Green Building Council Australia

Building a sustainable future

2 August 2021

Ms Felicity Sands
Manager, Gas Reform
Department of Environment, Land, Water and Planning
Via email: gas.roadmap@delwp.vic.gov.au

Dear Ms Sands

**Re: GBCA Submission to Victoria's Gas Substitution Roadmap**

Green Building Council of Australia (GBCA) welcomes the opportunity to provide feedback to the Victorian Government on its Gas Substitution Roadmap Consultation. We commend the Victorian Government for beginning the important discussion on transitioning Victoria to a clean energy future.

GBCA is a national industry association for Australia's sustainable development industry, working to deliver buildings and communities that are healthy, productive, sustainable and resilient. With our members, who reflect the diversity of Australian business, we are committed to playing a leading role in accelerating the transition to a modern, decarbonised built environment.

GBCA supports the development of a roadmap to guide Victoria's transition away from fossil fuels and towards a net zero economy, in line with its Climate Change Framework and the goal of a net zero emissions Victoria by 2050. Our response to the consultation paper centres on a number of key principles that the Roadmap should adopt, which are aligned closely with the actions presented in GBCA's Climate Positive Roadmap and reflect the recommendations from the City of Melbourne's submission to this consultation (endorsed by GBCA).

The strategies are as follows:

**Prioritise actions that can the taken today**

The Victorian Government should use a combination of strategies to reduce emissions from fossil fuels, with a preference for proven, cost effective solutions which can be implemented without delay. This means deploying energy efficiency and electrification as first order priorities in the built environment.

**Support fossil-fuel free buildings with 100% renewables**

Moving buildings to renewable electricity is the fastest way to reduce the vast majority of emissions in the built environment. For the majority of natural gas services in buildings, cost-effective electric alternatives exist and their uptake should be supported by the Victorian Government. The current and future limited and valuable supply of renewable gas fuels should be directed to manufacturing or very select high-heat needs in a very limited number of buildings.

**Seize the economic opportunity in this transition**

A focus on low-carbon business and expertise and innovation will help to speed the transition away from natural gas and open up a range of economic opportunities.

**Support a just, fair and inclusive transition**

Victoria's transition away from natural gas should be based on a fair and equitable distribution of risks and costs. It should identify ways to assist vulnerable consumers or consumers whose ability to transition away from gas is restricted.

**Avoid locked-in natural gas consumption**

Policies and regulations must ensure that the built environment is prepared for a net zero carbon future by making it as easy as possible for existing buildings and urban renewal precincts to switch away from gas infrastructure and for new buildings and community developments to be free of natural gas.

**Reserve green hydrogen for high value uses**

Green hydrogen shows tremendous opportunities for hard to abate sectors, like materials production. Many of these challenges are still evolving and need new research. Investment in hydrogen should focus on applications in areas where it is harder to electrify, rather than in homes and businesses where more direct use of renewable electricity is more efficient and electric appliances are much more economic.

GBCA looks forward to continuing our engagement with the Department on the Gas Substitution

Yours Sincerely

Davina Rooney
Chief Executive Officer
Green Building Council of Australia

**Background**

Green Building Council of Australia is committed to accelerating Australia progress toward a modern, decarbonised built environment, alongside our 550+ member organisations and partners.

In 2018, we released the Climate Positive Roadmap for the Built Environment (formerly: Carbon Positive Roadmap) a paper which establishes the steps required for commercial, institutional and government buildings and fitouts to decarbonise. The Climate Positive Roadmap presented the outcomes, actions, targets and policy positions required to decarbonise all new buildings in Australia by 2030, and existing buildings by 2050. To achieve this vision, it proposed the following actions for the built environment sector:

- Commit to a permanent transition to buildings and fitouts with no greenhouse gas emissions
- Switch to, install, or procure renewable energy and support the decarbonisation of the grid
- Build, operate, or occupy low energy intensive buildings and fitouts
- Adopt net zero carbon products, materials and services
- Support the transition to electric vehicles

These actions were proposed alongside changes to GBCA's Green Star rating system, to provide leadership and guidance for achieving the Roadmap's targets sooner. A range of regulatory reforms were also suggested to support faster building decarbonisation through policy. Since then, GBCA has been working to embed these changes and raise industry benchmarks and policy targets for new and existing buildings.

