Decision on the Maximum Reserve Capacity Price Proposal for 2010/11

Submitted by the Independent Market Operator

15 January 2008

Economic Regulation Authority
WESTERN AUSTRALIA

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DECISION

1 The Economic Regulation Authority (**Authority**) approves the revised value for the Maximum Reserve Capacity Price (**MRCP**) for the 2008 Reserve Capacity Cycle of $173,400 per MW per year.

2 The approved revised MRCP will be effective from 1 October 2010 through to 1 October 2011.

3 This approval is granted pursuant to Clause 2.26.1 of the Wholesale Electricity Market Rules (**Market Rules**). The approval is granted on the basis that:

- the revised value for the MRCP reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules; and
- the IMO has carried out an adequate public consultation process.

REASONS

Background

4 The MRCP sets the maximum bid that can be made in a Reserve Capacity Auction and, if no Reserve Capacity Auction is required, is used as the basis for determining an administered Reserve Capacity Price.

5 Clause 4.16.3 of the Market Rules requires the Independent Market Operator (**IMO**) to annually review the value of the MRCP in accordance with the Market Rules. The IMO must propose a revised value for the MRCP, and must prepare a draft report describing how it has arrived at a proposed revised value for the MRCP. Following a public consultation process, the IMO must propose a final revised value for the MRCP and submit that value, along with a final report and submissions received on the draft report, to the Authority for approval.

6 Where the IMO proposes a final revised value for the MRCP, Clause 2.26.1 of the Market Rules requires the Authority to:

- review the final report provided by the IMO and all submissions received by the IMO in preparation of the report;
- make a decision as to whether or not to approve the revised value of the MRCP;
- in making its decision, consider:
  - whether the proposed revised value for the MRCP reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules;
  - whether the IMO has carried out an adequate public consultation process; and
- notify the IMO that it has approved the revised value.

7 The proposed revised value of the MRCP becomes the MRCP after the Authority has approved the value in accordance with the Market Rules and the IMO has posted a notice on the Market web site of the new value of the MRCP.

MRCP methodology

8 In conducting the annual review of the MRCP, the IMO is required to assess the appropriateness of the following values for calculating the MRCP:

- the optimum size of an open cycle gas turbine (**OCGT**) for the SWIS, where the optimum size is a size that is expected by the IMO to minimise the cost of energy to Market Customers over the long term;
- the capital cost of OCGT power stations based on current data;
- the level of transmission connection costs, including the cost of electricity transmission assets required to connect an OCGT power station to the SWIS and an estimate of the cost of augmenting the shared network to facilitate the connection of an OCGT power station;
- the cost of acquiring and installing fuel tanks sufficient to accommodate 24 hours of liquid fuel storage including the cost of keeping this tank half full at all times;
- the capital cost of a pipeline lateral of reasonable length to connect to a main gas pipeline;
- the estimate of the fixed operating and maintenance costs for a typical OCGT power station and the transmission facilities required to connect to the SWIS;
- a margin allowed for legal, approval and financing costs; and
- a margin allowed for contingencies.

9 The methodology for setting the MRCP allowed under Clause 4.16 is set out in Appendix 4 of the Market Rules. The IMO must propose a value for the MRCP using the methodology described in Appendix 4, after taking into account any significant modifications to the methodology resulting from the review of the MRCP conducted in accordance with Clause 4.16.

10 Since the last annual review of the MRCP, a Market Rule change relevant to the methodology for setting the MRCP has been approved. Clause 4.16.5 of the Market Rules has been amended as follows:

> 4.16.5 The IMO must propose a revised value for the Maximum Reserve Capacity Price using the methodology described in Appendix 4 <u>after taking into account any significant modifications to the methodology resulting from the review conducted in accordance with clause 4.16.3 and 4.16.4</u>.

11 The Market Rule change commenced on 18 December 2007.

Assessment

12 The Authority is satisfied that the IMO has met the requirements of the Market Rules in proposing the MRCP for the 2010/11 capacity year because:

- the Authority is satisfied that the proposed values of all the input parameters reasonably reflect the application of the method and guiding principles described in Clause 4.16 of the Market Rules;
- the Authority is satisfied that the application of the MRCP methodology reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules; and
- the Authority is satisfied that the IMO has carried out an adequate public consultation process.

Input parameters to the MRCP calculation

13 The Authority is satisfied that the input parameters that the IMO has used to calculate the proposed revised value of the MRCP are consistent with the requirements of the Market Rules.

14 The Authority notes that the input parameters proposed by the IMO in the final report are the same as the input parameters proposed by the IMO in the draft report, and that no comments were received from stakeholders in regards to these input parameters during public consultation.

Optimum size of an OCGT

15 The Market Rules require the IMO to assess the optimum size of an OCGT for the SWIS, where the optimum size is a size that is expected by the IMO to minimise the cost of energy to Market Customers over the long term.

