CHAPTER 3. QUEENSLAND FORECASTS

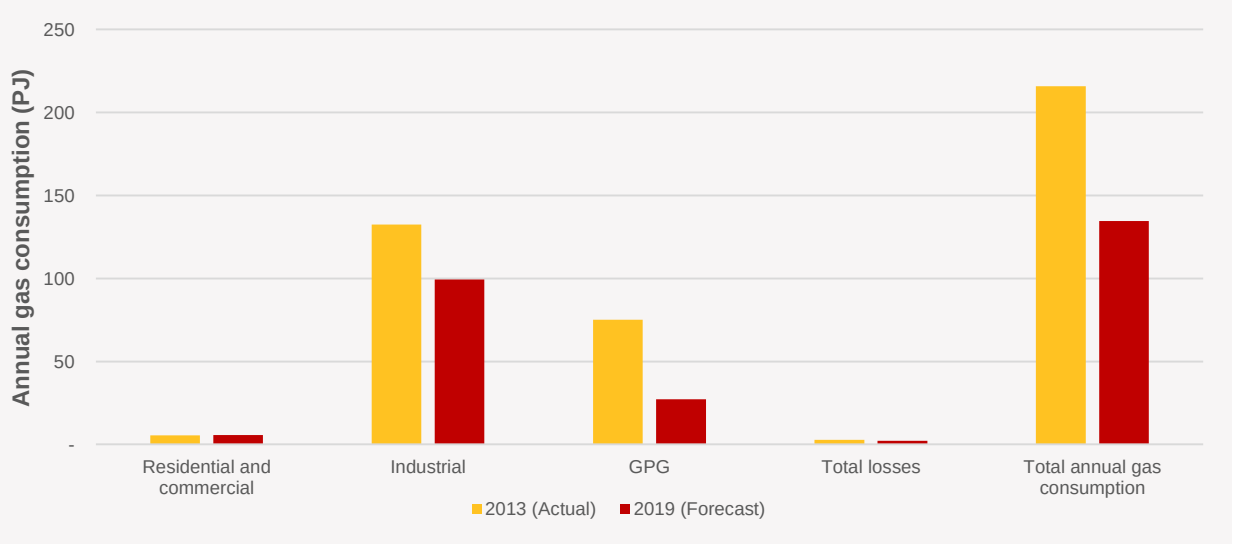
This chapter focuses on the medium scenario short-term forecast. A comparison of the high and low scenario short-term forecast is summarised in Table 16.

3.1 Key findings

Excluding LNG, key short-term (2014-19) findings for Queensland are:

- Total gas consumption is forecast to decrease at an average annual rate of 10.8%.
- Residential and commercial consumption is forecast to increase at an average annual rate of 0.8%, driven by new gas connections despite average use per connection continuing to decline.
- Industrial gas consumption is forecast to decrease at an average annual rate of 5.7%, driven by industrial closures.
- GPG gas consumption is forecast to decrease at an average annual rate of 22.2%, driven by rising gas prices that reduce the competitiveness of GPG plant in the NEM.

Figure 6 Comparison of 2013 (actual) and 2019 (forecast) annual gas consumption, excluding LNG[10]



[10] GPG gas consumption may include some gas used for electricity production that is subsequently used for LNG processing.

3.2 Annual consumption[11]

Historically, from 2010 to 2013, annual gas consumption increased from 212.8 PJ to 215.9 PJ. This average annual increase of 0.5% is mainly driven by plant expansion and new gas connections for industrial customers.

Annual consumption includes total losses from transmission and distribution networks. Refer to Appendix A for further details.

Table 11 presents the annual consumption trends and drivers over the short, medium, and long term.

