

Draft Report: Maximum  
Reserve Capacity Price for  
the 2008/09 Capacity  
Year

December 2005

## REPORT DETAILS

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## EXECUTIVE SUMMARY

One of the functions of the IMO is to set the Maximum Reserve Capacity Price for the Wholesale Electricity Market. The Maximum Reserve Capacity Price is used as a basis for payment of Reserve Capacity Credits in year three for the Reserve Capacity cycle. For the 2005 Reserve Capacity cycle, the Maximum Reserve Capacity Price was set at \$150000 per megawatt. This was the maximum price to be paid by the IMO for Capacity Credits in the 2007/08 Reserve Capacity year.

Each year, the IMO is required to review the Maximum Reserve Capacity Price and to assess the appropriateness of the input values used in the price computation listed at Appendix 4 of the Market Rules. This report details part of the process undertaken by the Independent Market Operator (IMO) to review the Maximum Reserve Capacity Price for the 2008/09 Reserve Capacity year. Under the Market Rules, the IMO is also required to request public submissions on the proposed Maximum Reserve Capacity Price.

For the 2008/09 Reserve Capacity year, the IMO proposes a Maximum Reserve Capacity Price of \$123000 per megawatt. This value differs from the \$150,000 per megawatt value used for the 2007/08 Reserve Capacity year for the following reasons:

- The price of OCGT plant has fallen by approximately 6% over the past year (in real terms).
- This year, the cost of electricity transmission assets and O&M costs for transmission assets and the open cycle gas turbine power station have been estimated using commercial practices. These costs are lower than those estimated for the 2005 Reserve Capacity Cycle, but are considered to more appropriately reflect market practices.

The IMO invites submissions from all sectors of the Western Australian energy industry on the proposed Maximum Reserve Capacity Price of \$123000 per Megawatt. Details on the submission process can be found at the end of this document. Submissions must be provided to the IMO by 4PM on Friday, 6 January 2006.

## INTRODUCTION

Under the Market Rules, each year the IMO is required to conduct a review of the Maximum Reserve Capacity Price. The review conducted by the IMO must assess the appropriateness of a number of the input values used to calculate the Maximum Reserve Capacity Price including:

- The optimum size of an open cycle gas turbine for the SWIS;
- The capital cost of open cycle gas turbine power stations;
- The level of electricity transmission connection costs;
- The cost of acquiring and installing fuel tanks sufficient to accommodate 24 hours of liquid fuel storage;
- The capital cost of a gas pipeline lateral to allow for dual fuel capability;
- The estimate of the fixed operating and maintenance costs for the power station and the transmission facilities listed above;
- A margin for legal, approval, financing costs and contingencies.

Following the review process, the IMO is required to publish a report (this report) describing how it has arrived at the proposed Reserve Capacity Price and call for submissions from all sectors of the Western Australian Energy industry on the report.

After receiving, and giving consideration to the public submissions, the IMO will then submit a final revised value of the Maximum Reserve Capacity Price to the Economic Regulation Authority for approval.

## REVIEW PROCESS

Following an initial review of the 2005 Maximum Reserve Capacity Price calculation, the IMO retained Sinclair Knight Merz (SKM) to assist with the estimation of a number of the cost components that contribute to the Maximum Reserve Capacity Price. SKM provided advice on the electricity transmission connection and O&M costs and the Power Station O&M costs. Western Power Corporation – Networks Division also provided costing assistance for this process.

## REVIEW OUTCOMES OF THE MAXIMUM RESERVE CAPACITY PRICE

Section 4.16.4 of the Market Rules requires that the IMO assess the appropriateness of a number of the input values to the Maximum Reserve Capacity Price calculation. Each of these values has been reviewed by the IMO and is discussed briefly below.

### ***Optimum size of open cycle gas turbine***

The optimum size of an open cycle gas turbine for the SWIS is one that is expected by the IMO to minimise the cost of energy to Market Customers over the long term. For the 2005 Reserve Capacity cycle, the optimum size was determined to be 160MW. The IMO reviewed the state of electricity generation assets currently online or under development within the SWIS and considered that 160 MW OCGT peaking plant remains appropriate for basis of calculating the 2006 Maximum Reserve Capacity Price.

