

## EXECUTIVE SUMMARY

Reduced growth in energy use across the National Electricity Market (NEM) compared to 2012, rising domestic rooftop photovoltaic (PV) generation, increasing consumer response to recent growth in electricity prices, and the development of new large-scale renewable generation is expected to defer new thermal electricity generation investment.

These changes result in all regions except Queensland having adequate generation capacity over the 10-year outlook period.

The 2013 Electricity Statement of Opportunities (ESOO) supports decision-making in the NEM by providing an analysis of opportunities for electricity generation and demand-side investment over a 10-year outlook period under a range of economic scenarios.<sup>1</sup>

ESOO supply–demand modelling assesses the adequacy of existing and committed electricity supply to meet demand in the NEM by identifying Low Reserve Condition (LRC) points. LRC points indicate when additional investment in generation or demand-side participation may be required to maintain electricity supply reliability within the NEM Reliability Standard.<sup>2</sup>

Under a medium economic growth scenario, the 2013 outlook for 2013–14 to 2022–23 projects:

- Reserve deficits in Queensland in 2019–20, bringing the LRC forward by one year compared to the 2012 ESoo.
- No reserve deficits in New South Wales, Victoria, South Australia, or Tasmania until after 2022–23, deferring the LRC by at least one year in those states compared to the 2012 ESoo.

Table E 1 summarises the LRC points and reserve deficits across the three scenarios modelled.

**Table E 1 — LRC points and reserve deficits in each NEM region for each scenario**

Region	Low		Medium		High	
	LRC point	Reserve deficit (MW)	LRC point	Reserve deficit (MW)	LRC point	Reserve deficit (MW)
Queensland	Beyond 2022–23	-	2019–20	159	2016–17	69
New South Wales	Beyond 2022–23	-	Beyond 2022–23	-	2021–22	53
Victoria	Beyond 2022–23	-	Beyond 2022–23	-	2021–22	123
South Australia	Beyond 2022–23	-	Beyond 2022–23	-	2020–21	36
Tasmania	Beyond winter 2023	-	Beyond winter 2023	-	Beyond winter 2023	-

### Key observations for the 2013 Electricity Statement of Opportunities

The main contributor to the adequacy results shown in Table E 1 is lower projected demand growth than forecast in 2012. Details of these changes were recently published in AEMO's 2013 National Energy Forecasting Report

<sup>1</sup> Table 1 details which scenarios were modelled from the AEMO scenarios. AEMO. 2012 Scenario Descriptions. 4 July 2012. Available: [http://www.aemo.com.au/Electricity/Planning/Related-Information/~/\\_media/Files/Other/planning/2012\\_Scenarios\\_Descriptions.ashx](http://www.aemo.com.au/Electricity/Planning/Related-Information/~/_media/Files/Other/planning/2012_Scenarios_Descriptions.ashx). Viewed 5 July 2013.

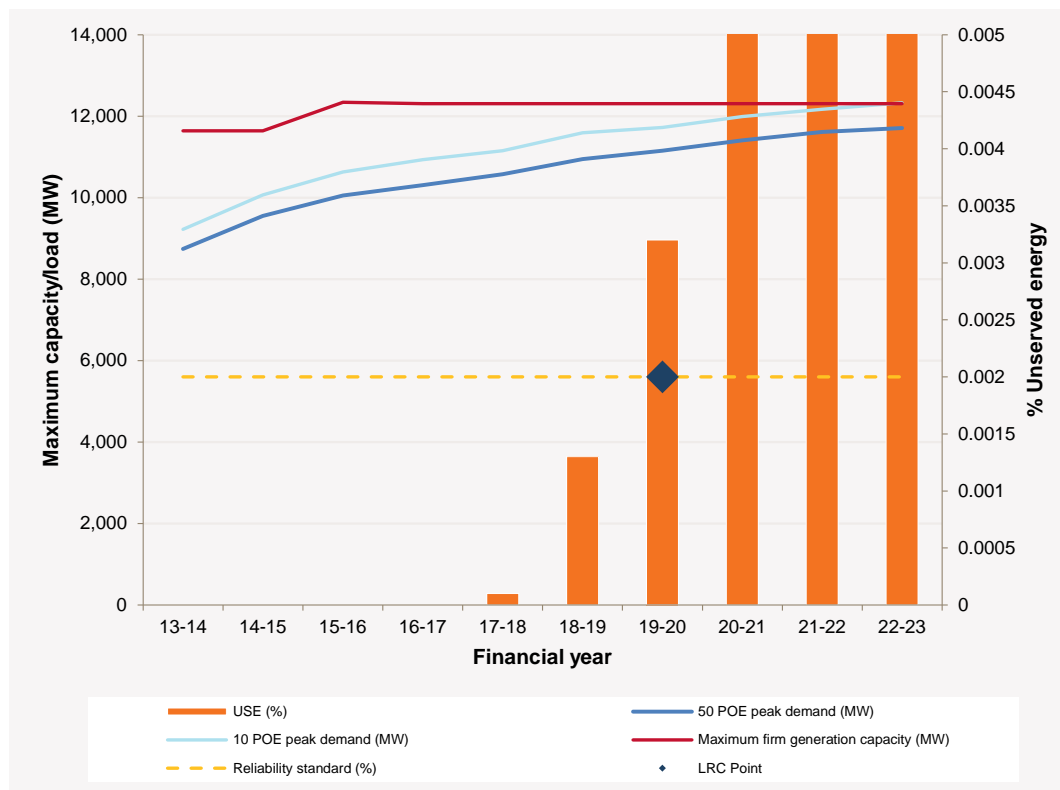
<sup>2</sup> AEMC. Reliability Standards. 1 July 2012. Available: <http://www.aemc.gov.au/panels-and-committees/reliability-panel/guidelines-and-standards.html>. Viewed 3 July 2013.

