

Independent Market Operator



Final Report: Maximum Reserve  
Capacity Price Review for the 2009/10  
Reserve Capacity Year

**January 2007**

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## EXECUTIVE SUMMARY

Each year, the IMO is required to conduct a review of the Maximum Reserve Capacity Price. This Final Report details the outcome of the review conducted in 2006 to determine the Maximum Reserve Capacity Price for the 2007 Reserve Capacity Cycle. The value used for the 2007 Reserve Capacity Cycle will be effective from 1 October 2009 through to 1 October 2010.

In October 2006, the IMO published a Draft Report and proposed a Maximum Reserve Capacity Price of \$129,900 per MW per year.

The review process included updating the costs of purchasing a 160MW Open Cycle Gas Turbine (OCGT), and a technical costing review of the prices associated with connection of the power station to the 330 kV transmission system. The technical review also considered the operations and maintenance costs associated with the transmission connection and the OCGT power station.

After publishing the Draft Report in accordance with clause 4.16.6 of the *Wholesale Electricity Market Amending Rules (September 2006)* (Market Rules), the IMO requested public submissions on the review. Three submissions were received by the IMO in respect of the Draft Report. Following consideration of the submissions received, the IMO has amended the transmission connection costs by approximately \$11M per year. The IMO has also provided an increase to the operations and maintenance costs. These changes increase the Maximum Reserve Capacity Price to \$142,200 per MW per Year.

The Maximum Reserve Capacity Price determined for the 2007 Reserve Capacity Cycle is approximately 16.1% higher than the similar value determined for the 2006 Reserve Capacity Cycle. The main cost increases have resulted from:

- An increase in the cost of purchasing the 160 MW OCGT (from prices published in the Gas Turbine World Handbook);
- Increases in the transmission connection and O&M costs.

These cost increases have been offset by the reduction in funding allocated to static var compensators.

This Final Report is produced in accordance with clause 4.16.7 of the *Market Rules* and is submitted to the Economic Regulation Authority for review in accordance with clause 2.26 of the Market Rules.

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## INTRODUCTION

Each year the IMO is required to conduct a review of the appropriateness of a number of the components that are used to determine the Maximum Reserve Capacity Price. This Final Report is produced in accordance with clause 4.16.7 of the *Wholesale Electricity Market Amending Rules (September 2006)* (Market Rules). Under clause 4.16.4 of the Market Rules, the IMO is required to assess the appropriateness of the following values, which are used to calculate the Maximum Reserve Capacity Price:

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

This Final Report has been developed following the preparation of a Draft Report published in accordance with clause 4.16.6 of the Market Rules and consideration following a public consultation process. In accordance with the Market Rules, the IMO has reviewed the appropriateness of each of these values for the 2007 Reserve Capacity Cycle by considering the input parameters that are used in calculating the Maximum Reserve Capacity Price. The Maximum Reserve Capacity Price is calculated in accordance with Appendix 4 of the Market Rules.

This Final Report and the submissions made through the public consultation process have been published on the IMO website ([www.imowa.com.au](http://www.imowa.com.au)). A copy of the Draft Report and the accompanying technical report can also be found on the IMO website.

### ***Reserve Capacity Cycle Timing***

This Final Report is presented for the 2007 Reserve Capacity Cycle. The Maximum Reserve Capacity Price determined for the 2007 Reserve Capacity Cycle will be effective from 1 October 2009 through to 1 October 2010.

### ***General Costing Methodology and Structure of this Final Report***

There are three main components to this review. The first is the determination of the capital cost of an OCGT power station. The second component is the determination of the cost associated with connection of that OCGT to the transmission system, and the third component is the estimation of O&M costs associated with the transmission connection and the OCGT plant.

The first component, that of determining the cost of developing an OCGT, is well specified in Appendix 4 of the Market Rules. The IMO makes comment about the appropriateness of this method as part of this Final Report.

Transmission connection costs associated with connecting an OCGT to the transmission system have been estimated by Sinclair Knight Merz (SKM), who were retained by the IMO for this purpose. The IMO has published the SKM report in the Reserve Capacity section of the IMO website ([www.imowa.com.au](http://www.imowa.com.au))

Operations and Maintenance costs associated with the OCGT and the Transmission assets were also analysed by SKM. This is a similar methodology that was adopted in a similar review conducted in 2005/2006.

### ***Maximum Reserve Capacity Price Outcome for the 2007 Reserve Capacity Cycle***

Following the review of the Maximum Reserve Capacity Price for the 2007 Reserve Capacity Cycle and the subsequent public consultation process the IMO proposes a final revised value of the Maximum Reserve Capacity Price to be **\$142,200** per MW per year. This value is proposed in accordance with clause 4.16.4 of the Market Rules.

The main upward cost drivers have been increases associated with the OCGT and transmission costs. Smaller downward pressures have resulted from an adjustment to the insurance costs that are funded as an ongoing Operations and Maintenance cost.

This Final Report is presented in a similar format as the Draft Report. This report first discusses the public consultation process and then presents the issue of cost escalation. The issue of cost escalation was raised previously in the public consultation process conducted in support of the determination of the Maximum Reserve Capacity Price for the 2008/09 Reserve Capacity Year. The following section lists the input parameters that are used in the Maximum Reserve Capacity Price calculation of Appendix 4 of the Market Rules. This section will allow the reader to verify the correct computation of the Maximum Reserve Capacity Price, in accordance with the Market Rules. The report then concludes with a discussion of the outcome of the Maximum Reserve Capacity Price review process.

## PUBLIC CONSULTATION PROCESS

After publishing Draft Report in accordance with Market Rule 4.16.6, the IMO initiated a public consultation process which included a formal call for submissions on the Draft Report and emailing the Draft Report to approximately 150 stakeholders and interested parties. The formal call for submissions was published in the West Australian on Saturday 21 October 2006. Three submissions were received by the IMO. These submissions were from:

- Alinta Sales Pty Ltd;
- Eneabba Gas Limited; and
- Beacons Consulting;

Copies of the submissions can be found on the IMO website. Appendices D through F present the IMO's response to the main issues raised in the submissions.

In response to the submissions received, the IMO has amended the transmission connection costing methodology to reflect the process used previously by the IMO. The transmission connection costs have been increased from A\$6.0899M to A\$ 16.908800 M. This results in a substantial increase to the Maximum Reserve Capacity Price for the 2009/10 Reserve Capacity Year. However, returning the funding model to the same basis that was used previously will help reduce regulatory risk associated with introducing changes.

In addition to the change to the transmission connection costs, the IMO has also included more detail in a number of the areas of concern raised by those making submissions to the IMO.