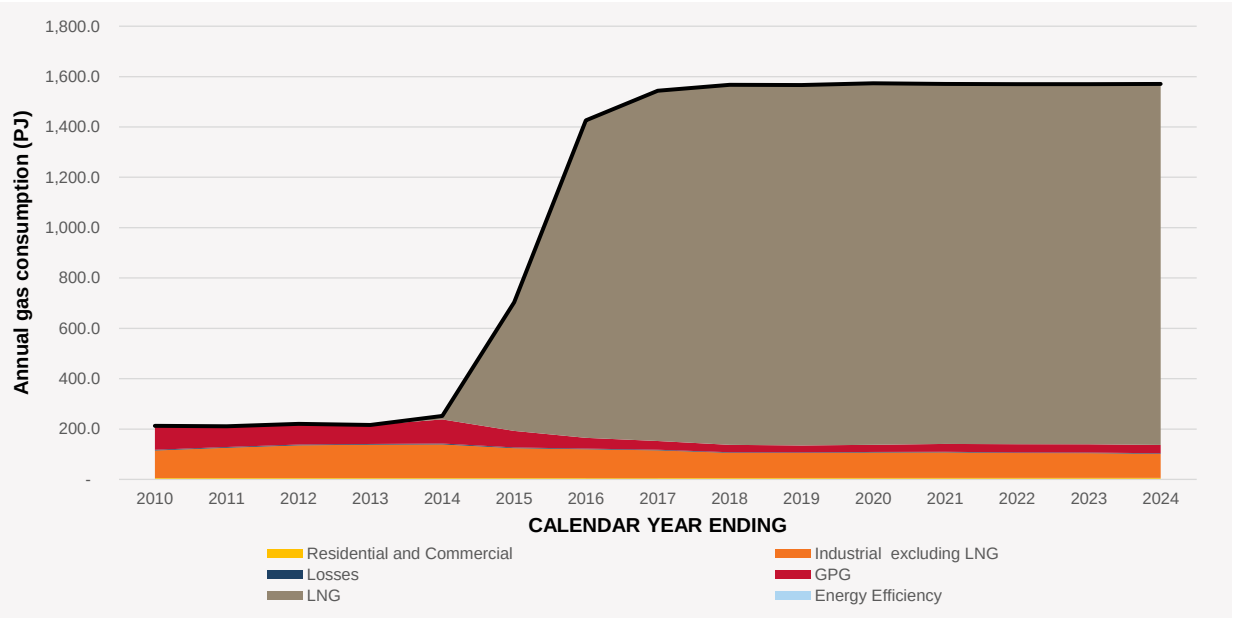
Table 11 Total annual gas consumption over the short, medium, and long term (excluding LNG)

Timeframe	Forecast (PJ)	Average annual growth	Drivers
Short term (2014-19)	238.3 to 134.7	10.8% decrease	Industrial closures by large customers such as BP Bulwer Island refinery[12] and reduced industrial consumption by other industrial consumers. Higher gas prices resulting in lower usage of GPG plants.
Medium term (2019-24)	134.7 to 136.9	0.3% increase	Increased GPG gas consumption driven by modelled retirement of existing coal-fired power stations, and increasing electricity consumption.
Long term (2024-34)	136.9 to 147.0	0.7% increase	

Figure 7 shows the annual forecast for Queensland by segment. This includes the impact of LNG, which is forecast to grow strongly once the LNG projects (QCLNG, APLNG, GLNG) begin to export gas from Curtis Island.

Six committed LNG trains are under construction, with the first delivery of LNG (from the QCLNG project) scheduled for 20 December 2014.[13] LNG forecasts were prepared by Jacobs and are available on AEMO's website.[14]

Figure 7 Annual consumption forecast segments (including LNG) for Queensland



[11] Consumption in Queensland excludes usage at the Daandine Power Station which is supplied directly from a gas field.
[12] http://www.bp.com/en_au/australia/media/media-releases/bulwer-island-refinery-processing-halt.html. Accessed: 14 November 2014.
[13] Available at http://aemo.com.au/Gas/Planning/Forecasting/National-Gas-Forecasting-Report. To be published 17 December 2014
[14] Available at http://aemo.com.au/Gas/Planning/Forecasting/National-Gas-Forecasting-Report. To be published 17 December 2014

Differences between high, medium, and low scenario short-term forecasts, 2014-19

Excluding LNG, the high, medium and low scenario short-term forecast average annual decreases are 7.3%, 10.8%, and 13.7% respectively. Including LNG exports, these increase to 46.3%, 44.2%, and 41.0% respectively. Key differentiating factors are outlined in the individual component forecast sections.

