



# Five-Yearly Review

**August 2018**

**Western Australian Gas Statement of Opportunities**

# Important notice

## PURPOSE

The purpose of this publication is to present the results and recommended actions from the first five-yearly review of the Western Australian Gas Statement of Opportunities, which AEMO is required to conduct in accordance with rule 105 of the Gas Services Information Rules.

This publication has been prepared by AEMO using information available at 27 July 2018. Information made available after this date may have been included in this publication where practical.

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## VERSION CONTROL

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Version	Release date	Changes
1.0	10/08/2018	

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# 1. Background and context

The Western Australian (WA) Gas Statement of Opportunities (GSOO) report provides Gas Market Participants (GMPs)<sup>1</sup> and other gas industry stakeholders with information and assessments relating to medium and long term natural gas supply and demand and natural gas transmission and storage capacity in the WA domestic gas market. The Australian Energy Market Operator (AEMO) must publish the WA GSOO annually by 31 December of each calendar year. Rules 2(2)(b) and 104 of the GSI Rules specify requirements for the WA GSOO.

The WA GSOO is refined and updated every year to address existing and expected market developments in the WA gas market.

Rule 105 of the GSI Rules requires AEMO to conduct a review of the WA GSOO information (Review) at least once every five years, which must be carried out in consultation with Gas Market Participants and gas industry groups. The Review may consider any of the following:

1. The regions (if any) to be specifically considered in a WA GSOO.
2. Assumptions used to develop a WA GSOO.
3. Scenarios to be considered by a WA GSOO.
4. The general methodologies to be used in developing a WA GSOO.
5. The types of information to be collected for a WA GSOO.
6. Any other inputs that AEMO considers relevant.

The first WA GSOO was published in July 2013 by AEMO's predecessor in WA, the Independent Market Operator (IMO).

This 2018 Review is the first five-yearly review of the WA GSOO since the GSI Rules commenced in 2013. The Review considers the matters specified in rule 105 of the GSI Rules, in consultation with Gas Market Participants and gas industry groups, and covers the six<sup>2</sup> WA GSOOs published over the last five years.

This report covers the process undertaken (Chapter 2), the submissions and findings (Chapter 3), and the action items (Chapter 4) for the 2018 Review.

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<sup>1</sup> As defined in the Gas Services Information Rules (GSI Rules), available at: <https://www.erawa.com.au/rule-change-panel/gas-services-information-rules>. All references to the GSI Rules in this report refer to the version dated 28 April 2018.

<sup>2</sup> The six WA GSOOs were published in July 2013 (IMO), January 2014 (IMO), December 2014 (IMO), November 2015 (IMO), December 2016 (AEMO) and December 2017 (AEMO). The GSI Rules required an additional WA GSOO to be published in the first year.

# 2. Process

AEMO addressed the Review requirements in two parts:

1. Preliminary desktop analysis, which considered the historical evolution of the content of the WA GSOO and AEMO's stakeholder engagement program (Section 2.1).
2. Comprehensive consultation and engagement with stakeholders and industry groups (Section 2.2).

## 2.1 Desktop analysis

### 2.1.1 Evolution of the WA GSOO report, 2013 to 2017

Six WA GSOO reports were published between July 2013 and December 2017<sup>3</sup>. The length of discussion and commentary on topics in the WA GSOOs has varied due to feedback provided by stakeholders and AEMO's assessment of the WA gas market at the time<sup>4</sup> (see Table 4 in the Appendix). The 2017 WA GSOO included several new items:

- As a precursor to the 2018 Review, a market dashboard compared key indicators of the WA gas market for 2013 and 2017.
- A separate chapter presented aggregate data submitted by GMPs and others from the first formal information request process conducted<sup>5</sup>. This included gas supply capacity, contracted gas volumes, gas resources and reserves.

### 2.1.2 Evolution of stakeholder engagement program, 2013 to present

AEMO interacts with WA gas market stakeholders on a regular basis. The level of engagement by the IMO/AEMO has increased, particularly since the IMO became AEMO in 2016, via three mechanisms:

- Stakeholder engagement commitment – launched by AEMO in November 2016<sup>6</sup>, the commitment provided a clear framework for what stakeholders could expect from their day-to-day engagement with AEMO. AEMO has tracked stakeholder engagement meetings through its customer relationship management (CRM) program since July 2016. From the inception of the CRM program through May 2018, AEMO stakeholder engagement managers logged 65 conversations either classified as WA GSOO-related or in which the WA GSOO was raised in other conversations.
- Gas Advisory Board (GAB) – The GAB is a committee of gas industry representatives whose purpose, among other things, is to advise on any matters arising in the performance of AEMO's role under the GSI Rules<sup>7</sup>. The GAB includes gas producers, pipeline operators and owners, gas shippers, gas users and small end-use customers, and representatives from WA government and AEMO. Its members are required to act in the best interests of the gas industry as a whole.

The GAB was managed by the IMO from its commencement in December 2011 until 2016. Since 2017, it has been convened by the Rule Change Panel. There have been 27 GAB meetings held to date.

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<sup>3</sup> See footnote 2.

<sup>4</sup> Key changes included: analysis of the global LNG export market was shortened substantially, then removed from 2015; discussion of gas reserves and resources grew to 2014 (December), then was reduced; the historical overview of the WA gas market was shortened from 2014 (December), and discussion of gas demand and supply forecasts grew to 2014 (December), decreased, then grew again moderately.

