

25 October 2019

By email: hydrogen@mbie.govt.nz

Powerco supports the Government's vision for hydrogen to contribute to meeting our net-zero carbon goals. It is too early for policy settings to prioritise green hydrogen over blue hydrogen.

The energy sector will play a major role in New Zealand's transition to a low-emissions economy. As a regulated monopoly provider of gas and electricity networks across a large expanse of rural and urban North Island locations, we will be a key enabler of business, consumer, and industry energy use decisions. The role of hydrogen is part of the environment we are monitoring and engaged with.

It is too early for policy settings to prioritise green hydrogen over blue hydrogen based on beliefs about global markets¹. It is too early to pick one preferred energy source for a low-carbon economy. It may be that some energy needs are met with one solution, and other sectors met by another. It may also be that blue hydrogen can contribute to emissions reductions faster than green given the scale of new renewable generation needed to deliver green hydrogen. If blue hydrogen can help us transition to net-zero faster, cheaper, easier, and with more resilience, shouldn't our policy settings support it? Technology-neutrality and fuel-neutrality will underpin the transition being achieved at lowest cost and highest speed.

Vivid Economics' 2018 report looked at the tradeoffs and options for meeting our net-zero carbon requirements. Hydrogen was part of the solution set, and the analysis showed that it was on-par with electrification from a cost perspective. Two of Vivid's recommendations remain relevant for the indicative roadmap: further research on

- A techno-economic assessment of the potential for hydrogen and electrification options
- A feasibility assessment of carbon capture and storage

The remainder of this letter provides responses to the six consultation themes and some information about Powerco. If you have any questions on this submission, please contact Andrew Kerr (Andrew.Kerr@powerco.co.nz).

Yours sincerely



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¹ "While hydrogen produced from fossil fuels and industrial processes (brown, blue and grey) may play a role in the transition of New Zealand's regions and existing industries, *the Government considers there is greater opportunity for New Zealand in exploring the use of our renewable energy to produce green hydrogen as an alternative fuel for domestic use and for export.*" (page 11, emphasis added)

Responses to questions

<p>1 - Developing hydrogen for storage and distribution</p>	<p>[A] Role of Government</p> <ul style="list-style-type: none"> • More clarity needed about how the activities on the roadmap will support blue hydrogen (the roadmap acknowledges blue hydrogen is a potential transition solution) • Define standards for working with hydrogen across generation, distribution, storage, training qualifications, etc <p>[B] Challenges</p> <ul style="list-style-type: none"> • Ensure legislative and regulatory settings for monopoly suppliers deliver the desired policy outcomes (eg treatment of research and development, changes to infrastructure, service definitions) <p>[C] Opportunities</p> <ul style="list-style-type: none"> • Complete a feasibility assessment of carbon capture and storage • Leverage the knowledge and regulated infrastructure providers to a coordinated national approach to hydrogen issues across regulated infrastructure providers are currently not in competition. • Leveraging the developments by Australian gas distributors
<p>2 - The role of electricity and hydrogen</p>	<p>[A] Role of Government</p> <ul style="list-style-type: none"> • Support development of a viable domestic market. Lessons from Australia prove that solely pursuing an export market can be uneconomical. • Support market development across existing and new markets that do not “pick winners”. <p>[B] Challenges</p> <ul style="list-style-type: none"> • Infrastructure investment will extend beyond 2050 so the alignment between policy and market settings is crucial eg ETS, electricity prices, network prices. Alignment will mean investments in infrastructure make the best use of limited natural resources (including land) to meet the needs of our people and businesses. <p>[C] Opportunities</p> <ul style="list-style-type: none"> • Ensure policies target lowest delivered energy costs, including resilience impacts. Gas networks provide a valuable co-benefit from a reliability and adaptation perspective. They provide a higher degree of resilience to climate change impacts compared to electricity networks by several orders of magnitude.² While not strictly climate related, gas networks also have a degree of resilience to earthquakes. For example, Powerco’s gas network in the Wellington region suffered no material outages during the Kaikoura earthquakes,³ whereas customers on the electricity network in the same region did experience outages.⁴
<p>3 - The transport sector</p>	<p>[A] Role of Government</p> <ul style="list-style-type: none"> • Support the development of the industry – like any emerging industry/technology, the journey is likely to be unpredictable. <p>[B] Challenges</p> <ul style="list-style-type: none"> • We support the conclusion that “there are no significant technical challenges ...to