Through a series of updates to Green Star, we are gradually cascading the requirement to deliver net zero carbon buildings across our entire rating tool suite, which address the design, construction, operation of buildings. The launch of the Green Star Buildings rating tool last year saw the introduction of new requirements for highest rated buildings under the tool (6 stars – World Leadership) to be net zero in operations, defined as fossil fuel free, highly efficient, powered by renewables, built with lower upfront emissions, and offset with nature. The GBCA plans to cascade this requirement over time to all new buildings rated with Green Star by 2026.

By working with governments at all levels, we are also helping to drive policy change by targeting a combination of mandatory measures, incentives to support best practice and enabling measures to provide the right conditions for least-cost, wide-scale action.

Every Building Counts1, the joint policy report by GBCA and Property Council of Australia published in 2019, contains a suite of recommendations for governments to decarbonise new and existing buildings and set the built environment on a trajectory to net zero by 2050. We call attention to the following recommendations in the context of Victoria's Gas Substitution Roadmap:

1.1 Set out a long-term vision for net zero buildings and extend the Trajectory for Low Energy Buildings to 2050
4.2 Invest in the best mix of demand-side and supply-side measures
7.3 Grow the availability of cost-effective low emissions building materials

[1] Green Building Council of Australia & Property Council of Australia. 2019. Every Building Counts. Accessed July 2021 at https://cdn2.hubspot.net/hubfs/2095495/_Communications/Advocacy/Submissions/SUSTAINABILITY/Every%20Building%20Counts%20for%20Federal%20Government.pdf

In partnership with the Australian Sustainable Built Environment Council and other peak bodies, GBCA is commencing a research project to model least-cost decarbonisation pathways. This research intends to make an assessment of electrification, natural gas, biogas, hydrogen and other forms of generation as lowest cost pathways within buildings and cost implications of different pathways for network augmentation. We expect this research to be beneficial to the Victorian Government in mapping out the regulations and investments that will enable the Victorian Government to achieve its net zero emissions goal by 2050. We look forward to keeping DELWP updated on this research.

**Key recommendations**

**Prioritise actions that can the taken today**

While each of the pathways identified in the discussion paper all have a role to play in driving Victoria to net zero emissions, GBCA believes these options should be prioritised to ensure that Government efforts and attention are focused on proven, cost effective solutions which can be implemented without delay.

To this end, the first two priorities should be energy efficiency and removing fossil-fuels from buildings.

Energy efficiency opportunities are low cost and usually deliver a return on investment in the form of energy savings"[2]. Energy efficiency uses technology and practices already available. Besides being cost effective, it eases pressure on peak demand and the energy grid, by reducing the need for natural gas. Energy efficient buildings also help improve occupant comfort and have a range of co-benefits such as improved resilience.

There are several ways in which the Victorian Government can support energy efficiency outcomes across the built environment. For instance, government programs can drive uptake of energy efficient appliances or improvements to thermal performance.

Secondly, the Victorian Government should pursue removing fossil fuels from buildings. In the vast majority of cases, this means supporting building electrification (see below 'Support fossil-fuel free buildings with 100% renewables'). Electrification is by far the most established technological alternative to natural gas, and a variety of cost-effective electric alternatives already exist for cooking, space and water heating in buildings.

Other identified pathways, such as green hydrogen, biogas and emerging technologies (including carbon capture and storage) have yet to be proven at scale but could reach maturity over time with sustained research and investment. However, the viability of these pathways for adoption should be considered in the context of timeframes to 2050, and the need to deliver against the Government's emissions reduction targets without delay. Furthermore these challenges require large infrastructure investments to lay new pipes due to molecule sizes, require significant building upgrades, and likely require the replacement of most appliances (due to current appliances being safe with approximately 10% hydrogen). A hydrogen transition would require both appliances and infrastructure to be upgraded or replaced. This would be quite costly to implement as it requires technology that is not readily available. A fully electric transition would still require appliance upgrades but would only require some infrastructure additions. This would be a faster, cheaper, and easier path to decarbonisation as these technologies already exist.

