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bp Australia's consultation response to a Renewable Hydrogen Target for electricity generation in the South West Interconnected System

About bp

bp welcomes the opportunity to respond to the Western Australia Government's consultation on a Renewable Hydrogen Target (Target) for electricity generation in the South West Interconnected System (SWIS).

Bp's ambition is to become a net-zero company by 2050 or sooner, and globally we are aiming to be a different company by 2030:

- Reducing our oil and gas production by around 40% by 2030 and lowering emissions, while keeping up cash flow by high-grading our hydrocarbon portfolio and growing bioenergy
- Investing in low carbon energy to rapidly scale up in solar and offshore wind, and develop new opportunities in carbon capture and low carbon hydrogen
- Providing 100,000 EV charging points and opening more than 1,000 new strategic convenience sites
- Doubling down on five transition growth businesses, planning for more than 40% of the capital we invest to be in bioenergy, convenience, EV charging, renewables, and hydrogen by 2025.

As one of our five transition growth engines, we aim to have 10% market share of low carbon hydrogen in core markets by 2030. We bring over 100 years of operating experience and we are one of the largest producers of hydrogen in the world, safely and reliably generating and handling hydrogen and carbon dioxide at an industrial scale.

Bp is not acting alone with many of our partners and customers here in Australia and globally also committed to supporting progress towards a net-zero future. We believe that ambitious climate policies will be essential to enable the world to meet the Paris Climate Goals.

Bp welcomes well-designed, stable, and long-term policy frameworks to incentivize and support the necessary investments in low carbon solutions. Nascent sectors like hydrogen will require government and policy support for initial scale up and further deployment.



bp in Western Australia

bp has a proud and long history in Western Australia and this is set to continue with significant future investment. We operated the Kwinana refinery for 65 years and are now exploring options to convert the site to a renewable fuels plant and hydrogen production facility in addition to its transition to an import terminal. This conversion is an embodiment of the energy transition in action. Bp and Macquarie are currently conducting a feasibility study with the support of the Department of Jobs Tourism Science and Innovation (JTSI) to evaluate the production of renewable hydrogen via electrolysis as part of the Kwinana Energy Hub. Stage 1 of the project involves a 75MW electrolyser that aims to produce renewable hydrogen for several customers in the middle of this decade. This project has also received Federal Government support as part of the Clean Hydrogen Industrial Hubs process, with \$70M allocated in support of the project.

bp is also exploring two greenfield opportunities that would produce renewable hydrogen at scale for domestic and export markets. Project GERI includes development of up to 10GW of wind and solar capacity to power 5GW of electrolysis. Feasibility for project GERI has been completed and bp was recently allocated land in the Oakajee Strategic Industrial Area to support development of the project. bp has also assumed operatorship and 40.5% equity stake in the Asian Renewable Energy Hub (AREH). Over multiple phases, AREH aims to develop 26GW of total generating capacity from wind and solar power. At full scale, this is expected to produce 1.6m tonnes of renewable hydrogen or 9m tonnes of green ammonia annually for local and export customers.

bp also has also a partner in the North West Shelf Project, Browse Joint Venture, and operates extensive fuels businesses. We are also exploring options with partners for a large-scale, multi-user Carbon Capture and Storage Hub to help decarbonise hard-to-abate industries in the Pilbara.

Renewable hydrogen in Western Australia & target objectives

The importance of Western Australia to bp is clear from its strong pipeline of renewable hydrogen projects. bp is supportive of Western Australia's Renewable Hydrogen Strategy and is an active participant on the Minister's Renewable Hydrogen Council. bp's strategy in Australia centers on the production of renewable hydrogen. However, bp's global portfolio includes projects that will produce hydrogen from steam methane reformation with capture and sequestration technology.

bp believes low carbon hydrogen will have an essential role as Western Australia transitions to a low carbon energy system that supports local value-added opportunities and job creation. Hydrogen is complementary to electrification and will be pivotal in the decarbonisation of hard-to-abate industrial and transport sectors where electrification is too expensive or not feasible.

bp is broadly supportive of the objectives outlined in the Consultation Paper that was agreed between Energy Policy WA (EPWA) and ACIL Allen. We encourage the State Government's consideration of demand side measures, which are necessary to facilitate development of low carbon hydrogen. bp would welcome further engagement as measures are framed and believes this Target could be more broadly defined in scope and geographic application. It is



unclear why the Target has taken a narrow approach to electricity generation (noting its absence as a priority in Western Australia's Renewable Hydrogen Strategy) and why it is only applicable in the SWIS. Applying a Target too narrowly risks undermining industry development and emission reduction objectives and increasing costs to consumers.

