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Report on Western Australian Gas Statement of Opportunities

Terms of Reference

APPEA has asked EnergyQuest to review the methodology and assumptions used in the West Australian Gas Statement of Opportunities (GSOO) released in July 2013, with recommendations for the IMO to consider when updating the modelling for the second report, due in December 2013. EnergyQuest has relied on public domain information, including its own data bases, in the preparation of this report, and it does not necessarily represent the views of APPEA or its members.

General comments

The GSOO is a thorough and comprehensive report, a pioneering effort for Western Australia and no doubt produced under a tight timetable and with the challenges of data limitations. The comments that follow are provided as positive suggestions to be considered for further development of the GSOO, particularly in terms of gas price and supply forecasts.

The analysis in the GSOO relies on numerous assumptions. While some of the assumptions are spelt out, there is a need for greater transparency in assumptions and the reasoning behind them. It would also be helpful to have more explanation of the methodology behind the forecasts and commentary explaining the results. For example, why gas prices are forecast to fall significantly in 2015 and 2021 and why supply is forecast to increase more quickly than demand.

There are recognised methodological challenges in producing a GSOO, particularly for Western Australia. The GSOO relies on an econometric model of the WA gas market to forecast future demand, supply and prices. The use of such models is widespread and commonly accepted. However such a methodology is best suited to large markets, with numerous buyers and producers (including numerous producing fields). As the GSOO notes, the WA gas market is characterised by a small number of buyers and producers and relatively large lumpy projects. Companies undertaking their own analysis of a market like WA will typically adopt a bottom-up approach, based on their understanding of the intentions of the eight or ten major buyers and the current and potential sellers and supply sources. Their assessments will typically draw on geological, engineering and commercial expertise. In particular there are difficulties using econometric modelling to attempt to forecast gas supplies, which typically depend on geoscience and reservoir engineering.

There are also some fundamental dilemmas in producing a GSOO, particularly for a market like WA with small numbers of buyers and sellers. Governments are rightly reluctant to be seen to be picking winners and losers but in a small lumpy market the analysis has to take a view on different companies and projects.

There is also the dilemma of unintended consequences. There is no point producing a GSOO that is ignored by market participants. However forecasting is an inherently risky business and, notwithstanding the disclaimers in the GSOO, if companies take account of forecasts which prove to be materially inaccurate, this will have adverse consequences in the market. Some of the feedback on the GSOO is that it suggests investment in future

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supply is unnecessary in the light of a forecast oversupply and that gas buyers do not need to contract because prices are expected to fall. This might turn out to be the case. However if the opposite occurs buyers would be caught short and producers would have missed out on opportunities, with negative impacts on the WA economy.

Gas price background

The GSOO would benefit from more discussion about the nature of gas contracts and prices in Western Australia.

In Western Australia wholesale gas prices are determined via confidential bilateral contracts that are negotiated between the buyer and seller. The market is dominated by long-term contracts.

Generally domestic gas projects are not built on a speculative basis but are underpinned by long-term contracts. The Gorgon and Wheatstone LNG projects, which are required to reserve gas for domestic purposes, are something of an exception. These domestic gas plants, which are under construction, are not yet fully contracted. However gas sales must be on a commercially viable basis (including recovering full cycle capital and operating costs).

Because of the prevalence of long-term contracts, prices paid do not react quickly to changes in market conditions. Changing market conditions are only reflected over time through prices under new long-term contracts and re-negotiation triggers under existing contracts.

There are also typically small supplies of short-term gas available due to various imbalances between contract obligations and actual gas take. The prices of such volumes can be quite volatile and do not necessarily bear a relationship to prices under long-term contracts.

As the Economic and Industry Standing Committee (2011) noted, for producers the upstream cost reflected in gas prices entails, at a minimum, the recovery of exploration, development and domestic gas processing costs plus a required rate of return. Development costs can vary from project to project depending on the complexity involved in recovering the gas. Costs on greenfield sites may comprise the additional capital expense of building a new processing facility.

Sellers will take account of costs, the range of sale opportunities and competing fuels such as coal or diesel. Buyers are driven by similar considerations from their side. However buyers with long-term contracts may also offer some of their contracted values to third parties if they have over contracted or may seek additional short-term volumes if they have under-contracted. These short-term prices can be quite volatile, as shown below.

