INVITATION TO PROVIDE SUBMISSIONS

2017 ENERGY PRICE LIMITS REVIEW FOR THE WHOLESALE ELECTRICITY MARKET DRAFT REPORT

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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 2017 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 2017.

The 2017 review includes:

- determining whether the cost assumptions and probability levels adopted in the modelling of the Energy Price Limits in 2016 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 2017. The draft report is available on the Market Web Site at: https://www.aemo.com.au/Stakeholder-Consultation/Consultations/

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 **Tuesday 09 May 2017**.

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: https://www.aemo.com.au/Stakeholder-Consultation/Consultations/

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

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

Australian Energy Market Operator
Attn: Group Manager, Operations and Technology (WA)
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 **2:00 PM – 4:00 PM (AWST)** on **Thursday 20 April 2017.**

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:

https://www.aemo.com.au/Stakeholder-Consultation/Consultations/

If you would like to register for this workshop, please email your name and details to wa.operations@aemo.com.au with 'Energy Price Limits Workshop' in the subject by **5:00 PM (AWST)** on **Thursday 13 April 2017**.

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 2017 review has continued with the basis for setting the Energy Price Limits as applied in 2016, 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.
- Modified the approach for gas price distribution compared to last year's review. An upward adjustment was made to the forecast price distribution last year to reflect the upwards trend in the gas contract price. There was an expectation that the recent upwards trend in the Brent crude oil price would 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. However, for this year's review this was not deemed necessary as expectations for strong growth in crude oil prices have not eventuated.
- Historical market observations have been expanded from 2 years of data to 4 years of data to estimate the distributions for starting frequency, average run time, generation Dispatch Cycle and minimum capacity for Pinjar and Parkeston. This has been implemented to better model actual behaviour.

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 $245/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 $424/MWh using the estimated costs (with distillate firing) for industrial type gas turbines at the distillate price of $16.43/GJ. The Alternative Maximum STEM Price is calculated, applying this distillate price as the fuel cost, as the total of:

  $100.65/MWh + 19.670 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:
https://www.aemo.com.au/Stakeholder-Consultation/Consultations/

[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 2013 – 2017 reviews

	2013	2014	2015	2016	2017 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
Gas[2] for industrial gas turbine (Pinjar)	18.6 GJ/MWh	19.2 GJ/MWh	18.9 GJ/MWh	18.9 GJ/MWh	19.1 GJ/MWh
Distillate[2] [3]	18.7 GJ/MWh	19.2 GJ/MWh	18.9 GJ/MWh	18.9 GJ/MWh	19.2 GJ/MWh
Gas[2] for the aero-derivative gas turbine (Parkeston)	13.4 GJ/MWh	12.4 GJ/MWh	12.4 GJ/MWh	12.1 GJ/MWh	12.4 GJ/MWh
Distillate[2] [4]	13.4 GJ/MWh	12.4 GJ/MWh	12.4 GJ/MWh	12.1 GJ/MWh	12.4 GJ/MWh
Gas contract price	$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)	$7.00/GJ (4.34-9.63)
South West (Transmission charge)	$1.74/GJ	$1.74/GJ	$1.74/GJ	$1.74/GJ	$1.77/GJ
Goldfields (Transmission charge)	$5.91/GJ	$6.14/GJ	$6.14/GJ	$6.18/GJ	$6.25/GJ
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.
[3] As above, multiplied by 1,0027, as there is a penalty on heat rate for burning distillate.
[4] As above, multiplied by 1,0027, as there is a penalty on heat rate for burning distillate.

	2013	2014	2015	2016	2017 Draft
Ex Terminal Distillate price[5]	$22/GJ	$23/GJ	$18/GJ	$14/GJ	$16/GJ
Start cost divided into average energy of dispatch cycle	$10.02/MWh	$13.58/MWh	$19.88/MWh	$23.51/MWh	$27.79/MWh
Aero-derivative gas turbine (Parkeston) variable O&M 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)	$189/hr (time based discounted cost)
Average number of starts per year industrial gas turbine (Pinjar)	76.4	71.2	63.6	52.9	68.5
Start per year Aero-derivative gas turbine (Parkeston)	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)

[5] Rounded to nearest integer.

Table 2 Key outcomes from the 2013 – 2017 reviews

	2013	2014	2015	2016	2017 Draft
Maximum STEM Price	$305/MWh	$332/MWh	$253/MWh	$240/MWh	$245/MWh
Annual Percentage Change	-5.57%	+8.85%	-23.80%	-5.14%	+2.08%
Probability level	80%	80%	80%	80%	80%
Risk Margin	22.1%	12.5%	20.3%	22.4%	24.1%
Alternative Maximum STEM Price (see monthly changes in the table below)	$500/MWh	$535/MWh	$425/MWh	$347/MWh	$424/MWh
Annual Percentage Change	-8.59%	+7.00%	-20.56%	-18.35%	+22.19%
Probability level	80%	80%	80%	80%	80%
Risk Margin	8.4%	5.8%	7.4%	10.9%	11.4%

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

	2013	2014	2015	2016	2017
January	535	552	515	396	379
February	525	555	488	377	390
March	515	563	451	345	401
April	525	571	428	316	
May	523	566	424	307	
June	512	558	438	315	
July	500	562	429	346	
August	500	555	436	367	
September	521	552	436	380	
October	545	546	421	375	
November	560	541	407	367	
December	558	530	398	371	