Industry Development

bp is supportive of this primary objective but believes the Target should be expanded beyond electricity generation. bp also believes there are more efficient and affordable ways to deliver similar or more significant industry development outcomes. The timeline for consultation was too short to provide detail in this submission, but we will provide additional information as soon as possible. A Target should also be complementary to other industry development initiatives the State Government is considering.

Decarbonisation of the electricity grid, grid reliability and stability

Renewable hydrogen could have a role in displacing carbon-intensive electricity generation in the SWIS. However, this is not the most immediate or efficient use case for renewable hydrogen. bp is supportive of reform to electricity market rules that will facilitate participation of storage technologies in Essential System Services and believes hydrogen will contribute to SWIS grid stability and reliability.

Reducing the risk of fuel cost escalation in a carbon constrained world

A broad-based Target is more likely to achieve industry development objectives, production at scale and lower unit costs compared to a narrow Target.

Decarbonisation of the Western Australian Economy

Bp believes decarbonisation in other industry demand scenarios should be a primary objective of this Target.

Facilitating the Western Australia hydrogen market

Government is a critical partner in the facilitation of a new low carbon market. Both State and Federal Governments have provided strong support, but further work from industry and government alike is required. bp supports demand and supply side measures that will grow the clean fuels and hydrogen sectors in Western Australia. This is critical for nascent markets to develop and to attract the significant investment required that will help achieve emissions reduction goals, support fuel and energy security for Western Australia, and underpin job creation in future facing industries.

bp supports certificate schemes that are broad based as these encourage efficient allocation of resources and can achieve objectives at lower cost to consumers. A scheme that includes multiple end use cases, including electricity generation, will allow the market to organically develop and deliver hydrogen to customers whose cost of using renewable hydrogen is nearest to the alternative. End use cases that should also be in this scheme include hydrogen for industrial feedstock, industrial heat and transport.



In addition to a Target, bp encourages the State Government to continue implementing measures that will facilitate a hydrogen industry in Western Australia, including:

- Bridging the electricity price. As the single largest component of levelised cost of hydrogen (LCOH), relief in this area will have a significant impact on investment decisions.
- Investment in new transmission infrastructure to support and accelerate industrial development and decarbonisation objectives.
- Reform to State Government approval processes, including improved streamlining of approvals and interagency referrals.
- Establishment of renewable energy zones
- Reform to WEM rules to value the flexibility of electrolysers

bp expects a gradual decline in the cost of hydrogen production as equipment costs fall and hydrogen is produced at scale. Underpinned by the right policy settings and support measures, the decline in production costs can be accelerated.

Renewable hydrogen target ambition

bp acknowledges the State Government needs to strike the right balance when setting the ambition of the Target. Driving sufficient demand to encourage investment in hydrogen production is important, as is balancing costs to end consumers. The market will also need a sufficient lead time before the scheme commences and certainty over the Scheme's duration to underpin investment and production decisions.

bp does not have a firm view on whether the 5 per cent and 10 per cent targets outlined would support industry development and emission reduction objectives given the uncertainties outlined in the following sections. We look forward to discussing these uncertainties and providing a firmer view shortly. A 1 per cent target is unlikely to have a material impact on developing the low carbon industry nor on emission reduction goals. At this level of ambition there may be other interventions such as pilot project funding, feasibility studies and b2b information sharing that could lead to similar experience gains for power generators and relatively inexperienced producers.

