INDEPENDENT MARKET OPERATOR

Gas Statement of Opportunities

Executive summary and key findings

November 2015

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[1] Gas referred to throughout this report refers to natural gas.

Executive summary

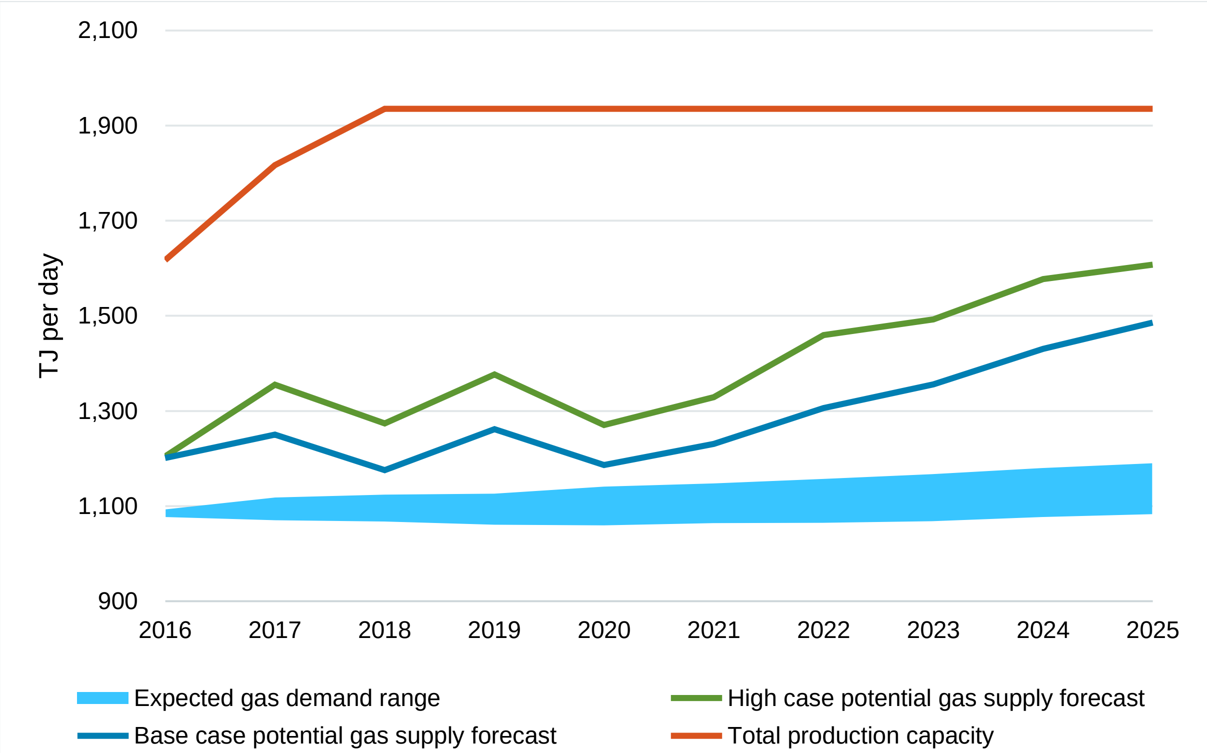
This Gas Statement of Opportunities (GSOO) provides the Independent Market Operator's (IMO) independent assessment of the Western Australian (WA) domestic gas market over the calendar years 2016 to 2025 (the forecast period). This GSOO includes forecasts of gas demand and supply, an overview of gas infrastructure in the state, and emerging issues affecting the gas industry. It is designed to assist Gas Market Participants and other energy industry stakeholders to identify any potential shortfalls, constraints and opportunities in the WA gas sector.

Key findings

- **The domestic gas market remains in excess supply**

The potential gas supply for the forecast period remains significantly higher than forecast demand. Potential gas supply is at least 107 TJ per day greater than demand over the next four years in the base forecast scenario (see Figure ES.1). This excess supply is forecast to rise to more than 400 TJ per day by the end of the forecast period as several large domestic gas production facilities commence operation[2].

Figure ES.1: Domestic gas market balance, 2016 to 2025



Source: NIEIR and IMO forecasts, 2015

[2] Gorgon and Wheatstone domestic facilities are expected to have commenced production by 2018. This will be followed by an expansion to the Gorgon domestic facility in 2020.

