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# Renewable Energy in NSW

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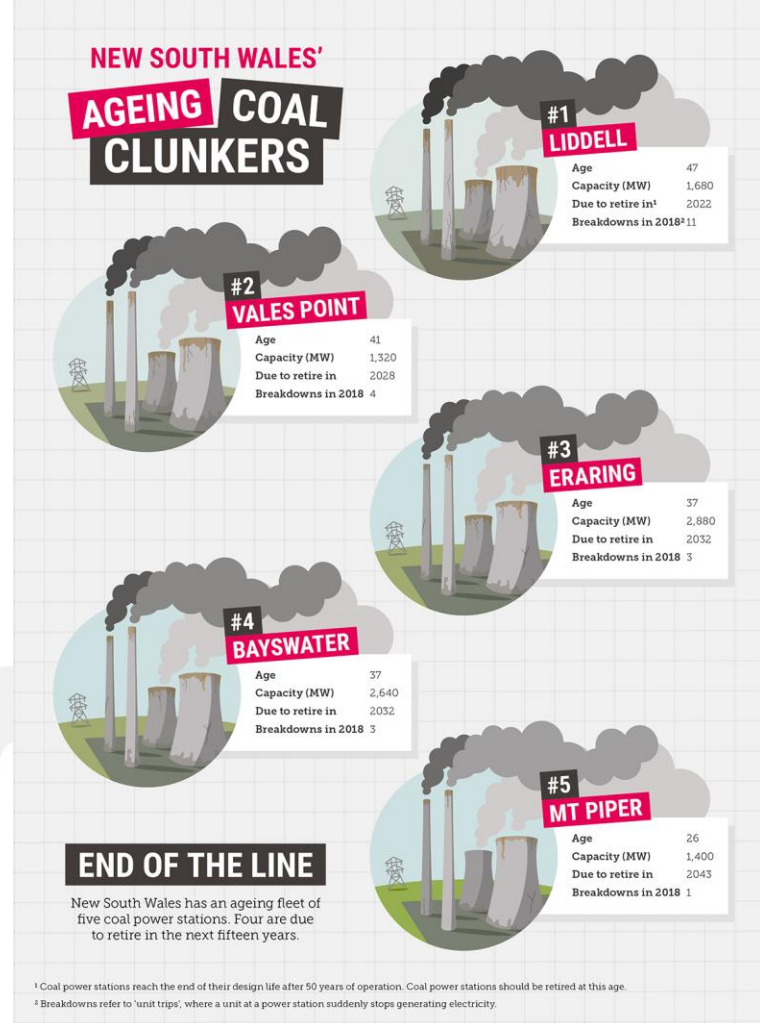
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# Coal-fired power in NSW

- The majority of electricity generation in Australia is from fossil fuels, primarily coal
- Five coal-fired power plants produced 80.8% of NSW electricity in 2018-19
- The Liddell Power Station is due to close in 2023 and the others will follow by the end of 2043

NSW Electricity Strategy 2019 <https://energy.nsw.gov.au/media/1921/download#>

Infographic used with permission of the Climate Council  
<https://www.climatecouncil.org.au/resources/new-south-wales-ageing-coal-clunkers/>



# Building renewable energy capacity can replace the current electricity supply

- Renewables plus storage are cheaper than new coal and nuclear power plants
- Renewables provided 24% of Australia's electricity in 2019



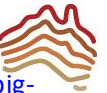
De Atholia, Flannigan & Lai 2020 Renewable Energy Investment in Australia