## ESCALATION OF COSTS

One of the outcomes from the review conducted last year was the apparent increase in construction related costs that have been experienced over the past few years. Following the review and public consultation process conducted at the end of 2005, the IMO increased the costs allocated to transmission construction components within the Maximum Reserve Capacity Price calculation. Presented below are official CPI rates as provided by the Australian Bureau of Statistics.

### *CPI*

The following CPI values are quoted by the Australian Bureau of Statistics for the period June 2005 and June 2006.

CPI June 2005	148.4
CPI June 2006	154.3

Where the CPI is the weighted average of eight capital cities.

These values result in an inflation rate of 3.98% over the period of June 2005 through June 2006 and are provided here as a reference for the Industry Escalation discussion below.

### *Industry Escalation*

This year, the IMO requested that SKM provide an assessment of the cost escalation for the transmission capital and O&M costs between 2005 and 2006. SKM conducted an analysis of a number of publicly available indices, and compared the impact of these to increases in actual component and construction costs. SKM determined that the transmission costing outcomes between 2005 and 2006 should be indexed at 5.48%. SKM has also referenced this escalation parameter against their internal costing database for transmission capital and O&M costs.

A similar analysis was conducted for the generator O&M costs that were provided in the SKM report titled “2006 Review of 160MW OCGT Transmission Link Pricing and GT fixed O&M”. This analysis showed an increase of 4.25% in costs between 2005 and 2006. A copy of the SKM report can be found on the IMO website ([www.imowa.com.au](http://www.imowa.com.au)).

The IMO proposes to use a cost escalation of 5.48% for transmission related components and 4.25% for generation related components when translating 2006 costs into costs to June 2007 for the purposes of the Maximum Reserve Capacity Price. Therefore, it is the IMO’s view that the most appropriate methodology for estimating future cost escalation (between 2006 and 2007) is to use those values determined for the 2005 to 2006 period by SKM for the appropriate components.

## INPUT PARAMETERS TO THE MAXIMUM RESERVE CAPACITY PRICE CALCULATION

### *US CPI*

In accordance with Appendix 4 of the Market Rules, CPI values have been sourced for the United States of America. CPI information was sourced from the following US Bureau of Labor Statistics website:

<ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt>

This information shows the following CPI information:

June 2004:	189.7
June 2005:	194.5
June 2006:	202.9

Appendix 4 of the Market Rules indicates that the US CPI must be forecast to June of the year in which the Reserve Capacity Auction would take place, in this case June 2007. The IMO is not in a position to provide detailed speculation on the future level of this value. The IMO therefore proposes to use a simple linear extrapolation of the CPI from June 2006 to June 2007 using the period June 2005 to June 2006. This results in the following equation:

$$\frac{USCPI[2006]^2}{USCPI[2005]}$$

The extrapolated CPI for June 2007 becomes:

June 2007:	211.663
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Therefore, the terms used in the Maximum Reserve Capacity Price calculation are:

<b>USCPI[2006]:</b>	<b>202.9</b>
<b>USCPI[2007]:</b>	<b>211.7</b>

### *Exchange Rate*

The Market Rules indicate that the Australian/US exchange rate to be used “is the forecast Australian dollar to United States of America dollar, made in year t-x, for midway through year t, based on the Australian Federal Government’s budget forecasts.” The IMO believes that given the speculative nature of an exchange rate forecast, it is appropriate in this case to simply adopt the most recent exchange rate available.

The Australian/US exchange rate as quoted by the Reserve Bank of Australia (13 October 2006) for the month ending August 2006 was 1.3111. This information can

be found at <http://www.rba.gov.au/Statistics/Bulletin/F11hist.xls>. The IMO has based the exchange rate at June 2007 on the latest available monthly information, as at the end of August 2006. Therefore, for the purposes of the Maximum Reserve Capacity Price calculation,

**ER[2007]: 1.3111**

### **Capacity Parameter CAP**

The optimum size of an OCGT is one that is expected to be the last procured machine required to fulfilling the Reserve Capacity Reliability Criterion. In this case, the IMO considers the appropriate capacity for an OCGT is approximately 160 MW and there is no basis for changing the size, denoted as CAP. A capacity of 160 MW does represent a reasonably cost-efficient size of power station, when the OCGT prices listed in the Gas Turbine World Handbook are assessed. Reducing CAP below 100 MW appears to result in substantial increases to the OCGT cost.

The IMO has initiated a high-level review of the Maximum Reserve Capacity Price methodology, but it is not viable to conduct this review in the timeframe required for the 2007 Reserve Capacity Cycle.

**CAP: 160 MW**

### **GAS Turbine Price**

As at the time of this review, the most current version of Gas-Turbine World is the 2006 edition. The lowest quoted price of the three open cycle gas turbines with capacities closest to 160MW is US\$180,000/MW for a Siemens SGT5-2000E machine.

**GTP[2006]: US\$360000/MW.**

### **Capital Cost of an OCGT**

In accordance with Appendix 4 of the Market Rules, the capital cost of an open cycle gas turbine in Australian dollars is expressed as PC[t] and is calculated by the following formula.

$$PC[2007] = GTP[2006] \times (USCPI[2007]/USCPI[2006]) \times ER[2007]$$

In conducting the review in accordance with clause 4.16.4 of the Market Rules, the IMO considers it still appropriate to include an allowance for low NOx burners which are commonly specified to meet environmental standards. A margin of 5% is included in the Margin M for this purpose. Using the term NOx to represent the low nitrous-oxide emissions component, PC[t] is now represented by the following equation:

$$PC[2007] = GTP[2006] \times (USCPI[2007]/USCPI[2006]) \times ER[2007] \times (1 + NOx)$$

PC[2007] therefore becomes:

**PC[2007]:           A \$517,103 per MW**

The IMO proposes to use the value above in the determination of the Maximum Reserve Capacity Price for the 2007 Reserve Capacity Cycle.

The inclusion of a separate component for low NOx burners has always been included in the Maximum Reserve Capacity Price determination. The Environmental Protection Authority (EPA) States<sup>1</sup> “In relation to large gas turbines burning natural gas, the EPA notes that most new industries are now, as a matter of course, adopting dry lox NOx burner technology as best practice. The IMO supports this position and the inclusion of low NOX burners on this basis. The rate of 5% was decided through the industry consultation process conducted prior to the First Reserve Capacity Cycle. However, the IMO proposes to consider the separate funding of low NOx burners as part of a wider review currently being conducted by an industry-based Advisory Group. This Advisory Group will assess the general determination methodology of the Maximum Reserve Capacity Price and will propose changes to the Market Rules if necessary.

