Infrastructure Victoria

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**Submission to Infrastructure Victoria's Towards 2050: Gas infrastructure in a zero emissions economy Interim report**

The Australian Energy Council (AEC) welcomes the opportunity to make a submission to Infrastructure Victoria's Towards 2050: Gas infrastructure in a zero emissions economy Interim Report (Interim Report).

The AEC is the industry body representing 20 electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. These businesses collectively generate the majority of the electricity in Australia, sell gas and electricity to over ten million homes and businesses, and are major investors in renewable energy generation.

**Introduction**

The AEC supports net zero emissions by 2050 and as the peak body representing businesses that produce and retail energy, we are acutely aware of the challenges that will need to be overcome to attain this goal.[1] The AEC recently provided a submission to the Victorian Department of Environment Land, Water and Planning's (DELWP) Victorian Gas Substitution Roadmap Consultation paper.[2] Accordingly, this submission presents a brief overview of the AEC's views, principles for policy development and addresses some statements in the Interim Report.

**Gas sector decarbonisation**

- Electrification appears to be the most tangible solution for gas decarbonisation as it utilises proven technology and existing infrastructure. As noted in a recent CSIRO and Climate Works report commissioned by the Australian Energy Market Operator (AEMO), electrification is a "cost effective option to reduce emissions".[3]
    - Space heating accounts for nearly three quarters of natural gas residential consumption and this is similar for commercial customers. High efficiency reverse cycle air conditioners (ACs) can deliver the same level of heat as gas with significantly less input energy.[4]
    - Of all the emissions reporting sectors, electricity has demonstrated the greatest ability and willingness to reduce its emissions and has decades of experience in the identification of reduction strategies and implementing emissions reductions policies.[5] Since 2011, overall, emissions from the electricity sector have been decreasing and are now around 20 per cent

[1] Australian Energy Council, 'Australian Energy Council backs net zero emissions by 2050', 25 June 2020, https://www.energycouncil.com.au/news/australian-energy-council-backs-net-zero-emissions-by-2050/.
[2] https://www.energycouncil.com.au/media/dijdwgb5/20210806-aec-submission-vic-gas-substitution-roadmap-consult-paper.pdf
[3] CSIRO and Climate Works, *Multi-sector energy modelling*, July 2021, p9. Commissioned by AEMO.
[4] Northmore Gordon, *Victorian Gas Market – Demand Side Measures Review*, Report for Environment Victoria, 23 March 2020, p20.
[5] Examples include: the differences between the current generation mix and that of 1997, implementation of the Renewable Energy Target; implementation and subsequent removal of the Carbon Tax; and the implementation of numerous state government emissions reductions schemes.

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lower.[6] There is high confidence the emissions intensity of electricity will dramatically decline further over the next two decades.

- Inverse seasonal demand between gas and electricity provides significant electricity network headroom to accommodate additional winter heating load demand. Furthermore, electrification offers scope for improved network utilisation and the potential to apply downward pressure on network prices.
- Increasing energy efficiency is a proven and generally 'no regrets' approach to reducing emissions. Cost effective energy efficiency improvements therefore increase productivity whilst also having an environmental benefit.
- Biogas appears to offer a partial solution to decarbonisation, however its role in reticulated gas and GPG substitution is expected to be limited.[7] Nevertheless, when biogas is converted to biomethane it can be injected into existing gas networks without requiring capex to modify the networks. This provides scope to partially decarbonise reticulated gas usage in the transition process and extend the useful life of existing gas network infrastructure.
- Hydrogen is a promising technology that has the potential to supplement existing decarbonisation efforts. The emissions from industrial processes requiring feedstock gas and intense heat represent some of the most challenging areas for electrification and this may be where hydrogen can make a significant contribution. However, the AEC does not consider hydrogen likely to ever be a superior approach to electrification in the decarbonisation of residential and commercial energy.
- Gas powered generation (GPG) is currently a critical part of Australia's generation mix. Its role is actually becoming more critical than ever as it evolves into a flexible, non-energy limited back-up to renewable energy and storage. This role however implies a low total energy output over time and consequentially very low emissions. The AEC even contemplates such a role in a "net-zero" economy, with the small emissions offset by carbon sinks. The AEC considers therefore that these economic forces can be allowed to play out without requiring any government direction.
- The Victorian gas market has changed in recent years, reserves are depleting rapidly and prices are both significantly higher and more volatile. These economic incentives and the need to decarbonise may facilitate consumers to seek alternatives to gas.