The prices different market segments are able to pay differ significantly. The maximum price for power generation competing with coal is quite different to the maximum price to supply gas to an iron ore project where the alternative is diesel. This needs to be taken into account in projecting gas demand and prices.

Gas prices and contract terms

There are a range of different gas prices in WA and it is suggested that the GSOO clearly distinguish these differences. There is a difference between average prices paid under

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long-term contracts and prices paid under new long-term contracts. There are also important differences between ex-plant prices and delivered prices. The wholesale gas price usually refers to the ex-plant price: the price that producers charge for supplying gas to their juncture of the transmission pipeline. It is also important to distinguish contract prices and spot or short-term prices. EnergyQuest estimates the average price of domestic gas sold in the June Quarter 2013 by Woodside from the NWS Project was \$4.33/GJ and \$4.46 for Apache. (EnergyQuest, 2013, p. 99). Gas prices under new contracts are higher than this.

However there are wide variations in spot prices for gas traded in Western Australia. While the average spot price on one small trading platform for the month of September 2013 was \$4.00/GJ, prices varied from almost \$2/GJ to over \$6/GJ (Gas Trading, 2013).

It is also suggested that the GSOO contain a more detailed explanation of the contract terms on offer that influence price. As the GSOO notes, while domestic gas prices are a major determinant of gas sales agreements, the terms of the contract may also be a very important aspect of gas supply (page 99).

There are a range of parameters in gas sales agreements, including:

- Maximum Daily and Hourly Quantity (MDQ and MHQ): the maximum daily or hourly quantity (normally expressed as TJ/day or TJ/hour) to which the Buyer is entitled and the Seller is obliged to deliver.
- Annual Contract Quantity (ACQ): the maximum annual quantity of gas which the Buyer is entitled to take and the Seller is obliged to deliver (expressed as PJ or TJ).
- Daily Contract Quantity (DCQ): this is not normally a contract term, but is the daily quantity that a Buyer would take if they took their Annual Contract Quantity evenly over the year (i.e. ACQ/365). It is a consideration in determining the Swing or Load Factor.
- Swing/Load Factor: MDQ/DCQ, normally expressed as a percentage (e.g. 120%). This is a measure of the flexibility that the Buyer has in varying their daily demands (compared to a "base load" user) and has significant value for a user who has widely varying demands either for seasonal or other reasons. It is a critical parameter for a supplier (particularly a Producer) because it dictates the size of the infrastructure necessary to meet its obligations, and therefore the higher the Load Factor the greater cost to the Producer.
- Take or Pay/Annual Minimum Bill (TOP/AMB): this determines the minimum payment which a Buyer is obliged to make per annum regardless of the Buyer's gas take for the year. It is often expressed as a percentage of ACQ (e.g. 90% multiplied by the contract price). TOP is particularly critical for longer term contracts and when a Seller has made significant infrastructure investment, is to provide a certain revenue stream to underpin the Seller's investments. The lower the TOP the greater the risk to the Seller.
- Firm/Interruptible Supply: most customers, particularly those industrial or commercial customers who are utilising gas for plant feedstock or processes, contract for a firm supply, that is, a supply which if not delivered on a day can lead to penalties for the supplier. A firm supply normally is more expensive than an interruptible supply because of the lower level of obligations of the latter on the supplier.

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- Contract Term: contract terms depend on a range of factors, including the needs of the buyer, the need for investment and the size of the field. Verve has a 20 year contract with Gorgon (Chevron, 2011), Rio Tinto has a seven year contract with Reindeer (Santos, 2010).

The Contract Price will vary depending upon the package of the above terms. The Economic and Industry Standing Committee (2011) cited a case where the service elements required under a contract saw the price double from its standard vanilla parameters.

The Contract Price is generally escalated, either annually or quarterly. Historically indexation has been in accordance with CPI movements. There are also some cases in the WA market now of prices linked to crude oil or petroleum product prices. In these cases, quoting a "price" is not meaningful in the absence of the oil price to which it applies. In LNG markets it is the slope (LNG price as a percentage of the oil price) that is quoted rather than an absolute price. In longer term contracts there is also often the provision for reset or review of the Contract Price in accordance with any movements in the market price of gas.

