Chapter 2:
Energy and demand projections

2 Energy and demand projections

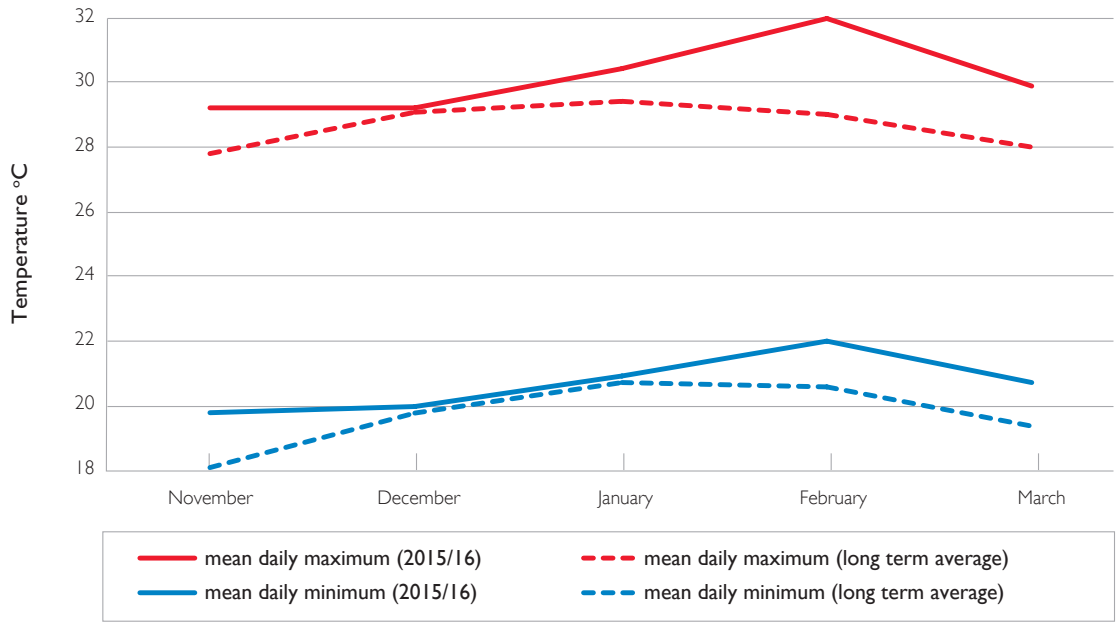
Key highlights

- This chapter sets out the historical energy and demand performance of Powerlink's transmission network and provides forecast data separated by zone.
- The 2015/16 summer in Queensland was hot and long lasting with a new record demand recorded at 5:30pm on 1 February, when 8,271MW was delivered from the transmission grid.
- Powerlink develops its energy and demand forecasts using both a top-down econometric model and bottom-up forecasts from DNSP and direct connect customers.
- Based on the medium economic outlook, Queensland's delivered energy consumption and demand is expected to remain relatively flat, with average annual increases of 0.6% and 0.2% per annum over the next 10 years.
- Powerlink is committed to understanding the future impacts of emerging technologies so that transmission network services are developed in a way most valued by customers. For example, future developments in battery storage technology coupled with small-scale solar photovoltaic (PV) could see significant changes to future electricity usage patterns including more even usage, which would reduce the need to develop transmission services to cover short duration peaks.

2.1 Overview

The 2015/16 summer in Queensland was hot and long lasting with a new record demand recorded at 5:30pm on 1 February, when 8,271 MW was delivered from the transmission grid. This corresponded to scheduled generation of 9,097MW, passing the previous record of 8,891MW in January 2010. This record was assisted by 439MW of new liquefied natural gas (LNG) load. After temperature correction, this demand fell short of the 2015 Transmission Annual Planning Report (TAPR) forecast by around 1%. The graph below shows observed temperatures for Brisbane Queensland during summer 2015/16 compared with long-term averages.

Figure 2.1 Brisbane weather over summer 2015/16



Energy delivered from the transmission network for 2015/16 is expected to fall short of the 2015 TAPR forecast by around 3%. This is mainly driven by slower than expected energy usage growth within the LNG sector.

The LNG industry continues to ramp up with observed demands close to those forecast in the 2015 TAPR. By 2018/19, LNG demand is forecast to exceed 700MW. No new loads have committed to connect to the transmission network since the 2015 TAPR was released.

During the 2015/16 summer, Queensland had around 1,500MW of installed small-scale solar PV capacity. The rate that this has been increasing has slowed to around 15MW per month. An important impact of the small-scale solar PV has been to delay the time of state peak, with state peak demand now occurring at around 5:30pm. As more small-scale solar PV is installed, future summer maximum demands are likely to occur in the early evening.

The forecasts presented in this TAPR indicate relatively flat growth for energy, summer maximum demand and winter maximum demand after the LNG industry is at full output. While there has been significant investment in the resources sector, further developments in the short-term are unlikely due to low global coal and gas prices. Queensland on the whole is still experiencing slow economic growth. However, the lower Australian dollar has improved growth prospects in areas such as tourism and foreign education while sustained low interest rates are providing a boost in the housing industry. Queensland's population growth has slowed in the aftermath of the mining boom and is expected to increase by around 15% to around 5.5 million over the 10-year forecast period.

Consumer response to high electricity prices continues to have a damping effect on electricity usage. Future developments in battery storage technology coupled with small-scale solar PV could see significant changes to future electricity usage patterns. In particular, battery storage technology has the potential to flatten electricity usage and thereby reduce the need to develop transmission services to cover short duration peaks.

Powerlink is committed to understanding the future impacts of emerging technologies so that transmission network services are developed in a way most valued by customers. Driven by this commitment, Powerlink has again hosted a forum in March 2016 to share and build on knowledge related to emerging technologies. As a result, several enhancements were made to the forecasting methodology associated with emerging technologies in this TAPR. Details of Powerlink's forecasting process can be found in Appendix B.

Figure 2.2 presents a comparison of the delivered summer maximum demand forecast with that presented in the 2015 TAPR, based on a 50% probability of exceedance (PoE) and medium economic outlook.

Figure 2.3 presents a comparison of the delivered energy forecast with that presented in the 2015 TAPR, based on the medium economic outlook.

The 2016 TAPR forecasts for both the energy and demand represent a reduction when compared to the 2015 TAPR. The energy reduction is almost entirely due to a reduction in the energy forecast for the LNG sector. The demand reduction is due to similar demand reductions for both the LNG sector and regional Queensland.