#### ***D – Real Interest Rate***

The real interest rate has been calculated in accordance with Appendix 4 of the Market Rules by estimating the Commonwealth 10 Year Bond Rate (real) plus a Margin for Debt of 1.5%. The Real Commonwealth 10 Year Bond Rate for 30 June 2017 was found by interpolation between the Indicative Mid Rates of Commonwealth Government Securities with maturity dates of 20 August 2015 and 20 August 2020 respectively. This information was current as at 9 October 2006. The data used in this calculation are included at Appendix A for reference.

The Real Commonwealth 10 Year Bond Rate is calculated as 2.41%. The parameter D is:

**D                           0.0391**

#### ***Fixed Fuel Costs***

The Fixed Fuel Costs (ie. the costs associated with the installation of fuel capacity) calculated in 2005/06 will be escalated for the 2006/07 determination of Maximum Reserve Capacity Price. An escalation rate of 5.48% will be used to reflect the escalation of costs within the electricity and construction industries. The FFC[2006] was A\$3.075M. FFC[2007] therefore becomes:

**FFC[2007]           A\$3.243500 M**

The FFC was determined prior to the first Reserve Capacity Cycle based on similar costs of installing tanks on Torrens Island. The values have been escalated each year. A gas pipeline lateral connection is not factored into the Fixed Fuel Costs as this is not seen as a necessary component for the least-cost OCGT power station on the system that would be expected to be run for a limited number of hours very

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<sup>1</sup> Environmental Protection Authority (2000) Guidance Statement for Emissions of Oxides of Nitrogen from Gas Turbines, Guidance Statement 15, p5.

infrequently (for example, under extreme system load conditions the facility may only run for a few hours once in every ten years).

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

SKM were retained to provide estimates of connecting a 160MW OCGT to the 330KV transmission system. In 2006, the total transmission connection cost was estimated at A\$14.410M and later revised to A\$17.516M following the public consultation and review process. It is noted that this price included a significant component for the funding of Static Var Compensators (SVCs). This methodology has been changed for the 2007 Maximum Reserve Capacity Price Review.

For this price review, a range of different options were costed as part of the SKM work package. The SKM report can be found in the Reserve Capacity section of the IMO website ([www.imowa.com.au](http://www.imowa.com.au)). The IMO has elected to use a more complex case than last year, which is now characterised by:

Line Length:	2km
Terrain:	50% Flat/50% Undulating
Urban/Rural:	50% Urban/50% Rural
No Road Crossings per km:	1

The scenario last year was based on a 2km connection, 100% flat terrain, 100% rural and no road crossings. This scenario was chosen to reflect the likely environment in which a 2km transmission connection would be developed. The selection of the new scenario does not result in a material change to the total transmission costs. The total transmission cost increases by approximately \$55,000. Transmission connection costs for the Turn-in and Turn-out configuration are shown in Table 1.

**Table 1 Transmission Connection Costs (Current and projected for the 2007 Reserve Capacity Cycle)**

<b>ITEM</b>	<b>Cost Estimate (2006)</b>	<b>Cost Estimate (2007)</b>
<b>Site Establishment</b>	\$ 1,128,545	\$ 1,190,389
<b>Line Tee-in</b>	\$ 242,247	\$ 255,522
<b>Switchyard</b>	\$ 2,992,259	\$ 3,156,235
<b>Tie Line</b>	\$ 664,753	\$ 701,181
<b>Subtotal</b>	\$ 5,027,804	\$ 5,303,327
<b>EPCM@15%</b>	\$ 754,171	\$ 795,499
<b>Deep Connection</b>	\$ 10,250,000	\$ 10,810,000
<b>Total</b>	\$ 16,031,975	\$ 16,908,826

The 2006 costs provided by SKM are further escalated by 5.48% to represent costs in 2007 figures. The 2005/06 review also included a component for deep connection costs and network reinforcement costs associated with new generation development. A value of A\$10.25M was used in the 2005/06 Maximum Reserve Capacity Price review. The IMO is now of the understanding that deep connection costs are likely to be borne managed through either:

- capital contributions by the generation proponents; or
- as a shared asset augmentations connection cost, distributed through the asset base of and recovered by the Network Operator from all network users via tariffs; or
- a combination of these methods.

The 2005/06 Maximum Reserve Capacity Price estimation also included the cost of an SVC. However, the IMO does not consider this to be an essential requirement as part of the Maximum Reserve Capacity Price. The reason for this is that an SVC is typically needed in conjunction with a generator remote from the load centre and is therefore a major component of the location-specific connection costs to be considered by the developer. There are other locations in the network where connections will not require an SVC. Prior to publishing the Draft Report, the IMO removed the deep connection cost (\$10.25M previously). SVC costs were inseparable from other deep connection costs within the total value allocated. While the IMO considers that the Maximum Reserve Capacity Price should not include location specific SVC costs, following consideration of the submissions received through the public consultation process, the IMO has reinstated the total allocation

for deep connection costs. The IMO has escalated the historical values using the industry escalation parameters determined by SKM. The previous value of A\$10.25M becomes A\$10.81M in 2007 terms following escalation by 5.48%.

The IMO undertakes to raise this issue within the Advisory Group that has been developed to review the Maximum Reserve Capacity Price methodology.

After revision, the parameter TC becomes:

$$TC[2007] = A\$ 16,908,826$$

$$TC[2007] = A\$ 16.908800 \text{ M (rounded)}$$

The review conducted by SKM appears to have appropriately captured the costs associated with connection of a 160MW OCGT to the 330 kV transmission system. SKM have used their comprehensive cost database to analyse transmission connection costs and have evaluated price escalation factors in a robust manner.

### **Margin M**

The margin M is included to cover legal, approval and financing costs and contingencies. This term was set in 2005 and 2006 at 15%. The IMO believes this is appropriate in 2007. Margin M therefore is:

$$M = 0.15$$

### **Capital Cost**

The term CAPCOST[t] refers to the total capital cost, expressed in million Australian Dollars in year t, assumed for a 160 MW OCGT. This is calculated using the following formula:

$$CAPCOST[t] = PC[t] \times (1 + M) \times CAP \times (1 + 1.5 \times D + 0.5 \times D^2) + TC[t] + FFC[t]$$

$$CAPCOST[2007] = A \$120,952,307$$

### **Fixed Operation and Maintenance Costs**

#### **Fixed Transmission O&M Costs**

These costs have been estimated by SKM. Details of the costing methodology used by SKM can be found in the SKM report. Transmission O&M costs make up part of the total fixed O&M costs referenced by the term FIXED\_O&M[t] in Maximum Reserve Capacity Price calculation of Appendix 4 of the Market Rules.

