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## **RENEWABLE HYDROGEN TARGET CONSULTATION PAPER**

Alinta Energy appreciates the opportunity to provide feedback on the Renewable Hydrogen Target Consultation Paper.

Alinta Energy strongly opposes the proposal to “introduce an obligation on electricity retailers and potentially large users to purchase a portion of their electricity from hydrogen-fuelled generation” considering that:

1. The SWIS already faces a substantial challenge to secure the renewable generation, firming capacity, and transmission investment it requires before 2030, especially considering the long lead time of these assets, supply chain pressure<sup>1</sup> and the lack of long-term signals for generation and storage<sup>2</sup>. By significantly adding to this requirement, a hydrogen target may render this challenge insurmountable both in terms of overall achievability and cost for consumers.
2. Electricity consumers would be required to subsidise hydrogen infrastructure they would not benefit from: the target would increase their costs and only reduce their emissions negligibly compared to renewable energy.
3. The subsidy may fail to contribute to a competitive hydrogen export industry and deliver emissions reduction benefits, noting the uncertainty of hydrogen as a shipping export, and the unmatched subsidies to hydrogen producers offered in the US.
4. Due to their relative cost, hydrogen generators could not clear in the market unless either the energy price or certificate price is very high. Both scenarios would mean higher costs for customers and the former may extend the lives of thermal generation.
5. Unlike the RET, the hydrogen target would likely establish a monopoly supplier, creating market power issues. Mitigating these issues would add to the complexity of the scheme which would already be administratively burdensome relative to its benefits.
6. Targeting sectors that are more likely to have long term use cases for hydrogen will better serve the objectives.

Given these points, we strongly recommend that any effort to stimulate demand for hydrogen and establish a hydrogen export industry should designate businesses who could use hydrogen

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<sup>1</sup> Financial Times, [European Wind Industry Struggling with Rising Costs](#), Oct 2022.

<sup>2</sup> The key finding of [ERA's 2022 effectiveness review](#) was that “existing price signals do not provide an adequate commercial justification for investing in the new, low emission generation and storage”.

to decarbonise cost-effectively or would benefit from the export revenue. This way the scheme is more likely to build infrastructure that makes hydrogen more accessible for the industries that have an interest in it succeeding, increasing the prospects of the target contributing towards the key objectives of establishing an export industry and decarbonisation.

We also note that the modelling appears to have not accounted for the cost of LGCs, only assuming an electricity input cost of [~\\$40/MWh](#) for hydrogen generation. We strongly disagree with this approach: if the renewable generator supplying the hydrogen producer can sell its LGC elsewhere, then the hydrogen producer would be double counting if it called the electricity it bought from that generator 'renewable'.<sup>3</sup> It follows that the hydrogen it produced would not be renewable and with LGCs at ~\$48 at time of writing, the cost of actual renewable hydrogen would be much higher than ACIL's model would currently suggest.

Finally, we note that if the proposal is progressed despite these points, we strongly recommend that there be measures to ensure the scheme is competitively neutral, and to mitigate the costs passed to customers (where possible).

Further detail to substantiate these reasons why we oppose the hydrogen target is provided below.

## **1. Supplying the renewable energy required for renewable hydrogen, may turn WA's substantial energy transition challenge into an insurmountable one.**

Even with the WEM ESOO demand assumptions which are much more conservative relative to the ISP,<sup>4</sup> the SWIS faces a significant challenge to deliver the investment required to maintain reliability. We estimate that replacing Synergy's planned retirements, while meeting the forecast shortfall in capacity and the government's 80% emissions reduction target may require ~\$13bn of investment in generation and storage before 2030. Publicly reported plans to potentially substitute from thermal generation or electrify, including from [Boddington Gold Mine](#), [South 32](#), and [Alcoa](#) could significantly increase this requirement and bring the WEM closer to the NEM's ISP demand forecast which is expected to double by 2050 to meet net zero.

With the scale of investment already required, we consider that adding a target would be infeasible before 2030 as it would exacerbate the risk of shortfalls and costs spikes for customers by necessitating further generation and storage to supply either a 90MW electrolyser (under a 1% target) or 450MW electrolyser (under a 5% target) by 2030.

Transmission capacity may also present a barrier to delivery, with [Western Power's ISP](#) indicating that the network will have limited capacity in WA's renewable energy resource areas after accommodating Synergy's planned investments.

