

Help Us Build Victoria's Gas Substitution Roadmap

What are the opportunities and challenges for Victoria to decarbonise the gas sector and achieve Victoria's emissions reduction targets?

Submission to Department of Environment, Land, Water and Planning, Victorian Government

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A major challenge for Victoria is the need to improve energy efficiency in homes as the first priority as this would decrease the use of gas, and also electricity use, significantly.

2020-21 State Budget, Victorian Government commitments include:

1. To expand the Solar Homes program, which includes \$85.91 million to provide 17,500 rebates over households to install batteries along with rebates for up to 15,000 small businesses to install solar PV on their work premises
2. To improve the energy efficiency of homes for low income and vulnerable Victorians, including:
3. To assist 250,000 low-income households to install reverse cycle air conditioners
4. Upgrades to improve thermal performance (with insulation and draught-proofing) and replace inefficient appliances in 35,000 public and community housing properties.

The first one on this list that needs attention for **all** residential buildings should be #4 above, **Upgrades to improve thermal performance (with insulation and draught-proofing) and replace inefficient appliances** as this would reduce the need for heating and cooling which is a significant percentage of energy use in Victoria.

Unfortunately, the Government commitments as they read, may not target homes for low-income households and the most vulnerable as many households in this category are not always home owners. As tenants they are limited in what they are able to do so owners / landlords / rental providers need to be targeted and have appropriate incentives for this to have significant uptake.

In addition to targeting vulnerable households, **multi-level strata complexes need to be targeted** ie apartments, especially older ones. The challenge is how do you get an uptake on #1 above? This needs to be done in an easy and affordable manner for these properties that are under Owner's Corporation control, that have both owner occupiers and investors with rental residents in their property.

In addition, as you cannot have individual solar panels in these situations, it would need to be shared PV. This needs to be made more financially attractive, so it is attainable to all holders of property in a building. Owners would want to know how the energy would be shared between the resident using it? ie how do individual apartments get an equal / fair share of the 'free' (solar) being applied to their bills. Is this system already set up? If so it

needs to be explained in layman's terms to the wider community. If not, can this sort of system be set up? It may need to have further Need models of this to be created – is this a micro grid set up?

For all four of the above Government commitments, they all need to be made financially viable / have incentives for owner investors rental providers that have tenants. This is because it needs to be considered why would an owner pay for an 'expensive' installation / upgrade when they do not live there, so will not get the financial benefit of reduced energy bills as a result of PV, energy efficiency measures, improved thermal performance etc.?

Additionally, some members of the community, possibly more specifically, older members, could be another challenge in regard to #3 above. There should be specific advertising targeted at them as many believe that gas is the most efficient way to heat their homes, possibly as they still remember that original air conditioners were very expensive to operate and they also consider their main function to be that of cooling. Many have this mind set so would not be likely to convert from gas even with if they were a low-income household that could receive financial incentives. The benefits of efficient RCAC needs to be specifically marketed to them through as many avenues as possible. Appropriate 'influencers' could be used to explain the updated technology and its advantages.

An opportunity for the Victorian Government is to lead the way in Australia, and possibly the world, is via clean green, renewable Hydrogen produced by electrolysis that is supplied by renewable energy as its energy input.

In regard to Hydrogen production in Victoria, the current pilot project in the Latrobe Valley should be abandoned if Victoria can meet its zero emissions targets. This particular hydrogen model **should not be** part of the Victorian Government's plan. The process of converting coal into hydrogen results in the production of carbon dioxide so it is considered Brown Hydrogen.

Capturing this carbon and then storing it, cannot not be claimed to be the redeeming feature of this Brown hydrogen production process. Chevron's Gorgon Gas Plant in Western Australia is capturing less than half the emissions needed to make carbon capture and storage (CCS) environmentally viable and it is falling millions of tonnes short of its emissions capture promises. Victoria cannot afford for this to happen. Many projects have been abandoned around Australia as they are expensive and not economically viable so any government support / funds should be directed towards greener renewable based projects rather than continuing to throw State money at something that is not feasible even though it has been investigated and trialled for well over a decade in Australia.

CSIRO, at <https://www.csiro.au/en/research/natural-environment/atmosphere/capture>, states "*We are working to reduce the cost and improve the efficiency of carbon capture and storage (CCS) so it is a viable option for Australia's energy future.*" going on to say "*Laboratory research has identified improved efficiencies from testing more than 100 novel solvents, ionic liquids, solid absorbents and enzyme technologies.*" which then complicates the energy

efficiency of CCS further as the carbon emissions from the attainment, production and processes for these chemicals needs to be included in the total efficiency of CCS technology.

With limited success of CCS technology, this means that promoting the future use of CCS to negate carbon emissions creates a false sense of clean energy. The Victorian Government cannot rely on expensive and unproven CCS technology as there is not a proven carbon capture and storage project that has delivered on time, on budget, and captured the agreed amount of carbon. CarbonNet storing carbon offshore in undersea rockbeds is not a proven method.

This means that truly clean green, renewable Hydrogen via electrolysis supplied with renewable energy as its energy input, must be the focus of Victoria and Government grant support for pilots, trials and demonstrations should be further explored so Victoria can produce Green hydrogen.

GREEN clean Hydrogen should be produced in an area where it can be stored and then used to generate power for the State. In Victoria, this could be the Latrobe valley where it could be a part of a just and fair transition from coal for the communities as it will provide employment opportunities.

Safely transporting hydrogen is an area of concern due to its high flammability. Also, as it needs to be compressed for transport, this places pressure on the structures carrying it and weakens them. Even the process of compressing hydrogen for transport requires an energy input so this adds to the demand for energy, reducing its.

Large users could use hydrogen for their higher temperature heat needs. To be most energy efficient, ideally larger users could consume hydrogen by generating it onsite. Government funding should be used to develop smaller scale green Hydrogen electrolysis-based models for this purpose.

In regard to large-scale use of hydrogen in power generation it could be used to replace the current gas-powered electricity generation as a back-up source. In addition, increasing the percentage of electricity generated from GREEN hydrogen could then allow the extra / excess electricity generated to be stored in grid-scale batteries along with excess renewable wind and solar energy for use when renewable energy is not attainable.

I believe that the State of Victoria has the ability, and the will, to truly reach zero carbon emissions and be a world leader in this area while creating employment resulting in wins for the economy, the people and of course the environment.

Thank you for this opportunity for me to be able to have some input into Victoria's Gas Substitution road map.

Nicole Fidge