16 In determining the proposed revised value for the MRCP, the IMO has proposed a value of 160 MW for the optimum size of an OCGT power station. The IMO notes that this is consistent with the unit size of OCGT's installed in the SWIS, and that prices listed in the Gas Turbine World Handbook indicate that a capacity of 160 MW represents a reasonably cost-efficient single-unit power station.

17 The Authority considers that the IMO, in adopting a value of 160 MW for the optimum size of an OCGT power station, has selected a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Capital cost of an OCGT

18 The Market Rules require the IMO to assess the capital cost of an OCGT. Appendix 4 of the Market Rules defines a methodology for calculating the capital cost of an OCGT.

19 During its review of the MRCP, the IMO retained SKM to estimate the capital cost of a 160 MW OCGT power station. Work conducted by SKM revealed a disparity between the capital cost of an OCGT calculated using the methodology defined in Appendix 4 and the actual capital cost that could be expected when developing an OCGT power station in the SWIS.

20 The IMO retained SKM to estimate a cost-reflective capital cost that takes into account actual project development costs specific to the construction and engineering environment in Western Australia. Based on SKM's capital cost

estimate, escalated to 2008 dollars and including the cost of low NOx burners, the IMO has proposed a value of $708,762 per MW for the capital cost of an OCGT. The IMO notes that this proposed value is in the order of 60 per cent higher than the capital cost calculated using the methodology defined in Appendix 4.

21 The Authority considers that the IMO, in adopting a value of $708,762 per MW for the capital cost of an OCGT, has selected a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules. The Authority notes that Clause 4.16.5 of the Market Rules provides for the IMO to take into account any significant modifications to the methodology described in Appendix 4 that result from the IMO's review of the MRCP. The Authority notes that the IMO's review indicated that the methodology in Appendix 4 would understate the capital cost of an OCGT power station in the SWIS, and considers that the IMO's proposed value reflects a modification of the methodology that is consistent with the requirement in Clause 4.16 of the Market Rules.

Transmission connection costs

22 The Market Rules require the IMO to assess the level of electricity transmission costs, including the cost of electricity transmission assets required to connect an OCGT power station to the SWIS and an estimate of the cost of augmenting the shared network to facilitate the connection of the OCGT power station. The Market Rules do not define a methodology for determining transmission connection costs.

23 During its review of the MRCP, the IMO retained SKM to provide an estimate of direct connection costs. Direct connection costs were estimated on the basis of a switched mesh, configured in a breaker and a half arrangement.[1] This reflected Western Power's comments during the 2007 review of the MRCP that such an arrangement would accommodate additional capacity in the future. All other variables were the same as were used in previous reviews, including the assumed line length, terrain and number of road crossings.

24 Deep connection costs were estimated by escalating estimates from the 2007 review. The estimates from the 2007 review were, in turn, based on escalating the amount of $10 million in year 2004 pre-approved by the Market Rules Development Group under advice from the Available Capacity Working Group.

25 Based on these estimates, the IMO has proposed a value of $20.707 million for transmission connection costs.

26 The Authority considers that the IMO, in adopting a value of $20.707 million for transmission connection costs, has selected a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Fixed fuel costs

27 The Market Rules require the IMO to assess the cost of acquiring and installing fuel tanks sufficient to accommodate 24 hours of liquid fuel storage including the cost of keeping this tank half full at all times. The Market Rules do not define a methodology for determining fixed fuel costs.

[1] Under this arrangement, a switchyard is assumed to be located adjacent to the generator site, with a 330 kV double circuit transmission line connecting the switchyard to the existing transmission line. A diagram of this arrangement is provided in Appendix E of SKM's report to the IMO, available from the IMO's web site.

28 During its review of the MRCP, the IMO retained GHD to conduct an analysis of the costs that could be expected when constructing the liquid fuel storage and handling facilities. Based on GHD's estimate of capital costs and fuel costs, escalated to 2008 dollars, the IMO has proposed a value of $2.636 million for fixed fuel costs.

29 The Authority considers that the IMO, in adopting a value of $2.636 million for fixed fuel costs, has selected a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Capital cost of a pipeline lateral

30 The Market Rules require the IMO to assess the capital cost of a pipeline lateral of reasonable length to connect to a main gas pipeline. However, the methodology for calculating the MRCP outlined in Appendix 4 of the Market Rules does not include any allowance for the costs associated with the installation and maintenance of a gas pipeline lateral.

31 In previous reviews, the IMO has taken the view that the capital cost of a lateral pipeline should not be included in the calculation of the MRCP. The IMO considers that a lateral pipeline is not a requirement of the peaking OCGT power station that is contemplated in the determination of the MRCP. This view was generally supported by the members of an industry advisory group established to assess the MRCP mechanism. As a result, the IMO has proposed not to provide an allowance for the capital cost of a pipeline lateral.

