

Decision on the Maximum Reserve Capacity Price proposed by the Independent Market Operator for the 2013/14 Reserve Capacity Year

28 January 2011

Economic Regulation Authority



WESTERN AUSTRALIA

A full copy of this document is available from the Economic Regulation Authority website at www.erawa.com.au.

For further information, contact:

Economic Regulation Authority
Perth, Western Australia
Phone: (08) 9213 1900

© Economic Regulation Authority 2011

The copying of this document in whole or part for non-commercial purposes is permitted provided that appropriate acknowledgment is made of the Economic Regulation Authority and the State of Western Australia. Any other copying of this document is not permitted without the express written consent of the Authority.

Contents

List of Tables	ii
DECISION	1
REASONS	1
Background	1
Maximum Reserve Capacity Price methodology	2
Input parameters to the Maximum Reserve Capacity Price calculation	3
Development of costs for the power station	4
Factor for legal, financing, approvals and contingencies	5
Transmission connection works	5
Fixed fuel costs	6
Land costs	6
Fixed operating and maintenance costs	6
Weighted average cost of capital (WACC)	7
Summary of input parameters and calculated values	8
Application of the Maximum Reserve Capacity Price methodology	9
Public consultation process	9
CONCLUSION	10

List of Tables

Table 1: Summary of input parameters and calculated values

8

DECISION

- 1 On 20 January 2011, 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 2013/14 Reserve Capacity Year.¹ The Authority approves the revised value for the MRCP for the 2011 Reserve Capacity Cycle of \$240,600 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

Background

- 3 The MRCP sets the maximum bid that can be submitted 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.
- 4 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 and to follow that procedure in an annual review of the MRCP value. The IMO must propose a revised value for the MRCP using the methodology described in the MRCP Market Procedure, and must 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.
- 5 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

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

² See IMO website, *Market Procedure for: Determination of the Maximum Reserve Capacity Price, Version 1.1*, http://www.imowa.com.au/f711,828707/Market_Procedure_for_Maximum_Reserve_Capacity_Price.pdf

- 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.
- 6 In coming to its decision to approve the revised value for the MRCP, 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.

Maximum Reserve Capacity Price methodology

- 7 As required under the Market Rules, 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.
- 8 The MRCP is to include all reasonable costs expected to be incurred in the development of a notional power station, defined in the MRCP Market Procedure as a 160 MW open cycle gas turbine (**OCGT**). Costs include the following:
- the cost of an industry standard, liquid-fuelled OCGT with a nominal nameplate capacity of 160 MW;³
 - power station balance of plant costs, which are those other ancillary and infrastructure costs that would normally be experienced when developing a project of this nature;
 - land costs;
 - costs associated with the development of liquid fuel storage and handling facilities;
 - costs associated with the connection of the power station to the bulk transmission system;
 - allowances for legal costs, insurance costs, financing costs and environmental approval costs;
 - reasonable allowance for a contingency margin; and
 - estimates of fixed operating and maintenance (**O&M**) costs for the power station, fuel handling facilities and the transmission connection components.
- 9 The Authority is satisfied that the IMO has met the requirements of the Market Rules in proposing the MRCP for the 2011 Reserve Capacity Cycle 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 (see paragraphs 12 to 45);
 - the Authority is satisfied that the application of the MRCP methodology

³ A generator's nameplate capacity is the amount of electricity that the generator is designed to produce.

- reasonably reflects the application of the method and guiding principles described in clause 4.16 of the Market Rules (see paragraphs 46 and 47); and
- the Authority is satisfied that the IMO has carried out an adequate public consultation process (see paragraphs 48 to 51).
- 10 In its final report, the IMO notes that the MRCP has been set four times using the current methodology and that the Market Rules require that the IMO conduct a review of the methodology and process for determining the MRCP at least once in every five year period.⁴ The IMO also noted that the Market Advisory Committee⁵ constituted the MRCP Working Group⁶ during 2010 to undertake this review. This review is scheduled to be completed by the mid-2011.
- 11 The Authority notes the MRCP Working Group's review will likely result in:
- a Procedure Change Process⁷ that will seek changes to the current MRCP Market Procedure; and
 - a revised MRCP Market Procedure being in effect by the time the IMO engages in the process of proposing a revised value for the MRCP for the 2014/15 Reserve Capacity Year.

