



CONSULTATION PAPER

CAPACITY ASSURANCE SCHEME

Closing date for submissions of comments and feedback:
1 March 2006

21 NOVEMBER 2005 | ENERGY MARKET AUTHORITY
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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 Introduction

- 1.1 In the National Electricity Market of Singapore, the philosophy is that both entry and exit of generation capacity should be commercially driven as far as possible. As a precaution against the risk of inadequate generation capacity in the system, EMA proposes to put in place a Capacity Assurance Scheme (CAS) to incentivise new planting in case the required new generation capacity is not forthcoming from the market.

2 Proposed CAS

- 2.1 The Power System Operator (PSO) has to ensure that at all times, there must be sufficient electricity generation capacity to meet electricity demand and to allow for planned maintenance and forced outages of generating units. The PSO will need reserve generation capacity for such purpose.
- 2.2 A normal industry practice is to maintain an amount of reserve generation capacity to achieve a loss of load probability (LOLP) of no more than a specified number of days in a year when system demand could not be fully met. Singapore sets the LOLP at 3 days per annum. This translates to a required reserve margin (defined as the excess of generation capacity over peak electricity demand) of 30%.
- 2.3 We have currently a reserve margin of about 80%. This is a market outcome driven by the generation companies' commercial decisions in investments in new gas-fired plants.
- 2.4 As far as possible, EMA will let market signals drive investment in new generation capacity. However, price signals from the wholesale electricity market are short-term signals, whereas investment in new generation capacity is a long-term decision. There is a possibility that the market signals may not be strong enough to attract new investment in time to maintain the required 30% reserve margin.

2.5 EMA is considering putting in place a CAS to incentivise new plantings to prevent breaching the 30% reserve margin. The objective is to ensure system security while minimising regulatory risks for investors.

2.6 The proposed design of the CAS is set out in Appendix 1.

3 Request for comments and feedback

3.1 EMA invites comments and feedback on the design of the CAS as set out in Appendix 1.

3.2 If you have comments or feedback on the CAS design, please submit them in the format as shown in Appendix 2.

3.3 Please send your submission (preferably by e-mail) to:

wong_mui_quee@ema.gov.sg and soh_sai_bor@ema.gov.sg

Alternatively, you may also send your submission by post/fax to the following address:

*Director (Licensing & Forecasting)
Energy Market Authority
111 Somerset Road, #15-05
Singapore 238164.*

Fax: (65) 6 835 8084

3.4 Anonymous submission will not be considered.

3.5 All comments and feedback must reach EMA by 5 pm on 1 March 2006.

- 3.6 If you need any clarifications, please contact Mr Soh by e-mail at soh_sai_bor@ema.gov.sg not later than 5 Dec 05.
- 3.7 EMA will acknowledge receipt of all submissions. Please contact Mr Soh if you have not received an acknowledgement of your submission within two business days.
- 3.8 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 commercially sensitive, should be clearly marked and placed in a confidential annex. EMA will take this into account regarding disclosure of the information submitted.

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DESIGN OF THE CAPACITY ASSURANCE SCHEME (CAS) FOR SINGAPORE

1 Why do we need CAS?

To ensure a secure and reliable electricity supply system, there must be sufficient electricity generation capacity to meet electricity demand and to allow for planned maintenance and forced outages of generating units. The Power System Operator (PSO) will need reserve generation capacity for such purpose.

A normal industry practice is to maintain an amount of reserve generation capacity to achieve a loss of load probability (LOLP) of no more than a specified number of days in a year when system demand could not be fully met. Singapore sets the LOLP at 3 days per annum. This translates to a required reserve margin (defined as the excess of generation capacity over peak electricity demand) of 30%.

As far as possible, EMA will let market signals drive investment in new generation capacity. However, price signals from the wholesale electricity market are short-term signals, whereas investment in new generation capacity is a long-term decision. There is a possibility that the market signals may not be strong enough to attract new investment in time to maintain the required 30% reserve margin.

As a precaution, EMA propose to put in place a CAS to incentivise new plantings to prevent breaching the 30% reserve margin. The objective is to ensure system security while minimising regulatory risks for investors.

2 How does the CAS work?

A tender will be conducted by the market company, Energy Market Company Pte Ltd (EMC), to buy a specified quantity of electricity over a specified period. The successful tenderer shall install new generation capacity as specified in the tender to prevent breaching the reserve margin of 30%.

The above CAS contract will be for the shortfall capacity needed to maintain the minimum generation capacity required for system security. Tenderers will have to bid to secure the CAS contract which will be awarded to the tenderer submitting the lowest bid.

3 What is the form of the CAS contract?

The contract will be structured as a “contract for differences” or CfD.

To illustrate how a CfD works, assume the CfD awarded to the generation company (“genco”) is at a Contract Price of \$100/MWh. Assume the Pool Price is \$80 per MWh. The genco receives \$80/MWh (Pool Price) from the market. In addition, the counter-party to the CfD will pay the genco a “credit” of \$20/MWh, being the difference between the Contract Price and the Pool Price. The “credit” payment to the genco under the CAS contract has to be recovered as a “debit” to consumers.

