

# Renewable Energy Index

August 2017



Green Energy Markets, September 2017



## Key findings

### Meeting our power needs while reducing pollution

- Over August Australia produced an amount of renewable energy equal to the power consumption of 8.2 million homes, or three quarters of all households in the country;
- Renewables made up 19.5% of the electricity generated in August across the east and west coast main electricity grids. The amount of renewable energy used in August avoided an amount of carbon pollution equal to removing 9 million cars from the road - equal to two-thirds of all the cars in Australia.

### Construction activity and job creation

- **56 large-scale renewable energy projects** were under construction at the end of August 2017. 6 projects were committed to construction in August including Australia's biggest ever wind farm - the 453MW Cooper's Gap wind farm in QLD. Another 3 projects shifted from the construction to production phase, resulting in a net increase of 3 projects under construction compared to July;
- These 56 projects are estimated to create **enough jobs to employ 11,941 people** full-time for a year ("job-years" of employment), up by 2,044 on last month;
- **Queensland has overtaken NSW for the first time** with 20 large-scale renewable projects creating enough jobs to employ 5,203 people full time for a year, compared to 3,426 in NSW.

### Rooftop solar installation jobs and power production:

- **15,225 small-scale rooftop solar systems** were installed in August 2017;
- These systems will generate **power equal to the needs of 25,559 homes**;
- **The systems installed in August will deliver around \$180 million in power bill savings over the next 10 years** for the households and businesses that installed them, up \$9 million on last month;
- Installing these solar systems supported **4,893 full-time jobs** (across installation, design and sales).

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## About this report

The Green Energy Markets' Renewable Energy Index tracks on a monthly basis the amount of renewable energy Australia relies on, the jobs it's creating, the power bill savings it is delivering for Australian households, and the environmental benefits of the rising use of clean power.

This edition covers the period of August 2017.

The Renewable Energy Index is funded by GetUp! to provide a reliable, up-to-date record on renewable energy's contribution to Australia.

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## What renewable energy is contributing to the grid



### 1. Renewables made up 19.5% of the electricity generated in Australia's main grids

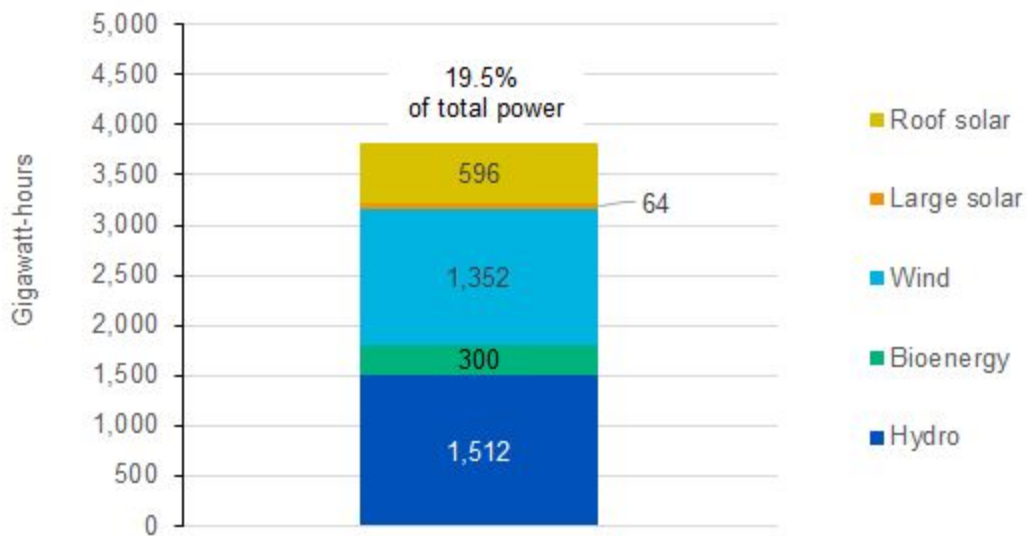


Figure 1: Renewable energy power generation by fuel & market share for west & east coast power grids – August 2017