32 The Authority considers that the IMO, in not providing an allowance for the capital cost of a pipeline lateral, has taken an approach that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Fixed operating and maintenance costs

33 The Market Rules require the IMO to assess the fixed operating and maintenance costs for a typical OCGT power station and the transmission facilities required to connect the power station to the SWIS. The Market Rules do not define a methodology for determining fixed operating and maintenance costs.

34 During its review of the MRCP, the IMO retained SKM to estimate fixed generation operating and maintenance costs. The IMO has calculated generation operating and maintenance costs by taking the first 15 years of annual generation operating and maintenance costs determined by SKM and creating an annuity discounted at real WACC. This is then escalated to 2008 terms, providing a value of $10,086 per MW per year.

35 The IMO also retained SKM to estimate fixed transmission operating and maintenance costs. As with generation operating and maintenance costs, the IMO has calculated an annuity of the first 15 years of annual transmission operating and maintenance costs. This is then escalated to 2008 terms, providing a value of $1,013 per MW per year.

36 The IMO also considers it appropriate to fund insurance to a level required to cover the replacement costs of the capital equipment contemplated in the determination of the MRCP. The IMO proposes to provide an allowance for insurance costs of 0.5% of the capital replacement cost, equivalent to $2,570 per MW per year.

37 Based on these estimates, the IMO has proposed a value for fixed operating and maintenance costs of $13,669 per MW per year.

38 The Authority considers that the IMO, in adopting a value $13,669 per MW per year for fixed operating and maintenance costs, has adopted a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Margin for legal, approval and financing costs and contingencies

39 The Market Rules require the IMO to assess a margin for legal, approval and financing costs and for contingencies. The Market Rules do not define a methodology for determining the margin.

40 During its review of the MRCP, the IMO retained SKM to provide an estimate of the margin for legal, approval and financing costs. SKM estimated these costs on the basis of in-house data and knowledge of similar recent developments. SKM estimate that these costs would in the order of $3.84 million (in 2007 terms). This equates to a margin of 2.72 per cent of capital costs (in 2008 terms).

41 Based on SKM's estimate, and the 10 per cent margin for contingencies adopted in previous MRCP reviews, the IMO has proposed a margin of 12.72 per cent.

42 The Authority considers that the IMO, in adopting a value of 12.72 per cent for the margin for legal, approval and financing costs and contingencies, has adopted a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Factor k

43 The Market Rules require that 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.

44 During its review of the MRCP, the IMO retained The Allen Consulting Group to conduct an appraisal of the method used to calculate the Factor K. On the basis of this work, the IMO has proposed to adopt a value of 1.0529 for the Factor K.

45 The Authority considers that the IMO, in adopting a value of 1.0529 for the Factor K, has adopted a value that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

Application of the MRCP methodology

46 The Authority is satisfied that the IMO has calculated the value of the MRCP according to a methodology that reasonably reflects the application of the method and guiding principles described in Clause 4.16 of the Market Rules.

47 In particular, the Authority notes that the IMO has determined the value of the MRCP using calculations that reflect the calculations set out in Appendix 4 of the Market Rules, and using the proposed input parameters discussed above. The only significant variation from the calculations set out in Appendix 4 is the IMO's use of a different methodology for determining the capital cost of an OCGT. In accordance with Clause 4.16.5 of the Market Rules, and as discussed above, the IMO has

adopted a modification of the methodology set out in Appendix 4 that is considered to be consistent with the requirements of Clause 4.16 of the Market Rules.

Public consultation process

48 The Authority is satisfied that the IMO conducted an adequate public consultation process.

49 The IMO published a draft report on 28 November 2007 describing how the IMO arrived at a proposed revised value for the MRCP. The draft report and supporting documents, including reports from SKM, GHD and The Allen Consulting Group, were released on the IMO's web site. Rule Participants and other industry stakeholders were advised that the draft report had been published. An announcement was also published in the West Australian on 1 December 2007.

50 The IMO requested submissions on the draft report, with the original deadline for submissions of 12 December 2007 subsequently being extended to 19 December 2007.

51 The IMO received a number of formal and informal comments and submissions on the draft report. Eneabba Energy Pty Ltd and System Management responded to the request for stakeholder input. System Management noted that it did not have any comment on the draft report. Eneabba Energy Pty Ltd made several comments on the draft report, each of which the IMO responded to in Section 5 of the final report.

Conclusion

52 Based on the above assessment, the Authority is satisfied that the IMO has met the requirements of the Market Rules, and the Authority approves the revised value for the MRCP for the 2008 Reserve Capacity Cycle of $173,400 per MW per year.