*Inverse seasonality of gas and electricity consumption*

One of the key opportunities presented by the electrification pathway is the inverse seasonality of electricity and gas consumption. Electricity networks have headroom in winter as Victoria is a strongly summer peaking market. In contrast, gas demand in Victoria is winter peaking. Hence, there should be capacity in Victorian electricity networks to accommodate additional demand from an electrification pathway to replace gas. The Interim Report raises the possibility of electrification causing higher network prices.[8]

When comparing the difference between the 2008/09 summer peak demand of 10,490MW and winter peak demands since then, this headroom averages 2,613MW and is never below 2,121MW. A recent AEMO report presents a possible 2050 Victorian load shape under an electrification scenario.[9] Under this scenario winter demand could be 4,500MW higher while the summer load profile would be 2,500MW higher. A rudimentary assessment of this implies the electricity network would require an additional 2,500MW of capacity by 2050. Using the 2008/09 peak demand of 10,490MW as a base (and assuming linear growth), indicates network capacity would need to increase at a compounding annual growth rate (CAGR) of 0.7% to 2050.

Expected battery electric vehicle (BEV) uptake will provide another source of electricity demand growth. However, if BEV charging is managed carefully the additional demand can further improve network utilisation and network load profiles.

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[6] Department of Industry, Science, Energy and Resources, *Quarterly Update of Australia's National Green House Gas Inventory: December 2020,* p 12.
[7] AEMO, *2021 Inputs, Assumptions and Scenarios Report*, Final Report, July 2021, p40.
[8] Infrastructure Victoria, *Towards 2050: Gas infrastructure in a zero emissions economy*, Interim report, p19.
[9] AEMO, *2021 Inputs, Assumptions and Scenarios Report*, Final Report, July 2021, p44.

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Therefore, electrification may result in both improved network load profiles and network utilisation without the need for significant augmentation capex. This would be expected to apply downward pressure on network prices as networks are largely fixed cost businesses and the additional (manageable) MWh of consumption provide more chargeable units to apportion network costs.

Electrification and electricity reliability

The National Electricity Market is a sophisticated and rigorously managed system. AEMO invests significant resources in planning and conducts detailed analysis of multiple future electricity demand scenarios.[10] The AEC believes the electricity system will be able to accommodate this additional demand and maintain reliability.

The Interim report refers to limited scope for new hydro power in Victoria and also notes that hydro power can be sourced from other states.[11] The AEC would like to emphasise the interconnected nature of the NEM and that the electricity requirements of each jurisdiction can be provided on a system wide basis.

**Principles for developing policies to attain a net zero emissions economy**

The AEC believes the principles for developing policies to attain a net zero emissions economy are:

- rigorous assessments to determine the most economically viable and deliverable solutions;
- incentives and support are provided to consumers and businesses to transition from gas;
- decisions are technology neutral;
- uncertainty is minimised; and
- policy development is transparent and consultative.

**Conclusion**

Achieving decarbonisation and net zero emissions by 2050 will require a suite of technologies, some of which may be transitional in nature. The AEC is supportive of Infrastructure Victoria's consultative approach and we look forward to contributing to the development of policies to achieve Victoria's net zero ambitions.

Any questions about our submission should be addressed to Peter Brook, by email to peter.brook@energycouncil.com.au by telephone on (03) 9205 3103.

Yours sincerely,

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[10] For example: AEMO, *2021 Inputs, Assumptions and Scenarios Report*, Final Report, July 2021; AEMO, *2020 Integrated System Plan,* July 2020; *AEMO, 2020 Electricity Statement of Opportunities*, August 2020 (updated in May 2021 in response to the bringing forward of Yallourn Power Station's retirement)

[11] Infrastructure Victoria, *Towards 2050: Gas infrastructure in a zero emissions economy*, Interim report, p31.