## 2. Enough renewable energy to power 8.2 million homes

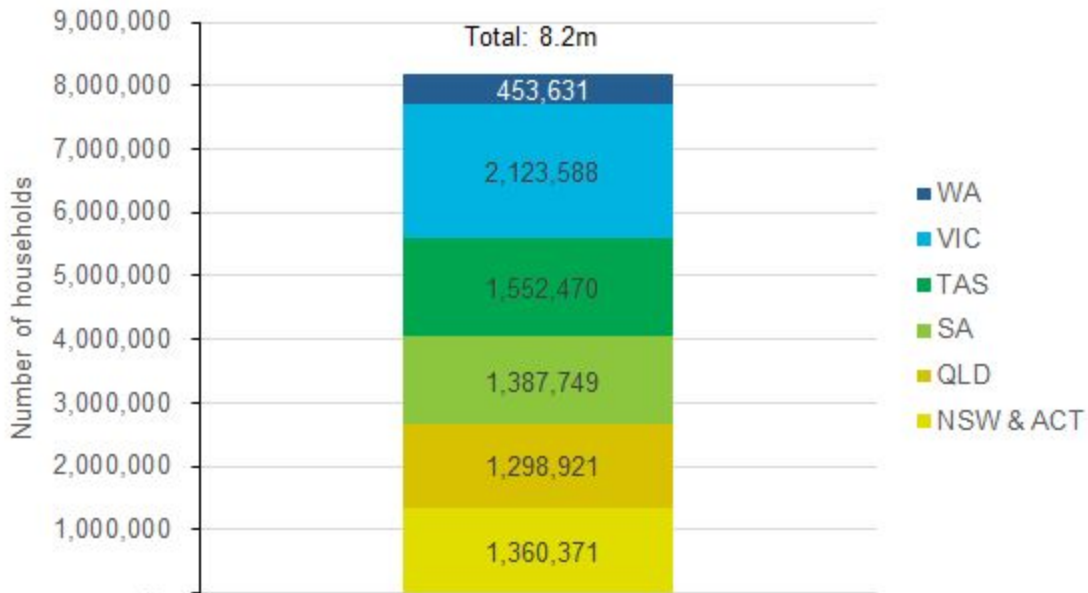


Figure 2: Renewable energy power generation August 2017 in terms of number of households' power consumption by state