Demand forecasts

Generally the GSOO demand forecasts appear reasonable to EnergyQuest and our comments focus more on the gas price and supply forecasts.

The GSOO's forecast rate of growth in domestic gas demand (constrained) of 1.1% is more realistic than many previous forecasts and is more in line with historical experience. Indeed, WA gas consumption has actually been flat over the last five years (EnergyQuest, 2013, p. 58).

However the relatively small difference in demand between the unconstrained and constrained cases (12 PJ in 2022) is surprising, given the importance of gas-fired generation in the SWIS and the competition from coal.

It would be useful to break out the projected demand for gas for power generation in the SWIS. It would also be useful to break out the forecast demand for gas for each of the other industrial segments for both the SWIS and non-SWIS regions.

Gas price modelling

The discussion of the gas price modelling methodology on pages 53-54 is very brief and it would be helpful to have this and the underlying assumptions spelt out in greater detail.

Further discussion on what the forecast gas prices mean would be useful. The comment is made that the gas price forecasts are "indicative price projections from the producers' perspective and do not represent equilibrium prices". Further elaboration of this and its implications for the analysis would be useful.

Future oil prices and LNG prices are cited as two of the drivers of forecast gas prices. However not all supply projects have the option of supplying LNG (John Brookes, Devil Creek and Macedon do not). Traditionally Australian LNG projects have been largely contracted and Australia has not been a major supplier of spot LNG. Similarly domestic gas is also largely supplied under long-term contracts. These features limit the scope for switching gas between LNG and domestic gas.

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Oil prices are assumed to be US\$118.44 to US\$132.01/bbl over the period to 2022 in the Base case. This is high. The Brent futures curve currently falls from US\$105.12/bbl for December 2013 to US\$87.28/bbl for February 2020 (the last month traded) (ICE, 2013). The high oil price assumption appears to drive the high LNG price assumption. The low exchange rate (0.64-0.73 compared with 0.80 quoted on page 49) then drives high AUD LNG prices of A\$27.34-26.71/GJ and a netback (assuming a liquefaction cost of around US\$5/GJ) of A\$19.53-19.86/GJ. These results are sensitive to the oil price and exchange rate assumptions. At an oil price of US\$100/bbl and an exchange rate of 0.9 the Karratha netback is a much lower A\$9.79/GJ (EnergyQuest, 2013, p. 103).

It would be useful to have a discussion of the prevalence of oil-linked versus CPI-linked pricing. While there is some oil-linked pricing for new WA domestic contracts, it is not known whether or not this applies to all new contracts.

The GSOO discussion of methodology on pages 53-54 appropriately refers to costs of production as an input into gas price forecasts and it would be helpful to spell out the costs assumed. Figure 49 on page 98 quotes our work and that of SKM-MMA for production costs for various fields. It is not clear whether these costs are inputs into the gas price forecasting methodology. In Figure 50 (page 99) forecast gas prices fall to \$4.08/GJ in 2015, around the time when new higher cost supplies come into the market. This suggests suppliers are prepared to take a loss, which is unrealistic.

Figure 50 on page 99 shows gas price forecasts to 2022. There are a number of aspects here where further clarification and explanation would be helpful:

- We understand that the forecast prices are nominal, ex-plant and an average of all contracts. It would be helpful to clarify this. We understand also that a seven year lag is assumed for prices under new contracts to impact average prices. It would be helpful to spell out any such assumption.
- The starting price in 2013 is \$6.73/GJ. It would be helpful to explain the basis for this. This is well above average contract prices currently being paid of around \$4.40/GJ.
- It would be helpful to explain the falls in prices required by suppliers in 2014, 2015 and 2021. There are only a handful of suppliers so it should be possible to trace the outcome back to assumptions about particular suppliers.
- In the Base and High Supply scenarios supply is reasonably flat between 2013 and 2015 notwithstanding lower prices. The same applies in 2021. Explanation would be helpful.
- It is not clear how the price forecasts relate to the extremely high estimates of LNG netbacks discussed above.

Supply modelling

It would be helpful to have greater transparency and justification of the assumptions behind the supply-side modelling and commentary on the results. A table of gas supply forecasts similar to Appendix 4 on the demand side would also be helpful.

