Decision on the Maximum Reserve Capacity Price proposed by the Independent Market Operator for the 2014/15 Reserve Capacity Year

24 February 2012

Economic Regulation Authority
WESTERN AUSTRALIA

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DECISION

1 On 15 February 2012, the Independent Market Operator (**IMO**) provided the Economic Regulation Authority (**Authority**) with its final report on the Maximum Reserve Capacity Price (**MRCP**) Review for the 2014/15 Reserve Capacity Year.[1] The Authority approves the revised value for the MRCP for the 2014/15 Reserve Capacity Year of $163,900 per MW per year, as proposed in the IMO's final report.

2 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 proposed by the IMO 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

3 Clause 4.16.3 of the Market Rules requires the IMO to develop a Market Procedure documenting the methodology it uses and the process it follows in determining the MRCP (**MRCP Market Procedure**).[2] The IMO must follow the MRCP Market Procedure to review the MRCP value for each Reserve Capacity Cycle. The IMO must propose a revised value for the MRCP using the methodology described in the MRCP Market Procedure, and prepare a draft report describing how it has arrived at the proposed revised value for the MRCP. Following a public consultation process, the IMO must propose a final revised value for the MRCP.

4 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, including all submissions received by the IMO in preparation of the report;
- to make a decision as to whether or not to approve the revised value of the MRCP;
- in making its decision, to only 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.

5 Clause 2.26.2 of the Market Rules provides where the Authority rejects a revised

[1] See IMO website, *Maximum Reserve Capacity Price web page*, http://www.imowa.com.au/mrcp

[2] See IMO website, *Market Procedure: Maximum Reserve Capacity Price*, http://www.imowa.com.au/f711,1963354/PC_2011_06_Market_Procedure_for_Maximum_Reserve_Capacity_Price_FINAL_clean.pdf

MRCP submitted by the IMO it must give reasons and may direct the IMO to carry out all or part of the review process under clause 4.16 again in accordance with any directions or recommendations of the Authority.

Maximum Reserve Capacity Price methodology

6 The MRCP Market Procedure sets out the principles to be applied and the steps to be taken by the IMO in order to develop and propose the MRCP.

7 The MRCP aims at establishing the marginal cost entry of providing additional Reserve Capacity in each Capacity Year. The methodology for determining the MRCP as specified in the Market Procedure includes a technical costing of the following components:

- the capital cost of an industry standard, liquid-fuelled open cycle gas turbine (**OCGT**) with a nominal nameplate capacity of 160 MW with inlet cooling system, located within the South West Interconnected System (SWIS);
- the land cost associated with developing and constructing the power station;
- the costs associated with the development of liquid fuel storage and handling facilities;
- the costs associated with the connection of the power station to the bulk transmission system;
- the fixed operating and maintenance (**O&M**) costs for the power station, fuel handling facilities and the transmission connection components;
- a margin for legal, insurance, financing and environmental approval costs plus contingencies; and
- the Weighted Average Cost of Capital (**WACC**).

8 Clause 4.16.9 of the Market Rules requires the IMO to review the MRCP Market Procedure at least once in every five year period. This review was last conducted by the MRCP Working Group constituted under the Market Advisory Committee between May 2010 and June 2011,[3] which culminated in the development of the Procedure Change Proposal PC_2011_06 to amend the Market Procedure. The Procedure Change Proposal was submitted into the Procedure Change Process on 6 September 2011. The IMO published its Procedure Change Report on the IMO website on 21 October 2011 and approved the amended MRCP Market Procedure.[4] The proposed revised MRCP value for the 2014/15 Reserve Capacity Year has been developed by the IMO based on the amended Market Procedure.

9 The Authority notes that changes in the methodology have caused a significant impact on the MRCP. These changes include:

- allowing for the costs and output efficiency gains of installing inlet cooling; and

[3] See IMO website, *Maximum Reserve Capacity Price Working Group web page*, http://www.imowa.com.au/MRCPWG

[4] See IMO website, *Procedure Change: PC_2011_06 web page*, http://www.imowa.com.au/PC_2011_06

- determining the transmission cost estimate from real costs faced by project developers, represented in historical connection costs and actual access offers determined by Western Power.

Summary of input parameters and calculated values

10 A summary of the input parameters to the MRCP calculation, and the values calculated according to the MRCP Market Procedure, is provided in Table 1.