<sup>5</sup> In 2017, for the first time, AEMO conducted a formal information request to support development of the WA GSOO in response to a recommendation made by the Economics and Industry Standing Committee (EISC) in its November 2016 report on the compilation of the WA GSOO. See EISC 2016. *The Compilation of the WA Gas Statement of Opportunities*, Report 10, November, available at: [http://www.parliament.wa.gov.au/parliament/commit.nsf/\(Report+Lookup+by+Com+ID\)/4C0D5C725939DFDE4825806600283C6C/\\$file/20161110+The+Com+ilation+of+the+WA+Gas+Statement+of+Opportunities.pdf](http://www.parliament.wa.gov.au/parliament/commit.nsf/(Report+Lookup+by+Com+ID)/4C0D5C725939DFDE4825806600283C6C/$file/20161110+The+Com+ilation+of+the+WA+Gas+Statement+of+Opportunities.pdf).

<sup>6</sup> AEMO 2016. "AEMO launches stakeholder engagement commitment", 28 November, available at: <https://www.aemo.com.au/Media-Centre/AEMO-launches-stakeholder-engagement-commitment>.

<sup>7</sup> See Economic Regulation Authority 2018. *Constitution of the Gas Advisory Board*, Section 2.5, available at: <https://www.era.wa.com.au/cproot/17915/2/GAB%20Constitution%20-%20May%202017.pdf>.

- Quarterly meetings of the WA Gas Consultative Forum (WAGCF)<sup>8</sup> – commencing in April 2016, 11 forums have been held in WA as of June 2018. The WAGCF provides a platform for communication between AEMO and stakeholders regarding the WA GSOO and Gas Bulletin Board (GGB)<sup>9</sup>.

## 2.2 Consultation process

The consultation process for the Review is represented in Table 1.

**Table 1 Consultation process for the Review**

Consultation method	Approach
<b>WA Gas Consultative Forum (WAGCF), January 2018</b>	<p>AEMO introduced the 2018 Review to GMPs and other stakeholders and sought feedback from stakeholders about the Review’s aim and methodology<sup>10</sup>.</p> <p>Members of the forum thought that the Review should consider how the GSOO can be made more robust to inform investment and policy decisions<sup>11</sup>. AEMO should allow sufficient time for a thorough review, taking into consideration: who uses the data, what it is used for, and how effective the GSOO is for its users. Members requested that AEMO develop a detailed Terms of Reference (TOR) document along with a template for providing written submissions. They suggested that a steering or working group could be established to assist with the Review. The GAB was considered a suitable reference group for this purpose. The members noted that it would be beneficial for submissions to be made public.</p>
<b>One-on-one stakeholder engagement meetings</b>	<p>AEMO held meetings with 15 individual GMPs, non-GMPs, industry and government stakeholders as part of the Review. AEMO determined that respondents would be more forthright if their written submissions remained confidential, and that a band of reference prices would be preferable to the domestic gas price forecasts presented in the WA GSOO.</p>
<b>Call for written submissions</b>	<p>AEMO developed a TOR and a submission template to solicit responses to the Review<sup>12</sup>.</p> <p>The template allowed for focused rating, categorical, and open-ended responses to address each area outlined in rules 105(3)(a)–(f) of the GSI Rules. AEMO stated that it would only publish the results of the Review in an aggregate and anonymous format.</p> <p>AEMO sent the TOR and template via email to the list of 144 external contacts for the WAGCF<sup>13</sup> (and to members of the GAB) on 9 February 2018, and published them on the AEMO website. The submission period closed on 2 March 2018<sup>14</sup>.</p>
<b>Gas Advisory Board (GAB)<sup>15</sup>, March and May 2018</b>	<p>AEMO sought feedback on the key issues and endorsement of action items to progress from the Review. Further details are provided in Section 3.4.</p>
<b>WAGCF, May 2018</b>	<p>AEMO presented the preliminary results from the Review submissions, the feedback from the GAB and AEMO’s proposed action items<sup>16</sup>. AEMO confirmed that a final report would be published on its web site and requested that any additional feedback should be provided by 27 July 2018.</p>

<sup>8</sup> AEMO. WA Gas Consultative Forum (WAGCF) – Terms of Reference, available at: [https://www.aemo.com.au/-/media/Files/Stakeholder\\_Consultation/Working\\_Groups/WA\\_Meetings/WAGCF/WA-Gas-Forum-ToR-Final.pdf](https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Working_Groups/WA_Meetings/WAGCF/WA-Gas-Forum-ToR-Final.pdf).

<sup>9</sup> AEMO. WA Gas Consultative Forum (WAGCF), available at: <https://www.aemo.com.au/Stakeholder-Consultation/Industry-forums-and-working-groups/WA-Forums/WA-Gas-Consultative-Forum-WAGCF>.

<sup>10</sup> AEMO 2018. WAG-CF 9 – Meeting Pack, “WAGCF9 – Agenda”, January, available at <https://www.aemo.com.au/Stakeholder-Consultation/Industry-forums-and-working-groups/WA-Forums/WA-Gas-Consultative-Forum-WAGCF>.

<sup>11</sup> AEMO 2018. WAG-CF 9 – Minutes, available at: [https://www.aemo.com.au/-/media/Files/Stakeholder\\_Consultation/Working\\_Groups/WA\\_Meetings/WAGCF/2018/WAG-CF-9---Minutes.pdf](https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Working_Groups/WA_Meetings/WAGCF/2018/WAG-CF-9---Minutes.pdf).

<sup>12</sup> The Terms of Reference detailed the purpose of the GSOO, AEMO’s role, and the requirements for the Review under the GSI Rules. The final Terms of Reference and submission template are available at: <https://www.aemo.com.au/Gas/National-planning-and-forecasting/WA-Gas-Statement-of-Opportunities>.

<sup>13</sup> The list is composed of Gas Market Participants, industry associations, government representatives, and other interested stakeholders. There are multiple contacts from a number of the stakeholder entities. AEMO staff are not included in the 144 figure quoted.

<sup>14</sup> The closing date was extended from 23 February.

