Energy and demand projections

02

02. Energy and demand projections

This chapter describes Queensland's historical energy and demand, provides forecast regional data disaggregated by zone, and explains the key drivers of demand and energy forecasts.

Key highlights

- Queensland's maximum transmission delivered demand for 2024/25 was 9,974 megawatts (MW) on Wednesday, 22 January 2025. This maximum demand occurred at 6.00pm and was 545MW higher than the previous record maximum delivered demand set in January 2024.
- Queensland set a new record minimum transmission delivered demand of 2,240MW on Sunday, 31 August 2025. This minimum demand occurred at 11.30am and was 298MW lower than the previous record minimum demand set in October 2024.
- The increasing adoption of rooftop solar photovoltaic (PV) and distribution-connected solar systems continues to reduce daytime electricity demand. However, the 2025 residential and commercial solar PV forecasts have been revised downward due to the inclusion of decommissioned rooftop solar systems in the forecast.
- The rising adoption of residential batteries has introduced new charging loads during traditionally low-demand periods. This change, coupled with a more moderate projection of solar PV uptake, has led Powerlink to forecast a slower decline in minimum demand compared to the previous year's forecast.
- The residential battery adoption rate is projected to nearly double compared to 2024 predictions, driven mainly by rapidly declining equipment costs and new government rebates. This increased uptake rate has boosted midday charging loads, helping to further stabilise declining minimum demand forecasts.
- While Powerlink's forecast for electric vehicle uptake remains largely consistent with the 2024 Transmission Annual Planning Report (TAPR), the future charging behaviour of electric vehicle owners is a key source of forecasting uncertainty. If charging is unmanaged, owners might charge during peak evening hours and add strain to the grid, whereas smart charging via time-of-use tariffs will move charging away from evening peaks.
- Powerlink has not included specific data centre projects into the demand forecast for Queensland at this time. Powerlink will continue to monitor developments and adjust future forecasts accordingly if significant interest for data centres in Queensland materialises.
- Based on Powerlink's Central scenario forecast, Queensland's:
  - transmission delivered maximum demand is expected to have steady growth with an average annual increase of 2.2% per annum over the next 10 years. This increase is mainly due to industries beginning to electrify and new anticipated loads.
  - transmission delivered minimum demand is expected to steadily decrease with an average annual decrease of 6.3% per annum over the next 10 years. This decrease is mainly due to the continued installation of residential rooftop solar PV systems.

2.1 Introduction

This chapter:

- explains key demand and energy terminology
- details Powerlink's forecast of energy and demand over the 10-year period
- includes historical energy and demand
- highlights some of the key drivers of forecasting demand
- provides seasonal demand forecasts and forecasts by zone[1].

Demand and energy forecast information is also available in the TAPR Portal.

1 As required by National Electricity Rules (NER), clauses 5.12.1(a) and (b)(1).

2.1.1 Forecasting demand and energy

Accurate demand and energy forecasting is a critical input for Powerlink to deliver safe, reliable and cost-effective transmission services. These forecasts underpin critical decisions on infrastructure investments and grid stability.

However, the rapidly evolving energy landscape introduces significant uncertainties that challenge the accuracy of the forecast. Uncertainties are driven by:

- variable load growth due to dynamic economic factors impacting industrial expansions in mining and manufacturing
- the pace of electrification, particularly in transport and industrial processes
- adoption of electric vehicles and uncertainties around charging behaviours
- uptake of behind the meter energy storage
- global commodity prices and policy shifts.

Adding to these challenges is the impact of Queensland's variable weather, which significantly influences electricity demand, particularly through air conditioning loads during extreme heatwaves or prolonged wet seasons. Climate projections also suggest increasing frequency and intensity of such events, disrupting historical weather-normalisation models and amplifying demand fluctuations.

These factors, combined with the intermittency of renewable generation, underscore the critical need for scenario-based and probabilistic forecasting methods that Powerlink has incorporated into the forecasting process.

2.2 Powerlink forecast tool

Powerlink has developed a transmission delivered demand and energy forecast tool. The tool enables Powerlink to produce sub-regional forecasts, and to forecast future load (new and/or as a result of electrification), in High, Central and Low scenario forecasts. Powerlink's forecast also includes sub-regional areas, otherwise known as TAPR zones, and provides greater granularity across the transmission network. The Powerlink forecast tool uses inputs from a variety of sources[2].

The Powerlink forecast process individually models a range of building blocks that impact electricity demand:

- native demand
- solar PV
- electric vehicles
- residential batteries
- block loads
- embedded generation.

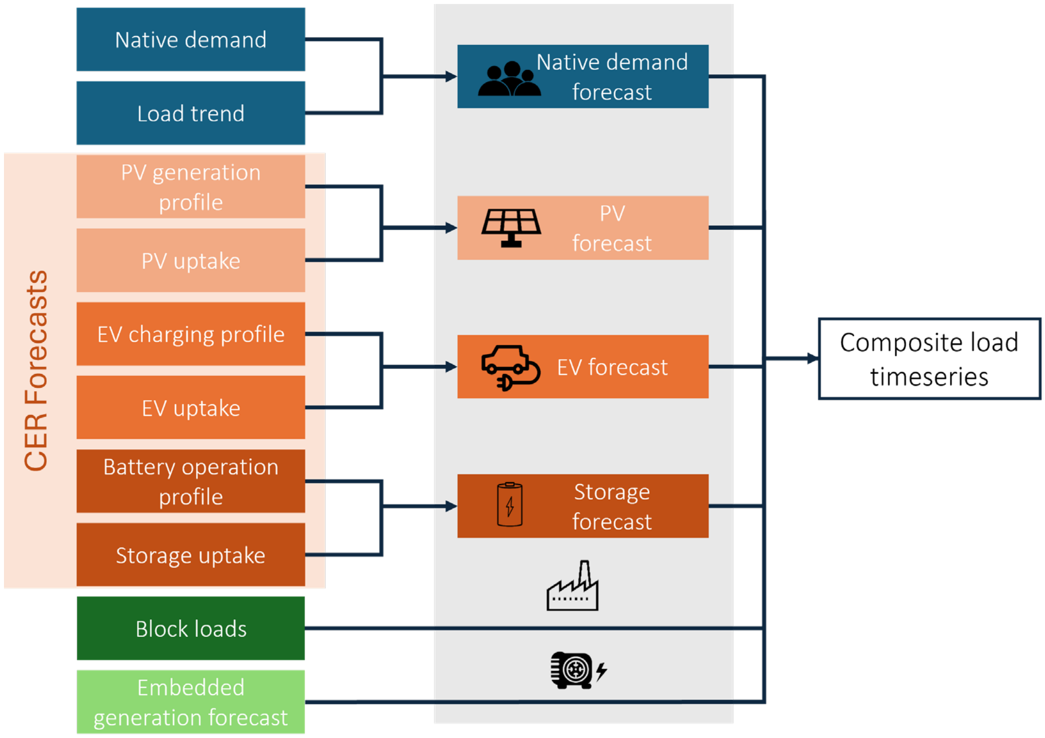
Powerlink endeavours to use the best available data sources. The forecast tool incorporates latest assumptions for macroeconomic factors and evolving trends in energy consumption and technology adoption, with sources including:

- Australian Bureau of Statistics (ABS)
- Queensland Government
- Australian Energy Market Operator (AEMO)
- Deloitte Access Economics economic forecasts
- CSIRO GenCost reports[3]
- data from Energy Queensland and Powerlink customers.

Figure 2.1 presents a schematic of the individual building blocks that make up the aggregate demand forecast. Independent sub-models are derived for the different consumer energy resource (CER) technologies, native demand trends, block loads and embedded generation. Composite load traces are constructed from the output of each sub-model.

2 Detail on the High, Central and Low scenarios, and the sources used for the forecasting tool, located in Appendix D.
3 CSIRO, GenCost 2024-25, final report, July 2025.

Figure 2.1 Powerlink's forecasting components



2.3 Forecasting assumptions and key drivers

2.3.1 Energy Queensland consultation

Energy Queensland provided summer and winter maximum demand forecasts for both the Energex and Ergon Energy distribution networks, over a 10-year outlook period. Powerlink produced transmission connection supply point forecasts that incorporate Energy Queensland's inputs. These connection supply point forecasts are presented in Appendix D.

Powerlink is proactively engaging with customers to understand their future load requirements. To enable efficient planning of the network, early customer engagement is required to allow transmission network services to be developed in ways that are valued by customers.

Powerlink and Energy Queensland jointly conduct the Queensland Household Energy Survey (QHES) to improve understanding of customer behaviours and intentions. More than 4,000 participants completed the survey in 2025[4].

2.3.2 Consumer Energy Resources

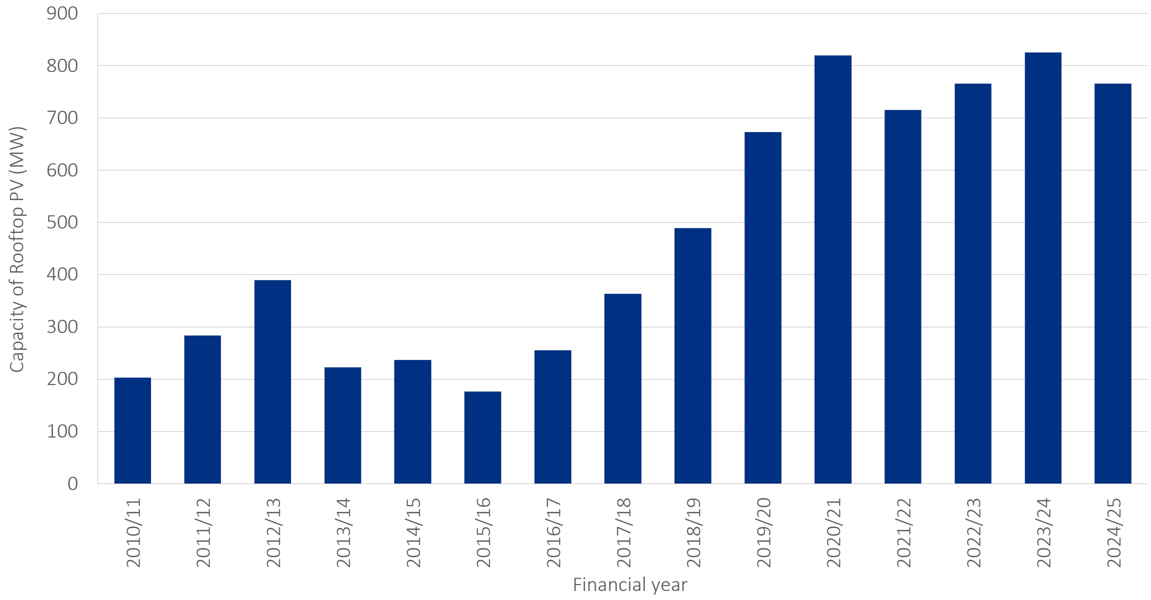
Powerlink works with Energy Queensland to derive forecasts for CER. Energy Queensland maintains a register of numbers, capacity and location of solar PV, electric vehicle and residential battery installations. This data provides insight into trends that can be projected forward. The uptake of rooftop solar PV systems is expected to continue with the 2025 QHES indicating that 24% of respondents intend to purchase new or upgrade existing rooftop solar PV systems in the next three years.

