CHAPTER 2

Energy and demand projections

2 Energy and demand projections

Key highlights

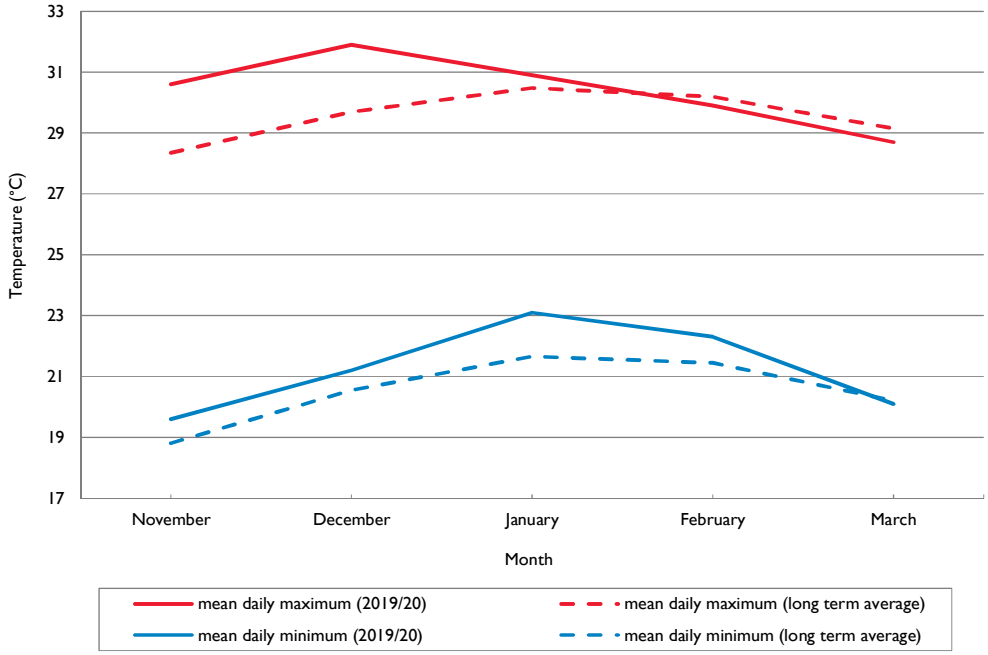
- This chapter describes the historical energy and demand, and provides forecast data separated by zone.
- The 2019/20 summer maximum transmission delivered demand of 8,766MW occurred at 6:00pm on 3 February 2020, was 203MW lower than the record demand set in 2018/19.
- The 2019/20 summer in Queensland had above average daily maximum and minimum temperatures, particularly in the earlier summer months, which saw a new monthly maximum delivered demand for the month of January 2020.
- The 2020 Queensland minimum transmission delivered demand of 3,003MW occurred at 12.30pm on 27 September 2020, setting a record minimum transmission delivered demand.
- Native plus rooftop photovoltaic (PV) energy reduced by approximately 2.2% between 2019 and 2020.
- Powerlink has adopted AEMO's 2020 Electricity Statement of Opportunity (ESOO) forecasts in its planning analysis for the 2020 Transmission Annual Planning Report (TAPR). Powerlink is focussed on working with Australian Energy Market Operator (AEMO) to understand the potential future impacts of emerging technologies so transmission network services are developed in ways that are valued by customers.
- Reductions in Queensland transmission delivered demand and energy from the COVID-19 pandemic are accounted for in the 2020 TAPR forecast.
- Based on AEMO's Central scenario Queensland's delivered maximum demand is expected to maintain low growth with an average annual increase of 0.7% per annum over the next 10 years.
- The uptake of rooftop PV and distribution connected solar systems is further reducing delivered demand during the day to the point where this is now lower than night time light load conditions. The rate at which minimum demand declines over the coming years will be closely related to the rate at which rooftop PV systems are installed. Falling minimum demand will result in a variety of impacts on the power system, some of which may necessitate investment on the transmission system.
- Queensland's transmission delivered energy is expected to decline over the next 10 years predominantly due to continued installation of variable renewable generation embedded within distribution networks and continuing installations of rooftop PV. Based on AEMO's Central scenario, transmission delivered energy consumption is expected to decline at an average rate of 0.7% per annum over the next 10 years.

2.1 Overview

The 2019/20 summer Queensland maximum delivered demand occurred at 6:00pm on 3 February 2020, when 8,766MW was delivered from the transmission grid (refer to Figure 2.6 for load measurement definitions). Operational 'as generated' and native demand peaks were recorded 30 minutes earlier at 5:30pm on 3 February 2020, with operational 'as generated' reaching 9,853MW, native demand reaching 9,268MW and transmission delivered demand reducing to 8,710MW. After weather correction, the 2019/20 summer maximum transmission delivered demand was 8,605MW, 0.2% higher than the 2019 TAPR forecast.

Figure 2.1 shows observed temperatures for Brisbane during summer 2019/20 compared with long-term averages, revealing a slightly warmer summer than average in south east Queensland, with daily maximum temperatures subdued in February and March.

Figure 2.1 Brisbane temperature ranges over summer 2019/20 (1)



Note:

(1) Long-term average based on years 2000 to 2020.

The 2020 Queensland minimum delivered demand occurred at 12:30pm on 27 September 2020, when only 3,003MW was delivered from the transmission grid (refer to Figure 2.6 for load measurement definitions). Operational 'as generated' minimum demand was recorded 30 minutes earlier at 12:00pm dropping to 3,860MW. Direct connect loads made up about two-thirds of the demand with Distribution Network Service Provider (DNSP) customers only making up one-third. Mild weather conditions, during a weekend (Sunday) in combination with strong contribution from rooftop PV were contributors to this record minimum demand. This minimum demand corresponds to the winter 2022 90% PoE minimum delivered demand under the Central scenario. Powerlink will work with AEMO to better understand underlying drivers and conditions to inform future forecasts.

Energy delivered from the transmission network for 2019/20 at 47,860GWh was within 2% of the 2019 TAPR forecast of 48,736GWh. Weather conditions and COVID-19 pandemic impacts contribute to the difference. Figure 2.2 illustrates monthly difference in native plus rooftop PV energy consumption between 2020 and 2019 since COVID-19 restrictions commenced in March. Queensland's native plus rooftop PV energy consumption reduced by an average of approximately 2.2%, but as evidenced the reductions are closely correlated with milder temperature conditions.

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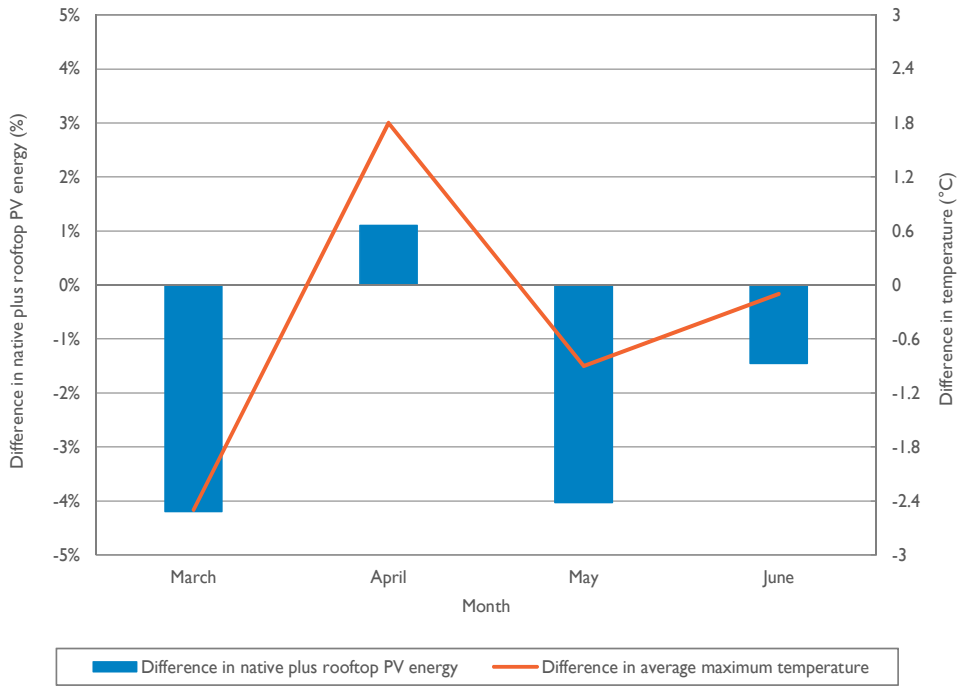
Figure 2.2 2020 and 2019 monthly native plus rooftop PV energy consumption comparison since March 2020



The publishing of the 2020 TAPR later in the year has allowed Powerlink to incorporate AEMO's recently published 2020 ESOO Queensland forecasts into the planning analysis for the TAPR. Powerlink has worked with AEMO to derive transmission delivered equivalent demand and energy forecasts based on the forecast operational sent out quantities used in the ESOO. Further information on the development of AEMO's 2020 ESOO is available on AEMO's website[1].

The AEMO 2020 ESOO forecasts provide the top-down, whole of state maximum demand forecast for the Queensland region. These are reconciled with bottom-up forecasts from DNSPs and directly connected customers to create the granular models needed to inform zonal or more localised issues.

Powerlink is committed to understanding the future impacts of emerging technologies and to work with AEMO so that these are accounted for within the forecasts. This will allow transmission network services to be developed in ways that are valued by customers. For example, future developments in battery storage technology coupled with rooftop PV and EV could see significant changes to future electricity usage patterns. This could reduce the need to develop transmission services to cover short duration peaks.

The observed electrical load for the coal seam gas (CSG) industry experienced demand slightly above those forecast in the 2019 TAPR. The CSG demand reached a peak of 801MW in 2019/20. No new CSG loads have committed to connect to the transmission network since the publication of 2019 TAPR.

The Federal Government's large-scale renewable energy target of 33,000GWh per annum by 2020 and the Queensland Government's 50% renewable energy target by 2030 (Queensland Renewable Energy Target (QRET) has driven renewable capacity in the form of solar PV and wind farms to connect to the Queensland transmission and distribution networks (refer to Table 6.1 and Table 6.2).

