

Energy bill fears grow as transmission costs blow out

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Billions of dollars of cost blowouts in transmission announced so far this year have fuelled worries about rising electricity bills for households and business.



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The cost of building the three largest electricity transmission lines vital to Australia's transition to clean energy has doubled to at least \$16 billion since they were first announced. Further increases are feared, stoking concerns of a hit to power bills from projects vital to decarbonisation.

Australia is in the early stages of a construction wave of power cables able to carry electricity long distances from solar and wind farms that are often located in regional areas with limited or no connection to the existing electricity grid.



Costs of transmission projects could rise further, advisers warn. *Nicole Cleary*

The Australian Energy Market Operator, the semi-government body that manages electricity and gas systems across Australia, estimates that almost 10,000 kilometres of new and upgraded transmission is needed by 2050 to connect new areas of generation that have strong solar and wind resources.

Those regions are often distant from the coal power stations that have historically provided the bulk of the country's electricity. AEMO estimates half of the new transmission needs to be built in the next decade.

At the same time AEMO believes about 6 gigawatts of new variable renewable energy capacity needs to be added every year through to 2030, which represents a tripling of large-scale renewables by 2030, and a six-fold increase by 2050. A wind farm of one gigawatt, the equivalent of 1000 megawatts, can typically power about 400,000 homes.

Many of the transmission projects are also needed to help meet the government's 2030 climate targets, which include 82 per cent of renewables in the electricity mix and a 43 per cent cut in greenhouse gas emissions from 2005 levels.

The costs associated with expanding transmission have been seized on by the Coalition to back its nuclear energy policy. Opposition Leader Peter Dutton says that building nuclear reactors at existing coal power sites would avoid having to build a new network.

The Opposition is yet to provide detailed costing for its nuclear plan, which many experts argue will be too expensive and take too long to meet Australia's climate targets.

Bumpy start

But new lines are also needed to cope with rising electricity demand due to increasing numbers of data centres and the electrification of transport and industry. AEMO also argues the new lines will enable the grid to cope better with more extreme weather. Delays in projects will result in higher costs for consumers.

But the construction program – the first new-build of major transmission lines in Australia for several years – has got off to a bumpy start.

The three big projects are the Central-West Orana Renewable Energy Zone in NSW, [Queensland's CopperString line from Townsville to Mount Isa](#), and the HumeLink transmission line which will connect Wagga Wagga, Bannaby and Maragle and support the Snowy 2.0 pumped hydro battery project. In some cases, the projects have increased in scale, contributing to delays and increases in the cost of materials and wages.

Along with other big transmission developments like Marinus Link between Tasmania and Victoria, the race is on to get these projects complete before ageing coal plants close. Governments and industry want to avoid a repeat of the surge in electricity prices that hit homes and businesses hard after the closure of the Hazelwood coal-fired generator in the Latrobe Valley in 2017.

“Nothing is being built on time, with almost every transmission line project already delayed and the prospects of further delays almost inevitable, and development timelines for renewable projects now averaging more than four years,” says Matthew Rennie, the co-chief executive of Rennie, which advises on the energy transition.

Urgent replacement

Rennie says the industry is struggling in the rush to retain the prospect of fairly priced and reliable power by the end of the decade. By then, big coal stations like Origin Energy's Eraring in NSW and EnergyAustralia's Yallourn plant in Victoria are due to be closed.

[AEMO says about 90 per cent of the existing fleet of 21GW of coal power generation capacity is likely to have retired by 2035](#), requiring an urgent build-out of replacement generation plants and the transmission to connect them.

The Albanese government has [beefed up an underwriting program to support new generation](#) to accelerate the roll-out. An initiative to better streamline the work required by building Renewable Energy Zones to coordinate the development of renewable generation with demand and transmission in particular areas is also intended to help.

Transmission is not covered in the expanded Capacity Investment Scheme program, and while the Albanese government has a separate \$20 billion Rewiring the Nation initiative to support transmission, rising costs and local community hostility to new lines remain as major concerns.

Origin Energy CEO Frank Calabria [describes the end-decade climate goal last month](#) as “a challenging target just by the sheer volume of what's required to be done between now and 2030”.

Difficult to forecast

“And you can see that one of the more significant areas that's a really critical path for a lot of renewables coming in is the Renewable Energy Zones, and the transmission associated with those ... but it's certainly going to require a lot to be done to get that done,” he says.

Brett Redman, the CEO of NSW high-voltage grid owner TransGrid, in September described the 2030 goals as “very challenging with the delays that we've seen to date”, while adding that the more distant net-zero emissions target for 2050 was “very achievable”.

Renewable energy developers are also concerned, citing increased risks for investors in clean generation and storage projects and higher prices for consumers.

“The reality is that higher and unpredictable transmission costs raise the risk for clean energy investors,” says Richie Merzian, CEO of the Clean Energy Investor Group, which includes Macquarie Capital, US investment giant BlackRock and other major investors.