2 Energy and demand projections

Figure 2.2 Comparison of the medium economic outlook demand forecasts

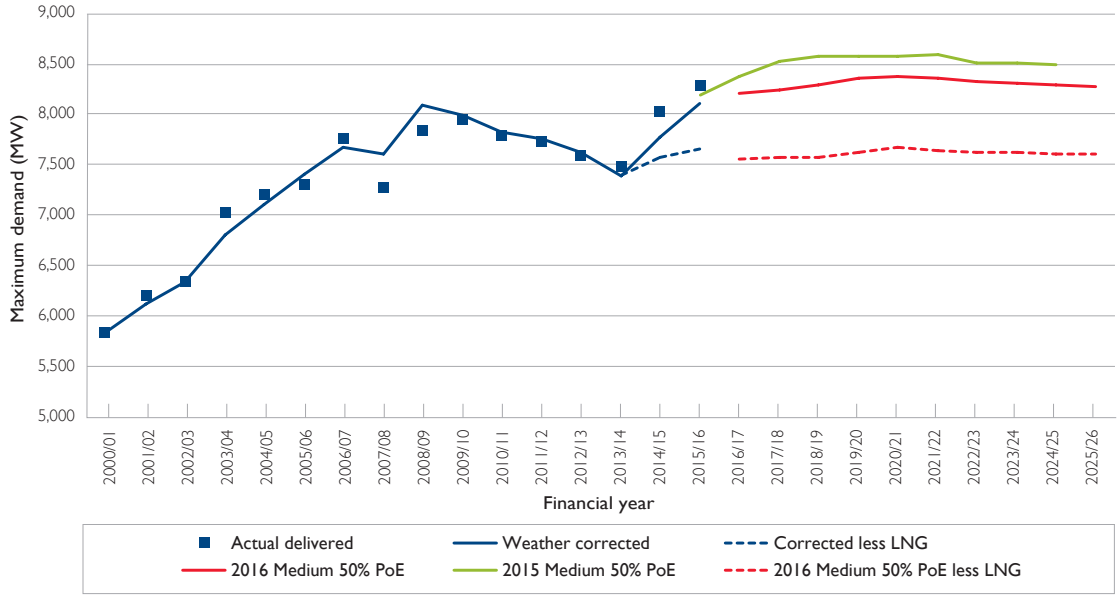
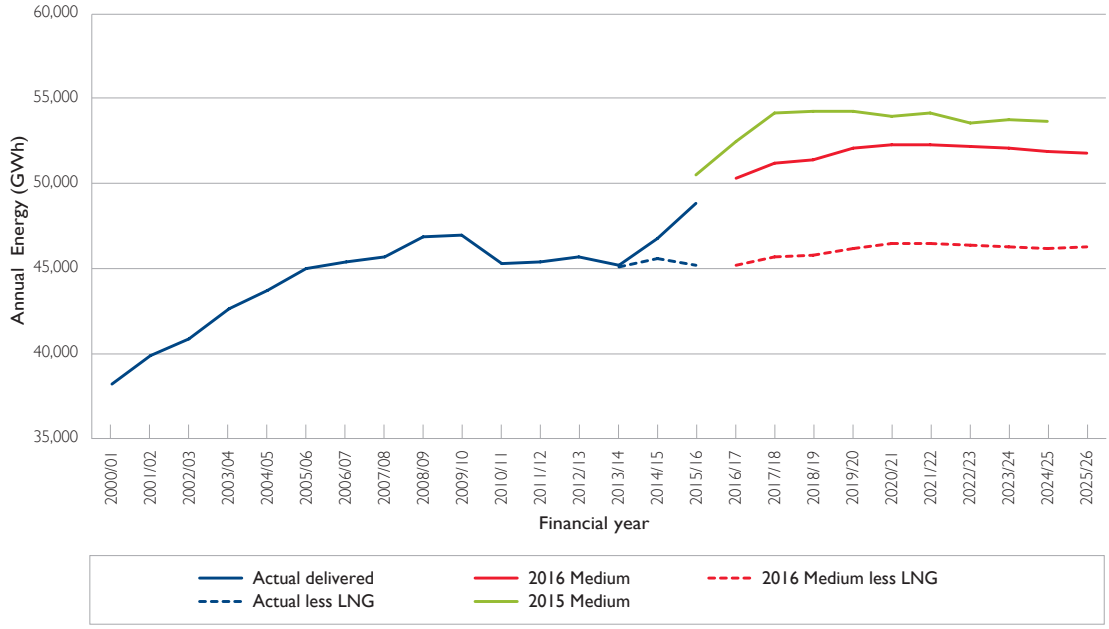


Figure 2.3 Comparison of the medium economic outlook energy forecasts



2.2 Customer consultation

In accordance with the National Electricity Rules (NER), Powerlink has obtained summer and winter maximum demand forecasts over a 10-year horizon from Queensland's Distribution Network Service Providers (DNSPs), Energex and Ergon Energy. These connection supply point forecasts are presented in Appendix A. Also in accordance with the NER, Powerlink has obtained summer and winter maximum demand forecasts from other customers that connect directly to the transmission network. These forecasts have been aggregated into demand forecasts for the Queensland region and for 11 geographical zones, defined in Table 2.13 in Section 2.4, using diversity factors observed from historical trends.

Energy forecasts for each connection supply point were obtained from Energex, Ergon Energy and other transmission connected customers. These have also been aggregated for the Queensland region and for each of the 11 geographical zones in Queensland, defined in Table 2.13.

Powerlink works with Energex, Ergon Energy, Australian Energy Market Operator (AEMO) and the wider industry to refine its forecasting process and input information. This engagement takes place through ongoing dialogue and forums such as the Demand and Energy Forecasting Forum and Powerlink Queensland Transmission Network Forum undertaken in March and July respectively.

Powerlink, Energex and Ergon Energy jointly conduct the Queensland Household Energy Survey each year to improve understanding of consumer behaviours and intentions. This survey provides air conditioning penetration forecasts that feed directly in the demand forecasting process plus numerous insights on consumer intentions on electricity usage.

Powerlink's forecasting methodology is described in Appendix B.

Transmission customer forecasts

New large loads

The medium economic outlook forecast includes the following loads that have connected recently or have committed to connect in the outlook period:

- APLNG upstream LNG processing facilities west of Wandoan South Substation
- GLNG upstream LNG processing facilities west of Wandoan South Substation
- QGC upstream LNG processing facilities at Bellevue, near Columboola Substation.

The impact of these large customer loads is shown separately in Figure 2.2 as the difference between 2016 medium 50% PoE demand forecast and 2016 medium 50% PoE less LNG demand forecast.

Possible new large loads

There are several proposals for large mining and metal processing or other industrial loads whose development status is not yet at the stage that they can be included (either wholly or in part) in the medium economic forecast. These developments, totalling nearly 1,300MW could translate to the additional loads listed in Table 2.1 being supplied by the network.

Table 2.1 Possible large loads excluded from the medium economic outlook forecast

Zone	Description	Possible load
North	Further port expansion at Abbot Point	Up to 100MW
North	LNG upstream processing load (Bowen Basin area)	Up to 80MW
Central West and North	New coal mining load (Galilee Basin area)	Up to 750MW
Surat	LNG upstream processing load and coal mining projects (Surat Basin area)	Up to 350MW

2.3 Demand forecast outlook

The following sections outline the Queensland forecasts for energy, summer demand and winter demand.

All forecasts are prepared for three economic outlooks, high, medium and low. Demand forecasts are also prepared to account for seasonal variation. These seasonal variations are referred to as 10% PoE, 50% PoE and 90% PoE forecasts. They represent conditions that would expect to be exceeded once in 10 years, five times in 10 years and nine times in 10 years respectively.