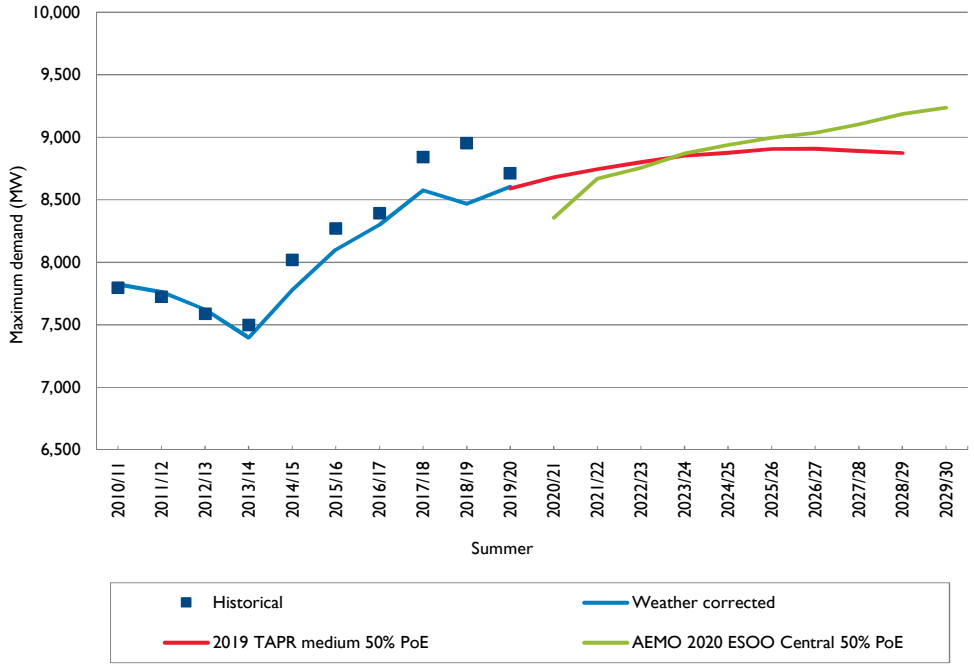
Additional uncommitted distribution connected solar and wind farm capacity has been included into the 10-year outlook period from 2023 to model the Queensland Government's target of 50% renewable energy by 2030.

[1] AEMO, 2020 Electricity Demand Forecasting Methodology Paper, August 2020.

At the end of 2019/20, Queensland reached 3,285MW of installed rooftop PV capacity[2]. Growth in rooftop PV capacity increased from around 40MW per month in 2018/19 to 59MW per month in 2019/20. An impact of rooftop PV, has been the time shift of the state's maximum demand, which now occurs around 5:30pm. As a result of significant capacity of rooftop PV and small-scale PV non-scheduled generation (PVNSG), maximum demand is unlikely to occur in the daytime, it is now expected to occur in the early evening.

Figure 2.3 shows a comparison of Powerlink's 2019 TAPR delivered summer maximum demand forecast based on medium economic outlook with AEMO's 2020 ESOO based on the Central scenario, both with 50% Probability of Exceedance (PoE). The AEMO 2020 ESOO Central scenario factors in the expected reduction in consumption due to COVID-19 pandemic impacts extending throughout summer 2020/21.

Figure 2.3 Comparison of the 2019 TAPR medium economic outlook demand forecast with AEMO's 2020 ESOO Central scenario (1)(2)



Notes:

(1) AEMO's 2020 ESOO forecast has been converted from 'operational sent-out' to 'transmission delivered' for the purposes of comparison. Refer to Figure 2.6 for further details.

(2) AEMO's 2020 ESOO forecast has been adjusted for future uncommitted distribution connected renewables by Powerlink to incorporate the Queensland Government's target of 50% renewable energy by 2030.

Figure 2.4 shows a comparison of Powerlink's 2019 TAPR delivered energy forecast based on medium economic outlook with AEMO's 2020 ESOO based on the Central scenario. Again, the reduction of energy in the short-term is due to the forecast COVID-19 pandemic impacts. Section 2.3 discusses updates included in AEMO's 2020 ESOO forecasts.

[2] Clean Energy Regulator, Postcode data for small-scale installations – all data, data as at 30/09/2020, October 2020. Whilst RET legislation allows a 12 month creation period for registered persons to create their certificates, updates for the first 9 months of this window are generally not material.

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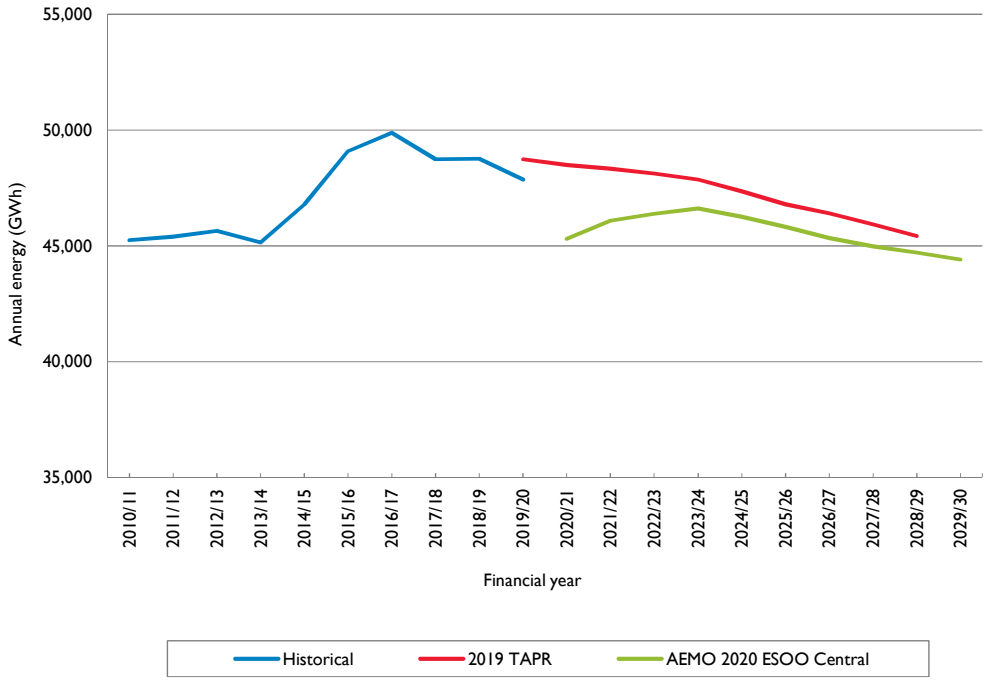
Figure 2.4 Comparison of the 2019 TAPR medium economic outlook energy forecast with AEMO's 2020 ESOO Central scenario (1)(2)



Notes:

(1) AEMO's 2020 ESOO forecast has been converted from 'operational sent-out' to 'transmission delivered' for the purposes of comparison. Refer to Figure 2.6 for further details.

(2) AEMO's 2020 ESOO forecast has been adjusted for future uncommitted distribution connected renewables by Powerlink to incorporate the Queensland Government's target of 50% renewable energy by 2030.

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 outlook period from Queensland's DNSPs, Energex and Ergon Energy (part of the Energy Queensland group). 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 Powerlink transmission network.

Powerlink, Energex and Ergon Energy jointly conduct the Queensland Household Energy Survey (QHES) to improve understanding of consumer behaviours and intentions. This survey provides comprehensive insights on consumer intentions on electricity usage.

Transmission customer forecasts

New large loads

No new large loads have connected or have committed to connect in the outlook period.

Possible new large loads

There are several proposals under development for large mining, metal processing and other industrial loads. These have not been included in AEMO's 2020 ESOO Central scenario. These developments totalling nearly 1,250MW, are listed in Table 2.1.

Table 2.1 Possible large loads excluded from the Slow Change, Central and Step Change scenario forecasts

Zone	Description	Possible load
Ross	Connection to North West Minerals Province (Mt Isa)	Up to 350MW
North	Further port expansion at Abbot Point	Up to 100MW
North	CSG load (Bowen Basin area)	Up to 80MW
North and Central West	New coal mining load (Galilee Basin area)	Up to 400MW
Surat	CSG load and coal mining projects (Surat Basin area)	Up to 300MW

2.3 Demand forecast outlook

The following sections outline the Queensland forecasts for energy, summer maximum demand, winter maximum demand, summer minimum demand and winter minimum demand. Annual maximum demands continue to be expected in the summer period. Annual minimum demands have generally occurred in the winter period. AEMO's 2020 ESOO[3] Central scenario forecast predicts the annual operational sent out minimum demand to shift to the shoulder period from 2024. Transmission delivered shoulder forecasts were not available for this 2020 TAPR, however the winter minimum demand provides a good representation of the annual minimum demand.

The annual minimum demand has moved from overnight to the daytime since 2018 (this is described in Section 2.3.1). The forecast for minimum delivered demand is now closely correlated to rooftop PV installations and embedded variable renewable energy (VRE) generators. Forecasts in this chapter are provided without predicting market outcomes, directions or constraints which may be imposed to ensure system security but impact on the output of these embedded VRE generators.

The 2019 TAPR forecasts were prepared for three economic outlooks, high, medium and low. For the 2020 TAPR the Slow Change, Central and Step Change scenarios from AEMO's 2020 ESOO forecast are used. Noticeably, the Slow Change scenario assumes extended COVID-19 restrictions and the loss of a large industrial load by summer 2029/30[4]. 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 Slow Change, Central and Step Change scenarios are shown in Table 2.2. These growth rates refer to transmission delivered quantities as described in Section 2.3.2. For summer and winter maximum demand, growth rates are based on 50% PoE corrected values for 2019/20 and 2019 respectively.

Table 2.2 Average annual growth rate over next 10 years

	AEMO future scenario growth outlooks		
	Slow Change	Central	Step Change
Delivered energy	-3.0%	-0.7%	-0.7%
Delivered summer maximum demand (50% PoE)	-1.6%	0.7%	1.2%
Delivered winter maximum demand (50% PoE)	-1.3%	1.0%	1.7%

[3] Available in AEMO's Forecasting Data Portal.
[4] AEMO, 2020 Electricity Demand Forecasting Methodology Paper, August 2020.