2.3.3 Rooftop solar PV

Rooftop solar PV installations continue to grow at a steady rate with a further 765MW being installed over the last 12 months. Expiry of the 44 cent per kilowatt hour feed-in-tariff on 1 July 2028 could see a spike in new installations as customers upgrade their solar PV systems.

4 Powerlink and Energy Queensland, Queensland Household Energy Survey 2025.

Figure 2.2 Net increase in capacity of Queensland rooftop solar PV (1) (2) (3)



Notes:

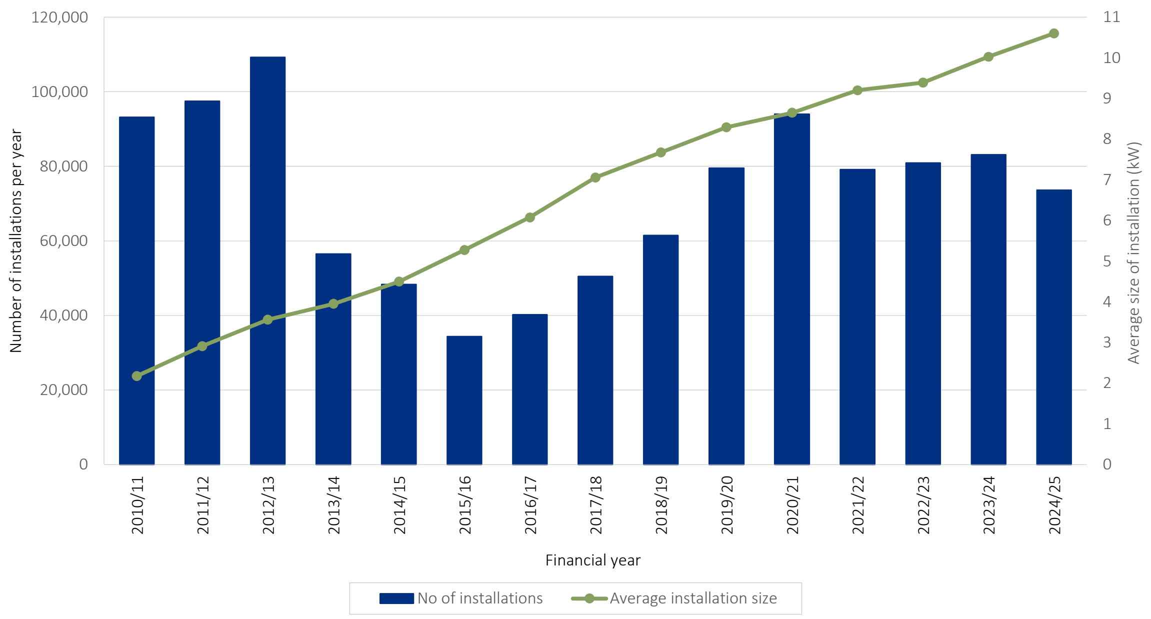
(1) Source: Clean Energy Regulator, Small-scale Installation Postcode Data.

(2) Registrations generally lag installations and hence data for FY2025 may be slightly understated.

(3) Installed panel capacity.

The historical solar PV register now includes the decommissioning of old rooftop solar PV systems, resulting in a revised solar PV forecast that has decreased compared to the 2024 forecast[5].

Figure 2.3 Annual installation rates and average sizes for Queensland rooftop solar PV (1) (2)



Notes:

(1) Source: Clean Energy Regulator, Small-scale Installation Postcode Data.

(2) Registrations generally lag installations and hence data for FY2025 may be slightly understated.

5 For example, if a customer installed a 5kW system in 2012 and added another 10kW to the system in 2020, previously the historical solar PV register recorded this as a single entry of 15kW installed in 2020. This had the effect of showing faster growth in solar PV than was actually the case. Correcting this error has led to the solar PV forecast being revised down.

2.3.4 Residential batteries

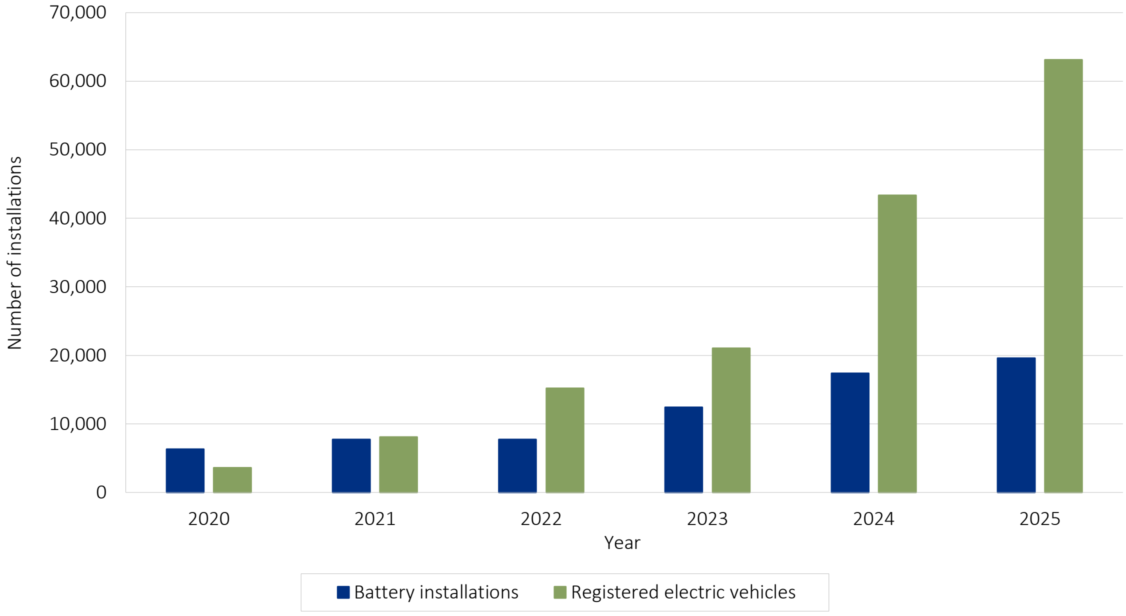
Residential batteries have seen steady growth over the last 12 months. As a result, faster uptake rates have been incorporated into the battery forecasts. Government subsidies are expected to increase the battery uptake across all scenarios. According to the recent QHES, 62% of households have either already installed batteries (21%), intend to purchase battery storage in the next 3 years (18%) or in the next 3-10 years (23%). The majority (52%) of households that have or intend to purchase a battery in the next three years indicated it is to store excess solar energy and use it later during peak times to reduce electricity use from the grid. Further, 37% of respondents have high interest in community batteries.

2.3.5 Electric vehicles

The forecast for electric vehicle uptake in 2025 remains largely consistent with the 2024 TAPR values. The 2024 TAPR estimated that 59,000 electric vehicles would be registered by 2025. Actual registrations as of January 2025 reached approximately 63,000, indicating a slightly higher adoption than expected, resulting in a slight uplift in the electric vehicle forecast for 2025.

The future charging behaviour of electric vehicle owners is a key source of uncertainty in forecasting assumptions. If charging is unmanaged, owners might charge during peak evening hours and add strain to the grid. Energy retailers' smart charging via time-of-use tariffs is already moving charging away from evening peaks. According to the recent QHES, of the households with electric vehicle ownership, 66% are open to the concept of their vehicle charging being managed by a third party.

Figure 2.4 Queensland residential battery uptake (1) and number of registered electric vehicles (2)



Notes:

(1) Source: Clean Energy Regulator, Small-scale Installation Postcode Data.

(2) Source: Queensland Government, Electric Vehicle Snapshot.

2.3.6 Hydrogen

Hydrogen load forecasts have undergone a notable reduction since 2024 TAPR, due to several hydrogen projects being withdrawn.

Powerlink's 2024 TAPR Central scenario included substantial hydrogen-related block loads, particularly in Gladstone and South Queensland. However, recent developments, such as the cancellation of large hydrogen projects and an electrolyser initiative in Gladstone, have led to the removal of these loads from the forecast.

This revised outlook is also captured in Table 2.1 compared to its counterpart in the 2024 TAPR.

While some upside risk remains, the current trajectory suggests a more cautious and measured integration of hydrogen into Queensland's energy landscape. This recalibration aligns with global trends, as highlighted in the International Energy Agency's Global Hydrogen Review 2024, which notes slower than anticipated progress in project implementation and demand creation worldwide.

2.3.7 Data centres

Powerlink acknowledges the substantial data centre expansions occurring in New South Wales and Victoria, driven by factors such as proximity to major population centres and established digital infrastructure. These trends have not translated to date in Queensland, as evidenced by the limited interest from data centre proponents in Queensland, with minimal enquiries or developments progressing beyond preliminary stages.

Further, AEMO has projected only a modest 90 gigawatt hours (GWh) of annual consumption for data centres in Queensland (from 2025/26 to 2054/55) in its 2025 Inputs, Assumptions and Scenarios forecast[6]. This reflects a conservative outlook, which is aligned with current market signals.

As a result, Powerlink has not included specific data centre projects into the current load forecast. Powerlink will continue to monitor emerging developments in this area and adjust future forecasts accordingly if significant interest materialises.

2.3.8 Electrification of load and decarbonisation

In 2023/24, approximately 21% of final energy consumption in Queensland was from electricity and this electrical energy was predominantly supplied from the interconnected power system[7]. The majority (79%) of energy consumption in Queensland has historically been supplied by the combustion of fossil fuels used in various sectors of the economy such as transport, agriculture, mining and manufacturing. The drivers for electrification of these sectors largely relate to the need to reduce carbon emissions for a variety of reasons including environmental, community and corporate expectations or the international treatment of exports with implicit emissions. Electrification of this load is likely to require a significant investment in the transmission and distribution networks and in new generation.

The growth in grid-supplied electricity resulting from electrification will, to some extent, be offset by efficiencies. For example:

- electric vehicles are more efficient than petrol cars, and
- behind the meter generation at both the commercial and domestic levels is a more efficient way to supply a load as losses are reduced.

