INVITATION TO PROVIDE SUBMISSIONS

2016 ENERGY PRICE LIMITS REVIEW FOR THE WHOLESALE ELECTRICITY MARKET DRAFT REPORT

Published: **April 2016**

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

IMPORTANT NOTICE

Purpose

The Australian Energy Market Operator (AEMO) has prepared this document to set out proposed inputs and seek feedback on the 2016 Energy Price Limits Review draft report. This document has been prepared and published by AEMO as required by clause 6.20.9 of the Wholesale Electricity Market (WEM) Rules.

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1. BACKGROUND

Clause 6.20.6 of the Wholesale Electricity Market (WEM) Rules requires the Australian Energy Market Operator (AEMO) to annually review the appropriateness of the values of the Energy Price Limits. In conducting the review, AEMO may propose revised values for the Maximum Short Term Energy Market (STEM) Price and the Alternative Maximum STEM Price. AEMO must calculate the proposed values using the methodology set out in clause 6.20.7 of the WEM Rules and then submit the proposed values to the Economic Regulation Authority (ERA) for approval.

The WEM Rules allow AEMO to delegate certain functions under the WEM Rules to a person or body of persons that is, in AEMO's opinion, competent to exercise the relevant functions (clause 2.1A.3 of the WEM Rules). Accordingly AEMO engaged Jacobs Group Pty Ltd (Jacobs), an independent consultant, to assist AEMO in preparing the draft report for the annual review of the Energy Price Limits for 2016.

The 2016 review includes:

- determining whether the cost assumptions and probability levels adopted in the modelling of the Energy Price Limits in 2015 are still appropriate;
- revising the maximum prices by conducting an analysis of the relevant costs; and
- preparing a draft report.

As part of this review, Jacobs has prepared a draft report proposing revised Energy Price Limits for 2016. The draft report is available on the Market Web Site at: http://wa.aemo.com.au/2016_EPL_Review.

2. INVITATION FOR SUBMISSIONS

AEMO invites all sectors of the Western Australian energy industry, including end-users, to make submissions on the draft report.

In accordance with clause 6.20.9 of the WEM Rules, the submission period is six weeks from the publication date of the draft report. Submissions must be delivered to AEMO by **5:00 PM (AWST)** on **Monday 30 May 2016**.

Submissions:

- should clearly address any issues that interested parties consider relevant to this review; and
- should provide any supporting evidence or calculations (if appropriate).

Please note that AEMO is required by clause 10.5.1(q) of the WEM Rules to make all submissions public. If confidential information is provided in a submission as supporting evidence, the submitting party must provide a public and a confidential version of the submission. The public submissions will be made available on the Market Web Site at: http://wa.aemo.com.au/2016_EPL_Review.

AEMO prefers to receive submissions by email to wa.marketdevelopment@aemo.com.au.

Written submissions may also be sent to AEMO by post, addressed to:

Australian Energy Market Operator
Attn: A/Group Manager, Markets
PO Box 7096
Cloisters Square, PERTH, WA 6850

3. INVITATION FOR PUBLIC WORKSHOP

AEMO also invites all interested parties to attend a public workshop on the draft report, to be held at AEMO's Perth office from **10:00 AM – 12:00 PM (AWST)** on **Monday 9 May 2016**.

The objective of the workshop is to discuss the draft report. Additional details including a draft agenda will be made available prior to the workshop on the Market Web Site at:

http://wa.aemo.com.au/2016_EPL_Review.

If you would like to register for this workshop, please email your name and details to wa.marketdevelopment@aemo.com.au with 'Energy Price Limits Workshop' in the subject by **5:00 PM (AWST)** on **Friday 29 April 2016**.

4. SUMMARY OF THE REVIEW

Two price caps were reviewed, the Maximum STEM Price, which applies when gas is used by the highest cost peaking plant, and the Alternative Maximum STEM Price, which applies when liquid fuel is required to be used.

The 2016 review has continued with the basis for setting the Energy Price Limits as applied in 2015, with Jacobs making changes to the following input parameters:

- Updated operation and maintenance costs for operating 40 MW gas turbines for both the industrial and aero-derivative types by accounting for movements in foreign exchange rates and applying Consumer Price Index escalation.
- The time series forecasting approach used to project the gas price distribution was adjusted for the unusually low spot gas prices and to reflect the recent upwards trend in the gas contract price which also has an influence on the spot price. Jacobs found a reasonably strong correlation between the Brent crude oil price denominated in US dollars and the historical maximum monthly spot gas prices in WA. With the expectation that the recent upwards trend in the Brent crude oil price will continue in the short to medium term, Jacobs considered it reasonable to add an uptrend to the maximum monthly spot gas price forecast to represent the expected movement in the oil price.
- Extended the Monte Carlo sampling from 1,000 samples to 10,000 samples, thereby reducing the standard error of estimated quantities.