Table 1: Summary of input parameters and calculated values

	Value	Units	Market Procedure definition
Power station inputs			
Power station expected Capacity Credit allocation	159.6	MW	CC[5]
Capital cost			
WACC	6.83	%	WACC[6]
Power station costs	858,987.37	$/MW	PC[7]
Factor for legal, financing, approvals, contingencies and other costs	18.2	%	M[8]
Transmission connection works	109,821.00	$/MW	TC[9]
Fixed fuel costs	3,183,074.82	$	FFC[10]
Land costs	2,804,181.83	$	LC[11]
Total capital cost	191,790,889.30	$	CAP COST[12]
Annualised capital cost	**20,829,728.91**	**$/year**	**ANNUALISED_ CAP_COST**
Annualised fixed O&M cost	**33,391.76**	**$/MW/year**	**ANNUALISED_ FIXED_O&M**
MRCP (rounded)	**163,900.00**	**$/MW/year**	**MRCP**

[5] CC is the expected Capacity Credit allocation determined in conjunction with Power Station costs in step 2.3.1(c) of the MRCP Market Procedure.

[6] WACC is the Weighted Average Cost of Capital as determined in step 2.9 of the MRCP Market Procedure.

[7] PC is the capital cost of an open cycle gas turbine power station, expressed in Australian dollars per MW as determined in step 2.3 of the MRCP Market Procedure.

[8] M is a margin to cover legal, insurance, approvals, financing and other costs and contingencies as detailed in step 2.8 of the MRCP Market Procedure.

[9] TC is the estimate of Total Transmission Costs as determined in step 2.4 of the MRCP Market Procedure.

[10] FFC is the Fixed Fuel Cost as determined in step 2.6 of the MRCP Market Procedure.

[11] LC is the Land Cost as determined in step 2.7 of the MRCP Market Procedure.

[12] CAPCOST is the total capital cost, expressed in Australian dollars, estimated for an open cycle gas turbine power station with the expected capacity credit allocation (CC).

11 The Authority has reviewed the IMO's draft report, the IMO's final report and submissions received by the IMO in response to its draft report. The Authority has also reviewed reports commissioned by the IMO in regard to input parameters for the MRCP, in order to confirm that these reports reasonably reflect the application of the method and guiding principles described in clause 4.16 of the Market Rules.

12 The Authority is satisfied that the IMO has determined 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 and the MRCP Market Procedure.

13 In particular, the Authority notes that the IMO has calculated the value of the MRCP using the formula set out in section 2.10.1 of the MRCP Market Procedure.

Power station costs

14 The MRCP Market Procedure states that the power station upon which the MRCP shall be based is a 160 MW OCGT, operating on liquid fuel, with a capacity factor of 2 per cent, include low Nitrous Oxide (**NOx**) burners and an inlet air cooling system and water receival and storage facilities to allow 14 hours of continuous operation (where in the opinion of the IMO this would be cost effective).

15 The MRCP Market Procedure states that the IMO must engage a consultant to provide an estimate of the costs associated with: engineering, procurement and construction of the power station as at April in Year 3 of the Reserve Capacity Cycle; a summary of any escalation factors used in the determination; and likely output at 41 degrees Celsius which will take into account available turbine and inlet cooling technology, likely humidity conditions and any other relevant factors, which represents the expected Capacity Credit allocation of the power station.

16 The IMO commissioned Sinclair Knight Merz (**SKM**) to provide generation capital costs for a 160 MW OCGT power station located within the SWIS. The process for calculating the 2012 MRCP power station capital costs is the same as the process applied in last year's proposal, except for the inclusion of an allowance for the costs and output efficiency gains of installing inlet cooling. Based on SKM's capital cost estimate, escalated forward to 1 April 2014 dollars, the IMO has proposed a value of $858,987.37 per MW for the capital cost of an OCGT.

17 The Authority considers that the IMO, in adopting a value of $858,987.37 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 and the MRCP Market Procedure.

Factor for legal, financing, approvals, contingencies and other costs

18 The MRCP Market Procedure states that the IMO shall determine an estimate of legal costs, financing costs, insurance costs, approval costs, contingency costs and other costs reasonably incurred in the design and management of the power station construction.

19 The IMO commissioned SKM to provide an estimate of the cost factor for legal, financing, approvals, contingencies and other costs. SKM estimated these costs on the basis of in-house data and knowledge of recent comparable developments,

excluding any abnormal costs that may be particular to individual projects. SKM proposed a margin of 18.2 per cent. Based on SKM's estimate, the IMO has proposed a margin of 18.2 per cent for legal, financing, approvals contingencies and other costs.