However, the geospatial distribution of these two effects is not expected to be uniform. There may be areas where net demand for grid-supplied electricity significantly increases, and other areas where it decreases.

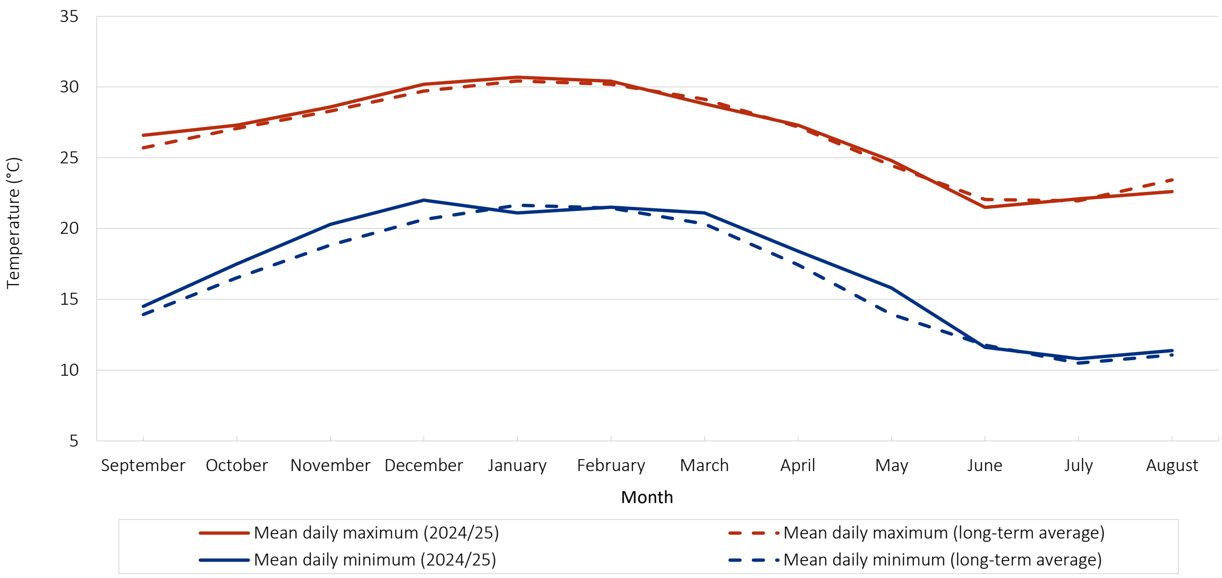
Powerlink is committed to developing an understanding of the future impacts of emerging technologies and electrification, and to working with our customers and AEMO so that these are accounted for geospatially within future forecasts. This will allow transmission network services to be developed in ways that are valued by customers.

2.3.9 Weather

Queensland's demand is highly sensitive to the sub-tropical climate and temperature variations, with heatwaves amplifying peak loads. Figure 2.5 shows observed mean temperatures for Brisbane during September 2024 to August 2025 compared with long-term averages. The comparison reveals a slightly hotter summer than average in south-east Queensland and the winter minimum temperatures in July and August were also warmer than the long-term average. The high summer temperatures were accompanied by extreme relative humidity, especially in January, which was the primary contributor to the record maximum demand that month.

[6] AEMO, 2025 Inputs, Assumptions and Scenarios Workbook (Data Centre Forecasts), August 2025.
[7] Department of Climate Change, Energy, the Environment and Water, Australian Energy Statistics, Table D, August 2025.

Figure 2.5 Brisbane temperature ranges over September 2024 to August 2025 (1)



Note:

(1) Long-term average based on years 2000 to 2024/25[8].

2.3.10 Transmission connected customers

Powerlink obtained summer and winter maximum demand forecasts from customers that connect directly to the Powerlink transmission network[9].

2.3.11 New large loads

No new large loads have connected in the past 12 months.

2.3.12 Possible new large loads

There are several proposals under development for new large mining, metal processing, other industrial loads and for the electrification of existing loads. These proposed large loads total approximately 2,982MW. The likely distribution of these loads is shown in Table 2.1.

The majority of proposed loads have been included in Powerlink's High scenario forecast only. Powerlink's Central scenario forecast allows for approximately 600MW of anticipated electrification load. This anticipated load ramps up over the forecast period beginning from 2027/28. The loads in Table 2.1 are not included in the Low and Central scenario forecasts.

Table 2.1 Possible large loads excluded from the Low and Central scenario forecasts

Zone	Description	Possible load
North Queensland	Electrification	1,500MW
	Manufacturing	
Central Queensland	Hydrogen production	1,372MW
	Electrification	
Southern Queensland	Technology	110MW
	Transport infrastructure	

8 Bureau of Metereology, Monthly Mean Maximum Temperature (Brisbane).
9 NER, clause 5.11.1.

2.4 Forecast highlights

Powerlink's energy forecasts for 2025 show steady growth in transmission delivered summer maximum demand at an average rate of 2.2% per annum over the 10-year period. The increase is mainly due to industries beginning to electrify their operations in the Gladstone zone.

Powerlink also forecast a decline in annual transmission delivered minimum demand over the 10-year period. Minimum demand, or minimum system load, is the lowest amount of energy flowing across the network at a given time, and has continually decreased over the past seven years, largely driven by uptake of rooftop solar PV and distribution-connected solar systems.

Queensland set new records for both minimum and maximum transmission delivered demand in 2024/25:

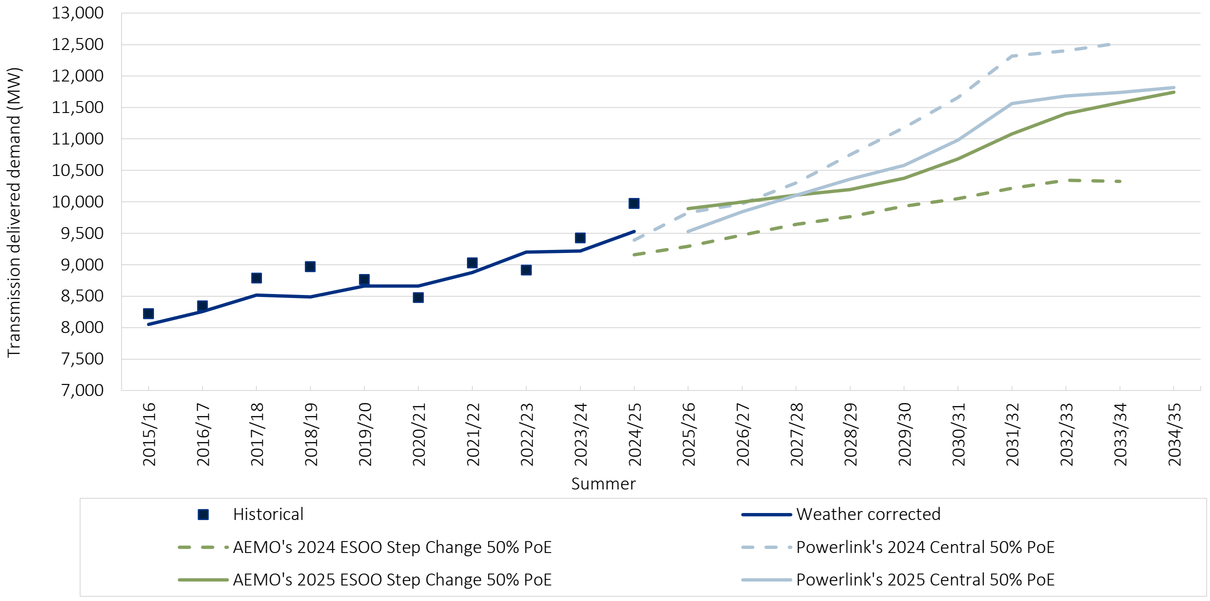
- On Sunday 31 August 2025, minimum transmission delivered demand reached 2,240MW, which was 298MW lower than the previous record set in October 2024.
- On Wednesday 22 January 2025, maximum transmission delivered demand reached 9,974MW, which was 545MW higher than the previous record set in January 2024.

2.5 Maximum delivered demand

The 2024/25 maximum transmission delivered demand in Queensland occurred at 6.00pm on 22 January 2025, when 9,974MW was delivered from the transmission grid (refer to Figure 2.10 for load measurement definitions). Operational as-generated peak demand was recorded at the same time, reaching 11,144MW. After weather correction, the 2024/25 summer maximum transmission delivered demand was 9,529MW, 0.6% higher than Powerlink's 2024 forecast for 2024/25.

Figure 2.6 shows a comparison of AEMO's 2024 and 2025 Electricity Statement of Opportunities (ESOO) delivered summer maximum demand forecasts based on the Step Change scenario with Powerlink's 2024 and 2025 Central scenario, all with 50% Probability of Exceedance (PoE). The reduction in Powerlink's forecast maximum demand primarily results from removing an anticipated hydrogen project, included in the 2024 TAPR Central scenario forecast.

Figure 2.6 Comparison of AEMO's 2024 and 2025 ESOO Step Change scenario forecast with Powerlink's 2024 and 2025 Central scenario 50% PoE delivered demand forecast (1)



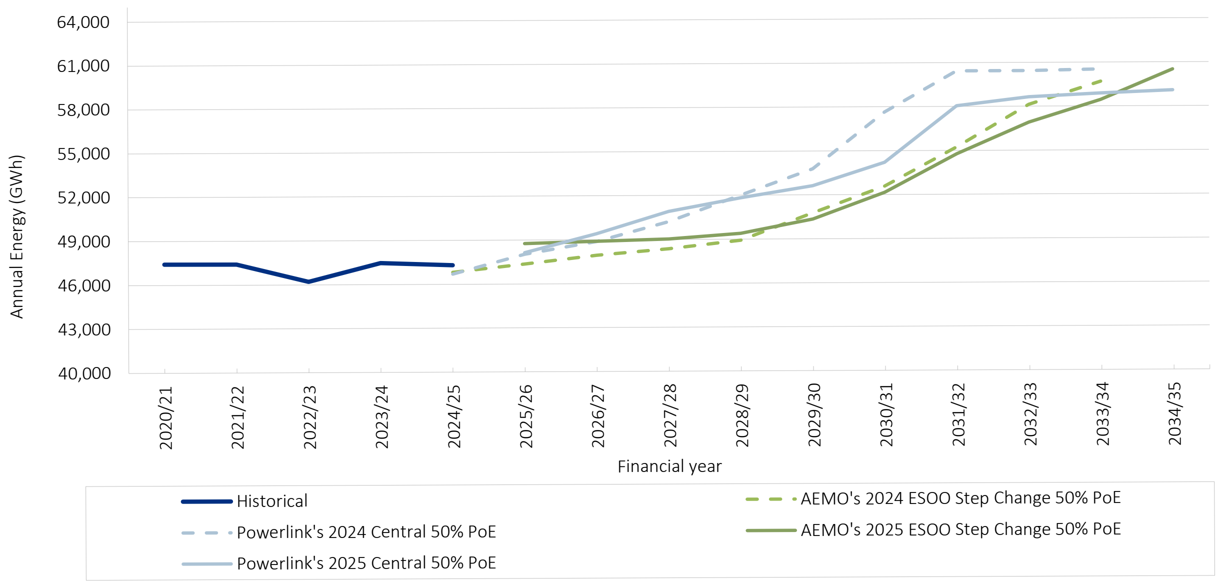
Note:

(1) AEMO's 2024 and 2025 ESOO forecast has been converted from operational sent out to transmission delivered for the purposes of comparison. Refer to Figure 2.10 for further details.