Transmission O&M Costs: A \$937 per MW per year.

This is determined by taking the average of the first 15 years of Transmission costs determined by SKM and presented in Table 8 of the report "2006 Review of 160MW OCGT Transmission Link Pricing and GT fixed O&M". The 2006 costs provided in the SKM report have been escalated to 2007 figures using an escalation of 5.48%.

Following the public consultation process and review, the transmission O&M costs have been revised from \$249 per MW per year to \$937 per MW per year. This represents a revision of the costing model and the changes result from the Western Power use of system charges that should be funded.

### **Fixed OCGT O&M Costs**

Fixed O&M costs for a 160 MW OCGT have been estimated by SKM. The first 15 years of costs are included to represent the funding basis considered in Appendix 4 of the Market Rules. The SKM report details the total fixed O&M costs of the OCGT to year 15 as A \$21,535,995 in 2006 terms. This is then escalated at 4.25% to 2007 values equates to A \$9,355 per MW per year.

Generation O&M Costs: A \$9,355 per MW per year.

### **Insurance Costs as an O&M Cost**

The IMO believes it appropriate to fund insurance to a level required to cover replacement costs of the capital equipment. The IMO believes it is not appropriate to fund insurance at a level which provides any cover for lost income or the contractual and risk position of the proponent. Therefore, an allowance of 0.5% of the capital replacement cost has been included in the Fixed O&M costs. Table 2 shows the insurance costs included as fixed O&M costs within the Maximum Reserve Capacity Price. Following the public consultation process and further review, the IMO has increased the insurance cost funding to include the Line-Tee-In as a capital replacement item. This adds \$255,522 to the total amount insured and raises the insurance premium from \$1,413 per MW per year to \$1,421 per MW per year.

Table 2 Insurance Costs

<i>ITEM</i>	<i>Value</i>
<b>Transmission Capital Costs [2007]</b>	
Tie Line	\$ 701,181
Switchyard	\$ 3,156,235
Line Tee In	\$ 255,522
<b>Generation Capital Costs [2007]</b>	
Generator	\$41,368,222
<b>Total [2007]</b>	
Insurance Premium	0.005
<b>Total Insurance Costs</b>	<b>\$1,421 per MW per year</b>

**Total Fixed O&M Costs**

The total Fixed O&M Costs are presented in Table 3 below.

Table 3 Fixed Operation and Maintenance Costs

<i>ITEM</i>	<i>Cost Estimate (per MW per year)</i>
<b>Transmission Fixed O&amp;M [2007]</b>	<b>\$ \$937</b>
<b>OCGT Fixed O&amp;M [2007]</b>	<b>\$9,355</b>
<b>Insurance as Fixed O&amp;M [2007]</b>	<b>\$1,421</b>
<b>Total</b>	<b>\$11,713 per MW per year</b>

**FIXED\_O&M: \$11,713 per MW per year**

**Annualised Capital Cost**

The Weighted Average Cost of Capital (WACC) is calculated using the real Commonwealth 10 year bond rate of 2.41%, a margin for debt of 0.015 and a margin for equity of 0.151.

The resulting WACC is 0.0935. The WACC calculation has been included in Appendix B.

The annualised capital cost, using a capital cost of \$120,952,307 , a WACC of 0.0935 and a term of 15 years becomes:

**ANNUALISED\_CAPCOST[2007]:      A\$15,316,608 per year**

### **Summer De-rating Factor**

A summer de-rating factor of 1.18 is outlined in the Market Rules.

**SDF:      1.18**

### **Factor K**

Factor K is set so that the net present value of 10 years worth of payments escalated on a CPI-1% basis is equivalent to the payment stream from 10 years worth of unescalated payments. The forecast GDP increases from the 2006 Statement of Opportunities Report have been used as a proxy to CPI. A WACC of 9.35% represents the rate of return.

**Table 4 Inflation Rates used to Determine Factor K**

<b>Year</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>14/15</b>	<b>15/16</b>	<b>16/17</b>	<b>17/18</b>	<b>18/19</b>
<b>Inflation Rate (CPI)</b>	2.8	4.0	4.5	3.7	3.7	4.2	4.0	4.0*	4.0*	4.0*

Note: Some inflation values estimates are beyond the forecast horizon of the SOO. These are denoted by \*

To increase fidelity of the computation, this year NPV calculations have been conducted on a monthly basis. This also replicates the monthly Reserve Capacity payment regime. The factor K has been computed as:

**K:      1.1409**

A formulation of the Factor K is included in Appendix C.

### **Maximum Reserve Capacity Price**

The Maximum Reserve Capacity Price is calculated using the following equation from Appendix 4 of the Market Rules.

$$PRICECAP[2007] = K \times \left( \frac{FIXED\_O \& M[2007] + ANNUALISED\_CAPCOST[2007]}{CAP / SDF} \right)$$

Using the values determined by the IMO and presented in the above sections, PRICECAP for the 2007 Reserve Capacity Cycle is determined to be \$142,239.40, which is rounded to:

**PRICECAP[2007]:        \$142,200 per MW per year**

A Maximum Reserve Capacity Price of **\$142,200** per MW per year is proposed by the IMO. This represents an increase of 16.1% of the price determined for the 2006 Reserve Capacity Cycle.

## CONCLUSION

The IMO has conducted a review of the main factors used to determine the Maximum Reserve Capacity Price. For the 2007 Reserve Capacity Cycle, the IMO proposes that the Maximum Reserve Capacity Price be set at **\$142,200** per MW per year.

The Maximum Reserve Capacity Price of **\$142,200** per MW per year represents an increase of 16.1% above the price for the 2008/09 Reserve Capacity Year. The main cost increases have been in the purchase price of a 160 MW OCGT, as listed in the Gas Turbine World Handbook, and increases in the prices associated with transmission components, which are estimated to be in the order of approximately 5.5%. Counteracting these cost increases has been the removal of static var compensators from the transmission costing model. This is a discretionary item resulting from choice of location when selecting a power station site and is therefore not a necessary component within the costing model.

The review conducted to support the analysis of the factors contributing to the Maximum Reserve Capacity Price included the selection of a more detailed transmission connection option and a detailed review of escalation parameters that have influenced transmission prices between 2005 and 2006.

The IMO has conducted a public consultation process and received three submissions in response to the Draft Report that was published. As a result of the public consultation process, the IMO has revised a number of the values and included more detail on financial components that contribute to the determination of the Maximum Reserve Capacity Price. The outcome of the revisions is an increase to the Maximum Reserve Capacity Price from the first proposed value of \$129,900 per MW per year to \$142,200 per MW per year.

