

Major milestone: initial FEED work for Lion's first commercial-scale green hydrogen production and refuelling station completed

Lion Energy Limited ("Lion" or "Company"; ASX: LIO) is pleased to announce that it has completed the initial front-end engineering and design ("FEED") for its first commercial-scale hydrogen production and refuelling station in Australia aimed at the heavy mobility market.

Highlights include:

- FEED scope includes hydrogen hub (electrolysis, compression, and loading), transport and refuelling station (receiving, compression, storage, and dispensing)
- Facility designed to produce and dispense 430kg hydrogen per day (155tpa), with allowance for capacity growth in the future up to 1.7t per day
- Lion expects the facility to start hydrogen production by 4Q2023, with full handover by 1Q2024
- The facility is expected to supply hydrogen fuel onsite to bus operators transitioning their fleet from diesel to zero-emission vehicles
- Lion envisions the facility to be the first of a green hydrogen refuelling network on the Eastern Seaboard of Australia, servicing initially the bus market and later the larger heavy mobility industry
- Project capex estimate of AUD12.0m
- Procurement process underway, with vendor quotes and delivery timing within expectations

Mr Thomas Soulsby, Lion's executive chairman, said that *"the initial phase for the hub is based on a 1MW electrolyser, using alkaline water electrolysis technology, which can produce approximately 18kg/hour of hydrogen. We expect a future expansion in the order of 4 x 1MW Electrolysers. Lion plans to pre-invest in site preparations to minimise cost for such an expansion and include the expansion in its permit applications."*

Mr Soulsby went further to say that *"Lion's plan is to produce the hydrogen via electrolysis at the hub. The hydrogen will then be compressed to 200 Bar and loaded on tube trailers. The tubes are unloaded at the refuelling station, where hydrogen is further compressed to 450 Bar to be stored or directly delivered to vehicles via onsite refueller. This is a well-established model in other countries with no technology risk and excellent safety records."*

To achieve the required outcome, the FEED level design and estimate was based on recently completed projects, along with actual pricing quote from equipment vendors and sub-contractor pricing.

Lion is now in advanced discussions with key vendors and expected to finalize procurement within the next few months. In parallel, Lion is actively negotiating with a shortlist of landowners to select and secure the location for this initial facility.

Mr Soulsby said: "Unlike many other prospective hydrogen producers, Lion is not tied to use a specific location for its facilities. This gives us great comfort that the selected locations are fit-for-purpose, with adequate access to relevant utilities, but most importantly close to our future customers. Lions strategic vision includes developing a network of more than 50 locations."



Figure 1: Lion's hub and spoke concept up to 4MW in stages

Positioning for market growth

Lion is confident hydrogen will play a major role in the decarbonisation of the Australian heavy transportation industry, including the bus sector. It envisions to build and operate a network of hydrogen generation and refuelling stations across the eastern states of Australia, which will complement the Hydrogen highway project announced by the New South Wales, Victorian and Queensland governments on 25 March 2022.

With governments' mandates to transition new buses to zero-emission (i.e., battery electric or hydrogen) from 2025 onwards, and assuming a 20% market share for hydrogen, about 300 hydrogen buses would be deployed each year under a natural replacement profile. Using an average consumption of 12.5kg/day/bus¹, an 8,600 strong hydrogen bus fleet would require about 40 million kg hydrogen per annum. This volume could be delivered through 270 hydrogen refuelling points of 400kg/day capacity each.

For reference, the 20 largest fleet operators in Australia operate about 300 bus depots in total, with an average of 61 buses per depot². The eastern states (NSW, VIC, QLD, ACT) represent more than 70% of the addressable market².

Funding considerations

As of 30 June 2022, Lion had a cash balance of US\$7.9 million (circa A\$11.4 million). To ensure adequate liquidity for its initial hydrogen project and to plan for future growth, Lion is exploring various funding avenues. In particular, Lion is entertaining a number of parties that have expressed interest to joint venture Lion's first mover hydrogen initiative in Australia. These parties have large existing businesses in the energy sector and would provide significant business complementarity in the future. A joint-venture arrangement would significantly reduce the cash outlay required from Lion or would allow Lion to fund multiple facilities in parallel. Lion is also exploring other funding options, including debt financing from financial institutions and other parties. There is no certainty at this stage if any of these initiatives will bear fruit. In any case, Lion does not anticipate any external funding requirement in 2022.

ENDS

This ASX announcement was approved and authorised for release by the Board of Directors.

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¹ Based on an average distance of 65,000km per year per bus (source: Zero Emission Bus Transition Strategy, Transport for NSW) and a consumption of 7kg H₂ / 100km (source: the Australian Road Research Board)

² Bus Industry Confederation, Australian Bus and Coach Industry: a snapshot, Sept 2021