## **2. Electricity consumers would be required to subsidise infrastructure they would not benefit from, at a time when they are already expected to underwrite unprecedented levels of investment in electricity infrastructure.**

Unlike the renewable energy certificate scheme, a hydrogen target funded by electricity users would not boost low-cost supply, nor would it meaningfully reduce users' scope 2 emissions over the longer term.

Hydrogen is significantly more expensive than gas, so blending it into gas-fired generators would increase prices.<sup>5</sup> The Grattan Institute expects that hydrogen won't be cost-effective for the electricity sector in the medium to long term, noting that even if the Government's

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<sup>3</sup> This is the same reason why a retailer cannot satisfy their LRET obligations with offtake from a renewable generator without the attached LGCs.

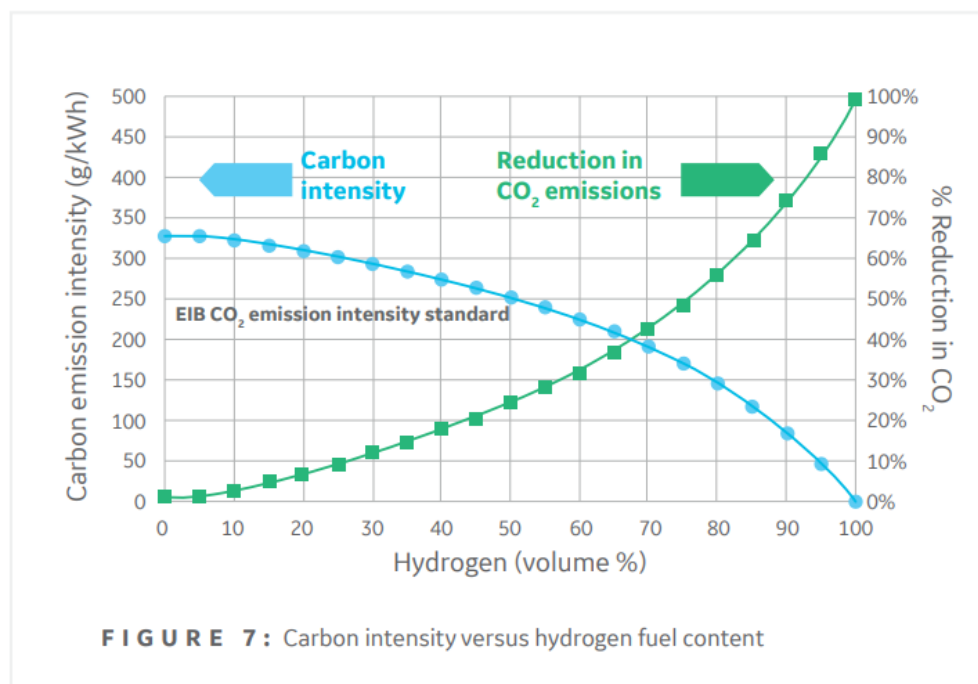
<sup>4</sup> Compared with [AEMO's ISP](#) which forecasts demand doubling by 2050 in every scenario to meet net zero.

<sup>5</sup> IRENA, [Global Hydrogen Trade to Meet the 1.5°C Climate Goal](#), p.104.

stretch goal of \$2/kg hydrogen is achieved by 2040 in the NEM, fuel costs in the alone would be about \$0.6 billion more per year than if using gas.<sup>6</sup> Further, hydrogen plants, being a less-developed technology, may cost more to build and operate than gas plants.<sup>7</sup>

Additionally, the emissions reduction benefit for electricity users is negligible: even if a blend as high as 20% by volume could be tolerated in a turbine, this would equate to only 7% in energy terms compared to no hydrogen (as the volumetric energy content of hydrogen is about a third of that of natural gas)<sup>8</sup>.

It's also likely the hydrogen tolerance of a retrofitted gas turbine would be less than this, delivering even more negligible benefits. The paper cites Tallawarra B to as evidence that hydrogen use in turbines is feasible and there's a potential future need for it. However, Tallawarra B, a new facility, will only be able to use 5% hydrogen and not until 2025,<sup>9</sup> and this only delivers a carbon reduction of 2% compared to no hydrogen per the chart below from GE's report: [Hydrogen for power generation](#).



Given hydrogen's relative cost, Grattan expects that renewables, storage, and gas-fired generation, (potentially using offsets) will be a more efficient means of decarbonising the electricity sector in the medium to long term.

### 3. This cross subsidy may fail to contribute to a competitive hydrogen export industry and broader economic benefits.

