120MW Peaking Plant to create green hydrogen offtake

Frontier Energy Limited (ASX: FHE; OTCQB: FRHYF) (**Frontier** or the **Company**) is pleased to provide an update regarding the Study of a green hydrogen-fuelled Peaking Plant (**Peaking Plant**) by Frontier's collaboration partner Waroona Energy Inc. (**Waroona Energy**) (TSXV:WHE). The Peaking Plant provides an offtake pathway for Frontier's green hydrogen.

HIGHLIGHTS

- **Peaking Plant Study confirms sizing of 120MW, utilising existing, off the shelf technology**
- **The Peaking Plant can provide a near term market opportunity for green hydrogen, given the well-established market for electricity generation**
    - *The selected plant design has up to 100% green hydrogen capability, and can potentially consume all green hydrogen produced by Stage One of Frontier's Bristol Springs Project (**Project**)*
- **Demonstrating a clear offtake pathway for green hydrogen puts Frontier in a strong position to apply for Federal Government subsidy funding**
    - *Applications for the Federal Government's Hydrogen Headstart subsidy funding are due to open later in 2023*
    - *Demonstrating a clear use case has been specified as one of the requirements for receiving funding in the Hydrogen Headstart Consultation Paper*
    - *The Peaking Plant provides a clear use case for Frontier's proposed green hydrogen production*
- **WA's electricity network, the South West Interconnected System (SWIS), is facing a major supply-demand deficit over the next decade, indicating an urgent and imminent requirement for investment in new electricity generation**
    - *The Australian Energy Market Operator (**AEMO**) has released its annual Electricity Statement of Opportunities Report (**ESOO** or **Report**) which highlights over the next decade demand is forecast to increase by at least 78% (Expected Case), with an Upside Case increasing by more than 220%*
    - *There is already upward pressure on electricity prices, with a 49% increase in the average electricity price over the past 12 months to $85/MWh (vs $57/MWh pcp)*

Frontier Managing Director, Sam Lee Mohan, commented: *"Frontier's collaboration partner Waroona Energy is rapidly advancing the Study of a green hydrogen-fuelled peaking plant, at a time when the market operator AEMO is forecasting generation capacity shortfall in the SWIS over the next decade. We are progressing our strategy of developing our Project to produce energy from solar and green hydrogen, with the Peaking Plant effectively creating a market for green hydrogen produced at Bristol Springs. We are also continuing to engage closely with the Federal Government on the Hydrogen Headstart subsidy program".*

Peaking Plant to provide near term market opportunity for green hydrogen

In March 2023, Frontier completed a DFS[1] on integrated solar and green hydrogen production facilities at the Project[1]. As part of the Study, a 72MW electrolyser was investigated (in 36MW building blocks), which would fully utilise the quantum of energy produced by the proposed solar farm (Stage One - 114MW). This could see Stage One production of up to 9.8 million kilograms of green hydrogen per annum.

Frontier also identified[2] that, given its existing connection to the SWIS and the maturity of the electricity market, a Peaking Plant is a clear first consumer of green hydrogen from the Project. This led Frontier's collaboration partner, Waroona Energy[3], to commence a Study (Class three cost estimation – AACE International) to assess a green hydrogen-fuelled (dual fuel) peaking power plant[4]. The Study remains on track for completion in the 4Q2023.

A Peaking Plant includes mature technology that can be switched on at short notice to provide power at peak demand times, providing stability to the electricity grid. There are several peaking plants operating on the SWIS currently.

Early results of the technology assessment have determined the optimal size for the peaking plant system will be 120MW (at 41°C). Importantly, the system allows for up to 100% green hydrogen to be the fuel source.

This size peaking plant can potentially consume all green hydrogen anticipated to be produced by Stage One of the Project, depending on the number of hours run per annum and the proportion of green hydrogen consumed by the plant, as shown in Table 1:

	Percent of hydrogen consumed (by volume)[5]		
Run time per annum	**25%**	**50%**	**75%**
1,000 hours	1,035 tpa	2,610 tpa	5,296 tpa
2,000 hours	2,070 tpa	5,220 tpa	10,592 tpa

Table 1: Hydrogen consumption sensitivity (tonnes per annum) by 120MW Peaking Plant under different run time and hydrogen blend proportion assumptions

While these sensitivities indicate potential hydrogen volumes consumed in the Peaking Plant, actual future consumption will depend on market factors once the Peaking Plant is in operation, as well as the amount of grant funding available from the Hydrogen Headstart program.

[1] *ASX Announcement 12 March 2023*
[2] *ASX Announcement 20 June 2023*
[3] *Frontier holds 20% of Waroona Energy and the Companies have a Collaboration Agreement in place – see ASX Announcement 6 October 2022*
[4] *ASX Announcement 5 July 2023*
[5] *Based on preliminary technology assessment*

A clear pathway for green hydrogen offtake supports Hydrogen Headstart subsidy funding application

The 2023-24 Australian Federal Budget allocated $2 billion in funding to be made available under the Hydrogen Headstart program[6] aimed at bridging the gap between the market price of hydrogen and the production cost of green hydrogen (an analogue is the US Inflation Reduction Act which provides up to US$3/kg subsidy for green hydrogen production).