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[2] ASBEC. 2016. *Low carbon, high performance*. https://www.asbec.asn.au/wordpress//wp-content/uploads/2016/05/160509-ASBEC-Low-Carbon-High-Performance-Full-Report.pdf

**Support fossil-fuel free buildings with 100% renewables**

Moving buildings to renewable electricity is the fastest way to reduce the vast majority of emission in the built environment. Analysis from the 2016 report, *Low Carbon, High Performance*, indicates that over 90 per cent of non-electric fuel use in residential buildings can be switched to electricity by 2030, and over 40 per cent in commercial buildings.

Across the building sector, most of the solutions needed to achieve electrification of power, heating and water services are already mature and commercially competitive or have been demonstrated at scale[3]. Many electrical appliances are now more energy efficient and cost effective than their gas counterparts. For example, ASBEC found in 2016 that one unit of electricity can replace between two and seven units of gas, depending on the end services[4]. The same study noted that electric heat pumps, such as split systems air conditioning can replace gas heating and deliver a 5 to 7-fold improvement in the energy efficiency of space heating.

There may be a role to play for renewable gaseous fuels such as green gas and renewably produced hydrogen For example, out of the current gaseous fuels supply to the market, approximately only 0.5% comes from biogas[5]. It is likely that significant investment would be needed to generated enough renewable gas fuels for the same uses as today. This current and future limited supply should be directed to uses for which high-heat sources are needed. Those needs are unlikely to be heating, cooling, and cooking which are the activities that use natural gas in most buildings.

GBCA has identified moving away from fossil fuels as a priority action for the built environment within our Climate Positive Roadmap. Through Green Star, we are introducing requirements for new and existing buildings to be fully powered by renewables and be fossil fuel free (or have a plan to transition away from fossil fuels in the case of existing buildings). While the rating tool acknowledges there may be a role for green gas or other renewable gaseous fuels in the future for specific uses, for most typical buildings the best, simplest, and cheapest solution will be electrification.

All buildings need to have on-site, or access to near-site, renewables, battery storage systems or technologies that promote grid decarbonisation. We are also developing a standard for net zero energy homes, through the Future Homes program. The standard will be used to verify homes that are fully electric (with no reliance on fossil fuels for heating, hot water and cooking), highly efficient (through the thermal envelope, windows and appliances) and produces enough energy to meet its energy needs during operation[6]. The focus on fully electric homes is a recognition that residential dwellings do not have needs for high-heat sources that only renewable gas can provide. Even cooking, where there has been a preference for gas use, we are seeing a shift to induction cooktops – these offer better control and a healthier solution to cooking[7].

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[3] ClimateWorks Australia 2020 *Decarbonisation Futures*, Accessed July 2021 from https://www.climateworksaustralia.org/wp-content/uploads/2020/04/Decarbonisation-Futures-March-2020-full-report-.pdf

[4] Australian Sustainable Built Environment Council , 2016 , *Low Carbon High Performance: How buildings can make a major contribution to Australia's emissions and productivity goal* Accessed July2021 from https://www.asbec.asn.au/research-items/low-carbon-high-performance-report/

[5] Enea Consulting. 2019. *Biogas opportunities for Australia*. Accessed July 2021 from https://www.energynetworks.com.au/resources/reports/biogas-opportunities-for-australia-enea-consulting/#:~:text=The%20Australian%20biogas%20industry%20is,landfills%20collecting%20landfill%20gas%20Bib.

[6] Green Building Council of Australia. 2020. *Green Star Homes Draft Standard*. Accessed July 2021 from https://new.gbca.org.au/rate/green-star-strategy/future-homes/

[7] Climate Council. 2021. *Kicking the Gas Habit: How Gas is Harming Our Health*. Accessed July 2021 from https://www.climatecouncil.org.au/wp-content/uploads/2021/05/Kicking-the-Gas-Habit-How-Gas-is-Harming-our-Health.pdf

There are some challenges and opportunities in moving away from fossil fuels. There will need to be investment and innovation in ensuring grid decarbonisation. This means investments in on-site, or access to near-site, renewables, battery storage systems or demand management technologies. The built environment will also need to consider how emergency diesel generators will need to be phased out over time.