2.3.1 Changing load profiles

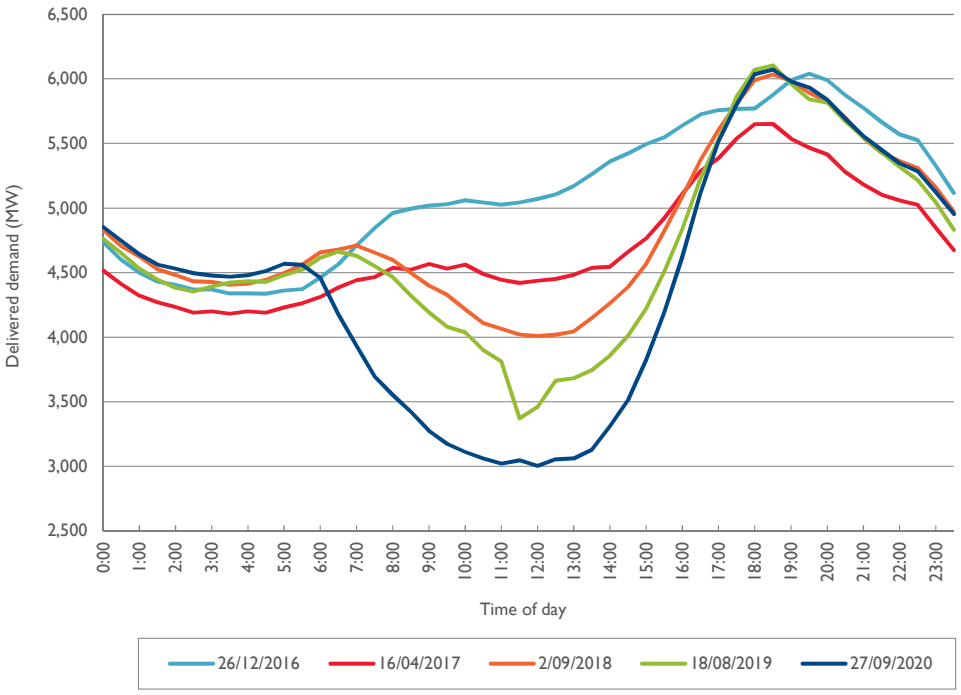
Historically, the daily load profile as delivered by the Powerlink transmission grid has seen daily maximum demand occur in the mid afternoon during the summer seasons, and during evening periods within the cooler winter seasons. Daily minimum demands have typically occurred during the night time (typically 4am or so) when industries and commercial premises are mostly closed and households are sleeping.

However, the installation of small scale rooftop PV systems and distribution connected solar farms is progressively changing the characteristics of daily demand required to be supplied by the Powerlink high voltage transmission system. The uptake of rooftop PV systems within Queensland has been one of the highest per capita rates in the world, and there are now over 700,000 installed solar PV systems with an aggregate state-wide capacity of more than 3,300MW[5].

While the cumulative effect of small scale renewable energy has reduced maximum demand and energy consumption, power produced by embedded solar installations has the effect of 'hollowing' the daily demand profile during the daytime period. This contribution ceases during the evening when the sun sets. This effect is more likely to be prominent within Queensland during the lower daytime demand winter and spring seasons. The term 'duck curve' was first coined by the Californian Independent System Operator to describe the effects of embedded solar power generation on the shape of the daily load profile, and is a characteristic experienced by transmission networks globally where there has been a significant level of embedded renewable energy systems.

Figure 2.5 depicts the change in daily load profile of the transmission delivered minimum demand daily profile. The duck curve can be seen to emerge creating a new annual minimum demand in the middle of the day from 2018.

Figure 2.5 Transmission delivered annual minimum demand for the Queensland region (1)(2)



Notes:

(1) Minimum demand can be caused by abnormal conditions, as depicted in the 2019 trace when lowest demand coincided with a large industrial load being out of service.

(2) September 2020 minimum based on preliminary metering data.

[5] Clean Energy Regulator, Postcode data for small-scale installations – all data, September 2020.

Minimum demand during the day has continued to decrease with the progressive installation of rooftop PV systems. However maximum daily demand has continued to increase in line with underlying load growth since the contribution of rooftop PV tapers off towards the evening. This has resulted in an increasing divergence between minimum and maximum demand which needs to be met and managed by generation and the transmission network.

This change in load profile has also meant that daytime minimum demand is now lower than night time for a significant portion of the year. This has meant that reactive power devices historically installed to manage night time minimum demand may no longer be sufficient to manage voltages during daytime periods.

The uptake of rooftop PV systems is expected to continue within residential and commercial premises. Should this trend progress in the absence of energy storage devices (such as household battery systems) or significant levels of demand time of day shifting, minimum demand is expected to further decrease with continued widening between maximum and minimum demand. The installation of additional reactive devices and/or non-network solutions are likely to be required to manage voltages during minimum demand conditions (refer sections 5.7.4 and 5.7.10).

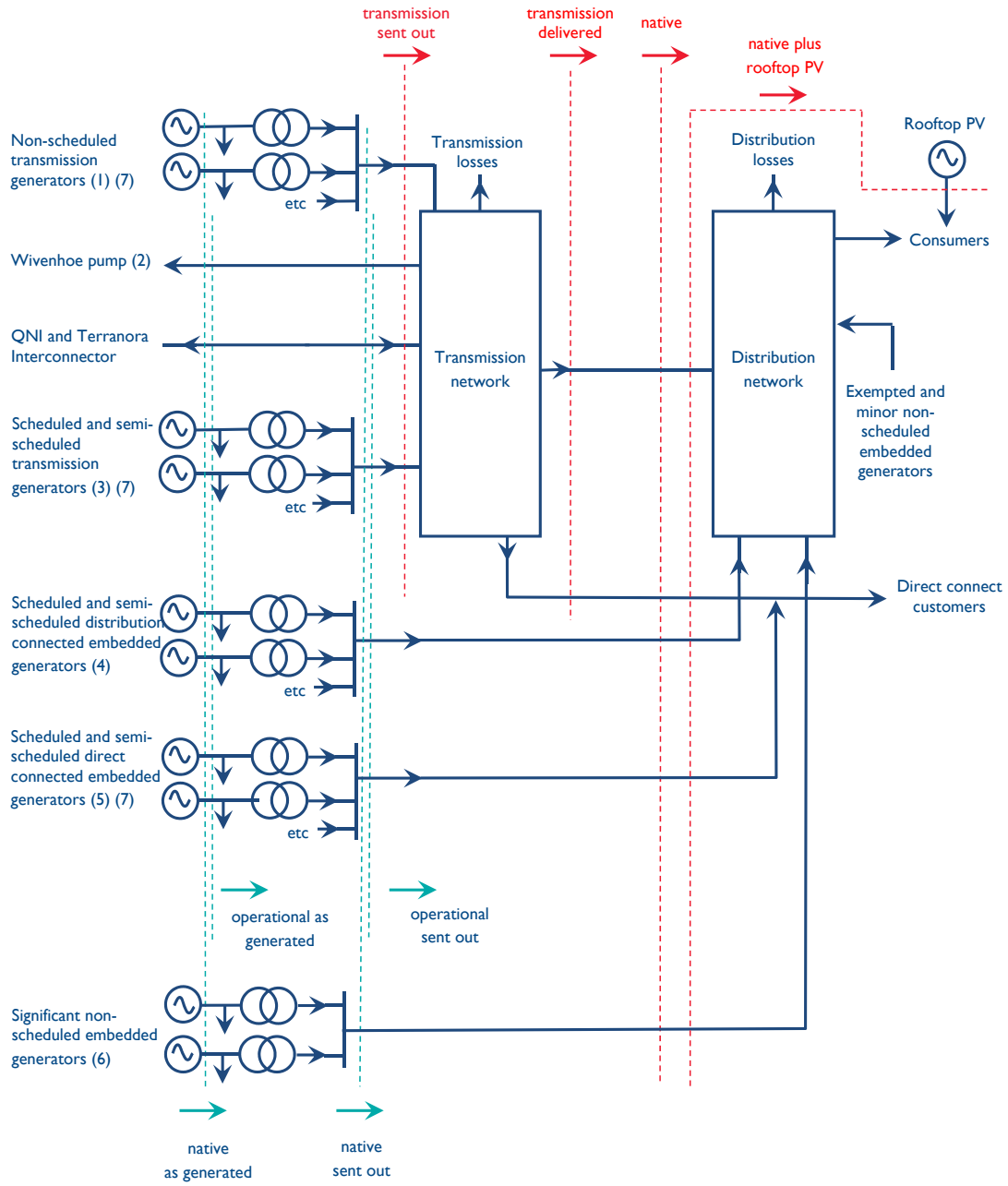
Continuation of this trend is likely to present further challenges to the energy system. Generating stations will be required to ramp up and down in response to daily demand variations more frequently. Decreasing minimum demand may lower the amount of synchronous generation that is able to be on-line and this could further impact on voltage control, system strength and the ability for available generators to meet evening peak demand. However there may be opportunities for new technologies and non-network solutions to assist with managing the daily peaks and troughs. Demand shifting and storage solutions have the potential to smooth the daily load profile. These type of services could offer a number of benefits to the electricity system including reducing the need for additional transmission investment.

Powerlink is continuing to monitor and assess the impacts of changing load profiles on the transmission network, and is taking an integrated planning approach to address emerging issues and challenges with the transitioning energy system.

2.3.2 Demand and energy terminology

The reported demand and energy on the network depends on where it is being measured. Individual stakeholders have reasons to measure demand and energy at different points. Figure 2.6 shows the common ways demand and energy measurements are defined, with this terminology used consistently throughout the TAPR.