The forecast average annual growth rates for the Queensland region over the next 10 years under low, medium and high economic growth outlooks are shown in Table 2.2. These growth rates refer to transmission delivered quantities as described in Section 2.3.1. For summer and winter maximum demand, growth rates are based on 50% PoE corrected values for 2015/16. Some of this growth is driven by the emerging LNG industry in South West Queensland.

Table 2.2 Average annual growth rate over next 10 years

	Economic growth outlooks		
	Low	Medium	High
Delivered energy	0.2%	0.6%	1.4%
Delivered summer maximum demand (50% PoE)	-0.2%	0.2%	1.0%
Delivered winter maximum demand (50% PoE)	0.5%	0.9%	1.7%

Table 2.3 below shows the forecast average annual growth rates for the Queensland region with the impact of LNG removed.

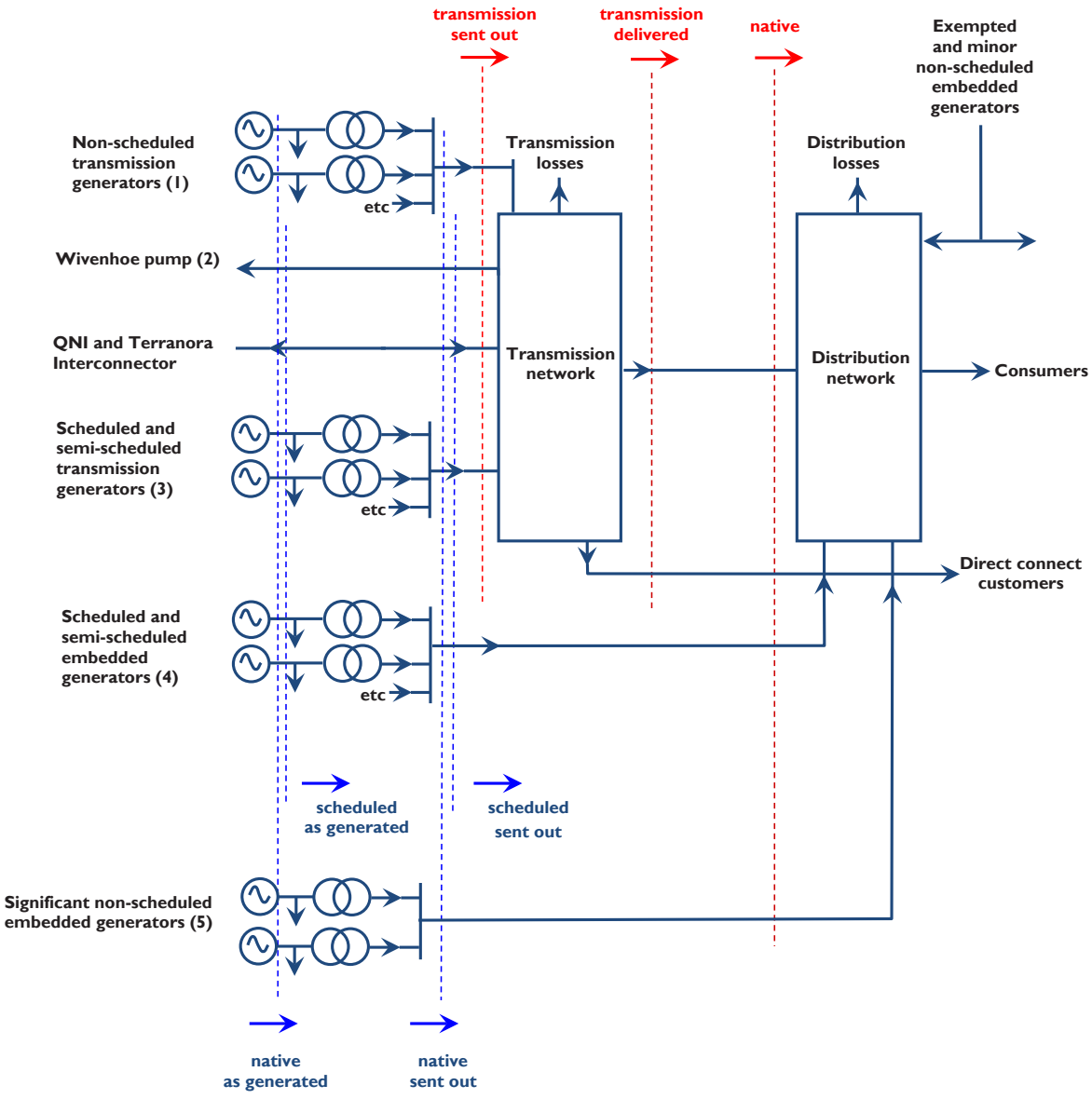
Table 2.3 Average annual growth rate over next 10 years – without LNG

	Economic growth outlooks		
	Low	Medium	High
Delivered energy	-0.1%	0.2%	1.0%
Delivered summer maximum demand (50% PoE)	-0.4%	-0.1%	0.5%
Delivered winter maximum demand (50% PoE)	0.0%	0.3%	1.0%

2.3.1 Demand and energy terminology

The reported demand and energy on the network depends on where it is being measured. Different stakeholders have reasons to measure demand and energy at different points. Figure 2.4 below is presented to represent the common ways to measure demand and energy, with this terminology being used consistently throughout the TAPR.

Figure 2.4 Load forecast definitions



Notes:

(1) Includes Invicta and Koombooloomba

(2) Depends on Wivenhoe generation

(3) Includes Yarwun which is non-scheduled

(4) Barcaldine, Roma and Townsville Power Station 66kV component

(5) Pioneer Mill, Racecourse Mill, Moranbah North, Moranbah, German Creek, Oaky Creek, Isis Central Sugar Mill, Daandine, Bromelton and Rocky Point

2.3.2 Energy forecast

Historical Queensland energies are presented in Table 2.4. They are recorded at various levels in the network as defined in Figure 2.5.

Transmission losses are the difference between transmission sent out and transmission delivered energy. Scheduled power station auxiliaries are the difference between scheduled as generated and scheduled sent out energy.

Table 2.4 Historical energy (GWh)

Year	Scheduled as generated	Scheduled sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus solar PV
2006/07	51,193	47,526	51,445	47,905	46,966	45,382	46,320	46,320
2007/08	51,337	47,660	52,268	48,711	47,177	45,653	47,188	47,188
2008/09	52,591	48,831	53,638	50,008	48,351	46,907	48,563	48,580
2009/10	53,150	49,360	54,419	50,753	48,490	46,925	49,187	49,263
2010/11	51,381	47,804	52,429	48,976	46,866	45,240	47,350	47,640
2011/12	51,147	47,724	52,206	48,920	46,980	45,394	47,334	48,018
2012/13	50,711	47,368	52,045	48,702	47,259	45,651	47,090	48,197
2013/14	49,686	46,575	51,029	47,918	46,560	45,145	46,503	47,722
2014/15	51,855	48,402	53,349	50,047	48,332	46,780	48,495	49,952
2015/16 (1)	53,589	49,990	55,158	51,708	50,034	48,965	50,639	52,460

Note:

(1) These projected end of financial year values are based on revenue and statistical metering data until February 2016.

The forecast transmission delivered energy forecasts are presented in Table 2.5 and displayed in Figure 2.5. Forecast native energy forecasts are presented in Table 2.6.