Figure 8 Comparison of high, medium, low scenario forecasts, including LNG

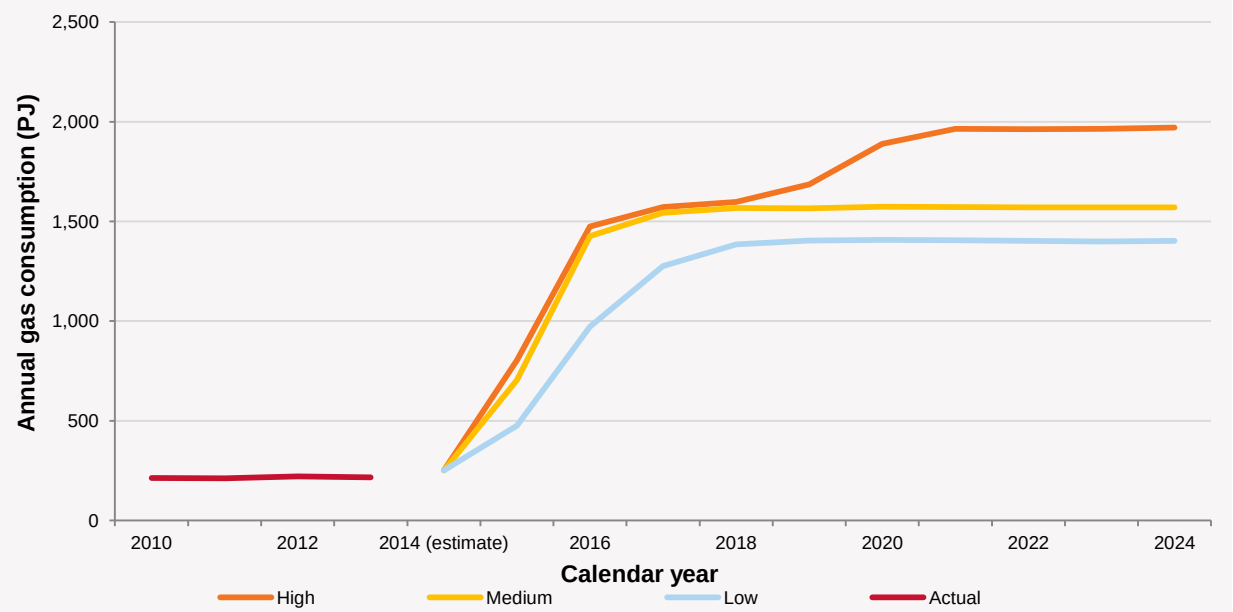


Table 12 Annual gas forecast for Queensland (PJ)

	Annual gas consumption, excluding LNG				Annual gas consumption, including LNG exports			
		High	Medium	Low		High	Medium	Low
2014 estimated	238.3				251.6			
2015		202.3	192.6	186.7		802.9	703.9	476.2
2016		176.2	165.1	155.8		1,475.1	1,426.5	971.7
2017		169.2	152.5	132.9		1,572.5	1,543.9	1,276.3
2018		164.9	137.3	116.8		1,597.7	1,567.1	1,385.5
2019		163.3	134.7	113.8		1,686.3	1,566.4	1,403.6
2020		169.5	137.5	113.4		1,889.3	1,573.1	1,406.8
2021		172.1	140.9	117.2		1,964.2	1,571.3	1,405.8
2022		170.9	139.8	114.4		1,962.9	1,570.2	1,403.0
2023		172.1	139.5	111.0		1,963.9	1,569.7	1,399.4
2024		174.4	136.9	111.2		1,971.1	1,571.0	1,403.1

3.2.1 Residential and commercial consumption (Tariff V)

Historically, from 2010 to 2013, residential and commercial consumption increased from 5.37 PJ to 5.44 PJ. This average annual increase of 0.4% reflects an increase in connections to the gas network due to new housing growth and fuel substitution from existing non-gas homes. This is offset by declines in average use per connection linked to rising retail gas prices and federal energy efficiency savings.

Table 13 demonstrates the residential and commercial consumption trends and drivers.

Table 13 Residential and commercial consumption over the short, medium, and long term

Timeframe	Forecast (PJ)	Average annual growth	Drivers
Short term (2014-19)	5.4 to 5.7	0.8% increase	Growth in new connections outpacing reductions in average use per connection, due to increasing retail gas prices, increased savings from federal energy efficiency programs.
Medium term (2019-24)	5.7 to 6.0	1.2% increase	
Long term (2024-34)	6.0 to 6.6	1.0% increase	

Refer to Appendix B for further details on savings from federal energy efficiency programs.

3.2.2 Industrial consumption (Tariff D)[15]

Historically, from 2010 to 2013, industrial consumption increased from 109.3 PJ to 132.5 PJ. This average annual increase of 6.6% is mainly driven by plant expansion and new industrial load.

Table 14 demonstrates the industrial consumption trends and drivers.

Table 14 Industrial consumption over the short, medium, and long term

Timeframe	Forecast (PJ)	Average annual growth	Drivers
Short term (2014-19)	133.6 to 99.5	5.7% decrease	Closures such as BP at Bulwer Island Refinery[16] in 2015, and industrial customers reducing their consumption because of improved plant efficiencies and increasing gas prices.
Medium term (2019-24)	99.5 to 95.4	0.8% decrease	Industrial customers reducing their consumption due to less favourable economic conditions linked to increasing gas prices.
Long term (2024-34)	95.4 to 92.6	0.3% decrease	Industrial customers continuing to reduce their consumption, driven by increasing gas prices.

