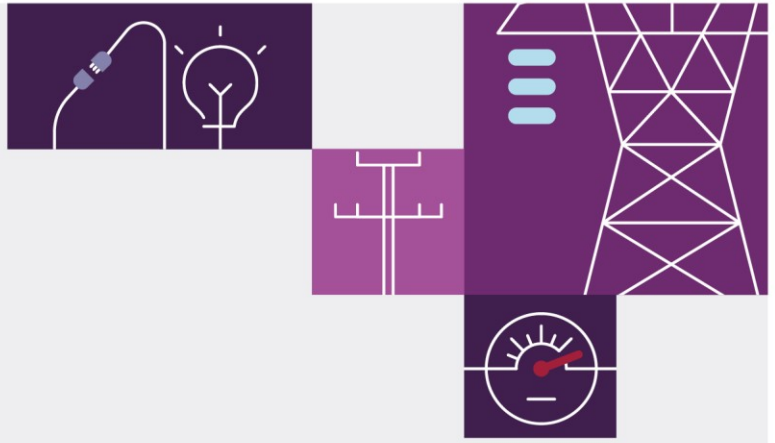


# Energy Security Target Monitor Report

May 2022 Further Report

A report for the New South Wales Minister for Energy to be read in conjunction with the December 2021 Energy Security Target Monitor Report





# Important notice

## Purpose

This Energy Security Target Monitor further report is provided to the New South Wales Minister for Energy by AEMO in its role as the energy security target monitor, under section 13(7) of the *Electricity Infrastructure Investment Act 2020* (NSW) as in force at the date of this report. The report contains additional information and revises information contained in the December 2021 Energy Security Target Monitor Report and is being provided because of a change in relevant circumstances. It is not intended to be used or relied on for any purpose other than as contemplated by that legislation. This further report is to be read in conjunction with the December 2021 Energy Security Target Monitor Report.

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## Version control

Version	Release date	Changes
1	31/5/2022	First release



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# 1 A further report to supplement the Energy Security Target Monitor Report

The Energy Security Target (EST) is defined in Part 3 of the *Electricity Infrastructure Investment Act 2020 (NSW)*<sup>1</sup> (the EII Act) and is set to ensure the reliable supply of electricity over the medium to long term for New South Wales consumers. Part 3 of the EII Act also defines the role of the “energy security target monitor”, a role that AEMO is undertaking in 2021-22.

The inaugural *Energy Security Target Monitor Report* (EST Monitor Report) was published in December 2021<sup>2</sup>. This inaugural report adopted inputs and assumptions that were used to produce the 2021 *Electricity Statement of Opportunities* (ESOO)<sup>3</sup> and/or from other relevant assumptions from AEMO’s 2021 *Inputs Assumptions and Scenarios Report* (IASR)<sup>4</sup>, unless otherwise stated.

Section 13(7) of the EII Act specifies that the ‘energy security target monitor may provide a further report to the Minister that contains additional information or revises information contained in a previous report if the monitor considers it necessary because of a change in relevant circumstances.’ As EST monitor, AEMO considers it appropriate to revise information published in the December 2021 EST Monitor Report following recent changes in market circumstances, including the announcement by Origin Energy<sup>5</sup> of the potential early retirement of Eraring Power Station in August 2025.

This further report adopts inputs and assumptions that were used to produce the *Committed* case published in the April 2022 *Update to the 2021 Electricity Statement of Opportunities* (ESOO)<sup>6</sup>, which also reflect the potential early retirement of Eraring Power Station and other recent changes. The April 2022 *Update to the 2021 ESOO* adjusted the ESOO Central scenario to examine the reliability forecast in accordance with AEMO’s *ESOO and Reliability Forecast Guidelines*. It also examined two sensitivities with improved reliability forecasts should development of additional, but as-yet uncommitted investments proceed. While the future is inherently uncertain, the *Committed* case projects outcomes should no further developments occur beyond what is considered committed, and therefore represents the appropriate minimum level of reliability over the reliability forecast period.

This further report contains a forecast of the EST and any projected breach of the EST (target breach) for each of the next 10 financial years, calculated consistently with the EII Act and the Electricity Infrastructure Investment Regulation 2021<sup>7</sup> (the EII Regulation).