Table 2.5 Forecast annual transmission delivered energy (GWh)

Year	Low growth outlook	Medium growth outlook	High growth outlook
2016/17	49,744	50,293	51,691
2017/18	50,545	51,214	53,036
2018/19	50,573	51,414	53,711
2019/20	50,864	52,034	54,521
2020/21	50,807	52,306	55,065
2021/22	50,518	52,289	55,240
2022/23	50,440	52,155	56,065
2023/24	50,228	52,066	56,083
2024/25	49,842	51,842	56,307
2025/26	49,758	51,756	56,396

Figure 2.5 Historical and forecast transmission delivered energy

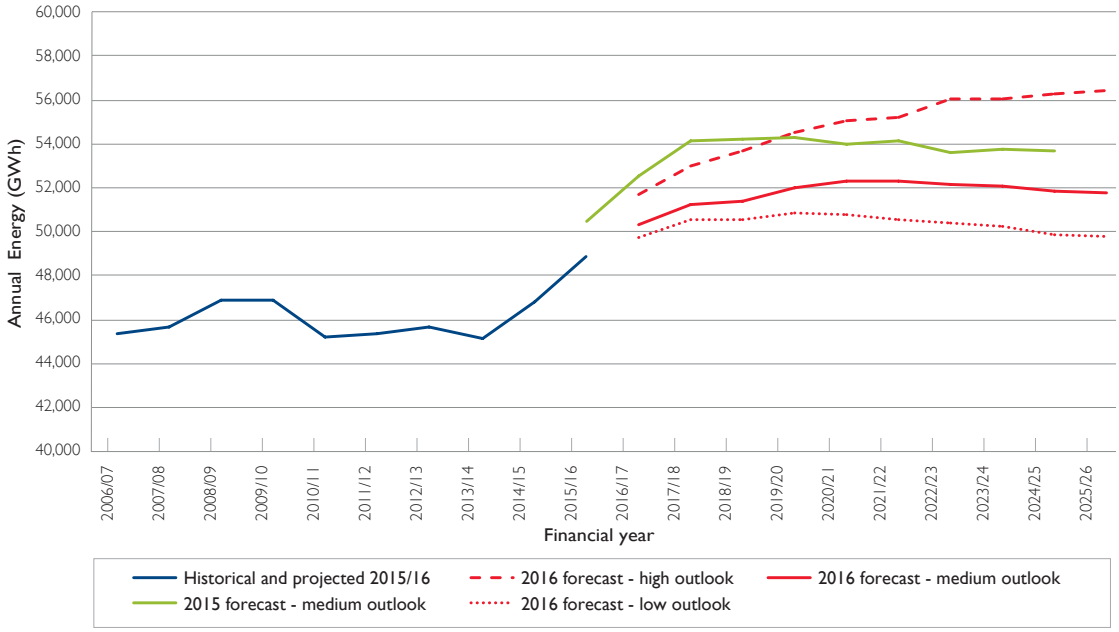


Table 2.6 Forecast annual native energy (GWh)

Year	Low growth outlook	Medium growth outlook	High growth outlook
2016/17	51,015	51,564	52,962
2017/18	51,814	52,483	54,305
2018/19	51,841	52,682	54,979
2019/20	52,132	53,302	55,789
2020/21	52,074	53,573	56,332
2021/22	51,784	53,555	56,506
2022/23	51,705	53,420	57,330
2023/24	51,493	53,331	57,348
2024/25	51,106	53,106	57,571
2025/26	51,021	53,019	57,659

2.3.3 Summer maximum demand forecast

Historical Queensland summer maximum demands are presented in Table 2.7.

Table 2.7 Historical summer maximum demand (MW)

Summer	Scheduled as generated	Scheduled sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus solar PV	Native corrected to 50% PoE
2006/07	8,589	8,099	8,632	8,161	7,925	7,757	7,993	7,993	7,907
2007/08	8,082	7,603	8,178	7,713	7,425	7,281	7,569	7,569	7,893
2008/09	8,677	8,135	8,767	8,239	8,017	7,849	8,070	8,078	8,318
2009/10	8,891	8,427	9,053	8,603	8,292	7,951	8,321	8,355	8,364
2010/11	8,836	8,299	8,895	8,374	8,020	7,797	8,152	8,282	8,187
2011/12	8,707	8,236	8,769	8,319	7,983	7,723	8,059	8,367	8,101
2012/13	8,453	8,008	8,691	8,245	7,920	7,588	7,913	8,410	7,952
2013/14	8,365	7,947	8,531	8,114	7,780	7,498	7,831	8,378	7,731
2014/15	8,809	8,398	9,000	8,589	8,311	8,019	8,326	8,512	8,084
2015/16	9,094	8,668	9,272	8,848	8,580	8,271	8,539	8,783	8,369

The transmission delivered summer maximum demand forecasts are presented in Table 2.8 and displayed in Figure 2.6. Forecast summer native demand is presented in Table 2.9.

Table 2.8 Forecast summer transmission delivered demand (MW)

Summer	Low growth outlook			Medium growth outlook			High growth outlook		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2016/17	7,747	8,134	8,659	7,817	8,206	8,732	8,030	8,428	8,970
2017/18	7,768	8,162	8,698	7,853	8,249	8,787	8,140	8,547	9,100
2018/19	7,773	8,172	8,714	7,882	8,283	8,828	8,209	8,623	9,185
2019/20	7,782	8,185	8,733	7,942	8,351	8,906	8,287	8,710	9,284
2020/21	7,743	8,151	8,704	7,955	8,371	8,936	8,336	8,767	9,352
2021/22	7,678	8,086	8,640	7,932	8,351	8,920	8,336	8,771	9,362
2022/23	7,663	8,076	8,636	7,907	8,330	8,905	8,438	8,880	9,480
2023/24	7,625	8,040	8,603	7,889	8,317	8,896	8,433	8,879	9,485
2024/25	7,566	7,984	8,551	7,857	8,289	8,875	8,457	8,910	9,524
2025/26	7,529	7,951	8,523	7,832	8,269	8,861	8,469	8,926	9,547