<sup>15</sup> See Section 2.1.2, footnote 7 and accompanying text for information about the GAB.

<sup>16</sup> AEMO 2018. WAG-CF 9 – Meeting Pack, “WAG-CF 10 – Meeting Pack”, May, available at <https://www.aemo.com.au/Stakeholder-Consultation/Industry-forums-and-working-groups/WA-Forums/WA-Gas-Consultative-Forum-WAGCF>.

# 3. Submissions and findings

## 3.1 Submissions to the review

AEMO received 15 submissions from stakeholders in the template provided<sup>17</sup>. The Review responses were representative of the various sectors of the WA gas market (Table 2). Gas consumers came from the mining, power, and industrial sub-sectors, and gas suppliers were from LNG-linked and domestic gas-only producing projects.

**Table 2 Review respondents (number by type)**

Respondent type	Number received
Gas consumers	6
Gas suppliers	6
Government agencies and industry bodies	2
Other (including gas transmission/distribution or storage, aggregator)	2
<b>Total submissions (15) plus email (1)</b>	<b>16</b>

Of the 15 submissions received, nine were from registered GMPs.

The submission template included 16 open-ended questions, which allowed stakeholders to provide qualitative feedback. Most respondents (64%) answered at least some of these questions. Thirty-two questions in the submission template asked respondents to:

- reply yes or no to a statement; or
- choose an option from a list of categories offered; or
- to rate (on a five-point scale) the gas demand, supply and price assumptions, methodology and base scenario forecasts and how certain adjectives described the 2017 WA GSOO.

AEMO analysed the information received, developing frequency tables for the quantitative and categorical questions, and classifying then tallying the responses to qualitative (open-ended) questions.

The general observations and key themes identified from the analysis are presented in the sections below.

## 3.2 Overall observations on the WA GSOO

Most of the responses to open-ended questions about the WA GSOO were either supportive or neutral (54 responses). These included suggested areas of improvement and suggestions for different types of analysis that could be undertaken. The remaining 43 responses were more critical of the WA GSOO. Examples include:

- *“The GSOO is a highly anticipated document and yet could be significantly improved to deliver on its promise.”*
- *“Overall, the gas SOO continues to be a useful reference document about our gas market. However, the large range of outcomes in terms of supply/demand balance and price means it can’t really be used for much more than just another input for market participants when making business decisions.”*
- *“[Respondent] considers the GSOO an important document that can provide impartial market information to multiple stakeholders (industry, policy makers, regulators).”*

<sup>17</sup> AEMO received one email with relevant comments.

- “[Respondent] is very satisfied and has always appreciated the work of AEMO in the development of domestic gas demand, supply and pricing forecasts.”

Figure 1 shows responses to questions which rated the WA GSOO generally, including the statistical mean<sup>18</sup>. Low or unfavourable assessments were represented as a “1” on the five-point scale, while high or favourable assessments were represented as a “5”; “3” was the mid-point between them.

**Figure 1 Rating the WA GSOO**

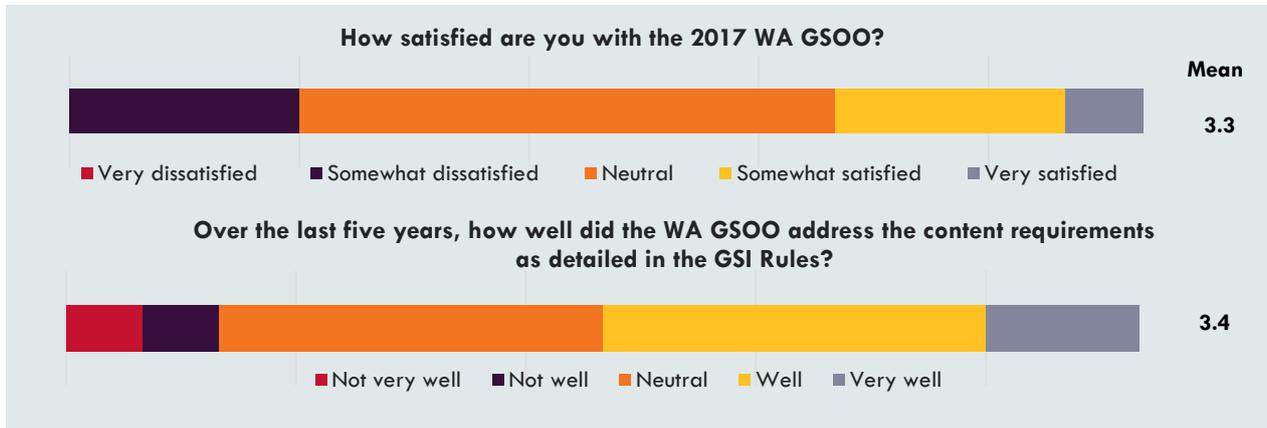


Figure 2 shows responses to questions which categorised how the WA GSOO is used.

