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To whom it may concern,

Renewable Hydrogen Target for Electricity Generation in the SWIS – Consultation paper

ENGIE Australia & New Zealand (ENGIE) appreciates the opportunity to respond to Energy Policy WA in response to the Consultation paper on a Renewable Hydrogen Target for Electricity Generation in the SWIS (“the Consultation paper”).

The ENGIE Group is a global energy operator in the businesses of electricity, natural gas and energy services. In Australia, ENGIE has interests in generation, battery storage, renewable energy development, and energy services. ENGIE also owns Simply Energy which provides electricity and gas to more than 745,000 retail customer accounts across Victoria, South Australia, New South Wales, Queensland, and Western Australia.

Hydrogen is an important component of a future carbon free world

ENGIE believes that hydrogen has the capacity to unlock the full potential of renewables and carbon-free energy solutions. It is capable of accelerating the energy transition by allowing numerous green energy technologies to be used with much greater flexibility.

ENGIE is committed to developing solutions based on renewable hydrogen, produced by electrolysis using a green energy supply. Hydrogen is the missing link for a decarbonised ecosystem, allowing for the harmonious progress of cities, territories and societies around the globe.

ENGIE’s aim is to operate across the entire value chain of renewable hydrogen, from carbon-free power generation to the three key end uses: mobility, industry and energy storage.

ENGIE is already partnering with governments and other businesses on trials, feasibility studies, and early commercial projects in order to develop the know-how that will allow the hydrogen sector to scale up quickly. This involvement has a global footprint, including projects in (amongst others) France, Singapore and Australia.

Notably, ENGIE is project lead on one of the three ARENA-supported commercial-scale renewable hydrogen projects: a 10 MW electrolyser project to produce renewable hydrogen in a consortium with Yara Pilbara Fertilisers at their Karratha plant which recently reached Final Investment Decision.

In this light, ENGIE welcomes the Consultation paper. Our detailed response to the questions in the Consultation paper are attached in the requested template format. Our position can be summarised as follows:

A broader target would be more effective and efficient

ENGIE notes that the WA Hydrogen Strategy includes four strategic focus areas for hydrogen use, none of which entail electricity generation in the SWIS: Export, remote applications, transport and blending in gas networks.

ENGIE further notes that the Whole of System Plan (WOSP) that represents the most detailed study to date of how the SWIS will evolve over the next 20 years, does not include any hydrogen generation.

ENGIE considers that a more effective and more efficient scheme would be one that encourages a wider range of renewable hydrogen use than specifically for electricity generation. This would allow proponents to find the use cases closest in cost to the existing alternative. A broader scheme is also likely to deliver more emissions savings since it allows for substitution of fossil fuel use in hard-to-abate sectors, whereas hydrogen generation may end up displacing future battery investment, say, rather than fossil fuel generators.

If the suggestion of broadening the scope of the scheme is adopted then the rationale for specifically charging electricity users when the certificates generated may end up being primarily in other sectors is less clear. It may be possible to broaden the tax base of the scheme by extending liabilities to parties in other sectors, such as reticulated gas, or even transport fuel sales. Naturally this will in turn introduce extra complexities in scheme design. Alternatively, the WA government could consider on-budget support for new projects that meet appropriate criteria. The pros and cons of this approach versus a certificate scheme will depend on the incidence of costs under a certificate scheme.

It appears that scheme exemptions are under consideration. This is understandable, given the SWIS is home to a number of large energy-intensive industrial plants and WA currently enjoys a competitive advantage in energy costs. If energy-intensive trade-exposed business were exempted the cost of the certificates would fall primarily on smaller consumers. These are typically supplied by the government-owned retailer Synergy under a price cap set by the Government that has not always been fully cost-reflective. In this scenario, the Government could effectively end up bearing the cost of the certificates in any case. This is not to rule out such a scenario, simply to note the consequences bear careful consideration.

Dispatchable capacity for the SWIS could be elicited through technology-neutral mechanisms

The discussion above assumes that the key objective of the proposed scheme is to develop WA's renewable hydrogen sector. If, instead the key objective is to bring forward low/zero emissions dispatchable capacity for the SWIS then a different mechanism may be more appropriate. Renewable hydrogen has a potentially useful role in providing zero emissions dispatchable energy to an energy system. Since the hydrogen is produced from renewable electricity, it is best regarded as a storage technology.

In this respect, its value is predicated on either providing lower cost or longer duration storage (or both) than alternative technologies such as lithium ion (li-ion) batteries. The best way to determine the best mix of such technologies would be to design a technology neutral scheme that meets suitable criteria for both emissions and providing reliable capacity on demand. Given the SWIS already has a capacity mechanism in place, the question is whether it would be an adjunct to this or a different scheme altogether.

