21 January 2022

Renewables, Climate and Future Industries Tasmania
Hobart
Via: renewableenergy@stategrowth.tas.gov.au

Dear Sir/Madam,

Submission in response to the Tasmanian Future Gas Strategy Discussion Paper

The Clean Energy Council welcomes the opportunity to provide input into the development of the Tasmanian Future Gas Strategy currently under development.

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 950 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.

The Future Gas Strategy presents a pivotal opportunity for Tasmania to leverage its existing position as a renewable energy powerhouse to completely, or almost completely, phase out the use of natural gas and liquified petroleum gas (LPG) by 2030, while delivering low-cost, reliable and clean energy to all Tasmanian homes, businesses and industry. The CEC commends the State Government for the development of this discussion paper and supports the State Government's move towards decarbonising its gas networks.

As an importer of natural gas, this also represents a strategic opportunity for Tasmania to increase its energy independence and utilise its own massive renewable energy resources, backed by energy storage, to provide the energy security that its citizens and businesses demand.

While gas has played a valuable role over the past two decades, it is subject to high and volatile international prices, and Tasmanian homes and businesses pay among the highest prices for gas in Australia.

The relatively low cost of hydro, wind and solar electricity generation, the large reductions in energy storage costs over the past decade, technology advancements in electrical equipment and appliances, and the increasing commercial viability of renewable hydrogen and other renewable gases, mean that Tasmania can comfortably phase out the use of gas by 2030, while maintaining secure and affordable energy supply for all Tasmanians.

With Tasmania having recently committed to legislate a target of net zero emissions by 2030, it is critical that the state sets out its plan for this phase out as soon as possible. This plan will need to be tailored to the different market segments – residential, commercial and industrial to ensure a smooth transition.

Fortunately, gas currently plays a relatively minor role within the energy sector for residential and commercial uses – largely due to the relatively recent introduction of natural gas to the state

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compared to the rest of Australia, and its high cost – which significantly reduces the potential time and complexity of the transition.

It currently plays a more significant and critical role for a number of large industrial users (e.g. manufacturing and processing), and we suggest that there may be a suite of solutions that can substitute the role of gas.

The remainder of this submission addresses these market segments in turn.

1. Phase-out of gas for residential and commercial customers

Residential and commercial gas customers predominantly use the energy source for space and water heating and cooking. These energy needs can be readily electrified especially given the relatively low level of natural gas uptake among residential customers, and over the longer term electrification will substantially reduce the energy costs for these homes and businesses, due to the lower unit costs of electricity compared to gas, and the higher efficiency of direct electrification compared to gas combustion for heating. Indeed, the 2020 report by Rewiring Australia found that *'a fully electrified home powered by renewables will need less than 40 per cent of the energy of its fossil-fuelled counterpart'.*[1]

An example of the superior efficiency of electric appliances is heat pumps (more commonly known in Australia as reverse-cycle air conditioners), which are between 3-4 times more energy efficient for space and water heating than gas-based appliances which do the same job[2].

While one alternative approach to electrification could be to replace reticulated gas with 100 per cent renewable hydrogen – which would deliver emissions benefits compared to the use of natural gas – we note that this would require significantly higher volumes of electricity than a strategy of direct electrification. One study by the leading German energy research institution, Fraunhofer IEE, found that the amount of renewable electricity needed to produce green hydrogen for space heating would be 5-6 times greater than the amount needed to power an equivalent number of heat pumps[3].

While the CEC strongly supports the development of a renewable hydrogen sector (and/or other renewable gases) in Tasmania, in the interests of energy (and land use) productivity, it is important that domestic use of hydrogen is directed to those areas which cannot be readily electrified, such as some segments of heavy industry, which we address in the next section.

Managing the transition

While the benefits of electrification for households and businesses are clear, a transition away from gas will require strong leadership and support from the State Government for those customers who use it, as well as the businesses and workers whose livelihoods depend on it. This should include a robust public education campaign about the need for the change and the benefits of the transition, which include lower energy costs, as well as new business and employment opportunities associated with replacing existing equipment with more efficient electrical appliances.

It will be important to give adequate advance notice to all stakeholders about the electrification program, and this should be provided as soon as practicable in order to avoid further expansion of

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[1] *Castles and Cars,* Rewiring Australia, 2020; https://global-uploads.webflow.com/612b0b172765f9c62c1c20c9/615a513770739cc6477e67f4_Castles%20and%20Cars%20Rewiring%20Australia%20Discussion%20Paper.pdf

[2] See this good explainer: https://theconversation.com/electric-heat-pumps-use-much-less-energy-than-furnaces-and-can-cool-houses-too-heres-how-they-work-154779

[3] *Hydrogen in the Energy System of the Future: Focus on Heat in Buildings,* July 2020, https://www.iee.fraunhofer.de/content/dam/iee/energiesystemtechnik/en/documents/Studies-Reports/FraunhoferIEE_Study_H2_Heat_in_Buildings_final_EN_20200619.pdf

the gas network which would likely deliver a low return on investment. Careful thought will also need to be given to the staging of the transition program in order to minimise the impacts to customers and networks.