The GSOO talks about WA domestic gas supply, growing at 3.7% pa compared with average annual demand growth of 1.1% (page 5). Elsewhere it refers to “potential supply”. It would be helpful to clarify the supply concepts being used, together with the outcome

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where potential supply greatly exceeds demand. Any large forecast supply overhang would be a strong disincentive to further investment (and also to near-term gas contracting).

The GSOO says that potential gas supply in 2013 is 1,274 TJ/d (page 6), defined as the volume producers would be willing to supply at current prices. It would be helpful to clarify whether this is at current historical prices or new contract prices. This is 333 TJ/d higher than production in 2012-13. It would be helpful here to spell out the underlying assumptions about potential field performance. The 1,274 TJ/d also appears to be higher than aggregate plant capacity for domestic gas plants. Detailing and explaining the assumptions on a project by project and plant by plant basis would be helpful.

The meaning and basis of the supply forecast curves in Figure B and Figure 51 (which should be TJ/d) could also be clarified. It would be helpful to spell out the assumptions behind the forecasts, which fields are included and the deliverability assumed for each field in each year. Page 6 says that gas supply is expected to reach 1,826 TJ/d in 2022 but it also refers to 1,052 TJ/d by 2022. It would be helpful if this was clarified.

Page 6 forecasts an additional 736 TJ/d of gas processing capacity being added by 2022, implying 1,247 TJ/d now, which is less than the 1,274 TJ/d referred to above. It would be helpful to spell out the assumptions on the projects that make up the 736 TJ/d in addition to the 500 TJ/d from Gorgon and Wheatstone. The only significant additional capacity in Figure 52 appears to be the 500 TJ/d from Gorgon and Wheatstone. This makes 1,983 TJ/d of processing capacity by 2022 (page 6). Page 31 has 1,740 TJ/d of capacity including planned projects. It would be helpful to explain what projects are assumed to make up the difference.

Table 29 appropriately considers gas reserves for each project. The NWS reserves are largely committed to LNG contracts. The projects supplying domestic contracts only have relatively short reserves lives: John Brookes-Spar-Halyard 13 years, Reindeer 13 years and Macedon 8 years. Harriet is largely depleted. This is relevant to the supply side assessment. Reindeer also only has a short production history and Macedon has only just started production. More history is needed to be certain about the long-term deliverability of these fields.

It would be helpful to have more discussion of the status and outlook for individual supply projects.

EnergyQuest estimates that the NWS has 2P reserves of around 15 Tcf (EnergyQuest, 2013, p. 41) of which we estimate that close to 12 Tcf is committed to LNG projects (GIIGNL, 2013) (assuming 13% processing gas). In 2011 the NWS was reported to be marketing a further 20 Mt of LNG (1 Tcf) (Domgas Alliance, 2011). This leaves around 2 Tcf for current and new domestic gas contracts. Current domestic gas production is around 520 TJ/d (EnergyQuest, 2013, p. 56). If there are 2P reserves for domestic gas of around 2 Tcf, that would imply a reserve life of around 10 years. There are additional higher cost field development options identified by Woodside (Woodside, 2013, p. 20)-Persephone (140 MMboe), Greater Western Flank 2 (1.7 Tcf) and Lambert Deep West (0.2 Tcf)-which could extend project life further.

Gorgon and Wheatstone are the two biggest sources of domestic gas under development. Gorgon includes a domestic gas plant capable of producing 300 TJ/d of domestic gas. In November 2011, Gorgon signed 20 year domestic gas sales contracts for 125 TJ/d with

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Synergy and Verve Energy (Chevron, 2011). The contracts coincide with the buyers' existing NWS contracts expiring around 2015-16 (Verve Energy, 2011). The contract will supply about 50% of Verve's daily gas requirements. According to media reports (AFR, 30 November 2011) the ex-plant price is believed to be about \$6.00/GJ. Domestic gas from Gorgon is scheduled to come on stream in 2015 and to ramp-up to 300 TJ/d by 2021.

Wheatstone has a domestic gas plant under construction with a capacity of 200 TJ/d. Chevron's equity share is approximately 128 TJ/d and will be marketed separately by Chevron. The other equity holders, with equity domestic gas to market are Apache Energy, KUFPEC, Shell and Kyushu Electric Power. Domestic gas production from Wheatstone is expected to commence in 2018.