**Figure 2 How the WA GSOO is used\***

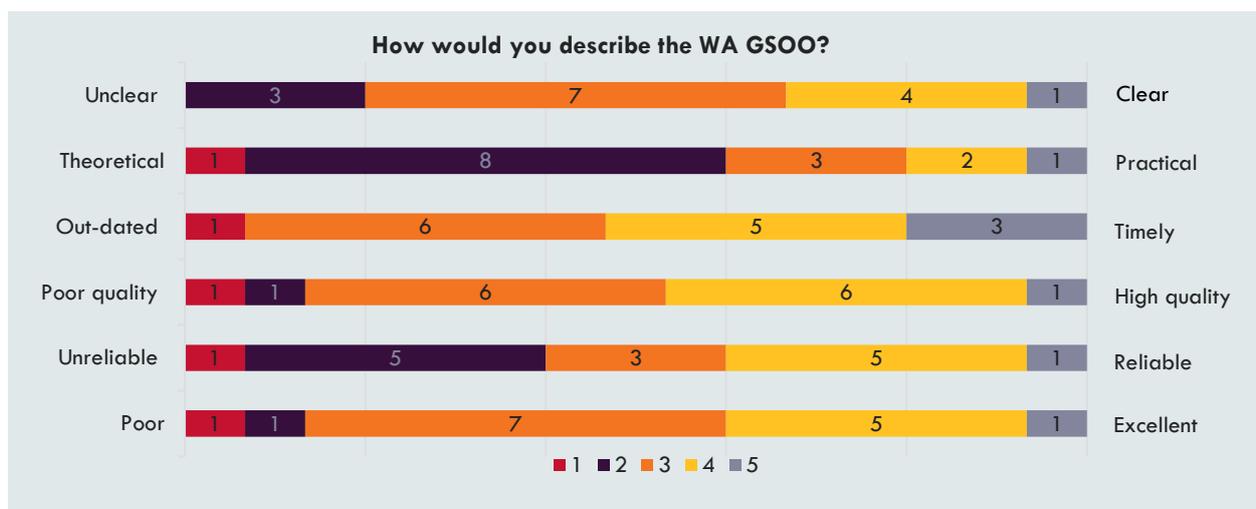


\*Numbers in each bar refer to the count of responses for each category.

As shown in Figure 3 (which uses the same rating scale as Figure 1), the 2017 WA GSOO scored above the statistical mean in terms of its reliability, quality, timeliness, clarity and excellence. However, the report is considered somewhat theoretical. Gas consumers’ and gas suppliers’ responses are equally supportive across the questions.

<sup>18</sup> The sample size is too small for robust statistical analysis.

**Figure 3 WA GSOO characteristics\***



\* Numbers in each bar refer to the count of responses for each rating on a five-point scale.

To better understand the priorities of stakeholders, one question asked respondents to list the top three topics that should be considered in the annual GSOO analysis (see Table 5 in the Appendix). Overall, the most-mentioned topics related to reserves, exploration and the cost of production, and government policy - especially the WA gas reservation policy (often referred to as the Domestic Market Obligation (DMO)). The topics of primary importance suggested by most respondents were related to government policy and the gas supply and demand balance. Gas price forecasts were seen as a lower priority, appearing exclusively as the third issue to consider.

### 3.3 Key themes

After analysis of all the submission data, AEMO identified five key themes:

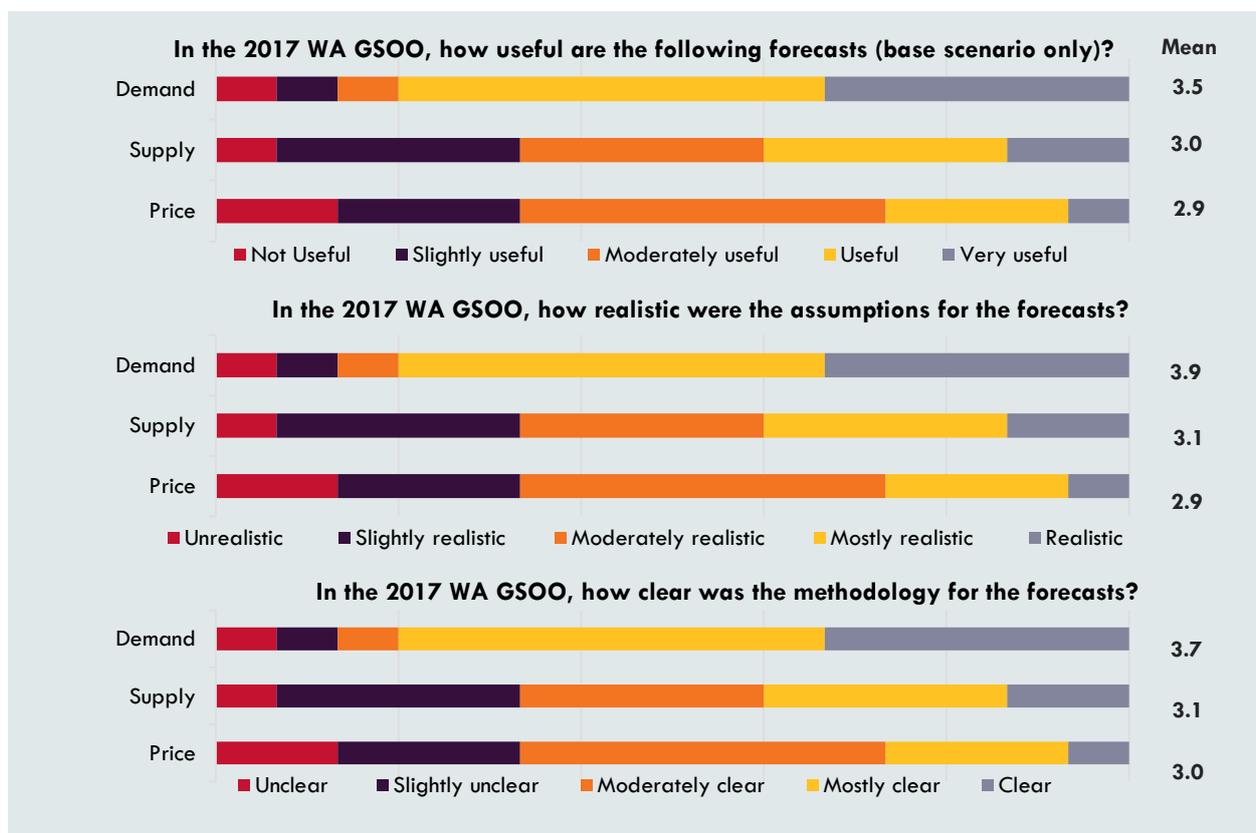
1. The modelling assumptions for gas supply and price forecasts need review.
2. Gas demand forecasts are more realistic than supply or price forecasts.
3. Gas demand, supply and prices should be modelled together (as a market).
4. Further granularity in the analysis is desirable, including identification of sensitivities.
5. Peak gas demand forecasts need review.