For the purposes of section 14(3) of the EII Act, in AEMO’s opinion, this report does not contain information the disclosure of which could reasonably be expected to:

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<sup>1</sup> See <https://www.legislation.nsw.gov.au/view/html/inforce/current/act-2020-044#pt.3>.

<sup>2</sup> See <https://www.energy.nsw.gov.au/sites/default/files/2021-12/2021-energy-security-target-monitor-report.pdf>

<sup>3</sup> See <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>.

<sup>4</sup> See <https://www.aemo.com.au/consultations/current-and-closed-consultations/2021-planning-and-forecasting-consultation-on-inputs-assumptions-and-scenarios>.

<sup>5</sup> See <https://www.originenergy.com.au/about/investors-media/origin-proposes-to-accelerate-exit-from-coal-fired-generation/>.

<sup>6</sup> At [https://aemo.com.au/-/media/files/electricity/nem/planning\\_and\\_forecasting/nem\\_esoo/2022/update-to-2021-electricity-statement-of-opportunities.pdf](https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2022/update-to-2021-electricity-statement-of-opportunities.pdf).

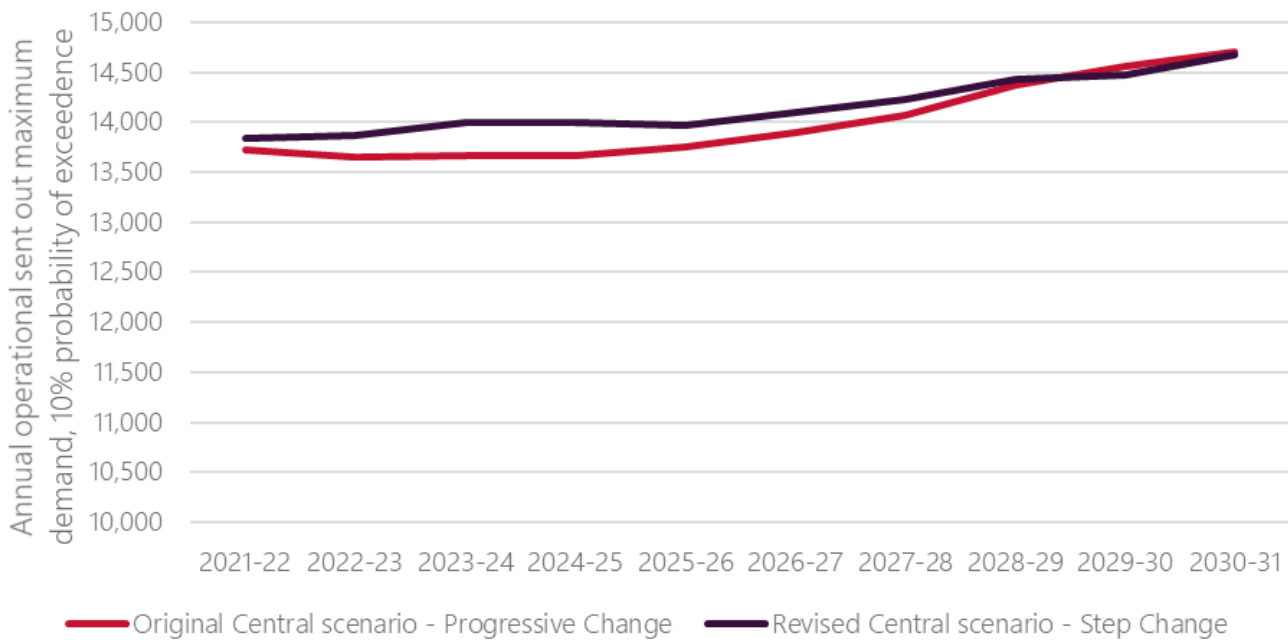
<sup>7</sup> See <https://legislation.nsw.gov.au/view/html/inforce/current/sl-2021-0102>.

- a) diminish the competitive commercial value of the information to the person who provided the information to AEMO, or
- b) prejudice the legitimate business, commercial, professional or financial interests of the person who provided the information to AEMO.

## 1.1 Updating the Central scenario to Step Change

The 2021 EST Monitor Report used the *Progressive Change* demand scenario developed for the 2021 IASR as the Central scenario, consistent with the 2021 ESOO. Consistent with the Update to the 2021 ESOO, the *Step Change* scenario is now considered by AEMO to be the Central or most likely scenario and has been adopted for this further report. AEMO has applied the revised demand forecast based on the *Step Change* scenario which is shown against the original forecast in Figure 1.

