

# Renewable Energy Index

January 2018



Green Energy Markets, February 2018

## Key highlights

### **Solar passes 10,000 jobs mark as it becomes significant source of power**

- Large scale solar farms under construction, combined with rooftop solar installations are now on track to support more than 10,000 full time jobs.
- Over January, 16,042 rooftop systems were installed which supported 5,337 full-time jobs (across installation, design and sales). These systems are expected to provide around \$197 million in power bill savings over the next 10 years for the households and businesses that installed them.
- In addition there was 2,273 megawatts of large-scale solar farms under construction which will provide enough work to employ 5,456 people full time for a year.
- So far this summer solar has supplied 5% of the NEM and WA main grid's overall power consumption. This is up from less than 0.5% at the beginning of the decade. By the end of the decade generation from rooftop solar and ground mount solar farms combined will approach 10% of these grid's electricity consumption. Total power produced by solar nationally over 2020 is likely to be 19,000 gigawatt-hours which is equal to the entire electricity consumption of WA's main grid.

### **Overall renewables activity Construction activity and job creation**

- Over January, power produced by all renewable fuels was equal to 17.3% of power consumed across the east and west coast main electricity grids.
- The amount of renewable energy used in January was equal to the power consumption of 8.5 million homes and avoided an amount of carbon pollution equal to removing 9 million cars from the road - equal to almost two-thirds of all the cars in Australia.
- 79 large-scale renewable energy projects were under construction at the end of January that are expected to provide 17,215 job years of construction work. Queensland leads in employment with 6,421 job years of construction work, followed by Victoria with 4,984 jobs years and NSW in third with 3,579 job years of construction activity.

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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 January 2018.

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 17.3% of the electricity generated in Australia's main grids

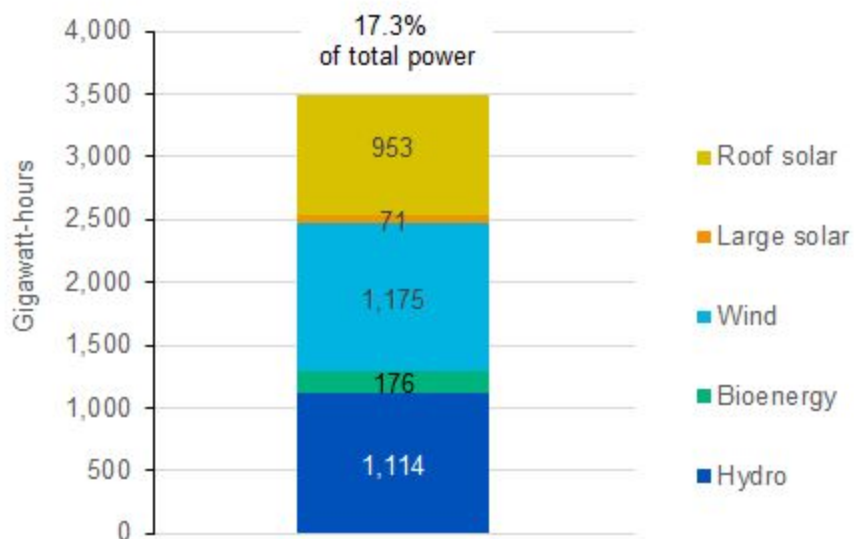


Figure 1: Renewable energy power generation by fuel & market share for west & east coast power grids – January 2018

## 2. Enough renewable energy to power 8.5 million homes



Figure 2: Renewable energy power generation January 2018 in terms of number of households' power consumption by state