2.6 Annual delivered energy

Powerlink's energy forecast has been adjusted downward following the removal of the anticipated hydrogen project. This reduction is partially offset by an updated solar PV forecast, which reflects the anticipated decommissioning of rooftop solar PV, thereby increasing demand on the transmission network. Figure 2.7 compares AEMO's 2024 and 2025 ESOO energy forecasts under the Step Change scenario with Powerlink's 2024 and 2025 Central scenario forecasts. The growth observed in the forecast can be attributed to electrification of existing load and the reduced solar PV output assumed in the forecast this year.

Figure 2.7 Comparison of AEMO's 2024 and 2025 ESOO Step Change scenario energy forecast with Powerlink's 2024 and 2025 Central scenario delivered energy forecast (1)



Note:

(1) AEMO's 2024 and 2025 ESOO[10] forecast has been converted from operational sent out to transmission delivered for the purposes of comparison. Refer to Figure 2.10 for further details.

2.7 Minimum delivered demand

The 2025 Queensland minimum transmission delivered demand occurred at 11:30am on Sunday, 31 August 2025, when only 2,240MW was delivered from the transmission grid (refer to Figure 2.10 for load measurement definitions). Operational as-generated minimum demand was recorded at the same time at 2,790MW and was 301MW lower than the 2024 record minimum set in October 2024.

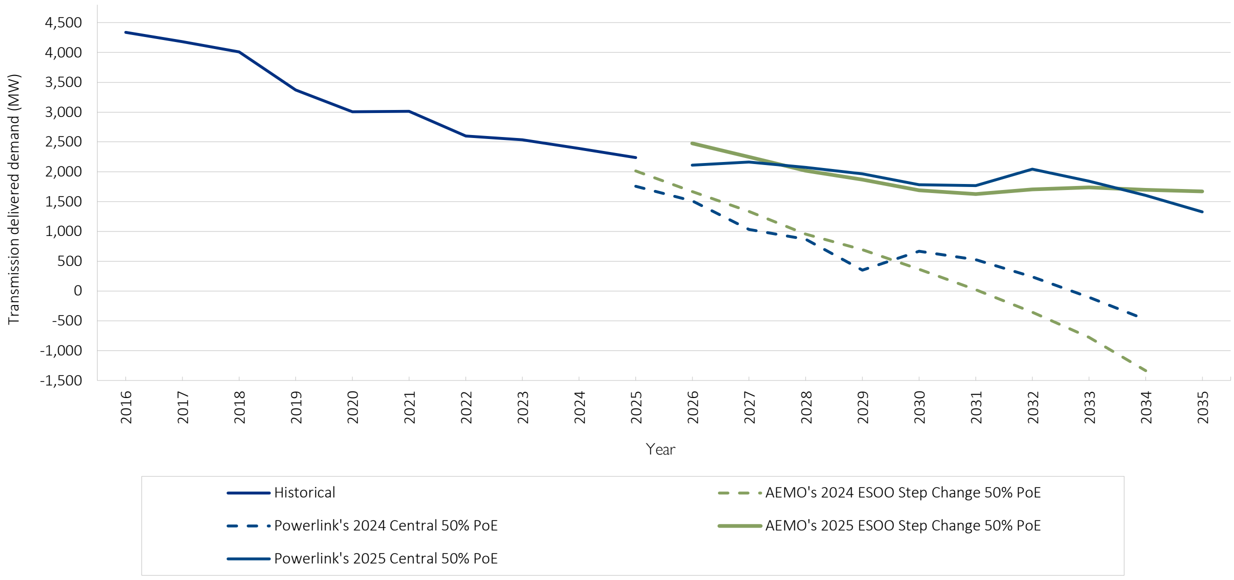
At the time of minimum transmission delivered demand, directly connected loads made up about 77.5% of the transmission delivered demand with Distribution Network Service Provider (DNSP) customers making up the remainder. Mild weather conditions, during a weekend in combination with strong contribution from rooftop solar PV were contributors to this minimum demand.

Figure 2.8 shows a comparison of AEMO's 2024 and 2025 ESOO annual delivered minimum demand forecast based on AEMO's Step Change scenario with Powerlink's 2024 and 2025 Central scenario. Both minimum demand forecasts indicate a slower decline in minimum demand compared to the previous year. A key driver of this trend is the inclusion of anticipated decommissioned rooftop solar PV into the forecast.

This adjustment results in a more moderate projection of rooftop solar PV uptake, reducing its impact on minimum demand periods. Additionally, the rising adoption of residential batteries, driven by falling equipment costs and government incentives, has introduced new charging loads during traditionally low-demand periods.

[10] AEMO, Electricity Forecasting Data Portal.

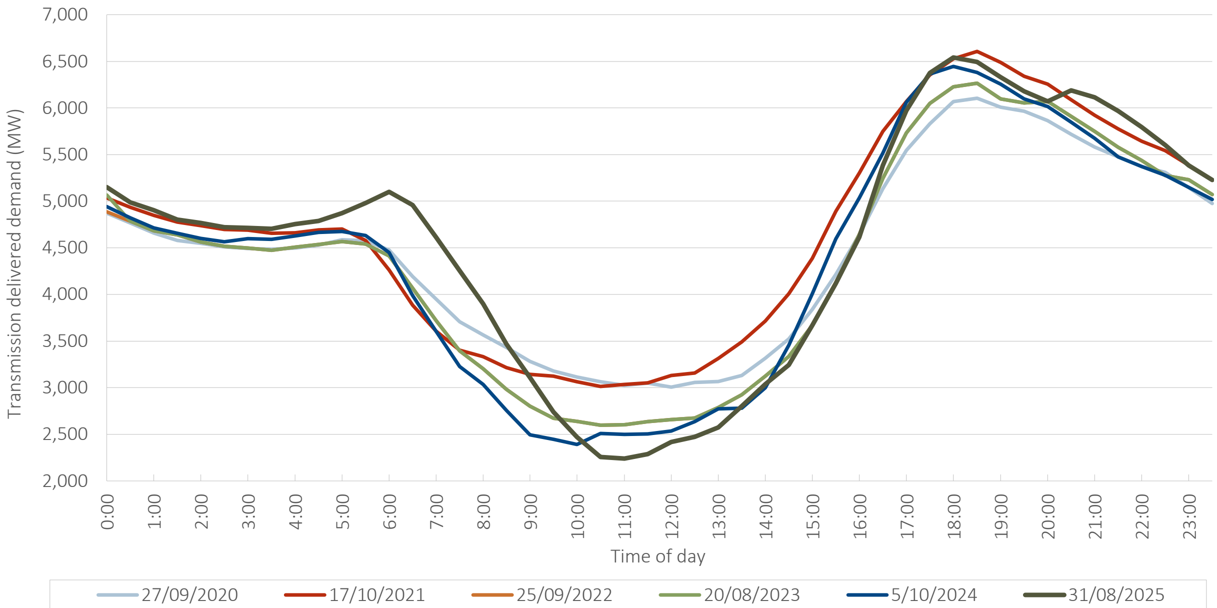
Figure 2.8 Comparison of AEMO's 2024 and 2025 ESOO[11] Step Change scenario minimum delivered demand forecast with Powerlink's 2024 and 2025 Central scenario (1)



Note:

(1) AEMO's 2024 and 2025 ESOO forecast has been converted from operational sent out to transmission delivered for the purposes of comparison. Refer to Figure 2.10 for further details.

Figure 2.9 Transmission delivered minimum demand for the Queensland region (1)



Note:

(1) 2025 trace based on preliminary metering data up to 18 September 2025.

Minimum demand during the day has continued to decrease since 2016 due to the progressive installation of rooftop solar PV and distribution network solar system connections. However, maximum daily demand has continued to increase in line with underlying load growth since the contribution of rooftop solar PV tapers off towards the evening, resulting in an increasing divergence between minimum and maximum demand. The increased maximum demand needs to be met and managed by large-scale generation and the transmission network as it occurs at a time when solar PV is not generating. With the expected continued uptake of residential and commercial rooftop solar PV installations, and in the absence of significant levels of demand shifting or distributed energy storage, minimum demand levels are expected to further decrease with a continued widening between maximum and minimum demand.

[11] AEMO, Electricity Forecasting Data Portal.

2.8 Demand forecast

The following sections outline the Queensland forecasts for energy, summer maximum demand, winter maximum demand and minimum demand. Maximum demands continue to be expected in the summer period, whereas minimum demands previously occurred in winter and have now shifted to the shoulder seasons.

The 2025 TAPR reports on the High, Central and Low scenario forecasts produced by Powerlink. Demand forecasts are also prepared to account for yearly weather variations. These weather variations are referred to as 10% PoE, 50% PoE and 90% PoE forecasts. They represent load 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 High, Central and Low scenarios are shown in Table 2.2. These growth rates refer to transmission delivered quantities as described in Section 2.8.1. The summer and winter maximum demand growth rates are based on 50% PoE corrected values for 2024/25 and 2024 respectively.