Figure 2.6 Load measurement definitions



Notes:
(1) Includes Invicta and Koombooloomba.
(2) Depends on Wivenhoe generation.
(3) Includes Yarwun which is non-scheduled.
(4) For a full list of scheduled and semi-scheduled distribution connected generators refer to Table 6.2.
(5) Sun Metals Solar Farm and Condamine.
(6) Lakeland Solar and Storage, Hughenden Solar Farm, Pioneer Mill, Moranbah North, Moranbah, Racecourse Mill, Barcaldine Solar Farm, Longreach Solar Farm, German Creek, Oaky Creek, Isis Central Sugar Mill, Baking Board Solar Farm, Daandine, Sunshine Coast Solar Farm, Bromelton and Rocky Point.
(7) For a full list of transmission network connected generators and scheduled and semi-scheduled direct connected embedded generators refer to Table 6.1.

2.3.3 Energy forecast

Historical Queensland energy measurements are presented in Table 2.3. They are recorded at various levels in the network as defined in Figure 2.6.

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

Table 2.3 Historical energy (GWh)

Financial Year	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus rooftop PV
2010/11	51,381	47,804	52,429	48,976	46,866	45,240	47,350	47,350
2011/12	51,147	47,724	52,206	48,920	46,980	45,394	47,334	47,334
2012/13	50,711	47,368	52,045	48,702	47,259	45,651	47,090	47,090
2013/14	49,686	46,575	51,029	47,918	46,560	45,145	46,503	46,503
2014/15	51,855	48,402	53,349	50,047	48,332	46,780	48,495	49,952
2015/16	54,238	50,599	55,752	52,223	50,573	49,094	50,744	52,509
2016/17	55,101	51,323	56,674	53,017	51,262	49,880	51,635	53,506
2017/18	54,538	50,198	56,139	51,918	50,172	48,739	50,925	53,406
2018/19	54,861	50,473	56,381	52,118	50,163	48,764	51,240	54,529
2019/20	54,179	50,039	55,776	51,740	49,248	47,860	50,804	54,449

The transmission delivered energy forecasts are presented in Table 2.4.

Table 2.4 Forecast annual transmission delivered energy (GWh)

Financial Year	Slow Change	Central	Step Change
2020/21	42,429	45,303	47,034
2021/22	42,915	46,078	47,315
2022/23	43,121	46,382	46,636
2023/24	43,259	46,611	45,819
2024/25	43,494	46,258	44,744
2025/26	43,576	45,811	43,471
2026/27	43,661	45,335	43,624
2027/28	43,504	44,971	43,389
2028/29	43,560	44,707	44,045
2029/30 (1)	35,373	44,413	44,395

Note:

(1) AEMO assumes the shutdown of a large industrial load in the Slow Change scenario in summer 2029/30.

The historical annual transmission delivered energy from Table 2.3 and the forecast transmission delivered energy for the Slow Change, Central and Step Change scenarios from Table 2.4 are shown in Figure 2.7.

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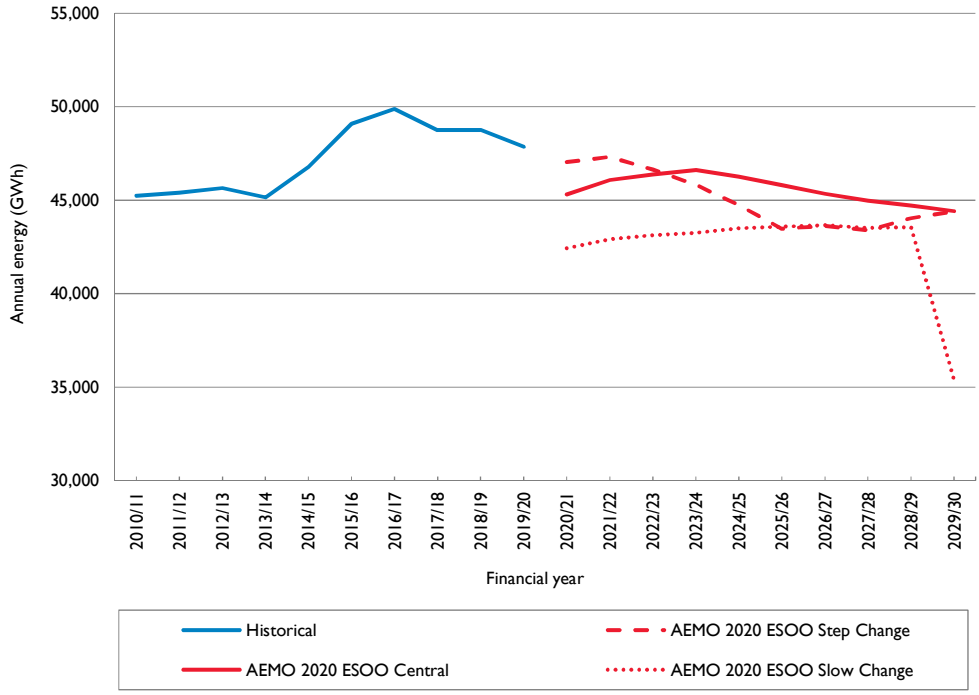
Figure 2.7 Historical and forecast transmission delivered energy



The native energy forecasts are presented in Table 2.5.

Table 2.5 Forecast annual native energy (GWh)

Financial Year	Slow Change	Central	Step Change
2020/21	46,266	49,140	50,871
2021/22	46,867	50,030	51,267
2022/23	47,110	50,371	51,119
2023/24	47,224	50,577	50,909
2024/25	47,452	50,650	50,866
2025/26	47,563	50,657	50,742
2026/27	47,556	50,650	50,795
2027/28	47,506	50,772	50,856
2028/29	47,414	50,981	51,276
2029/30 (1)	39,297	51,172	51,824

Note:

(1) AEMO assumes the shutdown of a large industrial load in the Slow Change scenario in summer 2029/30.

2.3.4 Summer maximum demand forecast

Historical Queensland summer maximum demand measurements at time of native peak are presented in Table 2.6.

Table 2.6 Historical summer maximum demand (MW)

Summer	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus rooftop PV	Native corrected to 50% PoE
2010/11	8,826	8,299	8,895	8,374	8,020	7,797	8,152	8,152	8,187
2011/12	8,714	8,236	8,769	8,319	7,983	7,723	8,059	8,059	8,101
2012/13	8,479	8,008	8,691	8,245	7,920	7,588	7,913	7,913	7,952
2013/14	8,374	7,947	8,531	8,114	7,780	7,498	7,831	7,831	7,731
2014/15	8,831	8,398	9,000	8,589	8,311	8,019	8,326	8,512	8,084
2015/16	9,154	8,668	9,272	8,848	8,580	8,271	8,539	8,783	8,369
2016/17	9,412	8,886	9,584	9,062	8,698	8,392	8,756	8,899	8,666
2017/18	9,796	9,262	10,010	9,480	9,133	8,842	9,189	9,594	8,924
2018/19	10,044	9,450	10,216	9,626	9,240	8,951	9,415	9,685	8,930
2019/20	9,853	9,294	10,074	9,515	9,011	8,710	9,268	9,652	9,163

The summer transmission delivered maximum demand forecasts are presented in Table 2.7.

Table 2.7 Forecast summer transmission delivered maximum demand (MW)

Summer	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2020/21 (1)	7,139	7,438	7,765	8,018	8,357	8,738	8,305	8,668	9,044
2021/22 (2)	7,436	7,768	8,083	8,280	8,669	9,072	8,403	8,800	9,220
2022/23	7,629	7,935	8,292	8,384	8,756	9,183	8,454	8,819	9,271
2023/24	7,739	8,054	8,407	8,472	8,871	9,302	8,503	8,890	9,339
2024/25	7,797	8,107	8,445	8,540	8,940	9,339	8,616	8,976	9,403
2025/26	7,830	8,175	8,519	8,585	8,995	9,425	8,707	9,090	9,504
2026/27	7,841	8,193	8,546	8,619	9,036	9,444	8,829	9,197	9,604
2027/28	7,859	8,214	8,562	8,651	9,105	9,522	8,957	9,334	9,725
2028/29	7,880	8,249	8,596	8,732	9,186	9,574	9,137	9,490	9,929
2029/30 (3)	6,987	7,311	7,700	8,803	9,236	9,669	9,351	9,688	10,117

Notes:

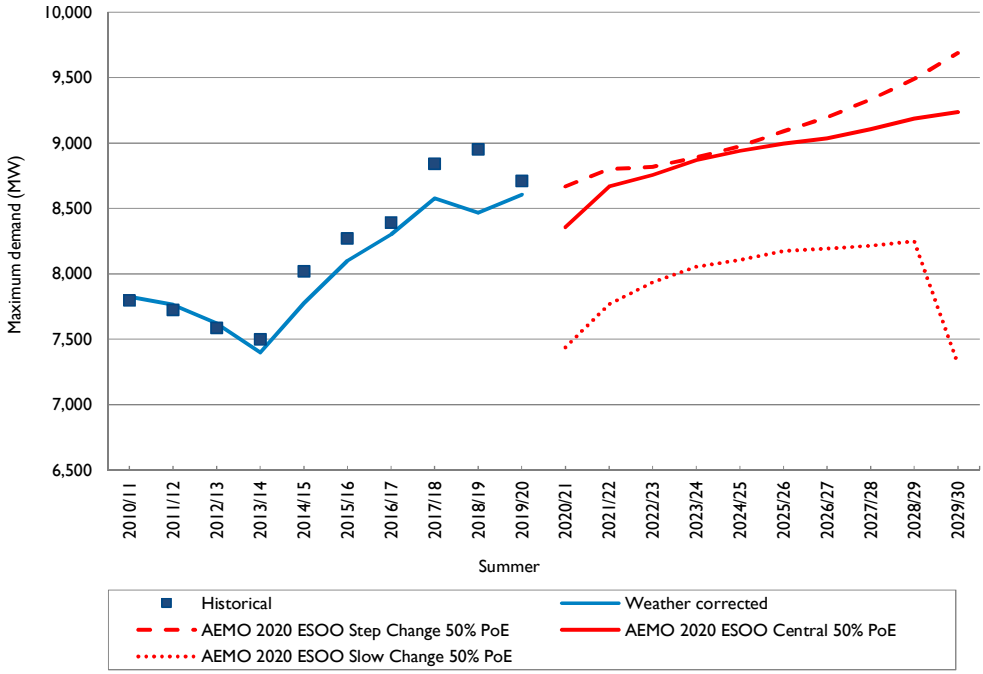
(1) Reduction in consumption in the Central and Slow Change scenarios due to forecast COVID-19 impacts in 2020/21.

