AHC Submission in response to AEMO's Draft 2022 Integrated System Plan.

Australian Hydrogen Council
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Submission to the Australian Energy Market Operator

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AUSTRALIAN HYDROGEN COUNCIL

About the Australian Hydrogen Council

The Australian Hydrogen Council (AHC) is the peak body for the hydrogen industry, with 90 members from across the hydrogen value chain.

Our members are at the forefront of Australia's hydrogen industry, developing the technology, skills and partnerships necessary to build Australia's hydrogen economy.

AEMO's Draft 2022 Integrated System Plan

AHC welcomes AEMO's inclusion of hydrogen in the 2022 Integrated System Plan (ISP). While hydrogen's potential was recognised in the 2020 ISP, the inclusion of a scenario based around the potential for a dominant hydrogen economy is indicative of the increased prominence of hydrogen in recent times and the significant activity in the sector.

We consider however, that this approach does not necessarily meet the expectation which was set in the 2020 ISP which stated "As the hydrogen sector will eventually be coupled with Australia's energy, water and transport sectors, it is critical that future hydrogen policies are coordinated with the policies and needs of those sectors. The 2022 ISP will investigate in more detail the role of hydrogen as it relates to Australia's electricity system."

While hydrogen demand is difficult to forecast in this relatively early stage of the industry's development, the Hydrogen Superpower scenario is the sole scenario in the ISP which forecasts a significant level of demand and consequently we consider that the full potential for hydrogen to play a role in the energy system has not been explored.

The establishment of Australia as a Hydrogen Superpower may not be among the most likely scenarios as determined by the Delphi Panel, but the level of government and public investment in the sector since the release of the 2020 ISP should indicate that the hydrogen will certainly play a role in Australia's energy mix. We consider that deeper analysis of the potential levels of demand for hydrogen would paint a more fulsome picture of Australia's energy future.

AHC believe that a focus on the following areas is needed to more fully capture the role of Hydrogen in Australia's future energy mix.

Engagement with a broad range of sources

Noting that the ISP is based upon the 2021 IASR which relied on Climateworks and CSIRO to inform its modelling of hydrogen prices, we feel there is a need to better understand where the immediate future of hydrogen in Australia may lie by examining a broader range of references. Sources such as Bloomberg NEF and the Clean Energy Finance Corporation paint a picture of a potentially sizeable role for hydrogen in Australia and may assist with AEMO's planning functions. Similarly, resources such as Hyresource show the number of hydrogen projects announced, which can illustrate the level of investment in the industry. This may assist AEMO in articulating the role of hydrogen in a context other than in the Hydrogen Superpower scenario. AHC also welcomes the opportunity to share its insights, particularly on the way in which hydrogen interacts with a range of sectors of the economy, with AEMO.

Focus on sector coupling

Sector coupling – the impact that a decision in one sector has on another sector – will become more important as pathways to decarbonise multiple, interlinked, sectors are explored more fully by policymakers, investors and stakeholders. Hydrogen's versatility and capacity to interact with Australia's energy system and markets in a number of ways (eg, as long-term storage, for grid firming or direct use through gas pipelines etc) mean that decision making related to any of these

applications will necessarily alter the opportunity cost in relation to any of the others and potentially change the hydrogen sector's path to commerciality.

It is important that any modelling AEMO relies upon to inform its scenarios explicitly accounts for the cross sector, system-wide costs of any fuel switching. We consider that this focus will ensure greater accuracy in forecasting and not only help drive growth in the hydrogen sector but also ensure that Australia's energy needs are met in the most efficient manner.

Further granularity in Renewable Energy Zone Scorecards.

Regardless of which of the ISP scenarios most closely resembles our energy future, renewable energy will play an increasing role in powering Australia and the focus on Renewable Energy Zones (REZs) will assist in investment decisions. By virtue of the inclusion of the availability of transmission assets as a metric, the REZ scorecards included in the Draft ISP assume grid connection. This assumption is largely valid however it ignores the versatility of hydrogen which can be transported as molecules rather than electrons and hence does not necessarily require grid connection. A strong solar or wind resource which does not have immediate access to electricity transmission infrastructure may be more suitable for hydrogen production which can then be transported via roads in a tube trailer or at larger scale via pipelines. In such instances, the existing network capability is largely irrelevant but a metric relating to access to transport routes, pipelines and ports may be more appropriate. We encourage AEMO to consult widely to build additional metrics into its REZ scorecards in future iterations of the ISP to ensure that renewable energy resources are used efficiently.

Investigate the flexibility of electrolyser load.

AEMO's future planning work should focus on the degree to which electrolysers will have a role in maintaining the grid. Electrolysers are in theory a high flexible load however, this flexibility is constrained by the current high capital cost which is amortised over the life of the equipment. As the cost of electrolysers falls, the potential for grid connected electrolysers to act as more flexible load increases and this may have a material impact on the need for grid augmentation. While such matters may be beyond the immediate remit of AEMO in developing the ISP, electrolyser costs will play a role in determining the makeup of our energy mix. We see value in AEMO analysing the degree to which increasing levels of demand for hydrogen could drive economies of scale for electrolysers and how varying price points for this equipment could transform the grid through the connection of flexible load.

Broader coordination and engagement with planning bodies

The Draft ISP shows how the NEM can optimise consumer benefits while supporting government policies for emissions reduction and Australia's net zero ambitions. However, the land needed for major VRE, storage and transmission projects to realise these goals is unprecedented. Early community engagement will be needed to ensure investments have an appropriate social licence. While AHC welcomes that this is acknowledged, it highlights one of the key shortcomings of the ISP.

AEMO's terms of reference for the ISP is understandably narrow with a focus on the National Electricity Market. As a result of this focus, off-grid development, including any development in Western Australia or the Northern Territory are not adequately considered. The exclusion of off-grid

developments in NEM states is likely to compound social licence challenges as considerable off-grid electrolyser load is likely to be developed and will increase competition for land and water use within Renewable Energy Zones.

This activity is also likely to impact both hydrogen production and demand and impact the overall energy mix in ways not anticipated by the ISP.

In its 2021 Whitepaper, Unlocking Australia's Hydrogen Opportunity, AHC has identified the need for energy planning to be considered as part of a broader net zero picture to more adequately account for the interactions between existing infrastructure (both the NEM assets and things like ports, water sources etc and transport infrastructure). This approach will ensure that Australia is better positioned to transition to net zero emissions in a more efficient manner. We are keen to discuss this issue with AEMO to understand how it can best meet its planning obligations within this broader net zero context.

Conclusion

AHC acknowledge that the suggestions contained in this submission are broader than timeframes for finalisation of the 2022 ISP allow for. We ask that these matters be kept in mind for future processes and look forward to the opportunity to engage further. We urge AEMO to continue to consult widely with stakeholders in the development of future planning documents and we commit to sharing information with AEMO on the developments in the emerging Australian hydrogen industry.

We welcome the opportunity to provide further detail about any aspect of this submission via GM Policy, Mr Joe Kremzer who can be contacted by email on jkremzer@H2council.com.au or telephone 0413 266 081