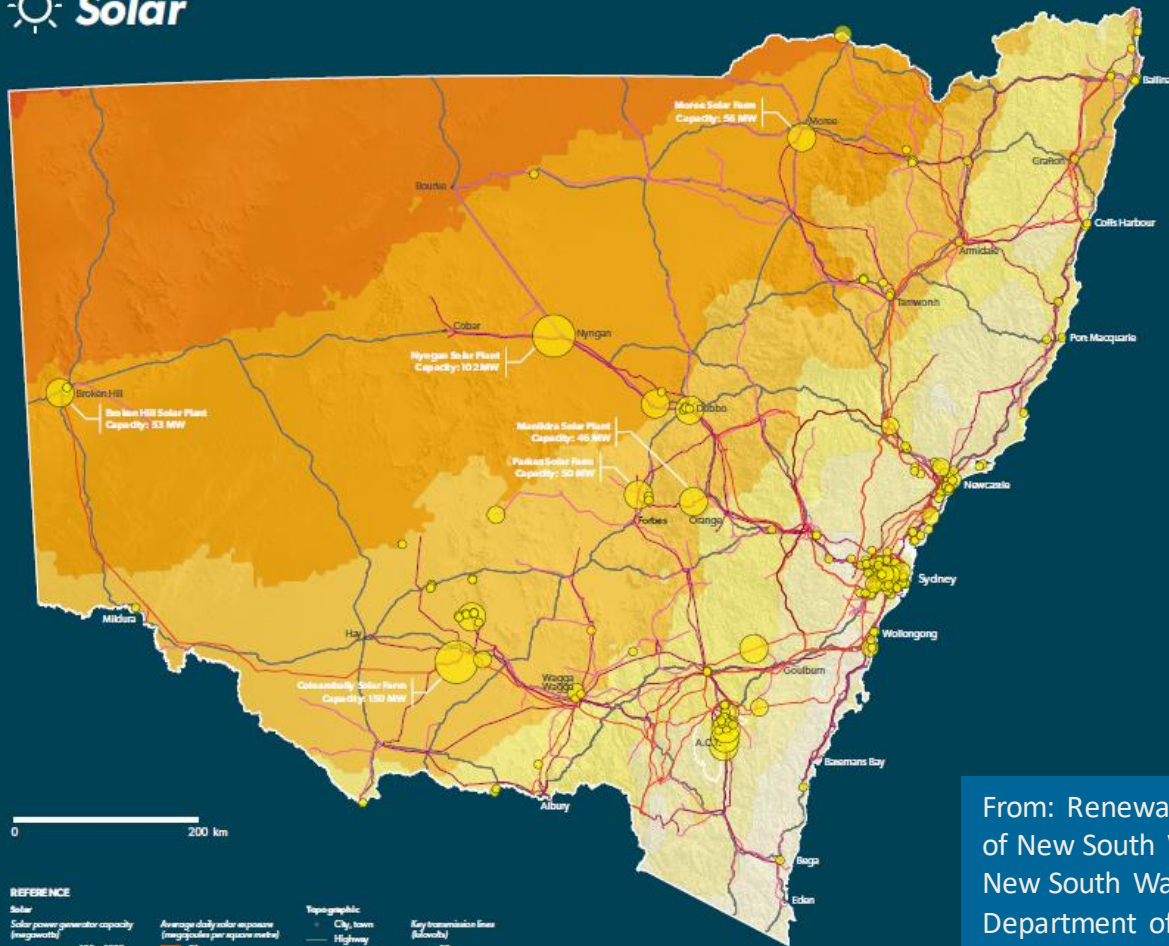
<https://www.rba.gov.au/publications/bulletin/2020/mar/renewable-energy-investment-in-australia.html>

RMIT ABC Fact Check 2019 <https://www.abc.net.au/news/2019-09-12/is-renewable-power-cheaper-than-coal-nuclear-malcolm-turnbull/11495558>

The Guardian 2020 <https://www.theguardian.com/environment/2020/mar/12/wind-and-solar-plants-will-soon-be-cheaper-than-coal-in-all-big-markets-around-world-analysis-finds>