Because capital is already being sunk in the Gorgon and Wheatstone domestic gas plants, EnergyQuest believes that the operator has an incentive to begin domestic gas production as early as possible. Bringing forward gas commercialisation generally increases project value. Other things being equal, gas sold today is more valuable than gas sold in 10 years' time. However this is subject to any project delays and also to upstream field performance, which will not be known until the fields start producing.

Supply and Demand Assessment

Consistent with the comments above, it would be helpful to explain in greater detail the basis for the excess supply of 327 TJ/d in 2013 rising to 827 TJ/d by 2022 (page 112). This implies not only that the uncontracted Gorgon and Wheatstone capacity is not needed (350 TJ/d) but that there will be a further 477 TJ/d of uncontracted capacity developed in a market where development of domestic gas projects is based on long-term contracts.

It is appropriate to consider a scenario of lower NWS domestic gas production. Domestic gas supply from the NWS has been falling and is currently around 520 TJ/d (Figure 1). As it gathers further information, the IMO will be able to improve its understanding of long-term contracts

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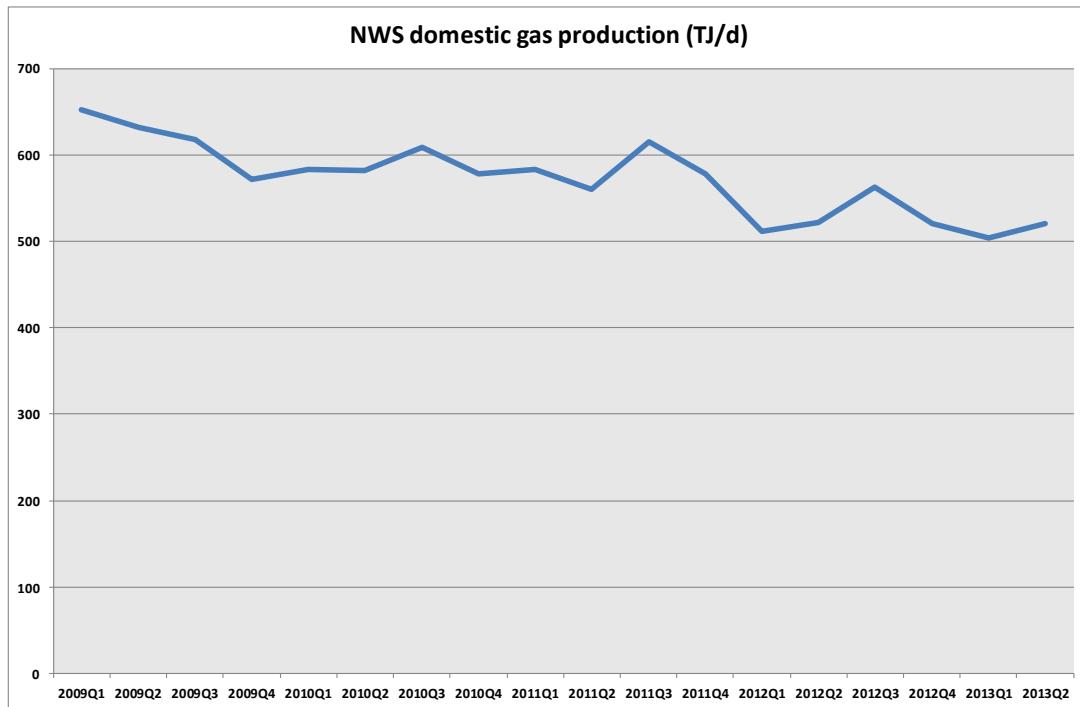
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Figure 1 NWS domestic gas production (TJ/d)



Source: EnergyQuest

Other

- Page 36: according to the latest report on the Dampier Bunbury Pipeline website the pipeline now has spare capacity of 10.5 TJ/d (Dampier Bunbury Pipeline, 2013).
- Page 70, Table 16: it is suggested that the IMO seek further information on the fuel gas required for WA LNG projects directly from operators.
- Page 97: unless IMO is taking a different view to the Operator, Gorgon is scheduled to commence domestic gas production in 2015 and Wheatstone in 2018.
- Page 126: The comment that “Australia is the only country amongst the 20 countries with the highest gas reserves globally, where gas companies can access and export gas without prioritising domestic supply” is misleading. This is not the case with the Netherlands, Norway or United Kingdom, all major gas producers. Canada is a major gas exporter to the US under the relevant free trade agreement (FTA) and US exports to FTA countries (which include Korea and Mexico) are unrestricted. Increasingly too US exports are being approved to non-FTA countries. See EnergyQuest (2012). Exports from Western Australia are restricted under the domestic gas reservation policy.