The timeframe provided for initial consultation did not allow a sufficient period to detail and test the modelling included in the consultation paper. However, initial analysis suggests that the model may have underestimated the volumes of hydrogen required to meet target bands and the overall cost of the Scheme. bp is considering alternative ways to deliver industry development and emissions reduction objectives, which may deliver the same or better outcomes at much lower costs than proposed in the consultation paper. bp is pleased to follow-up this with State Government and notes EPWA's commitment to ongoing consultation.

Renewable hydrogen target coverage

bp supports the State Government considering demand side intervention to facilitate the development of a renewable hydrogen industry in Western Australia. Importantly, bp is encouraged by the Target's primary objective of industry development. As with all emerging



low emissions technologies, mechanisms such as targets and contract for difference schemes are necessary to bridge the gap between production costs and customer expectations.

bp supports policy covering as broad a range of sectors as possible so a market can develop efficiently. Narrowing end-use cases risks inefficiencies, higher costs and unintended consequences. A scheme that covers a broad range of end use cases will lead to a lower overall cost while delivering similar or better industry development outcomes.

bp acknowledges that this Target is one of several measures that the State Government is pursuing to support the hydrogen sector and that there is potential for the Target to be expanded in the future. However, there are presently more competitive uses for hydrogen than in power generation and bp encourages the State Government to expand the application of the Target as a priority.

Encouraging hydrogen production for uses where there's a smaller gap between renewable and non-renewable hydrogen production is what will facilitate investment in hydrogen production projects and value chains. Production at scale will help put downward pressure on production costs, with this infrastructure available to deliver hydrogen for power generation at a time when it may be required to support the SWIS, rather than now where the primary rationale for a target is industry development.

In considering the primary objectives of industrial development and decarbonising the electricity grid, bp encourages ACIL and the Government to consider direct use of hydrogen in existing industrial processes, many of which have no electrification pathway and are inherently difficult to abate. Encouraging substitution of "grey" hydrogen for renewable hydrogen will:

- support the transition from natural gas to renewable hydrogen production
- make a more significant contribution to emission reduction targets
- support Western Australian industries achieve a "green premium" with their customers, many of which compete globally and are subject (or will be) to carbon border abatement mechanisms.

bp appreciates that a decision has been made to narrowly consider the initial phase of this Target to be applicable only to electricity generation in the SWIS, but it encourages the Government to reconsider its decision and broaden the Target.

Hydrogen in the SWIS

The round-trip efficiencies of using electricity to produce hydrogen, storing, transporting, and then combusting it to produce electricity has been documented in publicly available studies. bp expects hydrogen or derivatives for power generation to have a role in some jurisdictions' efforts to reduce emissions – particularly those without the benefit of significant renewable resources. Some jurisdictions have set timelines of 2030 to achieve significant percentages of power generation from hydrogen and ammonia, with power generation being a primary end use case for hydrogen in those markets.

Hydrogen may feasibly have a role in decarbonisation and security of the SWIS and bp supports including power generation in the proposed scheme. With the State Government setting out a timeline for coal generation retirement and indicating no new gas generation will



be built from 2030, hydrogen may be required to fill a gap if sufficient renewable energy capacity is not delivered in this timeframe.

Encouraging production at scale through more competitive end use cases now will prepare the hydrogen sector to be able to deliver hydrogen to generators when it is needed at a lower cost. Specifically tailored measures can also be considered for power generation, particularly a generator's technical preparedness to accept hydrogen. Indeed, this preparedness will need to be considered when setting the start time for the Scheme.

Hydrogen is better placed to have a role in supporting system security through firming and grid services. bp has considered how grid connected electrolyzers can help smooth the duck curve - the increased demand from electrolyzers can tangibly reduce pressure on the minimum demand forecast, while underpinning renewables buildout and investment in the SWIS. A large variable load can complement rapid buildout of batteries to smooth the duck curve while supporting decarbonisation aims. Drawing from an ARENA study¹ for the NEM, it found that every 100MW of electrolysis offering 15% variability resulted in \$91m NPV in system benefits through avoided additional generation and storage capacity.

bp supports setting clear electricity market rules to value system security and underpin investment in flexible storage options, including hydrogen. The implementation of a broader based hydrogen target will help the industry develop at scale and should make hydrogen more competitive for long-duration firming over time.