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**REFERENCE**

<b>Solar power generator capacity (megawatts)</b>	<b>Average daily solar exposure (megawatts per square metre)</b>	<b>Topographic</b>	<b>Key transmission lines (kilovolts)</b>
<ul style="list-style-type: none"> <li>100 &lt; 1000</li> <li>10 &lt; 100</li> <li>1 &lt; 10</li> <li>0 &lt; 1</li> </ul>	<ul style="list-style-type: none"> <li>21</li> <li>20</li> <li>19</li> <li>18</li> <li>17</li> <li>16</li> <li>15</li> </ul>	<ul style="list-style-type: none"> <li>City, town</li> <li>Highway</li> <li>State border</li> </ul>	<ul style="list-style-type: none"> <li>66</li> <li>132</li> <li>220 &amp; 330</li> <li>500</li> </ul>

0 200 km

**1910**  
people directly employed (2015-17)

**4314\***  
GWh generated (2017)

**17%**  
of suitable dwellings have solar PV (2017)

\* Includes residential, commercial, and industrial or service users

**Cofeambally Solar Farm**  
capacity to power  
**52 k** homes  
**560 k** PV panels

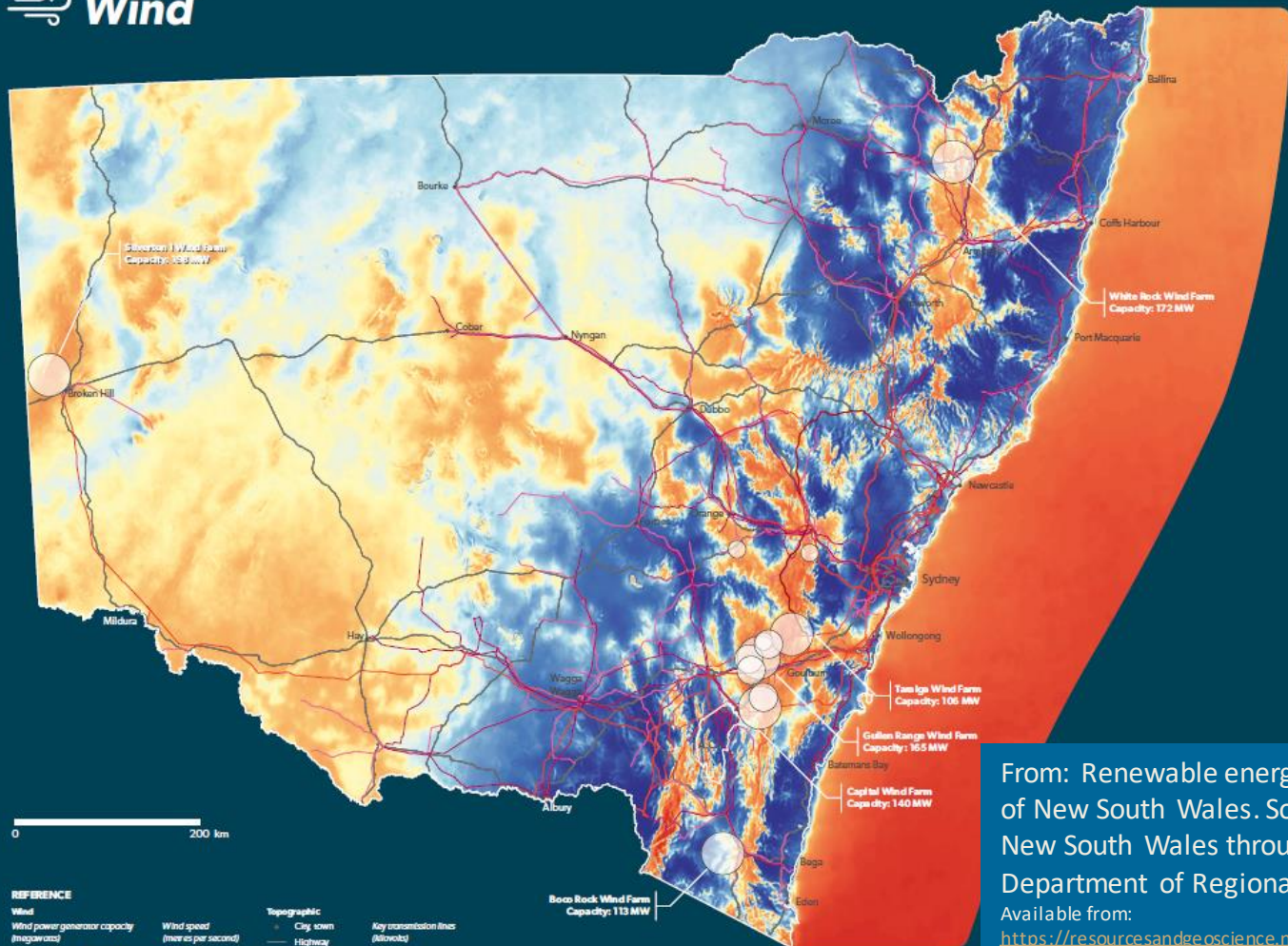
**Moree Solar Farm**  
capacity to power  
**24 k** homes  
**223 k** PV panels