- **Domestic gas supply has been affected by falling oil prices but is forecast to grow over the forecast period**

Potential gas supply over the forecast period (see Table ES.1) is lower than was presented in the 2014 GSOO. This is due to the recent fall in international oil prices, which has reduced domestic gas prices and caused uncertainty in the market. Gas producers will likely be less willing to supply the domestic market in the short-term, at least until prices increase (or stabilise) or additional production capacity comes online.

Table ES.1: Forecast potential supply (TJ per day), 2016 to 2025

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Ave. growth p.a. (%)
Base	1,201	1,251	1,175	1,262	1,187	1,231	1,306	1,356	1,431	1,486	2.4
High	1,205	1,355	1,274	1,377	1,271	1,329	1,460	1,492	1,578	1,608	3.3

Source: IMO forecasts 2016 to 2025

However, the IMO expects potential supply to increase towards the end of the period as international oil prices recover[3], which should lead to a higher domestic gas price and a more attractive domestic market. The commencement of the Gorgon and Wheatstone domestic gas projects in 2016 and 2018 will also increase production capacity and the availability of gas supply.

- **Domestic gas demand is forecast to grow very slowly**

The IMO expects domestic gas consumption to increase by less than 1 per cent per annum over the forecast period, remaining almost flat in the base scenario forecast (see Table ES.2).

Table ES.2: Forecast demand (TJ per day), 2016 to 2025

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Ave. growth p.a. (%)
Base	1,077	1,070	1,068	1,061	1,059	1,064	1,065	1,068	1,077	1,083	0.1
High	1,093	1,118	1,124	1,126	1,141	1,148	1,157	1,167	1,180	1,190	0.9

Source: NIEIR forecasts 2016 to 2025

This slow growth is due to the expected decrease in gas-fired electricity generation in the South West Interconnected System (SWIS), partially offset by increased gas consumption by the following projects:

- connection of the Sunrise Dam and Tropicana gold mines to the Eastern Goldfields Gas Pipeline;
- restart of Newman Power Station, which will supply electricity to the Roy Hill iron ore mine;
- operation of the South Hedland Power Station;

[3] The Organisation of Petroleum Exporting Countries expects oil prices to recover by 2020. See Bloomberg (2015).

- operation of the Pilbara Temporary Power Station; and
- expansion of the Sino Iron magnetite mine.

Overall demand is lower than forecast in the 2014 GSOO, largely due to scheduled decommissioning of the South-West Joint Venture Co-generation facility in 2016, which consumes about 30 TJ per day.

- **The end of joint marketing will bring greater competition to the supply market and may provide Gas Market Participants the opportunity to rebalance their gas requirements**

On 31 December 2015, the joint marketing authorisation for the North West Shelf Joint Venture (NWS JV) and the Gorgon Joint Venture (Gorgon JV) will expire. The IMO understands that participants of both JVs have not applied for an extension of their joint marketing authorisations. From 1 January 2016, the IMO expects each participant to market its share of gas production individually (commonly known as equity marketing).

The end of joint marketing authorisation for the NWS and Gorgon JVs is a significant change to the dynamics of the WA domestic gas market. This is because it will increase the number of individual gas suppliers, which is likely to increase competition. Greater competition will provide opportunities for customers to renegotiate their gas requirements, or secure a more competitive price.

The move to equity marketing has also eased concerns that the Karratha Gas Plant (KGP), WA's largest gas production facility, may be retired. Domestic gas customers were uncertain whether the KGP would continue to produce gas beyond 2020, when all the NWS JV's domestic gas supply contracts are known to expire[4]. However, in October 2015 several NWS JV partners confirmed they will market their uncontracted portion of KGP domestic capacity separately, meaning it is unlikely any of KGP's capacity will be retired in the near future.

- **There is greater opportunity for gas suppliers in the north of WA than in the South West**

Forecast demand growth is greater in areas that are not covered by the SWIS than those that are connected to the SWIS. Table ES.3 shows demand forecasts for the base and high scenarios in the SWIS and non-SWIS regions.

Table ES.3: Domestic gas forecasts for SWIS and non-SWIS regions (TJ per day), 2016 to 2025

Scenario		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Non-SWIS	Base	379	382	379	377	378	383	383	382	387	389
	High	389	416	426	432	448	453	458	461	468	472
SWIS	Base	698	689	689	684	681	681	682	686	690	694
	High	704	702	698	694	693	695	699	706	712	718

Source: NIEIR forecasts 2016 to 2025

4 See IMO (2014a) for a list of known NWS gas supply contracts.

Though around two-thirds of domestic gas is consumed in the Metropolitan and South West regions, the bulk of this is by a small number of large industrial users and electricity generators. Electricity demand is not forecast to increase significantly in the SWIS and excess capacity in the electricity network (1,061 MW for the 2016-17 capacity year) suggests no new gas-fired generation capacity will be required to meet demand in the near future.

