



Victoria's Gas Substitution Roadmap

City of Melbourne Submission to Department of
Environment, Land, Water and Planning

July 2021

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Department of Environment, Land, Water and Planning
PO Box 500 East Melbourne VIC 8002

To DELWP

Re: Victoria's gas substitution roadmap

Introduction

This submission is provided on behalf of the management of the City of Melbourne and is based on endorsed Council policy. The City of Melbourne welcomes the opportunity to provide input into Victoria's Gas Substitution Roadmap consultation and the Victorian Government's recognition of the need to find sustainable alternatives to the energy services currently provided by natural gas.

The City of Melbourne commends the Victorian Government for the commitments made in its energy sector pledge and for progressing the development of a roadmap to transition away from gas and towards a net zero economy. The City of Melbourne recognises the need for a strategic framework to decarbonise the energy system and eliminate natural gas consumption in Victoria and therefore welcomes this consultation paper.

The City of Melbourne's submission centers around three principles:

1. **The speed of the transition should be prioritised** – urgent action is required to mitigate the impacts of climate change. Action should not be delayed as there are cost effective solutions available today.
2. **Transition is an economic opportunity** – transitioning from gas presents enormous opportunities to develop the clean energy industry, generate jobs, boost economic productivity, and position Victoria as a leader in renewable technologies.
3. **The transition must be socially inclusive and equitable** – the transition needs to be managed to ensure that the benefits are shared equitably and that the costs are not unduly borne by vulnerable communities and those least able to afford it.

City of Melbourne Context

The City of Melbourne's [Climate Change Mitigation Strategy](#)ⁱ and [Response to the Climate and Biodiversity Emergency 2020](#)ⁱⁱ outlines the organisation's priorities for achieving zero emissions for Council operations, and for the municipality. Through these strategies Council has committed to a goal of a zero emissions city powered by 100 per cent renewable energy by 2040 and has already taken strong action.

City of Melbourne Operations

We have reduced emissions by 76 per cent from our 2011–12 baseline and are powering all of council's electricity from 100 per cent renewable sources through the [Melbourne Renewable Energy Project](#)¹ (MREP).

As emissions from electricity sources have reduced, natural gas consumption has become more material as a proportion of our total emissions. Our focus has now shifted to how we can eliminate gas use through

¹ <https://www.melbourne.vic.gov.au/business/sustainable-business/mrep/Pages/melbourne-renewable-energy-project.aspx>

electrification of our assets and buildings. Council, through its Climate and Biodiversity Emergency Response, has committed to 'bring forward the switching of top ten Council buildings from gas to electric by 2030' and to 'switch to electric infrastructure at end of life for all other buildings'. A detailed implementation plan and roadmap has been developed to convert all council buildings (e.g. town hall, libraries, recreation centres, and office buildings) from gas to electric, giving consideration of asset lifecycle, cash flow and emissions materiality. Council has allocated capital budget to progress year one of the Gas Free Operations roadmap.

New buildings and precincts

The City of Melbourne is supporting our community to make the transition away from natural gas and towards a clean energy future. Council's draft [Planning Scheme Amendment C376ⁱⁱⁱ](#) establishes environmentally sustainable design requirements to ensure that buildings are planned and designed to facilitate carbon neutral or carbon positive outcomes across construction and operational stages. The amendment will discourage development that incorporates infrastructure which is not aligned with a zero emissions future. This includes a recommendation that developments should not incorporate connections to gas services or other non-renewable energy.

By 2041 the City of Melbourne's population is expected to reach 384,000. Much of this growth is slated to occur in the urban renewal precincts of Arden-Macaulay and Fishermans Bend. The City of Melbourne is collaborating with the Victorian Government and the private sector to ensure we have the infrastructure and governance arrangements necessary to support these precincts to target zero emissions.

City of Melbourne supports changes that will ensure urban renewal precincts are not locked into natural gas infrastructure. To be fit for purpose in a zero carbon future, regulations need to remove requirements to connect to gas infrastructure. The [Draft Structure Plan²](#) for the Arden urban renewal precinct calls for all-electric buildings and fossil-fuel free precinct infrastructure^{iv}. The [Fishermans Bend Framework^v](#) includes similar strategies. This is challenging to implement due to the requirements of the current Victorian Planning Provisions.

