

15 November 2022

Energy Policy WA
Department of Mines, Industry Regulation and Safety
Locked Bag 100
EAST PERTH WA 6892

via email energymarkets@dmirs.wa.gov.au

Dear Sir/Madam

Re: Renewable Hydrogen Target for electricity generation consultation

Thank you for the opportunity to provide feedback to the consultation paper on implementation of a Renewable Hydrogen Target for electricity generation in the South West Interconnected System.

ATCO supports the proposed Renewable Hydrogen Target as it stimulates demand for renewable hydrogen and will underpin confidence for investment in renewable hydrogen production in Western Australia. Providing a clear signal on demand for renewable hydrogen will break the “chicken and egg” scenario that is currently impacting the industry.

Clear policy direction is needed by government to attract investment and position WA as a competitive destination for renewable hydrogen investment. The proposed Renewable Hydrogen Target is a positive step to incentivise local demand and build a domestic hydrogen market.

Hydrogen has a role to play in our energy mix and offers an alternate method of long term storage by capturing renewable electricity resources when it is abundant. With the ability to be used in fuel cells, directly or blended with natural gas, it is important that the proposed Renewable Hydrogen Target facilitates the use of hydrogen not only in the energy system but across the economy.

Overall, ATCO considers the Renewable Hydrogen Target will:

- Provide investors’ confidence to develop large scale production capability by stimulating hydrogen demand
- Support a Renewable Hydrogen Certificate scheme that will allow hydrogen certificates to be traded across the economy and incentivise its use in other areas through a use-agonistic approach
- Progressively increase over time to allow the industry to continue to build scale and reduce the cost of production

It is imperative that the right signals are provided to incentivise investment and bring us closer to the mix of resources needed to support both the gas and electricity networks supplying safe, reliable, affordable, and sustainable energy to consumers.

Please find attached our response to consultation questions.

About ATCO

Established in Canada in 1947 and now a \$22 billion global company, ATCO has a long history of partnering with communities and Indigenous groups, energising industries, and delivering customer focussed infrastructure solutions. This year marks our 75th year.

With over 60 years' experience in Australia – having entered the market in 1961 – ATCO understands the Australian environment and is a trusted, long-term partner of many large and respected Australian companies.

Leveraging a legacy of power generation, transmission and distribution networks operation and maintenance in Canada, ATCO has been providing gas-fired power generation in Australia for more than 20 years and is actively investigating investments across the entire energy value chain, including renewable generation, transmission, distribution and storage infrastructure for the national electricity market. ATCO is eager to apply its international expertise and experience in electricity, natural gas, hydrogen, water, storage and structures to its continued operations across Australia.

Experienced in building, owning and operating pipeline infrastructure globally, ATCO has successfully managed the Western Australian natural gas distribution network since 2011.

ATCO has invested in alternative and renewable energy solutions for 30 years. ATCO will continue to respond to disruption in the energy sector through investing in a range of projects that utilise new technologies and business models to provide energy solutions for a low carbon future. Activities in this area include renewable generation, microgrids, storage and hydrogen.

ATCO is a global leader in providing modular solutions to the community; from regional mining developments through to urban infrastructure development and provides a diverse range of services and products throughout various markets in Australia.

Should you have any queries or would like to discuss any of these issues further please contact Kiran Ranbir, Manager Energy Policy and Government Strategy on 0432 158 656.



J.D. Patrick Creaghan
Country Chair, Australia

Attachment 1 – Submission from ATCO

Renewable Hydrogen Target – stakeholder feedback template

Submission from ATCO

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?	<p>It is important that industry development be prioritised to initiate large scale domestic hydrogen production. Hydrogen has a role to play in the energy transition, but its potential will not be realised without local demand to support production facilities.</p> <p>Objectives that could help assess the impact of the Target need to be aimed at assessing its role in industry development.</p> <p>Suggested objectives that could be adopted to assess the benefits, costs and impacts of the RHT:</p> <ul style="list-style-type: none"> • Incentivise the use of renewable hydrogen at a sufficient scale in order to unlock a number of long-term benefits to consumers; • Facilitate the achievement of a Target at the least cost to the community; • Job creation and skill development in hydrogen