20 The Authority considers that the IMO, in adopting a value of 18.2 per cent for the margin for legal, approval, financing, contingency costs and other costs reasonably incurred in the design and management of the power station construction, has adopted a value that reasonably reflects the application of the method and guiding principles described in clause 4.16 of the Market Rules and the MRCP Market Procedure.

Transmission connection works

21 The MRCP Market Procedure states that Western Power must provide an estimate of the total transmission costs in accordance with the methodology in the MRCP Procedure to connect the generator and deliver the output to loads consistent with the relevant planning criteria in the Technical Rules.[13]

22 The estimate of the transmission connection cost for the proposed revised MRCP was provided by Western Power based on actual connection costs and Access Offers that have been determined by Western Power.[14] In accordance with the requirement of the MRCP Market Procedure, Western Power has provided an audit report verifying the accuracy of the connection cost data used in its calculation. Based on this, the IMO has proposed a value of $109,821 per MW for transmission connection costs.

23 The Authority notes that the significant reduction in the transmission connection costs of 64 per cent ($30,300 per MW) compared to last year's corresponding MRCP costs is primarily a result of the amended methodology in the MRCP Market Procedure. The revised methodology uses actual connection costs for projects within a 5-year window and assigns a weighting to connection cost according to the year that the facility commenced, or is expected to commence, operation. The methodology previously adopted in the MRCP Market Procedure was based on a high level, indicative estimate of future projects.

24 The Authority considers that the IMO, in adopting a value of $109,821 per MW for transmission connection 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 and the MRCP Market Procedure.

Fixed fuel costs

25 The MRCP Market Procedure states that the IMO must engage a consultant to determine an estimate of the costs for the liquid fuel storage and handling facilities

[13] See Western Power website, *Technical Rules web page*, http://www.westernpower.com.au/aboutus/accessArrangement/Technical_Rules.html

[14] In this context, Access Offers refer to transmission costs derived from capital contributions either paid historically or expected to be paid to Western Power in accordance with the *Electricity Networks Access Code 2004* and Western Power's Capital Contribution Policy, for generators that are capable of being gas or liquid fuelled. Facilities excluded from the Access Offers calculation are stipulated in section 2.4.1 of the Market Procedure.

of the power station. The costs should be those associated with a fuel tank of 1,000 tonne capacity, facilities to receive fuel from road tankers and all associated pipe work, pumping and control equipment.

26 The IMO commissioned Gutteridge Haskins and Davey (**GHD**) to update the costing of fixed fuel costs provided in its previous report, with costs that reflect those in 2011. Based on GHD's estimates, escalated to 1 April 2014, the IMO has proposed a value of $3.183 million for fixed fuel costs.

27 The Authority considers that the IMO, in adopting a value of $3.183 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 and the MRCP Market Procedure.

Land costs

28 The MRCP Market Procedure states that the IMO must retain Landgate under a consultancy agreement to provide valuations on parcels of industrial land in regions within the SWIS where generation projects are most likely to be proposed.

29 The MRCP Market Procedure states that the IMO will provide an indication as to the size of land required, which should be limited to: a three hectare parcel of land in an industrial area of a standard size with consideration given to any requirements for a buffer zone in that specific location; and the summation of multiple smaller parcels of land as appropriate to meet these requirements.

30 The Authority notes that Landgate has provided its estimate of the cost of each land parcel as at 30 June 2011 excluding stamp duty, and that the IMO has added the applicable stamp duty to each land parcel cost in response to a comment received from a Market Participant during the consultation process of the IMO's draft report. The Authority recognises that the inclusion of the stamp duty is not explicitly specified in the MRCP Market Procedure but considers that it is not unreasonable to include the stamp duty as part of the land costs calculation.

31 Pursuant to the MRCP Market Procedure, the IMO has calculated the mean of the land costs in the seven prescribed regions within the SWIS, and has escalated the land cost to 1 April 2014. The IMO has proposed a value of $2.804 million for land costs.

32 The Authority considers that the IMO, in adopting a value of $2.804 million for land 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 and the MRCP Market Procedure.

Fixed operating and maintenance costs

33 The MRCP Market Procedure states that:

- the IMO must determine fixed O&M costs for the power station and the associated transmission connection works;

- fixed O&M costs must also include fixed network access charges[15] and an estimate of annual insurance costs[16] as at 1 October in Year 3 of the Reserve Capacity Cycle; and
- fixed O&M costs shall be converted into an annualised amount.