## 3. Renewable energy avoided 2.4 million tonnes of CO2 pollution

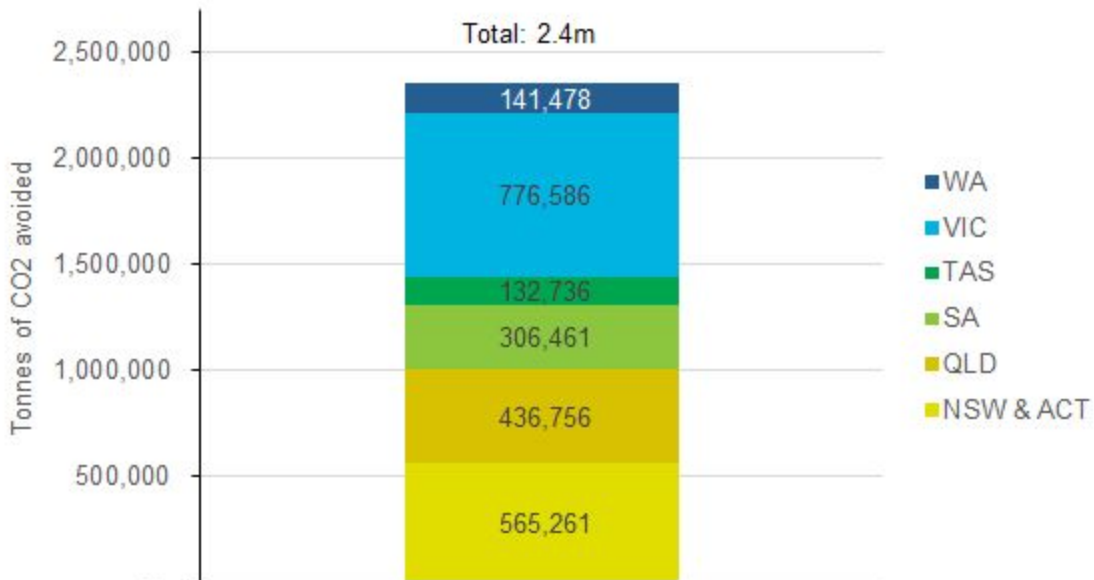


Figure 3. CO2 pollution avoided by renewable energy generation over August 2017

#### 4. Renewable energy avoided 9 million cars' worth of CO2 pollution over August



Figure 4. Number of cars' CO2 pollution avoided by renewable energy generation over August 2017



## Large-scale renewables construction activity



### 5. 3,411 megawatts of large-scale renewables under construction

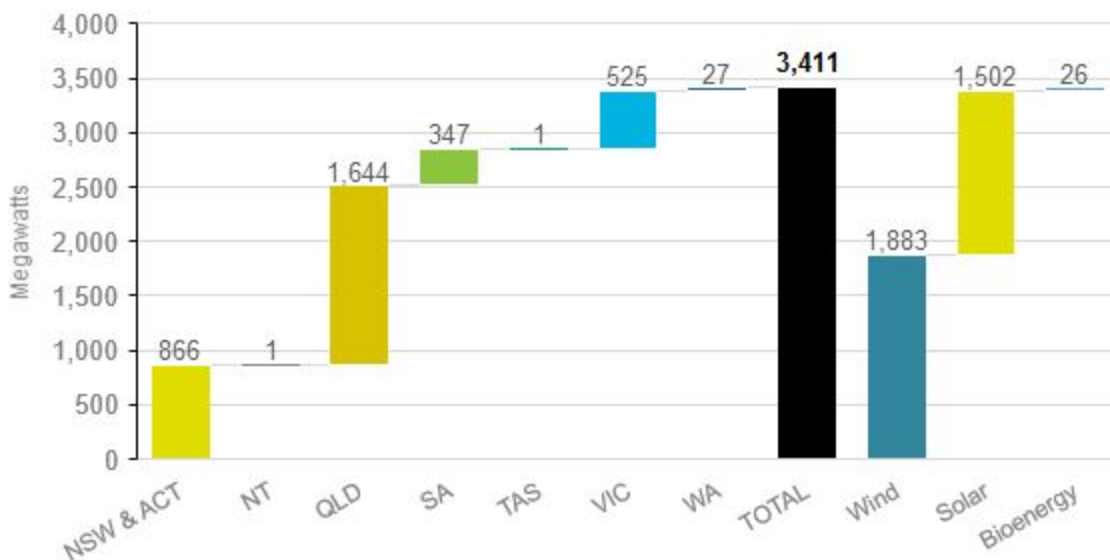


Figure 5: Megawatts of large-scale renewable energy projects under construction by state and fuel at end of August 2017

