Submission to the GenCost 2024-25 Consultation

Draft 205 Inputs Assumptions and Scenarios Consultation

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Executive Summary

The Coalition for Conservation appreciates the opportunity to provide feedback on the GenCost 2024-25 Consultation Draft. Our submission focuses on the methodology used by the CSIRO to compare generation types with fundamentally different characteristics (intermittent and dispatchable).

We raise concerns that the GenCost report's approach to accounting for the cost of "firming" renewables does not reflect the actual costs required to ensure reliability in the National Electricity Market (NEM). In particular, the CSIRO's "integration costs to support renewables" metric underestimates the cost of "firming" Variable Renewable Energy (VRE). Furthermore, we believe this metric lacks peer review and transparency, making it unsuitable for informing national energy policy.

We also highlight issues with the communication of GenCost findings, particularly misleading public statements suggesting that renewables are the lowest-cost option when the analysis that has been done is based on unrealistic inputs and is not a comparison of the full system costs (i.e. for realistic scenarios, with and without nuclear). The statement that nuclear "lacks an economic advantage" has not been demonstrated in the GenCost report, because this claim is based on an incomplete assessment.

1. Concerns about the treatment of "firming" and "integration costs"

Definition and Use of "Firming" Costs

The CSIRO's approach to comparing VRE with dispatchable sources attempts to quantify the cost of firming wind and solar at specific points in time within hypothetical future scenarios. However, this does not align with conventional definitions of firming.

To "firm" a VRE generation source means to take the intermittent generation profile of that source and convert this into a load-following profile, by adding storage and back-up generation. VRE "firming" requires us to include a combination of assets which is sufficient to match the electricity demand in all foreseeable weather scenarios (otherwise the supply is not "firm").

We note that the CSIRO have developed their own metric, "Integration costs to support renewables," and we note that the CSIRO have estimated this parameter to be between

$42/MWh to $48/MWh in 2024 and $20/MWh to $50/MWh in 2030, depending on the VRE share.

These amounts are far lower than the cost of "firming" VRE. To begin with, when we consider the reality that wind and solar generation in Australia's grid need to be fully backed up by dispatchable generation sources, such as gas, for example, it is clear that the parameter that the CSIRO have been using, does not cover the cost of back-up generation, let alone storage, transmission, gas infrastructure, and presumably, support from coordinated Consumer Energy Resources (CER). Even at the top end of the range in 2030, $50/MWh, the metric that the CSIRO have developed is not coming close to measuring the cost of "firming" VRE. The cost of gas-fired power plants and supporting gas infrastructure alone would already exceed this amount.

2. Flawed Input Assumptions

The CSIRO's methodology assumes that by 2030, the necessary support infrastructure for high levels of VRE will already be in place. This assumption is problematic because:

- Australia is not on track to meet the renewable energy, transmission and gas infrastructure targets outlined in AEMO's Integrated System Plan (ISP).
- The ISP's scenarios are unrealistic because they are constrained to meet political targets rather than reflecting practical implementation challenges or actual Consumer Energy Resources uptake and behaviours.
- The CSIRO should independently assess whether ISP scenarios are viable, rather than adopting them uncritically.

Given these unrealistic assumptions, the CSIRO's conclusions about the cost-effectiveness of renewables are unreliable. The analysis the CSIRO has presented that involves shares of VRE which are even higher than those specified in the government targets, is also not credible.

3. Lack of Peer Review and Transparency

It is concerning that the CSIRO's "integration costs to support renewables" metric has not undergone formal academic peer review. Additionally, the calculations behind this metric have not been publicly disclosed, making it impossible to validate their accuracy or even their logic.

Without transparency and peer review, the CSIRO's "integration costs" methodology should not be used to inform national energy policy. If a metric cannot be questioned or independently verified, it is not scientific.

4. Misleading communication

Misrepresentation of Renewable Energy Costs

The CSIRO's public statements have contributed to misunderstandings about the cost of renewables in Australia's energy transition. For example:

- The GenCost draft report states that "the LCOE cost range for variable renewables (solar PV and wind) with integration costs is the lowest of all new-build technologies in 2024 and 2030." Given the significant issues regarding input assumptions (the ISP etc), and the ambiguity in the definition of "integration costs," this statement itself is ambiguous.
- The May 2024 press release for the 2023-24 GenCost report claimed that "renewables remain the lowest cost." This statement is misleading, as the analysis does not account for the real cost of integrating VRE into a reliable system (i.e., it is not based on a comparison of full system costs).

- The December 2024 press release for the GenCost 2024-25 draft report stated that "there is no unique cost advantage in nuclear technology" and a "lack of an economic advantage." These claims are based on a flawed comparison that underestimates the cost of firming renewables.