Consultation on the Hydrogen Headstart subsidy funding has commenced. The Consultation Paper[7] specifies that applicants should provide "comprehensive detail on the use case for the hydrogen". Demonstrating a clear offtake pathway puts Frontier in a strong position to meet this specific requirement.

Frontier believes the Project is closely aligned with all the proposed requirements for receiving subsidy funding as outlined in the Consultation Paper, and the Company submitted a response to the Consultation Paper in early August (in accordance with the specified timeline). Applications for the Hydrogen Headstart program are due to open later in 2023, to be formally allocated during 2024.

ESOO Report highlights major supply deficit with an urgent requirement for additional capacity on the SWIS

In August, the **AMEO**, which is responsible for managing the electricity and gas systems and markets across Australia, released its annual Wholesale Electricity Market (**WEM**) Electricity Statement of Opportunities (**ESOO or Report)**).

This Report plays an important role in the Reserve Capacity Mechanism process on the WEM as it includes the 10-year Long Term Projected Assessment of System Adequacy for the SWIS. The primary purpose of the Report is to identify the investment in capacity from generation, storage, and demand side management (**DSM**) needed to ensure a secure and reliable electricity supply for the SWIS over the coming 10 years.

The Report highlighted the urgency of advancing generation, storage, DSM, and transmission projects to bolster reliability and support a rapid and orderly energy transition. Its findings emphasise the need for additional capacity procurement and expedited progress of capacity projects in the SWIS.

[6] *See ASX announcement 12 May 2023 – Australian Budget 2023/24 - Hydrogen Headstart*
[7] *https://arena.gov.au/assets/2023/05/hydrogen-headstart-consultation-paper.pdf*

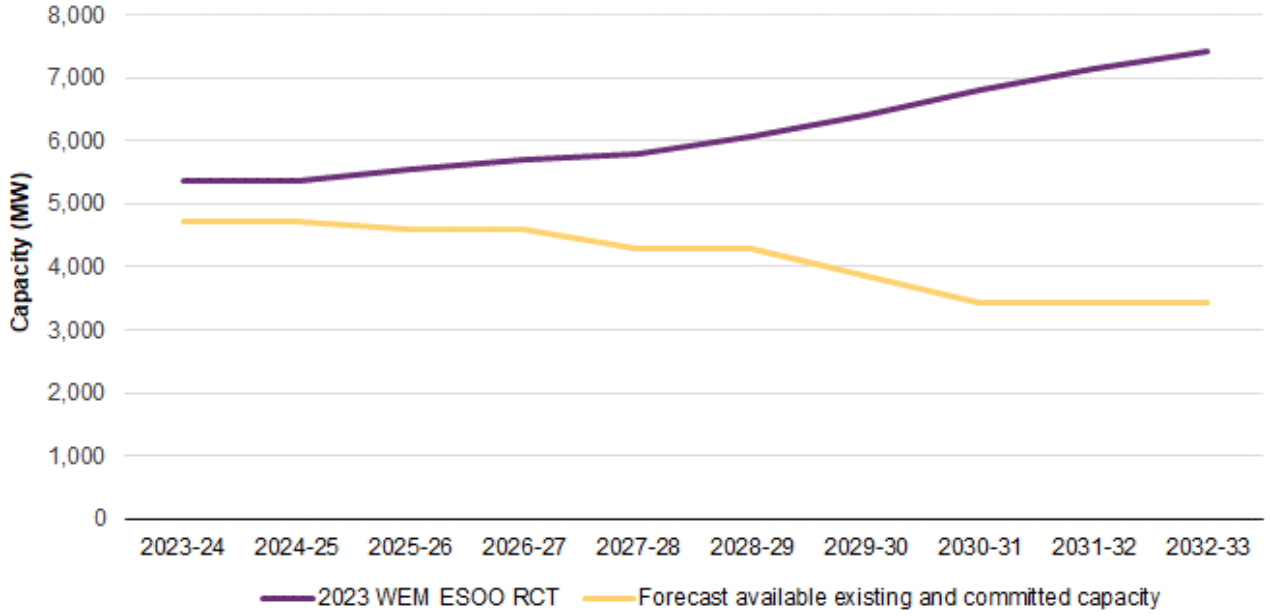

Figure 2: 2023 WEM ESOO Reserve Capacity Target (RCT) and forecast capacity, illustrating the Gap

While there are multiple factors highlighted in the Report affecting both supply and demand, the key drivers were:

- **Renewable Energy Transition (Supply)** – the transition to deploy renewable energy has been accelerated significantly over the past 12 months. In September 2022 , the Federal Government pledged to lower emissions by 43% by 2030 and achieve net zero emissions by 2050. In WA, the State Government will introduce climate change legislation this year to reduce government emissions by 80% below the 2020 level by 2030, and to meet net zero by 2050. This has seen the Government announce the closure of coal fired power generation in WA by 2029. These factors have significantly accelerated the forecast reduction in supply compared to the 2022 WEM ESOO.