Figure 2.6 Historical and forecast transmission delivered summer demand

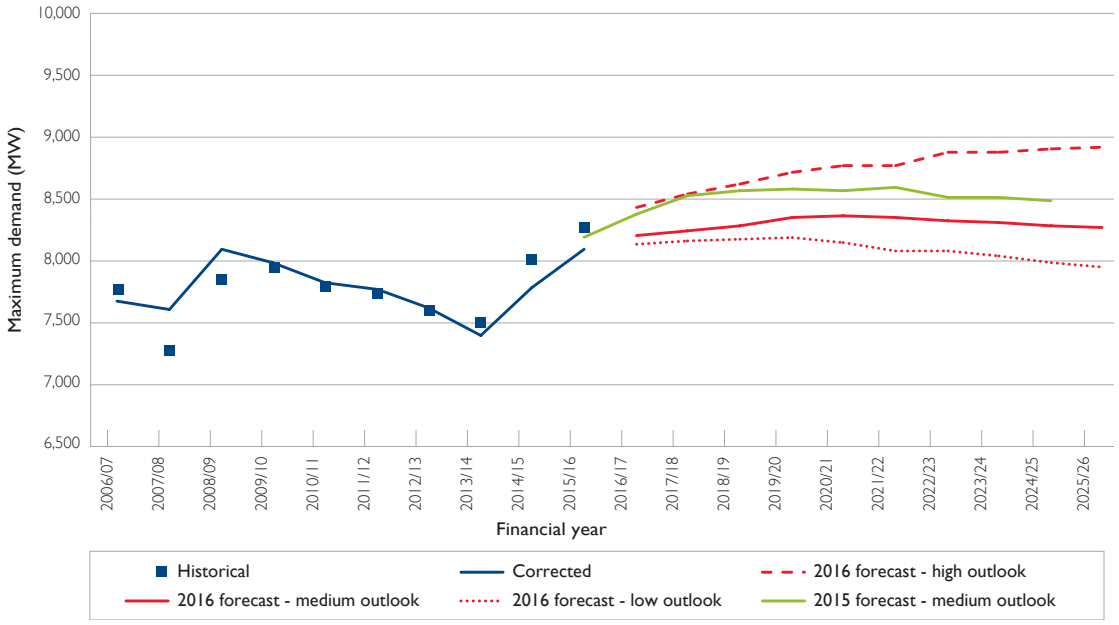


Table 2.9 Forecast summer native demand (MW)

Summer	Low growth outlook			Medium growth outlook			High growth outlook		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2016/17	8,016	8,403	8,928	8,086	8,474	9,001	8,298	8,697	9,238
2017/18	8,036	8,431	8,967	8,122	8,518	9,056	8,409	8,816	9,369
2018/19	8,042	8,441	8,983	8,151	8,552	9,097	8,478	8,892	9,454
2019/20	8,050	8,454	9,002	8,210	8,619	9,175	8,556	8,979	9,553
2020/21	8,012	8,419	8,972	8,223	8,640	9,204	8,605	9,036	9,621
2021/22	7,946	8,355	8,909	8,200	8,619	9,189	8,605	9,040	9,631
2022/23	7,932	8,344	8,905	8,176	8,599	9,174	8,706	9,148	9,748
2023/24	7,893	8,308	8,872	8,158	8,585	9,165	8,701	9,148	9,754
2024/25	7,835	8,253	8,820	8,126	8,558	9,144	8,726	9,178	9,792
2025/26	7,798	8,219	8,792	8,101	8,537	9,129	8,738	9,195	9,816

2.3.4 Winter maximum demand forecast

Historical Queensland winter maximum demands are presented in Table 2.10. Notice that as winter normally peaks after sunset, solar PV has no impact on winter peak demand.

Table 2.10 Historical winter maximum demand (MW)

Winter	Scheduled as generated	Scheduled sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus solar PV	Native corrected to 50% PoE
2006	7,674	7,160	7,747	7,249	7,119	6,803	6,933	6,933	6,978
2007	7,837	7,416	7,893	7,481	7,298	7,166	7,350	7,350	7,026
2008	8,197	7,758	8,283	7,858	7,612	7,420	7,665	7,665	7,237
2009	7,655	7,158	7,756	7,275	7,032	6,961	7,205	7,205	7,295
2010	7,313	6,885	7,608	7,194	6,795	6,534	6,933	6,933	6,942
2011	7,640	7,207	7,816	7,400	7,093	6,878	7,185	7,185	6,998
2012	7,490	7,081	7,520	7,128	6,955	6,761	6,934	6,934	6,908
2013	7,150	6,753	7,345	6,947	6,699	6,521	6,769	6,769	6,983
2014	7,288	6,895	7,470	7,077	6,854	6,647	6,881	6,881	6,999
2015	7,816	7,369	8,027	7,620	7,334	7,126	7,411	7,412	7,301

The transmission delivered winter maximum demand forecasts are presented in Table 2.11 and displayed in Figure 2.7. Forecast winter native demand is presented in Table 2.12.

Table 2.11 Forecast winter transmission delivered demand (MW)

Winter	Low growth outlook			Medium growth outlook			High growth outlook		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2016	7,299	7,311	7,387	7,361	7,373	7,449	7,579	7,592	7,671
2017	7,493	7,506	7,584	7,573	7,585	7,664	7,812	7,825	7,906
2018	7,477	7,489	7,568	7,579	7,592	7,671	7,912	7,925	8,007
2019	7,530	7,542	7,622	7,684	7,697	7,778	8,040	8,054	8,137
2020	7,544	7,556	7,637	7,749	7,762	7,844	8,120	8,134	8,219
2021	7,455	7,468	7,548	7,702	7,715	7,798	8,107	8,121	8,207
2022	7,454	7,467	7,549	7,688	7,701	7,785	8,189	8,203	8,291
2023	7,418	7,431	7,513	7,671	7,684	7,768	8,226	8,240	8,328
2024	7,389	7,402	7,484	7,666	7,680	7,765	8,254	8,268	8,357
2025	7,347	7,360	7,443	7,634	7,647	7,733	8,269	8,283	8,374

Figure 2.7 Historical and forecast winter transmission delivered demand

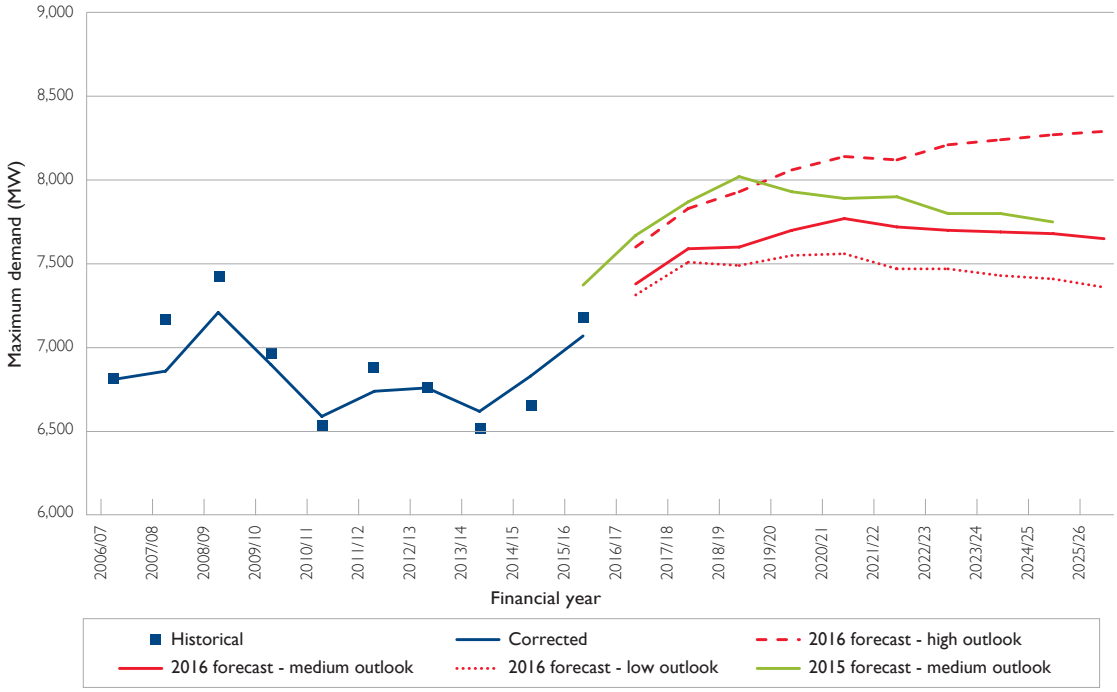


Table 2.12 Forecast winter native demand (MW)