These statements create a false impression that a renewables-only system will lower consumer electricity bills and/or it will result in lower bills than system scenarios that incorporate nuclear energy. These assertions are not supported by actual data or by the analysis undertaken in GenCost. The CSIRO must ensure that its statements are accurate and do not mislead policymakers or the public.

5. Failure to Compare Full-System Costs

The CSIRO's methodology does not assess how different generation mixes impact overall system costs. The reference frame of the analysis is that of a prospective investor, and not of a consumer of electricity from the system. A comparison that doesn't determine the full-system costs cannot accurately determine the most cost-effective path to decarbonisation.

International research demonstrates that including nuclear in the energy mix leads to lower system costs[1] due to:

- The low fuel cost of uranium compared to coal and gas.[2]
- A lack of need for backup generation, as nuclear is dispatchable.
- Lower storage requirements. Lower requirement for energy to be stored and shifted from day to night, from summer to winter, or from windy periods to calm periods. Nuclear is available to run at all times of the day and throughout all weather scenarios.
- Lower transmission infrastructure costs.[3]
- Longer asset lifetimes, reducing capital expenditure over time.[4]
- Lower emissions, reducing the need for offsets relative to a gas-backed renewables system.
- Lower gas network infrastructure costs (because the electricity system is less gas-dependent).[5]

Nuclear power increases the efficiency of the overall system relative to not having it. As summarised by Bank of America, "after accounting for efficiency, storage needs, the cost of transmission, and other broad system costs, nuclear power plants are one of the least expensive sources of energy."[6] This explains why policy support for nuclear energy is strengthening in many countries.[7] In the Australian context, likewise, Frontier Economics found that "the inclusion of nuclear power in the NEM in the [AEMO ISP] Progressive scenario is also 25% cheaper than AEMO's renewables and storage approach."[8]

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[1] "Advanced Nuclear Pathways to Commercial Liftoff", Sept 2024, US Department of Energy
[2] "Nuclear Costs in Context", Nov 2021, Nuclear Energy Institute
[3] "Investigating Benefits and Challenges of Converting Retiring Coal Plants into Nuclear Plants" Sept 2022, US Department of Energy
[4] It is understood that from an investor point of view longevity may be less important, but from the point of view of consumers, and long-term consumer interests (which is a priority specified in the National Energy Objectives), longevity is a very important consideration.
[5] "Policy sequencing: on the electrification of gas loads in Australia's National Electricity Market," Dec 24, Paul Simshauser (University of Cambridge) and Joel Gilmore (Griffith University)
[6] "The RIC Report" May 2023, Research Investment Committee, Bank of America
[7] "The Path to a New Era for Nuclear Energy," Jan 2025, International Energy Agency
[8] "Economic analysis of including nuclear power in the NEM," Dec 2024, Frontier Economics

The CSIRO's methodology for assessing different generation types is not a suitable approach to inform decision-making related to whole system costs.

6. Conclusion and Recommendations

The Coalition for Conservation urges the CSIRO to take the following actions to ensure GenCost provides useful and accurate information for policymakers:

1. Remove references to "integration costs" for VRE and any conclusions based on this flawed metric.
2. In future analysis, do not take the ISP scenarios (or government targets) as a given.
3. Conduct full-system cost comparisons that assess the real-world costs of different energy scenarios, including nuclear.
4. Retract misleading public statements that claim renewables are the lowest-cost option (it gives the impression that a full system cost assessment has been completed).
5. Ensure transparency and peer review of all cost calculations used in the GenCost report.
6. Clarify future public statements to explicitly state that the GenCost report does not assess whole-system costs and does not conclude that a renewables-only approach is the most cost-effective.

Electricity consumers and policymakers need accurate, transparent, and realistic cost assessments to make informed decisions about Australia's energy future. The CSIRO has a responsibility to ensure its analysis supports—not misguides—Australia's path to reliable and affordable decarbonisation.

We appreciate the opportunity to provide this feedback and look forward to further engagement on this critical issue.

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About the Coalition for Conservation

The Coalition for Conservation (C4C) is an independent, non-partisan environmental organization committed to advancing pragmatic and technology-neutral solutions to decarbonization while ensuring energy security and economic growth. C4C engages with policymakers, industry leaders, and experts to promote informed decision-making on Australia's energy transition. Our work includes policy advocacy, public education, and fostering bipartisan dialogue on the role of various energy sources—including renewables, gas, and nuclear—in achieving net-zero emissions. We believe that addressing climate change requires a balanced and fact-based approach, and we advocate for energy policies that prioritize reliability, affordability, and sustainability.