## 6. Enough work to employ 11,941 people

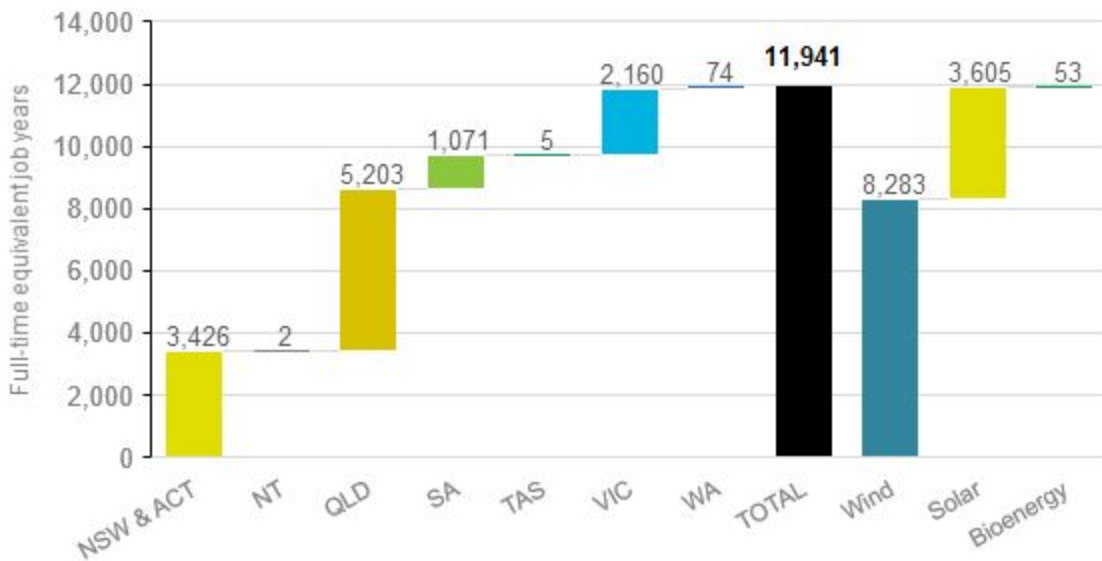


Figure 6: Job-years created by renewable energy projects currently under construction by state and fuel - as at August 2017