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

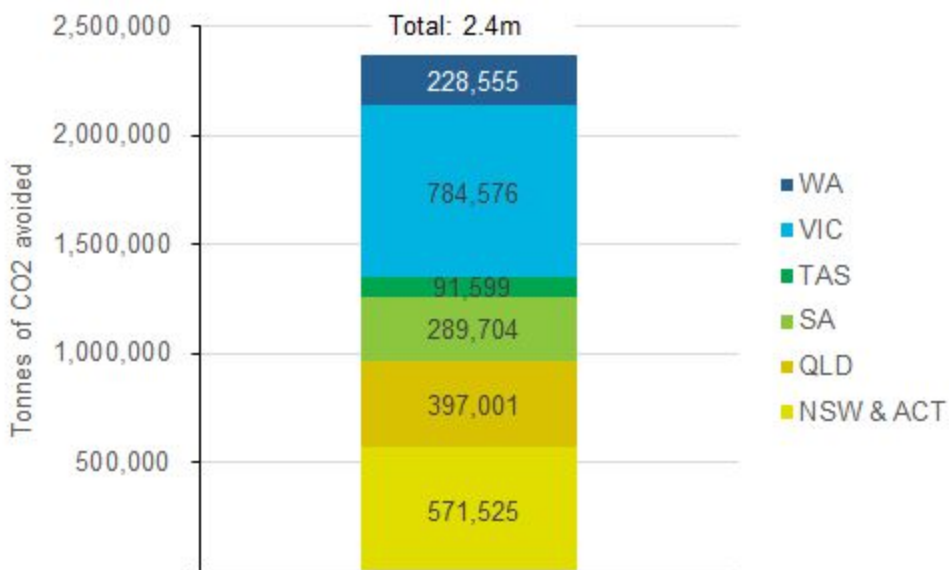


Figure 3. CO2 pollution avoided by renewable energy generation over January 2018

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



Figure 4. Number of cars' CO2 pollution avoided by renewable energy generation over January 2018



## Large-scale renewables construction activity



### 5. 4,960 megawatts of large-scale renewables currently under construction

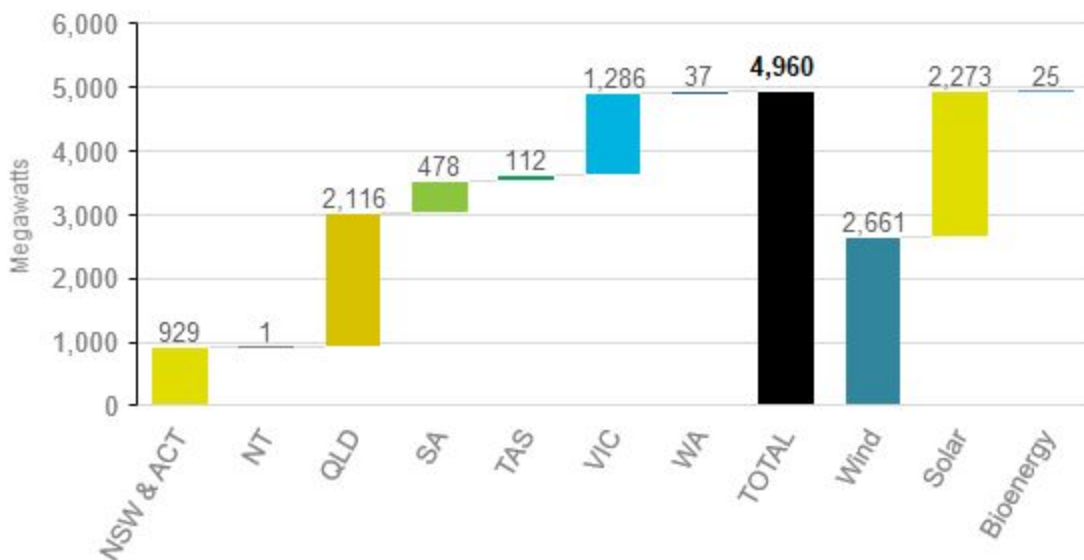


Figure 5: Megawatts of large-scale renewable energy projects under construction by state and fuel at end of January 2018