3.2.3 Gas-powered generation

Historically, from 2010 to 2013, GPG consumption decreased from 95.1 PJ to 75.1 PJ. This average annual decline of 7.6% was driven by decreasing electricity consumption. Table 15 demonstrates the GPG consumption trends and drivers.

Table 15 Gas-powered generation over the short, medium, and long term

Timeframe	Forecast (PJ)	Average annual growth	Drivers
Short term (2014-19)	95.8 to 27.3	22.2% decrease	Increasing gas prices which reduces the competitiveness of GPG plant in the NEM.
Medium term (2019-24)	27.3 to 33.1	4.0% increase	The modelled retirement of several coal–fired power stations, resulting in a greater electricity market share for GPG plant.
Long term (2024-34)	33.1 to 45.4	3.2% increase	

[15] Excludes LNG usage.
[16] Source: http://www.bp.com/en_au/australia/media/media-releases/bulwer-island-refinery-processing-halt.html. Accessed: 14 November 2014.

3.2.4 Summary of high, medium and low scenario trends and drivers in the short-term (2014-19)

Table 16 High, medium and low drivers for Queensland (PJ)

Forecast component	Scenario	Forecast (PJ)	Average annual growth	Key drivers
Residential and commercial	Medium	5.4 to 5.7	0.8% increase	Growth in new connections, outpacing reductions in average use per connection.
	High	5.4 to 6.0	1.8% increase	Lower retail gas prices, a higher rate of new connections (due to higher population growth) and no additional federal energy efficiency savings beyond current programs.
	Low	5.4 to 5.3	0.6% decrease	Higher retail gas prices, fewer new customers (due to lower population growth) and more federal energy efficiency savings.
Industrial	Medium	133.6 to 99.5	5.7% decrease	Closures such as BP at Bulwer Island Refinery in 2015, and industrial customers reducing their consumption because of improved plant efficiencies and increasing gas prices.
	High	133.6 to 120.0	2.1% decrease	More optimistic operating forecasts due to favourable economic conditions, higher GDP growth and higher commodity prices, lower gas prices, and lower exchange rates.
	Low	133.6 to 81.2	9.5% decrease	Reduced production forecast due to less favourable economic conditions, lower GDP growth, lower commodity prices, higher gas prices and higher exchange rates. AEMO adopted a probabilistic approach to reflect the reduced production or closure of aluminium smelters in response to less favourable economic conditions.
Gas-powered generation	Medium	95.8 to 27.3	22.2% decrease	Rising gas prices which reduces the competitiveness of GPG plant in the NEM.
	High	95.8 to 34.7	18.4% decrease	Gas prices increase more slowly than in the medium scenario, leading to a slower decline in GPG consumption.
	Low	95.8 to 25.4	23.3% decrease	Gas prices increase more quickly than in the medium scenario, leading to a faster decline in GPG consumption.
Liquefied Natural gas	Medium	13.3 to 1,432	154.7% increase	The three LNG projects (QCLNG, APLNG, GLNG) begin to export gas from Curtis Island, with the very first delivery of LNG scheduled for 20 December 2014.
	High	13.3 to 1,523	157.9% increase	All six committed LNG projects operate above contract, and a seventh train from 2020.
	Low	13.3 to 1,290	149.5% increase	All six committed LNG projects operate at 10% below contract.

3.3 Summer MD

Queensland is the only region where, historically, MD occurs in summer and is driven by GPG. The 2013 summer MD was 603.7 TJ on 30 January 2013.

Winter MD forecasts and growth rates are published in the 2014 NGFR datasheets.[17]

Table 17 Summer MD, excluding LNG, 1-in-20 forecast

Timeframe	Forecast (TJ/d)	Average annual growth	Drivers
Short term (2014-19)	700.3 to 473.5	7.5% decrease	Rising gas prices which reduce reliance on GPG plant in the NEM, and result in reduced operation or closure of large industrial customers.
Medium term (2019-24)	473.5 to 563.4	3.5% increase	Driven by GPG demand as electricity consumption increases and existing coal-fired power stations are retired.
Long term (2024-34)	563.4 to 552.8	0.2% decrease	Linked to rising gas prices which result in reduced operation of industrial customers and existing gas-powered stations withdrawing.