34 The IMO commissioned SKM to provide an estimate of fixed O&M costs for the power station and the associated transmission connection works.

35 The IMO has calculated the power station fixed O&M costs based on the annual generation fixed O&M costs determined by SKM which was converted to a present value using the Weighted Average Cost of Capital (**WACC**). This is escalated to 1 October 2014, providing an annualised value of $14,256.19 per MW per year.

36 The fixed O&M costs for transmission connection works include the switchyard and the transmission line O&M costs. The IMO has calculated the annual transmission connection works O&M costs determined by SKM and converted to a present value using the WACC. This is escalated to 1 October 2014, providing an annualised value of $418.54 per MW per year.

37 In regard to the fixed network access charges, the IMO has calculated the relevant charges from Western Power's published 2011/12 Price List. These charges are escalated to 1 October 2014 using the CPI in accordance with the MRCP Market Procedure, providing an annualised value of $14,349.38 per MW per year.

38 For the insurance cost in the fixed O&M costs, the IMO has consulted with three insurance brokers to estimate the relevant insurance premiums; and reviewed the insurance renewal documentation provided by two Market Participants. The insurance cost is escalated to 1 October 2014, providing an annualised value of $4,367.66 per MW per year.

39 The Authority notes that the IMO has sought written quotations that could be published on its website from two insurance brokers and that none of the insurance brokers contacted were willing to give consent for the IMO to publish their quotes.

40 Based on the cost estimates discussed above, the IMO has proposed a value for the total annualised fixed O&M costs of $33,391.76 per MW per year.

41 The Authority considers that the IMO, in adopting an annualised value of $33,391.76 per MW per year for fixed O&M 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 and the MRCP Market Procedure.

Weighted average cost of capital (WACC)

42 The MRCP Market Procedure states that the IMO must determine the cost of capital to be applied to various cost components of the MRCP. The MRCP Market Procedure sets out the parameters and a formula for calculating the WACC in real

[15] Which are to be provided by Western Power in accordance with the MRCP Market Procedure.

[16] The MRCP Market Procedure provides for power station asset replacement, business interruption and public and products liability insurance as required under network access arrangements with Western Power.

pre-tax terms. The WACC parameters are classified into two categories in the MRCP Market Procedure, i.e. the annual components and the five-yearly components.

43 The MRCP Market Procedure states that in determining the WACC, the IMO must review and determine values for the annual components; and may review and determine values for the 5-yearly components that differ from those in step 2.9.8 of the MRCP Market Procedure if, in the IMO's opinion, a significant economic event has occurred since undertaking the last 5-yearly review of the MRCP in accordance with clause 4.16.9 of the Market Rules.

44 For the 2012 Reserve Capacity Cycle, the IMO commissioned PricewaterhouseCoopers (**PwC**) to update the annual components of the WACC.

45 PwC produced a real pre-tax WACC value of 7.11 per cent as input into the initial revised MRCP value proposed in the IMO's draft report. This WACC value was based on the annual components of the WACC at 30 September 2011. Prior to the release of the IMO's final report, PwC provided an update of the values of the WACC's annual components at 30 December 2011 which resulted in a real pre-tax WACC value of 6.83 per cent. The real pre-tax WACC value for the MRCP in the 2011 Reserve Capacity Cycle was 8.65 per cent. The reduction in the WACC value is mainly driven by lower values of the risk free rate and the debt risk premium (**DRP**).

46 PwC calculated the DRP for a 10-year BBB rated corporate bond by extrapolating from the Bloomberg fair value yield curve for 7-year BBB rated corporate bonds (over the 20 trading days to 30 December 2011) by the margin between 7-year and 10-year AAA rated corporate bonds (over the 20 trading days to 22 June 2010).

47 The MRCP Market Procedure provides that, in determining the WACC, the IMO must determine the methodology to estimate the DRP which, in the opinion of the IMO, is consistent with current Australian accepted regulatory practice. In its final report, the IMO determined the DRP by extrapolating from Bloomberg's 7-year BBB fair value yield curve. The IMO stated that it is of the opinion that this methodology is consistent with current Australian accepted regulatory practice.

48 The Authority notes that the IMO acknowledges the significant shortcomings with its method in estimating DRP particularly in relation to its currency given that the data series for calculating the margin between 7-year and 10-year AAA fair value yield curves ceased in June 2010. The IMO also acknowledges that the current Australian regulatory practice with regard to the determination of the DRP is in a state of transition.