Should you have any queries in relation to this submission please do not hesitate to contact me on, telephone, (03) 9617 8415.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Jamie Lowe', with a stylized flourish at the end.

Jamie Lowe

Head of Regulation,
Compliance, and Sustainability

Renewable Hydrogen Target – stakeholder feedback template

Submission from ENGIE Australia and New Zealand (“ENGIE”)

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? | It may be more appropriate for Energy Policy WA to start with a set of broad objectives for WA energy systems and/or reference the objectives established for its Hydrogen Strategy and consider whether a Renewable Hydrogen Target for electricity generation is the best scheme to meet those objectives. |
| 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? | <p>ENGIE notes that the WA Hydrogen Strategy includes four strategic focus areas for hydrogen use, none of which entail electricity generation in the SWIS: Export, remote applications, transport and blending in gas networks.</p> <p>ENGIE further notes that the Whole of System Plan (WOSP) that represents the most detailed study to date of how the SWIS will evolve over the next 20 years, does not include any hydrogen generation.</p> <p><u>ENGIE considers that a more effective and more efficient scheme would be one that encourages a wider range of renewable hydrogen use than specifically for electricity generation. This would allow proponents to find the use cases closest in cost to the existing alternative.</u></p> |

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| | | <p>There are of course multiple ways in which all applications of renewable hydrogen may be supported. A key decision for the WA government is how much it is prepared to provide on-budget support. From a budget perspective the proposed target in principle has the merit that it uses a certificate scheme such that the costs will fall on electricity consumers in the SWIS. However the government determines the prices paid for electricity by small customers at least, and it does not always set these prices to allow full cost recovery. Any gap is effectively borne by the GOC Synergy and thus becomes a cost to the government again. Large users would be exposed to the cost of a certificate scheme unless exempted. However, WA is currently enjoying more stable energy prices than the eastern states and indeed much of the rest of the world. This is a source of competitive advantage to the state.</p> <p>If the suggestion of broadening the scope of the scheme is adopted then the rationale for specifically charging electricity users when the certificates generated may end up being primarily in other sectors is less clear. It may be possible to broaden the tax base of the scheme by extending liabilities to parties in other sectors, such as reticulated gas, or even transport fuel sales. Naturally this will in turn introduce extra complexities in scheme design.</p> <p>This is not to suggest that a certificate scheme is poor policy, simply that the consequences of such a scheme require careful consideration.</p> |
| 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 has a potentially useful role in providing zero emissions dispatchable energy to an energy system. Since |

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| | Renewable Hydrogen Target for electricity generation in the SWIS assist in achieving the decarbonisation objectives of the State Government? | <p>the hydrogen is produced from renewable electricity, it is best regarded as a storage technology. In this respect, its value is predicated on either providing lower cost or longer duration storage (or both) than alternative technologies such as lithium ion (li-ion) batteries.</p> <p>A Renewable Hydrogen Target for the state more broadly, as noted in the response to question 2 above would assist in achieving the decarbonisation objectives of the state government, regardless of whether or not it is targeted to electricity generation. Indeed a broader scheme is likely to deliver more emissions savings since it allows for substitution of fossil fuel use in hard-to-abate sectors, whereas hydrogen generation may end up displacing future battery investment, say, rather than fossil fuel generators.</p> |
| 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? | n/a |
| 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? | <p>The use of renewable hydrogen for electricity generation and other novel uses (transport, steel manufacturing, industrial heat, etc) faces substantial technical challenges. These include:</p> <ul style="list-style-type: none"> • Scaling up electrolysers, both in term of unit size and of volumes manufactured. • Confirming electric turbines can run effectively on pure hydrogen fuel (OEMs¹ present their latest turbine models |

¹ Original Equipment Manufacturers, such as Siemens and GE.

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| | | <p>as hydrogen-ready, but there is still a dearth of real-world operational data to assure this).</p> <ul style="list-style-type: none"> • Ensuring safe and secure transport and storage at scale. <p>To some extent these are the kinds of challenges that the proposed scheme is designed to help spur solutions to. However, they are also another reason to broaden the scope of the scheme in case elements of the power-to- gas-to-power supply chain prove harder than expected to deliver. They should also be factored in to the design of the scheme. This could be done in two ways:</p> <ol style="list-style-type: none"> 1. Capping the cost of certificates with an alternative penalty fee, as was done with the large scale renewable energy target. The penalty should be refundable if the certificates are surrendered within the subsequent three years say. 2. Allowing some banking and borrowing to provide liable entities with some flexibility in the timing of when they meet their obligations. This protects liable entities against delay in the projects they are helping to underwrite. <p>These design features are a normal component of certificate schemes and so participants will be familiar. Of course if the cap is set too low or if too much flexibility is allowed, the scheme risks becoming ineffective in actually stimulating the renewable hydrogen sector. ENGIE recommends the government consult in further detail with industry on these elements once the basic parameters of the scheme are clearer.</p> |
| 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 effective | As noted in the answer to question 5 above, such schemes are well understood and can contain design features that provide |