**Figure 1 Annual maximum demand forecast comparison, 2021-22 to 2030-31**



Additionally, demand side components have also been revised and included consistent with the updated scenario specification. These components include coordinated management of distributed batteries and electric vehicles, including vehicle to grid coordinated storage. While the revised maximum demand forecast is higher than the original *Progressive Change* scenario at the beginning of the horizon, the increase and inclusion of other demand components mostly offsets the impact of the higher annual maximum demand on EST outcomes. For example, by 2025-26 with the increased expectation of coordinated distributed batteries, the net impact is only 55MW.

## 1.2 Updated generation information

In addition to the new information about the potential withdrawal of Eraring Power Station, this further report incorporates all updated information from developers and market participants from AEMO's latest *Generation Information*, published 22 February 2022<sup>8</sup>.

Since the 2021 ESOO was published in August 2021, numerous projects have become sufficiently advanced to be considered committed for the Update to the 2021 ESOO and therefore this further EST Monitor Report.

Notable generator and storage changes include<sup>9</sup>:

- In accordance with Origin Energy's announcement on the potential closure of Eraring Power Station, all generating units are assumed to retire prior to summer 2025-26, earlier than the previous announced retirement schedule of a staged withdrawal of units between 2030 and 2032<sup>10</sup>.
- Hunter Valley Gas Turbine has been withdrawn.
- 296 megawatts (MW) of wind developments are now considered committed.
- 421 MW of large-scale solar developments are now considered committed.
- Energy Australia's Tallawarra B is now considered committed; however this does not impact EST outcomes as this development was already considered in the December 2021 EST Monitor Report due to its Commonwealth and New South Wales Government support.

The EST assessment model has been updated to reflect this changed generation information, including:

- Generator auxiliaries, which are used in the calculation of the EST, have been updated to reflect the adjusted generator availability. Instead of auxiliaries as estimated from the 2021 ESOO, the generator auxiliary load forecast for all years after 2021-22 were calculated using a revised methodology as follows:
  - Auxiliary rates published in the 2021 IASR were multiplied by the available capacity for each generator, then summed.
  - The summed auxiliary load was then scaled such that the calculation is consistent with the published auxiliary rate forecast for 2021-22.
- The EST assessment model's reserve margin for 2025-26 remains unchanged despite the assumed unavailability of Eraring Power Station. In this case, the 675 MW Mount Piper Unit 2 directly replaces the 675 MW Eraring 2 unit as one of the two largest units in the region.

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<sup>8</sup> At <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>.

<sup>9</sup> AGL has updated the expected closure year for Bayswater Power Station, however the closure date remain beyond current EST Monitor Report timeframes.

<sup>10</sup> As reported in the November Generation Information publication, at <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>.

## 2 Revised EST assessment

The assessment charts in this section demonstrate the 10-year EST outlook. For this Central scenario, 10% probability of exceedance (POE) maximum demand is forecast to rise slowly, driven by growth in the business mass market consumer segment, as well as an increase in the rate of electrification (fuel switching from other fuels to electricity). Generator auxiliary losses at time of peak are forecast to decline more rapidly than the 2021 EST Monitor Report, following the exit of Eraring Power Station. The reserve margin over the forecast horizon is forecast to reduce from 1,385 MW to 1,380 MW.

Collectively, these components sum to the EST as shown in Figure 2.