Input parameters to the Maximum Reserve Capacity Price calculation

- 12 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.
- 13 The Authority notes that through the public consultation process, comments were received from stakeholders in regards to these input parameters. Comments include the following:
- the determination of escalation factors through simple extrapolation of previous years' indices is a weak methodology, and forecast escalation factors could provide a better estimate;
 - the IMO should use an average of the assessed locations, not the least cost solution;
 - an allowance should be made for the inclusion of insurance costs;
 - the appropriateness of assumptions underlying the calculation of the weighted average cost of capital (**WACC**);⁸

⁴ Clause 4.16.9 of the Market Rules.

⁵ An advisory body to the IMO comprised of industry representatives established under clause 2.3.1 of the Market Rules.

⁶ See IMO website, Maximum Reserve Capacity Price Working Group web page, <http://www.imowa.com.au/MRCPWG>

⁷ The process for amending a Market Procedure, as set out in clauses 2.10 and 2.11 of the Market Rules.

⁸ Infratil Energy Australia noted in its submission that "generation capacity revenue does not have the same risk profile as regulated revenue earned by network businesses". See IMO website, MRCP web page, <http://www.imowa.com.au/mrcp>

- an inability to understand how the transmission connection works cost estimates were derived based on the information provided by Western Power, and a suggestion that additional transparency on how these cost estimates were calculated would be helpful;
 - the treatment of the cost of obtaining access to easements should be maintained in line with 2010 MRCP (i.e. last year's) methodology;
 - land cost should be calculated based on the actual land size of a model plant at the optimal location (i.e. calculations should be based on the actual land size of the Kemerton Industrial Park of five hectares);
 - an allowance should be made for the costs of constructing dual-fuelled facilities; and
 - consideration should be given to methods for smoothing the annual MRCP in order to reduce its year-on-year volatility.
- 14 The IMO's response to comments received in respect of input parameters was to either agree and correct the MRCP calculation where it was considered appropriate, or reject the comments on the grounds that it was not considered in the MRCP Market Procedure. In three cases, where the IMO's response was to reject comments for the purposes of this review, the IMO advised that it would refer these comments to the MRCP Working Group for its consideration (see paragraph 51). Comments received from stakeholders and the IMO's responses are summarised in Section 5 of the IMO's final report.

Development of costs for the power station

- 15 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 and include low Nitrous Oxide (**NOx**) burners.
- 16 The MRCP Market Procedure states that the IMO shall engage a consultant to provide advice, including providing an estimate of the cost associated with designing, purchasing and constructing the power station. The power station costs shall be determined with specific reference to the use of actual project-related data and shall take into account the specific development conditions under which the power station will be developed.
- 17 The IMO commissioned Sinclair Knight Merz (**SKM**) to provide generation capital costs for a 160 MW OCGT power station located within the South West Interconnected System (**SWIS**). The process for calculating the 2011 MRCP power station capital costs is the same as the process applied last year, and involved consideration of the costs of a number of OCGT plants. Based on SKM's capital cost estimate, escalated to 2011 dollars and including the cost of low NOx burners, the IMO has proposed a value of \$790,634.25 per MW for the capital cost of an OCGT.
- 18 The Authority considers that the IMO, in adopting a value of \$790,634.25 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 and contingencies

- 19 The MRCP Market Procedure states that the IMO shall determine an estimate of legal costs, financing costs, insurance costs, approval costs, other fixed costs and contingency costs.
- 20 The IMO commissioned SKM to provide an estimate of the cost factor for legal, financing, approvals and contingencies. SKM estimated these costs on the basis of in-house data and knowledge of recent developments. SKM proposed a margin of 18.6 per cent. Based on SKM's estimate, the IMO has proposed a margin of 18.6 per cent for legal, financing, approvals and contingencies.
- 21 The Authority considers that the IMO, in adopting a value of 18.6 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 and the MRCP Market Procedure.