He says it is an ongoing difficulty to accurately forecast project returns due to the uncertainty surrounding transmission costs.

Incentivising households

“This adds to the challenging timeframes already faced with state and federal assessment processes,” Merzian says. “This can also lead to higher energy prices and additional costs passed on to consumers.”

Climate Change Authority chairman Matt Kean and Australian Energy Regulator chairwoman Clare Savage are among those who point to opportunities to use the distribution grid – the localised “poles and wires” network – in a smarter way while the transmission build-out plays out.

That includes incentivising households to install battery systems with solar, and encouraging investment in large-scale firming and battery projects to support the grid.

AEMO calculates that co-ordinating batteries effectively across individual households could avoid the need for an additional \$4.1 billion of grid-scale investment.

“There are some really interesting price implications there that we are yet to fully see flow through, in terms of more and more households looking to host their own energy on their roof, take charge of their bill, real-time pricing retail solutions as well,” says Emma Herd, a climate change and sustainability partner at EY.

Competition for equipment

“And ultimately in terms of the energy sources we are switching to, we also know that there is clear and continuous research around the cost benefits to moving to renewables even when you take into account the additional transmission infrastructure build-out as well.”

Still, energy users remain worried they will bear the brunt of the rising cost of reaching a net-zero electricity supply system, particularly as Australia’s rush to build more transmission is coinciding with a global push to strengthen and extend power grids to support the switch to lower-carbon energy. That intensifies competition for specialised equipment and labour.

“What is becoming clear is that costs are starting to rise, with transmission companies facing wage increases around the country and the costs of materials and construction experiencing price increases well beyond inflation,” says Rennie.

The most significant increase in costs has been at the Central-West Orana Renewable Energy Zone stretching between Dubbo, Mudgee and Gilgandra, where the budget has increased more than 70 per cent to \$5.4 billion. That compares to a budget of \$3.2 billion last year.

The increase in cost has been attributed to broader inflation and difficulties in sourcing material, people close to the project say.

Development zones

The Central-West Orana development, about 350km north-west of Sydney, was initially estimated at \$650 million by the Australian Energy Market Operator in its 2020 long-term blueprint for the power grid.

That's an estimate that EnergyCo NSW, the state corporation responsible for delivering it, says is no longer relevant given changes to the scope of the project and the investment conditions.

It is the first of at least five such zones planned in NSW to connect wind, solar and battery projects to the national grid. Similar zones are planned in Victoria and Queensland.

The contract with ACEREZ, the consortium selected to build the Central-West Orana development that includes Acciona and Endeavour Energy, is due to be finalised by the end of December. It is possible it could contain even higher construction costs.

"Due to its complexity, there are matters to be finalised before reaching financial close including regulatory, environmental, technical, consultation and commercial approvals," a spokeswoman for EnergyCo says. She adds the expected completion date of 2028 is still within the range released as part of the government's strategy last year.

The Queensland government has warned costs at CopperString, originally estimated at \$1.5 billion four years ago, are also increasing. While construction costs now stand at \$5 billion, they are likely to rise by more than 20 per cent to more than \$6 billion.

Solving the transmission puzzle

That 1100km transmission line will link a major renewable energy generation region near Hughenden with critical minerals mining and processing activities in Mt Isa. It will connect Queensland's north-west into the national grid for the first time.

The 365km HumeLink project, which is being built for Transgrid, owned by Canadian pension funds and infrastructure investors, is a priority project for the Australian Energy Market Operator in [its latest \\$122 billion blueprint for the transformation of the power grid](#).

Transgrid had blamed the increased price of raw materials and the difficulty in getting parts for a near 30 per cent increase in construction costs. The cost of that project has risen from an initial \$3.3 billion estimate in 2020 to \$4.6 billion.

The increases at the biggest transmission projects do not include cost increases at EnergyConnect – which will link NSW and South Australia – where the market has little confidence in the current \$2.28 billion budget approved by the Australian Energy Regulator. When the project was envisaged in 2019, it was estimated at \$1 billion.

Big delays

The Australian Financial Review revealed in July that the [difficulties between owner Transgrid and its key contractor, Spain's Elecnor](#), had led to big delays.

Nor does it include the Marinus Link, the underwater transmission line to be installed between Tasmania and Victoria, which is now estimated at between \$3 billion and \$3.3 billion for 750MW of transfer capacity. That means [the cost has almost doubled, because the original \\$3.8 billion plan included two 750MW cables.](#)

Also excluded is the VNI West interconnector planned between Victoria and NSW, which is now estimated at almost \$4 billion, up from an expected maximum of \$2.6 billion in 2020.

EY's Herd calls for a strong focus on the policy and planning part of the transmission build-out to reduce the risk and accelerate the delivery of projects, so customers can start to see the benefits of the transition.

"We're changing everything everywhere all at once, and that makes it very hard to accurately price and predict risk and cost," she says.

"But we know where we need to get to, and there's a strong role for government and the private sector to be working much more closely together to really be smoothing out the troughs and peaks in the transition."