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References

- Chevron. (2011, November 30). *Chevron Secures Gorgon Domestic Gas Sales Contracts*. Retrieved October 30, 2013, from Chevron Australia:
<http://www.chevronaustralia.com/media/mediastatements.aspx?NewsItem=28486d1c-f2a8-4109-97f5-c731fd0520d0>
- Dampier Bunbury Pipeline. (2013, September 18). *DBNGP Capacity Register*. Retrieved October 30, 2013, from Dampier Bunbury Pipeline:
http://www.dbp.net.au/Libraries/Customer_Access_and_Information/DBNGP_Capacity_Register_as_at_September_2013.pdf
- Domgas Alliance. (2011, November 15). *North West Shelf gas must end supply uncertainty*. Retrieved October 30, 2013, from Domgas Alliance:
http://www.domgas.com.au/pdf/Media_releases/2011/Media%20release%20-%20North%20West%20Shelf%20Gas%20-%202015-11-11.pdf
- Economic and Industry Standing Committee. (2011). *Inquiry into Domestic Gas Prices, Report No. 6 in the 38th Parliament*. WA Parliament.
- EnergyQuest. (2012). *Domestic Gas Market Interventions: International Experience*. Canberra: APPEA.
- EnergyQuest. (2013). *Energy Quarterly August 2013*.
- GasTrading. (2013) Historical Prices And Volume. Retrieved October 30, 2013, from GasTrading: <http://www.gastrading.com.au/spot-market/historical-prices-and-volume.html>
- GIIGNL. (2013). *The LNG Industry in 2012*. Paris: GIIGNL.
- ICE. (2013, November 8). *Daily Volumes for ICE Brent Crude Futures (Monthly)*. Retrieved November 12, 2013, from ICE:
<https://www.theice.com/marketdata/reports/ReportCenter.shtml?reportId=10&productld=254&hubId=403#report/10/reportId=10&productId=254&hubId=403>
- Santos. (2010, December 31). *Fourth Quarter Activities Report*. Retrieved October 30, 2013, from Santos:
http://www.santos.com/library/20012011_STO_Fourth_Quarter_Activities_Report.pdf
- Verve Energy. (2011, November 30). *Gorgon Gas Supply Agreement*. Retrieved October 30, 2013, from Verve Energy: <http://www.verveenergy.com.au/news>
- Woodside. (2013). *2013 Half Year Results Briefing*.

Abbreviations

2P	proved and probable reserves
APPEA	Australian Petroleum Production and Exploration Association
bbl	barrel (159 litres or 35 imperial gallons)
bbl/d	barrels per day
Bcf	billion cubic feet (10^9 or a thousand million)
Bcf/d	billion cubic feet per day

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Btu	British thermal unit (1.055 kilojoules)
CO ₂	carbon dioxide
GJ	gigajoule (1 billion joules or 10 ⁹)
GL	gilalitre (1 billion litres or 10 ⁹)
GSOO	Gas Statement of Opportunities
LNG	liquefied natural gas
Mcf	thousand cubic feet
Mcf/d	thousand cubic feet per day
MMBtu	million British thermal units
MMBtu/d	million British thermal units per day
MMcf	million cubic feet
MMcf/d	million cubic feet per day
MMscf/d	million standard cubic feet per day
MOU	memorandum of understanding
Mt	million tonnes
Mtpa	million tonnes a year
NWS	North West Shelf
PJ	petajoule (one thousand terajoules)
PJ/a	petajoules a year
T	metric tonne
Tcf	trillion cubic feet (10 ¹² or one thousand billion)
TJ	terajoule (one thousand gigajoules)
TJ/d	terajoules per day
Tpa	tonnes per annum

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