## APPENDIX A - COMMONWEALTH BOND RATES

Item	Issue Date	T1405	T1406
		Maturity Date 20-Aug-15	Maturity Date 20-Aug-20
1	12-Sep-2006	2.505	2.335
2	13-Sep-2006	2.500	2.320
3	14-Sep-2006	2.505	2.325
4	15-Sep-2006	2.555	2.370
5	18-Sep-2006	2.575	2.390
6	19-Sep-2006	2.570	2.385
7	20-Sep-2006	2.485	2.300
8	21-Sep-2006	2.495	2.305
9	22-Sep-2006	2.435	2.245
10	25-Sep-2006	2.400	2.205
11	26-Sep-2006	2.405	2.205
12	27-Sep-2006	2.450	2.240
13	28-Sep-2006	2.450	2.240
14	29-Sep-2006	2.450	2.245
15	2-Oct-2006	2.470	2.255
16	3-Oct-2006	2.435	2.230
17	4-Oct-2006	2.460	2.255
18	5-Oct-2006	2.495	2.280
19	6-Oct-2006	2.500	2.290
20	9-Oct-2006	2.580	2.365
20-day Moving Average		2.48600	2.28925
Rate Delta		-0.197	
Date Delta (DAYS)		1,827.000	
Start Date		20-Aug-15	
Target Date		<b>30-Jun-17</b>	
End date		20-Aug-20	
<b>Interpolated Rate</b>		<b>2.41277</b>	

Source Data

[http://www.rba.gov.au/Statistics/HistoricalIndicativeMidRates/2005\\_to\\_2006.xls](http://www.rba.gov.au/Statistics/HistoricalIndicativeMidRates/2005_to_2006.xls)

## APPENDIX B - WEIGHTED AVERAGE COST OF CAPITAL

The following WACC formula is used for the determination of the Maximum Reserve Capacity Price.

<i>ITEM</i>	<i>Value</i>
<b>Margin for Debt (M<sub>D</sub>)</b>	1.5%
<b>Margin for Equity (M<sub>E</sub>)</b>	15.1%
<b>Real Commonwealth 10 Year Bond Rate (B)</b>	2.41%
<b>Return to Debt (R<sub>d</sub>)</b>	(B+M <sub>d</sub> ) = 3.91%
<b>Return to Equity (R<sub>e</sub>)</b>	(B+M <sub>e</sub> ) = 17.51%
<b>Debt to Equity Ratio</b>	60:40
<b>D/V</b>	0.6
<b>E/V</b>	0.4

$$WACC = R_e \frac{E}{V} + R_d \frac{D}{V}$$

The values of M<sub>D</sub>, M<sub>E</sub>, E/V and D/V are all detailed in the Market Rules and the IMO does not consider there any basis to change these parameters.

It is noted that with respect to the return to debt component of the WACC, the methodology listed in Appendix 4 of the Market Rules states:

“...a real return to debt equal to the Commonwealth 10 Year Bond Rate (Nominal) plus a margin for debt of 1.5%...”

The IMO considers this statement to be misleading and partially incorrect. This statement should read:

“...a real return to debt equal to the Commonwealth 10 Year Bond Rate (Real) plus a margin for debt of 1.5%...”

Similar to the way the sentence has been structured for the return to equity component.

There does not appear to be a basis for mixing real and nominal risk-free rate terms in this portion of WACC computation and the historical calculations have always been performed completely on a real basis. Therefore the IMO has adopted the second interpretation presented and proposes to introduce rule changes to clarify this typographical error.

This results in a real pre-tax WACC for the purposes of determining the Maximum Reserve Capacity Price.

The IMO believes it appropriate to re-visit this issue as part of the wider review being undertaken by the IMO and the Advisory Group.

## APPENDIX C - FACTOR K

The Market Rules indicated that the Factor K should be set so that the net present value of 10 years worth of payments escalated on a CPI-1% basis is equivalent to the payment stream from 10 years worth of unescalated payments. The following formulae are used to describe the methodology of deriving the factor K.

Let the net present value of unescalated payments be defined by:

$$NPV_{unescalated} = \sum_{t=1}^n \frac{C}{(1+r_w)^t}$$

Where:

- C is the payment
- $r_w$  is the return equal to WACC
- n is equal to 10

Also let the net present value of escalated payment be defined by:

$$NPV_{escalated} = \sum_{t=1}^n \frac{C(1+r_e)^t}{(1+r_w)^t}$$

Where:

- $r_e$  is the escalation parameter equal to CPI-1%.

Introducing the factor K, the derivation becomes

$$K \times \sum_{t=1}^n \frac{C}{(1+r_w)^t} = \sum_{t=1}^n \frac{C(1+r_e)^t}{(1+r_w)^t}$$

Normalising C, Factor K becomes:

$$K = \frac{\sum_{t=1}^n \frac{(1+r_e)^t}{(1+r_w)^t}}{\sum_{t=1}^n \frac{1}{(1+r_w)^t}}$$

It is noted that the above equations consider an equal and consistent escalation of CPI through the investment period. In practice, the IMO has used a proxy CPI as detailed in Table 4 of this report.

The term  $r_e(t)$  is introduced to capture the time-dependent nature of this parameter.

$$K = \frac{\sum_{t=1}^n \frac{(1+r_e(t))^t}{(1+r_w)^t}}{\sum_{t=1}^n \frac{1}{(1+r_w)^t}}$$

The IMO conducts this computation on a month-by-month basis across the 10-year term, so it is impractical to include the spreadsheet in this report. It is further noted that CPI as used in the Market Rules is not strictly the correct terminology, but has been used in the above equations to maintain consistency. Estimates of inflation (Table 4) are used.

## APPENDIX D IMO DISCUSSION REGARDING SUBMISSION MADE BY ALINTA

The IMO wishes to thank Alinta providing the response to the Draft Report. The IMO has considered the main issues raised by Alinta and has made a number of changes to the price methodology in response to Alinta's submission. Detailed below are specific comments in reference to the main points raised by Alinta. IMO comments are in **BLUE** text font. In general, the submission made by Alinta raises a number of pertinent questions, but no evidence is provided to support the claims. Supporting evidence was strongly encouraged in the public submission process. Generally, Alinta raises concerns about the level of pricing of some components within the Maximum Reserve Capacity Price determination methodology. These claims are difficult to quantify without supporting evidence.

