10 November 2022

Energy Policy WA
Locked Bag 100
East Perth WA 6892

Sent via email by graham.pearson@energycouncil.com.au to: EPWA-info@dmirs.wa.gov.au

Renewable Hydrogen Target

The Australian Energy Council (the "**AEC**") welcomes the opportunity to make a submission on the Renewable Hydrogen Target consultation paper ("**Consultation Paper**") published by Energy Policy WA ("**EPWA**").[1]

The AEC is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. Our members collectively generate the overwhelming majority of electricity in Australia, sell gas and electricity to millions of homes and businesses, and are major investors in renewable energy generation. The AEC supports reaching net-zero by 2050 as well as a 55 percent emissions reduction target by 2035, and is part of the Australian Climate Roundtable promoting climate ambition.

It is understood that EPWA is investigating a Renewable Hydrogen Target for the electricity sector that would place an obligation on retailers to purchase some of their electricity from hydrogen-fueled generation. This would be undertaken via a Renewable Hydrogen Electricity Generation Certificate. The overall objectives of the proposed Renewable Hydrogen Target are to:

- Stimulate demand by artificially creating a domestic renewable hydrogen market.
- Enhance electricity grid reliability and stability.
- Use hydrogen to assist with decarbonizing the grid.

The presentation from EPWA indicated that a paper will be delivered to Cabinet in December 2022 for a decision on whether to progress to the design and implementation of the policy.

Objections to the Renewable Hydrogen Target

The proposed Renewable Hydrogen Target will have significant consequences for the electricity sector as well as generators, retailers and end consumers. The AEC forwarded correspondence to EPWA on 15 July 2022 expressing our concerns about the proposed Renewable Hydrogen Target.[2] These concerns remain and the AEC does not support the Renewable Hydrogen Target for the following reasons:

[1] See Renewable Hydrogen Target for electricity generation in the South West Interconnected System Consultation Paper
[2] See correspondence to EPWA

Level 14, 50 Market Street
Melbourne 3000
GPO Box 1823 Melbourne Victoria 3001

P +61 3 9205 3100
E info@energycouncil.com.au
W energycouncil.com.au

ABN 92 608 495 307

- ***The Renewable Hydrogen Target is using the electricity sector to stimulate demand for another sector***

  The AEC's main objection to the proposed Renewable Hydrogen Target is that the electricity sector is being used to artificially stimulate demand for the hydrogen sector through the obligation to purchase Renewable Hydrogen Electricity Generation Certificates.

  To date, there has been no explanation during the consultation process or in the Consultation Paper about why the electricity sector should subsidise another sector – at significant cost to generators, retailers and consumers – while receiving no benefit itself or enhancing the stability and security of the SWIS.

  If hydrogen is "not currently financially viable"[3] and the State Government does not favour financial incentives to attract investment[4], why should the electricity sector, and ultimately end users, be required to support the development of the hydrogen sector by buying certificates?

  This is a fundamental question that needs to be addressed before any decision is made to proceed with the Renewable Hydrogen Target.

- ***The Renewable Hydrogen Target will distort the market***

  The Consultation Paper states that "a Renewable Hydrogen Target for electricity generation could contribute to electricity grid stability and reliability, particularly in the long run as technologies advance and hydrogen can play a firming role."[5]

  It appears that hydrogen is being chosen to receive a subsidy over other emerging and required technologies, such as dispatchable long duration battery storage, which are needed to support the energy transition and are not commercial with current revenue streams in the Wholesale Electricity Market ("**WEM**"). Supporting one generation type over others goes against the WEM objective to avoid discrimination in the market against particular energy options.

  The AEC suggests that grid stability and reliability should be promoted by sending the 'right' signals to encourage the entry of new technology into the SWIS through the market mechanisms in the WEM (including the Reserve Capacity Mechanism ("**RCM**"), Essential System Service ("**ESS**") markets and the energy markets).

  Marsden Jacobs Associates ("**MJA**") considered this issue in a report commissioned by the AEC on revenue adequacy for generators in the WEM.[6] MJA found that there was 'missing money' for many generation types and long duration battery storage, which are required for reliability, are not economic because the ESR Obligation Duration, the Capacity Price formula and the linear derating method does not provide an economic return for storage facilities exceeding 4 hours. The Economic Regulation Authority's *Triennial review of effectiveness of the WEM Discussion Paper* similarly found that "existing price signals do not provide an adequate commercial justification for investing in the new, low-emission generation and storage that would meet the WEM Objectives."[7]

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[3] See WA forges ahead with renewables transition as other states face energy crisis
[4] See Mines Minister Bill Johnston cautious of State Government role in battery production
[5] See p6, Renewable Hydrogen Target for electricity generation in the South West Interconnected System Consultation Paper
[6] See Revenue adequacy for generators in the WEM
[7] See p2, Triennial review of the effectiveness of the Wholesale Electricity Market 2022 Discussion paper

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ABN 98 052 416 083

To incentivise these types of flexible, dispatchable projects to enter the market and to make them viable, a specific capacity price category could be introduced in the WEM. This technology neutral approach would allow the market to send the 'right' signals to investors when this type of generation is required. It would encourage the most appropriate mix for the WEM as a whole and avoid distortions in the market caused from other sectors subsidising the entry of hydrogen projects.