(2) Reduction in consumption in the Slow Change scenario due to forecast COVID-19 impacts in 2021/22.

(3) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

The summer historical transmission delivered maximum demands from Table 2.6 and the forecast 50% PoE summer transmission delivered maximum demands for the Slow Change, Central, and Step Change scenarios from Table 2.7 are shown in Figure 2.8.

Figure 2.8 Historical and forecast transmission delivered summer maximum demand



The summer native maximum demand forecasts are presented in Table 2.8.

Table 2.8 Forecast summer native maximum demand (MW)

Summer	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2020/21 (1)	7,824	8,123	8,450	8,703	9,042	9,423	8,990	9,353	9,729
2021/22 (2)	8,121	8,453	8,768	8,965	9,354	9,758	9,092	9,489	9,909
2022/23	8,315	8,620	8,978	9,069	9,441	9,868	9,146	9,511	9,963
2023/24	8,424	8,739	9,093	9,157	9,556	9,987	9,200	9,588	10,037
2024/25	8,482	8,792	9,130	9,225	9,626	10,024	9,318	9,678	10,105
2025/26	8,515	8,860	9,204	9,272	9,683	10,113	9,413	9,796	10,210
2026/27	8,526	8,879	9,231	9,309	9,727	10,134	9,535	9,903	10,310
2027/28	8,544	8,899	9,247	9,342	9,796	10,212	9,663	10,040	10,431
2028/29	8,565	8,934	9,281	9,427	9,882	10,270	9,843	10,196	10,635
2029/30 (3)	7,672	7,996	8,385	9,501	9,934	10,366	10,056	10,394	10,823

Notes:

(1) Reduction in consumption in the Central and Slow Change scenarios due to forecast COVID-19 impacts in 2020/21.

(2) Reduction in consumption in the Slow Change scenario due to forecast COVID-19 impacts in 2021/22.

(3) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

2.3.5 Winter maximum demand forecast

Historical Queensland winter maximum demand measurements at time of native peak are presented in Table 2.9. As winter demand normally peaks after sunset, solar PV has no impact on winter maximum demand.

Table 2.9 Historical winter maximum demand (MW)

Winter	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus rooftop PV	Native corrected to 50% PoE
2011	7,632	7,207	7,816	7,400	7,093	6,878	7,185	7,185	6,998
2012	7,469	7,081	7,520	7,128	6,955	6,761	6,934	6,934	6,908
2013	7,173	6,753	7,345	6,947	6,699	6,521	6,769	6,769	6,983
2014	7,307	6,895	7,470	7,077	6,854	6,647	6,881	6,881	6,999
2015	7,822	7,369	8,027	7,620	7,334	7,126	7,411	7,412	7,301
2016	8,017	7,513	8,188	7,686	7,439	7,207	7,454	7,454	7,479
2017	7,723	7,221	7,874	7,374	7,111	6,894	7,157	7,157	7,433
2018	8,172	7,623	8,295	7,750	7,554	7,383	7,633	7,633	7,904
2019	8,073	7,559	8,286	7,778	7,416	7,208	7,624	7,624	7,617
2020	8,143	7,671	8,320	7,885	7,673	7,441	7,708	7,708	(1)

Note:

(1) The winter 2020 weather corrected demand was not available at time of publication.

The winter transmission delivered maximum demand forecasts are presented in Table 2.10.

Table 2.10 Forecast winter transmission delivered maximum demand (MW)

Winter	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2021 (1)	6,237	6,475	6,776	7,012	7,265	7,576	7,215	7,473	7,793
2022	6,535	6,772	7,086	7,227	7,489	7,806	7,347	7,618	7,964
2023	6,683	6,930	7,237	7,316	7,590	7,917	7,401	7,683	8,017
2024	6,729	6,971	7,298	7,384	7,661	8,016	7,463	7,757	8,131
2025	6,780	7,026	7,333	7,431	7,709	8,053	7,573	7,854	8,234
2026	6,814	7,065	7,361	7,491	7,762	8,098	7,697	7,978	8,357
2027	6,831	7,078	7,380	7,526	7,808	8,145	7,830	8,119	8,487
2028	6,838	7,106	7,438	7,587	7,882	8,271	7,972	8,278	8,713
2029	6,857	7,105	7,425	7,652	7,943	8,303	8,162	8,463	8,859
2030 (2)	5,965	6,214	6,530	7,715	8,010	8,391	8,383	8,689	9,130

Notes:

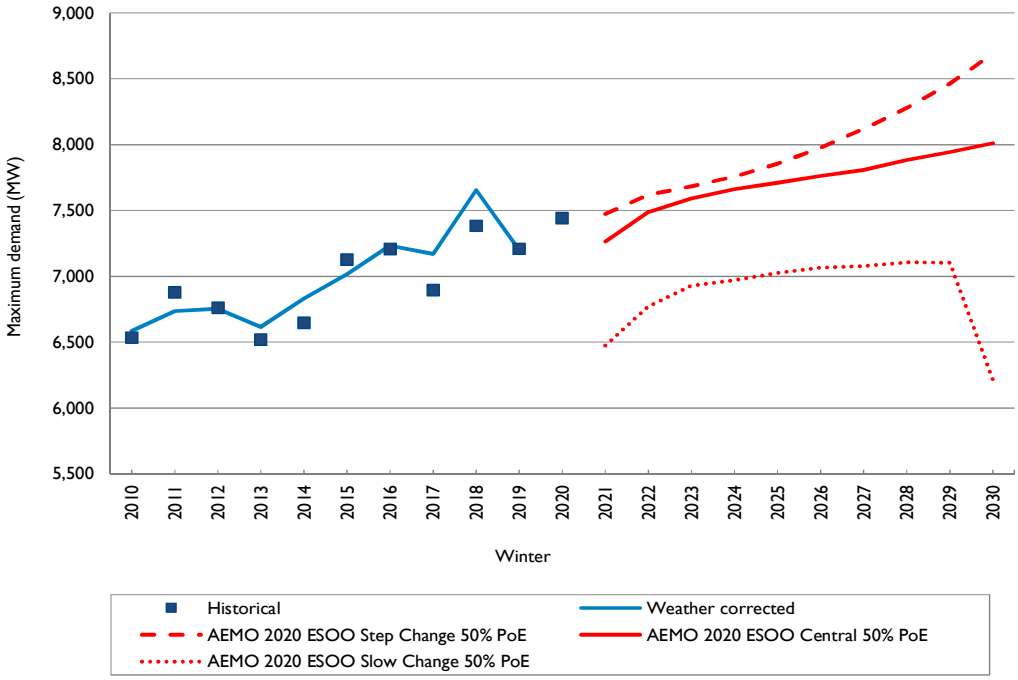
(1) Reduction in consumption in the Slow Change scenarios due to forecast COVID-19 impacts in 2021.

(2) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

2 Energy and demand projections

The winter historical transmission delivered maximum demands from Table 2.9 and the forecast 50% PoE summer transmission delivered maximum demands for the Slow Change, Central, and Step Change scenarios from Table 2.10 are shown in Figure 2.9.

Figure 2.9 Historical and forecast winter transmission delivered maximum demand



The winter native maximum demand forecasts are presented in Table 2.11.

Table 2.11 Forecast winter native maximum demand (MW)

Winter	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2021 (1)	6,706	6,944	7,245	7,481	7,734	8,044	7,683	7,942	8,261
2022	7,003	7,241	7,554	7,695	7,957	8,275	7,823	8,094	8,441
2023	7,152	7,399	7,706	7,784	8,059	8,386	7,884	8,166	8,501
2024	7,198	7,440	7,766	7,852	8,130	8,484	7,956	8,251	8,624
2025	7,249	7,495	7,802	7,900	8,179	8,523	8,075	8,356	8,736
2026	7,283	7,533	7,829	7,965	8,235	8,571	8,206	8,487	8,867
2027	7,300	7,547	7,848	8,005	8,286	8,624	8,340	8,629	8,997
2028	7,307	7,574	7,907	8,065	8,361	8,750	8,483	8,788	9,223
2029	7,325	7,573	7,893	8,142	8,433	8,792	8,672	8,974	9,370
2030 (2)	6,434	6,683	6,999	8,209	8,503	8,884	8,893	9,199	9,640

Notes:

(1) Reduction in consumption in the Slow Change scenarios due to forecast COVID-19 impacts in 2021.

(2) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

2.3.6 Summer minimum demand forecast

Historical Queensland summer minimum demand measurement at time of delivered minimum are presented in Table 2.12.

Table 2.12 Historical summer minimum demand (MW)

Summer	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus rooftop PV
2010/11	4,055	3,684	4,155	3,784	3,603	3,476	3,657	3,657
2011/12	4,041	4,285	4,127	4,371	4,204	3,506	3,673	3,673
2012/13	4,095	4,408	4,220	4,521	4,397	3,610	3,734	3,734
2013/14	4,176	4,400	4,305	4,540	4,411	3,702	3,831	3,831
2014/15	4,313	3,993	4,523	4,236	4,027	3,914	4,123	4,123
2015/16	4,652	4,234	4,772	4,354	4,234	4,109	4,228	4,228
2016/17	4,944	4,470	5,101	4,627	4,471	4,336	4,493	4,493
2017/18	4,773	4,313	4,949	4,489	4,314	4,190	4,366	4,366
2018/19	4,847	4,294	5,033	4,485	4,097	3,984	4,372	5,980
2019/20	4,530	4,039	4,727	4,270	3,855	3,688	4,103	5,453

The summer transmission delivered minimum demand forecasts are presented in Table 2.13.