## Rooftop solar installation activity



### 7. 15,225 small-scale solar systems installed in August

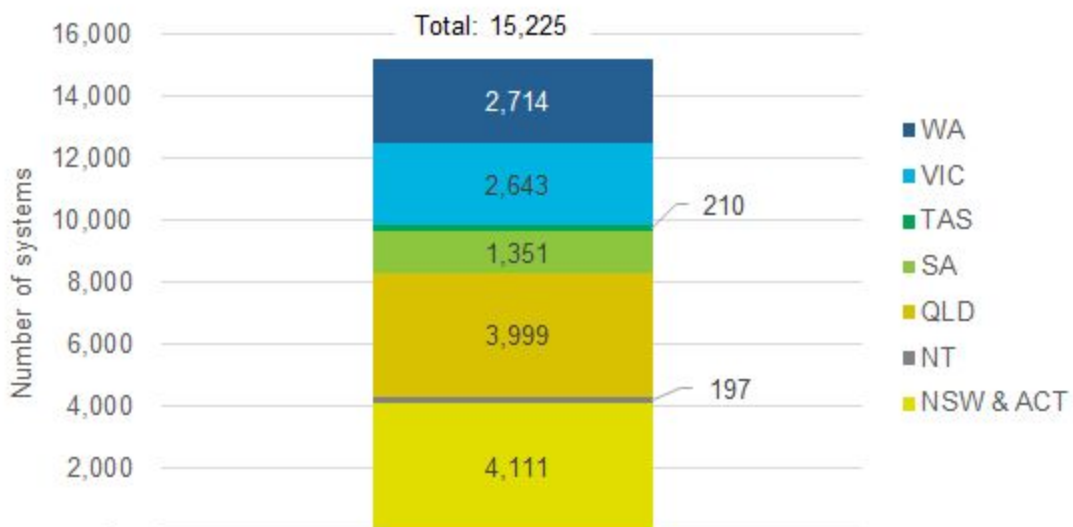


Figure 7: Small-scale solar PV systems installed by state - August 2017

## 8. Rooftop solar employed 4,893 people in August

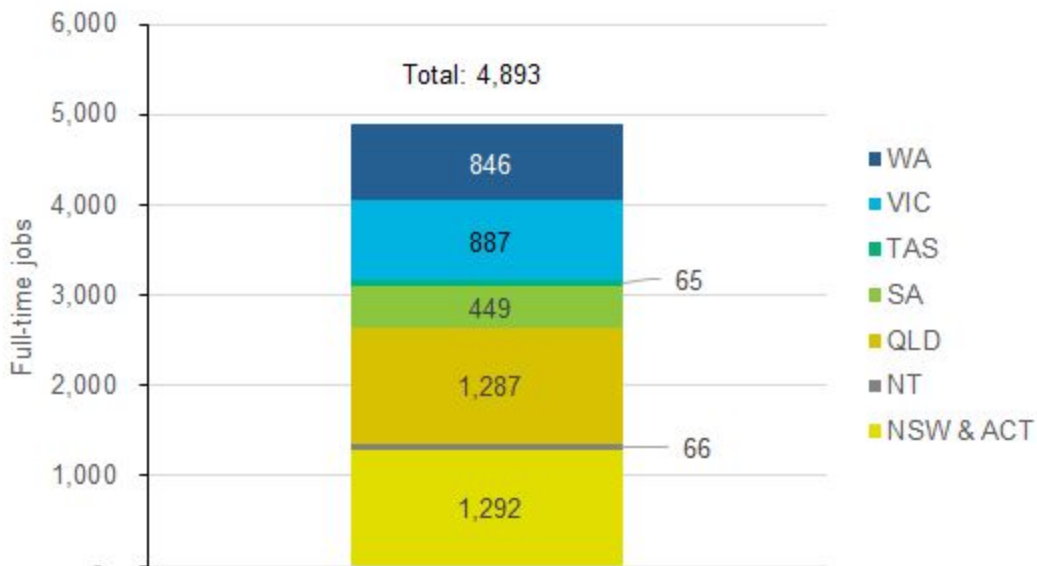


Figure 8. Number of full-time equivalent jobs by state in the installation and sale of rooftop solar PV systems installed over August 2017

## 9. Enough rooftop solar installed in August to power 25,559 homes

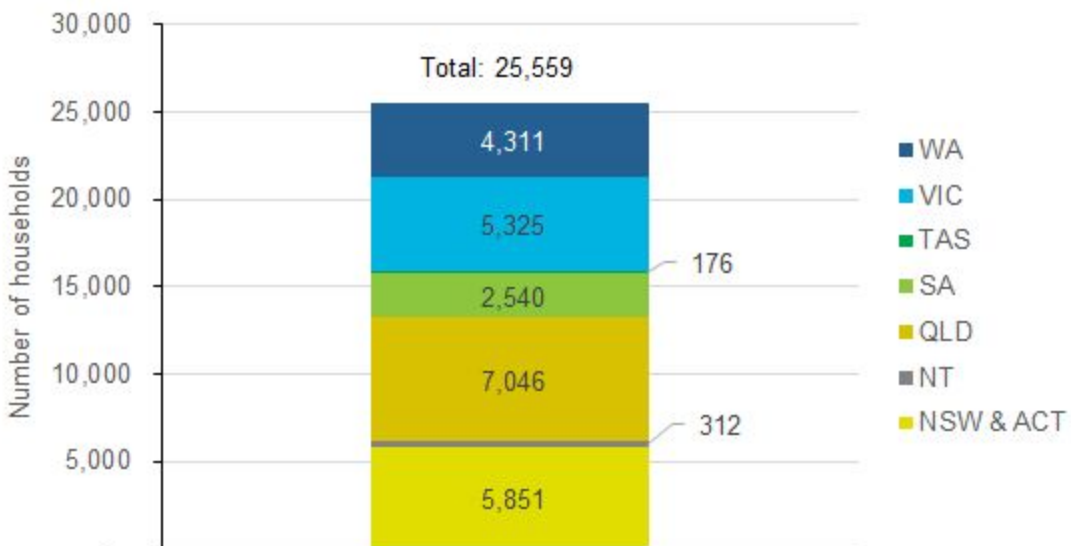


Figure 9: Expected generation from solar systems installed over August in terms of number of households' power consumption

10. Rooftop solar installed in August will deliver \$180 million in bill savings



Figure 10: Power bill savings (in \$millions) over next ten years from rooftop solar systems installed in August 2017

## Notes on sources and methodology

Figure 1 – Data sourced from the Australian Energy Market Operator (AEMO) and via NEM Review for all power except rooftop solar PV generation in the WEM. Rooftop solar PV generation in the WEM is derived from an estimate of the cumulative installed capacity in WA multiplied by a generic capacity factor for each month derived from AEMO’s 2017 WA Electricity Statement of Opportunities with a discount to align it with Clean Energy Regulator estimates for solar PV annual average generation.