- ***The Renewable Hydrogen Target will increase costs and may not decarbonise the grid***

  The Consultation Paper notes that "a Renewable Hydrogen Target for electricity generation could play a role in decarbonising the target electricity grid by displacing carbon-intensive electricity generation."[8]

  While it is possible for hydrogen to play a role in decarbonising the electricity grid, the cost of producing hydrogen will make it prohibitive for at least the next few decades without exorbitant subsidies. The Grattan Institute explains:

  > *"It could play a significant role in the future – depending on its cost.*
  >
  > *The main problem in using hydrogen … is the cost of making and storing enough of the fuel in a zero-emissions way. The Federal Government has set a 'stretch goal' of delivering low-emissions hydrogen for less than A$2/kg, which would equate to an energy cost of more than $16 per gigajoule (GJ). For comparison, natural gas today typically costs between $8 and $10/GJ for industrial customers on the east coast of Australia, and is projected to cost between $11 and $14/GJ for gas-powered generation by 2040; coal costs less than $4/GJ. So even if the stretch goal is met, this would be a more expensive source of energy. The National Hydrogen Roadmap estimates that in the absence of a carbon price, hydrogen would need to cost $1.6/kg to be competitive with natural gas for providing seasonal energy storage.*
  >
  > *… Hydrogen could in future be competitive with other firming options, but the timing is uncertain. Some analysts see potential for hydrogen to cost $2.1/kg by 2030 and $1.2/kg by 2050, if governments around the world introduce policies to stimulate demand and provide more than $200 billion in subsidies over the next decade."*[9]

  The high cost of hydrogen production and storage means that it cannot compete against existing generation assets on a commercial basis and, for that reason, hydrogen is not likely to have a noticeable impact on decarbonising the grid for several decades. In fact, the high cost of hydrogen could have the adverse impact: hydrogen generators may not clear in the market unless the certificate price is high, and perversely this could drive up the wholesale price and extend the lives of thermal generators. Such an outcome would be contrary to the WEM objective to promote the economically efficient supply of electricity in the SWIS.

- ***The Renewable Hydrogen Target will cost generators***

  The Renewable Hydrogen Target assumes a certificate scheme where a Renewable Hydrogen Electricity Generation Certificate would be generated for every MWh of electricity generated via the combustion of renewable hydrogen. The Consultation Paper notes that as a consequence gas turbines will need to be retrofitted and "alterations are typically required in the fuel handling systems, valves and piping, and combustor hardware. The costs of these alterations would likely vary significantly across different generators."[10]

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[8] See p6, Renewable Hydrogen Target for electricity generation in the South West Interconnected System Consultation Paper

[9] See p34 & p35, Go for net zero: A practical plan for reliable, affordable, low-emissions electricity

[10] See p9, Renewable Hydrogen Target for electricity generation in the South West Interconnected System Consultation Paper

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Retrofitting existing assets would be neither a quick nor low-cost activity. The relevant generators would be out of service for a substantial period and this would potentially reduce system security. The Consultation Paper does not address how gas generators will recover their lost revenue and the costs of retrofitting their assets. It is assumed that the only means available to gas generators will be to pass on the costs in the market, which will ultimately be borne by end consumers.

- ***The Renewable Hydrogen Target will cost retailers***

  Retailers typically contract wholesale energy years in advance to cover their portfolio. Because of this, it is likely that that many retailers will have a surplus when they are required to procure additional, excess energy from renewable hydrogen projects. In the absence of a refund mechanism for retailers, this cost will likely be passed on to end consumers.

- ***The Renewable Hydrogen Target will increase costs for end users***

  There has been little focus on the rising costs for consumers as part of the Energy Transformation Strategy ("**ETS**"). Consumers have been bearing the cost of the energy transition and further cost pressures for end consumers will continue with the AA5 Draft Decision increasing costs, and AEMO's AR6 final determination raising WEM fees by 85 per cent. The Economic Regulation Authority noted that "the pass-through of these increases will be particularly acute, given current cost of living pressures experienced by consumers."[11]

  In this context, it is not appropriate for consumers to pay for the ETS plus also subsidise a hydrogen industry that is not financially viable.