The sections below consider the data and responses that contributed to the identification of the key themes.

#### Gas supply, demand and price forecasts (Themes 1, 2 and 3)

The first three key themes are interrelated. Gas demand forecasts are viewed more favourably than the gas supply and price forecasts (Figure 4).

Figure 4 Rating the WA GSOO forecasts



Some comments suggested that the gas supply forecast assumptions were “overly simplistic”, and “illogical”. Observations from the submissions included:

“...the domestic gas demand forecasts were reasonably realistic...the domestic gas supply and price forecasting did not represent realistic expectations based on [respondent’s] detailed understanding of gas supply and prices. The limitations in the supply side forecasting negatively impacted the overall forecasting.”

- “The supply band is very wide. The low case appears to have built into it some extreme assumptions...”
- “...the methodology for supply and pricing is not clear. The logic for supply seems flawed as there is no feedback to price from low supply.”
- “Projections of potential domestic gas supply from LNG projects need to be understood in the context of domestic gas agreements with the State.”

Respondents observed that gas demand, supply and price forecasts could be developed by modelling the WA gas market as a whole, instead of separately.

- “The assumptions made and how ‘realistic’ they are is not really the fundamental problem with the GSOO. The problem is the results from the modelling and associated assumptions are somewhat spurious because they model demand and supply independently from one another.”

Respondents thought that it would be more valuable for the WA GSOO to consider the drivers of the domestic gas price over time rather than present gas price forecasts. In response to this feedback, the 2018 WA GSOO will present a range of reference prices. The submissions suggested that the LNG netback price is not a valid basis for the development of domestic gas price forecasts in WA.

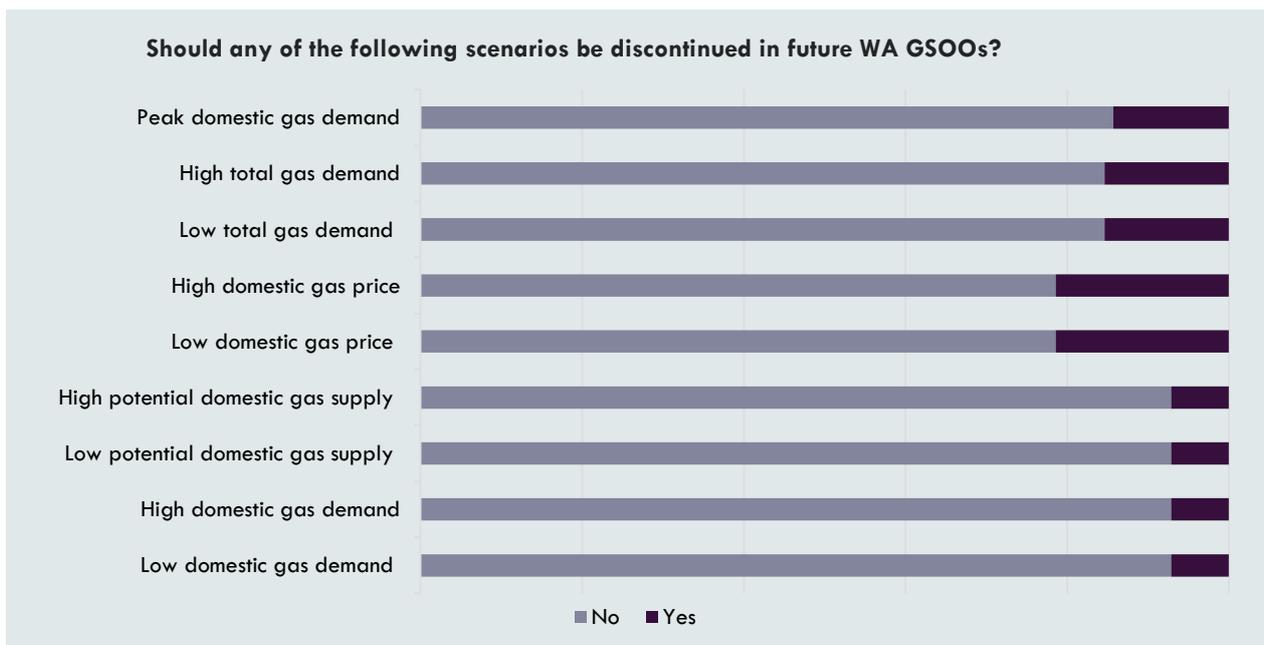
“The natural gas price forecasting exercise is quite work intensive and the result is highly debated. More important than the price forecast itself, market participants will be seeking to understand the current and future dynamics of the market: demand exposed to competitive pressure, natural gas reserves and other supply forces, market dynamics. Each participant will subsequently form its own view of prices.”

- “Rather than attempting to forecast, the market participants would benefit from more understanding of the price drivers, ie. maintain/have more detail of the logic: contracted gas quantities, price sensitive gas quantities available, gas available from reserves developed and undeveloped.”
- “LNG netback-based forecasts are not a good reflection of domestic prices. AEMO assumes LNG producers can freely switch between LNG exports and domestic supply, which is inconsistent with domestic gas obligations and infrastructure constraints.”
- “...the price for buyers is not driven by the international oil price because of the reservation policy, this needs to be reflected...the price needs to be at a point where the market clears, not fixed to an assumption.”
- “AEMO continues to take a narrow approach to pricing, when the reality is a range of prices will exist, ultimately based on each party’s willingness to pay and negotiation skills.”
- “Refer to DMP Statistical Digest for historical WA domgas prices and then include a series of forecasts such as SRMC, LRMC, LNG, LNG netback and a forecast contracted gas price by having all producers provide a contracted MDQ for each year and the weight average price for that year for the 10 year forecast period. Then all these curves should present a range within which gas price will fall and will inform the market.”

