Taranaki Energy Watch Submission on the Interim Hydrogen Roadmap- 2 November 2023

Name	
Organisation (if applicable)	Taranaki Energy Watch
Contact details	

Release of information

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Responses to questions

	Section 1: Hydrogen is emerging as an important part of the future global energy system
	Are there other issues we should be considering in our assessment of the strategic landscape for hydrogen in New Zealand?
1	Whole energy system analyses 1. Taranaki Energy Watch (TEW) are concerned about why the government is considering an interim hydrogen roadmap prior to the development of a New Zealand Energy Strategy. [1] 2. TEW agree with the comments made by the Parliamentary Commissioner for the Environment (PCE) on the development of a New Zealand energy strategy. [2] The PCE is an *"independent Officer of Parliament…has broad powers to investigate environmental concerns and is independent of the government of the day".* [3] They outline there are 6 concurrent work programmes and notable decisions (including offshore renewable energy) that could have system wide impacts before the New Zealand Energy Strategy is published. [4] The Commissioner states that *"understanding how they might interact with one another is something different again. It is essential that we can gain an appreciation of how these different elements could play out in real time. Only then will we know whether the energy system that emerges will be low carbon, secure and, crucially, affordable."* [5]

[1] https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-strategies-for-new-zealand/new-zealand-energy-strategy/
[2] https://pce.parliament.nz/media/ndudvpxt/letter-considerations-for-the-development-of-new-zealand-s-energy-strategy.pdf
[3] https://pce.parliament.nz/about-us/the-commissioner/
[4] https://pce.parliament.nz/media/ndudvpxt/letter-considerations-for-the-development-of-new-zealand-s-energy-strategy.pdf at Table 1 in Appendix.
[5] https://pce.parliament.nz/media/ndudvpxt/letter-considerations-for-the-development-of-new-zealand-s-energy-strategy.pdf at p.3.

3. The urgency of completing the New Zealand Energy Strategy ahead of decision-making on other energy projects is clearly articulated by the PCE. [6] We need to understand the trade-offs we face with the different energy strategies now before we are locked in for decades to come. [7] On 31 January 2023 the Commissioner stated, *"any proposals that have consequences for the entire system should be included in the scope for the energy strategy and progress halted until the whole-of -system is completed."* Green hydrogen production is one of these proposals. [8]

4. The Parliamentary Commissioner for the Environment (PCE) had earlier (11 March 2022) expressed concern with the Government's approach to green hydrogen. They noted the following from the Climate Change Commission:

   The costs, benefits, trade-offs and risks of a hydrogen economy will need to be carefully assessed. This includes assessing the cost of production and storage, the costs to maintain, upgrade and repurpose existing infrastructure, and the practicality and affordability for all consumers."[9]

5. The PCE continues: [10]

   "Determining whether hydrogen should be part of the energy system requires a ***whole energy system analysis*** *so the opportunity cost of green hydrogen can be estimated and compared with alternative options. Any such analysis should start from agnostic premises about the desirability of hydrogen and consider a range of energy technologies and pathways for achieving deep reductions in carbon dioxide emissions together with the social, economic and environmental implications of those pathways. Economic analysis should include all costs*

[6] https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-strategies-for-new-zealand/new-zealand-energy-strategy/ at p.7.
[7] https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-strategies-for-new-zealand/new-zealand-energy-strategy/ at p.7.
[8] https://pce.parliament.nz/publications/letter-to-minister-woods-regarding-system-wide-energy-strategy/
[9] https://pce.parliament.nz/media/obzpgjze/pce-letter-to-ministers-woods-shaw-and-robertson-re-green-hydrogen.pdf at p.2.
[10] https://pce.parliament.nz/media/obzpgjze/pce-letter-to-ministers-woods-shaw-and-robertson-re-green-hydrogen.pdf at pp.2-3.

associated with the development of a hydrogen industry in New Zealand. This includes the development of import and export terminals, export production facilities (e.g. ammonia), transport infrastructure and the development of new renewable energy capacity to replace renewable energy that would otherwise feed into the wholesale electricity market."

6. The PCE appended 6 questions that should be answered when considering green hydrogen. [11]

   (i) What are the opportunity costs of green hydrogen production within a whole energy system context?

   (ii) What is the effect on domestic emissions budgets of diverting renewable electricity from wholesale electricity markets to green hydrogen production (e.g., in the event that Tiwai Point aluminium smelter closes) and what will this mean for wholesale electricity prices?