## 6. Enough work to employ 17,215 people

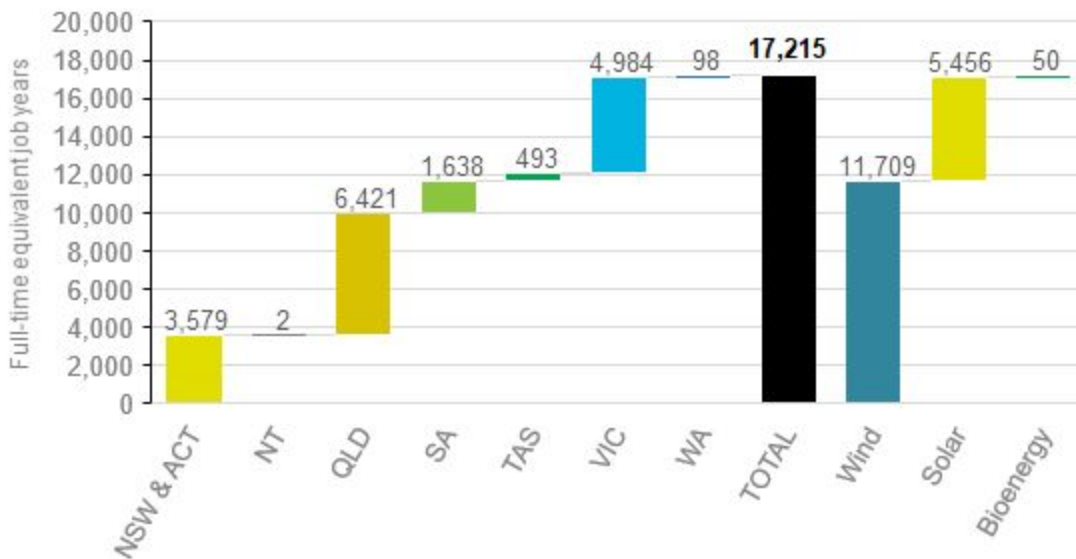


Figure 6: Job-years created by renewable energy projects currently under construction by state and fuel - as at end of January 2018