There are limitations to the City of Melbourne's urban planning controls and City of Melbourne are in active discussions with the Victorian Planning Authority (VPA) and the Department of Environment, Land Water and Planning (DELWP) as part of the precinct planning process for urban renewals; specifically around which technologies and market mechanisms exist to achieve a zero carbon precinct.

The City of Melbourne cannot mitigate risk for the municipality effectively without supporting action from the Victorian Government. The proposed gas transition roadmap provides an opportunity to implement stronger action to support our communities to make the transition away from natural gas.

Recommendations

We make the following recommendations for consideration and incorporation into the roadmap:

Recommendation 1: Seize the economic opportunity in this transition

The development of this roadmap presents an opportunity to position Victoria at the forefront of Australia's low-carbon transition and make Victoria a hub for clean energy business and innovation. The benefits of transition far outweigh the costs of climate change inaction.

Through promoting ambitious projects to grow local supply chains and scale-up solutions, this roadmap could build a strong local workforce to deliver the services required to transition the state off natural gas. This would establish the skills, expertise and professional services for Victoria to become a leading market for innovative climate change solutions.

² https://s3.ap-southeast-2.amazonaws.com/hdp.au.prod.app.com-participate.files/9815/9315/6556/Draft_Arden_Structure_Plan_-_26_June_2020.pdf

The Victorian government is well positioned to take advantage of this opportunity. Further developing and expanding programs such as the Clean Economy Skills and Jobs Taskforce could enable the workforce of registered gasfitters to undertake the retrofitting task required to transition Victoria towards a gas-free future.

Recommendation 2: Prioritise energy efficiency and electrification pathways

Whilst appreciating the uncertainty present in the transition, it is important to place this within the greater uncertainty of a rapidly changing climate. This roadmap should prioritise the speed of transition and ensure that action is not delayed waiting for emerging technological solutions when there are existing cost-effective solutions available today. A combination of decarbonisation pathways will be required to achieve a zero carbon future and the roadmap should prioritise those opportunities which can be implemented immediately and at scale.

The pathways as described in the consultation paper include:

1. Improving energy efficiency
2. Electrification
3. Substituting natural gas with hydrogen
4. Substituting natural gas with biogas
5. Emerging technologies
6. Addressing fugitive emissions

To ensure a rapid and cost-effective transition, the City of Melbourne recommends the roadmap explicitly state that investment and effort be prioritised as per the ordering of this list.

Due to the nature of energy conversion and associated losses, every megawatt of energy not used is greater than one that is transitioned from one fuel source to another. Adopting a principle of energy efficiency first will reduce energy costs and reduce the challenge of shifting to zero carbon alternatives^{vi}. Continued effort should be placed on reducing demand for heating services, whilst not extending the life of gas consuming assets. For example the focus should be in insulating homes to reduce heating requirements rather than improving the efficiency of gas heaters which would extend natural gas usage.

No matter how efficient a gas appliance gets it cannot eliminate carbon emissions. By far the most established technological alternative to gas is electrification. Electric alternatives exist for the majority of gas services. The roadmap should prioritise electrification of gas services as electricity can readily be provided from carbon-free sources.

Electrifying the heat used in homes and commercial buildings is a huge opportunity for savings. For low temperature heat services, well-developed heat pump technology is commercially available and can significantly outperform existing gas boilers, offering more than three times as much heating or cooling per unit of energy input^{vii}.

Where possible, upgrades to electric alternatives should be aligned to the end of life of the gas assets. Equipment costs are rapidly decreasing and could quickly achieve cost parity with like-for-like replacement, with appropriate government incentives. Many local governments, including City of Melbourne, have identified electrifying facilities such as aquatic centers as a particular focus for emissions reduction. Industrial heat pumps present a significant opportunity to make these facilities gas free.

The Victorian Government should develop grant programs specifically targeting the uplift costs for switching to electric alternatives at end of life. Based on City of Melbourne's experience having developed a costed implementation plan to convert assets from gas to electric, uplift costs typically average around 160% above like-for-like replacement. Future funding programs should seek to provide \$1.50 of every \$1 contributed by the grant applicant as this would help bridge the true capital investment gap, create demand for electrification technologies, and further drive down equipment and installation costs.