Transmission connection works

- 22 The MRCP Market Procedure states that Western Power shall provide an estimate of transmission connection costs based on the capital cost of a generic 330 kV substation, including an allowance for 2 km of 330 kV overhead line, to facilitate the connection of the power station.
- 23 Estimates of the cost of connection assets (a 330 kV line and dedicated connection to a 330 kV substation) and shared assets (including a 330 kV substation and deep connection costs) were provided by Western Power. These estimates were escalated to 2011 dollars. Based on this, the IMO has proposed a value of \$48.798 million for transmission connection costs.
- 24 The Authority notes an overall decrease in the transmission connection costs of \$6,872 per MW compared to last year's corresponding MRCP costs, resulting from reduced shared transmission connection cost⁹ and an adjustment to the determination of easement acquisition cost.¹⁰
- 25 The Authority also notes that the IMO identified two numbers in its draft report that were erroneous in calculating an estimate of transmission connection costs, and these numbers were corrected in its final report.

⁹ The Authority notes that Western Power's overarching network development strategies have influenced its estimations of transmission connection costs, resulting in reduced shared transmission asset connection costs of 15.2 per cent from the corresponding cost from last year's MRCP. For further information on Western Power's network development strategies see IMO website, Western Power report: *Transmission Cost Estimate for the Maximum Reserve Capacity Price for 2013/14*, pp 4-5, http://www.imowa.com.au/f175,856404/MRCP_Transmission_Cost_Estimate_for_2013_14_Capacity_Year_V4.PDF

¹⁰ In proposing an easement cost, the IMO's consultant (SKM) acknowledged that a project developer may not be required to purchase the full portion of land (i.e. which was the philosophy adopted for the purposes of the 2010 MRCP) and could instead secure easement rights for some or all of the easement. In adopting this philosophy, SKM estimated that easement costs would be approximately 50 per cent of the purchase value of the land. The IMO notes in its final report that it consulted with Western Power prior to the publication of the draft report in order to verify the validity of SKM's approach in determining the easement cost. Based on its historical observations, Western Power advised the IMO that SKM's approach was valid. The IMO considers that SKM's approach more accurately reflects the easement cost faced by a project developer.

- 26 The Authority considers that the IMO, in adopting a value of \$48.798 million 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

- 27 The MRCP Market Procedure states that the IMO must determine appropriate and reasonable costs for the liquid fuel storage and handling facilities 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.
- 28 The IMO commissioned Gutteridge Haskins and Davey (**GHD**) to update the costing of fixed fuel costs provided in its previous three reports, with costs that reflect those in 2010. Based on GHD's estimates, escalated to 2011 dollars, the IMO has proposed a value of \$2.670 million for fixed fuel costs.
- 29 The Authority considers that the IMO, in adopting a value of \$2.670 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

- 30 The MRCP Market Procedure states that the IMO shall 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. The MRCP Market Procedure states that the size of land for areas that do not require a substantive buffer zone will have costs determined based on a 3 hectare site, and areas that do require a substantive buffer zone will have costs determined based on a 30 hectare site.
- 31 Pursuant to the MRCP Market Procedure, the IMO calculated the MRCP for locating the 160 MW OCGT at the various prescribed regions within the SWIS, and determined that using the Kemerton Industrial Park Region for the land cost estimate yielded the lowest MRCP.
- 32 Based on the Kemerton Industrial Park Region land cost estimate provided by Landgate, escalated to 2011 dollars, the IMO has proposed a value of \$772,904 for land costs.
- 33 The Authority considers that the IMO, in adopting a value of \$772,904 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

- 34 The MRCP Market Procedure states that the IMO must determine fixed O&M costs for the power station and the associated transmission connection works. The MRCP Market Procedure states that fixed O&M costs shall be converted into an annualised amount.