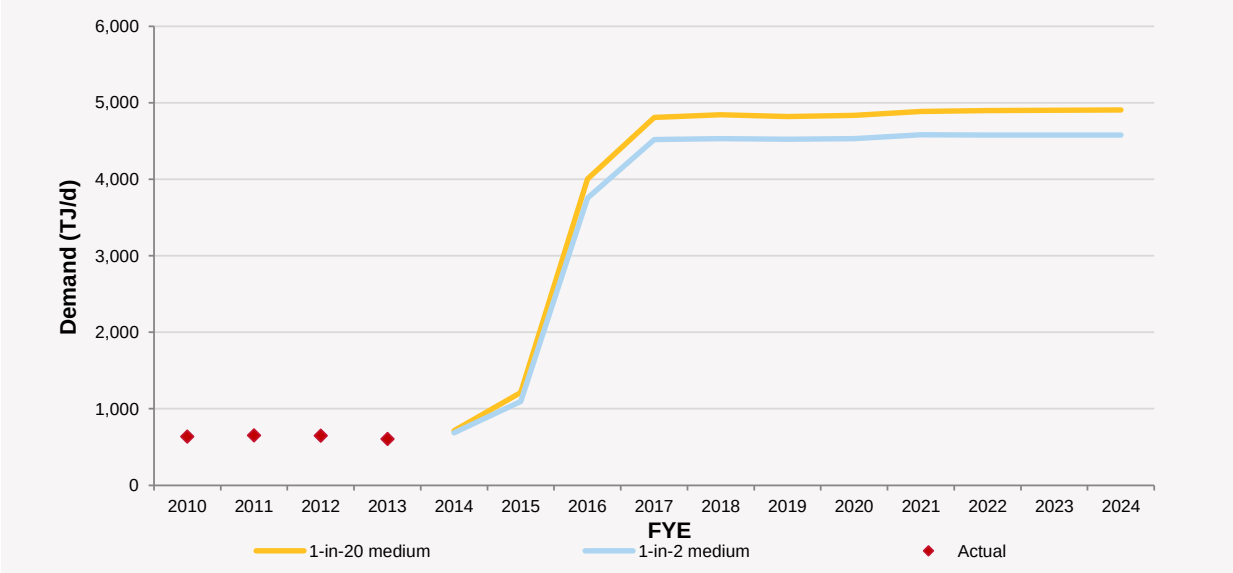
Differences between high, medium, and low scenario short-term forecasts, 2014-19

Excluding LNG, the high, medium and low short-term forecasts decrease at annual average rates of 3.3%, 7.5%, and 12.9% respectively. This decrease is primarily due to reduced large industrial and GPG demand. Including LNG, the high, medium and low short-term forecasts increase at average annual rates of 49.0%, 46.6%, and 43.0% respectively.

Key drivers behind the differences from the medium scenario are:

- In the high scenario, gas prices increase more slowly and electricity MD increases more quickly in the short term. These factors together lead to a slower decline in GPG MD. The high scenario also assumes an additional (seventh) LNG project and LNG operation above contract.
- In the low scenario, gas prices increase more quickly and electricity MD decreases in the short term. These factors together lead to a faster decline in GPG MD. The low scenario also assumes all six LNG projects operate at 10% below contract.

Figure 9 Summer 1-in-2 and 1-in-20 year event MD forecasts for Queensland



[17] Available at http://aemo.com.au/Gas/Planning/Forecasting/National-Gas-Forecasting-Report. To be published 17 December 2014

Table 18 Summer 1-in-2 and 1-in-20 year event MD for Queensland (TJ/d)

		High		Medium		Low	
	Actual	1-in-2	1-in-20	1-in-2	1-in-20	1-in-2	1-in-20
2013	603.7						
2014		684.9	713.0	684.9	713.0	684.9	713.0
2015		1,192.2	1,325.0	1,093.4	1,211.3	892.6	978.9
2016		4,048.2	4,320.7	3,754.9	4,003.8	2,297.7	2,434.4
2017		4,592.7	4,919.6	4,519.9	4,810.0	3,393.9	3,588.5
2018		4,625.0	4,958.0	4,529.0	4,843.3	4,017.4	4,258.9
2019		4,894.2	5,234.7	4,521.8	4,819.8	4,023.6	4,266.1
2020		5,612.8	6,008.6	4,531.7	4,836.0	4,013.8	4,254.0
2021		5,734.5	6,110.4	4,582.3	4,885.9	4,115.3	4,377.0
2022		5,734.4	6,111.8	4,577.3	4,896.9	4,085.5	4,353.0
2023		5,737.2	6,124.7	4,576.8	4,903.0	4,071.4	4,347.7
2024		5,766.0	6,149.4	4,577.5	4,905.1	4,069.9	4,351.0