(NEFR)<sup>3</sup>, and describe a NEM average annual growth rate of 1.3% under the medium economic growth scenario, compared to 1.5% in the 2012 NEFR. Contributing factors include:

- Continued increases in domestic rooftop PV installations incentivised through feed-in tariffs and reduced system installation prices.
- Lower-than-expected growth in most industrial sectors.
- Higher estimated impacts from energy efficiency measures through capture of changes in building standards and regulations.
- Higher estimate of customer response to high price events based on analysis of historical demand-side participation behaviour.<sup>4</sup>

Figure E 1 shows the Queensland supply adequacy for the medium economic growth scenario, identifying the LRC point in 2019–20 mainly due to higher forecast energy consumption in this region. The 2013 NEFR forecasts average annual growth of 3.1% over the 10-year outlook period in Queensland, higher than the 2012 forecast of 2.5%.<sup>5</sup> Queensland is the only region with an LRC point within the ESOO’s study horizon.

**Figure E 1 — Queensland supply adequacy<sup>6</sup>**



<sup>3</sup> A detailed analysis of demand projection is provided in the 2013 NEFR. Available:

<http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013>. Viewed: 2 July 2013.

<sup>4</sup> The DSP forecast provided in the 2013 NEFR Methodology Information Paper is based on improved modelling and understanding of demand-side participation at various price levels and its expected growth over the outlook period. Available:

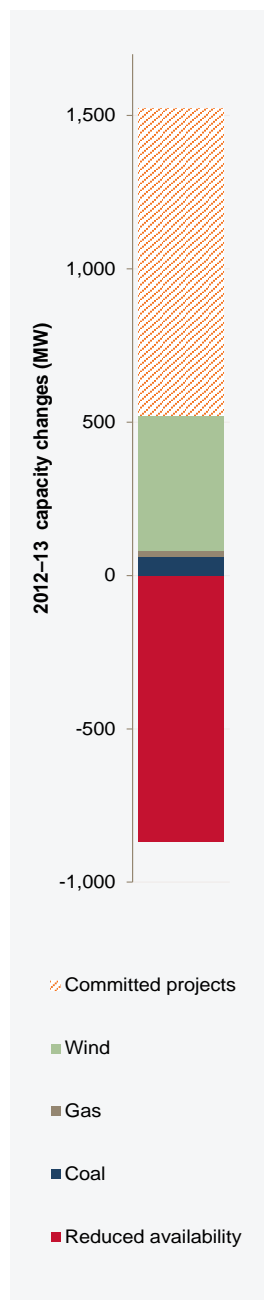
<http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013/NEFR-Supplementary-Information-2013>. Viewed: 31 July 2013.

<sup>5</sup> Queensland demand growth is due to higher large industrial demand and the ramp-up of liquefied natural gas (LNG) projects between 2014 and 2017. For further information refer to the 2013 NEFR. AEMO. 2013 National Electricity Forecasting Report. 28 June 2013. Available:

<http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013>. Viewed 2 July 2013.

