

Renewable Energy Zones Strategy:

1. The Federal Government directs AEMO to prepare a shortlist of potential renewable energy zones, following further assessment and consultations on its Integrated System Plan, based on an ultimate transition to 100% renewable energy;
2. The study is assessed by *Renew Australia*, a new independent statutory authority that is tasked with managing the transition to a 100% renewable energy economy, which will take into account not just the technical suitability of AEMO's proposed zones, but also the social, economic, employment and environmental aspects of the zones. AEMO and Renew Australia will jointly determine the locations of Renewable Energy Zones;
3. Upon approval of the REZ, funding from the newly established Grid Transformation Fund (GTF) will support required construction or augmentation of transmission infrastructure for generation located in the REZ to connect to the grid. Renew Australia will construct and own new transmission infrastructure itself, unless there is a compelling reason otherwise. The GTF will be allocated funding on an 'as needed' basis, as new transmission infrastructure is planned and approved. The fund will be initially capitalised at \$2.8b.

NOTE: The Greens have already announced a policy to change the way network investment is assessed, with the goals of reducing rampant profits made from network investment and encouraging public ownership of network infrastructure. We expect that the new investment rules, which limit guaranteed rates of return to at or close to the government bond rate, may see some private operators exit the system and government regain ownership. If private operators choose to remain as network owners in the new 'non-profit' environment, they will be able to access the Grid Transformation Fund on commercial terms to augment existing transmission infrastructure. Transmission and network service providers may be directed by AEMO and Renew Australia to augment existing infrastructure as part of the REZ strategy.

Without a policy to establish Renewable Energy Zones, the transition to a 100% renewable energy system will be less efficient and take longer. The Deep Decarbonisation analysis by ClimateWorks and the Australian National University anticipates that our electricity use will rise from approximately 247 terawatt hours (TWh) a year to 358 TWh by 2030. As renewable energy is the cheapest and cleanest form of new energy, policies that unlock the potential of REZs are necessary to construct the requisite amount of generation to meet increased future demand.

By effectively guaranteeing grid connection, the Greens' REZ strategy will provide an incentive for new generation to be built in the zones. Together with the Greens' plan to increase the Renewable Energy Target, this will unlock new investment.

International Experience:

Around the world governments are putting in place policies to support Renewable Energy Zones. Australia needs to join the Renewable Energy Zone race to attract investment. In 2009 in Germany the conservative-led government of Angela Merkel passed the Grid Expansion Acceleration Act to encourage the optimal development of transmission infrastructure to support the transition to clean energy, which included an effective 'right to connect'. In the UK the Conservative government has established a Transmission Investment for Renewable Generation mechanism to fund projects to connect renewable energy generation to 4 key zones. In 2005, the Texas Legislature passed a directive to establish Competitive Renewable Energy Zones in five areas. The government also funded the construction of approximately \$7b of transmission lines.

Potential Renewable Energy Zones:

The Australian Energy Market Operator is undertaking a detailed analysis of potential Renewable Energy Zones, its provisional work is set out in Integrated System Plan.¹ Below is an outline of some of the key Renewable Energy Zones identified by the Australian Greens as a priority.

Renewable Energy Zones in Queensland:

NAME	Generation Active	Generation Proposed	MW (Potential)	New transmission? (Y/N)	Notes	Wind/Solar
North Queensland Clean Energy Hub	0 MW	2,000 MW proposed wind and solar projects	4000 MW solar, 9275 MW wind	Y - \$150M already committed for network upgrades, more may be required	Resources are incredibly strong, just lacks the requisite transmission infrastructure. Has state government support.	Good solar and wind - strong diversity. Home of proposed Kidston Pumped Hydro Storage project, which may become QLD's largest power plant. ²
North Queensland	125 MW	Committed generation projects include Clare Solar Farm (150 MW), Ross River Solar Farm (116 MW).	2500 MW solar.	Y - The existing 275 kV network has good capacity, but upgrades may be required if other zones are developed	Diversity not studied.	Potential for pumped hydro to store excess solar energy generated. Adjacent to Kennedy Energy Park
Isaac	0 MW	Over 1000 MW committed and proposed solar projects, Burdekin Falls Hydro (50 MW)	3500 MW solar, 1860 MW wind.	N- Has room to accommodate 2,800 MW of extra generation capacity	Right along the backbone of major transmission infrastructure	High quality wind and solar & extremely good diversity with other REZs
Fitzroy	0 MW	850 MW of Solar proposed	2000 MW Solar, 890 MW Wind	N	If thermal generation retired (such as Stanwell, Gladstone and Callide), spare network capacity would increase, resulting in more potential generation build along this transmission backbone.	The quality of wind is good and solar is moderate. Strong diversity.
Darling Downs	0 MW	2500 MW of solar proposed	4,000 MW Solar, 2,785 MW Wind	N	Currently large amounts of coal (Kogan, Millmerran, Tarong) and gas power. Minimal marginal loss factor due to proximity to interconnector and SE QLD. Forced retirement of coal would enable solar replacement w/o more transmission infrastructure.	The quality of wind is good and solar is moderate, and there is also the potential for pumped hydro at some sites. More than \$5.5 billion in solar, wind and biofuel projects have been approved for construction in the Western Downs Regional Council area alone, which will feed power into the national grid. ³