49 The Authority does not believe that the methodology to estimate the DRP by extrapolating from Bloomberg's 7-year BBB fair value yield curve is an appropriate methodology. The Authority views the extrapolation method using Bloomberg's 7-year BBB fair value yield curve as problematic because its underlying data is far out of date, adding significant inaccuracy and inconsistency. In its most recent regulatory decisions requiring the calculation of the DRP, the Authority has moved away from the approach of extrapolating Bloomberg data and has instead applied

the 'bond-yield' approach.[17] The Authority notes regulators have consistently recognised the problem of relying on the extrapolation of 7-year Bloomberg fair value yield curve. Many regulatory bodies have either expressed a desire to move away from using 7-year Bloomberg fair value yield curve, or have already moved towards a mechanism that does not rely on Bloomberg's 7-year fair value yield curve. Although the Authority does not believe that the methodology used by the IMO to derive the DRP is appropriate, it acknowledges that current Australian regulatory practice with regard to the determination of the DRP is in a state of transition and the Authority gives latitude to the way the IMO calculates DRP in this decision. However, the Authority is of the view that accepted regulatory practice is likely to evolve over the next few years, and it believes that it is unlikely to be a methodology that uses the Bloomberg fair value yield curve.

50 The Authority notes that a debt to total asset ratio of 60 per cent is widely used in regulation. The ratio of 40 per cent debt to total asset ratio as specified in the MRCP Market Procedure is inconsistent with common regulatory practices. The Authority also notes that the franking credit value of 0.5 as specified in the MRCP Market Procedure is inconsistent with a value of 0.25 commonly used in regulatory decisions. However, given these values have been hard-coded in the MRCP Market Procedure, the Authority considers the values used by the IMO are not unreasonable.

51 The Authority considers that the IMO, in adopting a value of 6.83 per cent for the real pre-tax WACC, has adopted a value that reasonably reflects the application of the method and guiding principles described in clause 4.16 of the Market Rules and the MRCP Market Procedure, including the formulae for the calculation of the real pre-tax WACC set out in the MRCP Market Procedure.

Public consultation process

52 The IMO published a draft report in December 2011, which described how the IMO arrived at the initial revised value for the MRCP and called for submissions by 17 January 2012. Rule Participants and other industry stakeholders were advised by the IMO that the draft report had been published. Announcements were also published in the Australian Financial Review newspaper and the West Australian newspaper on 16 December 2011. The draft report and supporting documents, including reports from SKM, GHD and PwC, were published on the IMO's website.[18]

53 As part of the IMO's public consultation, the IMO conducted a workshop on 4 January 2012 to provide background information on the calculation of the WACC and its input parameters and to explain the underlying reasons behind the reduction in the WACC value compared with the previous year. The workshop was attended by 28 stakeholders and included a short presentation by the IMO and PwC, followed by discussion.

[17] The bond-yield approach relies on bond yields observed directly from the Australian financial market. An example of a recent Authority regulatory decision where the bond-yield approach was applied is available on the Authority's website, see *Final decision on WA Gas Networks Pty Ltd proposed revised access arrangement for the 76 Mid-West and South-West Gas Distribution Systems - 28 February 2011*, http://www.erawa.com.au/cproot/9382/2/20110228 Final decision on WA Gas Networks Pty Ltd proposed revised access arrangement for the MW and SW GDS.pdf

[18] IMO website, *MRCP web page*, http://www.imowa.com.au/mrcp

54 The IMO received nine submissions through the public consultation process on the draft report – from Alinta, ENERNOC, ERM Power, Griffin Power, Infratil Energy Australia, Landfill Gas and Power, Merriden Energy, Perth Energy and Tesla Corporation.

55 The IMO has summarised the comments it received from stakeholders and its responses to the comments in section 5 of the IMO's final report. The Authority notes that the IMO has also published a letter dated 30 January 2012 from SKM in response to comments raised through stakeholder feedback.

56 The Authority is satisfied with the public consultation process undertaken by the IMO. In the context of the application of the method and guiding principles described in clause 4.16 of the Market Rules and the MRCP Market Procedure, the Authority is of the opinion that the IMO has appropriately addressed the comments raised by stakeholders.

CONCLUSION

57 The Authority is satisfied that the IMO has met the requirements of the Market Rules in proposing the MRCP for the 2014/15 Reserve Capacity Year for the following reasons:

- 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.

58 Based on the above assessment, the Authority approves the proposed revised value for the MRCP for the 2012 Reserve Capacity Cycle of $163,900 per MW per year, effective from 1 October 2014 to 1 October 2015.