5 August 2021

Gas Reform
Energy Strategy
Department of Environment, Land, Water and Planning
Via: gas.roadmap@delwp.vic.gov.au

Dear Sir/Madam,

Submission to the Victorian Gas Substitution Roadmap Consultation Paper

The Clean Energy Council welcomes the opportunity to comment on the Department of Environment, Land, Water and Planning's (DELWP) consultation paper regarding the Victorian Government's Gas Substitution Roadmap ('the Roadmap').

As you will be aware, the Clean Energy Council (CEC) is the peak body for the clean energy industry in Australia. We represent and work with over 900 of the leading businesses operating in renewable energy and energy storage including the emerging sector of renewable hydrogen, and are committed to accelerating Australia's transition to a clean energy future.

Renewable electricity generated from wind and solar is now the lowest cost form of energy and is expected to only get cheaper over the medium to long term. This clean, low-cost and infinite electricity supply, combined with energy storage solutions such as batteries, pumped hydro, renewable hydrogen and bioenergy, can provide the foundation for a zero-emissions energy sector.

By contrast, natural gas which has satisfied significant residential, commercial and industrial energy demand in Victoria over the past 50 years, is emissions intensive (though less so than coal-fired electricity), subject to high and volatile international prices, and in declining supply (in Victoria).

Victoria, along with the rest of Australia, must reduce and ultimately phase out the use of natural gas in order to meet its net zero emissions goal by 2050, and achieve its interim targets. As the country's largest gas user, this challenge is more significant for Victoria than any other jurisdiction.

Establishing firm and standalone targets for the displacement of natural gas

The CEC acknowledges the Victorian Government's pledge to reduce energy sector emissions by an estimated 2.2 million tonnes of $CO_{2\text{-}e}$ in 2025 and 3.7 million tonnes in 2030. To date, the emissions reduction efforts in the energy sector have been led by the renewable energy industry, which is working to supply 40 per cent of Victoria's electricity by 2025.

It is vital that the State sets standalone emissions reduction target/s for the Victorian gas sector as part of the Roadmap in order to provide certainty about the scale and timing of the gas sector's contribution to the abatement task within the energy sector.

These targets should not be 'aspirational', as indicated by the Government, but rather concrete and binding, to provide the certainty required for major infrastructure planning and investment decisions of long-life assets and equipment. We also note that similar policy support is required to support

Phone: +61 3 9929 4100
Fax: +61 3 9929 4101
info@cleanenergycouncil.org.au

Level 15, 222 Exhibition
Street, Melbourne, VIC
3000, Australia

cleanenergycouncil.org.au

ABN: 84 127 102 443

the transition of the gas sector as has been provided to support the transition of the electricity sector over a long period of time.

Short term (2021-2030): Immediately pursue 'no regrets' options for gas network decarbonisation

The CEC supports DELWP's approach set out within the consultation paper to explore a range of pathways for decarbonisation as part of the development of the Roadmap, and we consider it likely that a range of measures will be required over time.

However, with emissions budgets fast depleting for the world to contain global heating, and the impacts of climate change becoming more apparent and severe, time is not on Victoria's side for a slow and steady transition of the gas sector. Rather, the state should prioritise the deployment of 'no regrets' and immediately available opportunities for emissions reductions over the short (2021-25) to medium (2025-2030) term, rather than wait for emerging technologies to become economically and technically viable.

These no regrets options are:

- Continued deployment of broad-scale energy efficiency programs, as per the State Government's recent allocation of $515 million for energy efficiency and demand management programs.
- Ambitious deployment of distributed electricity generation and storage, as per the state's Solar Homes and Solar Batteries rebate programs, which can support greater energy independence and consumer choice for electrification
- Ambitious deployment of large-scale renewable energy generation capacity to achieve a minimum of 50 per cent target by 2030 if not significantly higher in recognition that the phase-out of all or most utility-scale thermal generation is a pre-requisite for achieving broad-scale electrification and renewable hydrogen production/deployment.
- Establishment of a 10 per cent renewable hydrogen blending target or a higher renewable gas blending target where including both hydrogen and biomethane, as a means of delivering both immediate emissions reductions in the next decade, and also supporting the industry scale-up of these nascent clean energy sectors.

Long term (2030-50): Higher levels of renewable gas blending are possible, but we should plan for full electrification; focus the deployment of renewable hydrogen and biomethane on hard-to-abate uses

While a range of readily available solutions should be pursued in the short term to immediately reduce the emissions intensity of our gas network, the range of options for achieving zero emissions in the long-term is considerably narrower: natural gas consumption will need to be replaced by renewable energy either via electrification and/or in the form of renewable hydrogen/renewable gas. Fossil-fuel based gases combined with carbon capture and storage would be high cost, high risk, and could not deliver zero emissions.

Gas networks will be able to support higher levels of renewable gas blending, and in the case of biomethane, it presents a like-for-like replacement for natural gas. However, with the potential supply of biomethane dependent on the availability of organic waste streams, it is likely to be able to substitute only a portion of Victoria's natural gas consumption.