#### Granularity of data and sensitivities (Theme 4)

Respondents support the range of forecast scenarios, beyond the base case, presented in the 2017 WA GSOO (Figure 5). There was slightly less support for the low and high domestic gas price scenarios<sup>19</sup>.

Figure 5 Changing the GSOO forecast scenarios



However, the submission responses suggested that the forecasts, and gas demand in particular, should be further disaggregated beyond the current classifications of South West interconnected system (SWIS) and non-SWIS. Stakeholders requested that information be split into smaller geographical zones and into multiple categories designating the type of gas user.

**“We believe the increased granularity of forecasts is necessary to provide relevant and useful information on the WA energy industry for businesses, the Government and potential investors. Providing this modelling under different scenarios would be beneficial for gas consumers of WA to have a clear outlook of the state of the WA gas market.”**

- “Suggest including SWIS and non SWIS by zone and usage category (electricity, mining, industrial, etc).”
- “There could also be value in looking more specifically at gas demand in the Pilbara (with the development of the NWIS) and at off-grid gas demand (with the development of domestic LNG demand) in future GSOOs.”

<sup>19</sup> In the open-ended questions (see previous discussion on Themes 1, 2 and 3), and during one-on-one engagement sessions and GAB meetings, stakeholders indicated that they would prefer a band of reference prices to the domestic gas price forecasts as presented in the 2017 WA GSOO.

- “Subject to future demand growth in the Non-SWIS region, consideration should be undertaken on a further breakdown for example, North West/Pilbara and Eastern (GGP).”
- “...with respect to the domestic market, we recommend that this is further segregated to provide regional forecasts for the following areas:
  - Metropolitan Perth
  - Kalgoorlie, East of WA
  - South West of WA
  - North of SWIS
  - North of WA/Pilbara.”

Responses indicated that the WA GSOO should reflect key uncertainties, contingencies and challenges, and provide insights to future market trends over the 10-year forward period. The responses indicated that this could be done by identifying potential projects and new assets in the market, addressing potential demand destruction and the impact of renewable energy on gas supply.

- “The GSOO could provide a useful 12-month lookback and draw insights from both announcements, regulatory changes and GBB data.”
- “Scenarios (sensitivities) help provide insight to the market across the forecast period. These need to be defined (to the extent not to compromise confidential information) and used to draw insights and provide signposts to outcomes.”

#### Peak gas demand forecasts (Theme 5)

Respondents stated that the peak gas demand forecast, first provided in the 2017 WA GSOO, indicated a “very poor understanding” and was “discounted by a large portion of the market as irrelevant”.

- “Peak gas demand is determined on a day assuming all gas users are running at capacity. This is simply a sum of capacities and peak residential demand from the various gas distribution networks...AEMO should have presented this data as what it is, a highly unlikely peak demand scenario that would occur on perhaps a single day for only a few hours. A table would be a more appropriate representation.”

## 3.4 Stakeholder feedback on action items

### GAB, March 2018 meeting

At the March 2018 meeting, AEMO presented the preliminary results from the Review submissions to the GAB, including proposed key areas of focus for the 2018 GSOO to improve the modelling, sensitivity analysis, and granularity of the outcome<sup>20</sup>.

GMPs that are members of the GAB emphasised that AEMO’s unbiased viewpoint in the WA GSOO was of significant value since AEMO is not a Gas Market Participant<sup>21</sup>. The GAB considered the gas demand forecasts to be accurate and was satisfied with the continued separation of the gas demand and supply forecasting models, rather than modelling the two together as a market.

AEMO agreed there was value to progress with the following:

- Review and re-define the criteria that it uses to assess gas supply projects for inclusion in the GSOO.
- Make more use of the GBB data in the development of the GSOO, as it provides fundamental public information on the market.
- Provide more granular reporting of the GSOO results.
- Use external consultants to verify the results of the WA GSOO and to provide guidance on the development of gas supply assumptions and scenarios for the forecasts<sup>22</sup>.

It was agreed that there would be a subsequent meeting between the members of the GAB and AEMO in relation to the Review to discuss options to improve key components of the GSOO.

<sup>20</sup> Economic Regulation Authority 2018. Gas Advisory Board Meetings, “AEMO presentation: 5-Yearly Review of the WA GSOO overview and role of the GAB”, 28 March, available at: <https://www.era.gov.au/cproot/18804/2/GAB%20Meeting%202018.3.28%E2%80%94AEMO%20presentation%205-Yearly%20Review%20of%20the%20WA%20GSOO.pdf>.

<sup>21</sup> Economic Regulation Authority 2018. Gas Advisory Board Meetings, “Minutes”, 28 March, available at: [https://www.era.gov.au/cproot/18986/2/GAB%20Meeting%202018\\_03\\_28%20Minutes.pdf](https://www.era.gov.au/cproot/18986/2/GAB%20Meeting%202018_03_28%20Minutes.pdf).

<sup>22</sup> Ibid.

### **GAB, May 2018 meeting**

At the May 2018 meeting, AEMO requested GAB members to provide feedback on progressing detailed action items related to the general recommendations from the previous GAB meeting<sup>23</sup>.

