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EPRG Working Paper EPRG 2604

Cambridge Working Paper in Economics CWPE 2626

The Counterfactual Scenario: are renewables cheaper?

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In the pursuit of net zero policy, Australian consumers were told that renewables would make their electricity bills cheaper. Yet household electricity tariffs increased sharply from 2021-2025. So are renewables actually cheaper? In this article, we evaluate the cost outcomes of Australia's energy transition by constructing and analysing a counterfactual scenario for the National Electricity Market (NEM), with a focus on the Queensland region. Specifically, our counterfactual scenario asks what electricity costs would look like today if, over the past two decades, new generation investment had been restricted to coal and gas fired plant, rather than wind, solar and associated dispatchable (i.e. firming) technologies. The analysis deliberately abstracts from environmental externalities and retail/network charges, focusing strictly on long run wholesale market costs and prices.

A suite of gas network and power system models are used with the demand reconstructed to include both grid supplied electricity and self consumed rooftop solar. Doing so allows system wide effects of different technology portfolios to be isolated.

We start with the power system of 2005 where coal and gas dominated, and where power system costs and prices prevailed at an AUD ~$40/MWh market. Coal and gas were unambiguously the lowest cost entrants at that time. However, by 2025 plant economics are dominated by structurally higher fuel prices, sharply higher capital costs for new coal plant, and increased financing premiums associated with carbon policy risk. Even using conservative assumptions (i.e. discounted coal prices and moderated gas prices) a coal only or gas only system appears to produce materially higher wholesale costs and prices in Australia's NEM.

When these costs are carried through to the system level, the counterfactual coal only and gas only scenarios deliver wholesale prices roughly 30–50 per cent higher than outcomes observed under Australia's current transition pathway. This transitioning system comprises intermittent renewables supported by firming capacity batteries, pumped hydro and gas turbines.

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Importantly, results suggest renewables are not cheaper than the historical system once adjusted for inflation. Our 50% renewables scenario remains more expensive than an escalated version of the mid 2000s benchmark. In this sense, public perceptions that electricity is no longer cheap are correct. However, the critical policy insight is that renewables are cheaper than any counterfactual reliant on new coal or gas investments.

The timing in political narratives around renewables being cheaper is also important. Claims made around 2019-2022 (when most policies were being established) that renewables would reduce costs were defensible given then prevailing wind and solar entry costs. Subsequent global fuel shocks, supply chain constraints, construction cost inflation and higher interest rates materially altered that trajectory.

The energy transition involves unavoidable trade offs, not a return to historically low prices. While renewables can't restore the "good old days" of very low electricity, they remain the least cost pathway relative to feasible coal or gas alternatives.

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Publication November 2025

Financial Support ♦ Centre for Applied Energy Economics & Policy Research, Griffith University.

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