SWITCHING ON QUEENSLAND'S HYDROGEN POTENTIAL

As key economies around the world move towards net zero emissions, demand is growing globally for low-carbon products and fuel sources. These include renewable hydrogen, 'green' steel and aluminium, and materials used in electric vehicle and storage batteries. Luckily for Australia, and in particular Queensland, we are well-placed to expand local manufacturing and capitalise on this growing demand.

The Sunshine State has key ingredients required to become a renewable energy industrial superpower; including, world-class solar and wind resources, a skilled workforce and critical mineral deposits in the North West Minerals Province that are needed to develop clean technology. In regional Queensland, businesses are already lining up to produce renewable hydrogen and manufacture clean technology onshore.

In Townsville, the owners of the local zinc refinery, Sun Metals, have built their own solar farm and now are looking to build and scale up a renewable hydrogen facility – with plans for it to eventually grow to a 3,500 MW exporting plant. In Gladstone, proposals for a 3,000 MW renewable hydrogen facility led by government-owned corporation Stanwell and a separate hydrogen electrolyser manufacturing plant proposed by Fortescue are gathering pace and moving through the development process.

Turning Queensland into a hub for renewable energy industry is an exciting opportunity to create future-proof regional employment while working towards Queensland's commitment to reach net zero emissions by 2050.

In December 2021, the Australian Energy Market Operator (AEMO) released least cost modelling showing how Australia's main electricity grid can power additional electricity demand from industry if Australia becomes a hydrogen superpower [1]. AEMO's Hydrogen Superpower scenario describes a future where there's a strong domestic and international push to slash emissions – and Australia's electricity consumption nearly quadruples by 2050 to supply a hydrogen export industry.

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"The technology transforms transport and domestic manufacturing, and renewable energy exports become a significant Australian export, retaining Australia's place as a global energy resource." – The Hydrogen Superpower scenario as discussed in AEMO's Draft 2022 Integrated System Plan.

Our analysis uses AEMO's modelling to determine the approximate number of renewable energy jobs that could be created in Queensland this decade if Australian governments invest in establishing a thriving renewable hydrogen export industry while introducing policies to slash the country's carbon emissions.

The findings of this analysis demonstrate that fast-tracking Queensland's energy transition will create a significant number of construction and ongoing jobs in renewable energy.

Key Findings

- A staggering 20,400 MW of new large-scale solar and wind generation is modelled to be built in Queensland's Renewable Energy Zones by 2030 if Australia becomes a renewable hydrogen superpower. This is almost eight times more than the amount of large-scale solar and wind capacity currently operating in Queensland.
- This massive build out of clean energy would create almost 30,000 renewable construction job years* and 1,800 ongoing jobs in renewable energy operations and maintenance.
- This represents an extra 10,000 renewable energy construction job years building solar and wind farms compared to Queensland's current trajectory.

Predicted Solar and Wind Farm Build-out in AEMO's Hydrogen Superpower Scenario by region to 2030.

Region	Added capacity (MW)	Construction job years	New operational and maintenance jobs
Far North Queensland	2,430	3,504	250
NQ Clean Energy Hub	1,323	2,066	139
Isaac	2,772	3,350	210
Barcaldine	166	234	15
Fitzroy	4,690	6,623	375
Wide Bay	939	1,526	85
Darling Downs	7,888	12,320	743
Banana	193	259	12

*A job year is a full-time equivalent job that lasts for a year.

Methodology

AEMO's modelling shows the projected least cost build of Queensland's Renewable Energy Zones under the Hydrogen Superpower scenario [2]. These large-scale solar and wind projections were used alongside Institute of Sustainable Futures' renewable job factors [3] to determine the level of renewable energy employment that this would stimulate in Queensland. It was assumed that large-scale solar and wind renewable job factors decline every year in line with falling technology costs as sourced from AEMO [4].

References

[1] Australian Energy Market Operator. (2021). Draft 2022 Integrated System Plan.

[2] Australian Energy Market Operator. (2021). 2022 Draft ISP results workbook - Hydrogen Superpower.

[3] Institute for Sustainable Futures. (2020). Renewable Energy Jobs in Australia: Stage One. University of Technology Sydney.

[4] Australian Energy Market Operator. (2021). 2021 Inputs and assumptions workbook.