<sup>6</sup> From 2020–21, unserved energy continues to grow beyond the scale of the chart. The chart has been capped at 0.005% on the secondary axis to preserve the detail of the reliability standard and LRC point.

**Figure E 2 —  
Generation changes**



### Investment trends

In 2012–13, 522.7 MW of new large-scale generation was added to the NEM’s generation capacity.<sup>7</sup> The majority of this new capacity, 439.5 MW, is wind generation from Macarthur Wind Farm (420 MW) and Morton’s Lane Wind Farm (19.5 MW), both located in Victoria.

Other generation added to the NEM in 2012–13 includes the Qenos Cogeneration Facility (21 MW) and the Hallam Road Landfill Gas Facility (2.2 MW), both also located in Victoria.

New thermal generation in 2012-13 comprised a 60 MW capacity increase of Unit 4 at New South Wales’ Eraring Power Station.

The 1,000 MW in new generation committed<sup>8</sup> since the 2012 ESOO comprises 95% wind generation and 5% solar generation. Six wind farms totalling 954.4 MW – Mount Mercer (Victoria), Boco Rock Stage 1, Gullen Range and Taralga (New South Wales), Snowtown Stage 2 (South Australia), and Musselroe (Tasmania) – are committed with commissioning<sup>9</sup> dates between July 2013 and January 2015, together with an additional 45.5 MW of solar generation at Kogan Creek<sup>10</sup> (Queensland) and the Mildura demonstration plant (Victoria).

Over the same period, 870 MW of Queensland coal-fired generation was placed in either seasonal dry storage or was decommissioned; comprising both Tarong Power Station Units 2 and 4 (700 MW), and Collinsville Power Station (170 MW). This is in addition to the South Australian availability changes of Playford B Power Station and Northern Power Station reported in the 2012 ESOO.

The above capacity changes since the 2012 ESOO are summarised in Figure E 2. See AEMO’s generation information webpage<sup>11</sup> for further information.

### Future implications

The NEM generation fleet continues to evolve in response to government renewable energy policies. For example, the Large-scale Renewable Energy Target (LRET) continues to drive the entry of renewable generation capacity. However, demand-driven investment signals for new plant remain muted.

Currently, almost 30,000 MW of publicly-announced new generation capacity is on the investment horizon, including 45% wind, 37% gas and 11% coal-fired generation.

Any changes resulting from the forthcoming 2013 Federal Government election may also impact current energy policy settings and investment drivers. Potential changes may impact the future mix of generation projects, either through changed incentives for withdrawing existing plant, or a reassessment of the timing and/or technology of proposed future projects.

However, any changes are unlikely to have an immediate impact on the ESOO

<sup>7</sup> Rooftop solar PV generation is treated as a demand offset for supply–demand balance, and is not included in this figure. In 2012-13, it is estimated that 774 MW of rooftop PV generation capacity was installed in the NEM. AEMO. 2013 NEFR Methodology Information Paper. Available: <http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report-2013/NEFR-Supplementary-Information-2013>. Viewed: 31 July 2013.

<sup>8</sup> A committed project represents generation that is considered to be proceeding.

<sup>9</sup> A commissioned project can be operated up to its installed capacity.

<sup>10</sup>The 44 MW Kogan Creek capacity is not additional to the 730/744 MW summer/winter capacities of Kogan Creek, rather it is a contribution towards the total generation.

<sup>11</sup> Available: <http://www.aemo.com.au/Electricity/Planning/Related-Information/Generation-Information>. Viewed: 5 July 2013.



results. AEMO will continue to monitor developments and update the market through its Generator Information page and ESOO Updates.

### **Improvements to the 2013 ESOO**

The 2013 ESOO incorporates improved supply–demand modelling that uses simulated hourly dispatch. This results in more accurate forecast of reserve deficits, and is more consistent with AEMO’s other planning studies.<sup>12</sup>

The 2013 ESOO is accompanied by a suite of supplementary reports and an extensive set of data supporting the 2013 supply–demand outlook, enabled by the improved modelling methodology.<sup>13</sup>

<sup>12</sup> A description of the changes to supply-demand modelling for the assessment of LRC is included in the 2013 Planning Consultation 2013 Modelling Methodology and Assumptions. 12 June 2013. Available: <http://www.aemo.com.au/Electricity/Planning/Related-Information/2013-Planning-Assumptions>. Viewed: 2 July 2013.

<sup>13</sup> Available: <http://www.aemo.com.au/Electricity/Planning/Electricity-Statement-of-Opportunities>. See also supporting information in Section 5.