² For example, the Powerco electricity network experienced 12 major events over the last 5 years, causing approximately 400 minutes of unplanned outages across our customer base (on average). Over the same period, Powerco’s gas consumers experienced a total of 6 minutes of outages across all types of outages (on average). These gas outages were typically due to human error and 95% of them impacted fewer than 5 customers (eg breaking a mains pipe while digging). There were no storm related outages to the gas network over this period.

³ See <http://www.lpga.co.nz/news/Gas-network-withstands-Kaikoura-earthquake.php>

⁴ Wellington Electricity’s information disclosures state that “two major earthquakes affected the Wellington region in July and August 2013, which caused an outage at the zone substation at Karori, as well as overhead feeders to trip due to line clashes. Both events affected approximately 7,000 customers each and contributed a total SAIDI of 2.635 minutes”.

	<p>deployment of hydrogen”.</p> <p>[C] Opportunities</p> <ul style="list-style-type: none"> We support the lifecycle approach to costing of technologies – this includes the indirect costs eg infrastructure costs to enable hydrogen or electric vehicles, and vehicle disposal.
4 - Industrial processes	<p>[A] Role of Government</p> <p>[B] Challenges</p> <ul style="list-style-type: none"> We agree with the summary presented in the document but note that it only focuses on Green hydrogen. If blue hydrogen <p>[C] Opportunities</p> <ul style="list-style-type: none"> Both natural gas and Blue hydrogen may offer faster transition to low carbon industrial heat
5 - Encouraging hydrogen uptake	<p>[A] Role of Government</p> <ul style="list-style-type: none"> Support a fuel-neutral approach to meeting our net-zero carbon goals. As electrification of the energy sector increases, the diversity of energy sources reduces. Maintaining the resilience and reliability of the energy system as this occurs will be essential to maintain public confidence and political consensus on New Zealand’s pathway to a low-emissions economy. Hydrogen will be one of many fuels available to consumers and businesses to meet their needs – policy settings need to allow those choices to be made, and costs borne. <p>[B] Challenges</p> <ul style="list-style-type: none"> The vision succinctly outlines the surmountable challenges for gas regulators/infrastructure providers/retailers <p>[C] Opportunities</p> <ul style="list-style-type: none"> We agree with the comments that continued research is needed on the impacts of hydrogen blending across supply, distribution, and consumption
6 - Producing hydrogen for export	<p>[A] Role of Government</p> <p>[B] Challenges</p> <ul style="list-style-type: none"> We agree with the summary presented in the document. It reinforces the need to keep our options open on achieving both net-zero carbon and hydrogen production via blue hydrogen. <p>[C] Opportunities</p>

About Powerco

Powerco is a dual energy distributor with electricity lines and gas pipelines. Powerco is New Zealand's largest electricity distributor in terms of network length (28,000km) and has the second largest number of electricity connections (337,000). The company also has the second largest gas distribution network (6,000km) and the largest number of gas connections (107,000).

- *Electricity distribution.* Powerco's electricity networks are in the Taranaki, Wanganui, Rangitikei, Manawatu, Wairarapa, Bay of Plenty, Coromandel and Waikato regions, including the urban centres of New Plymouth, Wanganui, Palmerston North, Masterton and Tauranga.
- *Gas distribution.* Powerco's gas networks are in the Taranaki, Manawatu, Hutt Valley, Porirua, Wellington City, Horowhenua and Hawke's Bay regions