Table 2.13 Forecast summer transmission delivered minimum demand (MW)

Summer	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2020/21 (1)	3,086	3,207	3,320	3,536	3,662	3,768	3,678	3,793	3,906
2021/22 (2)	3,076	3,204	3,324	3,495	3,636	3,753	3,151	3,314	3,446
2022/23	2,997	3,134	3,258	3,398	3,541	3,671	2,702	2,863	3,017
2023/24	2,926	3,055	3,184	3,309	3,447	3,589	2,076	2,249	2,408
2024/25	2,900	3,037	3,165	2,938	3,092	3,234	1,107	1,303	1,477
2025/26	2,882	3,029	3,162	2,730	2,888	3,038	344	553	732
2026/27	2,861	3,010	3,148	2,319	2,485	2,643	178	388	583
2027/28	2,810	2,975	3,121	1,975	2,151	2,314	-285	-65	150
2028/29	2,717	2,885	3,035	1,504	1,695	1,873	-496	-259	-41
2029/30 (3)	1,774	1,930	2,073	1,260	1,436	1,612	-643	-409	-185

Notes:

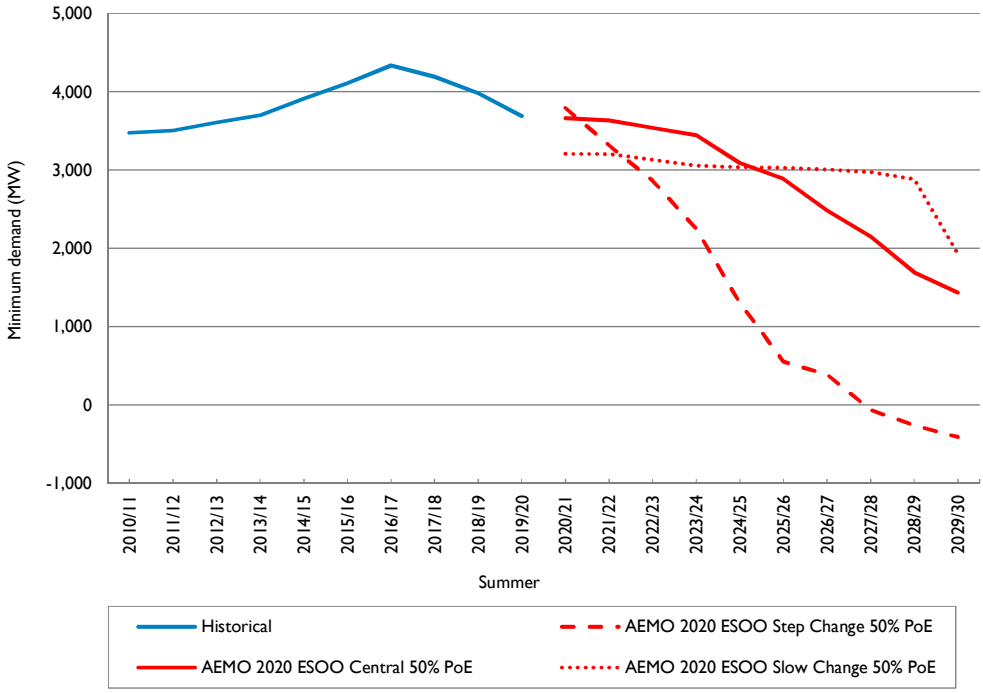
(1) Reduction in consumption in the Central and Slow Change scenarios due to forecast COVID-19 impacts in 2020/21.

(2) Reduction in consumption in the Slow Change scenario due to forecast COVID-19 impacts in 2021/22.

(3) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

The summer historical transmission delivered maximum demands from Table 2.12 and the forecast 50% PoE summer transmission delivered minimum demands for the Slow Change, Central, and Step Change scenarios from Table 2.13 are shown in Figure 2.10.

Figure 2.10 Historical and forecast transmission delivered summer minimum demand



The summer native minimum demand forecasts are presented in Table 2.14.

Table 2.14 Forecast summer native minimum demand (MW)

Summer	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2020/21 (1)	3,892	4,013	4,127	4,342	4,468	4,574	4,484	4,600	4,712
2021/22 (2)	3,882	4,010	4,130	4,301	4,443	4,559	4,097	4,261	4,392
2022/23	3,803	3,940	4,064	4,204	4,347	4,478	3,768	3,929	4,083
2023/24	3,732	3,861	3,990	4,115	4,253	4,395	3,327	3,501	3,659
2024/25	3,706	3,843	3,972	3,885	4,039	4,181	2,717	2,913	3,087
2025/26	3,688	3,835	3,968	3,746	3,905	4,055	2,220	2,429	2,608
2026/27	3,667	3,817	3,954	3,517	3,683	3,841	2,063	2,273	2,467
2027/28	3,616	3,781	3,927	3,321	3,497	3,660	1,720	1,939	2,155
2028/29	3,524	3,691	3,842	3,040	3,232	3,409	1,509	1,746	1,964
2029/30 (3)	2,580	2,736	2,879	2,904	3,080	3,257	1,362	1,596	1,820

Notes:

(1) Reduction in consumption in the Central and Slow Change scenarios due to forecast COVID-19 impacts in 2020/21.

(2) Reduction in consumption in the Slow Change scenario due to forecast COVID-19 impacts in 2021/22.

(3) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

2.3.7 Winter minimum demand forecast

Historical Queensland winter minimum demands at time of delivered minimum are presented in Table 2.15.

Table 2.15 Historical winter minimum demand (MW)

Winter	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus rooftop PV
2011	4,334	3,959	4,442	4,066	3,815	3,696	3,947	3,947
2012	4,158	4,642	4,254	4,729	4,550	3,629	3,808	3,808
2013	4,172	4,737	4,365	4,980	4,787	3,800	3,992	3,992
2014	4,073	3,780	4,274	4,022	3,768	3,664	3,918	3,918
2015	4,281	3,946	4,476	4,178	3,983	3,884	4,079	4,079
2016	4,958	4,500	5,123	4,670	4,505	4,382	4,547	4,547
2017	4,791	4,313	4,942	4,468	4,318	4,181	4,331	4,331
2018	4,647	4,165	4,868	4,421	4,143	4,008	4,286	5,492
2019	4,211	3,712	4,441	3,978	3,528	3,370	3,820	5,190
2020 (1)	3,897	3,493	4,094	3,728	3,097	3,003	3,634	5,841

Note:

(1) Winter 2020 based on preliminary metering data.

The winter transmission delivered minimum demand forecasts are presented in Table 2.16.

Table 2.16 Forecast winter transmission delivered minimum demand (MW)

Winter	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2021 (1)	2,726	2,874	3,001	3,073	3,221	3,353	3,094	3,248	3,380
2022	2,686	2,839	2,975	3,023	3,178	3,319	2,609	2,776	2,922
2023	2,644	2,792	2,923	2,939	3,106	3,245	2,176	2,345	2,489
2024	2,601	2,753	2,884	2,871	3,033	3,168	1,562	1,733	1,885
2025	2,569	2,727	2,858	2,499	2,668	2,809	569	745	911
2026	2,543	2,695	2,829	2,281	2,444	2,597	-220	-33	134
2027	2,497	2,651	2,788	1,845	2,014	2,163	-411	-228	-52
2028	2,444	2,603	2,737	1,504	1,668	1,817	-876	-701	-521
2029	2,388	2,551	2,695	1,078	1,252	1,414	-1,033	-841	-653
2030 (2)	1,482	1,641	1,784	818	988	1,147	-1,163	-961	-764

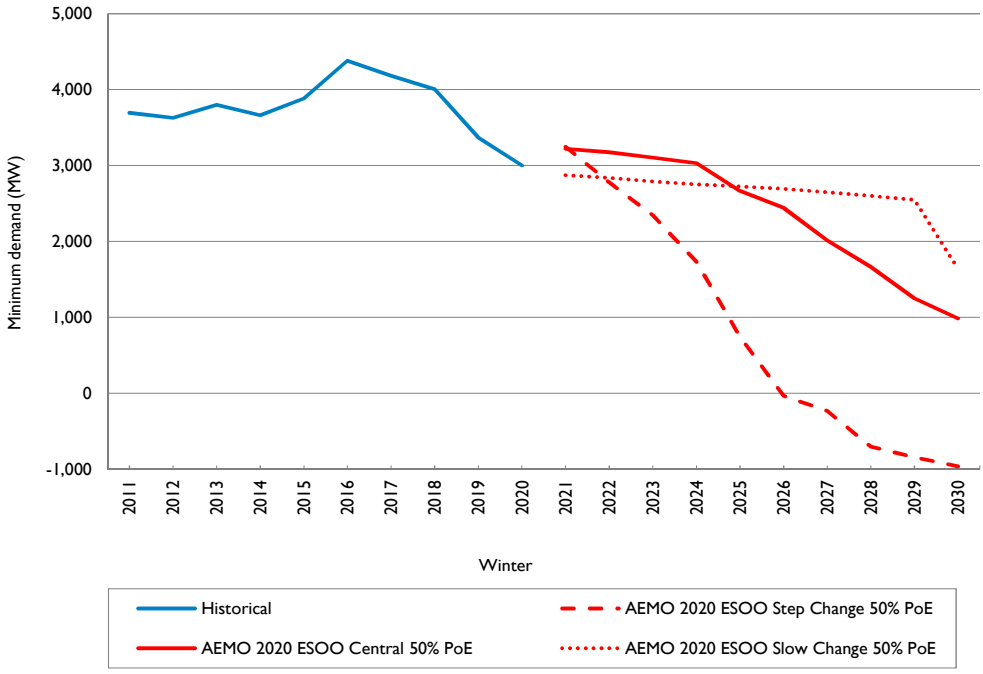
Notes:

(1) Reduction in consumption in the Slow Change scenarios due to forecast COVID-19 impacts in 2021.

(2) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

The winter historical transmission delivered minimum demands from Table 2.15 and the forecast 50% PoE summer transmission delivered minimum demands for the Slow Change, Central, and Step Change scenarios from Table 2.16 are shown in Figure 2.11.

Figure 2.11 Historical and forecast winter transmission delivered minimum demand



The winter native minimum demand forecasts are presented in Table 2.17.

