

Response to:
“Towards 2050: Gas Infrastructure in a Zero Emissions Economy
Interim Report by Infrastructure Victoria”

Comments on ‘Chapter 5: Key Early Findings’

The Report should explain how the major existing domestic gas use – namely gas-fired home central heating – will be able to be fuelled instead by electricity, given the large existing investment by around 1 million Victorian households in the required infrastructure at domestic scale, ie, assets that could become potentially stranded in future along with the existing major Latrobe Valley transmission lines.

These gas assets comprise:

- in the case of ducted heating, a gas fired heat exchanging furnace which heats ducted recirculated air which in turn is piped into convection panels in virtually every room in each house
- in the case of small-bore hydronic heating, a gas fired boiler which heats recirculated water which in turn is distributed into virtually every room in each house.

In order to minimize the stranding of all these domestic assets as well as the associated gas transmission pipelines and treatment plants, as a result of removing/restricting the associated gas supply, electrically powered heat exchangers will be required to replace the above gas fired furnaces and boilers – and at whose cost?

We believe that gas could still continue to be used at domestic scale for cooking and possibly also hot water – via instantaneous gas fired hot water systems.

In addition, the Report should explain how the additional electricity demand required to achieve the above transition can be generated, transmitted and distributed both during peak periods and over a full year, given the proposed reliance on intermittent sources of generation (ie, no coal and limited gas); and also, how the required electricity infrastructure upgrade would be funded.

The Report should also highlight that in the event of the loss of the Bass Strait offshore gasfields as a significant source of affordable gas (eg, for domestic heating, cooking and hot water and industrial/commercial use) – then adequate quantities of high quality low carbon biogenic peat gas can be found onshore in the vicinity of the existing major Gippsland gas transmission pipe lines. Further, under the recently gazetted Victorian gas legislation, this gas, being non-frackable, is now, from 1 July 2021, legally able to be explored and potentially developed for use within Victoria.

We note that the current winter of 2021 in Melbourne and Victoria more broadly, with cool nights and days, and little wind and sunshine, would be a severe test of Scenarios A to D in the Report’s Key Findings.

Comments on the associated Accenture ‘Gas Infrastructure International Comparisons Technical Report’ and its implications for Table 2 ‘Scenarios to Achieve Net Zero Emissions for Gas Use in Victoria by 2050’

General

We believe that the International Comparisons Report by Accenture is misleading, because the countries reviewed have far greater levels of zero carbon energy security, reliability and dispatchability because as, distinct from Australia, they have access to significant resources of:

- dispatchable, zero carbon hydro-electricity
- dispatchable, zero carbon nuclear electricity
- dispatchable mixed source electricity and gas via transmission cables/pipelines from neighbouring nations.

By way of example, the installed capacities of hydro-electric and nuclear power in the four countries reviewed are set out below together with Australia’s:

Country	Hydro GW	Nuclear GWe	Nuclear TWh	Connections
U.K.	5*	13	45	Europe
Netherlands	0	0.5	4	Europe
Canada	81	13.5	90	USA
Japan	50	15-32	40	?
Australia	8**	0	0	Nil

*includes 3GW of pumped storage **potentially upgradable, but primarily only via pumped storage

Thus, for the comparisons expressed in the Accenture Report to be helpful and constructive they should either provide for Australia to be also similarly equipped with either adequate dispatchable zero carbon nuclear electricity (further hydro power opportunities being limited and international connection cables being out of the question) or adequate low carbon dispatchable gas fired electricity generation, or a combination of both nuclear and hydro power.

Implications for Table 2 ‘Scenarios’

To address the problems outlined in the above comments, we believe that the scenarios selected by Infrastructure Victoria (in Section 5.1), to inter alia assess the gas sector’s interplay with other sectors such as electricity generation, need to be expanded to include the following two additional scenarios (ie, in addition to Scenarios A, B, C & D).

Scenario E: Almost full electrification supported by natural gas

- Almost full electrification using renewable sources, utility scale battery storage and some pumped hydroelectric
- Sufficient low carbon gas-fired electricity generation and domestic/industrial use
- Extensive roll out of regenerative agriculture to sequester the quantum of CO₂ emitted by the above gas fired electricity generation (a low-cost, profitable solution to achieve net zero emissions that should be included in all scenarios, as it is included/prominent in the Federal Government’s CFI legislation and its Low Emissions Technology Investment Roadmap, and the cost/risk of CCS/CarbonNet is likely prohibitive).

Scenario F: Virtually full electrification supported by natural gas and nuclear electricity generation

- Virtually full electrification using renewable sources, utility scale battery storage and some pumped hydroelectric
- Sufficient low carbon gas-fired electricity generation and domestic/industrial use
- Sufficient nuclear electricity generation
- Roll-out of regenerative agriculture to sequester the quantum of CO₂ emitted by the above gas fired electricity generation

The above three scenarios would cope much better with Melbourne's and Victoria's significant increase in heating demand over winter – especially in the later afternoon/early peak period, when the winter sun is not shining and typically the wind is not blowing. No reasonable amount of battery back-up would cope in backing up the required say 5GW over a 10 day period, this equating to 1200 GW hr, greater than the total capacity of Snowy 2.0.

General Comment on Affordability of the Transition to Net Zero Emissions

It is considered that given the circa \$1 trillion (and rising) debt forecast to be incurred by Australia as a result of the COVID Pandemic, there should be even greater care and scrutiny of the capital and other expenditure likely to deliver net zero which could well be an additional expense to that committed in Australia's COVID response.

Thus, discussion will be required not just in Victoria but across Australia on what level of expenditure can be afforded before we up-end our economy and bequeath an unserviceable level of debt to our children and grandchildren.

Comment on Report Title

We believe that IV's final report, when it is released, would instead be better titled as follows: -

"Towards 2050: Gas Infrastructure in a Net Zero Emissions Economy"

Thank you for the opportunity to make this submission, which we look forward to discussing with you in further detail.

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