The IMO is not aware of any new large industrial projects commencing operations in the South West and Metropolitan regions during the forecast period. If any large industrial users do commence operation, they are likely to connect to the SWIS for their energy needs rather than require independent gas-fired electricity generation.

In regional WA the situation is different. Mines and industrial facilities tend to be located too far from the SWIS to be able to draw on any of its spare electricity capacity. As a result, any new major mining or processing facility would likely require its own on-site electricity generation, with gas as a potential fuel source.

Several resources projects in regional WA are expected to commence operation or increase gas consumption during the forecast period. The high forecast demand scenario includes a further six prospective resources projects, all of which are located outside the SWIS. It is likely some or all of these projects will require domestic gas supply.

- **The domestic gas market will benefit from greater transparency**

As discussed, the end of joint marketing is expected to increase competition in the domestic gas market. New production facilities such as Wheatstone, Gorgon and Pluto will increase WA's production capacity. Further, gas infrastructure development such as the new Eastern Goldfields Gas Pipeline (EGGP) and the recent upgrade of the Goldfields Gas Pipeline (GGP)[5] brings greater shipping capacity to WA. These are fundamental changes to the domestic gas market, which create the potential for greater opportunity and efficiencies in the gas sector.

The IMO considers improved data sharing, greater visibility of domestic gas flows, and more transparent sales information will maximise the potential efficiencies that can be achieved. Greater transparency provides Gas Market Participants with more information on how to identify potential investment opportunities, which ultimately leads to more competitive pricing.

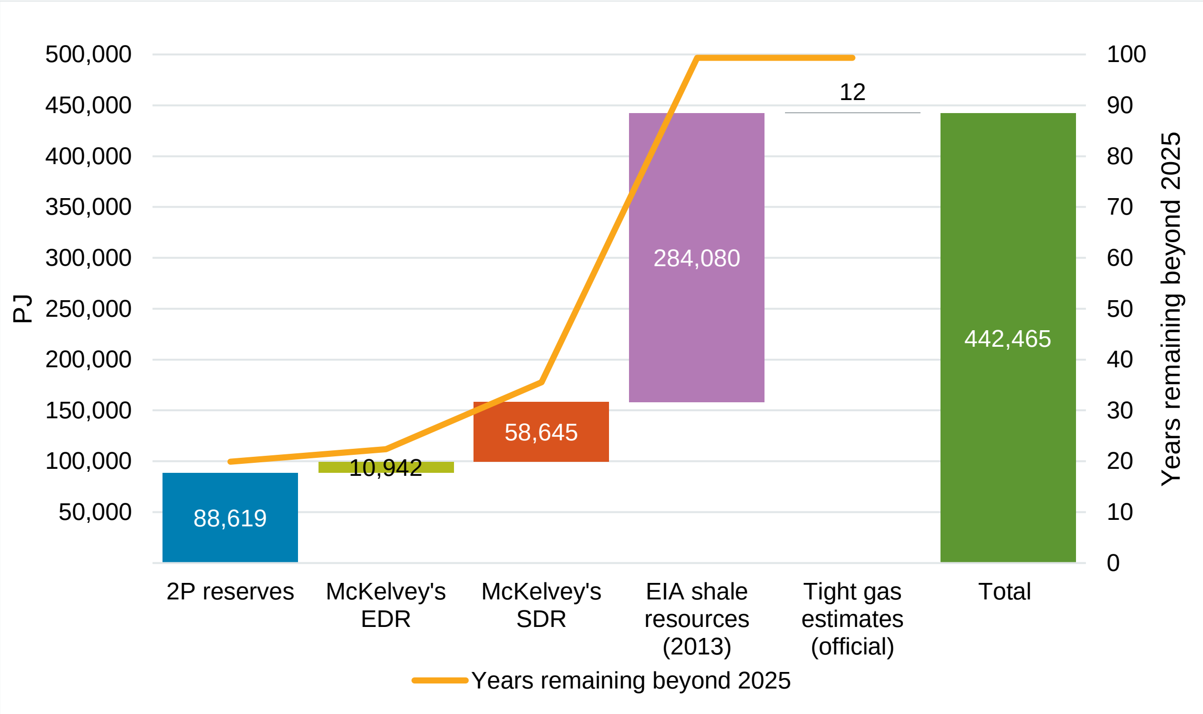
While the IMO understands a degree of confidentiality must be retained, the recent introduction of WA's Gas Bulletin Board and the IMO's data visualisations have demonstrated that the domestic gas sector can increase transparency without adversely affecting the market. Changes to the domestic gas sector over the forecast period present a unique opportunity to establish a more efficient market through the provision of information, with the potential for gas trading.