Winter	Low growth outlook			Medium growth outlook			High growth outlook		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2016	7,554	7,566	7,642	7,616	7,628	7,705	7,834	7,847	7,926
2017	7,749	7,761	7,839	7,828	7,841	7,919	8,067	8,080	8,161
2018	7,732	7,744	7,823	7,834	7,847	7,926	8,168	8,180	8,263
2019	7,785	7,797	7,877	7,939	7,952	8,033	8,296	8,309	8,393
2020	7,799	7,811	7,892	8,004	8,017	8,100	8,375	8,389	8,474
2021	7,710	7,723	7,803	7,957	7,970	8,053	8,362	8,376	8,462
2022	7,709	7,722	7,804	7,943	7,956	8,040	8,445	8,458	8,546
2023	7,673	7,686	7,768	7,926	7,939	8,023	8,481	8,495	8,583
2024	7,644	7,657	7,740	7,921	7,935	8,020	8,509	8,523	8,613
2025	7,602	7,615	7,698	7,889	7,903	7,989	8,524	8,539	8,629

2.4 Zone forecasts

The 11 geographical zones referred to throughout this TAPR are defined in Table 2.13 and are shown in the diagrams in Appendix C. In the 2008 Annual Planning Report (APR), Powerlink split the South West zone into Bulli and South West zones and in the 2014 TAPR, Powerlink split the South West zone into Surat and South West zones.

Table 2.13 Zone definitions

Zone	Area covered
Far North	North of Tully, including Chalumbin
Ross	North of Proserpine and Collinsville North, excluding the Far North zone
North	North of Broadsound and Dysart, excluding the Far North and Ross zones
Central West	South of Nebo, Peak Downs and Mt McLaren, and north of Gin Gin, but excluding the Gladstone zone
Gladstone	South of Raglan, north of Gin Gin and east of Calvale
Wide Bay	Gin Gin, Teebar Creek and Woolooga 275kV substation loads, excluding Gympie
Surat	West of Western Downs and south of Moura, excluding the Bulli zone
Bulli	Goondiwindi (Waggamba) load and the 275/330kV network south of Kogan Creek and west of Millmerran
South West	Tarong and Middle Ridge load areas west of Postmans Ridge, excluding the Bulli and Surat zones
Moreton	South of Woolooga and east of Middle Ridge, but excluding the Gold Coast zone
Gold Coast	East of Greenbank, south of Coomera to the Queensland/New South Wales border

Each zone normally experiences its own maximum demand, which is usually greater than that shown in tables 2.17 to 2.20.

Table 2.14 shows the average ratios of forecast zone maximum transmission delivered demand to zone transmission delivered demand at the time of forecast Queensland region maximum demand. These values can be used to multiply demands in tables 2.17 and 2.19 to estimate each zone's individual maximum transmission delivered demand, the time of which is not necessarily coincident with the time of Queensland region maximum transmission delivered demand. The ratios are based on historical trends.

Table 2.14 Average ratios of zone maximum delivered demand to zone delivered demand at time of Queensland region maximum demand

Zone	Winter	Summer
Far North	1.15	1.16
Ross	1.53	1.36
North	1.14	1.15
Central West	1.10	1.15
Gladstone	1.03	1.05
Wide Bay	1.02	1.13
Surat (1)		
Bulli	1.16	1.28
South West	1.03	1.23
Moreton	1.01	1.01
Gold Coast	1.01	1.01

Note:

(1) As load is still ramping up in the Surat zone, ratios for this zone cannot be reliably determined.

Tables 2.15 and 2.16 show the forecast of transmission delivered energy and native energy for the medium economic outlook for each of the 11 zones in the Queensland region.

Table 2.15 Annual transmission delivered energy (GWh) by zone

Year	Far North	Ross	North	Central West	Glad-stone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2006/07	1,770	2,563	2,733	3,169	9,945	1,461			2,047	18,469	3,225	45,382
2007/08	1,818	2,719	2,728	3,165	10,058	1,399		87	1,712	18,684	3,283	45,653
2008/09	1,851	2,772	2,779	3,191	10,076	1,430		94	1,774	19,532	3,408	46,907
2009/10	1,836	2,849	2,719	3,300	10,173	1,427		84	1,442	19,619	3,476	46,927
2010/11	1,810	2,791	2,590	3,152	10,118	1,308		95	1,082	18,886	3,408	45,240
2011/12	1,792	2,762	2,627	3,407	10,286	1,323		105	1,196	18,630	3,266	45,394
2012/13	1,722	2,782	2,730	3,326	10,507	1,267		103	1,746	18,233	3,235	45,651
2013/14	1,658	2,907	2,829	3,482	10,293	1,321	338	146	1,304	17,782	3,085	45,145
2014/15	1,697	3,063	2,885	3,327	10,660	1,266	821	647	1,224	18,049	3,141	46,780
2015/16	1,703	2,976	2,876	3,256	10,706	1,239	2,779	1,211	1,194	17,888	3,137	48,965
Forecasts												
2016/17	1,631	2,946	2,887	3,469	10,719	1,248	4,116	1,214	1,185	17,536	3,342	50,293
2017/18	1,634	2,951	3,033	3,528	10,657	1,268	4,508	1,232	1,196	17,804	3,403	51,214
2018/19	1,603	2,927	3,022	3,541	10,774	1,260	4,641	1,228	1,168	17,838	3,412	51,414
2019/20	1,567	2,891	3,105	3,608	10,944	1,241	4,954	1,167	1,134	17,987	3,436	52,034
2020/21	1,569	2,905	3,178	3,650	10,947	1,253	4,928	1,167	1,125	18,122	3,462	52,306
2021/22	1,550	2,899	3,178	3,659	10,945	1,251	5,011	1,166	1,102	18,075	3,453	52,289
2022/23	1,526	2,889	3,158	3,674	10,943	1,246	5,015	1,166	1,078	18,016	3,444	52,155
2023/24	1,499	2,879	3,143	3,699	10,941	1,241	5,046	1,165	1,053	17,969	3,431	52,066
2024/25	1,481	2,868	3,102	3,740	10,941	1,236	4,890	1,164	1,028	17,962	3,430	51,842
2025/26	1,462	2,857	3,062	3,800	10,941	1,229	4,832	1,164	1,003	17,974	3,432	51,756