**Figure 2 Central scenario, EST components**

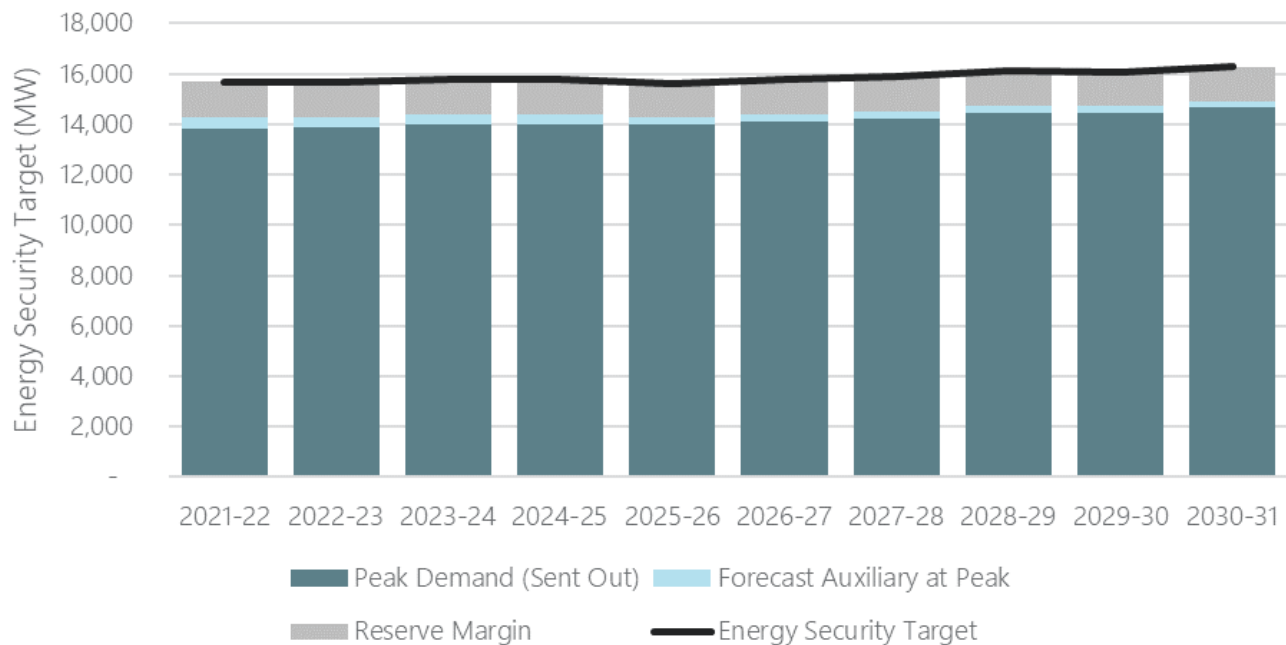
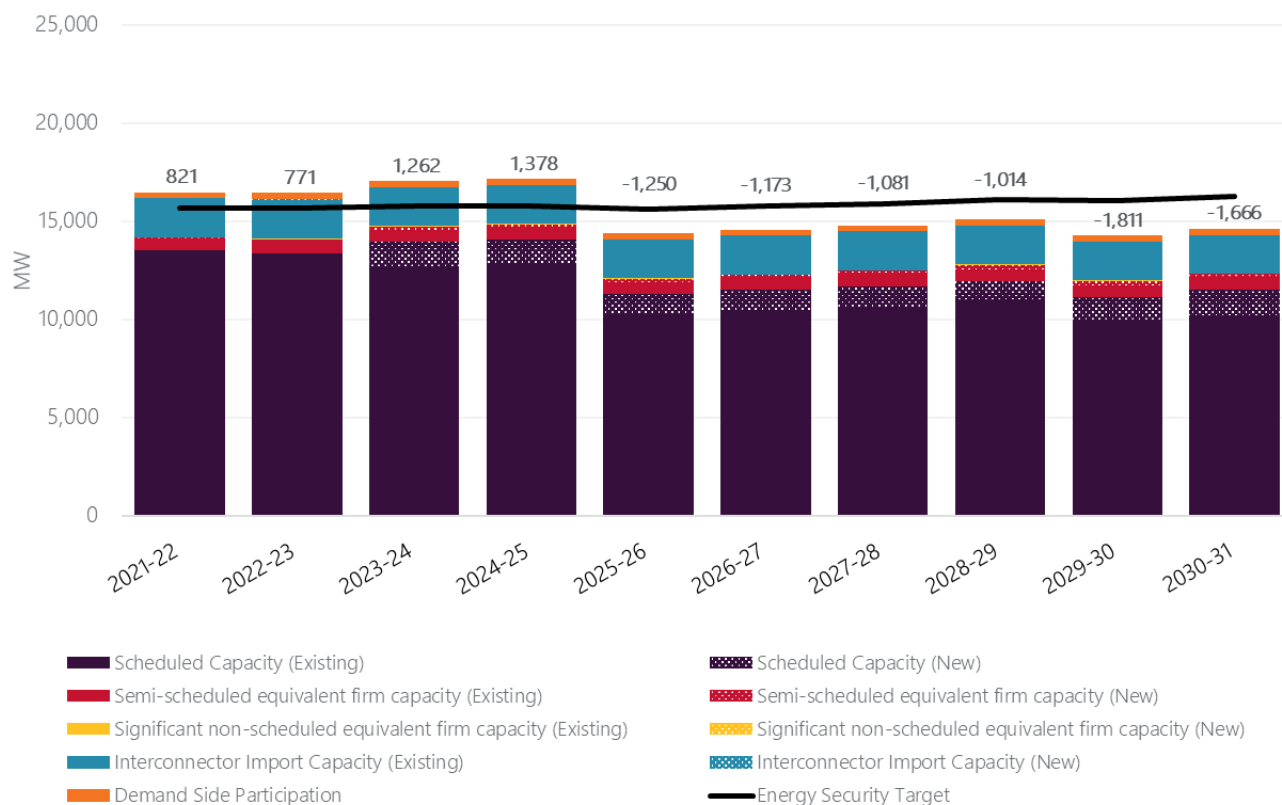


