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From: no-reply@mbie.govt.nz
Sent: Thursday, 5 September 2019 5:32 p.m.
To: [redacted]; Hydrogen
Subject: Hydrogen green paper - submission
Attachments: [redacted]

Submission on Hydrogen green paper recevied:

Introduction
Name

[redacted]

Email

[redacted]

Business name or organisation (if applicable):
Position title (if applicable):
Is this an individual submission or on behalf of a group or organisation?

Individual

Please give the name of the group or organisation this submission is on behalf of.
What is the role of Government in developing hydrogen for storage and distribution?

A scientific research role

What are the challenges for using hydrogen for storage and distribution?

massive safety challenges, massive economic "heavy lifting" challenges in supporting an industry that has little groundswell of its own.

What are the opportunities for using hydrogen for storage and distribution?

storage - possibly centralised well guarded, isolated scenarios. distribution - very little.

What is the role of Government in developing the complementary role of electricity and hydrogen?

to keep studying it and keep researching it with a healthy R&D budget.

What are the challenges for achieving this complementary role of electricity and hydrogen?

massive challenges that are unnecessary

What are the opportunities for this complementary role of electricity and hydrogen?

very few when compared with other safer ways to do so today.

What is the role of Government in supporting hydrogen use for the transport sector?

to keep people safe, and make transportation affordable and avoid any hydrogen on the roadways.

What are the challenges when using hydrogen for mobility and transport?

massive challenges - this has not been done anywhere yet in scale.

What are the opportunities for using hydrogen for mobility and transport?

not many if you consider the insurance premiums needed.

What is the role of Government in encouraging the use of hydrogen for industrial processes including process heat supply?

we can replace coal-fired thermal heat with electricity from other sources if we are talking about drying milk for powder - that is not a high tech job.

What are the challenges for using hydrogen in industrial processes?

massive safety issues.

What are the opportunities for the use of hydrogen in industrial processes?

not many because it has to do with shipping or moving the gas in contained spaces - dangerous.

What is the role of Government in encouraging hydrogen uptake for decarbonisation of our natural gas uses?

to study the economics and the technology and see if the market picks it up on its own.

What are the challenges for hydrogen to decarbonise the applications using natural gas?

not many except blue hydrogen gets you pretty much nowhere - it pushes the status quo ahead by kicking the can down the road, and justifies the inclusion of fossil fuel industry players who are not going to progress anything. jobs are an issue and we need to support the people working in fossil fuels transition to renewable energy industries.

What are the opportunities for hydrogen to decarbonise our gas demand?

many but they do not involve hydrogen

What is the role of Government in producing hydrogen in sufficient volume for export?

to review it economically and see if there are any private companies willing to underwrite such a dangerous business.

What are the challenges for hydrogen if produced for export?

massive - H2 is dangerous.

In addition, we welcome your feedback about the opportunities of hydrogen to Māori and how this will support their aspirations for social and economic development.

Maori are incredibly important stakeholders in this decision on energy policy, especially as renewable energy takes over - they will be and should be leading this effort and consulted in everything that has to do with using natural resources in NZ. We should be looking to Maori for leadership and guidance, they are a very special resource and knowledge base in these matters for the nation and its future.

What are the opportunities for hydrogen if produced for export?

very little - why chase a commodity once again when you can produce services much higher on the value chain? NZ can export many more higher value things than hydrogen.

If you wish to, you can attach a document to this submission.

[redacted]

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I think the hydrogren strategy as described in the green paper is misguided, and not realistic in comparison to the other options in reducing our carbon footprint and creating high-tech renewable energy jobs, and supporting the innovative, agile economy that New Zealand has today. While you may see countries like Japan, France and the UK experimenting with H2, they have completely different geopolitical contexts and economy sizes, they are not equivalents to NZ. They are, also notably, large users of energy derived from nuclear fission, whereas NZ is patently NOT a consumer of energy derived from nuclear fission and never will be.