Renewable hydrogen could be blended with biomethane, and the Australian Hydrogen Centre – an initiative supported by the Victorian Government – is currently undertaking comprehensive studies to understand the extent and potential for high levels of hydrogen blending. The CEC supports this valuable work and looks forward to its findings in the coming year.

It is critical that Victoria maintains a clear focus on driving down the costs of renewable hydrogen (and renewable electricity as an input) such that it can compete with and substitute natural gas in a variety of applications and for export. It will however be difficult for renewable hydrogen to compete with direct electrification in many applications simply due to the higher quantities of electricity required to produce hydrogen, and as such where the electrification option exists, we expect that this will be the more efficient solution.

The most compelling usage case for renewable hydrogen and biomethane is for the decarbonisation of hard-to-abate sectors currently reliant on gas for high-temperature process heat and as a feedstock. With the high and volatile gas prices currently being experienced, and the Reserve Bank of Australia's expectation that *'gas prices are likely to remain structurally higher than their pre-2015 levels over coming decades'*[1], programs to assist local industrial gas users to adopt alternative energy sources or feedstocks is urgent. We recommend that the Roadmap complements existing programs (eg. *Business Recovery Energy Efficiency Fund*) with significant investment in targeted industrial gas displacement programs.

By 2030: Battery and pumped hydro energy storage allow us to phase out gas-fired power generation

Falling costs in renewable energy storage technologies provide another opportunity to reduce the state's reliance on natural gas in the medium term. Infrastructure Victoria's Interim Report on *Gas Infrastructure in a Zero Emissions Economy* notes that Victoria's 11 gas-fired power generation plants collectively meet around 3 per cent of the state's electricity demand, while accounting for 17 per cent of the state's gas use.

The Clean Energy Council recently published a report outlining that for short to medium duration dispatchable energy, large-scale battery storage outcompetes gas-fired peaking plants on cost, flexibility, services to the network and emissions.

The study – *Battery Storage: The New, Clean Peaker*[2] – compares a new 250 MW gas peaker with a 250 MW grid-scale battery with four hours of storage, both built in NSW, over a 20-year period. It found that the battery provides cost savings of more than 30 per cent on a levelised cost of energy basis, providing energy for $156/MWh compared to $234/MWh for a gas peaker.

In addition to cost, batteries provide a range of added benefits, including a fast response rate to frequency deviations, a wide range of network support services and zero emissions. In comparison, gas projects come with several added risks, including exposure to fluctuating gas prices, planned and unplanned outages and carbon risk premiums.

The market recognises the significant potential of batteries, and there are currently 21 battery projects that are in construction (or due to start construction soon) around Australia[3]. Victoria has helped to lead the charge in the deployment of these utility-scale batteries with its support for the Ballarat and Gannawarra Energy Storage Systems and the more recent Victorian Big Battery near Geelong.

As more coal-fired generation retires, medium to long duration storage (4-12 hours) will be required more often. The Integrated System Plan, supported by CSIRO's annual GenCost analysis[4], finds

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[1] https://www.rba.gov.au/publications/bulletin/2021/mar/understanding-the-east-coast-gas-market.html#fn1
[2] https://www.cleanenergycouncil.org.au/resources/resources-hub/battery-storage-the-new-clean-peaker
[3] Clean Energy Council project tracker: https://www.cleanenergycouncil.org.au/resources/project-tracker
[4] https://publications.csiro.au/publications/publication/PIcsiro:EP208181

that pumped hydro energy storage ('pumped hydro') is more competitive in these high-duration applications than battery storage[5] or gas-fired generation, and expects it to play an important role in intra-day and inter-day time shifting of energy supply. Australia's existing hydro power assets are very well placed to play this increasingly important role into the future.

Other medium-term storage technologies are also emerging, such as redox flow batteries which are currently undergoing significant research and development. While smaller than pumped hydro facilities, these flow batteries are beginning to be developed at megawatt scale, targeting between 6-12 hours of flexible discharge, and ideal for daily deep-cycling applications.

Conclusion

The forthcoming Gas Substitution Roadmap provides a critical opportunity to provide clear direction on the objectives, strategy and targets for the full decarbonisation of the gas sector.

While there may be some merit in keeping options open in the short term with regards to which of these solutions, or mix of solutions, will be utilised, the Victorian Government must provide a framework for what energy solution/s will be best deployed for which sectors in the medium to long-term.

Over the next decade, there are a range of measures including energy efficiency, electrification and renewable gas blending, that the State Government should immediately deploy to drive down emissions intensity and gas consumption.

In the long term, the CEC expects that electrification will ultimately present the most efficient energy outcome for residential and business customers, and that renewable hydrogen and biomethane will be most productively focused on addressing hard-to-abate energy needs such as high temperature process heat (as well as heavy transport).

Energy storage solutions of utility-scale batteries and pumped hydro are well placed to substitute gas-fired peaking plants for firming and dispatchable energy, and the state should plan for, and support, the declining role of gas fired power stations over the next decade.

The CEC commends the Victorian Government for undertaking this critical planning and we look forward to a clear strategy being presented by the end of the year for the clean and affordable substitution of natural gas by 2050 or earlier.

Yours sincerely,

Anna Freeman
Policy Director – Energy Generation & Hydrogen

[5] Specifically, lithium ion batteries.