We urge the Victorian Government to support the transition to 100% fossil fuel free buildings through incentivising the replacement of non-electric appliances such as gas space heaters, cooktops and water heaters in buildings.

**Seize the economic opportunity in this transition**

A focus on low-carbon business and expertise and innovation will help to speed the transition away from natural gas and open up a range of economic opportunities.

The Victorian Government can take the lead through retrofitting its own asset portfolio from natural gas to electricity (with a commitment to green power or renewables wherever possible) and promoting the private sector to do the same. A targeted incentive program should be considered for those that are unlikely to be able to finance the switch on their own (see below 'Support a just, fair and inclusive transition'). The Victorian Government should also commit to no gas in any of its new buildings and facilities.

A strong commitment from government sends a clear message to industry and the power of government procurement provides opportunity and certainty to the supply chain which can then accelerate capacity building, innovate and scale up solutions.

There are opportunities for new and existing businesses to drive the retrofitting efforts required for this transition and to champion efficient electric technology and renewable energy technology.

As noted above, energy efficiency has an important role to play in the transition from gas and offers economic opportunities through significant job growth. A 2019 report by Green Energy Markets showed the huge potential for job growth in energy efficiency-related jobs if several key energy efficiency policies and programs were implemented.[8]

**Support a just, fair and inclusive transition**

Victoria's transition away from gas should be based on a fair and equitable distribution of risks and costs. For some households, the upfront cost to replace fixed home appliances for heating and cooking can be prohibitive. For others, the option to switch may not be available.

To ensure that parts of the community are not left behind (such as low-income and vulnerable households), we encourage the Government to undertake further research into the challenges faced by high risk groups around transitioning from gas.

This should address challenges related to:

- The cost of replacing appliances and disconnecting from gas for households facing energy stress;
- Constraints against switching from gas in social, or private rental property;

[8] Green Energy Markets. 2019. Energy efficiency employment in Australia. Commissioned by Energy Efficiency Council & Energy Savings Industry Association, Accessed July 2021 from https://www.eec.org.au/policy-advocacy/projects/energy-efficiency-employment-in-australia

- Lack of consumer awareness or understanding of how to participate in the energy market; and,
- The consequences of householders (and businesses) leaving the gas network, leaving remaining end users to pay more to cover network costs.

The Victorian Government is currently exploring a national framework for minimum standards in rental properties. As part of this work, it could investigate the option of staged energy requirements that can facilitated a guided transition away from gas-based heating and cooking. In rental properties, these appliances are normally provided by the landlord, meaning renters have limited control over the choice to use natural gas (and landlords are not incentivised to invest in upgrades, due to split incentives).

Options to subsidise the upfront costs of replacing appliances should be considered, including rebates for energy efficient appliances, no-interest loan schemes and the VEU program. Loan schemes have the additional benefit of ensuring that costs are borne by the participant and are not passed on to other consumers.

Besides the efficiency of appliances, the savings that can be realised from moving away from gas are linked to the thermal performance of homes, and the electricity prices that consumers negotiate with energy retailers. As such, the Victorian Government should simultaneously invest in retrofitting existing building stock to improve their energy performance (through programs that encourage the installation of double glazing or insulation, for example). Consumers should also be empowered to make informed decisions regarding energy tariffs through having better access to market information[9].

**Avoid locked-in natural gas consumption**

Buildings and the equipment within them are long-lived assets. Given the lifespan of most buildings today, it is realistic to expect that new buildings developed in the next 5 – 10 years will still be in operation in the 2040s and 2050s. To avoid unnecessary costs associated with offsetting, replacing or refurbishing redundant equipment and assets, the Victorian Government needs to ensure that these buildings are compatible now with a zero emissions economy.

GBCA encourages the Victorian Government to immediately review any policies and planning, building and plumbing regulations that have mandatory requirements to connect to gas infrastructure[10]. Policies and regulations must instead ensure that our built environment is prepared for a net zero carbon future by making it as easy as possible for existing buildings and urban renewal precincts to switch away from gas infrastructure and for new buildings and community developments to be free of natural gas.