Many local governments, including the City of Melbourne have 'shovel ready' electrification projects that could be brought forward with additional financial support. Existing programs, such as the Business Recovery Energy Efficiency Fund and Energy Innovation Fund, could readily be expanded and targeted to support businesses and local governments to implement large capital intensive electrification projects. Such programs would accelerate progression along the technology adoption curve, support supply chain and skills development, and de-risk the implementation of the Government's gas transition policies.

Case Study – Amsterdam

Through the [Transitievisie Amsterdam^{viii}](#) program the City of Amsterdam has developed a roadmap to reduce and ultimately eliminate the city's use of natural gas by 2040. In collaboration with the community the city has established the order in which 400 neighbourhoods will move away from natural gas. Targeting the most cost-effective options first the city has already begun work on 50 neighbourhoods using a combination of electrification, district heating systems as well as aquathermics using the cities many canals. The transition plan and roadmap is reviewed every five years to ensure that new insights and technical innovations can be incorporated into the rollout.

Recommendation 3: Avoid lock-in gas consumption

Immediate action is required to prevent the installation of new gas assets and prevent future gas consumption from being locked in across the lifecycle of these assets.

The City of Melbourne supports changes that will ensure new buildings and urban renewal precincts are not locked into natural gas infrastructure. Planning, building, and plumbing regulations need to remove mandatory requirements to connect to gas infrastructure. These requirements should instead require zero emissions infrastructure and for new developments to be free of gas.

Case study – ACT

The ACT government in 2020 removed the requirement for new suburbs to be connected to gas thereby discouraging gas from being installed in new homes. The released Variation 373, removes the mandatory requirement for gas connections to new suburbs. This allows new suburbs to be all electric, powered by the ACT's 100% renewable electricity supply^{ix}.

Government programs such as the Victorian Energy Upgrade (VEU) program should be redesigned to rapidly phase out incentives for gas efficiency retrofits and increase incentives for fuel switching from gas to electricity. The metric used by the scheme to determine the number of Victorian Energy Efficiency Certificates (VEECs) created per activity should be changed from an emissions based metric, to an energy metric. This would result in more certificates being created for electrification projects and thus more appropriately value the benefits of fuel switching. Moreover, an energy metric would disincentivise gas projects relative to electrification upgrades, and serve to decrease the lock-in of gas infrastructure.

Those gas efficiency activities where proven commercially viable electric technologies exist, such as domestic hot water and space heating upgrades, should imminently be made ineligible for VEECs so as to incentivise fuel switching activities. Where upgrade technologies and supply chains are less developed, such as for high temperature or industrial-scale boilers, incentives should be phased out over a graduated but ambitious timetable.

Recommendation 4: Support vulnerable communities in the transition away from natural gas

In planning for a gas-free transition, issues of social inclusion, equity and affordability need to be considered. It is foreseeable that as more people disconnect from the gas network, the ongoing costs of operation and maintenance of the network will fall to households who are less able to afford the upfront costs of disconnection. A just transition is vital to ensure that those who can least afford to transition away from gas are

not saddled with increasing gas and infrastructure costs. The Victorian Government's roadmap should provide clear market signals to encourage gas distribution companies to write down asset value in a staged manner, and ensure the costs of the transition are spread equitably across the community.

The use of gas for heating and cooking has many well-known health risks in our homes. These health risks include asthma and carbon monoxide poisoning and disproportionately fall hardest on young people, poorer households, and the most vulnerable^x. Using alternative such as biogas would have no improvement in regards to these health impacts, this provides a compelling case for electrification as the preferred option in homes. Like kerosene and coal, household gas is an out-dated technology as healthier, more efficient alternatives are currently available. Ensuring homes are energy efficient and gas free is critical as both a driver of improved health for occupants, and an accelerator for developing energy efficiency retrofit services and industries.

The upfront capital cost of replacing appliances should be subsidised to ensure vulnerable communities are not left behind. The City of Melbourne recognises that the Victorian Government are already investing in programs such as the Household Energy Savings Package to improve the energy efficiency of homes for low income and vulnerable Victorians. The City of Melbourne supports programs such as these and recommends their ongoing expansion.

Targeting funding programs to low income households would reduce the upfront cost of gas retrofits for vulnerable households and would help ensure that the costs of any transition are borne equitably. Well-designed retrofit programs should be developed that create demand for gas-free retrofit services, enable supply chains to develop and mature, and generate employment opportunities for socially disadvantaged Victorians.

