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**From:** no-reply@mbie.govt.nz  
**Sent:** Monday, 23 September 2019 3:16 p.m.  
**To:** [REDACTED]; Hydrogen  
**Subject:** Hydrogen green paper - submission

Submission on Hydrogen green paper received:

**Introduction**

**Name**

Pat Wall

**Email**

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**Business name or organisation (if applicable):**

Energy TS

**Position title (if applicable):**

Relationship Manager

**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?**

I think that government MUST take a large role in order to set the direction and maintain momentum. Without government leading this, we risk having initiatives captured by the fossil fuel industry and hindered. We need real progress on climate change, and hydrogen needs to be part of that and it must move quickly. The only way that will happen is for major government involvement, be that through grants, investments or any other mechanism.1

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

Storing and transport of hydrogen is that hard part, because the Hydrogen atom is so small and can easily escape from most vessels. If this can be managed economically, it will enable Hydrogen to be a marketable energy carrier for commerce, industry and transport. One of the other hurdles in the storage of Hydrogen is the energy required to liquefy and store Hydrogen. We must utilize the most efficient methods possible, to improve the economics and the environmental outcomes.

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

The opportunities are limitless, but one can imagine use as a fuel for fuel cells to power heavy transport, aviation, shipping, passenger vehicles as well as perhaps use for industrial process heat, as a reducing agent in iron smelting, peaking generation for electricity and more.

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

The government needs to not only send signals to the power industry, but to actively push the agenda for a massive buildup of renewable generation to provide the electricity to not only power NZ, but to provide excess energy to convert to Hydrogen. It is assumed that the government will also need to ease the process of consent for some energy projects.

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

Upgrades to electricity transmission networks would be one of the major issues. It would be a good idea to invest in micro-grids and distributed generation and storage to help reduce the burden on the grid and to free up space on transmission networks to allow for nearly 100% renewables as well as to support the energy infrastructure for Hydrogen generation.

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

A LOT of jobs! To create the infrastructure to support the Hydrogen industry, as well as to reach nearly 100% renewable energy it will take a LOT of investment in infrastructure and that will create a LOT of high paying jobs.

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

I imagine that the government should help to create a market for hydrogen powered vehicles in the private sector. Furthermore, the government owns Kiwi Rail and can certainly invest in hydrogen powered train engines and ferries. Also, in the same way that the government has allowed EV aviation startups to come to NZ, they can do the same for Hydrogen aviation companies.

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

Storage! Once again, small atoms escape easier. We would need a distribution and storage network capable of storing and selling hydrogen efficiently and safely.

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

Cars, trains, boats, planes or anything that gets people from A to B.

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

Government needs to help create the market and incentive. That may be through ETS or incentives or even through subsidies. Whatever works for the particular industry, just do what it takes to get the transition happening.

**What are the challenges for using hydrogen in industrial processes?**

Being able to supply enough Hydrogen at a price that is reasonable. Hydrogen is already widely used, so I imagine that most technical issues should be relatively straight forward and the main issues to contend with are cost and supply.

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

Process heat, as a reducing agent in steel production, fertilizer production.

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

The government should mandate this and place timelines, incentives and fines in order to get industry moving in the right direction.

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

The ability to produce enough at a cost that is reasonable, and storage and distribution. These have been covered before but basically we need to build a LOT of infrastructure to generate the renewable electricity that will be converted into Hydrogen. We will also need to upgrade storage and transport methods used for gas to be able to carry Hydrogen. This means a lot of jobs will be created so go for it.

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

Possibility to be used in boilers of all sizes, although it would likely be better to try to use electricity in the first instance, since it would be more efficient than going through a conversion to Hydrogen and then being used to generate heat.. Also to be used for peaking electricity production.

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

Government needs to not only send signals to market via ETS, but also to legislate and mandate that energy producers must direct investments toward renewable production to supply the hydrogen market. Government may also want to hold a stake in a Hydrogen producing company in order to help get it off the ground, and later to generate profit from these activities.

**What are the challenges for hydrogen if produced for export?**

Mentioned above in storage and distribution.

**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 may want to join in the market by developing geothermal and wind energy farms, to generate electricity to make Hydrogen for the market. Maori have resources that they may tap into, that would suit these uses well and provide jobs and income to Maori communities.

**What are the opportunities for hydrogen if produced for export?**

Export market means income for NZ! More populous nations that cannot supply their own needs from renewable resources will need to look to places like NZ to help supply their needs.

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

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Yes

**Can we include your name?**

Yes

**Can we include your email address?**

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**Can we include your business name or organisation?**

Yes

**Can we include your position title?**

Yes

**Can we include the group or organisation your submission represents (if submitting on behalf of a group or organisation)?**

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