Regulatory Risk is also raised as an issue in the Alinta submission. However, Alinta then suggests that the IMO conduct confidential discussions with Market Generators, and to change the pricing methodology of the transmission scenario. This is inconsistent with the issue of reducing variability. However, following the arguments presented by Alinta with respect to the inclusion of deep connection costs, the IMO has increased the level of funding in this component. The impact of this is an increase to the Maximum Reserve Capacity.

### Capital Cost - Gas Turbine Price

Alinta suggests that the IMO reviews the requirement to utilise the lowest of the quoted gas turbine prices. Practically, it may not be appropriate to utilise the manufacturer with the lowest quoted price as they may not be able to deliver the project within the required timeframes.

The determination of the Gas Turbine Price is clearly defined in the Market Rules. There is no basis for deviating from this methodology under the current framework without detailed review. This methodology was developed under the umbrella of the Market Rules Development Group, an industry-based consultation group established to consider such methodologies. Alinta Sales was represented in this group. That said, a new industry-based Advisory Group has been established to determine if the pricing methodology is appropriate for circumstances within the SWIS.

### Electricity Transmission Connection Costs — Connecting to the SWIS

Alinta disagrees with the Sinclair Knight Merz (SKM) approach to calculating the electricity transmission connection costs.

The Wholesale Electricity Market (WEM) rules state that the transmission connection cost *'is the cost of electricity transmission assets required to connect an open cycle gas turbine power station to the SWIS.'* However, the SKM report appears to have calculated the capital connection cost for connecting a 160MW generator to a generic 330kV transmission line and has not taken into account the actual costs required to meet Western Power's requirements that are unique to the SWIS. For example, the underlying configuration proposed in the SKM report is unlikely to be acceptable to Western Power given the outages required on the 330kV system to construct it.

In order to obtain more accurate cost estimates Alinta suggests that the IMO should:

## Public

- arrange for its consultant to liaise more closely with Western Power for current market advice;
- directly obtain the relevant cost estimates from Western Power as suggested in s4 16 4c of the WEM rules; and
- Confidentially liaise with Market Generators, who have the most recent/current experience of these costs, for current market advice.

The costing approach, including the selection of the scenario is the same as that used last year. Through the public consultation process and informal discussions Western Power have been provided with an opportunity to comment on the appropriateness, among other things, of the transmission connection costs associated with the determination of the Maximum Reserve Capacity Price. Western Power has not challenged the connection option and costs presented by the IMO in the Draft Report through the public submission process.. Therefore the IMO considers them to be appropriate.

The proposal for the IMO to confidentially liaise with Market Generators does not provide sufficient levels of transparency for the entire process. This approach would be of particular concern for Market Customers who would potentially be affected by any pricing changes discussed and agreed confidentially with the IMO and Market Generators.

### **Transmission Connection Costs — Length of Tie Line and Tie Line Cost**

Alinta proposes that the length of the tie-line used in the transmission connection cost estimate is typically less than that required by generators connected to the South West Interconnected System (SWIS). Alinta estimates that, on average, tie-lines connecting generators to the SWIS 330kV system are longer than 2km assumed by the IMO and that an amount of 10km to 20km would be more appropriate Alinta suggests that the IMO assess the location of existing, proposed and under construction generators with a 330kV connection to the SWIS in order to determine an average tie- line length on which to base the cost estimate.

Furthermore, the tie line costs incurred by proponents in the current market are significantly greater than those utilised in the SKM report. Over the last 3 years Alinta has experienced significant cost increases in raw materials and labour associated with the construction of transmission lines that do not appear to be considered in the SKM report.

In order to obtain more accurate cost estimates Alinta suggests that the IMO should:

- arrange for its consultant to liaise more closely with Western Power for current market advice;
- directly obtain the relevant cost estimates from Western Power as suggested in s4. 16 4c of the WEM rules; and
- confidentially liaise with Market Generators, who have the most recent/current experience of these costs, for current market advice.

The Maximum Reserve Capacity Price model is based on a generic scenario, the details of which were largely discussed and agreed to within the aforementioned Market Rules Development Group. This assumed a site located close to the transmission system to minimise costs. The IMO has increased the complexity of the scenario from last year without changing the scenario entirely. The change to a different scenario would, as is raised in Alinta's submission would increase regulatory risk, something not supported by Alinta. Alinta does not provide and evidence or supporting information for its claims that an amount of 10km or 20km would be more appropriate.

### **Transmission Connection Costs — Switchyard Costs**

Alinta comments that the switchyard costs incurred by proponents to meet Western Power requirements are significantly greater than those assumed in the SKM report. In order to obtain more accurate cost estimates. Alinta suggests that the IMO should:

- arrange for its consultant to liaise more closely with Western Power for current market advice;
- directly obtain the relevant cost estimates from Western Power as suggested in s4 .16 .4c of the WEM rules; and
- confidentially liaise with Market Generators, who have the most recent/current experience of these costs, for current market advice

Comments have been made in the previous response regarding the proposal to include Western Power and to confidentially liaise with Market Generators.

### **Transmission Connection Costs - Removal of SVCs**

The SWIS is becoming increasingly constrained, with Western Power imposing additional capital contribution requirements on users to enable Western Power to fund voltage support initiatives and fault level upgrades.

Alinta has significant concerns with the sudden change of methodology to remove costs associated with SVCs.

The draft report (Page 10) states that this change is *discussed in detail*. However, Alinta has been unable to locate any detailed discussion that goes toward the justification of this key change in the methodology and the basis on which it needs to diverge from the previous two Maximum Reserve Capacity Price determinations by the IMO.

The draft report states that *'there are other locations in the network where connections will not require an SVC'*. This assertion ignores the vast array of complex considerations and limitations that a generation proponent faces in the locating and eventual construction of a power station. For example, costs to meet more stringent location specific planning requirements, provision of water supplies, etc. Generally proponents are unable to locate generation in the metropolitan area.

Alinta notes that the conclusion of the draft report refers to a *transmission costing model* and *funding model* that will be impacted by the removal of the SVCs. There

appears to insufficient detail in the report on these two models for Alinta to understand what allowances may have existed in these previously for SVCs and how they will be impacted by removing SVCs from them.

Alinta suggests that the IMO prepare a detailed document on this matter and invite further public comment before releasing a final report.

Following the consultation process, the IMO has re-instated the deep connection costs, which include an inseparable component for SVCs. Therefore they are now included in the final revised value. The IMO believes that this is one of the issues that should be discussed as part of the review process currently underway. This review will involve discussions with an industry Advisory Group and a public consultation process..