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| | means to deliver a Renewable Hydrogen Target for electricity generation in the SWIS? Please explain your answer. | <p>appropriate flexibility in the context of a developing industry where the rate of progress is uncertain.</p> <p>As noted in the answer to question 2, a more effective and efficient scheme would allow a broader range of renewable hydrogen activities to qualify for certificate creation.</p> <p>Additionally the government should consider carefully the likely actual incidence of the costs of the scheme, as discussed in the answer to question 2.</p> |
| 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? | This is dependent on whether the WA government accepts the suggestion of a broader scheme. |
| 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? | n/a |
| Exemptions | | |
| 9 | What are the benefits, costs and impacts of an exemptions regime for a Renewable Hydrogen Target for electricity generation? | While there may be merit in exempting certain classes of energy users – as noted above, WA currently has an enviable competitive advantage in energy costs for large industrial users – this just shifts the costs onto other users. |
| Non-renewable hydrogen | | |
| Renewable fuels | | |
| 10 | Should the Renewable Hydrogen Target for electricity generation consider alternative renewable fuels as eligible for the creation of | This comes back to the underlying objectives of the proposal. If it is primarily guided by the desire to assist the development of the WA renewable hydrogen sector then including other fuels would |

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| | Renewable Hydrogen Electricity Generation Certificate? Why or why not? | undermine that objective. Conversely if it is primarily guided by the desire to elicit low/zero emissions dispatchable generation, then a more technology neutral scheme for all technologies that met those twin criteria would be appropriate. But the Government should be cognisant that the outcomes of that scheme might not include any hydrogen generation. |
| 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. | As noted in the consultation paper the percentage peak target represents a trade-off between stimulation of the renewable hydrogen industry, versus exposing the electricity sector to costs and risks. At this stage of development there are too many unknown factors to provide further guidance, notwithstanding the cost estimates. provided in table 3 of the consultation paper. ENGIE observes that a 14 per cent increase in wholesale costs as implied by the 10% by 2030 scenario would be regarded as a material increase by most electricity consumers. If energy intensive trade-exposed users were exempted, then the increase on remaining customers could plausibly be double that. However, if the scheme were broadened, the cost impacts on electricity customers should be lower. |
| 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? | See answer to question 11 above. |
| 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? | n/a |

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| 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? | See answer to question 5 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. | <p>The simplest form of technical delivery would be if an existing gas generator could co-fire with hydrogen without any material modification. In principle this may be possible, but ENGIE is not in a position to publicly commit to being able to do so with its generation in the SWIS. The other component would be the installation of an electrolyser, preferably co-located with the generator. There are no particular barriers to this, but clearly it would need to go through engineering design, planning application and so on.</p> |
| 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. | <p>Commercial delivery requires contract negotiation between various parts of the supply chain, e.g. renewable generator and electrolyser owner, electrolyser owner and gas generator, and gas generator and retailer/large consumer. In some cases the two parties may be the same, but full supply chain integration is unlikely.</p> <p>To the extent this requires new investment then each component then has to reach FID. Finance is likely to be predicated on contracting. Then each part has to be built tested and commissioned.</p> <p>As a rough estimate these processes could take 2-4 years from the point at which the scheme is legislated. The government should err on the side of caution, but could offer an incentive for projects that are commissioned before the scheme start date designed to be roughly equal to the value of certificates the project would have earned if the scheme was in force.</p> |

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| 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 reflect on the actions your organisation and / or sector would need to take to participate in the scheme. | This is somewhat dependent on the peak aggregate liability of the scheme. As important as allowing some time to ramp up, is the time at which the liability plateaus so that the projects that meet the last incremental increase in the target are able to earn certificates for a reasonable time. In the case of the RET this is ten years, which seems reasonable in this case too. |
| 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? | n/a |
| 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. | n/a |
| 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? | Given the scale of electrolysers being manufactured today (noting that unit size is expected to scale up significantly as the industry developed) and given that co-firing with natural gas is the likely first step, it should be possible for several parties to create certificates to meet the annual requirement. |
| 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? | See answer to question 20 above. |