

# 2016 National Electricity Forecasting Report

## ABOUT AEMO

This infographic has been developed by the independent Australian Energy Market Operator (AEMO), using information from the 2016 National Electricity Forecasting Report. AEMO plans, develops, and operates markets that are responsive to energy sector needs and support investment for the long-term benefit of Australian consumers. © 2016. The material in this publication may be used in accordance with the copyright permissions on AEMO's website.



The 2016 National Electricity Report (NEFR) provides independent electricity consumption and maximum and minimum demand forecasts for each region in the National Electricity Market (NEM) over a 20-year outlook period from 2015–16 to 2035–36.

The effects of energy technology advancements and changing consumer behaviour on energy usage and demand for grid-supplied electricity become clearer as we move through the electricity supply chain.



Percent of installed capacity in the NEM as at April 2016.

### Biomass

0.8%



### Coal

47.7%



### Gas-fired generation (Combined-cycle gas turbine; and Open-cycle gas turbine)

16.6%



### Gas – other

~4.1%



### Hydro

15%



### Other

0.3%



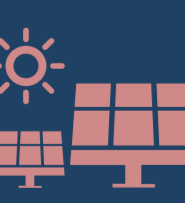
### Rooftop photovoltaic (PV)

8.2%



### Solar (Large-scale)

0.3%



### Wind

6.9%



## Liquefied natural gas (LNG)



Electricity consumption for LNG production is forecast to increase 95.6% over the 20-year forecast period, from 4,334 gigawatt hours (GWh) to 8,478 GWh.



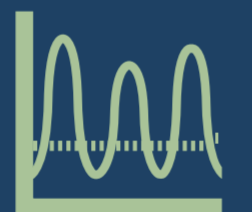
Queensland's export LNG industry is projected to increase the state's electricity consumption by 8.3% or 4,144 GWh from 2015–16 levels.



Rooftop PV capacity is forecast to more than triple over the 20-year forecast period from ~4.4 GW to ~20.1 GW.



By 2035–36, 3.8 gigawatts (GW) of rooftop PV capacity (19% of total PV capacity) is expected to have integrated battery storage, providing 6.6 GWh of energy storage potential. Assuming stored battery energy is discharged over a number of hours, battery storage is forecast to reduce peak demand by 1.5% by the end of the 20-year forecast period.



Minimum demand is projected to stay flat and to occur overnight in the short term. By the mid-2020s, rooftop PV capacity is forecast to grow to the point of shifting the time of minimum demand from the grid to midday. By the end of the 20-year horizon, minimum demand is expected to reduce between 3%–10% per annum depending on the region, as rooftop PV capacity keeps growing.



Maximum demand is forecast to remain flat over the 20-year outlook period due to energy efficiency gains in air conditioning and increasing rooftop PV capacity.

## KEY INSIGHTS



Total NEM-wide consumption of electricity from the grid is forecast to remain flat over the 20-year forecast period (from 183,258 GWh to 184,467 GWh - an increase of 0.03%), despite a forecast 30% growth in population and projected average growth in the Australian economy.



Australian households are using more electric appliances than ever, and this is forecast to continue growing.



Increasing energy efficiency of household appliances is forecast to offset increasing use of electric appliances, flattening the resultant consumption of electricity from the grid.



The outlook for grid-supplied electricity is further flattened by strong growth in rooftop PV, which is forecast to increase by 350% from current levels by 2035–36, equivalent to 11% of current grid-supplied electricity use.

## ELECTRICITY CONSUMPTION FORECASTS BY SECTOR

### Residential



Consumption from the grid from the residential sector is forecast to decrease ~16% over the 20-year forecast period from ~51,074 GWh to ~42,896 GWh.

### Manufacturing



Consumption from the grid from the manufacturing sector is forecast to increase 6.4% over the 20-year forecast period from ~50,684 GWh to ~53,944 GWh.

### Other business sectors\*



Consumption from the grid from other business sectors (including coal) is forecast to increase ~10.9% over the 20-year forecast period from ~85,911 GWh to ~95,313 GWh.

\*This includes industrial and commercial users, including coal mining, LNG, the services sector, and food and beverage manufacturing.

## ENERGY EFFICIENCY FORECASTS



Over the 20-year outlook, annual improvements in energy efficiency (0.69% of total NEM operational consumption), plus increasing installations of rooftop PV each year (0.51% of total NEM operational consumption), are offsetting the effect of population growth on electricity consumption.

~27,082 GWh

Energy efficiency savings are projected to total ~27,082 GWh by the end of the 20-year forecast period reducing forecast total electricity consumption by 14.8%.

## HOUSEHOLD ELECTRIC APPLIANCE USAGE TRENDS

Measuring the use and improved characteristics (such as size, capacity and/or function) of electric appliances shows that Australian households use more lighting, have larger televisions, more web-connected devices, larger capacity white goods and more heating and cooling capacity than in 2009, when electricity consumption from the grid was at its peak. The following figures represent a composite index of forecast electricity appliance usage, ownership and quality, and functionality characteristics, from 2009 until 2035–36.