Table 2.2 Average annual growth rate over next 10 years

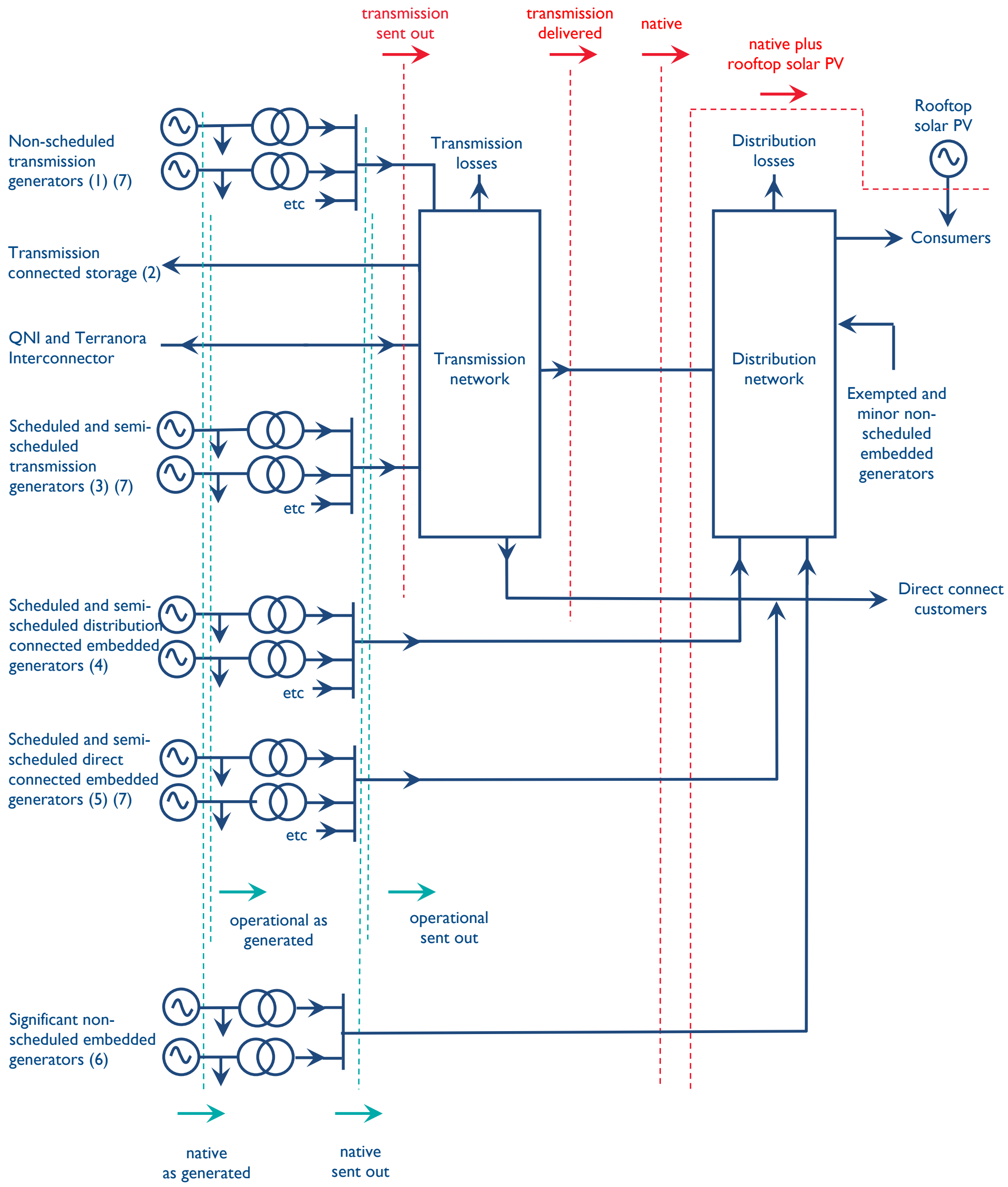
	Powerlink future scenario outlooks		
	High	Central	Low
Delivered energy	6.1%	2.2%	-1.9%
Delivered summer maximum demand (50% PoE)	5.0%	2.2%	-1.2%
Delivered winter maximum demand (50% PoE)	4.7%	2.0%	-1.1%

The forecast for minimum delivered demand is closely correlated to forecast rooftop solar 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.

2.8.1 Demand and energy terminology

The reported demand and energy on the network depend on where it is being measured. Individual stakeholders have reasons to measure demand and energy at different points. Figure 2.10 shows the common ways demand and energy measurements are defined, with this terminology used consistently throughout the TAPR.

Figure 2.10 Load measurement definitions



Notes:

(1) Includes Invicta and Koombooloomba.

(2) Including pump and battery loads.

(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, Racecourse Mill, Barcaldine Solar Farm, Longreach Solar Farm, German Creek, Oaky Creek, Baking Board Solar Farm, Sunshine Coast Solar Farm and Rocky Point.

(7) For a full list of transmission network connected generators, Battery Energy Storage Systems (BESS) and scheduled and semi-scheduled direct connected embedded generators and BESS, refer to Table 6.1.

2.8.2 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 2.10.

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 solar PV
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
2020/21	53,415	49,727	54,710	51,140	48,608	47,421	50,107	55,232
2021/22	53,737	49,940	54,744	51,052	48,625	47,405	50,081	56,162
2022/23	52,692	48,906	53,690	49,998	47,422	46,214	49,047	55,714
2023/24	54,827	50,154	55,858	51,272	48,753	47,477	50,251	58,010
2024/25	54,192	50,775	54,983	51,675	48,821	47,306	50,374	59,104

Note:

(1) Source: Powerlink revenue meters.

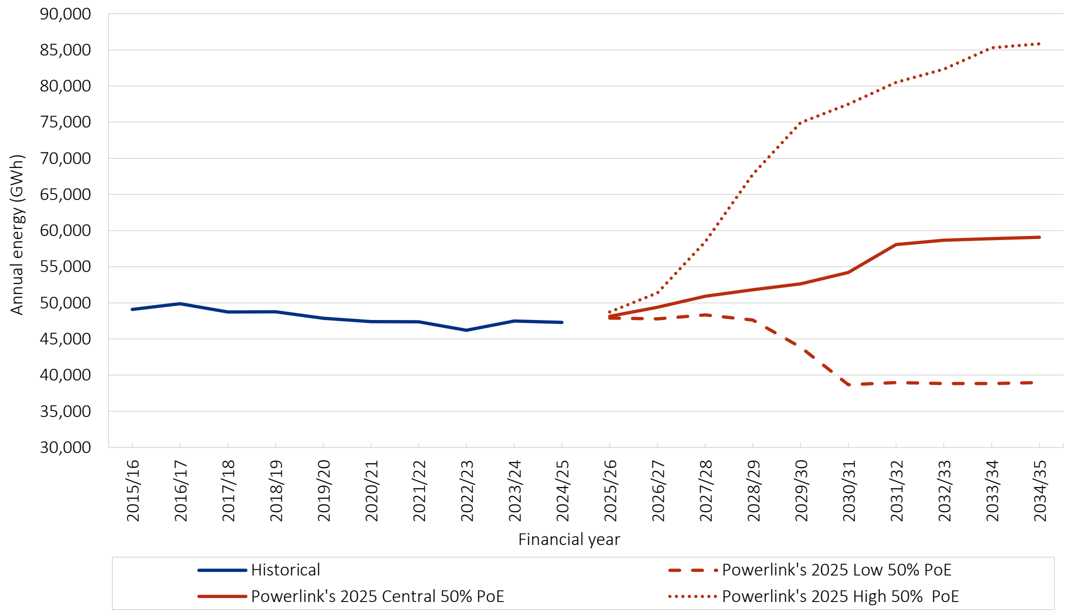
The transmission delivered energy forecasts are presented in Table 2.4.

Table 2.4 Forecast annual transmission delivered energy (GWh)

Financial year	High	Central	Low
2025/26	48,744	48,147	47,879
2026/27	51,371	49,418	47,797
2027/28	58,462	50,926	48,345
2028/29	67,800	51,819	47,633
2029/30	74,940	52,634	43,863
2030/31	77,489	54,215	38,679
2031/32	80,504	58,054	38,976
2032/33	82,320	58,654	38,832
2033/34	85,319	58,890	38,843
2034/35	85,834	59,077	38,966

The historical annual transmission delivered energy from Table 2.3 and the forecast transmission delivered energy for the High, Central and Low scenarios from Table 2.4 are shown in Figure 2.11.

Figure 2.11 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	High	Central	Low
2025/26	52,319	52,106	51,671
2026/27	54,576	53,495	51,881
2027/28	61,677	55,033	52,826
2028/29	71,009	55,797	52,762
2029/30	78,155	56,423	51,097
2030/31	80,724	57,107	48,086
2031/32	83,723	60,293	48,157
2032/33	85,543	60,947	48,237
2033/34	88,543	61,178	48,442
2034/35	89,049	61,349	48,646

2.8.3 Summer maximum demand forecast

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

Table 2.6 Historical summer maximum demand at time of transmission delivered peak (MW)

Summer	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Transmission delivered corrected to 50% PoE	Native	Native plus solar PV
2015/16	9,154	8,620	9,332	8,850	8,532	8,222	8,050	8,541	9,021
2016/17	9,412	8,856	9,572	9,078	8,694	8,347	8,257	8,731	8,817
2017/18	9,798	9,211	10,015	9,489	9,080	8,789	8,515	9,198	9,602
2018/19	10,010	9,433	10,173	9,666	9,248	8,969	8,488	9,387	9,523
2019/20	9,836	9,283	10,052	9,544	9,056	8,766	8,662	9,255	9,453
2020/21	9,473	8,954	9,627	9,161	8,711	8,479	8,660	8,929	9,256
2021/22	10,058	9,503	10,126	9,624	9,332	9,031	8,876	9,323	9,323
2022/23	9,873	9,363	9,985	9,487	9,202	8,916	9,110	9,413	9,413
2023/24	11,005	10,359	11,136	10,587	9,807	9,429	9,218	11,149	11,149
2024/25	11,144	10,612	11,220	10,751	10,382	9,974	9,529	10,342	10,751

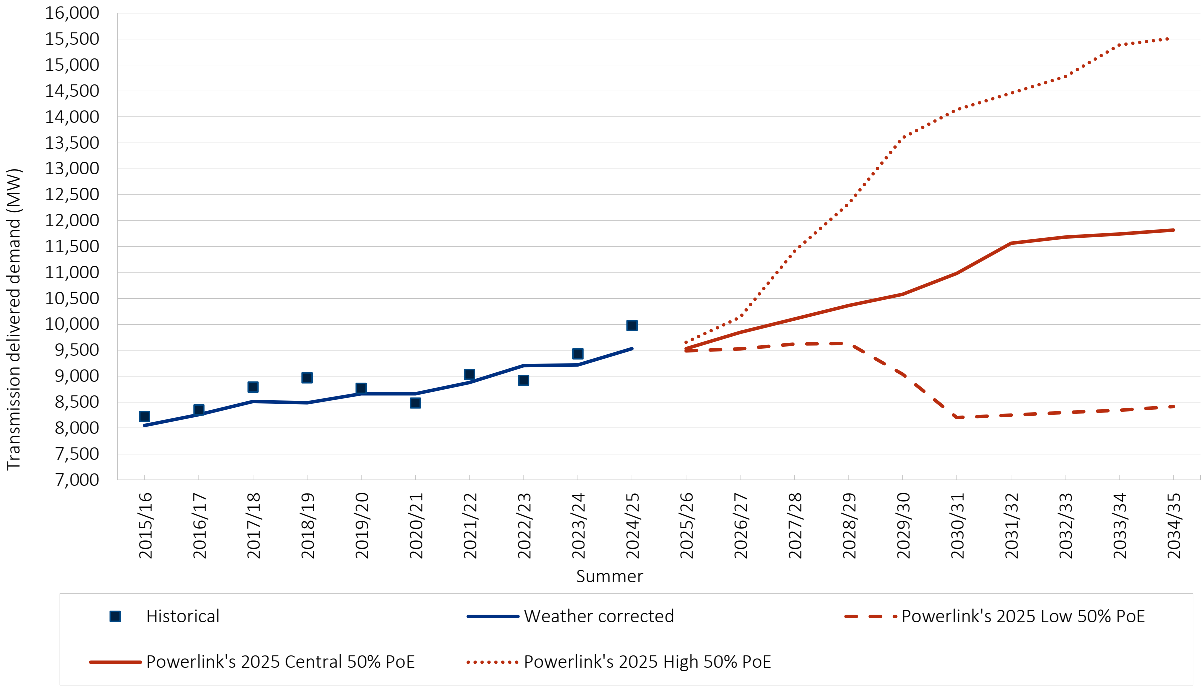
The summer transmission delivered maximum demand forecasts are presented in Table 2.7.