Development uncertainty

In the case of hydrogen for power generation there are several factors that remain uncertain and will need to be considered in the structure of the Scheme. By focusing the Target on a single end use case, there's a greater potential that the primary objective of hydrogen's industrial development may be thwarted by unintended consequences and suboptimal design. While several examples of hydrogen end use cases are emerging, directing market participation to a single source narrows industry's focus and may divert attention from more prospective options.

State Government policy relating to Synergy and their operational decisions will also have an impact on achieving stated objectives through the Target. As both a major holder of liability in the scheme and a potential procurer of hydrogen, Synergy's decisions will have a significant impact on the Government achieving the objectives of the Target. For example, Synergy may prefer hydrogen be produced within its fence gate, opting for a smaller scale decentralized system. It could alternatively procure hydrogen centrally, consuming it at one generator at a high percentage of hydrogen-to-natural gas or at lower percentages at several generators. These choices are not unique to Synergy and will be considered by other utilities in other jurisdictions, but the market power Synergy holds in both the retail and generation businesses means its decisions will have a substantive impact on how a system of hydrogen production emerges and therefore industrial development objectives. In parallel with the development of the Scheme, it would be useful for Synergy to outline a position, as utilities in other states have done.

¹ [Valuing Load Flexibility in the NEM - Australian Renewable Energy Agency \(ARENA\)](#)



It is also uncertain how the electricity generation required for hydrogen production will be developed, where it will be located, and the timeliness and cost of connecting to the SWIS. Such capacity will be required at a time when there is interest from several sectors for new electricity generation and growing pressure on industry and government timelines for investment decisions and approvals. State Government can help address these uncertainties outside of the Scheme design.

bp anticipates the State Government will progress with design of the Scheme in more detail following this initial consultation. Further considerations include:

- Ability to trace renewable hydrogen production to the generator if it is transported through the transmission network
- Specifying the eligibility of renewable hydrogen production and adoption of a nationally (and ideally regionally) recognised Guarantee of Origin and Certification scheme
- Further analysis of the NSW Renewable Fuel Scheme and applicability of design choices for Western Australia, with a view to implement nationally consistent and linked schemes, including supporting registry architecture. A nationally linked scheme will deepen the market, provide more competition, and lower costs.

Exemptions

The first examples of hydrogen production in the Mid West and South West are likely to draw on electricity from the SWIS. This will likely be required until the depth of the hydrogen market is such that it supports investment in behind-the-meter generation (presuming also that land can be identified, and approvals obtained in a timely fashion). bp encourages ACIL and the Government to consider the costs and benefits of providing an exemption to hydrogen producers that are using electricity from the SWIS to produce hydrogen. It appears that this exemption is not currently contemplated. On face value, it is counterintuitive to charge a consumer for the very product that they have been incentivised to produce. This adds additional cost to the hydrogen producer and is contrary to the primary objective of facilitating industrial development.

This cost impost will also make it more difficult for hydrogen producers to sell renewable hydrogen to customers not covered by the Scheme.

bp notes reference in the Consultation Paper to the benefits, costs and impacts of exemptions to the Scheme, notably for emissions-intensive trade exposed (EITE) businesses.

Consideration should be given to the risk of 'carbon leakage' to ensure that the Scheme remains effective while other countries may not yet have equivalent policy settings. In designing tailored treatment for EITEs, bp's recommendation is that tailored treatment:

- Focus on the risk of carbon leakage, where the emission reduction goals and policies of one jurisdiction are undermined by businesses moving activities and the associated emissions to another country without equivalent policy measures.
- The definition of an EITE reflect the specific design of this Scheme (which may be different from previous and emerging carbon pricing policies)
- Does not unduly burden non-EITE consumers
- Is fit for purpose, having regard to the overall objectives and settings of the scheme



- Is not static, with regular review considering international progress and the cost of the Scheme to EITEs
- Consider emergence of “green premiums” that develop for EITE products
- Analyses the impact exemptions will have on achieving the objectives of the Target.

Next Steps

bp looks forward to progressing consultation with the State Government and supporting the design of a demand side mechanism that facilitates the renewable hydrogen sector.