- 35 The IMO commissioned SKM to provide an estimate of fixed O&M costs.
- 36 In regard to fixed O&M costs for the power station, the IMO has determined costs by taking the annual generation fixed O&M costs determined by SKM and calculating an annuity discounted at the value of the real WACC. This is escalated to 2011 dollars, providing a value of \$12,696.89 per MW per year.
- 37 In regard to fixed O&M costs for transmission connection works, the IMO has determined costs by taking the annual generation O&M costs determined by SKM and calculating an annuity discounted at the value of the real WACC. This is escalated to 2011 dollars, providing a value of \$358.88 per MW per year for switchyard O&M costs and a value of \$6.85 per MW per year for transmission line O&M costs. Western Power access charges, escalated to 2011 dollars, are added to these transmission costs, thereby providing an estimated value of \$13,951.76 per MW per year.
- 38 The Authority notes that the determined fixed O&M costs for transmission connection works is 7.1 per cent lower than the corresponding value in last year's MRCP review, and that the IMO attributes this reduction to the exclusion of GST from Western Power's estimates of access charges.
- 39 Based on these estimates, the IMO has proposed a value for total fixed O&M costs of \$26,648.64 per MW per year.
- 40 The Authority considers that the IMO, in adopting a value of \$26,648.64 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)

- 41 The MRCP Market Procedure states that the IMO shall determine the cost of capital to be applied to various costing components of the MRCP. This cost of capital shall be an appropriate WACC for the notional power station project considered. The MRCP Market Procedure sets out a formula for calculating the real pre-tax WACC. The MRCP Market Procedure states that the WACC components will be classed as those that require annual review (referred to as minor components) and those that require review less frequently (referred to as major components).
- 42 The IMO commissioned the Allen Consulting Group to provide estimates of the minor WACC components,¹¹ and these estimates were included in the IMO's draft report. Prior to the release of the IMO's final report, the IMO commissioned the Allen Consulting Group to update its estimates of the minor WACC components.¹² These updated estimates were included in the IMO's final report. The updated estimates of the minor WACC components resulted in a calculated real pre-tax WACC of 8.65 per cent, which represented an increase of 0.51 percentage points compared to the real pre-tax WACC proposed in the IMO's draft report (i.e. of 8.14 per cent).

¹¹ See IMO website, *Allen Consulting Group Report - WACC Parameters Update*, http://www.imowa.com.au/f175,856445/ACG_Report_to_IMO_291010.pdf

¹² See IMO website, MRCP webpage - Allen Consulting Group memorandum: *Update of the values of the volatile WACC parameters*, <http://www.imowa.com.au/mrcp>

- 43 The Authority notes that its role in the review of the MRCP is to determine whether the IMO's 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, which includes the IMO's derivation of the WACC parameters. While the Authority is of the view that the IMO has adopted a value for the WACC's Debt Risk Premium¹³ parameter that reflects an appropriate application of the prescribed method, the Authority considers that the resulting value does not reflect the current cost of funds in the market. The Authority has concerns with the method prescribed in the MRCP Market Procedure for deriving the Debt Risk Premium and is of the view that this matter should be considered as part of the MRCP Working Group's review of the methodology and process for determining the MRCP, which is currently in progress (see paragraph 10). The Authority emphasises that the Debt Risk Premium value adopted by the IMO in its review of the MRCP should not be interpreted as a regulatory precedent.
- 44 The Authority considers that the IMO, in adopting a value of 8.65 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.

Summary of input parameters and calculated values

- 45 A summary of the input parameters to the MRCP calculation, and the values calculated according to the formulae set out in Section 1.14 of the MRCP Market Procedure, is provided in Table 1.