Table 2.17 Forecast winter native minimum demand (MW)

Winter	Slow Change			Central			Step Change		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2021 (1)	3,654	3,802	3,929	4,001	4,149	4,281	4,022	4,176	4,308
2022 (2)	3,614	3,767	3,903	3,951	4,106	4,247	3,678	3,845	3,991
2023	3,572	3,720	3,851	3,867	4,034	4,173	3,364	3,533	3,676
2024	3,529	3,681	3,812	3,799	3,961	4,096	2,935	3,105	3,258
2025	3,497	3,655	3,785	3,568	3,736	3,878	2,301	2,477	2,643
2026	3,471	3,623	3,757	3,419	3,582	3,735	1,778	1,965	2,132
2027	3,425	3,579	3,716	3,164	3,334	3,482	1,596	1,778	1,954
2028	3,372	3,531	3,665	2,972	3,136	3,285	1,250	1,426	1,606
2029	3,316	3,479	3,623	2,736	2,910	3,072	1,093	1,285	1,473
2030 (3)	2,410	2,569	2,712	2,584	2,754	2,913	963	1,165	1,363

Notes:

(1) Reduction in consumption in the Slow Change scenarios due to forecast COVID-19 impacts in 2021.

(2) Shutdown of a large industrial load is assumed in the Slow Change scenario in summer 2029/30.

2.4 Zone forecasts

AEMO's 2020 ESOO provides forecasts for Queensland as a single region. Forecasts from DNSPs and directly connected customers at each transmission connection supply point have been used to apportion the demand and energy forecasts into the 11 zones referenced throughout this TAPR. The 11 geographical zones are defined in Table C.1 and illustrated in Figure C.1 in Appendix C. In the 2014 TAPR Powerlink split the South West zone into Surat and South West zones. Each zone normally experiences its own maximum demand, which is usually greater than that shown in tables 2.21 to 2.24.

Table 2.18 shows the average ratios of zone maximum transmission delivered demand to zone transmission delivered demand at the time of Queensland region maximum delivered demand. These values can be used to multiply demands in tables 2.21 and 2.23 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 2.18 Average ratios of zone maximum delivered demand to zone delivered demand at time of Queensland region maximum delivered demand

Zone	Winter	Summer
Far North	1.11	1.19
Ross	1.34	1.65
North	1.10	1.16
Central West	1.10	1.25
Gladstone	1.03	1.05
Wide Bay	1.03	1.11
Surat	1.14	1.15
Bulli	1.05	1.07
South West	1.04	1.09
Moreton	1.03	1.01
Gold Coast	1.03	1.01

Tables 2.19 and 2.20 show the forecast of transmission delivered energy and native energy for the Central scenario for each of the 11 zones in the Queensland region.

Table 2.19 Annual transmission delivered energy by zone (GWh)

Financial Year	Far North	Ross	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
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	2,723	2,611	3,463	10,286	1,323		105	1,196	18,629	3,266	45,394
2012/13	1,722	2,693	2,732	3,414	10,507	1,267		103	1,746	18,232	3,235	45,651
2013/14	1,658	2,826	2,828	3,564	10,293	1,321	338	146	1,304	17,782	3,085	45,145
2014/15	1,697	2,977	2,884	3,414	10,660	1,266	821	647	1,224	18,049	3,141	46,780
2015/16	1,724	2,944	2,876	3,327	10,721	1,272	2,633	1,290	1,224	17,944	3,139	49,094
2016/17	1,704	2,682	2,661	3,098	10,196	1,305	4,154	1,524	1,308	18,103	3,145	49,880
2017/18	1,657	2,645	2,650	3,027	9,362	1,238	4,383	1,497	1,315	17,873	3,092	48,739
2018/19	1,648	2,338	2,621	2,996	9,349	1,198	4,805	1,519	1,376	17,849	3,065	48,764
2019/20	1,594	2,466	2,495	2,859	9,303	1,031	5,025	1,580	1,141	17,395	2,971	47,860
Forecasts												
2020/21	1,550	2,036	2,449	2,462	9,365	864	5,175	1,623	663	16,325	2,791	45,303
2021/22	1,568	2,188	2,560	2,571	9,415	875	5,217	1,636	664	16,545	2,839	46,078
2022/23	1,587	2,204	2,575	2,598	9,426	886	5,238	1,642	670	16,684	2,872	46,382
2023/24	1,602	2,219	2,594	2,621	9,432	896	5,244	1,644	672	16,789	2,898	46,611
2024/25	1,571	2,161	2,530	2,555	9,438	872	5,145	1,615	639	16,827	2,905	46,258
2025/26	1,532	2,096	2,455	2,476	9,436	846	5,031	1,582	605	16,843	2,909	45,811
2026/27	1,493	2,025	2,381	2,395	9,435	818	4,885	1,539	568	16,881	2,915	45,335
2027/28	1,455	1,956	2,303	2,314	9,434	789	4,770	1,505	528	16,982	2,935	44,971
2028/29	1,419	1,886	2,230	2,241	9,434	756	4,656	1,472	486	17,158	2,969	44,707
2029/30	1,378	1,817	2,150	2,156	9,433	729	4,517	1,431	449	17,348	3,005	44,413

Table 2.20 Annual native energy by zone (GWh)

Financial Year	Far North	Ross	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
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	3,217	2,901	3,710	10,286	1,348		105	2,014	18,695	3,266	47,334
2012/13	1,722	3,080	3,064	3,767	10,507	1,292		103	1,988	18,332	3,235	47,090
2013/14	1,658	3,067	3,154	3,944	10,293	1,339	402	146	1,536	17,879	3,085	46,503
2014/15	1,697	3,163	3,434	3,841	10,660	1,285	1,022	647	1,468	18,137	3,141	48,495
2015/16	1,724	3,141	3,444	3,767	10,721	1,293	2,739	1,290	1,475	18,011	3,139	50,744
2016/17	1,704	2,999	3,320	3,541	10,196	1,329	4,194	1,524	1,549	18,134	3,145	51,635
2017/18	1,667	2,935	3,296	3,493	9,362	1,259	4,853	1,497	1,527	17,944	3,092	50,925
2018/19	1,670	2,894	3,211	3,608	9,349	1,266	5,163	1,519	1,550	17,945	3,065	51,240
2019/20	1,614	2,899	3,159	3,656	9,303	1,282	5,395	1,580	1,479	17,466	2,971	50,804
Forecasts												
2020/21	1,567	2,676	3,134	3,367	9,365	1,197	5,510	1,623	1,505	16,405	2,791	49,140
2021/22	1,585	2,937	3,245	3,478	9,415	1,209	5,553	1,636	1,509	16,624	2,839	50,030
2022/23	1,607	2,958	3,266	3,511	9,426	1,223	5,584	1,645	1,516	16,763	2,872	50,371
2023/24	1,619	2,971	3,281	3,530	9,432	1,231	5,582	1,645	1,519	16,869	2,898	50,577
2024/25	1,621	2,971	3,282	3,534	9,438	1,232	5,596	1,649	1,516	16,906	2,905	50,650
2025/26	1,617	2,968	3,277	3,529	9,436	1,231	5,603	1,651	1,512	16,924	2,909	50,657
2026/27	1,614	2,965	3,276	3,526	9,435	1,230	5,579	1,644	1,508	16,958	2,915	50,650
2027/28	1,612	2,963	3,271	3,524	9,434	1,231	5,590	1,648	1,505	17,059	2,935	50,772
2028/29	1,611	2,958	3,271	3,529	9,434	1,224	5,601	1,652	1,496	17,236	2,969	50,981
2029/30	1,607	2,956	3,266	3,523	9,433	1,225	5,589	1,648	1,493	17,427	3,005	51,172

2 Energy and demand projections

Tables 2.21 and 2.22 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 central scenario and average summer weather.

Table 2.21 State summer maximum transmission delivered demand by zone (MW)

Summer	Far North	Ross	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2010/11	306	339	371	469	1,172	274		18	175	3,990	683	7,797
2011/12	296	376	405	525	1,191	249		18	217	3,788	658	7,723
2012/13	277	303	384	536	1,213	232		14	241	3,754	634	7,588
2013/14	271	318	353	493	1,147	260	30	21	291	3,711	603	7,498
2014/15	278	381	399	466	1,254	263	130	81	227	3,848	692	8,019
2015/16	308	392	412	443	1,189	214	313	155	231	3,953	661	8,271
2016/17	269	291	392	476	1,088	276	447	175	309	3,957	712	8,392
2017/18	304	376	414	464	1,102	278	557	183	301	4,145	718	8,842
2018/19	338	319	389	445	1,104	289	518	191	313	4,314	731	8,951
2019/20	287	293	372	334	1,084	234	623	191	273	4,299	720	8,710
Forecasts												
2020/21	278	265	433	441	1,074	242	494	198	216	4,035	681	8,357
2021/22	286	293	466	461	1,076	256	501	200	225	4,204	701	8,669
2022/23	288	285	484	463	1,076	264	504	201	227	4,255	709	8,756
2023/24	293	291	491	470	1,078	268	505	201	232	4,325	717	8,871
2024/25	296	295	495	474	1,078	272	507	202	235	4,363	723	8,940
2025/26	298	298	498	480	1,079	275	508	202	238	4,392	727	8,995
2026/27	301	302	500	486	1,079	278	505	200	241	4,415	729	9,036
2027/28	303	305	502	487	1,080	281	506	201	243	4,462	735	9,105
2028/29	306	309	505	490	1,080	285	507	201	247	4,513	743	9,186
2029/30	309	312	505	490	1,080	288	505	200	250	4,548	749	9,236

Table 2.22 State summer maximum native demand by zone (MW)

Summer	Far North	Ross	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2010/11	306	412	408	551	1,172	274		18	337	3,991	683	8,152
2011/12	296	449	434	598	1,191	249		18	378	3,788	658	8,059
2012/13	277	417	422	568	1,213	241		14	328	3,799	634	7,913
2013/14	271	423	386	561	1,147	260	88	21	316	3,755	603	7,831
2014/15	278	399	479	548	1,254	263	189	81	254	3,889	692	8,326
2015/16	308	423	491	519	1,189	214	370	155	257	3,952	661	8,539
2016/17	269	364	512	559	1,088	276	498	175	329	3,974	712	8,756
2017/18	310	480	486	508	1,102	278	617	183	328	4,179	718	9,189
2018/19	338	456	432	562	1,104	293	630	191	340	4,337	731	9,415
2019/20	287	451	441	530	1,084	277	660	191	305	4,322	720	9,268
Forecasts												
2020/21	280	457	509	574	1,074	266	617	198	327	4,059	681	9,042
2021/22	288	484	543	594	1,076	281	624	200	337	4,226	701	9,354
2022/23	290	476	561	597	1,076	288	628	201	338	4,277	709	9,441
2023/24	295	482	568	604	1,078	293	628	201	343	4,347	717	9,556
2024/25	298	486	571	608	1,078	296	631	202	346	4,387	723	9,626
2025/26	300	490	575	614	1,079	299	632	202	349	4,416	727	9,683
2026/27	303	494	578	620	1,079	303	630	201	353	4,437	729	9,727
2027/28	305	497	579	622	1,080	306	631	201	355	4,485	735	9,796
2028/29	309	502	583	625	1,080	310	633	202	359	4,536	743	9,882
2029/30	311	505	583	625	1,080	314	631	201	362	4,573	749	9,934

2 Energy and demand projections

Tables 2.23 and 2.24 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 central scenario and average winter weather.