First of all, NZ is a fast follower and not (compared to other larger and more populated nations with larger science, research and infrastructure budgets) as much of a "heavy lifter". Saying we are going for forge a way ourselves in a new unproven hydrogen economy, rather than see what is succeeding in the marketplace and getting cheap to acquire, is unrealistic at best, suspicious at worst. New Zealand is not going to make the investments in infrastructure needed and support a completely niche energy system that hydrogen represents - any more than it would go into nuclear fission reactor design and deployment. Electric cars today - early models of an advanced technology - run with LiFePO4 batteries. Those rapidly evolving storage technologies backed by big manufacturers, and specifically Chinese made crystalline photovoltaics manufactured in commodity scale and available to NZ in volume is what the NZ energy future holds. We are not unique in this regard - there is a groundswell in this distrbuted technology and its management with over the internet. From an economic point of view, we will likely follow these trends. NZ did not invent or invest in these technologies when they were new and expensive - we shewdly watched the prices fall, we shrewdly bought and mastered the technology as it became affordable, and we let the market decide how and when to take use it for our own advantage, in incremental steps. There is no way we will be doing this same process with hydrogen - the role of that stakeholder in the research and economic support is for someone much larger and probably someone with a much greater CO2 problem than NZ has. The NZ public will be interested in our scientists knowing and learning about the latest hydrogen research, and having in-depth pilot projects with the technology. But they will not want to pay for what it would take to support the hydrogen infrastructure that this green paper sketches. This plan is calling for some really heavy lifting, more than what is said, and part of that is due to the requirements for fundamentally new technology in this space, and part of that has to do with basic human safety.

New Zealand is a very safe place, and there is a huge culture of safety being cultivated here especially since Pike River. The safety aspect of hydrogen storage, transport/shipping and especially the use of H2 in transportation as a fuel is major. MAJOR. It will only take one very small H2 accident for people to fully understand the risks involved in hydrogen management. Hydrogen is an incredibly volitile gas, is incredibly energy dense, and creates incredible, spectactular and devistating explosions when things go wrong. Regular ordinary, everyday things - like a value being loose, or a steel wall losing its integrity during a collision. There is no sealable, affordable "bottle" that can hold hydrogen yet. Whether or not people understand the risks of getting on a hydrogen powered bus, if they did, they would no more get on that bus than get on a rocket to the moon. It is a deadly mixture hydrogen and oxygen and we do not have the true ability to reduce the risk of that mixture with a little heat or spark. Throw a match into a bath of diesel fuel, it may go out - not so with hydrogen. Being safety concious, the NZ public will not tolerate the kind of danger imbued in H2, and it is misguided at best to think of it is a mere detail that can be brushed aside or skirted over with some future technology someday. H2 is the first element of the periodic table, we know how it behaves - it's not going anywhere new.

The last issue I would say really dooms this plan is the momentum of distributed generation around the world. A quest for a hydrogen economy in NZ implicitly betrays a need for control of a centralised energy resource. But the way the world is going, it's all going to be distributed and that will happen relatively fast now with climate change underway. If you read the book "The Dirty Energy Dilemma" by Benjamin K. Sovacool you can understand the difference between the liabilities of long-term, high capex energy projects with their awkward project management and the friction from their small stakeholder base, and the rapid, agile virtues of distributed generation deployment that can be done at marginal cost, in surgical movements, with teams in parallel which execute under their own autonomy but in good communication with other stakeholders, under the steam of private and public capital in partnership. Every project management delay in a waterfall, centralised, highly capital intensive energy project means higher rates for the end consumer. It doesn't matter what the technology is - it's about funding those delays today with the future price hikes of the energy to the consumer tomorrow. There is no competition here - the distributed world design is going to win - is winning - and that speed of delivery of solid, safe, proven energy infrastructure is probably the main thing. NZ is a very fast follower, superb at systems and software development, superb at communication and collaboration, and also very resourceful and social society that works together, we all muck in. You can't hold that back, or deliver solution from on high to the masses. You can't impose the culture of a Japan, France or even UK here - NZ innovators are going to be too quick out of the gate with practical distributed energy schemes for an H2 plan to even get off the ground. The need for control of centralised energy infrastructure I suspect is likely the real driver behind this plan, but it is kind of a futile effort at this point. it's like saying: "Don't use those laptops, look, we have this great mainframe that will do all your your computing needs!" Forget about it. Yes let’s stay up with the latest hydrogen tech, yes let’s have active H2 pilots going, yes let’s keep modeling the the economic possibilities there with a healthy R&D budget. But follow the smart money which is going after solar PV and LiFePO4 distributed generation and storage, join SEANZ and EMANZ and get behind the culture of distributed is my advice - that is the future.