

Why investing in our grid is a priority for Australia



Why we need it

Coal power plants shutting down

Australia's coal power plants are closing rapidly, with twelve shut down in the last decade, reducing coal generation from 74% to 56%.

Ensure that we keep the lights on

To maintain reliable power, we need to replace ageing coal plants with renewable energy sources and expand production.

Support renewable energy integration

Investing in our grid by building 10,000 km of new grid infrastructure by 2050, is crucial to connect renewable energy sources as coal exits.



Broad benefits

Jobs across the Country

Between now and 2050, Australia's renewable energy industries will require nearly two million workers, fostering economic opportunities nationwide.

Support regional economic growth

Renewable energy transition drives regional industries; it creates jobs, income for landholders, and community benefits.

Cheaper electricity for everybody

Upgrading the grid will supply cleaner, cheaper power, reducing reliance on expensive gas and lowering energy bills.



Guiding principles

Local jobs and a skilled workforce

Collaboration between sectors is vital to meet the demand for two million workers in renewable energy industries by 2050.

Regions at the centre

Government-community partnership is crucial for regional influence in decision-making, ensuring lasting benefits for communities.

Informed consent (FPIC) with First Nations people

Free, prior and informed consent from First Nations communities is essential to protect culturally significant sites in renewable energy projects and ensure First Nations economic empowerment.

Grids and Thriving Nature

Prioritise biodiversity protection and cultural respect in grid projects to ensure sustainable development.

Electricity grid infrastructure plays a vital role in ensuring consistent power as coal plants retire. These new grids connect renewable sources, offering opportunities for skill development, bolstering local economies through increased employment and supply chain activity, and advancing the transition to renewable energy.

Preparing for Australia's Future Power Needs

Australia's coal power generation facilities are progressively shutting down. Twelve coal fired power stations closed in the last decade and coal generation fell from 74% to just 56% in that time. The remaining facilities are experiencing significant operating challenges as they reach the end of their mechanical and economic life. They are expected to close within the next decade and are already being rapidly replaced by wind and solar farms, backed up by energy storage. With almost 40% of our energy already generated by renewables, Australia's energy system will soon be majority renewables-powered.

As well as replacing ageing power stations, we need to produce a greater total volume of electricity to account for new electric vehicles, farm machinery, home appliances and large volumes of energy for heavy industries - some of which have never needed to connect to a grid before.

The missing link to bring this new renewable generation to market are major new grid infrastructure and upgrades to existing lines. They will ensure we can supply homes, schools, workplaces and industry with higher volumes of renewable, cheaper power. Upgrading our grids means opportunities for businesses to participate in a global economy that increasingly prioritises goods produced using renewable energy.

New power lines, pylons and substations need to be built. To power Australia, we need to add almost 10,000 km of new grid infrastructure by 2050 to connect the new renewable generation as our coal generators exit the system, with 4,000 km of this to be built by 2030.¹ If we aim to build new manufacturing industries to shore up our economy in the coming decades, we will need at least twice as much. Increasing the length of the grid by this much is a big task.

Building the grid infrastructure we need won't come without challenges. It will require a change in how governments, industry, civil society and regional communities work together for this change to succeed.

Delays to these power lines, pylons and substations would hold back economic growth in our regions, slow our chance of tackling climate change for future generations and will mean burning more expensive gas, raising energy bills for everyone. This document seeks to outline how this transmission buildout can be expedited in full view of the risks of not succeeding.



Image Credit: Yellowgrain

¹ Numbers taken from the step change scenario in the Draft 2024 Integrated System Plan: https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/draft-2024-isp-consultation/draft-2024-isp---overview.pdf

Ensuring energy reliability and affordability

The rollout of new grid infrastructure is one of the biggest infrastructure projects needed in Australia in decades. By building new grid infrastructure and connecting up new generation, renewable electricity can be safely and reliably moved around Australia, sharing the electricity generated from large wind and solar farms, and energy stored in batteries and hydro dams, to homes and businesses.