[5] The upgrade of the GGP was competed in September 2014, however utilisation rates have not yet increased.

Gas resources and reserves

Approximately 92 per cent (158,373 PJ) of Australia's total conventional gas resources are located in WA and the waters around it[6]. WA is also estimated to hold at least 284,092 PJ[7] of unconventional resources in the form of tight and shale gas. Based on total estimates of conventional and unconventional gas, WA's reserves may last up to 99 years beyond the forecast period (see Figure ES.2).

Figure ES.2: Estimated WA gas resources and reserves, 2014



Source: *EnergyQuest (2015), Geoscience Australia (2014), DMP (2013b) and DMP (2014)*

Note: McKelvey provides two estimates of reserves. Economic demonstrated resources (EDR) is a measure of the resources that are established, analytically demonstrated or assumed with reasonable certainty to be profitable for extraction or production under defined investment assumptions that are set by Geoscience Australia. Sub-economic demonstrated resources (SDR) are similar to EDR in terms of certainty of occurrence but are considered to be potentially economic only in the foreseeable future.

It should be noted that the estimates of conventional gas reserves are based on official 2P (proven and probable) assessments, which are typically conservative. The Chevron-led Gorgon and Wheatstone liquefied natural gas (LNG) projects, both of which are in the Carnarvon Basin, are expected to commence production within the next two years. Each project has an expected operating life of around 30 years, which takes these conventional reserves beyond 2045.

6 Geoscience Australia (2014), gas basins in Australia (offshore and onshore).
7 Ibid.

Gas transmission capacity

WA has nine transmission pipeline systems shipping gas to customers (see Figure ES.3). The two largest systems are the Dampier to Bunbury Natural Gas Pipeline (DBNGP) and the GGP. These account for almost 80 per cent of gas shipping capacity, and 90 per cent of total domestic gas shipped throughout WA.

Figure ES.3: Gas transmission pipelines in WA

Source: GBB data

In July 2014, APA Group announced it will construct the 292 km EGGP to ship gas to AngloGold Ashanti's Sunrise Dam JV and Tropicana JV gold mines[8]. The EGGP will connect to the end of the existing gas lateral at the Murrin Murrin mine and will be registered as part of the GGP. The extension is currently under construction and is anticipated to be completed late 2015 and be in service in 2016.

Peak utilisation rates indicate the Telfer Gas Pipeline is fully contracted. The DBNGP is not fully contracted but is fully utilised at peak periods. Substantial shipping capacity appears to be available on all other pipelines. This indicates that greater opportunity for major gas customers exists in regional WA than the South West and Metropolitan areas.

8 APA Group (2014).

Forecast assumptions

The IMO's domestic gas supply and demand forecasts are calculated using input assumptions including:

- forecast WA economic growth;
- resources sector outlook;
- LNG outlook;
- domestic gas prices;
- WA electricity consumption; and
- production efficiency assumptions (in the resources sector).

These inputs are detailed in chapter 3 of this GSOO, and are provided to complement Gas Market Participants' assumptions when forming their own view of the domestic gas market.

The IMO's assumptions are based on the latest available information and subject to internal scrutiny and annual refinement. Key changes to assumptions compared with the 2014 GSOO include an adjustment to account for the introduction of equity marketing and a relaxation of efficiency assumptions in the resources sector. Previous forecasts assumed that businesses in the resources sector would seek production efficiencies (such as switching to alternative fuel sources) as a result of the high domestic gas prices. However, as the domestic gas price has fallen during 2015, a move away from gas is less likely.

Other issues

This GSOO also considers other emerging issues that are likely to impact the WA gas sector in the near future. The most pertinent issues include:

- the introduction of full retail contestability in the WA retail electricity market, which carries the potential for major energy retailers to enter the retail gas market;
- the Australian Energy Market Commission's proposal to introduce a wholesale gas price index for Australia, which would increase pricing transparency including in WA;
- the use of domestic LNG and compressed natural gas facilities, which has the potential to make gas supply accessible to remote areas of the state, while increasing gas demand as a substitute for diesel; and
- changes to the pricing of the LNG in the international gas market which are likely to have an impact on domestic gas prices.

These issues are discussed further in chapter 6, and will be carefully monitored over the forecast period.