Figure 3 shows the assessment of the EST for the revised Central scenario, with a target breach projected from 2025-26. This is due to the potential early retirement of Eraring Power Station. Despite the commitment of new firm capacity on or after 2025-26, major transmission infrastructure constraints limit the ability for this firm capacity to be available to the majority of New South Wales electricity consumers in the Sydney-Newcastle-Wollongong area.

**Figure 3 Central scenario showing EST surplus or breach, revised assessment of the EST, 2021-22 to 2030-31**



Key considerations and observations from the assessment include:

- Existing firm capacity is forecast to be sufficient to meet the EST at the start of the horizon.
- In 2023-24, when Liddell Power Station is assumed to retire, the loss of capacity is forecast to be more than offset by the commitment of new scheduled generation within the Sydney-Newcastle-Wollongong area, including Kurri Kurri and Tallawarra B power stations.
- In 2025-26, when the Eraring Power Station is assumed to retire, the loss of capacity is forecast to result in a target breach.
- Committed interconnector import capacity is expected to become available over the horizon, including Queensland – New South Wales Interconnector (QNI) Minor (2022-23), Victoria – New South Wales Interconnector (VNI) Minor (2023-24), and Project EnergyConnect (2025-26). However, forecast major constraints on intra-regional transmission infrastructure between the outer and inner sub-regions of New South Wales, as shown in Figure 4, are expected to constrain this committed capacity from being available to consumers in the Sydney-Newcastle-Wollongong area during peak demand periods. Numerous projects were described in the 2021 EST Monitor Report that are designed to increase intra-regional transmission limits<sup>11</sup>.
- Committed semi-scheduled and scheduled generation capacity will become available in the Southern New South Wales area, including the Snowy 2.0 pumped hydro storage project and Riverina Battery Energy Storage System (BESS) project. However, forecast constraints on intra-regional transmission infrastructure between the outer and inner regions of New South Wales are expected to constrain this capacity from being

<sup>11</sup> See Page 22. <https://www.energy.nsw.gov.au/sites/default/files/2021-12/2021-energy-security-target-monitor-report.pdf>