GMPs present at the May GAB meeting supported AEMO's recommended action plan to:

- Discontinue the peak gas demand forecast in the form presented in the 2017 WA GSOO. AEMO noted that these forecasts are not required under the content requirements for the WA GSOO specified in the GSI Rules.
- Undertake further analysis of GBB data.
- Undertake greater consultation with GMPs at the assumptions/scenario development stage.

AEMO proposed a number of approaches for the treatment of prospective gas supply projects under various supply scenarios.<sup>24</sup> GAB members agreed generally with AEMO about widening its assessment of prospective supply, and that:

- AEMO should retain the criteria for the base gas supply scenario, as presented in the 2017 WA GSOO (inclusion of projects that had reached final investment decision only).
- A separate chapter of the WA GSOO could address more prospective projects and their relative sensitivities in relation to the base scenario. The high gas supply scenario could include prospective supply projects identified as likely to proceed, as is already done in relation to the gas demand forecasting for the WA GSOO.
- AEMO should use an external consultant to refine or re-build its internal domestic gas supply forecasting model.

The GAB members supported the discontinuation of domestic gas price forecasts in the form presented in the previous WA GSOOs. Instead, the WA GSOO should publish a series of reference prices that represent a confidence band into which domestic gas price forecasts are likely to fall over the 10-year forward period.

### **WAGCF, May 2018 meeting**

At the May 2018 meeting, forum members were comfortable with the preliminary results and action items from the Review as presented by AEMO. Subsequently, three stakeholders requested individual meetings with AEMO to provide feedback on the action items.

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<sup>23</sup> Economic Regulation Authority 2018, *Gas Advisory Board Meetings*, "AEMO Presentation: 5-Yearly Review of the WA GSOO", 7 May, available at: [https://www.erawa.com.au/cproot/18984/2/GAB%20Meeting%202018\\_05\\_07%20AEMO%20presentation%205-Yearly%20Review%20of%20the%20WA%20GSOO.pdf](https://www.erawa.com.au/cproot/18984/2/GAB%20Meeting%202018_05_07%20AEMO%20presentation%205-Yearly%20Review%20of%20the%20WA%20GSOO.pdf).

<sup>24</sup> Economic Regulation Authority 2018, *Gas Advisory Board Meetings*, "Minutes", 7 May, available at: [https://www.erawa.com.au/cproot/19145/2/GAB%20Meeting%202018\\_05\\_07%20-%20Minutes.pdf](https://www.erawa.com.au/cproot/19145/2/GAB%20Meeting%202018_05_07%20-%20Minutes.pdf).

# 4. Action items

Taking into account the key themes identified from written submissions, stakeholder consultation, and the feedback received at the GAB meetings, AEMO determined a number of action items, as a result of the Review process, to progress toward the development of the 2018 WA GSOO (Table 3)<sup>25</sup>.

**Table 3 Action items from the five-yearly review of the WA GSOO**

Key Theme	Proposed Action
<ul style="list-style-type: none"> <li>• <b>The modelling assumptions for gas supply and price forecasts need review.</b> <i>and</i></li> <li>• <b>Gas demand forecasts are more realistic than supply or price forecasts.</b> <i>and</i></li> <li>• <b>Gas demand, supply and prices should be modelled together (as a market).</b></li> </ul>	<p>Gas supply forecasts:</p> <ul style="list-style-type: none"> <li>• Refine or re-build AEMO's internal potential gas supply model. AEMO agrees that the supply model has been a topic of contention in previous years. To this effect, AEMO is engaging with external consultants and internal teams to review its internal gas supply model to reflect industry best practice in a fit-for-purpose manner.</li> <li>• AEMO to widen the view on prospective projects in gas demand and supply forecasts. The 2018 formal information request process (conducted in February/March 2018) captured more speculative information from Gas Market Participants.</li> <li>• AEMO to maintain the base supply scenario criteria from the 2017 WA GSOO (that only includes projects that have reached final investment decision) and include prospective supply projects in the high supply scenario.</li> </ul> <p>Gas price forecasts:</p> <ul style="list-style-type: none"> <li>• AEMO to discontinue domestic gas price forecasts in the form presented in the 2017 WA GSOO and develop a reference price series to include: <ul style="list-style-type: none"> <li>– Short-run and long-run marginal production costs for domestic gas production facilities.</li> <li>– LNG netback.</li> <li>– Full LNG price.</li> </ul> </li> </ul> <p>Gas supply, demand and prices as a market:</p> <ul style="list-style-type: none"> <li>• Gas Market Participants at the GAB considered the gas demand forecasts to be accurate and were satisfied with the continuation of separate gas demand and supply forecasting, rather than modelling the two together as a market.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Further granularity in the analysis is desirable, including identification of sensitivities.</b></li> </ul>	<p>AEMO to:</p> <ul style="list-style-type: none"> <li>• Provide gas demand forecasts disaggregated by region and usage category.</li> <li>• Undertake further analysis of historical GBB data to capture recent trends. AEMO may provide this analysis in an insight paper prior to the publication of the WA GSOO.</li> <li>• Discuss prospective gas supply projects and their sensitivities with respect to the base gas supply scenario in a separate chapter.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Peak gas demand forecasts need review.</b></li> </ul>	<p>AEMO to:</p> <ul style="list-style-type: none"> <li>• Discontinue peak gas demand forecasts in the form presented in the 2017 WA GSOO.</li> <li>• Develop and discuss a new method to represent the concept of peak gas demand, such as the sum of nameplate capacities of all gas-consuming facilities, plus maximum metro/southwest distribution demand, and/or present hottest/coldest day, greatest gas use day over the last year as per GBB data.</li> </ul>

<sup>25</sup> AEMO noted at the WAGCF and the GAB meetings that it may not be able to implement all of recommendations from the GSOO review in the 2018 GSOO due to timing and resource restraints.