Table 1: Summary of input parameters and calculated values

	Value	Units	Market Procedure definition
<u>Power station inputs</u>			
Power station capacity	160	MW	CAP
Power station derating factor	1.18	%	SDF
<u>Capital cost</u>			
WACC	8.65	%	WACC
Development costs	790,634.25	\$/MW	PC[t]
Factor for legal, financing, approvals and contingencies	18.6	%	M
Transmission connection works	48,797,708.54	\$	TC[t]
Fixed fuel costs	2,670,126.35	\$	FFC[t]
Land costs	772,904.19	\$	LC[t]

¹³ The debt risk premium (also referred to as the debt premium) is a margin above the risk free rate reflecting the risk in the provision of debt finance to businesses. See the ERA's website, *Discussion Paper on Measuring the Debt Risk Premium: A Bond-Yield Approach*, http://www.erawa.com.au/cproot/9104/2/20101201_D57440_Discussion_Paper_-_Measuring_the_Debt_Risk_Premium_-_A_Bond-Yield_Approach.PDF

	Value	Units	Market Procedure definition
Total capital cost	238,777,908.78	\$	CAP_COST[t]
Annualised capital cost	29,013,199.36	\$/year	ANNUALISED_CAP_COST[t]
<u>Fixed O&M</u>			
Generation fixed O&M	12,696.89	\$/MW/year	
Transmission fixed O&M	13,951.76	\$/MW/year	
Annualised fixed O&M	26,648.64	\$/MW/year	ANNUALISED_FIXED_O&M[t]
MRCP (rounded)	240,600	\$/MW/year	PRICECAP[t]

Application of the Maximum Reserve Capacity Price 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 and the MRCP Market Procedure.
- 47 In particular, the Authority notes that the IMO has determined the value of the MRCP using the proposed input parameters (as discussed in paragraphs 12 to 45) and that the IMO calculations reflect the formulae set out in Section 1.14 of the MRCP Market Procedure.

Public consultation process

- 48 The Authority is satisfied that the IMO conducted an adequate public consultation process.
- 49 The IMO published a draft report in November 2010, which described how the IMO arrived at the proposed revised value for the MRCP and called for submissions by 15 December 2010. 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 17 November 2010. The draft report and supporting documents, including reports from SKM, GHD and The Allen Consulting Group, were published on the IMO's website.¹⁴
- 50 The IMO received four submissions through the public consultation process on the draft report – from Infratil Energy Australia, Energy Response, Tesla Corporation and Perth Energy. The IMO responded to each of the issues raised in

¹⁴ IMO website, MRCP web page, <http://www.imowa.com.au/mrcp>

submissions.¹⁵

- 51 In its responses to the comments raised in submissions, the IMO noted that it would present four comments, which it considered to be out of scope under the current MRCP Market Procedure, to the MRCP Working Group for that group's consideration.
- The determination of escalation factors through simple extrapolation of previous years' indices is a weak methodology, and forecast escalation factors could provide a better estimate.¹⁶
 - An allowance should be made for the inclusion of insurance costs.¹⁷
 - Land cost should be calculated based on the actual land size of a model plant at the optimal location.
 - Consideration should be given to methods for smoothing the annual MRCP in order to reduce its year-on-year volatility.

CONCLUSION

- 52 The MRCP proposed in the IMO's final report for the 2011 Reserve Capacity Cycle (i.e. for the 2013/14 Reserve Capacity Year) is four per cent higher in comparison to that proposed in its draft report and 0.9 per cent higher in comparison to the MRCP determined for the 2010 Reserve Capacity Cycle (i.e. for the 2012/13 Reserve Capacity Year). The higher MRCP for the 2011 Reserve Capacity Cycle, when compared to the MRCP determined for the 2010 Reserve Capacity Cycle, is due to a higher WACC; incremental increases in land costs and the cost of constructing the power station and fuel storage and handling facilities; and a decrease in the transmission connection cost, resulting from reduced shared connection asset costs and an adjustment to the determination of easement acquisition cost.
- 53 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 2011 Reserve Capacity Cycle of \$240,600 per MW per year.

¹⁵ See Section 5 of the IMO's *Final Report: MRCP for the 2013/14 Reserve Capacity Year*.

¹⁶ The IMO's response to this comment (in its final report) was that it "will investigate options for the use of observable forward prices for the purpose of cost escalation and will present these to the MRCP working group."

¹⁷ The IMO's response to this comment (in its final report) was that "Step 1.12.1(c) of the Market Procedure specifies that the insurance cost must be accounted for in the calculation of the WACC, however there is no aspect of the prescribed WACC formula in the Market Procedure where this is included."