No.	Question	Feedback
		<ul style="list-style-type: none"> • Use of hydrogen as energy storage to support the security and reliability of the energy system.
2	<p>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?</p>	<p>The Renewable Hydrogen Target certificate scheme must support the direct combustion of hydrogen, or hydrogen blending into the natural gas distribution system. The certificate scheme will provide another avenue for hydrogen to meet our energy needs and provide storage capacity to optimise energy infrastructure.</p> <p>The obligation created by the Target could allow hydrogen to be traded for multiple use purposes with flexibility in the trade of certificates across the economy and not linked necessarily to use in turbines. This could include the displacement of non-renewable hydrogen and diesel in the transport sector.</p> <p>The introduction of other clean fuel obligations, such as a Renewable Gas Target should be considered alongside this Target, as well as incentives to lower the cost of production.</p>
Considering hydrogen		
3	<p>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?</p>	<p>Renewable hydrogen has a role to play in WA's energy mix and offers an alternate method of long term storage by capturing renewable electricity resources when they are abundant. A whole of energy system picture considering interactions between all energy sources will help to ensure pressures on energy infrastructure is balanced across the existing system and limit the need for new infrastructure investment by the State. Hydrogen blending into the natural gas distribution system provides another avenue for hydrogen to have a role in meeting our energy needs and providing storage capacity to ensure energy security and reliability and optimise the existing energy infrastructure.</p>

No.	Question	Feedback
		Renewable hydrogen has the potential to deliver safe, reliable and affordable energy to consumers.
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?	<p>An integrated systems approach considering all energy sources and infrastructure will lead to improvements in affordability and reliability for consumers. Utilisation of current pipeline assets in transporting hydrogen to its end use should be considered to balance energy needs across the SWIS and limit the need for new transmission investment.</p> <p>Electrolysers provide flexible capacity to help to balance the energy system. This Target proposal will incentivise flexible loads for hydrogen production, through electrolysis, providing a range of ancillary services to the WEM because of their ability to start, ramp up and down and stop quickly whilst having the additional benefit of storing energy for either the short or long term to meet demand at different times. The Australian Energy Market Operator has indicated with respect to the National Energy Market that “<i>embedded electrolysers (utility scale or distributed) could provide benefits to power system security, operability and reliability, depending on their location, infrastructure deployed in the plant, their commercial and technical operations, and supported by market reforms that incentivise and reward appropriately</i>”¹.</p>
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	Hydrogen can be used today in electricity generation by fuel cells and in turbines operating on a blend of hydrogen and natural gas without any modification. It is anticipated that

¹ Australian Energy Market Operator, Integrated System Plan 2020, p22

No.	Question	Feedback
	<p>overcome? How should this impact on the consideration of a Renewable Hydrogen Target for electricity generation in Western Australia?</p>	<p>turbines capable of running on 100% hydrogen will be available around 2025.</p> <p>The areas affecting hydrogen utilisation least advanced are:</p> <ul style="list-style-type: none"> • Large scale production - There is no large scale production facility operating in Australia yet. • Storage of renewable hydrogen - Existing gas networks provide a solution for transport and storage of hydrogen. Work by GPA Engineering as part of the National Hydrogen Strategy supports the technical viability of up to 10% hydrogen blend in natural gas distribution networks.² <p>As the availability of renewable hydrogen improves, 100% capable hydrogen appliances will become available and help break the “chicken and egg” cycle that currently impacts the industry.</p>
<p>Certificate schemes for Renewable Hydrogen Target for electricity generation in the SWIS</p>		
6	<p>Do you believe a renewable hydrogen electricity generation certificate-based scheme represents an efficient and effective means to deliver a Renewable Hydrogen Target for electricity generation in the SWIS? Please explain your answer.</p>	<p>ATCO supports a use-agnostic tradable certificate scheme, not necessarily linked to combustion of hydrogen for electricity generation, to allow the benefits of renewable hydrogen production to be spread across the economy. It is considered that a certificate scheme should be combined with other incentives to promote hydrogen use within the SWIS. For example, the adoption of roof top solar was supported by grants and a feed in tariff. Incentivising flexible loads for renewable hydrogen production, through electrolysis, can provide the ability to start, ramp up and down and stop quickly whilst having the additional benefit of</p>