## Rooftop solar installation activity



### 7. 16,042 small-scale solar systems installed in January

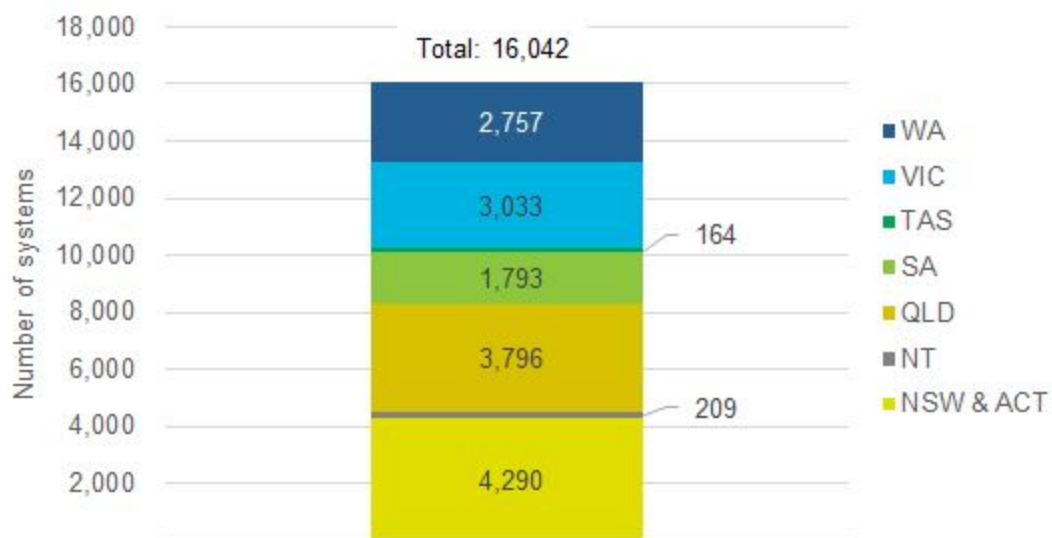


Figure 7: Small-scale solar PV systems installed by state - January 2018

## 8. Rooftop solar employed 5,337 people in January

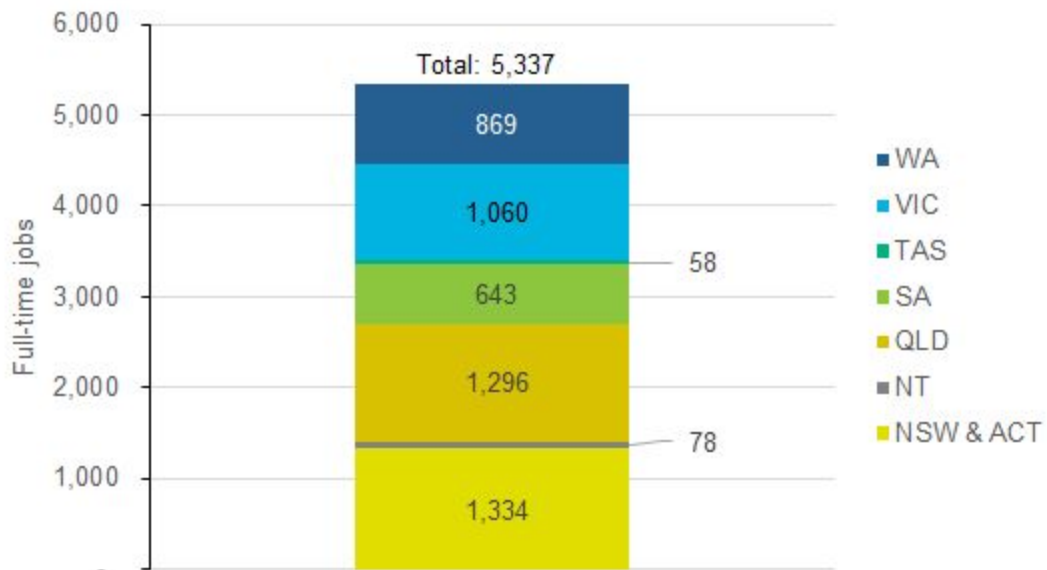


Figure 8. Number of full-time equivalent jobs by state in the installation and sale of rooftop solar PV systems installed over January 2017

## 9. Enough rooftop solar installed in January to power 31,752 homes

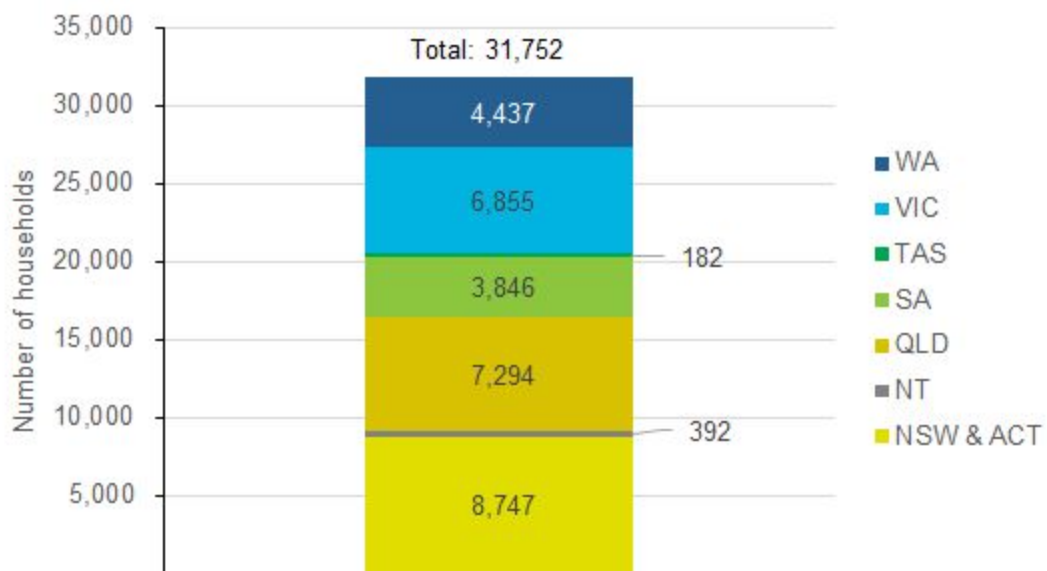


Figure 9: Expected generation from solar systems installed over January in terms of number of households' power consumption

## 10. Rooftop solar installed in January will deliver \$197 million in bill savings



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