Recommendation 5: Reserve hydrogen for high value uses and ensure all hydrogen is 'green' hydrogen

The use of hydrogen as an alternative to substitute hydrocarbon gasses is a long way from commercial. There are a many technical challenges related to replacing natural gas in distribution pipelines with hydrogen which are highlighted in the consultation paper. Of particular concern is the round trip efficiency of utilising hydrogen for heating services. Due to the incredible efficiency and coefficients of performance presented by heat pumps, hydrogen would require five times the wind and solar generation to produce the same amount of heat^{xi}.

The arguments for utilising hydrogen in the gas network are limited and the technical barriers great. Focusing on this alternative has the potential to detract from action in other decarbonisation pathways and delay action towards net zero.

Where hydrogen does have a key role to play is in those areas of the economy which cannot be easily electrified. Hydrogen should therefore be reserved for use in high temperature industrial heating and feedstock applications as well as in the heavy transport sector.

Additionally, whilst hydrogen can be produced through syntheses from natural gas or paired with carbon capture and storage (CCS) to produce 'blue' hydrogen, the use of these methods would only continue the production of carbon emissions and increase opportunity costs relative to green hydrogen. CCS technology has not been proven to work at scale and runs significant risks of not working cost effectively. Producing brown or blue hydrogen is likely to expose Victorian industries to carbon tariffs in the case of international exports.

In the instances where hydrogen is to be used it should be produced using electricity sourced from renewables. The origin of hydrogen should also be certified under the Guarantee of Origin Scheme currently in development by the federal Department of Industry, Science, Energy and Resources^{xii}.

Recommendation 6: Accelerate divestment from fossil fuel energy supply

Clear market signals and policy settings are needed to support businesses and investors to transition to a low carbon economy. Investment in new renewable energy is being driven by the commitments of the Victorian government, however without a clear commitment to transition the economy away from natural gas, the level of investment needed to meet the increased energy demand may be inadequate.

A lack of clear policy relating to the complete phase out of natural gas has the potential to create investor uncertainty, delaying the transition to a fully renewable energy system and increasing the risk of stranded gas assets. Explicit policy directions from the Victorian government would assist businesses and investors to manage climate-related financial risks and meet their obligations to their stakeholders.

The International Energy Agency's roadmap for the global energy sector to reach net zero warns against new fossil fuel projects, stating that beyond 2021 there should be no new fossil fuel development and no new gas fields approved^{xiii}. Continued exploration and extraction of new gas is inconsistent with achieving the goals in the Paris agreement and with Victoria's own net zero goals. With Australian east coast gas markets now linked internationally via LNG terminals, increasing gas supply via conventional (or unconventional) gas exploration in Victoria is unlikely to benefit consumers through reduced prices. The Victorian government should consider introducing a moratorium on gas exploration and development activities in Victoria to better align with its net zero ambitions.

Summary

The City of Melbourne makes the following recommendations for consideration in Victoria's Gas Substitution Roadmap:

1. Seize the economic opportunity in this transition.

The gas transition presents significant opportunities for Victoria to position itself at the forefront of low carbon business and innovation. The benefits of mitigating the impacts of climate change and its damages far outweigh the cost.

2. Prioritise energy efficiency and electrification pathways

Adopting the principle of energy efficiency first will reduce the challenge of shifting to zero carbon alternatives. Electric alternatives exist for the majority of gas services and electricity can readily be provided by carbon-free sources.

3. Avoid lock-in gas consumption

Planning, building and plumbing regulations should remove mandatory requirements to connect to gas infrastructure so that new developments can achieve zero carbon.

4. Support vulnerable communities in the transition away from natural gas

Issues of social equity and affordability need to be considered to ensure that all communities benefit from the gas transition.

5. Reserve hydrogen for high-value uses and ensure all hydrogen is 'green' hydrogen

Hydrogen produced through methods that generate carbon emissions are incompatible with Victoria's net zero objectives. Use of green hydrogen should be prioritised towards sectors which are difficult to electrify, including heavy transport and industrial processes.

6. Accelerate divestment from fossil fuel energy supply

Continued exploration and extraction of gas is inconsistent with Victoria's net zero goals. The Victorian government should consider introducing a moratorium on gas exploration.

Yours sincerely,

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CoM reference: 14816382

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