Table 2.16 Annual native energy (GWh) by zone

Year	Far North	Ross	North	Central West	Glad-stone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2006/07	1,770	3,141	2,761	3,375	9,945	1,459			2,110	18,534	3,225	46,320
2007/08	1,818	3,371	2,771	3,528	10,058	1,413		87	2,039	18,820	3,283	47,188
2008/09	1,851	3,336	2,950	3,481	10,076	1,437		94	2,265	19,665	3,408	48,563
2009/10	1,836	3,507	3,070	3,635	10,173	1,447		84	2,193	19,766	3,476	49,187
2010/11	1,810	3,220	2,879	3,500	10,118	1,328		95	2,013	18,979	3,408	47,350
2011/12	1,792	3,257	2,917	3,654	10,286	1,348		105	2,014	18,695	3,266	47,334
2012/13	1,722	3,169	3,062	3,680	10,507	1,292		103	1,988	18,333	3,235	47,090
2013/14	1,658	3,148	3,156	3,862	10,293	1,339	402	146	1,536	17,878	3,085	46,503
2014/15	1,697	3,249	3,435	3,755	10,660	1,285	1,022	647	1,468	18,136	3,141	48,495
2015/16	1,703	3,207	3,415	3,684	10,706	1,269	2,879	1,211	1,446	17,982	3,137	50,639
Forecasts												
2016/17	1,631	3,136	3,284	3,603	10,719	1,266	4,323	1,215	1,429	17,616	3,342	51,564
2017/18	1,634	3,142	3,429	3,662	10,657	1,287	4,714	1,232	1,440	17,883	3,403	52,483
2018/19	1,603	3,118	3,419	3,675	10,774	1,278	4,847	1,228	1,412	17,916	3,412	52,682
2019/20	1,567	3,082	3,501	3,743	10,944	1,260	5,160	1,167	1,378	18,064	3,436	53,302
2020/21	1,569	3,096	3,574	3,785	10,947	1,272	5,134	1,167	1,369	18,198	3,462	53,573
2021/22	1,550	3,089	3,575	3,794	10,945	1,269	5,217	1,166	1,347	18,150	3,453	53,555
2022/23	1,526	3,080	3,555	3,808	10,943	1,265	5,221	1,166	1,322	18,090	3,444	53,420
2023/24	1,499	3,069	3,540	3,833	10,941	1,260	5,253	1,165	1,297	18,043	3,431	53,331
2024/25	1,481	3,059	3,499	3,875	10,941	1,254	5,096	1,164	1,272	18,035	3,430	53,106
2025/26	1,462	3,047	3,458	3,935	10,941	1,248	5,038	1,164	1,247	18,047	3,432	53,019

Tables 2.17 and 2.18 show the forecast of transmission delivered winter maximum demand and native winter maximum demand for each of the 11 zones in the Queensland region. It is based on the medium economic outlook and average winter weather.

Table 2.17 State winter maximum transmission delivered demand (MW) by zone

Winter	Far North	Ross	North	Central West	Glad-stone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2006	207	243	325	409	1,157	228			361	3,279	594	6,803
2007	219	309	286	442	1,165	297			410	3,451	587	7,166
2008	216	285	361	432	1,161	253		17	374	3,655	666	7,420
2009	210	342	328	416	1,125	218		19	341	3,361	601	6,961
2010	227	192	325	393	1,174	179		18	269	3,173	584	6,534
2011	230	216	317	432	1,155	222		22	376	3,303	605	6,878
2012	214	226	326	412	1,201	215		20	346	3,207	594	6,761
2013	195	261	348	405	1,200	190	23	17	263	3,040	579	6,521
2014	226	360	359	448	1,200	204	16	51	257	2,975	551	6,647
2015	192	307	332	412	1,249	203	172	137	258	3,267	597	7,126
Forecasts												
2016	218	248	378	437	1,193	191	487	158	223	3,247	593	7,373
2017	220	240	378	465	1,191	191	620	161	224	3,298	597	7,585
2018	223	230	398	464	1,202	191	582	164	224	3,316	598	7,592
2019	225	232	417	469	1,208	192	605	158	226	3,364	601	7,697
2020	224	231	424	482	1,206	190	637	151	225	3,391	601	7,762
2021	225	228	429	484	1,204	187	612	151	220	3,379	596	7,715
2022	226	226	433	481	1,203	185	608	151	219	3,375	594	7,701
2023	227	226	431	480	1,203	185	602	151	218	3,371	590	7,684
2024	227	227	431	479	1,203	184	599	151	218	3,373	588	7,680
2025	227	227	428	479	1,203	184	572	151	218	3,370	588	7,647

Table 2.18 State winter maximum native demand (MW) by zone

Winter	Far North	Ross	North	Central West	Glad-stone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2006	207	322	325	460	1,157	228			361	3,279	594	6,933
2007	219	309	292	520	1,165	297			485	3,476	587	7,350
2008	216	362	365	470	1,161	253		17	479	3,676	666	7,665
2009	210	425	372	466	1,125	218		19	407	3,362	601	7,205
2010	227	319	363	484	1,174	186		18	380	3,198	584	6,933
2011	230	339	360	520	1,155	222		22	428	3,304	605	7,185
2012	214	302	360	446	1,201	215		20	375	3,207	594	6,934
2013	195	304	374	487	1,200	195	89	17	290	3,039	579	6,769
2014	226	384	420	495	1,200	204	90	51	286	2,974	551	6,881
2015	192	352	404	500	1,249	203	208	137	288	3,281	597	7,411
Forecasts												
2016	218	310	435	505	1,193	192	522	158	252	3,250	593	7,628
2017	220	302	436	533	1,191	192	656	161	253	3,300	597	7,841
2018	223	292	455	532	1,202	192	617	164	253	3,319	598	7,847
2019	225	294	475	537	1,208	193	640	158	255	3,366	601	7,952
2020	224	293	482	550	1,206	191	672	151	254	3,393	601	8,017
2021	225	290	486	552	1,204	188	647	151	249	3,382	596	7,970
2022	226	289	491	548	1,204	186	643	151	247	3,377	594	7,956
2023	226	289	489	547	1,203	186	637	151	247	3,374	590	7,939
2024	227	289	488	547	1,204	185	634	151	247	3,375	588	7,935
2025	227	289	486	546	1,204	185	607	151	247	3,373	588	7,903

Tables 2.19 and 2.20 show the forecast of transmission delivered summer maximum demand and native summer maximum demand for each of the 11 zones in the Queensland region. It is based on the medium economic outlook and average summer weather.