- ***Consumers will subsidise projects that don't benefit them***

  Under the proposed Renewable Hydrogen Target, consumers will not receive any benefit from the Renewable Hydrogen Target but will ultimately wear the cost of subsidising the hydrogen sector. There is also a real risk that through the Renewable Hydrogen Target, consumers will subsidise hydrogen projects that do not benefit them and are instead developed for other purposes, such as producing hydrogen for export. If consumers wear the cost of this program, then EPWA should ensure that the hydrogen projects are designed to support consumer needs and not projects that are created for a different purpose.

- ***The Renewable Hydrogen Target is subsidised by the wrong sector***

  As noted above, the AEC considers that market-based mechanisms are the best instrument to send signals for particular types of generation to enter the SWIS. However, should the State Government decide to proceed with subsidising hydrogen, then the support should come from relevant, hard to abate industries that stand to benefit from hydrogen projects.

  There are many heavy industries that could get directly involved and support the development of hydrogen projects in Western Australia. For example, there are now cases around the world where steel makers have successfully replaced natural gas with renewable hydrogen.[12] Industries such as this, which are heavy carbon emitters and able to easily adapt to use renewable hydrogen, are far better placed to support the establishment of the hydrogen sector.

[11] See pviii, Australian Energy Market Operator's allowable revenue and forecast capital expenditure proposal for the period 1 July 2022 to 30 June 2025 – Final determination

[12] See Steel-making giant successfully tests green hydrogen at plant

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- ***The Renewable Hydrogen Target will divert resources away from the broader energy transition***

  Market participants have widely supported the ETS and incurred costs and used substantial resources to implement the reforms. Market Participants only have limited resources and they cannot switch focus away from implementing the WEM reforms and being ready for the new market, to instead address the considerable challenges that the Renewable Hydrogen Target brings.

- ***The Renewable Hydrogen Target will exacerbate the capacity shortfall***

  An energy transition is underway in Western Australia, led by a State Government that has put forward a range of commitments and proposed policies that will shift the energy sector towards more intermittent and low-emissions capacity. This transition is also being driven by private companies proactively adopting renewable energy alternatives.[13]

  It will be challenging for the market to address the increased demand for renewable energy generation. Indeed, the *2022 Wholesale Electricity Market Electricity Statement of Opportunities* says that capacity shortfalls are expected from 2025-26 and these forecast shortfalls will increase to 303MW by 2030-31.[14] This forecast doesn't include the consequences of the State Government's economy-wide goal of net zero by 2050 and Synergy's plans to close coal-fired power plants by 2030 and build no new natural gas-fired power plants after 2030.

  A significant amount of investment will be required just to cover the forecast capacity shortfall, the retirement of Synergy's coal generation fleet and the State Government's net zero commitments. The Renewable Hydrogen Target will divert renewable generation away from addressing these challenges and exacerbate the shortfall even further.

- ***No justification for supporting hydrogen sector***

  The Renewable Hydrogen Target has so far been progressed without any consideration given to whether it provides an overall net benefit. The Consultation Paper indicates that a cost benefit analysis will be undertaken after feedback has been received by stakeholders.[15] It is important that this cost benefit analysis covers the entire lifecycle costs, including the:

  - Administration costs
  - Supply chain costs
  - Cost of storing and transporting hydrogen
  - Costs for augmenting existing generators
  - Costs to consumers
  - Costs for Market Participants
  - Cost to retailers of procuring excess energy from renewable hydrogen projects on top of their existing contracts
  - Cost to investors of renewable hydrogen artificially displacing their generation

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[13] See South32 to switch fossil fuels at alumina refinery as coal ends and Green alumina processing pilot in WA receives major backing from ARENA
[14] See p8, 2022 Wholesale Electricity Market Electricity Statement of Opportunities
[15] See p18, Renewable Hydrogen Target for electricity generation in the South West Interconnected System Consultation Paper

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This cost benefit analysis should be publicly available and also provided to Cabinet before a decision is made on proceeding with the design and implementation of the Renewable Hydrogen Target.

Conclusion

The AEC appreciates this opportunity to provide feedback on the Renewable Hydrogen Target.

The AEC does not support the Renewable Hydrogen Target and encourages Energy Policy WA to consider the issues raised above.

Please do not hesitate to contact Graham Pearson, Western Australia Policy Manager by email on graham.pearson@energycouncil.com.au or by telephone on 0466 631 776 should you wish to discuss this further.

Yours sincerely,

Graham Pearson
Policy Manager, Western Australia
Australian Energy Council

Level 14, 50 Market Street
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