² GPA Engineering, Hydrogen in the Gas Distribution Networks, November 2019, Available from: <https://www.dcceew.gov.au/energy/publications/australias-national-hydrogen-strategy/reports-to-support-the-strategy>

No.	Question	Feedback
		storing energy to meet demand at different times, whilst supporting the reliability and security of the energy system.
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?	<p>A combination of obligation and incentive based initiatives aimed at encouraging both hydrogen supply and demand are needed. These could include:</p> <ul style="list-style-type: none"> • A new flexible capacity product could be incorporated into the design of the Reserve Capacity Mechanism. Hydrogen production can deliver flexible capacity to support the reliability of the electricity grid and integrate with gas networks. • Concessions for electricity transmission and distribution charges, similar to those offered by the NSW Government, to encourage connection to the grid and could be used to support hydrogen development in strategic locations, such as hubs. • Introduction of Renewable Gas Target for the gas sector will provide further demand and momentum for the uptake of hydrogen to support the objectives of this proposal.
Liabe 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?	ATCO agrees with the approach that the Target apply to electricity retailers and large electricity consumers in the SWIS. It is considered that a use agnostic approach to certification be adopted and not necessarily linked to the combustion of hydrogen for electricity generation. This will incentivise hydrogen use across the economy and provide a greater degree of demand stimulation.
Exemptions		

No.	Question	Feedback
9	What are the benefits, costs and impacts of an exemptions regime for a Renewable Hydrogen Target for electricity generation?	Exclusions from the Target should be limited to ensure the widest application and stimulus for production of renewable hydrogen.
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?	<p>The consideration of alternative renewable fuels must be consistent with the objectives of this Target proposal to stimulate development of the renewable hydrogen industry. In line with the objective of this Target for hydrogen industry development the:</p> <ul style="list-style-type: none"> • focus on renewable hydrogen is appropriate. • use of alternative fuels could be incorporated into a renewable gas target and decarbonisation of the gas sector in the future. • establishment of a renewable gas target should be considered separately from the implementation of this Target. • links between the two stimulus mechanisms could be created through the proposed certificate scheme.
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 a commercial and investment perspective to each target level.	ATCO considers that a target set at 10% will provide a clear signal for investment in hydrogen production. Capacity to meet the target may be impacted by current global pressures in skill shortages and supply chain constraints. In this respect, a staged ramp up from a lower target initially will allow production capacity to build and the development of production facilities over the short to medium term with a higher target set in the long run.

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		To facilitate the necessary investment, any ramp-up in the target from 1% to 10% should be clearly articulated with a timetable and expected volumes made available to industry stakeholders.
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?	<ul style="list-style-type: none"> • A target that increases from a base level will create demand to support a competitive production environment. • Building demand for renewable hydrogen in a managed ramp-up will enhance cost competitiveness and advance technology uptake. • A target level that supports hydrogen production at scale from multiple production facilities will drive a lower cost of hydrogen production.
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?	<p>Establishment of a Target should be considered on a medium term basis at a minimum and could stretch for up to 30 years. The success of the Commonwealth's Renewable Energy Target can in part be attributed to the certainty it provided over a long period of time.</p> <p>Annual reporting and any restrictions on the use of hydrogen needs to be stipulated in the design of the Target to ensure it provides the stimulus for demand.</p>
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?	Banking of certificates could be permitted, however consideration needs to be given to how this may affect the hydrogen market in other areas. Borrowing of certificates should not be permitted, as it will allow the liable entity to trade in the future and at a future price, where the penalty for borrowing may be eroded.
Scheme commencement and ramp up		