We doubt that the proposed target could deliver towards these objectives noting that the infrastructure it would incentivise would be to supply a hydrogen electricity generator, and therefore be unlikely to have the necessary scale, location and useful life to complement an export industry, or be used by upstream stationary energy users for whom hydrogen is a viable means to decarbonise.

Even energy users in the SWIS that would have the clearest use cases for hydrogen (e.g. those that require combustion of fuels for heat in industrial processes), like [Alcoa](#) and [South](#)

<sup>6</sup> Grattan Institute, [Go for Net Zero](#), April 2021, p.35.

<sup>7</sup> Grattan Institute, [Go for Net Zero](#), April 2021, p.35.

<sup>8</sup> IRENA, [Global Hydrogen Trade to Meet the 1.5°C Climate Goal](#), p.104.

<sup>9</sup> Consultation Paper, p.10.

[32](#) have public plans to electrify instead, noting the relative cost of hydrogen.

We also note that the increased costs it would impose on electricity users would have negative economic impacts.

Further, we consider that it's not certain hydrogen will be shipped internationally, nor that WA will be able to be competitive in doing so, meaning the cost of the hydrogen target may be an unsound investment from a WA perspective. This is because:

- Hydrogen's lower energy density means three times as many vessels would be needed to ship the same amount of energy as LNG, and energy loss from cooling and liquefying may push that up to four. Due to these costs, the BNEF founder considers that either pipelines will be used instead, or there will not be export at all.<sup>10</sup>
- Many other countries are offering far larger subsidies to establish hydrogen production industries that would make it difficult for WA to compete. The US is offering tax credits of up to \$3/kg<sup>11</sup>, or \$359bn in total and \$8bn for hubs, likely positioning them the most attractive market in the world for green hydrogen producers.<sup>12</sup>

#### **4. The target would likely create a monopoly supplier.**

Given that demand for hydrogen electricity will be limited to the target, we anticipate the scheme will create a monopoly supplier. This may cause market power issues, and a wealth transfer from other market participants. If the target is implemented, we recommend that competitive neutrality and market power mitigation measures may be required, recognising that this would add to the scheme's complexity.

#### **5. The target may have impacts that undermine the energy transition and affordability.**

Given their fuel cost compared to marginal gas-fired generators, hydrogen generators may not clear in market and be dispatched unless certificate price is very high, meaning high costs to customers. If the cost is recovered through energy instead, the higher prices may perversely extend the lives of thermal generators, although the increased demand for renewable energy driven by the electrolyzers may increase energy costs regardless.

#### **6. Targeting sectors that are more likely to have long term use cases for hydrogen will better serve the objectives.**

While Alinta Energy recognises that a key barrier to a WA hydrogen industry is a lack of demand, it considers that requiring electricity users to stimulate this demand will not help eliminate this barrier. A key reason for the lack of demand is businesses not having the infrastructure and supply chains to integrate hydrogen into their operations. A scheme funded by electricity users would not help rectify this because most energy users near or already connected to the SWIS cannot integrate hydrogen into their operations and would electrify to reduce emissions instead. As noted, even those with the most likely use cases for hydrogen, like South 32 and Alcoa have indicated that they are investigating electrification instead.

Consequently, removing this integration barrier requires targeted demand stimulation – the scheme should designate businesses who can or could use hydrogen to decarbonise. This way the scheme is more likely to build infrastructure that makes hydrogen more accessible for the industries that can use it.

This is also more likely to support the decarbonisation and hydrogen export objectives. Building

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<sup>10</sup> Recharge News, [Not going to be a thing it will be too expensive to ship hydrogen around the world says Liebreich](#), Sep 2022.

<sup>11</sup> Financial Times, [Europe risks losing green hydrogen funding to US, industry leader says](#), Aug 2022.

<sup>12</sup> Hydrogen Insight, [EU officially asks US to amend 'market-distorting' clean hydrogen production tax credits](#), Nov 2022.

hydrogen projects that serve genuine use cases is more likely to deliver better emissions reduction outcomes. Further, having a use case beyond serving an electricity target would help a project have the scale and sustainability necessary for contributing to an export industry.

Thank you for your consideration of Alinta Energy's submission. If you would like to discuss this further, please contact me at [oscar.Carlberg@alintaenergy.com.au](mailto:oscar.Carlberg@alintaenergy.com.au) or on 0409 501 570.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Oscar Carlberg', written in a cursive style.

**Oscar Carlberg**  
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