If, on the other hand, the Pool Price is higher than the Contract Price, say \$120/MWh, then the genco gets a “debit” of \$20/MWh and consumers get a “credit” of \$20/MWh.

Overall, the cost of buying the electricity from the genco under the CAS contract is the Contract Price of \$100 per MWh.

4 How will the costs of buying electricity under the Contract be recovered?

It is proposed that EMC will recover the CfD debits from or return the CfD credits to the market i.e. smeared to all electricity consumers.

5 Who will be the counter-party to the CAS contract?

The EMC will be the counter-party to the CAS contract, i.e. the contract will be struck between the successful tenderer and EMC. EMC already has the market mechanism and IT systems in place to settle the CAS contract credits and debits.

6 What will be the Contract Price?

EMC will call an open tender, and each tenderer is required to offer a Contract Price for the CAS contract. The tenderer who submits the lowest offer complying with the tender conditions will be awarded the CAS contract.

7 What will be the Contract Term?

The CAS contract would be for a term of 5 years. The 5-year period is intended to provide adequate certainty to the successful tenderer and would not commit the market to an unduly long contracting period.

8 How much electricity will be contracted for under the CAS?

Every year, EMA will project and publish annual peak electricity demand over the next 10-year period.

If in the current year, it is projected that there would be inadequate generation capacity to meet the 30% reserve margin within the next 5 years, EMA will activate the CAS by directing EMC to call a tender for the CAS contract.

The CAS contract will be for the shortfall capacity needed to maintain the minimum generation capacity required for system security. For example, if EMA's projection in 2010 is that the annual peak demand in 2015 is 8,520 MW and the anticipated installed generation capacity is 10,640 MW, the projected reserve margin is therefore 25% which means a shortfall capacity of about 440 MW.

9 What will be the trigger points to activate the CAS?

The reserve margin may fall below 30% required for system security due to demand growth and/or power plant retirements.

EMA propose to activate the CAS under the following scenarios:

- (a) When a shortfall in generation capacity is projected at the end of the next 5 years because of demand growth, the CAS will be triggered to address the capacity shortfall before it arises. The shortfall situation is defined as the situation where the projected system capacity falls 3% below the minimum generation capacity needed for system security (ie 30% reserve margin) at the end of the next five years. The 3% threshold allows for a reasonable plant capacity to be built without resulting in excessive over-capacity in the system.
- (b) When a genco wants to retire a power plant which is required for system security within the next 5 years, the CAS will be triggered to bring in new plant so as to enable the genco to retire the old plant at the end of the 5-year period.

10 Why must the CAS be triggered 5 years before the expected capacity shortfall?

Typically, a new power plant takes 3 to 4 years to come on stream, from design to commercial operation. The CAS will be triggered 5 years before the expected capacity shortfall so that there is sufficient lead-time to bring new capacity on stream to maintain the 30% reserve margin.

11 Will Gencos with market power be allowed to participate in the CAS tender?

Gencos with market power will not be allowed to participate in the tender for the CAS contract. The other gencos would be allowed to participate in the tender as long as they would not acquire market power with the proposed planting.

12 Will market-driven planting be “undermined” as investor wait for CAS before they plant?

EMA has assessed this to be unlikely. An investor wanting to enter the market is just as likely to plant to forestall new entrants and the activation by EMA of the CAS. This is especially if the planting is driven by new technology, which can take market share from the incumbents.

Furthermore, investors waiting for the CAS may find themselves out of the market if their bids are not successful.

13 Do other markets have “CAS mechanisms” to incentivise plantings?

EMA notes that similar mechanisms are used in the markets in other jurisdictions such as in the US (e.g. PJM, New York and New England), Northern Ireland and in certain states of Australia.

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FORMAT FOR SUBMISSION OF COMMENTS AND FEEDBACK ON THE DESIGN OF THE CAPACITY ASSURANCE SCHEME

	Comments and Feedback On:
1.	<u>Purpose & objective of CAS</u>
2.	<u>Using a tender mechanism to attract new generation capacity to prevent breaching the 30% reserve margin</u>
3.	<u>Structuring the CAS Contract as a CfD (Contract for Differences)</u>
4.	<u>Recovering from all electricity consumers the cost of buying electricity under the CAS Contract</u>
5.	<u>Using EMC as the counter-party to the CAS Contract</u>
6.	<u>Setting the CAS Contract Price</u>
7.	<u>Setting the duration or term of the CAS Contract</u>
8.	<u>Setting the amount of electricity to be bought under the CAS Contract</u>

9.	<u>Trigger points for activating the CAS</u>
10.	<u>Activating the CAS 5 years before the expected shortfall in generation capacity</u>
11.	<u>Not allowing generation companies (“gencos”) with market power to participate in the CAS tender</u>
12.	<u>Ensuring that market-driven planting will not be undermined by the CAS</u>
13.	<u>Any other comments or feedback</u>