Table 2.7 Forecast summer transmission delivered maximum demand (MW)

Summer	High			Central			Low		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2025/26	9,088	9,653	10,415	8,964	9,529	10,321	8,885	9,487	10,221
2026/27	9,545	10,139	10,936	9,264	9,843	10,651	8,931	9,524	10,257
2027/28	10,800	11,410	12,258	9,510	10,102	10,909	9,019	9,619	10,357
2028/29	11,710	12,330	13,191	9,742	10,360	11,188	9,032	9,631	10,375
2029/30	12,923	13,597	14,524	9,943	10,579	11,430	8,479	9,038	9,733
2030/31	13,457	14,141	15,089	10,330	10,984	11,835	7,697	8,203	8,809
2031/32	13,760	14,457	15,413	10,858	11,561	12,448	7,745	8,247	8,858
2032/33	14,066	14,779	15,755	10,977	11,682	12,582	7,795	8,300	8,911
2033/34	14,634	15,389	16,409	11,043	11,740	12,648	7,844	8,344	8,960
2034/35	14,728	15,516	16,545	11,136	11,817	12,720	7,906	8,413	9,035

The summer historical transmission delivered maximum demands from Table 2.6 and the forecast 50% PoE summer transmission delivered maximum demands for the High, Central and Low scenarios from Table 2.7 are shown in Figure 2.12.

Figure 2.12 Historical and forecast transmission delivered summer maximum demand



2.8.4 Winter maximum demand forecast

Historical Queensland winter maximum demand measurements at time of transmission delivered peak are presented in Table 2.8. As winter demand normally peaks after sunset, solar PV has no impact on winter maximum demand.

Table 2.8 Historical winter maximum demand at time of transmission delivered peak (MW)

Winter	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Transmission delivered corrected to 50% PoE	Native	Native plus rooftop solar PV
2016	8,017	7,469	8,176	7,678	7,398	7,176	7,198	7,456	7,456
2017	7,595	7,063	7,756	7,282	7,067	6,870	7,138	7,085	7,085
2018	8,172	7,623	8,295	7,803	7,554	7,331	7,654	7,580	7,580
2019	7,898	7,446	8,096	7,735	7,486	7,296	7,289	7,544	7,544
2020	8,143	7,671	8,320	7,941	7,673	7,483	7,276	7,751	7,751
2021	8,143	7,677	8,279	7,901	7,659	7,472	7,376	7,714	7,725
2022	8,625	8,216	8,701	8,347	8,141	7,921	7,571	8,127	8,127
2023	8,137	7,601	8,223	7,738	7,585	7,399	7,556	7,553	7,553
2024	8,728	8,190	8,728	8,152	8,196	7,970	7,876	7,927	7,927
2025	8,591	8,093	8,615	8,181	8,103	7,876	(1)	7,955	7,955

Note:

(1) The winter 2025 weather corrected demand was not available at time of publication.

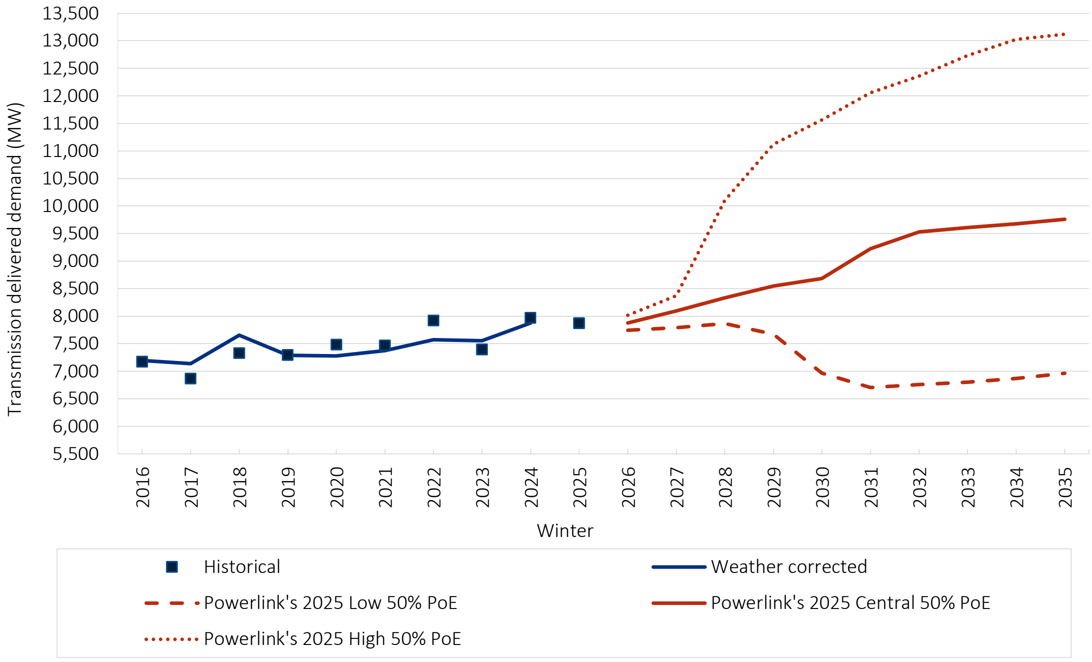
The winter transmission delivered maximum demand forecasts are presented in Table 2.9.

Table 2.9 Forecast winter delivered maximum demand (MW)

Winter	High			Central			Low		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2026	7,797	8,016	8,331	7,662	7,876	8,176	7,505	7,747	8,080
2027	8,151	8,373	8,719	7,881	8,095	8,410	7,553	7,789	8,122
2028	9,856	10,101	10,469	8,110	8,333	8,660	7,632	7,868	8,209
2029	10,855	11,120	11,490	8,309	8,545	8,880	7,430	7,674	8,015
2030	11,282	11,563	11,946	8,431	8,683	9,023	6,722	6,967	7,273
2031	11,758	12,057	12,448	8,965	9,223	9,573	6,514	6,706	6,981
2032	12,051	12,360	12,771	9,249	9,529	9,898	6,549	6,756	7,024
2033	12,397	12,729	13,146	9,323	9,608	9,980	6,577	6,803	7,068
2034	12,685	13,028	13,466	9,389	9,677	10,050	6,626	6,872	7,121
2035	12,770	13,118	13,577	9,460	9,760	10,128	6,704	6,965	7,192

The winter historical transmission delivered maximum demands from Table 2.8 and the forecast 50% PoE summer transmission delivered maximum demands for the High, Central and Low scenarios from Table 2.9 are shown in Figure 2.13.

Figure 2.13 Historical and forecast winter transmission delivered maximum demand



2.8.5 Minimum demand forecast

Historical Queensland minimum demand measurements at time of transmission delivered minimum are presented in Table 2.10.

Table 2.10 Historical minimum demand (MW)

Year	Operational as generated	Operational sent out	Native as generated	Native sent out	Transmission sent out	Transmission delivered	Native	Native plus rooftop solar PV
2016	4,944	4,470	5,101	4,686	4,471	4,336	4,552	4,552
2017	4,791	4,313	4,942	4,526	4,318	4,181	4,389	4,389
2018	4,647	4,165	4,868	4,501	4,143	4,008	4,366	5,572
2019	4,211	3,712	4,441	4,112	3,528	3,370	3,953	5,323
2020	3,897	3,493	4,094	3,767	3,097	3,006	3,675	5,882
2021	3,869	3,480	3,958	3,701	3,043	3,014	3,671	6,804
2022	3,504	3,065	3,617	3,283	2,707	2,597	3,173	6,457
2023	3,490	2,973	3,655	3,277	2,634	2,538	3,181	6,232
2024	3,091	2,647	3,091	2,650	2,650	2,389	2,389	6,741
2025	2,790	2,684	2,886	2,784	2,573	2,239	2,450	5,872

Annual transmission delivered minimum demand forecasts are presented in Table 2.11.