### **Transmission Connection Costs — Shared Network/Deep Connection Costs**

The WEM rules state that the transmission costs should include *'an estimate of the cost of augmenting the shared network to facilitate the connection of the open cycle gas turbine power station..'*

The draft report (Page 11) states that a value of \$10.25M was used in the previous review for deep connection and network reinforcement costs. Given that the total proposed transmission connection cost estimate is \$6 098M Alinta can only conclude that deep connection and network reinforcement costs are to be excluded in the current transmission connection cost. If this is the proposal it should be explicitly stated in the report as it is a significant change in methodology.

In a recent submission to the Economic Regulation Authority (ERA) concerning Western Power's proposed network Access Arrangement, Alinta submitted that the majority of Western Power's costs to connect a generator or large load to the SWIS should be added to Western Powers capital base, rather than being paid by users in the form of a capital contribution. If the ERA agrees with Alinta's submission then there would be a drop in the electricity transmission connection costs, which could then be reflected in determination of the Maximum Reserve Capacity Price. However, whilst the status quo is maintained, Alinta contends that electricity transmission connection costs have increased, not decreased. Alinta submits that the IMO should be increasing electricity transmission costs and that deep connection and network reinforcement costs should be included.

The IMO accepts this argument and has included the previous cost of \$10.25M, escalated to 2007 by 5.48% to \$10.81M.

### **Fixed Transmission O&M Costs**

Transmission fixed O&M costs were estimated as \$19,000/MW for the 2005 cycle, determined to be \$7,823/MW for the 2006 cycle and proposed to be only \$249/MW for the 2007 cycle, This is a very significant reduction proposed by the IMO in the Draft Report and, because it is an annual cost rather than one that will be capitalised over a number of years, it will have a large impact on the Maximum Reserve Capacity Price. Alinta submits that the IMO has not provided sufficient detail on the derivation of the proposed operating and maintenance cost (including why there has been such a significant change from previous estimates) to enable meaningful comment on the figures. Given the impact of the proposed change, Alinta suggests

that the IMO prepare a detailed document on this matter and invite further public comment before releasing a final report.

The transmission fixed O&M costs estimates for the 2006 cycle (2008/09 Reserve Capacity Year) and for the 2009/10 Reserve Capacity Year are based on a more rigorous analysis of the costing inputs that were used for the 2005 Reserve Capacity Cycle (Energy Market Commencement through to 1 October 2008). The major difference between the Maximum Reserve Capacity Price for 2008/09 and the Maximum Reserve Capacity Price for 2009/10 was the inclusion of \$1,200,000 per year in insurance costs which were added to the Fixed Transmission O&M cost component last year. The addition resulted from the public consultation process and raised this as an issue this year. The \$1.2M equates to \$7500 per MW per year, accounting for the main difference in values (\$7823 per MW per Year as opposed to \$249 per MW per year). These costs have been included, but have been provided separately this year. The IMO has also reviewed ongoing connection charges following the consultation process.

### **Fixed Fuel Costs - Lateral Pipeline Installation Cost**

Alinta comments that the level of detail on fixed fuel costs on Page 10 is insufficient for Alinta to provide meaningful comment, Alinta notes that bullet (e) in the Introduction states that the MC is required to assess the appropriateness of *'the capital cost of a gas lateral to allow for dual fuel capability'*. Alinta notes that there is no mention of a gas lateral in the remainder of the report.

Alinta submits that the IMO should be including the cost of a lateral pipeline installation when determining the Maximum Reserve Capacity Price. Clauses 4.164(d) and (e) of the Wholesale Electricity Market Rules require that the maximum reserve capacity price will be based on a dual fuel gas turbine in which the cost of fuel tanks and a gas lateral pipeline are included. It appears that the IMO has included the cost of fuel tanks but not the cost of a lateral pipeline.

The decision to fund fuel tanks and not a gas pipeline lateral was an outcome of the Market Rules Development Group consultation process prior to the determination of the first Maximum Reserve Capacity Price in 2005. Alinta was a party to this consultative process. In accordance with clause 4.16.4 of the Market Rules, the IMO considers it appropriate to continue the funding approach on the same basis that was used previously with the provision that the issue is re-visited by the Maximum Reserve Capacity Price Advisory Group.

### **Insurance**

The draft report provides insufficient detail as to how the 0.5% of the capital replacement cost was derived to determine the level of insurance. Alinta suggests that the actual amounts are greater and significantly greater during the construction phases of a project.

Given that the capital replacement cost used to derive the level of insurance is also low the resulting provision for insurance appears too low.

The insurance rates of 0.5% of the capital replacement costs are derived from the statement made on page 15 of the SKM technical report. The statement made by SKM refers to insurance for the transmission line connection costs. This rate has been applied to both the transmission line connection and the generation plant costs. The insurance cost estimate includes the replacement cost of generator and the replacement cost of the main transmission components. Alinta makes the statement that both the rate of 0.5% and the capital replacement costs are too low, but provides no supporting evidence for such claims. In addition to this, Alinta states that the insurance costs are higher during the construction phases. It would not seem appropriate to include an O&M cost for insurance over the life of the project for short-term developmental costs. No comment is made as to whether the cost estimates referred to by Alinta include any energy or capacity contractual risk cover. As such, the IMO does not believe sufficient argument has been presented to warrant substantial change to this component. However, the IMO has reviewed the input values used and has expanded the insurance to cover line-tee-in costs.

### IMO Disclaimer

Alinta submits that the IMO should review and amend the disclaimer attached to the report. The disclaimer states that the document is published *‘as an information service’*, *‘contains only general information’* and *‘makes no representations or warranty as to the accuracy, reliability, completeness or suitability for particular purposes of the information in this document’*. These statements appear inconsistent with the importance and intent of the report and question the point of publishing the report at all.

The IMO has removed this disclaimer.

### Regulatory Risk Concerns

Alinta notes that the cost estimates utilised to derive the Maximum Reserve Capacity Price seem to be at the very low end and at times unrealistically low.

Alinta also notes its ongoing concern that there is significant variability in methodology and outcomes between each capacity year. Changes of such magnitude, and the risk that further similar significant changes may take place in future, will cause instability and uncertainty amongst project proponents and investors. Alinta has significant concerns with the regulatory risks inherent in the IMO's proposals and considers that making such significant changes will be detrimental to the long-term development of the electricity market. The regulatory process needs to provide some long-term certainty to users and prospective users, particularly as there is likely to be an absence of price signals in an energy market where there are very low price caps and probable low volatility such as the proposed Wholesale Energy Market in WA.