**Nyngan Solar Plant**  
capacity to power  
**43 k** homes  
**1350 k** PV panels

From: Renewable energy resources of New South Wales. Source: State of New South Wales through Department of Regional NSW (2020)

Available from:  
<https://resourcesandgeoscience.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/renewable-resources-map>



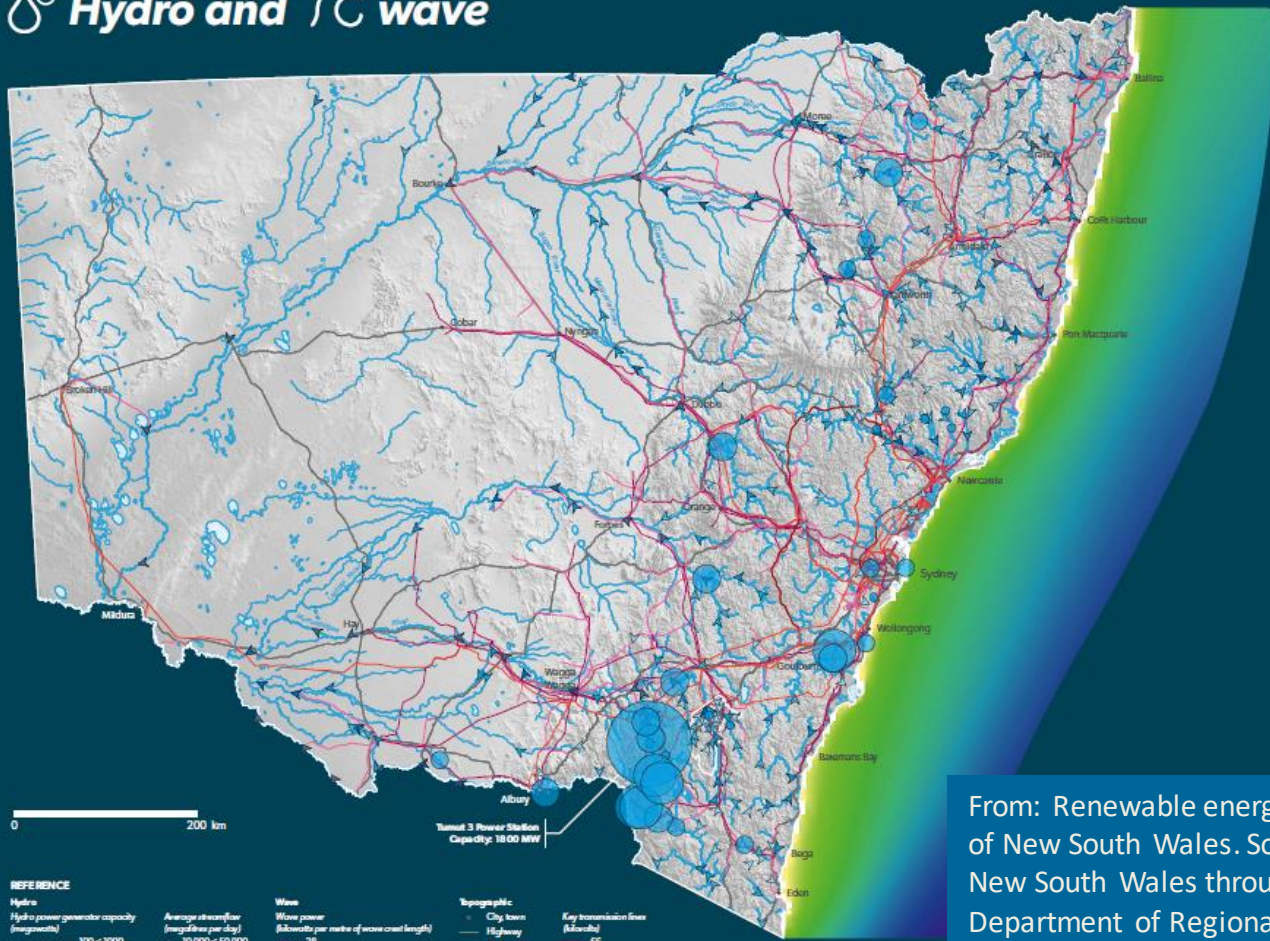


- 750** people directly employed (2016-17)
- 1941\*** GWh generated (2017)
- 10** major wind farms (largest project - over 30 MW)
- 483** wind turbines
- 1113** MW maximum capacity

From: Renewable energy resources of New South Wales. Source: State of New South Wales through Department of Regional NSW (2020)

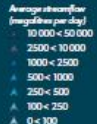
Available from: <https://resourcesandgeoscience.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/renewable-resources-map>