In summary however, given that this strategy already provides opportunities for substantial cost savings for all affected consumers, as well as reductions in greenhouse gas emissions, we would urge the State Government not to delay the implementation of the strategy longer than is necessary.

2. Phase-out of gas for industrial customers

With the Reserve Bank of Australia's expectation that *'gas prices are likely to remain structurally higher than their pre-2015 levels over coming decades'*[4], the State Government's 2030 decarbonisation target is a critical component of the state's strategy to protect and enhance the commercial competitiveness of local industry.

For Tasmania's heavy industry, which includes metal refining and food and materials processing, the gas phase-out strategy will be clearly more complex than for the residential and commercial sectors, given that each plant/facility will have different needs, and that very large volumes of heat/ power will be required by some (eg. metals processing) on a continuous basis.

As such, the State Government's plan will need to reflect close consultation with these major energy users about their individual energy needs and the suite of options available for phasing out natural gas.

Case study: Working with industry to develop a decarbonisation plan

- A recent case study from The Netherlands demonstrates how the Tasmanian Government could go about working with industry to develop its phase out plan for natural gas.
- The Dutch Climate Act has set legally binding greenhouse gas (GHG) emissions reduction targets for the Netherlands, mandating a 49 per cent emissions reduction by 2030 and 95 per cent by 2050.
- As part of the climate policy, the Government developed a 'Climate Agreement' with industry and business in 2019, which forms the basis for The Netherlands' emissions reduction roadmap.
- Under this agreement, six geographic industry hubs (referred to by the Dutch as 'clusters') have formulated their own Energy Transition plans for presentation to the minister of Economic Affairs & Climate (see Industriële clusters publiceren plannen 2030-2050) identifying a set of energy transition projects which should deliver on the overall CO_2 reduction target for industry of 14,3 million tons per annum by 2030.
- The Energy Transition plans provide the Dutch Government, companies and other stakeholders insight into the plans, and the conditions and enablers to progress the energy transition, assisting the Government to allocate resources accordingly.

Noting that the role that natural gas plays in industry will differ from plant to plant, we would expect that there will be a range of solutions available for most businesses to meet their energy needs. These would include:

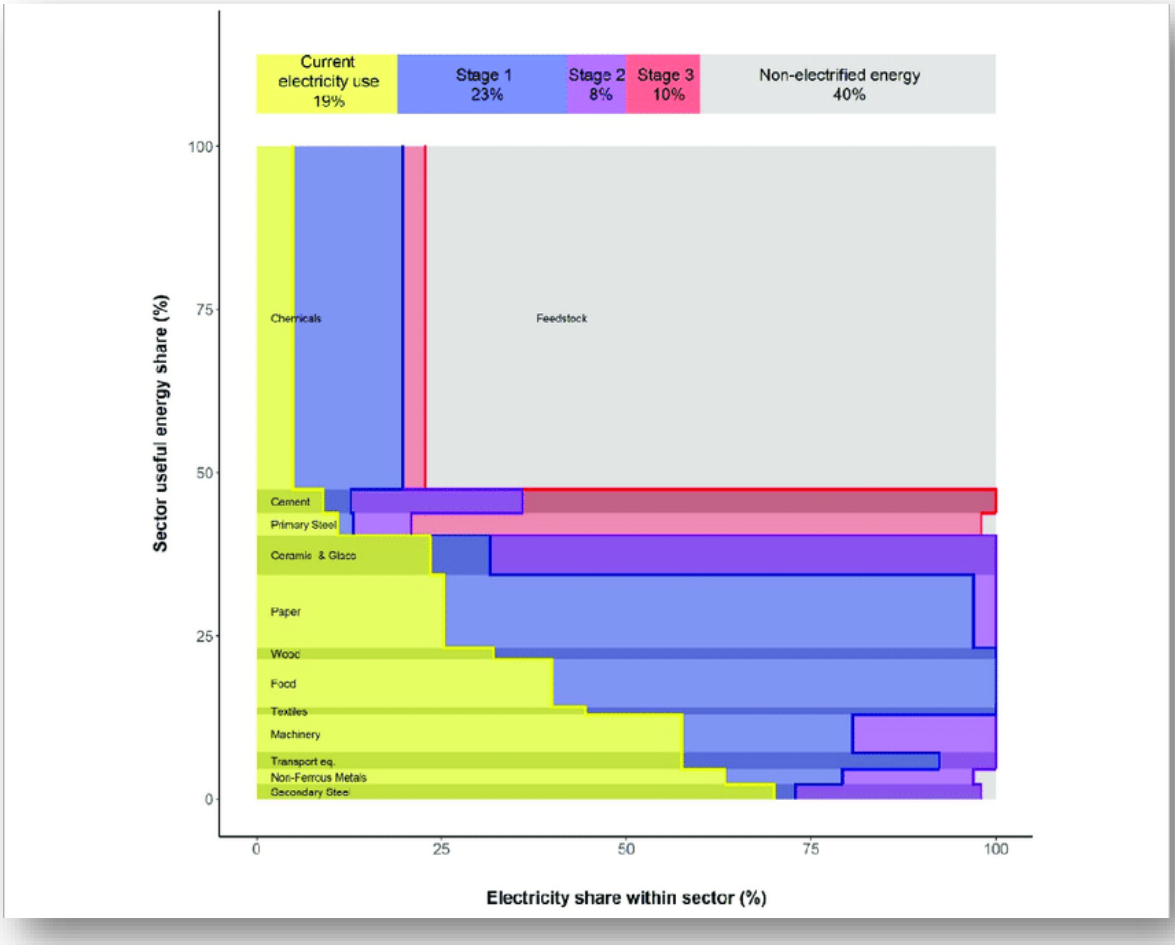
1. Energy efficiency measures
2. Electrification of fossil-based energy systems with renewable electricity (hydro, wind, solar backed by energy storage)
3. Replacement of natural gas with renewable hydrogen or other renewable gases, where direct electrification is not possible.