   (iii) When the costs and benefits of a new green hydrogen production industry are assessed, will the costs of developing the import and export terminals, ammonia production facilities, additional renewable energy capacity and hydrogen transport infrastructure be factored into the analysis?

   (iv) What is the government's definition of 'green hydrogen'?

   (v) How will a global market for 'green hydrogen' be regulated and what assurance and certification processes will be in place to verify the sale of 'green hydrogen' on international markets?

[11] https://pce.parliament.nz/media/obzpgjze/pce-letter-to-ministers-woods-shaw-and-robertson-re-green-hydrogen.pdf at p.8.

(vi) What effect does the government expect the development of new green hydrogen production facilities to have on investment in new renewable energy capacity?

Economics

7. Recent work (Economics of using green hydrogen to decarbonise long-distance heavy freight) [12] was completed in New Zealand at Ara Ake regarding whether it was economically feasible to use green hydrogen to decarbonise long-distance heavy freight (LDHF). Their overall conclusion from their review *"of these studies is that there remains uncertainty as to what is the least-cost path to decarbonising LDHF in New Zealand, particularly where "path" is defined to include goals for both short-term and longer-term emissions reduction as the answers to each question might be different."*

8. The report concluded:

   The key gaps we have identified after reviewing the existing studies are:

   ▪ *Existing studies focus on comparing green hydrogen FCEVs and BEVs with ICEVs, but do not consider broader alternatives for decarbonising LDHF such as biofuels, blue hydrogen, cleaner burning fossil fuels or modal shift;*

   ▪ *Relatedly, the studies focus on long-run economics (the "end point") but do not consider in detail the economics of more immediate options to decarbonising (the "path");*

   ▪ *The studies were often completed with a different purpose to ours, and therefore the modelling and assumptions are not available in a way that the findings can be rigorously tested and updated to account for future technology and cost changes; and*

   ▪ *The public data that exists on the LDHF task in New Zealand is relatively sparse and aggregated, which makes it difficult to define what LDHF means in a New Zealand context.*

[12] https://www.araake.co.nz/assets/Uploads/LDHF/Ara-Ake-LDHF-paper.pdf

Our review suggests that the public policy debate surrounding both the "end point" and the more immediate-term "path" for decarbonising LDHF would benefit from a publicly available TCO model, with overlays for social costs and benefits. This would ideally compare the full identified range of options against each other and allow comparisons to be made both in the longer and more immediate terms. Such a model would facilitate answering a more holistic question such as "what economic options exist to decarbonise LDHF in both the immediate and long term?"

9. This reinforces TEW's view that there is further work to be done on a whole system energy analysis prior to long term decision making occurs and becomes locked in.

Health and safety

10. TEW have concerns about health and safety regarding hydrogen storage, use, production and transport. There is currently no legislation. Hydrogen is considered hazardous. Recently Taranaki Energy Watch's risk expert provided evidence in the proposed New Plymouth District Plan that hydrogen storage of 1.5 Tonnes should not be a permitted activity and this was accepted. [13] [14] These health and safety considerations needs immediate consideration including around land use planning.

Section 2: The role for hydrogen in New Zealand's energy transition

2	**Do you agree with our assessment of the most viable use cases of hydrogen in New Zealand's energy transition?**

[13] https://proposeddistrictplan.npdc.govt.nz/media/30flgy0o/hearing-12-expert-evidence-taranaki-energy-watch-jennifer-polich-risk.pdf from paragraph 32.
[14] https://districtplan.npdc.govt.nz/eplan/property/0/0/150?_fp=true

3	**Do you support some of these uses more than others?**
4	**What other factors should we be considering when assessing the right roles for hydrogen in New Zealand's energy transition?**
5	**Do you agree with this assessment of the potential for hydrogen supply and demand in New Zealand?**
6	**Do you agree with the key factors we have set out that are likely to determine how hydrogen deployment could play out?**
7	**What do you think needs to happen to address these factors?**
8	**Do you have any evidence to help us build a clearer picture?**
9	**Do you agree with our findings on the potential for hydrogen to contribute to New Zealand's emissions reduction, energy security and resilience and economic outcomes?**
10	**Do you have any insights we should consider on what is needed to make hydrogen commercially viable?**

11	**Is there any further evidence you think we should be considering?**
Section 3: Government position and actions	
	Do you agree with our policy objectives?
12	
	Do you agree with our positioning on hydrogen's renewable electricity impacts and export sector?
13	
	Do you agree with the proposed actions and considerations we have made under each focus area?
14	
	Is there any evidence we should be considering to better target actions in the final Hydrogen Roadmap?
15	
General comments	