As well as making changes to policies that enable or lock-in gas use, the Victorian Government should examine how it will incentivise new buildings, homes and communities to choose electric

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[9] The Victorian Government's Independent and Bipartisan Review of the Electricity and Gas Retail Markets, conducted in 2019, yielded several recommendations linked to supporting vulnerable consumers, making energy more affordable, ensuring awareness and delivering robust consumer protections. Since then, a number of services have been established in response to the findings of this review, which can be leveraged. https://www.energy.vic.gov.au/__data/assets/pdf_file/0034/396583/Independent-and-Bipartisan-Review-of-the-Electricity-and-Gas-Retail-Markets-in-Victoria.pdf

[10] Currently, a Victorian variation of the National Construction Code (NCC) requires new dwellings with a gas connection to install a solar-gas hot water service (HWS). Choosing an alternative hot water system technology is only permissible if certain other conditions are met, such as installation of a rainwater tank. The variation, which was introduced in 2005 was intended to encourage the use of gas, a less green house gas intensive fuel than electricity at the time, for the purpose of reducing residential emissions. In 2021, the case for retaining this variation if much weaker.

and/or renewable options over natural gas. A number of Victorian Government programs are currently accelerating progress towards zero emissions buildings, such as Solar Victoria's financial incentives for heat pump hot water service units and Sustainability Victoria's Zero Carbon Homes pilot. GBCA supports programs such as these, would welcome their ongoing expansion as well as efforts to scale up existing schemes such as the VEU program to enable gas free retrofits of existing buildings.

Education and awareness-raising will be critical in sharing the vision of the Gas Substitution Roadmap with industry and community. Many people like the convenience of natural gas for cooking or heating, and many building owners and developers have used gas in the past and may not have seriously considered the alternatives. People will need the opportunity to understand why the transition away from natural gas is important if they are to embrace the changes needed. However, the recent research on the health issues with natural gas such as *Kicking the gas habit: How gas is harming our health* from the Climate Council (2021) demonstrates that a "*child living with gas cooking in the home faces a comparable risk of asthma to a child living with household cigarette smoke*"[11].

As discussed above, the Victorian Government can lead by example by committing to no new gas connections in any building, project, or development over which it has control or provides funding. Victorian Government can also commit to using Green Star for its own asset and projects which encourages and rewards low/zero carbon or carbon positive outcomes and promote its use to the private sector.

**Reserve hydrogen for high value uses**

Projects to prove and develop hydrogen's potential are currently underway globally and in Australia, and this potential has also been the subject of research by the CSIRO through the National Hydrogen Strategy.

While these studies have shown that hydrogen has the potential to be a valuable export commodity and an important new industry in Australia, developing this industry for the domestic market will require further investment in the physical infrastructure to support hydrogen production, storage and network integration, as well as regulatory infrastructure to ensure a safe transition.

Research shows that hydrogen has strong potential for use in the following areas[12]:

- Providing a stock-based energy supply to ensure grid stability by firming electricity generation. Hydrogen may be useful for inter-seasonal storage as we approach a fully-renewable electricity grid.
- As a zero carbon feedstock for industrial processes, including the production of ammonia, hydrocarbon and steel.
- As a fuel for heavy machinery used in industry, particularly fleet vehicles requiring rapid fuelling, such as mining and warehouse operations.

GBCA believes that government investment in hydrogen should focus on these realistic applications for hydrogen use, rather than in homes and businesses where more direct use of renewable electricity is more efficient and electric appliances are much more economic. Hydrogen should not

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[11] Climate Council. 2021. Kicking the Gas Habit: How Gas is Harming Our Health. Accessed July 2021 from https://www.climatecouncil.org.au/wp-content/uploads/2021/05/Kicking-the-Gas-Habit-How-Gas-is-Harming-our-Health.pdf

[12] Pwc. 2020. *Embracing clean hydrogen for Australia*, accessed July 2021 from https://www.pwc.com.au/infrastructure/embracing-clean-hydrogen-for-australia-270320.pdf

be implemented in preference to alternatives that could be delivered more cost-effectively and allowed to distract from rapid, renewable electrification of the building stock.