Table 2.23 State winter maximum transmission delivered demand by zone (MW)

Winter	Far North	Ross	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2011	230	216	317	432	1,155	222		22	376	3,303	605	6,878
2012	214	212	326	426	1,201	215		20	346	3,207	594	6,761
2013	195	249	348	418	1,200	190	23	17	263	3,039	579	6,521
2014	226	346	359	463	1,200	204	16	51	257	2,974	551	6,647
2015	192	289	332	429	1,249	203	172	137	258	3,268	597	7,126
2016	216	278	341	451	1,229	193	467	193	280	3,009	550	7,207
2017	218	290	343	366	1,070	220	520	182	247	2,912	526	6,894
2018	242	366	336	440	1,091	235	527	186	336	3,084	540	7,383
2019	229	207	321	433	1,066	241	502	207	316	3,154	532	7,208
2020	227	306	327	449	1,104	246	531	191	313	3,232	515	7,441
Forecasts												
2021	222	276	375	459	1,108	224	433	216	280	3,138	534	7,265
2022	227	298	405	474	1,109	234	439	218	287	3,247	551	7,489
2023	230	288	425	478	1,110	241	442	219	291	3,307	559	7,590
2024	233	292	430	483	1,111	244	443	219	294	3,346	566	7,661
2025	233	292	429	482	1,111	244	444	219	294	3,389	572	7,709
2026	234	293	429	485	1,111	245	444	219	295	3,429	578	7,762
2027	234	293	428	486	1,110	246	441	218	295	3,472	585	7,808
2028	234	293	425	483	1,110	247	441	218	295	3,539	597	7,882
2029	234	292	422	479	1,108	247	441	218	294	3,601	607	7,943
2030	235	294	421	477	1,108	249	441	218	296	3,657	614	8,010

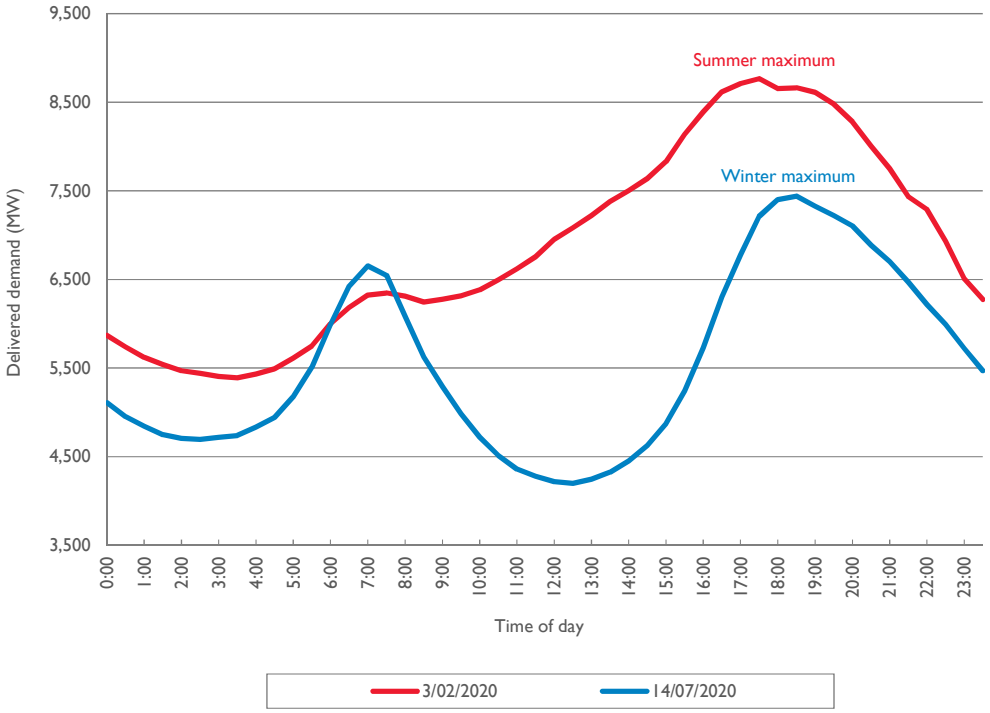
Table 2.24 State winter maximum native demand by zone (MW)

Winter	Far North	Ross	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals												
2011	230	339	360	520	1,155	222		22	428	3,304	605	7,185
2012	214	289	360	460	1,201	215		20	375	3,206	594	6,934
2013	195	291	374	499	1,200	195	89	17	290	3,040	579	6,769
2014	226	369	420	509	1,200	204	90	51	286	2,975	551	6,881
2015	192	334	404	518	1,249	203	208	137	288	3,281	597	7,411
2016	216	358	419	504	1,229	200	467	193	310	3,008	550	7,454
2017	218	367	416	415	1,070	220	554	182	276	2,913	526	7,157
2018	242	360	410	494	1,091	235	654	186	336	3,085	540	7,633
2019	230	307	408	483	1,066	241	628	207	346	3,176	532	7,624
2020	227	329	406	492	1,104	247	624	191	342	3,231	515	7,708
Forecasts												
2021	222	378	450	511	1,108	226	642	216	304	3,143	534	7,734
2022	227	399	480	526	1,109	237	648	218	311	3,251	551	7,957
2023	230	390	500	531	1,110	243	651	219	314	3,312	559	8,059
2024	233	393	505	536	1,111	246	651	219	318	3,352	566	8,130
2025	233	394	504	535	1,111	247	653	219	318	3,392	572	8,178
2026	234	395	504	538	1,111	248	654	219	319	3,433	578	8,233
2027	235	395	503	539	1,110	249	651	218	319	3,477	585	8,281
2028	235	396	501	536	1,110	250	651	219	319	3,542	597	8,356
2029	235	395	498	533	1,108	250	652	219	319	3,606	607	8,422
2030	236	397	498	532	1,108	253	653	219	321	3,659	615	8,491

2.5 Summer and winter minimum and maximum daily profiles

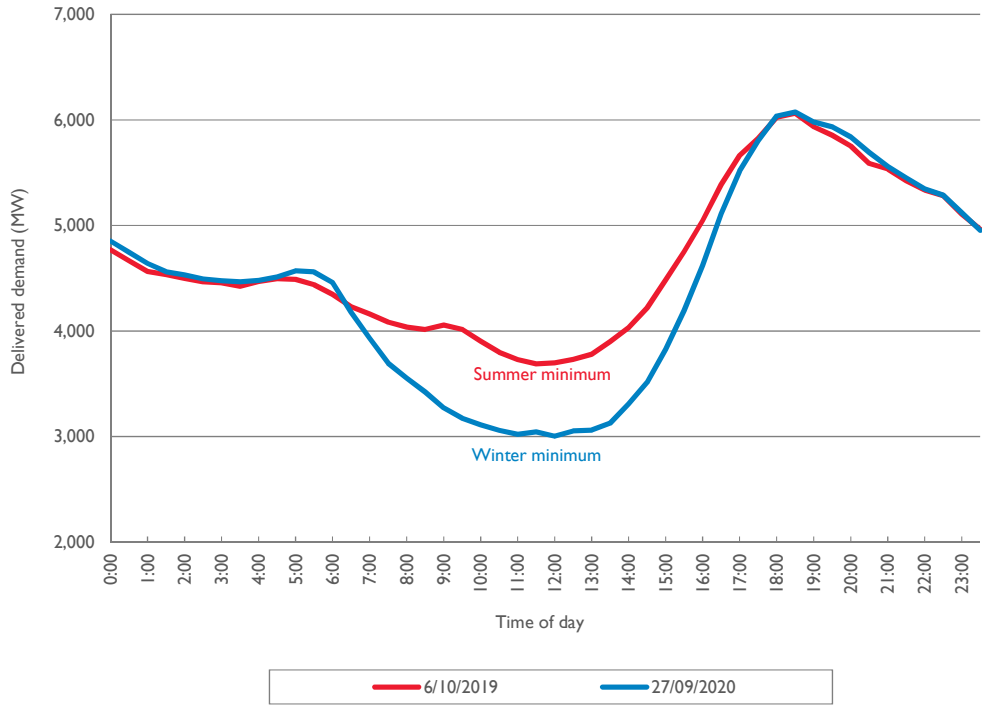
The daily load profiles (transmission delivered) for the Queensland region on the days of summer 2019/20 and winter 2020 native maximum demands are shown in Figure 2.12.

Figure 2.12 Daily load profile of summer 2019/20 and winter 2020 maximum transmission delivered demand days



The daily load profiles (transmission delivered) for the Queensland region on the days of summer 2019/20 and winter 2020 delivered minimum demands are shown in Figure 2.13.

Figure 2.13 Daily load profile of summer 2019/20 and winter 2020 minimum transmission delivered demand days (1)



Note:

(1) September 2020 trace based on preliminary metering data

2.6 Annual load duration curves

The annual historical normalised cumulative load duration curves for the Queensland region transmission delivered demand since 2015/16 is shown in Figure 2.14.

Figure 2.14 Historical normalised transmission delivered load duration curves