Figure 2 – This chart is calculated by dividing the amount of renewable energy produced in each state by the average annual electricity consumption of households in that state which are sourced from the Australian Energy Market Commission’s 2016 Residential Electricity Price Trends publication.

Figure 3 – This chart is calculated by multiplying the amount of renewable energy produced in each state by the average emissions intensity of grid power in that state sourced from the Australian Government’s National Greenhouse Accounts Factors – August 2016. Readers should note this is an approximate measure because estimating abatement precisely depends on a complex array of factors. The method employed in the Index is highly likely to underestimate abatement delivered by renewable energy in Tasmania and South Australia while potentially overestimating abatement in Victoria and to a lesser extent other states.

Figure 4 – This chart is calculated by dividing the estimated tonnes of CO<sub>2</sub> avoided by renewable energy generation by the average emissions of an Australian passenger car. The average annual emissions of an Australian passenger car was derived by dividing the total CO<sub>2</sub> emissions of Australia’s passenger cars sourced from the Australian Government’s 2016 Emissions Projections by the number of passenger vehicles in Australia as estimated in the Australian Bureau of Statistics’ 2016 Motor Vehicle Census (31 Jan 2016).

Figure 5 – This data is sourced from [Green Energy Markets](#)’ Power Plant Register which tracks information on every renewable energy project in the country that is currently registered or likely to register under the Large-Scale Renewable Energy Target.

Figure 6 – This chart is calculated by multiplying the number of megawatts under construction by an estimate of the job years (a person employed full-time for a year) involved in constructing renewable energy projects by fuel type sourced from ROAM Consulting report to the Clean Energy Council –RET Policy Analysis, dated 23 May 2014. Readers should note that job estimates provided by individual project proponents may not align due to inconsistent definitions of how to measure job creation that are not necessarily reported in job-years.

Figure 7 - Data sourced from [Green Energy Markets' Solar Report](#) produced using data extracted from the Clean Energy Regulator's register of Small Scale Technology Certificates.

Figure 8 – This chart is calculated by sorting solar PV systems into different kilowatt size categories using information sourced from the [Green Energy Markets Solar Report](#) using data extracted from the Clean Energy Regulator's register of Small Scale Technology Certificates. These are then multiplied by estimates of the average person-hours involved in selling, designing and installing such sized systems based on a Green Energy Markets' survey of solar PV industry participants which is then converted into full-time equivalents working a 37.5 hour work week.

Figure 9 - This chart is calculated by using data on the number of small-scale technology certificates within the Clean Energy Regulator's registry as a proxy for the expected average annual power generation from solar PV systems installed in each state. This is then divided by the average annual electricity consumption of households in that state which are sourced from the Australian Energy Market Commission's 2016 Residential Electricity Price Trends publication.

Figure 10 - This chart is calculated by using data on the number of small-scale technology certificates within the Clean Energy Regulator's registry as a proxy for the expected average annual power generation from solar PV systems installed in each state. To determine how much of this generation is displacing imported power from the grid at retail rates or exported to the grid where it receives a feed-in tariff tied to wholesale electricity prices, systems are sorted into different kilowatt size categories using information sourced from the [Green Energy Markets Solar Report](#) using data extracted from the Clean Energy Regulator's register of Small Scale Technology Certificates. The amount exported by solar power systems rises from 50% for 2 kilowatts systems up to 90% for 8-10kW systems based on advice received from the Alternative Technology Association. Systems larger than 15kW are assumed to only avoid or receive an electricity rate equal to the export feed-in tariff we estimate for residential customers in each state. The imported retail rate of electricity and the export feed-in rate is based on an average of the AGL, Origin and EnergyAustralia lowest post-discounted published offer for the capital cities in the states of QLD (Energex), NSW (Ausgrid), VIC (Citipower) and SA (SA Power Networks). For Tasmania, WA, ACT and NT we use the regulated and standard feed-in tariff rates of the Government-owned retailer in each state.