The IMO acknowledges that regulatory risk is a concern, particularly with regard to visibility and consistency of IMO processes. To streamline and optimise the process the IMO has undertaken to review the existing methodology used to determine the Maximum Reserve Capacity Price in a wider context. However, the IMO does not believe proposals by Alinta to include confidential consultations with selected market generators would be a viable solution to any of the issues raised, particularly in the

context of further raising issues regarding Regulatory Risk. Strong investment signals have been observed by the IMO, with the process securing surplus capacity in both years in which the Reserve Capacity Mechanism has been run. While this is a very short timeframe, the signals are encouraging. The IMO does acknowledge that long-term certainty will be a key driver to investment within the SWIS, and this was that reason for making the process more transparent this year than for previous cycles. The level of transparency of the process for determining the Maximum Reserve Capacity Price has been increased substantially this year.

### **Report Structure and Readability**

Alinta suggests the report be reworked to improve its readability by:

- including an appendix containing all the inputs and calculation for both the maximum reserve capacity price, including underlying components such as the WACC and k-factor
- include a chart showing where the increases and decreases are from the previous cycle(s)
- Adjust Table 1 as it currently could misrepresent the proposed transmission connection cost estimates increasing from the 2006 review cycle to the 2007 cycle.

The IMO has made a number of changes to the report format to improve clarity. Subject to the outcomes of the Maximum Reserve Capacity Price Advisory Group, the IMO undertakes to include changes from previous Reserve Capacity Cycles in future reviews.

## APPENDIX E IMO DISCUSSION REGARDING SUBMISSION MADE BY ENEABBA GAS LIMITED

The IMO wishes to thank Eneabba Gas Limited (EGL) for providing their response to the Draft Report. The IMO provides the following responses to a number of the comments raised by EGL. The following issues are discussed in reference to the ELG submission. Again, IMO comments are shown in **BLUE** font.

### Reserve Capacity Pricing

Eneabba notes that the 2007 Maximum Reserve Capacity Price is proposed to be set at \$129,900 per MW per year for the 2009 year. This price compares to previous calculations and “Ministerial” directions released. With the following pricing:

2007/08 \$150,000/MW

2008/09 \$122,500/MW

2008/09 (rev) \$129,900/MW

Under the rules this is meant that the annual payment available has fluctuated from \$127,500/MW to as low as \$94,375/MW.

Eneabba uses the pricing information released by the IMO and previously by “Ministerial direction” inter alia, as a basis of investment decision making. Investing in a power station plant carries many risks namely construction risk, technology risk, market risk and regulatory risk to name a few. Clearly, power station proponents seek to minimize all of these risks where possible and where they can influence them. Eneabba is looking to invest between \$130 million - \$160 million on the power plant and associated land in Western Australia. It is disturbing to note that a potentially important revenue stream in the form of Reserve Capacity Payments can have such a wide variation as outlined above. Investment decision making becomes extremely difficult in such an uncertain and volatile environment.

The Maximum Reserve Capacity Price for the first Reserve Capacity Cycle, which extends from Energy Market Commencement (21 September 2006) through to 1 October 2008 of \$150,000 per MW per year was set under the Market Rules and was not subject to the same price determination and review process that has been conducted for the 2008/09 Reserve Capacity Year (determination and review conducted in 2005/06) and for the 2009/10 Reserve Capacity Year conducted as part of this review. The administered price in the case where the Reserve Capacity Auction is cancelled is not within the scope of the Draft Report or the public submission process.

### Draft Report

The overriding concern of Eneabba with respect to the Report is the lack of detail provided in the report to support the conclusions reached. This ordinarily may not be of a concern but when coupled with the significant variation as outlined above

the reader of the Report is unable to undertake their own analysis to confirm any of the conclusions reached in the Report.

As a minimum a format that covers the following headings, with sufficient information to convey confidence to the reader that the analysis is both complete in capturing all costs as well as providing detail on costs is considered necessary.

Suggested areas that need to be provided in the Report are outlined below:

### **Power Station Site**

- Where is the site located regional or metropolitan?
- Are site acquisition and preparation costs included?
- Are EPA and local shire approval costs included?

### **Power Station Costs**

- Are the total costs of an open cycle plant included?
- Do the 'total costs' include all ancillary plant, such as water treatment, oil recovery, etc?
- Are the construction costs based on today's high priced construction?
- Market?
- Is the cost of acquiring and installing fuel tanks as outlined in page 5 of the Report included in the Reserve Capacity Price of \$129,900

### **Financing Costs**

Eneabba found this area particularly poorly covered. Financing costs have a significant impact on the pricing of the Reserve Capacity Price. Yet only two short paragraphs were dedicated to this important issue. A review of regulation determinations in the Eastern States reveal that considerable attention is given to this area. As a minimum the IMO should provide a table with the key parameters as outlined below to allow for analysis.

### **Power Station and Site Costs**

The IMO has endeavoured to make the process more transparent this year and the information presented in the Draft Report, combined with the SKM technical report and knowledge of the Market Rules can be used to replicate the pricing. A number of questions are raised regarding location-dependent issues of the determination strategy.

The pricing methodology of the OCGT power station under Appendix 4 of the Market Rules does not take into account and location specific pricing signals. The general concept of the Maximum Reserve Capacity Price is to provide adequate capital cost recovery of an OCGT power station project entered through the Reserve Capacity Auction. Inherent in this mechanism is the assumption that overall project costs are minimised for the purposes of providing peaking capability. This would not provide increased costing resulting from sub-optimal location of the power station.

Site acquisition and preparation costs are not specifically included under Appendix 4 of the Market Rules, however the generator price is doubled to include power station development costs. General approval costs are included in accordance with Appendix 4 of the Market Rules and presented as margin M in the Draft Report. The IMO is conducting a more general review of the current methodology to assess the appropriateness of the entire methodology.

### **Financing Costs**

More detail has been included in the Final Report, including the determination of the WACC and the Factor K. However many of the parameters of interest can already be found in Appendix 4 of the Market Rules.

## **APPENDIX F IMO DISCUSSION REGARDING SUBMISSION MADE BY BEACONS CONSULTING INTERNATIONAL**

Based on the prices for similar 132 kV transmission links we have for various projects currently under consideration, it is our belief the price for the 330 kV transmission link in the 2006 review is less than the actual current pricing for this type of works.

Western Power Networks costing for the 330 kV transmission link needs to be obtained for comparison to the costs used in the 2006 Review.

The IMO wishes to thank Beacons Consulting for providing their submission on the Draft Report. Beacons Consulting contends that the transmission pricing appears to be low in reference to current projects under consideration. Unfortunately no supporting information is provided to substantiate such claims. Western Power has been given the same opportunity to make a formal submission on the adequacy of the transmission connection scenario and pricing. The IMO will consider this position for future reviews.