# Appendix

**Table 4 Evolution of topic coverage in the WA GSOO report, July 2013 to December 2017**

Issues/GSOO year	July 2013	Jan 2014	Dec 2014	Dec 2015	Dec 2016	Dec 2017
<i>Length of GSOO report (pages):</i>	149	165	175	103	78	76
<b>WA domestic gas market profile:</b>						
– Market overview	✓	✓	✓	✓		✓
– Historical WA consumption of energy by fuel source	✓	✓	✓	✓		✓
– Historical WA gas consumption						
• by category/sector	✓	✓	✓			✓
• comparison with other states	✓	✓	✓	✓	✓	✓
• by area/region	✓	✓	✓	✓	✓	✓
– Historical total gas consumption/production (LNG)	✓	✓	✓			
– Large facilities using gas	✓	✓	✓	✓	✓	✓
– Domestic gas production facilities	✓	✓	✓	✓	✓	✓
– Historical domestic gas production	✓	✓	✓	✓		
– LNG production facilities incl. planned	✓	✓	✓	✓	✓	✓
– Historical LNG exports	✓	✓	✓	✓	✓	
– LNG						
• historical exports	✓	✓	✓	✓	✓	
• market characteristics	✓	✓	✓	✓		
• market outlook	✓	✓	✓	✓		
– Transmission pipeline and storage capacity	✓	✓	✓	✓	✓	✓
– Historical WA economic statistics/outlook	✓	✓	✓	✓		✓
– Spot/short-term trading platforms/historical prices			✓	✓		✓
– Retail/residential and commercial gas	✓	✓	✓	✓	✓	✓
– Historical domestic gas prices	✓	✓	✓			✓
– Historical peaks: gas demand or supply		✓	✓	✓		
– Historical WA conventional/unconventional gas resources and reserves (third party)	✓	✓	✓	✓	✓	✓
– Gas reserves by basin	✓	✓	✓	✓	✓	
– Gas production by basin	✓	✓	✓	✓		
– Remaining reserves	✓	✓	✓	✓	✓	
– Updates on WA exploration activity			✓	✓	✓	✓
– Demand destruction or gas supply outage	✓	✓	✓	✓		✓
<b>Forecast methodology and assumptions:</b>						
– Input assumptions – economics	✓	✓	✓	✓	✓	✓
– Input assumptions – domestic gas price forecasts		✓	✓	✓	✓	✓
– Domestic gas demand	✓	✓	✓	✓	✓	✓
– Potential domestic gas supply	✓	✓	✓	✓	✓	✓
– Total gas demand	✓	✓	✓	✓	✓	✓
– Peak gas demand				✓	✓	✓
<b>Forecasts:</b>						
– Domestic gas demand	✓	✓	✓	✓	✓	✓
– Potential domestic gas supply	✓	✓	✓	✓	✓	✓

- Domestic gas price	✓	✓	✓	✓	✓	✓
- Total gas demand (incl. gas for LNG)	✓	✓	✓	✓	✓	✓
- Nameplate domestic gas production capacity	✓	✓	✓	✓	✓	✓
- Domestic gas market potential supply-demand balance	✓	✓	✓	✓	✓	✓
- Prospective gas demand information and/or volume included in high scenario	✓	✓	✓	✓	✓	✓
- Prospective gas supply information	✓	✓	✓	✓	✓	✓
<i>Other issues:</i>						
- WA government policies	✓	✓	✓	✓	✓	✓
- Commonwealth government policies	✓	✓	✓	✓	✓	✓
Appendices:	✓	✓	✓	✓	✓	✓

**Table 5 Top three issues that should be considered in the development of the WA GSOO**

	Top issue	Second issue	Third issue	Row total
Reserves/exploration/cost of production	2	4		6
Government policy, including DMO	3	1	2	6
Gas price forecast			5	5
Gas supply/demand balance	3		1	4
Gas supply forecast	1	2		3
Gas demand forecast	2	1		3
Intended audience	1	1	1	3
Future market trends	1	1	1	3
Robust base case/methodology		2		2
Scenario variability		1	1	2
Uncertainties/sensitivities			2	2

# Glossary

Terms used in this document that are defined in the Gas Services Information Rules have those meanings unless otherwise specified.

<b>Term</b>	<b>Definition</b>
<b>CRM</b>	Customer Relationship Management.
<b>IMO</b>	Independent Market Operator.
<b>DMO</b>	Domestic Market Obligation. Term used by gas stakeholders to refer to the WA Domestic Gas Policy, which requires that landed LNG projects commit to making domestic gas available to the WA market by reserving the equivalent of 15% of their LNG production.
<b>DMP</b>	Department of Mines and Petroleum, now known as the Department of Mines, Industry Regulation and Safety.
<b>FID</b>	Final investment decision.
<b>GAB</b>	Gas Advisory Board. A WA committee of gas representatives convened by the Rule Change Panel.
<b>GBB</b>	Gas Bulletin Board.
<b>GGP</b>	Goldfields Gas Pipeline.
<b>GMP</b>	Gas Market Participant.
<b>GSI</b>	Gas Services Information.
<b>GSOO</b>	Gas Statement of Opportunities.
<b>LNG</b>	Liquefied Natural Gas.
<b>LNG netback</b>	A gas price marker formed by subtracting the cost of liquefaction and pipeline transportation from the market value or sales price of LNG.
<b>LRMC</b>	Long run marginal cost of production.
<b>MDQ</b>	Maximum Daily Quantity.
<b>NWIS</b>	North West Interconnected System.
<b>SRMC</b>	Short run marginal cost of production.
<b>SWIS</b>	South West interconnected system.
<b>TOR</b>	Terms of Reference.
<b>WAGCF</b>	WA Gas Consultative Forum.