[4] Understanding the East Coast Gas Market, Reserve Bank of Australia, 18 March 2021, https://www.rba.gov.au/publications/bulletin/2021/mar/understanding-the-east-coast-gas-market.html

A significant study published by Silvia Madeddu of the Potsdam Institute for Climate Impact Research et al in 2020[5] on the energy use in 11 industrial sectors (representing 92 per cent of Europe's industrial CO_2 emissions) found that 78 per cent of industry's energy demand was electrifiable with technologies which are already established. See Figure 1 below. Readily electrifiable industries included timber, paper (to a large extent), and food, while chemicals, steel and cement were recognised as relatively difficult to electrify.

These latter industries (chemicals, steel and cement) which use gas (and other fossil fuels) for high-temperature process heat and as a feedstock, therefore represent the most compelling opportunities for the use of renewable hydrogen or other renewable gases.

Figure 1: Analysis of the current role and potential for direct electrification in European industry[6]



With Bell Bay identified as a prospective hydrogen hub location by the Tasmanian and Australian Governments, and advanced planning underway for renewable hydrogen export projects within the region, there is an opportunity for some heavy manufacturing and processing plants to take advantage of this prospective new source of renewable gas when it emerges.

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[5] Silvia Madeddu et al, 2020, Environmental Research Letters, 15 124004, *The CO_2 reduction potential for the European industry via direct electrification of heat supply (power-to-heat)*. https://iopscience.iop.org/article/10.1088/1748-9326/abbd02/pdf

[6] Ibid. Note that the stages of electrification represented in the chart reflect the relative maturity and electrification solutions/technologies, with Stage 3 projects representing the sectors which are most difficult to electrify.

The cost of this renewable gas is likely to be materially higher than the cost of natural gas in the early years of the industry (despite Tasmanian gas prices for industry being higher than the national average), but there is an expectation that these costs would gradually fall over time. Some industries may have greater capacity to absorb these higher costs than others, depending in part on the competitive pressures on the business and customer appetite to pay a premium for 'green' (low or zero carbon) products.

Regardless, where there is a strong use case for renewable hydrogen within local industry, additional State Government support is almost certain to be required for enabling infrastructure or potentially assisting to bridge the cost gap between natural and renewable gas.

Finally, while decarbonising transportation sits outside the scope of the discussion paper, we note that the development of Tasmania's renewable hydrogen sector could ultimately deliver benefits for the state to achieve its emissions objectives within the transport sector, specifically for heavy haulage, while delivering more local demand for home-grown renewable hydrogen.

3. Role of gas in electricity generation

In addition to the use of natural gas by residential, commercial and industrial customers, gas plays a role as an intermittent dispatchable energy source where required for the electricity sector.

While the Tamar Valley Power Station (TVPS) is the biggest single gas consumer in Tasmania in operation, it has played a relatively small and declining role over recent years (with the notable exception of the 2015-16 energy security challenges) – a trend which can be expected to continue with further investment in clean energy storage resources, strengthened connection with the mainland, and additional renewable energy generation coming online.

To meet its decarbonisation objectives, the State Government should investigate the potential for fuel-switching for the TVPS to renewable hydrogen or other renewable gases, again taking advantage of Bell Bay's potential as a major renewable hydrogen production hub.

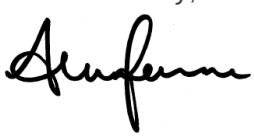
Conclusion

In conclusion, Tasmania's existing role as a clean energy powerhouse – reinforced by continuing declines in the cost of renewable electricity, energy storage and renewable hydrogen projects – enables the state to confidently plan for the phase-out of gas by 2030, while delivering substantial savings to households, businesses and industry.

An electrification strategy should be pursued for the household and commercial sectors as soon as possible, while local industry should be empowered to put forward their own decarbonisation plans over the coming year to meet the State Government's emissions objectives. This work can inform the State Government's strategic planning for existing and future infrastructure, and the allocation of resources to support the energy transition.

The CEC commends the Tasmanian Government for undertaking this critical planning and we look forward to a clear strategy being presented over the coming year for the transition to a zero net emissions energy system by 2030 for all Tasmanian homes and businesses.

Yours sincerely,



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