Renewable Hydrogen Target – stakeholder feedback template

Submission from LINDE GmbH

This template has been developed to enable stakeholders to provide feedback on the questions posed in the Renewable Hydrogen Target consultation paper.

Energy Policy WA encourage stakeholders to use this template. If you wish to provide additional feedback outside the template, wherever possible please reference the relevant question/section to which your feedback relates.

No.	Question	Feedback
Renewable Hydrogen Target for electricity generation		
1	What are some examples of an objective or objectives that could be used to assess the benefits, costs and impacts of a Renewable Hydrogen Target for electricity generation?	WA Government offer Linde a contract to manufacture, install and operate electrolyser plants in WA to support and replace conventional fossil fuel electricity generation. Linde has the capability to supply end to end solution, including H2 refuellers, storage, liquefaction, H2 blending and extraction. Benefits and costs include decarbonisation, tax or green credits to switch.
2	How might other uses of renewable hydrogen be accommodated under a Renewable Hydrogen Target certificate scheme? How might Government otherwise support and/or encourage other use cases for hydrogen?	Switching from fossil fuels to hydrogen can offer companies chance to decarbonise their businesses. Many have 2030-2040 targets they need to make. The WA Government could offer short to mid term incentives to these businesses to encourage them to use hydrogen instead of gas, diesel, coal etc… This could be in the form of hydrogen into their industry to power gas turbines, hydrogen truck/mobility.

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		Linde can support with building hydrogen electrolysis plants and a full value chain of hydrogen mobility for trucks, busses. Including H2 liquefaction.
Considering hydrogen		
3	What role do you believe renewable hydrogen can play in the decarbonisation of electricity generation? To what extent will a Renewable Hydrogen Target for electricity generation in the SWIS assist in achieving the decarbonisation objectives of the State Government?	Linde can supply a full in-house hydrogen solution from production generation for export and local industry. Linde can supply a H2 gas or liquid to decarbonise power generation, replacing gas for turbines or any NG application with partial blending or full H2 supply for in pipelines, power or industry.
4	What role can the infrastructure associated with the production of renewable hydrogen (i.e. renewable electricity generation facilities, electrolysers, transport and storage infrastructure) play in the broader SWIS?	Linde has technology for HRS refuelling, storage and H2 extraction in pipelines. We can support with a study to show the benefits of all industry benefits.
Technical feasibility		
5	To the extent you are able please reflect on some of the technical issues, challenges and considerations in the utilisation of hydrogen in the generation of electricity. To what extent can these technical issues and challenges be overcome? How should this impact on the consideration of a Renewable Hydrogen Target for electricity generation in Western Australia?	- Manufacture of renewable energy - Manufacture of electrolysers to meet demand - Water requirements - Local content Incentives for companies to grow in the region and support demand. Offer WA Gov owned entity H2 projects. i.e. replacing gas with H2 production (electrolysis) to help grow the Ely market. Linde have recommended this to WA Gov as part of our Electrolyser 'market ready' study we are currently working on.
Certificate schemes for Renewable Hydrogen Target for electricity generation in the SWIS		
6	Do you believe a renewable hydrogen electricity generation certificate-based scheme represents an efficient and	Yes, if set up in the right way. A number of variables that will need to be planned and implemented properly

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	effective means to deliver a Renewable Hydrogen Target for electricity generation in the SWIS? Please explain your answer.	
7	What are some other approaches which could be considered alongside a renewable hydrogen electricity generation certificate scheme that would provide a framework to deliver on the objectives or outcomes sought?	To be discussed further
Liable entities		
8	Is the proposed approach of certification, deemed liability and certificate transfer an efficient and effective way to deliver on the intent of the Renewable Hydrogen Target for electricity generation? Are there alternative approaches which could better deliver on the objectives?	We would need to see more detail on this to offer our opinion.
Exemptions		
9	What are the benefits, costs and impacts of an exemptions regime for a Renewable Hydrogen Target for electricity generation?	Make all industries accountable
Non-renewable hydrogen		
Renewable fuels		
10	Should the Renewable Hydrogen Target for electricity generation consider alternative renewable fuels as eligible for the creation of Renewable Hydrogen Electricity Generation Certificate? Why or why not?	Don’t discount blue hydrogen first. Its more competitive especially with CCUS and the NG being available now so quicker timespan for projects.
Setting a target		
11	Please consider the benefits, costs and implications of a 1%, 5% and 10% Renewable Hydrogen Target for electricity generation in the SWIS on your business or industry, and provide commentary on how you would expect to react from	

