



9 February 2024

## **Submission: GenCost 2023-24**

The Australian Pipelines and Gas Association (APGA) represents the owners, operators, designers, constructors and service providers of Australia's pipeline infrastructure, connecting natural and renewable gas production to demand centres in cities and other locations across Australia. Offering a wide range of services to gas users, retailers and producers, APGA members ensure the safe and reliable delivery of 28 per cent of the end-use energy consumed in Australia and are at the forefront of Australia's renewable gas industry, helping achieve net-zero as quickly and affordably as possible.

APGA welcomes the opportunity to contribute to the draft 2023-24 GenCost report. As a document intended to complement the Integrated Systems Plan (ISP), GenCost has become much more prominent and is a nationally recognised compilation of energy capital costs in Australia. For this reason, APGA recommends expanding technologies covered by GenCost to ensure gas and renewable gas generation and storage technologies are considered.

APGA supports a net zero emission future for Australia by 2050<sup>1</sup>. Renewable gases represent a real, technically viable approach to lowest-cost energy decarbonisation in Australia. As set out in Gas Vision 2050<sup>2</sup>, APGA sees renewable gases such as hydrogen and biomethane playing a critical role in decarbonising gas use for both wholesale and retail customers. APGA is the largest industry contributor to the Future Fuels CRC<sup>3</sup>, which has over 80 research projects dedicated to leveraging the value of Australia's gas infrastructure to deliver decarbonised energy to homes, businesses, and industry throughout Australia.

GenCost is intended to cost electricity generation. However, the ISP which it supports has gradually shifted from considering electricity system design alone to considering associated energy supply chains impacting generation and potential customer transition to electricity. As the ISP changes, an expanded GenCost report would support more robust ISP modelling.

APGA recommends GenCost also be clear in its limitations. The report notes that its costings source, Aurecon's *Cost and Technical Parameters Review*, states its data uncertainty range is +/- 30%. Uncertainty ranges considering data input and calculation uncertainty should be reflected in GenCost's projections and visual data representation which currently imply that cost estimates are absolute, with only scenarios affecting cost ranges.

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<sup>1</sup> APGA, *Climate Statement*, available at: <https://www.apga.org.au/apga-climate-statement>

<sup>2</sup> APGA, 2020, *Gas Vision 2050*, [https://www.apga.org.au/sites/default/files/uploaded-content/website-content/gasinnovation\\_04.pdf](https://www.apga.org.au/sites/default/files/uploaded-content/website-content/gasinnovation_04.pdf)

<sup>3</sup> Future Fuels CRC: <https://www.futurefuelscrc.com/>

## Improving GenCost by costing associated energy supply chains

GenCost provides costings for gas turbines and hydrogen electrolyser technologies. But capital costs for the entire gas supply chain – including transport and storage infrastructure – is a gap in the GenCost report. This gap impedes ISP modelling identifying a least regrets investment pathway where that pathway may include these technologies.

### APGA recommends GenCost include costings for gas and renewable gas supply chains.

This includes:

- Natural gas pipelines and infrastructure, including storage infrastructure (which can also be used for biomethane and hydrogen blends).
- Hydrogen gas pipelines and infrastructure, including storage infrastructure and electricity generation technologies.

### Existing costings available for use

In support of its recommendation, APGA highlights the following datapoints which could help facilitate GenCost technology assessments:

- The GPA Engineering study *Pipelines vs Powerlines: A technoeconomic analysis in the Australian context*.<sup>4</sup>
- A Baker Hughes presentation detailing their 100% hydrogen turbine generation and compression technologies.<sup>5</sup>

### Aurecon Cost and Technical Parameters Review<sup>6</sup>

Further, Aurecon's source cost document for CSIRO's capital cost projections already provides a range of indicative costs for technologies suggested by APGA. Unfortunately, these have been excluded from GenCost to date. These include:

- Natural gas underground storage
- Biogas generators
- Hydrogen reciprocating engines
- Hydrogen turbines and conversions
- Hydrogen fuel cells
- Liquid hydrogen storage (for the purposes of an SMR plant)

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<sup>4</sup> GPA Engineering, 2022, *Pipelines vs Powerlines: A Technoeconomic Analysis in the Australian Context*.

Full Report: [https://39713956.fs1.hubspotusercontent-na1.net/hubfs/39713956/pipelines\\_vs\\_powerlines\\_-\\_a\\_technoeconomic\\_analysis\\_in\\_the\\_australian\\_context.pdf](https://39713956.fs1.hubspotusercontent-na1.net/hubfs/39713956/pipelines_vs_powerlines_-_a_technoeconomic_analysis_in_the_australian_context.pdf);

Summary: [https://39713956.fs1.hubspotusercontent-na1.net/hubfs/39713956/pipelines\\_vs\\_powerlines\\_-\\_a\\_summary.pdf](https://39713956.fs1.hubspotusercontent-na1.net/hubfs/39713956/pipelines_vs_powerlines_-_a_summary.pdf);

Appendix 3A and 3B Results Summary: [https://39713956.fs1.hubspotusercontent-na1.net/hubfs/39713956/Appendix%203A%20and%203B\\_Results%20Summary%20-%20Copy.xlsx](https://39713956.fs1.hubspotusercontent-na1.net/hubfs/39713956/Appendix%203A%20and%203B_Results%20Summary%20-%20Copy.xlsx)

<sup>5</sup> Bakes Hughes, Presentation at APGA Building Hydrogen Infrastructure Symposium 2022: 100% Hydrogen Ready Gas Turbines and Compressors, available at <https://vimeo.com/showcase/9986338/video/771771236>

<sup>6</sup> Aurecon, 2023, *2023 Cost and Technical Parameters Review*, [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2023/2024-forecasting-assumptions-update-consultation-page/aurecon--2023-cost-and-technical-parameters-review.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/2024-forecasting-assumptions-update-consultation-page/aurecon--2023-cost-and-technical-parameters-review.pdf)

- Geological hydrogen storage
- Hydrogen distribution network and associated costs

APGA does query some of the assumptions used in these costings. For example, for natural gas turbines, fuel cost is an input but not necessarily the cost of getting the fuel to the turbine and potential fluctuations in that cost as a result of other factors (such as electrification). This approach does not enable the low cost of gas storage to be considered alongside other electricity storage options. The Aurecon costings are an appropriate basis for costing projections to be started for GenCost, and it is hoped that broader analysis could be developed in subsequent iterations of the study.

To discuss any of the above feedback further, please contact me on +61 422 057 856 or [jmccollum@apga.org.au](mailto:jmccollum@apga.org.au).

Yours sincerely,



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