direct supply of electricity from generating units\**

Current Conditions on Direct Supply from a Generating Unit		Changes Proposed by Business Consumers		
		Outsource onsite generating unit	Direct self-supply across non-contiguous land	Power Park
i	Coy must <i>own</i> the generating unit	Remove	✓	Remove
ii	Coy must <i>own</i> the land on which the generating unit is located	✓	✓	Remove
iii	Coy must <i>own</i> the land on which the load facility is located	✓	✓	Remove
iv	Land must be <i>contiguous</i>	✓	Remove	Remove

\* Definitions: "Coy" refers to the company/consumer whose load facility is taking direct electricity supply from a generating unit. "Own" means having at least 50% ownership/equity share. "Contiguous" means the respective plots of land where the generating unit and the load facilities are located, are not separated by third party land. "✓" means the current condition is retained.

### 3 EMA's preliminary assessment

3.1 EMA's preliminary assessment is set out below.

#### **Existing Grid Charge Structure**

3.2 Electricity from the power system is delivered to consumers via the transmission and distribution grid owned by SP PowerAssets Ltd ("SPPA"). The grid can be broadly conceptualised as providing *driveway capacity* which is dedicated to each consumer, and *expressway capacity* which is shared with other consumers and not dedicated to any particular consumer.

3.3 SPPA recovers its capital and operating costs from consumers through the UOS (use-of-system) or grid charges. Currently, the grid charges are structured with two components:

- (a) Capacity charge (\$/MW/month) to recover the costs of the *driveway capacity* requested by the consumer to meet its peak MW demand.
- (b) Usage charge (\$/MWh) to recover the cost of the *expressway capacity*. The usage charge is charged according to the amount of electricity drawn from the grid.<sup>2</sup>

### ***Implications of Direct Supply under the Existing Grid Charge Structure***

3.4 Under the existing grid charge structure, a company taking direct electricity supply from embedded generating units with backup from the power system draws less electricity from the grid, and consequently pays less for expressway capacity. *This is even though the expressway capacity provided and made available for use by the company is the same as that when it takes electricity supply from the grid to meet its full demand at all times.*

3.5 Consequently, investments in embedded generating units for direct supply to the company would be more attractive than investments in similar and potentially more efficient generating units by commercial gencos for supply to the same company through the grid. This is likely to promote inefficient investment decisions.<sup>3</sup>

### ***Minimising Inefficiency in the Generation Market***

3.6 The current conditions for direct supply from generating units allow a company to have access to an onsite source of power, while minimising the potential adverse impact on competition in the market and efficiency in generation investment under the existing grid charge structure.

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<sup>2</sup> The current grid charges are published by SPPA at the following website:  
<<http://www.sppowerassets.com.sg/PDF/ts-usc.pdf>>.

<sup>3</sup> To illustrate consider a normal company with peak electricity demand of say 2 MW. At the current usage charge (as at 1 Apr 07) of \$11.50/MWh and \$1.30/MWh for expressway capacity during the *peak* and *off-peak* periods, the total cost of expressway capacity recovered by SPPA from the company is about \$115,000 per annum. If the company switches to taking full electricity supply directly from generating units with full backup from the grid, the company can potentially avoid paying the full cost (i.e. \$115,000 per annum) of the expressway capacity provided to and made available for use by the company in event the direct supply is disrupted. As a result investors would, for the purpose of supplying direct to the company, be prepared to invest in generating units that are up to \$115,000 per annum less efficient than those of generation companies competing to sell electricity into the grid.

3.7 If one or more of the current conditions *except for the one on contiguous land* are removed (e.g. to allow outsourcing of onsite generating units), there would still be limited impact on market competition and efficiency under the existing grid charge structure.

3.8 However if the contiguous land requirement is removed, there could be proliferation of inefficient investments in generating units to supply directly to companies over wide geographical areas. The net outcome could be significant distortion to competition and inefficient investment in grid and generation assets.

3.9 To remove the contiguous land requirement and at the same time minimise market distortion, the grid charges can be restructured such that full capacity charges (to recover both driveway capacity and expressway capacity) are imposed on the companies taking direct supply from generating units located on non-contiguous land.

- (a) Table 2 sets out the *preliminary / indicative full grid capacity charges* (to recover both driveway capacity and expressway capacity) from companies taking direct supply from generating units across non-contiguous land.
- (b) If the land on which the generating units and the load facilities taking direct supply from those generating units is contiguous, the current grid charges as shown in Table 3 (comprising of capacity charges to recover driveway capacity, and usage charges to recover expressway capacity) would still be applicable.

*Table 2: Preliminary / indicative full grid capacity charges (source: SPPA)*

Connecting Voltage	Driveway & Expressway Capacity		
	Contracted Capacity Charge (\$/kW/month)	Uncontracted Capacity Charge (\$/kW/month)	Usage Charge (\$/kWh)
66 kV	8.43	12.65	-
22 kV	11.73	17.60	-

*Table 3: Current grid charges (source: SPPA)*

Connecting Voltage	Driveway Capacity		Expressway Capacity	
	Contracted Capacity Charge (\$/kW/month)	Uncontracted Capacity Charge (\$/kW/month)	Usage Charge (\$/kWh)	
			Peak	Off-Peak
66 kV	6.74	10.11	0.28	0.04
22 kV	7.04	10.56	1.15	0.13

## **4 EMA's preliminary views**

4.1 Having taking into account the above assessment, EMA holds the preliminary view that the current conditions (as set out in Table 1 above) could be removed, subject to the following:

- (a) If the land is contiguous, apply the existing grid charge. This includes outsourcing of onsite generating units as described in paragraph 2.1(a); and
- (b) If the land is not contiguous, apply full capacity charges as described in paragraph 3.9(a). This includes direct self-supply across non-contiguous land and power parks as described in paragraphs 2.1(b) & (c).

4.2 EMA recognises that there will be instances where the land to site a company's load facilities and generating units is separated by roads, drains, canals or other encumbrances. EMA will take a practical approach and review on a case-by-case basis to determine whether the land can be considered contiguous or not, and impose full grid capacity charges accordingly. EMA will be guided by the need to ensure no proliferation of inefficient investments in generation and grid assets.

## **5 Request for comments and feedback**

5.1 EMA would like to seek comments and feedback from the industry and members of the public on its preliminary assessment and views as set out in sections 3 and 4 before making the final determination on the companies' proposed changes as described in section 2.

5.2 All comments and feedback must be submitted in writing in the format as shown in the Appendix.

5.3 Please send your submission via email to:  
soh\_sai\_bor@ema.gov.sg and poh\_sho\_siam@ema.gov.sg

5.4 All comments and feedback must reach EMA by 5 pm, 18 Jun 07.

5.5 Anonymous submissions will not be considered.

5.6 EMA will acknowledge receipt of all submissions electronically. Please contact EMA if you have not received an acknowledgement of your submission within 2 business days.

5.7 EMA reserves the right to make public all or parts 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. EMA will take this into account regarding disclosure of the information submitted.

~ End ~



## FORMAT FOR SUBMISSION OF COMMENTS AND FEEDBACK

**REVIEW OF POLICY ON DIRECT SUPPLY OF ELECTRICITY FROM GENERATING UNITS**

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

***Comments/Feedback submitted by***

Name :

Designation :

Company :

Email :

Tel. No. :

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