Sometimes it's not windy or sunny. But it's usually windy or sunny somewhere! One of the advantages of large grids like the National Electricity Market is that we can **transport renewable energy across great distances to where it's needed**, reducing the total amount of renewable energy generation and storage that would otherwise need to be built in each region.

Investing in renewable grids will **provide households and businesses with cheaper, more reliable energy**. CSIRO analysis consistently shows wind and solar, new grid, batteries and pumped hydro storage is the cheapest way to power our economy.²

Keeping energy costs for households and businesses down **requires nearly all of the 10,000 km of grid infrastructure to be completed by 2050** and half to be in place over the next decade.^{3,4}

If we don't build the grid and renewables on time, households will pay hundreds of dollars and businesses thousands of dollars more per year in their energy bills.

Keep energy bill costs down
Transport energy across great distances
Better and more reliable access and make progress towards net zero by bringing even more renewables onto the grid

2 <https://www.csiro.au/en/research/technology-space/energy/energy-data-modelling/gencost>
3 <https://aemo.com.au/-/media/files/major-publications/isp/2024/2024-integrated-system-plan-overview.pdf?la=en>
4 <https://aemo.com.au/newsroom/media-release/updated-energy-plan-reiterates-the-need-for-urgent-delivery>

Broad and local economic benefits

The shift to renewable energy as old coal power plants close will both disrupt and benefit regional Australia. If we do this well, with regions leading the charge, communities can harness new industries including wind and solar, renewable manufacturing and agriculture, ensuring there will be jobs and opportunities in our regions for decades to come.

Grid infrastructure creates thousands of direct jobs through planning and construction,⁵ and ongoing jobs in operations and maintenance, and we need to act quickly to train community workforces that will be needed to complete the buildout. New grid projects are **developing community benefit funds that provide grants to community groups** that work alongside the line. Grid infrastructure **brings payments to landholders hosting the towers**, and in some cases to neighbouring properties.

There are indirect benefits from the wind, solar, hydro and storage projects new grid infrastructure enable, including further jobs, additional income streams for landholders, improved services such as telecommunications,⁶ and community benefit schemes.

Investing in renewables and upgrading our infrastructure will deliver reliable, renewable Australian energy, driving local economic benefits and new jobs in regional communities as new renewable energy projects and grid infrastructure projects are built.

Secure long-term regional job opportunities
Potential additional income streams
Mitigate environmental impact and make progress towards reducing emissions by bringing even more renewables onto the grid.

5 For example, it is estimated that transmission investment will generate about 6500 jobs over the next 15 years in Victoria's Western Renewable Energy Zone alone. <https://www.afr.com/policy/energy-and-climate/transmission-infrastructure-lagging-as-planners-look-to-balance-local-needs-20230904-p5e1st>
6 <https://www.powerlink.com.au/news-media/project-delivers-regional-high-speed-internet-and-mobile-coverage>

Properly involving Regional Communities

Australia needs a process where critical grid projects can be assessed and approved in a timely manner, without cutting corners.

New electricity grid infrastructure goes through the planning system, where there are opportunities for the public to input into project design. And while it is inevitable that electricity infrastructure will be visible, grid network companies typically seek to minimise and mitigate where possible, avoiding impacts on the most sensitive landscapes, environment and society.

Transmission lines can go underground, and in some cases this is appropriate. However, underground transmission lines cost between three and twenty times the cost of overhead lines, and this extra cost (billions of dollars for each project), will be passed on to people through their energy bills.⁷

Grid infrastructure must continue to coexist with agriculture, as it has done for decades. Natural habitats must be protected as part of assessment processes, while also acknowledging the climate benefits for those same habitats from these projects.