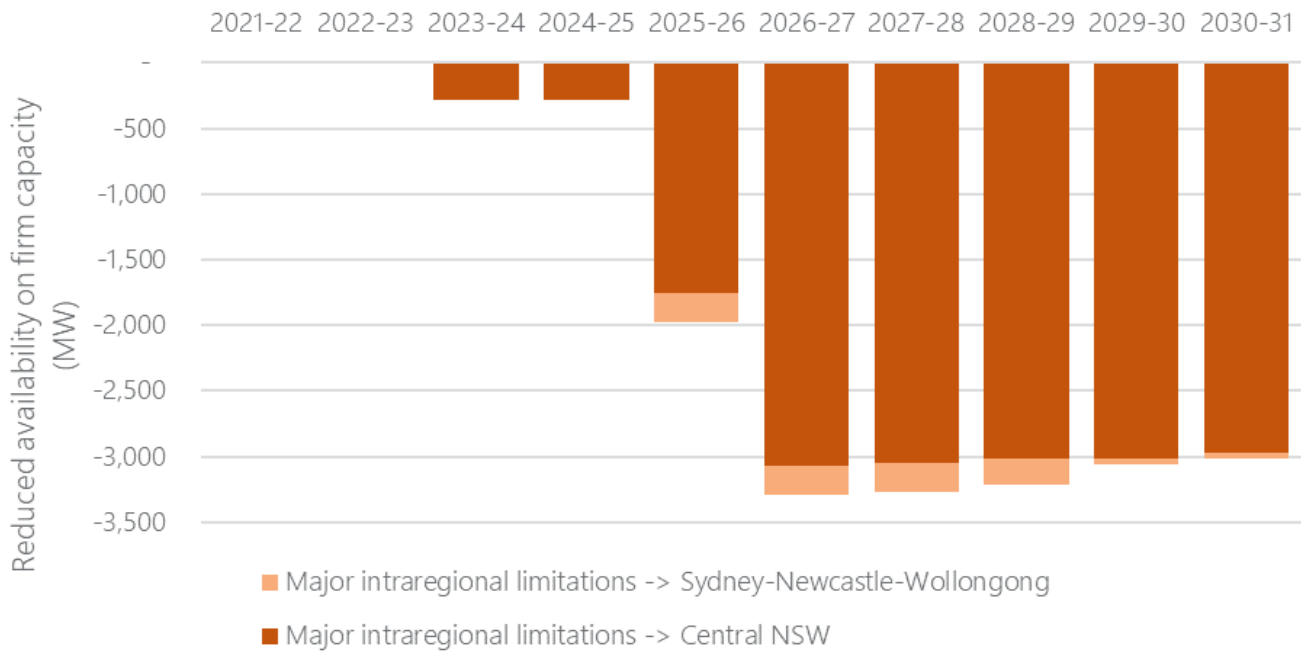


available to consumers in the Sydney-Newcastle-Wollongong area during peak demand periods without additional reinforcement.

- An EST breach is forecast to worsen from 2029-30, when Vales Point Power Station is assumed to retire. At this point, although there is firm capacity to meet the peak demand periods, some of this capacity is outside the Sydney-Newcastle-Wollongong area and may be unavailable to the majority of New South Wales customers due to forecast constraints on intra-regional transmission infrastructure.

Figure 4 shows the projected reduction in generation, storage, and interconnector firm capacity due to these major constraints on intra-regional transmission infrastructure in this assessment.

**Figure 4 Central scenario, estimated impact of major transmission limits on firm capacity**



## 2.1 Table of revised EST assessment outcomes

The revised EST assessment outcomes are shown in Table 1.

Table 1 Central scenario, EST assessment (MW)

Financial year ending	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
Peak demand (as generated 10% POE)	14,287	14,296	14,407	14,403	14,260	14,383	14,510	14,720	14,705	14,901	
Reserve margin	1,385	1,385	1,385	1,385	1,380	1,380	1,380	1,380	1,380	1,380	
<b>Energy Security Target</b>	<b>15,672</b>	<b>15,681</b>	<b>15,792</b>	<b>15,788</b>	<b>15,640</b>	<b>15,763</b>	<b>15,890</b>	<b>16,100</b>	<b>16,085</b>	<b>16,281</b>	
Scheduled capacity	Existing	13,500	13,308	12,741	12,852	10,305	10,481	10,678	10,908	9,938	10,234
	New	50	80	1,204	1,199	1,024	1,024	1,024	1,062	1,221	1,267
Semi-Scheduled equivalent firm capacity	Existing	597	597	597	597	597	597	597	597	597	597
	New	41	100	206	212	158	181	204	212	212	212
Significant non-scheduled equivalent firm capacity	Existing	23	23	23	23	23	23	23	23	23	23
	New	-	-	-	-	-	-	-	-	-	-
Interconnector firm import capacity	Existing	1,975	1,975	1,975	1,975	1,975	1,975	1,975	1,975	1,975	1,975
	New	-	60	-	-	-	-	-	-	-	-
Demand side participation	Existing	308	308	308	308	308	308	308	308	308	308
	New	-	-	-	-	-	-	-	-	-	-
<b>Firm (or equivalent) capacity</b>	<b>16,493</b>	<b>16,451</b>	<b>17,054</b>	<b>17,166</b>	<b>14,390</b>	<b>14,589</b>	<b>14,809</b>	<b>15,086</b>	<b>14,274</b>	<b>14,616</b>	
<b>Target surplus/breach</b>	<b>821</b>	<b>771</b>	<b>1,262</b>	<b>1,378</b>	<b>-1,250</b>	<b>-1,173</b>	<b>-1,081</b>	<b>-1,014</b>	<b>-1,811</b>	<b>-1,666</b>	