¹ Integrated System Plan, AEMO 2018

² <https://reneweconomy.com.au/kidston-solar-project-set-to-start-sending-power-to-the-grid-96114/>

³ <https://www.theaustralian.com.au/national-affairs/state-politics/renewables-boom-arrives/news-story/bea6bf1a644d1185d1725b815ff0a280>

Renewable Energy Zones in New South Wales:

NAME	Generation Active	Generation Proposed	MW (Potential)	New transmission? (Y/N)	Notes	Wind/Solar
North West New South Wales	Moree Solar Farm (56 MW)	Connection enquiries have been received	3250 MW Solar	Y - The existing 132 kV network is weak, requires upgrades	Strong diversity--requires upgrades to support high wind potential	
Northern New South Wales Tablelands	442 MW of Wind	600 MW of additional wind generation proposed	1750 MW solar, 3660 MW wind.	Y - can support 300 MW of new connections, requires upgrades to enable full potential of zone	Strong diversity--requires upgrades to support high wind potential	Aligns with the Potential Priority Energy Zone ("New England") announced by the New South Wales Government.
Central New South Wales Tablelands	Bodangora Wind 113 MW and Beryl Solar 100 MW Current	More than 2,200 MW of wind projects proposed for the area	3,000 MW solar, 1,600 MW wind	N		
Central West New South Wales	102 MW of Solar	Over 100 MW of solar committed and more is proposed	3,750 MW solar, 1,420 MW wind	Y – existing connection is weak, reinforcement is required.	Little network loss if new generation was built—has strong support from state and local government.	
Southern New South Wales Tablelands	Over 500 MW Wind, 240 MW pumped Hydro		1000 MW Solar, 2310 MW Wind	N	Could support 1000 MW of new connections, minimal network loss	Strong wind resources
Broken Hill	0 MW	252 MW of wind and solar planned	4000 MW Solar, 2490 MW Wind	Y -- high potential for wind and solar. If projects were developed, additional infrastructure would be required to deliver to load centres.		
Murray River	0 MW	Over 2000 MW of solar generation proposed	6,000 Solar, 9,140 wind	Y - requires significant network upgrades	The New South Wales part of this zone aligns with the area identified by the New South Wales Government as a Potential Priority Energy Zone	The area has moderate wind and solar resources. Ideally located to unlock a large number of renewable energy projects currently in the project pipeline between Griffith and Deniliquin, as well as to open areas further west.
New England	0 MW		Possible pumped hydro	N - has 300 MW spare network capacity	More than 1500 potential pumped hydro sites identified. The wind resource quality is also good	

Renewable Energy Zones in Victoria:

NAME	Generation Active	Generation Proposed	MW (Potential)	New transmission? (Y/N)	Notes	Wind/Solar
Western Victoria	720 MW of Wind	1700 MW of Wind proposed	1580 MW	Y - existing network is constrained and cannot support any new connections	SnowyLink development options could aid REZ development	Excellent wind resources & reasonably good diversity with other REZs

Moynes	569 MW of wind	1,600 MW of Wind proposed	2,295MW	N	2,000 MW available network capacity for new generation. Lies on a 500 kV network.	Good wind resources, no solar capacity
Gippsland	106 MW in service	2000 MW offshore wind farm proposed	140 MW (onshore)	N - no major transmission network passing through the area	Within 60 km of the 500 kV substations where Loy Yang and Basslink are connected. Investment in this area will help with the social, employment and economic transition away from coal.	Good diversity score. Offshore wind could be successful with the right planning and settings