No.	Question	Feedback
15	<p>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.</p>	<p>The regulatory changes required for this Target could be achieved in a relatively short period of time allowing the Target to be in place within two years. The introduction of the Target can be expedited in order to bring about the desired positive impacts to the hydrogen industry sooner. This includes sending a clear signal to renewable hydrogen producers regarding potential demand. For example, ATCO has been developing the Clean Energy Innovation Park, a 10MW hydrogen production facility, and is ready to progress its development if binding offtake can be secured, which would be assisted by the introduction of this Target.</p>
16	<p>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.</p>	<p>It is considered that apart from the two years signal to the market of the introduction of the Target, no further time is needed from a commercial and economic perspective. Introduction of a target from 2025 will encourage investment in production to provide a supply of hydrogen to activate the industry. Current hydrogen production projects in development are unable to meet commercial thresholds due to their inability to secure offtake for production. While current global pressures in skill shortages and supply chain constraints will affect the development of production facilities in the short term, final investment decisions progressed in the near term and based on the signal of the Target's introduction will ensure available production to be supplied by 2025.</p>
17	<p>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 reflect on the actions your organisation and / or sector would need to take to participate in the scheme.</p>	<p>ATCO considers clear signals are needed of the Target's introduction at least two years prior to implementation. Without these signals for investment, current hydrogen projects in development face a significant hurdle to secure offtake to substantiate the investment. ATCO conducted an Expression of Interest process in 2021 to test the readiness</p>

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		<p>of hydrogen users in WA. It was clear from this process that without government direction to utilise hydrogen there was not a willingness to accept the commercial risk for the transition. t A minimum two year period ramp up period will allow time for hydrogen production facilities to progress to commissioning, including procurement of electrolysers, storage and construction.</p>
Hydrogen cost outlook		
18	<p>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?</p>	<p>Movement on the cost of production will depend on the policy settings in place to generate and encourage production at scale. Domestic growth will be judged on a global scale and governments that provide supportive hydrogen policy settings will benefit from higher production capability.</p> <p>The cost of production of electricity from roof top solar has dropped by more than 80% since 2010³ a direct result of the renewable energy certificate scheme, grants and feed in tariffs that were made available to encourage their uptake. Even if the Renewable Hydrogen Target results in a fraction of these cost reductions it will enable renewable hydrogen to be cost competitive with other renewable energy sources.</p> <p>Scaling hydrogen production can only be achieved by building demand to enhance the cost competitiveness of hydrogen and advancing technology uptake. Without market mechanisms requiring hydrogen uptake to kick-start demand and enable investment in production facilities at scale, there is no pathway to achieve the goal of hydrogen under \$2/kg. Clear signals are needed that costs of</p>

³ PV-Magazine, Solar costs have fallen 82% since 2010, June 2020, Available from: <https://www.pv-magazine.com/2020/06/03/solar-costs-have-fallen-82-since-2010/>

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		<p>production may be recovered by its sale or revenue streams for investments in hydrogen to be made with confidence. An expeditious introduction of the Target, combined with other incentives to support flexibility capacity will provide the signals for investment in production..</p> <p>The Target consultation paper suggests a potential hydrogen cost of \$6.60/kg or \$50.72/GJ at scheme commencement in 2024. This price outlook appears ambitious and it is more likely that a price in line with the Levelised Cost of Hydrogen modelled in consultation paper of between \$6.87/kg to \$9.36/kg will apply in 2024.</p>
Hydrogen demand and electrolyser capacity		
19	To what extent do 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.	An initial target at 1% will provide stimulus for industry development but will need to gradually increase from commencement in a staged approach to build scale and bring the cost of production down.
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 to emerge and provide all certificates?	
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?	Given the current capacity of electrolyzers, it is likely in the early stages a few producers will emerge. We expect that the Target will enable producers to build scale overtime to also supply the export market.