REFERENCE

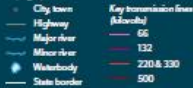
Hydro



Wave



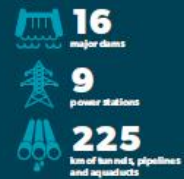
Topographic



Hydro industry



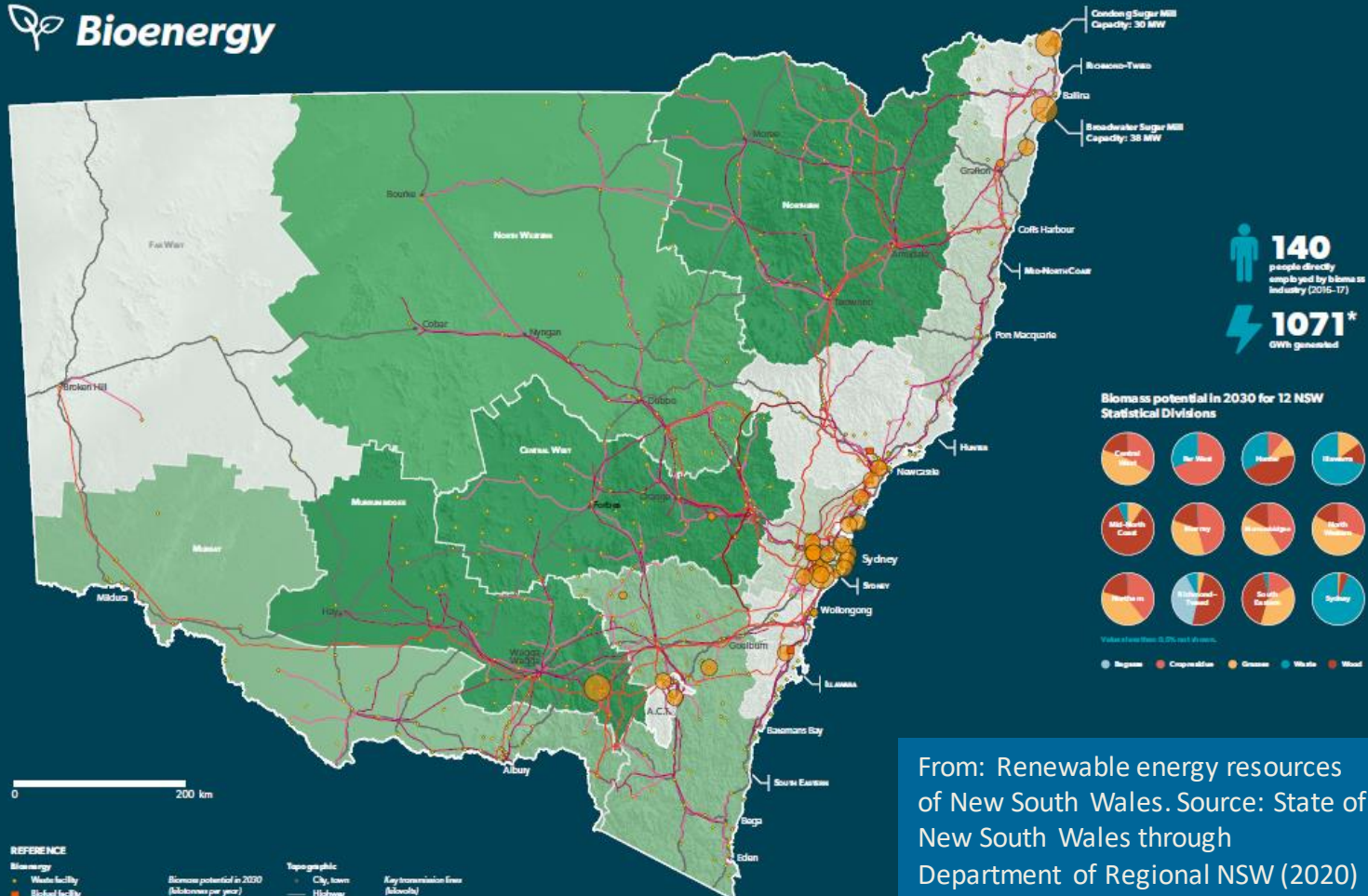
Snowy Mountains Hydro-electric Scheme



From: Renewable energy resources of New South Wales. Source: State of New South Wales through Department of Regional NSW (2020)

Available from:  
<https://resourcesandgeoscience.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/renewable-resources-map>





 **140**  
people directly employed by biomass industry (2016-17)

 **1071\***  
GWh generated

**Biomass potential in 2030 for 12 NSW Statistical Divisions**



**REFERENCE**

**Biomass**

- Waste facility
- Biogas facility

**Biomass power generator capacity (megawatts)**

- 100 < 1000
- 10 < 100
- 1 < 10
- 0 < 1

**Biomass potential in 2020 (Milotonnes per year)**

- 4000 < 5000
- 3000 < 4000
- 2000 < 3000
- 1000 < 2000
- 0 < 1000

**Topographic**

- City town
- Highway
- State border

**Key transmission lines (MW)**

- 66
- 132
- 220 & 330
- 500

From: Renewable energy resources of New South Wales. Source: State of New South Wales through Department of Regional NSW (2020)

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# Problem 1:

## Renewable power is not always located where people live

- Electricity transmission lines are costly and vulnerable to storms
- Hydrogen is a promising solution with the potential for a \$26 billion export industry by 2050\*



Hydrogen fueling pump in Las Vegas. (US Dept of Energy, public domain)



## Problem 2:

# Renewable power is not always available when it is needed

- Australian households installed 22,661 batteries in 2019 – a household storage capacity of more than 1 GWh\*
- The Hornsdale Power Reserve in SA is the world's largest battery, helping to stabilise the power supply grid
- Snowy 2.0 and Tasmania's Battery of the Nation will store power with pumped hydro





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