### ***Capital Cost of an Open Cycle Gas Turbine***

For the 2005 Reserve Capacity cycle, the capital cost of an Open Cycle Gas Turbine was estimated to be US\$155/kW. Using the Gas Turbine World Handbook (2005) the price determined for the 2006 Reserve Capacity cycle is US\$158/kW (US\$157.59/kW). This is based on the price listed in Gas Turbine World for a Siemens 163 MW V94.2 machine. The 2004 cost of this machine is listed as US\$150/kW, and was subsequently indexed by the IMO to US\$158/kW in 2006 (at 2.5%). The real cost of the Open Cycle Gas Turbine has dropped by approximately 6% over the last year due to decreasing worldwide demand.

It is noted that the capital cost calculation used for the 2005 Reserve Capacity cycle includes an additional component to factor in the cost of low NOx equipment. It is believed that this margin should remain for the present calculation.

### ***Electricity Transmission Connection Costs***

This includes the cost of electricity transmission assets required to connect an open cycle gas turbine power station to the SWIS and an estimate of the cost of augmenting the shared network to facilitate the connection. In 2005, this cost was estimated as \$17M. This cost has been estimated by the IMO as \$14.410M for the 2006 Reserve Capacity cycle. Ongoing transmission O&M costs were estimated as \$19,000/MW for the 2005 cycle and \$7812/MW for the 2006 cycle. The drop in electricity transmission connection costs is attributed largely to a lower estimate of capital costs for transmission assets.

It is acknowledged that electricity transmission asset costs will be variable and depend on the type and location of the transmission connection. To account for variability, the estimates include a 15% engineering, procurement and contract management margin. Shared network augmentation costs are also variable in nature depending on the network state at the time of connection. The estimates for the network augmentation costs have been carried through from the last year (indexed at CPI).

### ***Cost of acquiring and installing fuel tanks***

For the 2005 Maximum Reserve Capacity Price, this was estimated to be \$3M and was based on historical data for Torrens Island. For the 2006 cycle, a similar value has been used, indexed at the inflation rate. This results in a value of approximately \$3.075M

### ***Lateral Pipeline Installation Cost***

This was not explicitly included in the 2005 calculation as the cost of on-site fuel storage was determined to be less than the cost of lateral pipeline installation. Therefore the on-site fuel storage cost was used in preference. The same methodology has been adopted for the calculation of the Maximum Reserve Capacity Price for 2006.

**Fixed Operating and Maintenance Cost of an Open Cycle Gas Turbine Power Station**

In 2005, this value was estimated as \$15000/MW compared with the estimate for the 2006 capacity cycle of \$10474/MW. The estimation of this value was developed by SKM using industry best practices.

**Legal, Approval, Financing Costs and Contingency Margin**

This margin used for the 2005 capacity cycle was 15%. The IMO believes there is no reason to change this margin for the 2006 capacity cycle. The IMO has identified a disparity between the interest during construction calculation presented in Appendix 4 of the Market rules and the associated description. After considerable review, the IMO has determined that the 2005 Maximum Reserve Capacity Price was calculated correctly, and a similar implementation methodology has been adopted here. In the coming months, the IMO will propose amendments to the Market Rules Appendix to clarify this issue.

**2006 MAXIMUM RESERVE CAPACITY PRICE**

Using the methodology detailed in Appendix 4 of the Market Rules, and the input values listed above, the Maximum Reserve Capacity Price has been calculated as \$122962.11 for the 2006 Reserve Capacity cycle. Therefore, the IMO proposes that the 2008/09 Maximum Reserve Capacity Price be set at \$123000.00.

**DISCUSSION ON THE MAXIMUM RESERVE CAPACITY PRICE FOR THE 2008/09 RESERVE CAPACITY YEAR**

In 2004/05, the Maximum Reserve Capacity Price was determined to be \$150000/MW. This varies from the proposed 2008/09 value by approximately 18%. The main reasons for this difference are summarised below.

- Fall in the real cost of OCGT plant;
- Reduction in O&M cost estimates; and
- Reduction in the Transmission Connection cost estimates.

## SUBMISSIONS

The IMO invites submissions from all sectors of the Western Australian energy industry, including end users, on the proposed Maximum Reserve Capacity Price for the 2008/09 Reserve Capacity year. Following receipt of public submissions, the IMO will revise the Maximum Reserve Capacity Price prior to submission to the ERA for approval.

Submissions must in writing and be no longer than five pages in length (12 point font).

Submissions should be addressed to:

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The deadline for submissions is:

**4.00PM Western Standard Time on Friday, 6 January 2006.**

General enquiries may be directed to Troy Forward on 9254 4304.