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	a commercial and investment perspective to each target level.	
12	At a whole-of-economy and / or sectoral level, what do you consider to be some of the benefits, costs and implications of a 1% target, a 5% target, and a 10% target?	
Target terms		
13	Is the suggested approach of a medium term aggregate target, with annual entity targets, an efficient and effective means to achieve the objectives of the Renewable Hydrogen Target for electricity generation in the SWIS? Why or why not?	
14	To what extent should banking and borrowing of liabilities be permitted under the scheme? What are the benefits and costs of a borrowing mechanism as described in the paragraph above?	
Scheme commencement and ramp up		
15	How soon do you believe a Renewable Hydrogen Target for electricity generation in the SWIS could be feasibly delivered from a technical perspective (i.e. if cost was not a consideration)? Please reflect on your own organisation and/or sector when providing your answer.	2 years
16	Similar to the above, how soon do you believe a Renewable Hydrogen Target for electricity generation in the SWIS could be feasibly delivered from a commercial or economic perspective (i.e. if cost was a consideration)? Please reflect on your own organisation and/or sector when providing your answer.	2 years
17	Over what period of time do you believe is an appropriate ramp up period for the Renewable Hydrogen Target for electricity generation in the SWIS? In providing your answer	3-4 years

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	reflect on the actions your organisation and / or sector would need to take to participate in the scheme.	
Hydrogen cost outlook		
18	In the short (<5 years), medium (5-15 years) and long (15+ years) term, where do you expect the cost of production of renewable hydrogen to move from the estimated levels of today? What do you expect to be the drivers of this change?	Improvements in manufacturing – scaling up of facilities and projects. Cost to reduce by approx. 15-20%
Hydrogen demand and electrolyser capacity		
19	To what extent to you believe the above scenarios are reasonable and achievable? Please explain your answer with reference to your previous answers regarding the objectives of the scheme.	We see the improvement in costs driven by lower cost renewables solar/wind, this is the key. Adding to this will be the technology like electrolysers, we/Linde see lower cost regions manufacturing the stacks (China etc…) plus automation of production lines
20	How would you expect the levels of hydrogen demand for electricity generation in the SWIS to be met at various points in the supply chain? Would you expect a single generator would emerge and provide all certificates?	It depends on how quickly Australia act on the transition to hydrogen. At present we are talking a lot but not acting or progressing quickly enough with getting projects to FID. We/Linde see other global regions moving faster – Europe, US and ME all working on larger commercial scale projects. It will probably require a central organisation/dept to run but could be sub managed/certs by various entities.
21	Would you expect one very large renewable hydrogen producer, a number of very small renewable hydrogen producers, or some other combination, to emerge in the State as a result of the scheme? Alternatively, would a domestic-focused producer have sufficient scale to operate in a domestic market only?	We cannot rely on one single producer. Nor would we want to be dependent on one large company to dominate the states hydrogen production. Linde have been manufacturing hydrogen plants for over 60 years, now it's a high demand product we can support with large and mid scale projects to meet the states requirements. This applies to government owned entities and 3rd party producers like bp, Woodside, Yara and others.

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		Linde Gas can design, manufacture, install and operate hydrogen facilities in WA to supply both domestic and export markets. We encourage the WA Government to work with Linde to build the hydrogen economy in the state. https://www.lindehydrogen.com/