Table 2.19 State summer maximum transmission delivered demand (MW) by zone

Summer	Far North	Ross	North	Central West	Glad-stone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2006/07	329	385	452	509	1,164	296			375	3,636	611	7,757
2007/08	292	296	386	476	1,193	243		15	314	3,466	600	7,281
2008/09	280	350	317	459	1,178	278		19	367	3,934	667	7,849
2009/10	317	394	415	505	1,176	268		11	211	3,919	735	7,951
2010/11	306	339	371	469	1,172	274		18	175	3,990	683	7,797
2011/12	296	391	405	510	1,191	249		18	217	3,788	658	7,723
2012/13	277	320	384	518	1,213	232		14	241	3,755	634	7,588
2013/14	271	330	353	481	1,147	260	30	21	291	3,711	603	7,498
2014/15	278	398	399	449	1,254	263	130	81	227	3,848	692	8,019
2015/16	308	411	412	425	1,189	214	313	155	231	3,952	661	8,271
Forecasts												
2016/17	261	326	388	505	1,185	203	522	151	203	3,799	663	8,206
2017/18	266	315	399	508	1,182	203	533	153	204	3,821	665	8,249
2018/19	265	313	403	504	1,195	201	569	153	203	3,817	660	8,283
2019/20	265	313	419	509	1,201	201	601	145	203	3,836	658	8,351
2020/21	267	312	432	517	1,201	200	583	138	202	3,861	658	8,371
2021/22	266	307	432	522	1,200	196	591	138	199	3,846	654	8,351
2022/23	267	305	433	521	1,200	195	582	138	198	3,841	650	8,330
2023/24	267	305	432	519	1,200	195	582	138	197	3,835	647	8,317
2024/25	267	305	431	519	1,201	195	558	138	197	3,832	646	8,289
2025/26	269	307	417	521	1,201	196	546	138	199	3,832	643	8,269

Table 2.20 State summer maximum native demand (MW) by zone

Summer	Far North	Ross	North	Central West	Glad-stone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2006/07	329	491	458	573	1,164	295			436	3,636	611	7,993
2007/08	292	404	390	533	1,193	243		15	387	3,512	600	7,569
2008/09	280	423	331	510	1,178	278		19	421	3,963	667	8,070
2009/10	317	500	453	539	1,176	268		11	361	3,961	735	8,321
2010/11	306	412	408	551	1,172	274		18	337	3,991	683	8,152
2011/12	296	464	434	583	1,191	249		18	378	3,788	658	8,059
2012/13	277	434	422	551	1,213	241		14	328	3,799	634	7,913
2013/14	271	435	386	549	1,147	260	88	21	316	3,755	603	7,831
2014/15	278	416	479	531	1,254	263	189	81	254	3,889	692	8,326
2015/16	308	442	491	501	1,189	214	370	155	257	3,951	661	8,539
Forecasts												
2016/17	261	391	447	551	1,185	204	578	151	228	3,815	663	8,474
2017/18	266	380	458	554	1,182	205	590	153	228	3,837	665	8,518
2018/19	265	378	462	550	1,195	203	625	153	228	3,833	660	8,552
2019/20	265	378	477	555	1,201	203	657	145	228	3,852	658	8,619
2020/21	267	376	491	564	1,201	201	640	138	227	3,877	658	8,640
2021/22	266	371	491	569	1,200	198	647	138	224	3,861	654	8,619
2022/23	267	370	492	567	1,200	197	639	138	222	3,857	650	8,599
2023/24	267	369	491	566	1,200	197	639	138	222	3,850	646	8,585
2024/25	267	370	490	565	1,200	197	615	138	222	3,848	646	8,558
2025/26	269	371	476	567	1,201	198	603	138	224	3,847	643	8,537

2.5 Daily and annual load profiles

The daily load profiles for the Queensland region on the days of 2015 winter and 2015/16 summer maximum transmission delivered demands are shown in Figure 2.8.

The annual cumulative load duration characteristic for the Queensland region transmission delivered demand is shown in Figure 2.9 for the 2014/15 financial year.

Figure 2.8 Winter 2015 and summer 2015/16 maximum transmission delivered demands

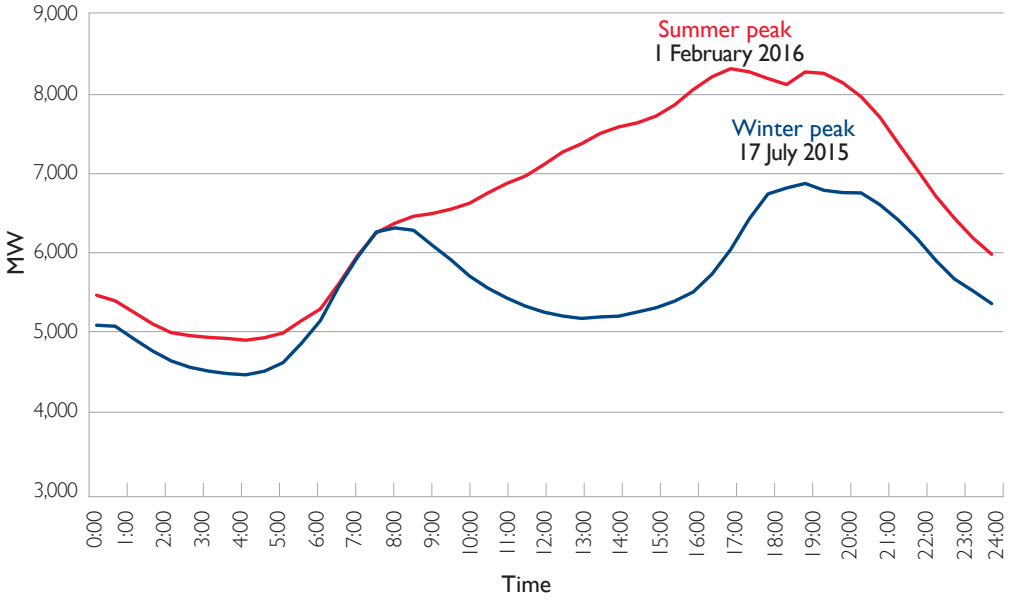
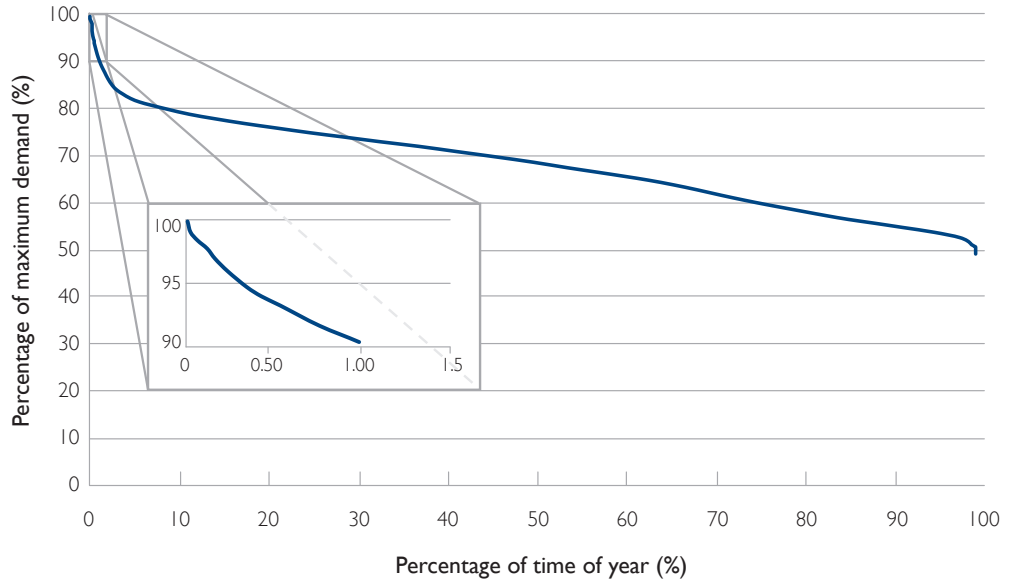


Figure 2.9 Normalised cumulative transmission delivered load duration from 1 March 2015 to 29 February 2016



2 Energy and demand projections