Table 2.11 Forecast annual transmission delivered minimum demand (MW) (1)

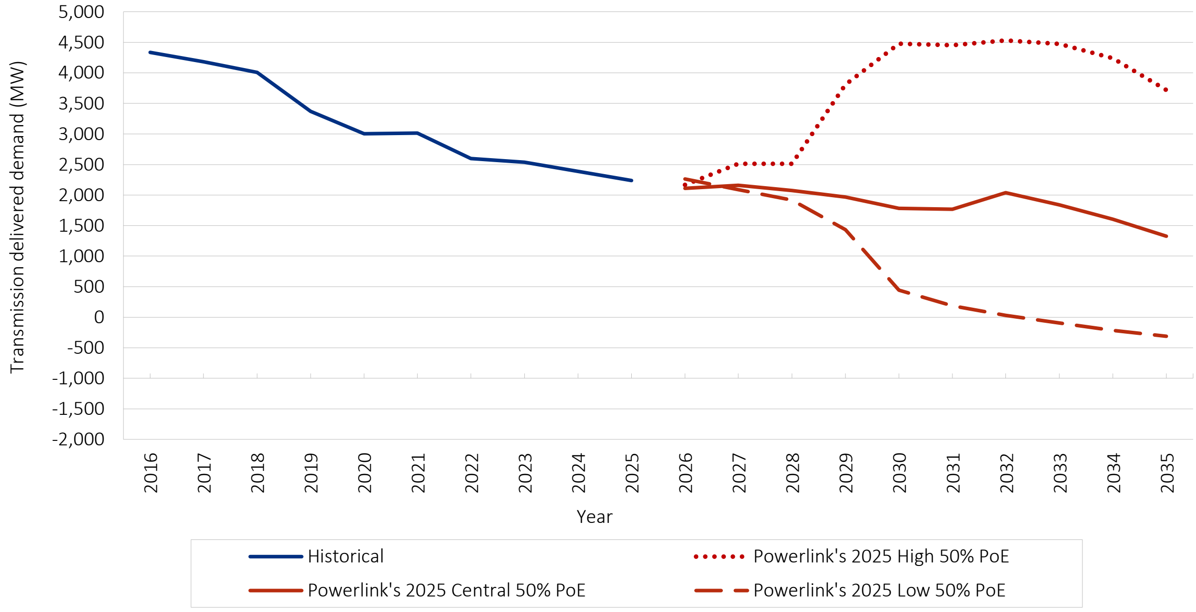
Year	High			Central			Low		
	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE	90% PoE	50% PoE	10% PoE
2026	1,885	2,165	2,665	1,809	2,110	2,594	1,871	2,262	2,758
2027	2,053	2,510	2,963	1,710	2,161	2,578	1,682	2,087	2,566
2028	2,212	2,510	3,019	1,608	2,074	2,497	1,514	1,918	2,398
2029	3,497	3,807	4,310	1,496	1,968	2,408	1,038	1,432	1,896
2030	3,959	4,479	4,980	1,311	1,784	2,250	71	442	883
2031	4,046	4,454	4,970	1,430	1,770	2,307	-175	185	594
2032	3,992	4,531	5,082	1,544	2,042	2,525	-336	28	434
2033	3,980	4,475	5,031	1,336	1,839	2,339	-464	-94	312
2034	3,641	4,238	4,822	1,103	1,605	2,115	-547	-216	224
2035	3,106	3,719	4,324	823	1,328	1,843	-608	-312	135

Note:

(1) Forecasts are provided without predicting market outcomes, directions or constraints which may be imposed to ensure system security but will impact the output of embedded VRE generators and, as a consequence, transmission delivered demand.

The annual historical transmission delivered minimum demands from Table 2.10 and the forecast 50% PoE annual transmission delivered minimum demands for the High, Central and Low scenarios from Table 2.11 are shown in Figure 2.14. The minimum demand forecast does not factor in any market intervention to prevent the grid from becoming insecure under the minimum system load conditions. Market interventions could include directing off embedded non-scheduled generators and directing on grid-scale BESS and Pumped Hydro Energy Storage (PHES) systems to increase demand.

Figure 2.14 Historical and forecast transmission delivered annual minimum demand



2.9 Zone forecasts

Powerlink's 2025 TAPR zone maximum demand forecasts are coincident with the state peak. The 12 geographical zones are defined in Table G.1 and illustrated in Figure G.1 in Appendix G. Each zone experiences its own (non-coincident) maximum demand, which is greater than or equal to that shown in tables 2.13 to 2.15.

Table 2.12 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 2.13 and 2.15 to estimate each zone's individual maximum transmission delivered demand, the time of which is not coincident with the time of Queensland region maximum transmission delivered demand. The ratios are based on historical trends.

Table 2.12 Average ratios of zone maximum delivered demand to zone delivered demand at time of Queensland region maximum delivered demand

Zone	Winter	Summer
Far North	1.16	1.19
Ross	1.61	1.45
North	1.14	1.14
North West	1.02	1.03
Central West	1.01	1.03
Gladstone	1.03	1.02
Wide Bay	1.03	1.20
Surat	1.25	1.22
Bulli	1.05	1.14
South West	1.04	1.24
Moreton	1.01	1.02
Gold Coast	1.04	1.12

Table 2.13 shows the historical and forecast transmission delivered energy for the Central scenario for each of the 12 zones in the Queensland region.

Table 2.13 Annual transmission delivered energy by zone (GWh)

Financial Year	Far North	Ross	North West	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals													
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
2020/21	1,519	2,569	-	2,413	2,813	9,383	970	5,241	1,491	993	16,807	3,222	47,421
2021/22	1,598	2,418	-	2,755	2,776	9,124	904	5,420	1,395	990	17,101	2,924	47,405
2022/23	1,602	2,074	-	2,668	2,783	8,898	898	5,279	1,334	971	16,829	2,878	46,214
2023/24	1,566	2,286	-	2,548	2,866	9,368	951	5,376	1,481	991	17,093	2,948	47,474
2024/25	1,501	2,275	-	2,555	2,807	9,353	953	5,363	1,513	920	17,125	2,941	47,306
Forecasts													
2025/26	1,601	1,985	-	2,624	3,025	9,572	676	4,302	1,648	908	18,289	3,516	48,147
2026/27	1,603	1,803	-	2,447	2,998	10,449	807	4,214	1,558	854	19,071	3,615	49,418
2027/28	1,625	1,904	-	2,451	3,189	10,785	843	4,212	1,540	853	19,794	3,731	50,926
2028/29	1,606	1,900	-	2,466	3,322	11,131	829	4,276	1,510	857	20,128	3,793	51,819
2029/30	1,609	1,924	-	2,495	3,353	11,536	826	4,211	1,515	865	20,438	3,862	52,634
2030/31	1,611	2,195	-	2,797	3,465	12,207	820	4,097	1,473	938	20,690	3,922	54,215
2031/32	1,630	1,923	887	2,487	3,388	15,241	838	4,029	1,424	865	21,318	4,023	58,054
2032/33	1,639	1,848	891	2,398	3,369	15,796	838	3,860	1,390	832	21,714	4,078	58,654
2033/34	1,643	1,813	879	2,357	3,361	15,863	836	3,736	1,358	825	22,075	4,144	58,890
2034/35	1,638	1,793	878	2,326	3,343	15,865	827	3,710	1,349	810	22,341	4,197	59,077

Table 2.14 shows the historical and forecast transmission delivered summer maximum demand for each of the 12 zones in the Queensland region. It is based on the Central scenario and average (50% PoE) summer weather.

Table 2.14 State summer maximum transmission delivered demand by zone (MW)

Financial Year	Far North	Ross	North West	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals													
2015/16	308	392	-	411	443	1,189	214	265	155	231	3,953	661	8,222
2016/17	258	222	-	378	429	1,193	270	421	178	286	3,993	719	8,347
2017/18	304	376	-	413	463	1,102	278	504	183	301	4,147	718	8,789
2018/19	342	339	-	400	484	1,096	285	526	191	312	4,270	724	8,969
2019/20	286	325	-	391	368	1,080	263	610	191	267	4,276	709	8,766
2020/21	254	405	-	431	471	1,111	298	588	165	248	3,894	614	8,479
2021/22	363	441	-	473	518	1,103	269	594	174	253	4,146	697	9,031
2022/23	305	365	-	414	418	1,091	283	547	132	276	4,359	725	8,916
2023/24	294	321	-	423	372	1,098	214	608	177	270	4,907	742	9,429
2024/25	327	443	-	405	475	1,120	297	641	197	255	4,988	824	9,974
Forecasts													
2025/26	348	549	-	523	513	1,182	288	534	181	289	4,271	852	9,529
2026/27	350	577	-	544	529	1,185	296	530	172	300	4,498	861	9,843
2027/28	359	607	-	560	567	1,270	295	548	172	318	4,499	908	10,102
2028/29	367	603	-	564	577	1,284	308	547	169	315	4,699	928	10,360
2029/30	380	585	-	537	563	1,407	310	526	166	301	4,849	955	10,579
2030/31	392	683	-	660	601	1,415	314	511	161	342	4,961	945	10,984
2031/32	391	729	260	703	623	1,422	314	520	159	345	5,113	982	11,561
2032/33	391	641	260	615	619	1,738	330	512	160	327	5,094	995	11,682
2033/34	387	621	260	581	605	1,757	316	479	152	324	5,210	1,048	11,740
2034/35	402	603	260	558	592	1,761	329	468	150	325	5,338	1,032	11,817

Table 2.15 shows the historical and forecast transmission delivered winter maximum demand for each of the 12 zones in the Queensland region. It is based on the Central scenario and average (50% PoE) winter weather.

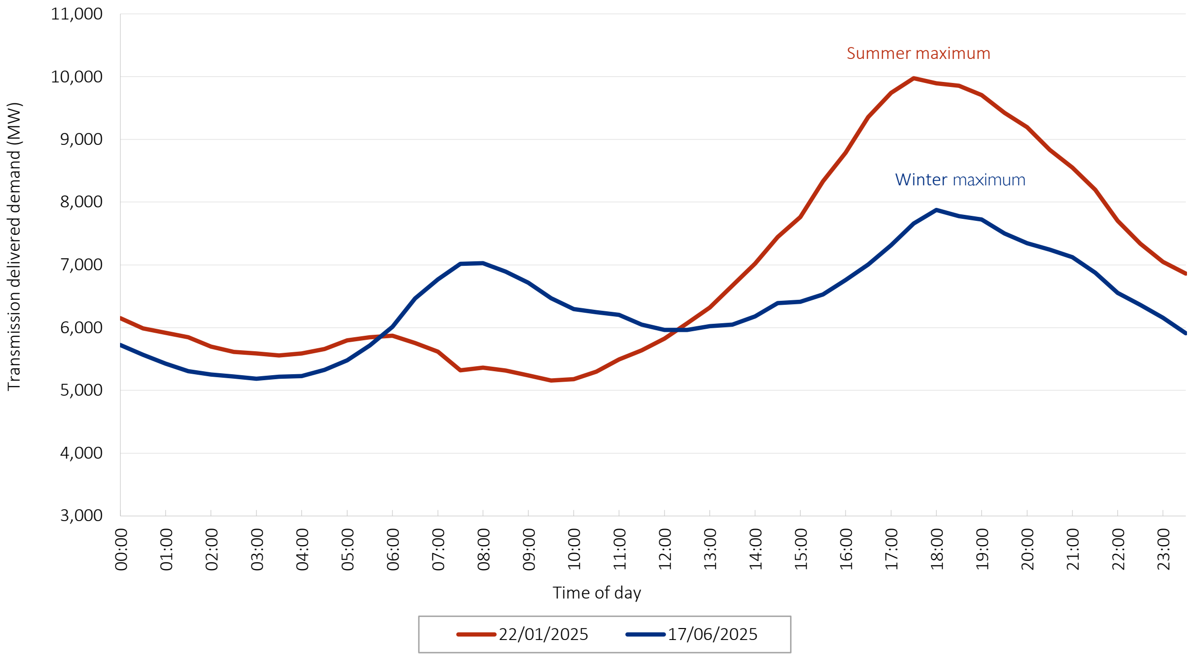
Table 2.15 State winter maximum transmission delivered demand by zone (MW)