4.1 Results

The proposed revised values for the Energy Price Limits are as follows:

- **Maximum STEM Price**: The proposed revised value for the Maximum STEM Price is $240/MWh using the gas price forecast method which had been applied in last year's review (alternative case). This is based on the estimated costs (with gas firing) for industrial type gas turbines. These units have shorter run times and higher start-up costs, which make them the higher cost resources; and

- **Alternative Maximum STEM Price**: The proposed revised value for the Alternative Maximum STEM Price is $347/MWh using the estimated costs (with distillate firing) for industrial type gas turbines at the distillate price of $13.56/GJ. The Alternative Maximum STEM Price is calculated, applying this distillate price as the fuel cost, as the total of:

  $84.27/MWh + 19.356 multiplied by the Net Ex Terminal[1] distillate fuel cost in $/GJ.

A comparison of the input parameters and key outcomes for the reviews since 2012 are presented in Tables 1 and 2. A summary of the monthly changes to the Alternative Maximum STEM Price is presented in Table 3.

Further details of historical Maximum STEM Prices and Alternative Maximum STEM prices are available on the Market Web Site at:
http://wa.aemo.com.au/home/electricity/market-information/price-limits.

[1] Wholesale price for distillate in Perth, Western Australia, after deduction of excise rebate and excluding GST. This price does not include road freight costs.

Table 1 Input parameters from the 2012 – 2016 reviews

	2012	2013	2014	2015	2016 draft
Heat rate	Fixed at the heat rate at minimum operating capacity	Fixed at the heat rate at minimum operating capacity	Fixed at the heat rate at minimum operating capacity	Fixed at the heat rate at minimum operating capacity	Fixed at the heat rate at minimum operating capacity
Industrial type					
Gas[2]	18.6 GJ/MWh	18.6 GJ/MWh	19.2 GJ/MWh	18.9 GJ/MWh	18.9 GJ/MWh
Distillate[2]	18.6 GJ/MWh	18.7 GJ/MWh	19.2 GJ/MWh	18.9 GJ/MWh	18.9 GJ/MWh
Aero derivative					
Gas[2]	13.4 GJ/MWh	13.4 GJ/MWh	12.4 GJ/MWh	12.4 GJ/MWh	12.1 GJ/MWh
Distillate[2]	13.4 GJ/MWh	13.4 GJ/MWh	12.4 GJ/MWh	12.4 GJ/MWh	12.1 GJ/MWh
Gas cost					
Gas contract price	$6.48/GJ (5.33-12.17)	$6.60/GJ (4.98-11.54)	$8.50/GJ (7.52-11.12)	$6.04/GJ (4.09-7.98)	$7.30/GJ (4.80-10.25)
Gas transport					
South West	$1.82/GJ	$1.74/GJ	$1.74/GJ	$1.74/GJ	$1.74/GJ
Goldfields	$5.67/GJ	$5.91/GJ	$6.14/GJ	$6.14/GJ	$6.18/GJ
Load factor					
Load factor range	95.0% (80-98%)	95.0% (80-98%)	95.0% (80-98%)	95.0% (80-98%)	95.0% (80-98%)

[2] Rounded to one decimal place.

	2012	2013	2014	2015	2016 draft
Distillate costs					
Distillate price[3]	$24/GJ	$22/GJ	$23/GJ	$18/GJ	$14/GJ
O&M costs					
Industrial type	$14.49/MWh	$10.02/MWh	$13.58/MWh	$19.88/MWh	$23.51/MWh
Aero derivative	$194/hr (time based discounted cost)	$199/hr (time based discounted cost)	$201/hr (time based discounted cost)	$175/hr (time based discounted cost)	$175/hr (time based discounted cost)
Starts per year (average)					
Industrial type	160.8	76.4	71.2	63.6	52.9
Aero derivative	Taken into account in a different way (1 start equivalent to only 1 running hour)	Taken into account in a different way (1 start equivalent to only 1 running hour)	Taken into account in a different way (1 start equivalent to only 1 running hour)	Taken into account in a different way (1 start equivalent to only 1 running hour)	Taken into account in a different way (1 start equivalent to only 1 running hour)

[3] Rounded to nearest integer.

Table 2 Key outcomes from the 2012 – 2016 reviews

	2012	2013	2014	2015	2016 draft
Non-Liquid					
Maximum STEM Price	$323/MWh	$305/MWh	$332/MWh	$253/MWh	$240/MWh
Annual Percentage Change	+2.87%	-5.57%	+8.85%	-23.80%	-5.14%
Probability level	80%	80%	80%	80%	80%
Risk Margin	18.7%	22.1%	12.5%	20.3%	22.4%
Liquid					
Alternative Maximum STEM Price (see monthly changes in the table below)	$547/MWh	$500/MWh	$535/MWh	$425/MWh	$347/MWh
Annual Percentage Change	+2.63%	-8.59%	+7.00%	-20.56%	-18.35%
Probability level	80%	80%	80%	80%	80%
Risk Margin	7.8%	8.4%	5.8%	7.4%	10.9%

Table 3 Monthly Alternative Maximum STEM Price ($/MWh)

	2012	2013	2014	2015	2016
January	546	535	552	515	396
February	552	525	555	488	377
March	559	515	563	451	345
April	558	525	571	428	316
May	564	523	566	424	
June	571	512	558	438	
July	547	500	562	429	
August	528	500	555	436	
September	510	521	552	436	
October	510	545	546	421	
November	528	560	541	407	
December	540	558	530	398	