Underground lines cost 3 – 20x more than overhead lines. Extra cost of underground lines will reflect in energy bills

⁷ <https://aemo.com.au/-/media/files/major-publications/isp/2021/transmission-cost-report.pdf?la=en>

Household and large-scale energy generation are both required

The challenge of replacing coal fired power stations requires a significant increase in both household and large-scale generation and storage. According to the Australian Energy Market Operator's (AEMO's) forecasts, large-scale solar and wind power will increase nine-fold by 2050, and rooftop-scale solar will increase by more than five-fold. Modeling from the Climate Council shows that it can be done faster.⁸

Both small and large-scale renewables will play a role in our future grids. Small-scale solutions including household solar and batteries are great for localised areas and low volume on-site consumption, while large-scale generation produces power at the volume required to meet medium and high density residential, commercial and industrial energy demands across the country.

⁸ https://www.climatecouncil.org.au/wp-content/uploads/2024/03/CC_MVSA0394-CC-Report-Seize-the-decade-FA-Screen-Single.pdf

Conclusion

Electricity grid infrastructure is at the heart of facilitating our journey to net zero and keeping the lights on while our coal fired power stations retire. New grid infrastructure will connect new electricity generation to our homes and businesses and transport the renewable power required to decarbonise industry and transport.

Investment in our electricity networks will be essential to unlock skills and training opportunities, deliver a boost to local supply chains and make progress towards net zero by bringing even more renewables onto the grid.

Principles for building our future grid successfully

Minimising impacts and solving challenges of building new grid infrastructure requires collaboration across government, the private sector, and communities at every stage of the conversation. It is important that the following principles are incorporated into grid developments:

1. Local jobs and a skilled workforce

Co-ordinated efforts among various sectors are needed to meet the nearly 2 million worker demand by 2050.

There are big workforce opportunities and challenges for this scale of build. Between now and 2050, Australia's renewable energy industries will require nearly two million workers in engineering, building, and energy trades.⁹

To create a strong workforce pipeline requires coordination and strong partnerships with the energy industry, educational institutions, governments, unions, First Nations groups and communities all working together to lift the collective capacity of the community to be able to do the work. This could be achieved through government incentives for training in the areas where skills are needed most, and by ensuring businesses invest in apprentices.

2. Regions at the centre

Government and community collaboration is essential for regional influence in decision-making.

Government development, planning and energy agencies must coordinate among themselves and help communities to engage more directly, ensuring community influence over decision-making is well reflected and respected.

Lasting legacies are made through new and upgraded roads, childcare facilities, community transport, additional housing, better energy reliability, additional communications and digital coverage, and more water, waste and health services.

See RE-Alliance, '[Community Benefits Handbook: How Regional Australia Can Prosper From The Clean Energy Boom](#)' for further information on community and farming impact and benefits.

3. Free, prior, and informed consent (FPIC) with First Nations people

Engaging with First Nations communities from the planning stage onward is key to protect culturally significant sites in renewable energy projects.

Respectful engagement on the basis of Free, Prior and Informed Consent with First Nations communities must occur from the initial planning stage of any transmission project and throughout the project's life cycle to ensure protection of culturally significant places and ensure First Nations economic empowerment.

See First Nations Clean Energy Network's '[Aboriginal and Torres Strait Islander Best Practice Principles for Clean Energy Projects](#),' for further information on FPIC and engaging First Nations people with renewable energy.

4. Grids and thriving nature

Minimize impact, protect biodiversity, and respect culturally significant places in projects.

Making sure the grid is planned and built well means avoiding or minimising negative impacts on the environment. We can have both a renewable energy future and protect our biodiversity. Making sure that projects protect and even regenerate precious habitats and prioritise working with local environmentalists and First Nations groups to avoid impacts requires stronger planning frameworks and improved industry practice.

For more information please visit [Better Practice Renewables and Biodiversity - RE-Alliance](#); [Nature Conservation Council of NSW](#); [We can't save the climate by destroying nature - Australian Conservation Foundation \(acf.org.au\)](#); [Mainstreaming Biodiversity into Renewable Power - OECD](#) and [New guide shows how solar farms can improve biodiversity - Community Power Agency](#).

⁹ <https://www.racefor2030.com.au/wp-content/uploads/2021/10/RACE-E3-Opportunity-Assessment-FINAL-REPORT-October-2021.pdf>



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