Financial Year	Far North	Ross	North West	North	Central West	Gladstone	Wide Bay	Surat	Bulli	South West	Moreton	Gold Coast	Total
Actuals													
2016	226	249	-	370	417	1,242	206	390	181	279	3,079	537	7,176
2017	241	368	-	366	377	1,074	216	513	187	248	2,797	483	6,870
2018	242	366	-	335	439	1,091	235	475	186	336	3,086	540	7,331
2019	234	284	-	362	419	1,037	239	615	195	293	3,078	540	7,296
2020	227	306	-	327	449	1,104	246	531	191	313	3,274	515	7,483
2021	204	296	-	334	383	1,075	250	592	179	339	3,275	545	7,472
2022	230	246	-	322	431	991	280	508	162	360	3,780	611	7,921
2023	217	237	-	352	418	1,069	252	606	167	321	3,225	537	7,399
2024	221	187	-	367	441	1,071	270	473	193	396	3,728	624	7,970
2025	233	329	-	416	457	1,059	247	673	192	324	3,392	555	7,876
Forecasts													
2026	287	380	-	350	398	1,182	238	441	150	215	3,530	704	7,876
2027	288	399	-	364	408	1,185	244	436	142	223	3,699	708	8,095
2028	296	421	-	373	439	1,270	244	452	142	237	3,711	749	8,333
2029	303	417	-	375	447	1,284	254	451	139	234	3,876	766	8,545
2030	312	390	-	340	430	1,407	254	432	136	218	3,980	784	8,683
2031	329	492	-	464	475	1,415	264	429	135	261	4,166	794	9,223
2032	322	588	220	565	509	1,422	259	429	131	280	4,214	809	9,529
2033	322	414	220	381	469	1,738	271	421	131	233	4,190	818	9,608
2034	319	399	220	354	458	1,757	260	395	125	231	4,295	864	9,677
2035	332	386	220	337	449	1,761	271	387	124	233	4,409	852	9,760

2.10 Summer and winter maximum and annual minimum daily profiles

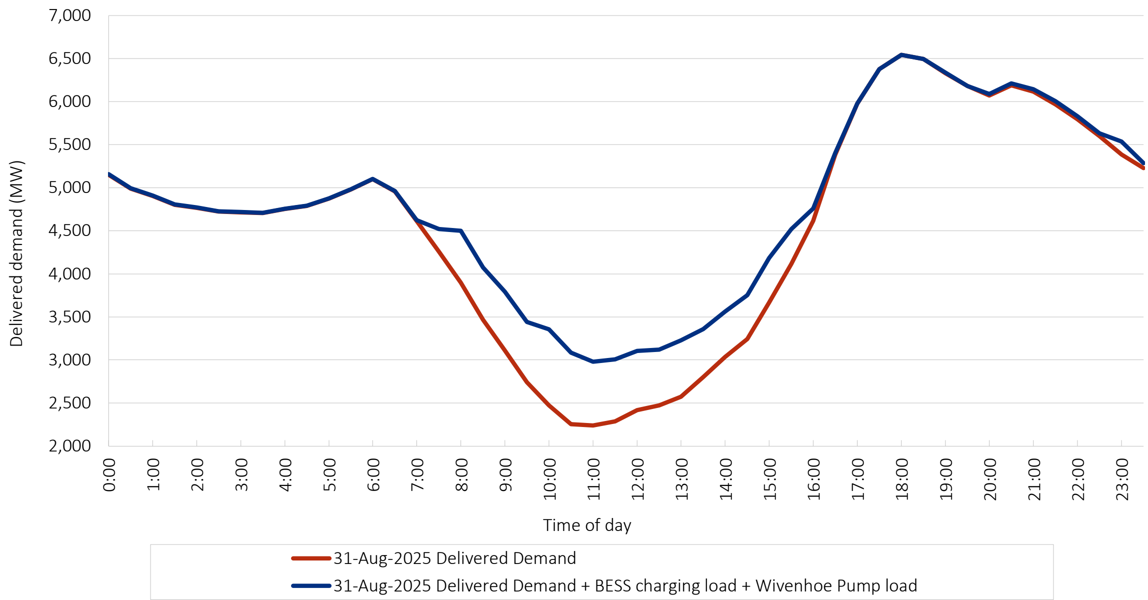
The daily load profiles (transmission delivered) for the Queensland region on the days of summer 2024/25 and winter 2025 maximum demands are shown in Figure 2.15.

Figure 2.15 Daily load profile of summer 2024/25 and winter 2025 maximum transmission delivered demand days



The 2025 annual minimum (transmission delivered) daily load profile for the Queensland region delivered demand plus BESS charging load and Wivenhoe pump load is shown in Figure 2.16. The transmission delivered demand definition excludes the load from pumped hydro and BESS charging load. Adding the BESS and pumped hydro load to the minimum transmission delivered demand demonstrates that there is extra load on the network that assists in avoiding insecure load levels.

Figure 2.16 Daily load profile of 2025 minimum transmission delivered day and minimum delivered demand plus BESS charging load and Wivenhoe pump load (1)



Note:

(1) Based on preliminary meter data up to 18 September 2025.

2.11 Annual load duration curves

The annual historical load duration curves for the Queensland region transmission delivered demand since 2020/21 is shown in Figure 2.17. The graphs illustrate the widening gap between the minimum and maximum demand on the network. Previously, the maximum demand was the cause of concern and where the network limits were being stressed. The network is now facing new challenges due to the rapidly declining minimum demand.

Figure 2.17 Historical transmission delivered load duration curve

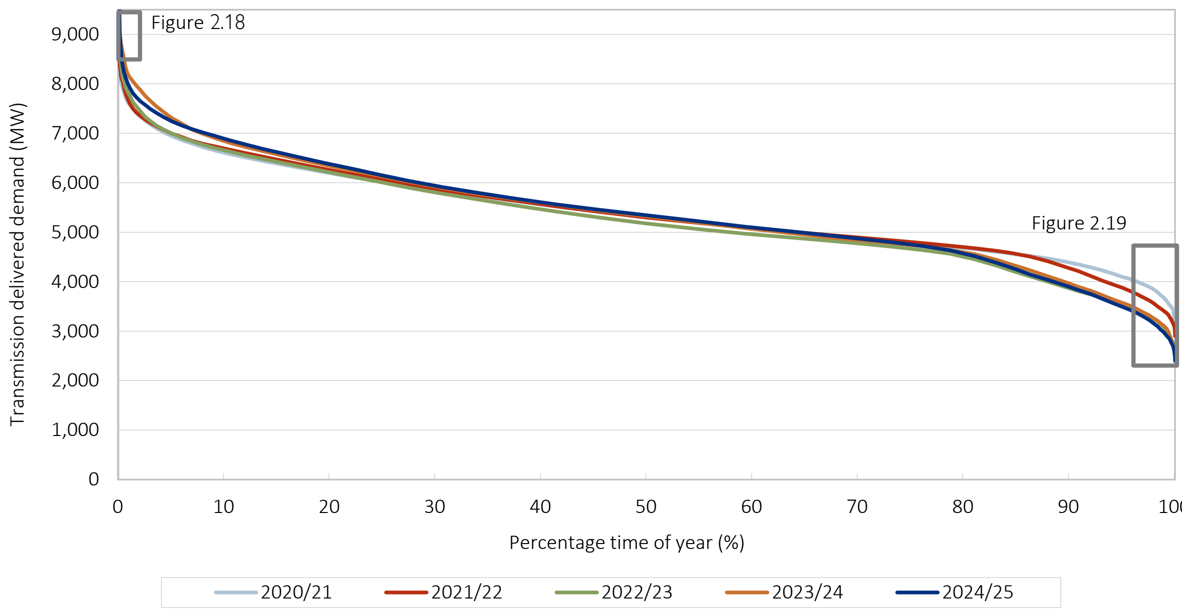


Figure 2.18 Historical transmission delivered load duration curves (95-100%)

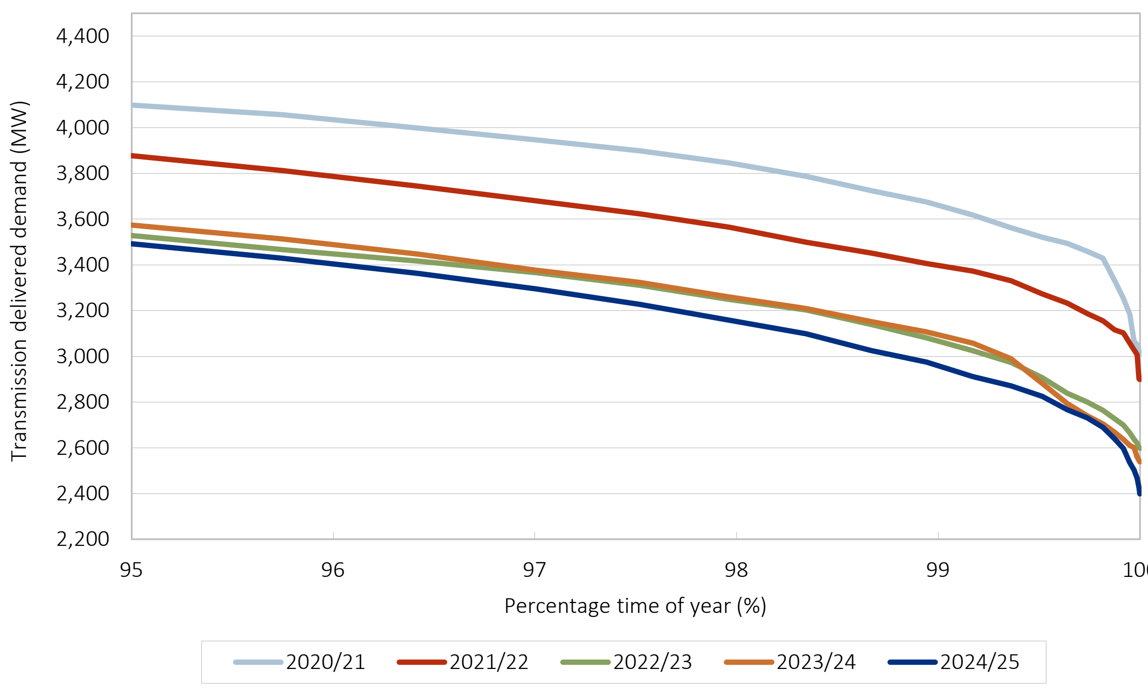


Figure 2.19 Historical transmission delivered load duration curves (0-0.5%)