Renewable Energy Zones in South Australia:

NAME	Generation Active	Generation Proposed	MW (Potential)	New transmission? (Y/N)	Notes	Wind/Solar
Riverland	0 MW	330 MW of Solar	2620 MW	Y - essential	SnowyLink development options could aid REZ development	Excellent wind resources & reasonably good diversity with other REZs
Mid-North SA	795 MW Wind, 100 MW Hornsdale Battery	600 MW Wind	2425 MW	Maybe -- has space for 1000 MW of new generation, but may require more augmentation based on development in other REZs	Already delivering a significant amount of renewables into the grid, but has more wind resources to utilise.	Moderate diversity
Northern	0 MW	346 MW Wind committed, over 1000 MW proposed	1500 MW solar, potential hydro	N - already good existing infrastructure	Close to major load centres.	
Roxby Downs	0 MW		1700 MW Solar	N - Currently connected to transmission infrastructure and additional infrastructure is under construction	Some network losses.	

The total potential generating capacity of the Renewable Energy Zones in the NEM states is: 43,950 MW of Solar & 42,490 MW of Wind.

Renewable Energy Zones in Western Australia ⁴

Greater Perth:

The Perth Metropolitan Area hosts nearly 80% of the population of Western Australia and is by far the largest single source of demand in the State. It is also, at the time of writing, the largest renewable energy installation in WA.

Australia hit the milestone of 1 million solar rooftops in March this year compared with just 20,000 systems in 2008. More than 134,000 West Australian households now have solar on their roofs, generating 310MW and accounting for up to 10 per cent of generation at certain hours on sunny days. About 2,500 households in WA are applying to install solar each week. The large number of homes in the Perth metropolitan with rooftop PV mean Perth itself is a renewable energy zone, and one of the best in the whole country.

Five of Perth's suburbs are in the top twenty solar postcodes in Australia, with Mandurah coming first, and Canning Vale / Ashby 8th, Hocking 9th, Atwell 17th and Bibra Lake 20th . If 1.5kW worth of solar panels were installed on one quarter of the WA homes currently supplied by Synergy, this would create 230MW of electricity, comparable to one of the larger WA

⁴ The Western Australian Greens have done extensive work on identifying Renewable Energy Zones, for more, head to: https://greens.org.au/sites/greens.org.au/files/energy-2029-wa_clean_energy_roadmap_for_wa.pdf

coal-fired power stations. There are already seven suburbs in Perth's greater metro area that have hit just under 25% homes with solar PV including Pinjarra and Ellenbrook.

Mid West and Geraldton Region:

This zone has the best combination of wind, wave, sun and biomass resources in the state. The City of Greater Geraldton has released a ground-breaking 100% renewable energy plan, and there is strong community, industry and local Government support for a zero-emissions electricity system. A 330kW interconnector is under construction to connect the region to the SWIS, from Cataby to Greenough, providing much-needed network capacity for new renewable energy stations

Great Southern:

The wheat belt in this region is also WA's finest wind belt, and has significant biomass potential. The wave resources off the coast of Esperance are some of the best in the world, and the long operating experience of wind energy at Esperance and Albany have well and truly demonstrated the potential of the industry.

Central Pilbara:

This region has one of the best solar resources in the world and this huge hotspot for CST has been identified in international studies. The sparse and poorly connected nature of the NorthWest Interconnected System is in urgent need of upgrade to provide the basis for a transition to a large-scale solar industry.

Solar Goldfields:

The Goldfields region has an abundance of sunlight, a growing demand for electricity and is connected to the South-West Interconnected System. A number of studies have identified the region as one of the best in the world for large scale solar power. In The Goldfields, the solar industry has strong community, business and Council support, but no major projects have come to fruition despite many years of hard work. We believe it is time to get behind this industry and promote the natural advantages of the Goldfields as the Clean Energy Finance Corporation considers where to invest its money.

Collie Region:

The community of Collie will require a high degree of support in order to make the transition to a local renewable energy economy after a century of dependence on coal mining and combustion. Both Energy 2029 scenarios envisage a major installation of renewable energy capacity in Collie (principally biomass, utility-scale PV and wind) for the simple reason that decades of investment in transmission capacity endow a huge competitive advantage on the region.