- **Increased business, industrial and electrification (Demand)** – Forecast demand has increased significantly due to growth in business electrification, along with growth in cooling load (air-conditioning), electric vehicles and the expansion of industrial loads.

In the Report's Expected Forecast, operational consumption is forecast to grow at an average annual rate of 5.6% and reach 30.3TWh per annum in 2032-33. This is a 72% increase compared to the 2022/23 estimate. In this high demand growth scenario, operational consumption is projected to increase by more than 220% to 58.9TWh per annum over the same period.

For 2023, the low case demand in the current Report is higher than the high case forecast in the previous Report.

Subsequent to AEMO publishing the Report, the WA Government announced that the planned retirement of some coal fired generation planned for 2024 has been postponed by at least six months[8]. By contrast, the proposed peaking plant will help narrow the generation capacity shortfall forecast in the WEM ESOO.

Full details of the ESOO can be found here:
https://aemo.com.au/en/energy-systems/electricity/wholesale-electricity-market-wem/wem-forecasting-and-planning/wem-electricity-statement-of-opportunities-wem-esoo

Recent WEM electricity price trends

The supply / demand deficit forecast in the Report can already be observed in current WEM pricing, which has increased materially as shown in the Figure 3 below. The average electricity price on the WEM over the past year has increased from A$57/MWh to A$85/MWh. For the solar generation period, the price trend is also strongly increasing, with an increase to A$66/MWh (July 2022 -June 2023) from A$48/MWh (July 2021 -June 2022). During the peak periods (4pm – 9pm) when a peaking plant operates this price has increased further to an average price of A$122/MWh (previously A$82MW).[9]

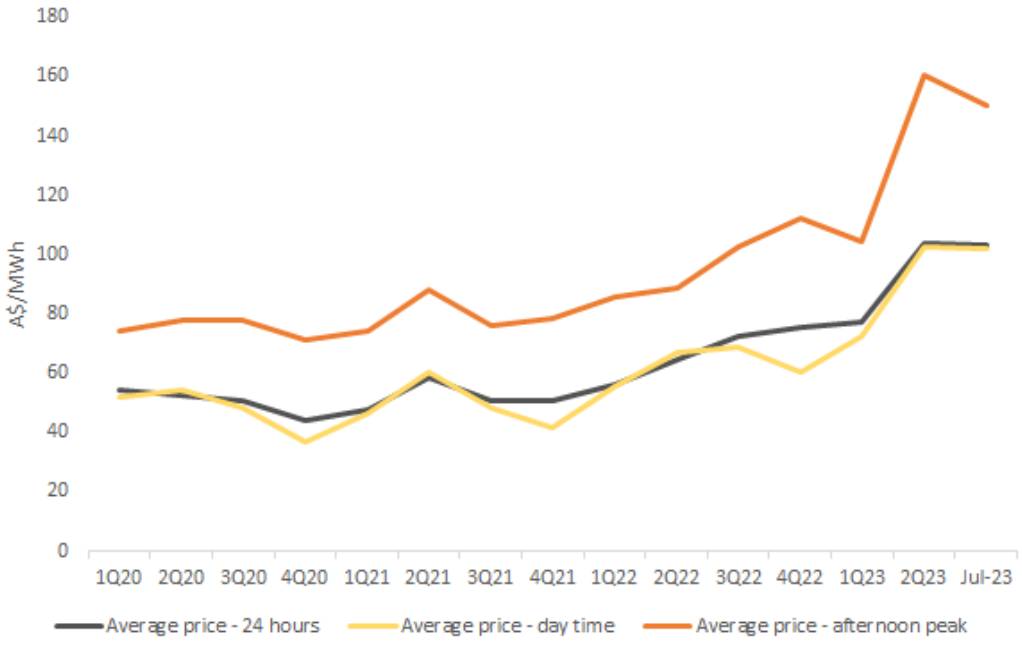

Figure 3: Quarterly average of wholesale price of electricity[10]

[8] *https://thewest.com.au/politics/state-politics/shutdown-of-collie-coal-fired-power-plant-delayed-in-response-to-fears-over-electricity-shortages*
[9] *AMEO – August 2021 – July 2023*
[10] *Source: AEM. On the chart shown, afternoon peak is 4pm-9pm, daytime is 6.30am-6pm. Not adjusted for seasonality.*

This price dynamic supports Frontier's strategy of delivering renewable generation capacity from the Project's 114MW solar farm (Stage 1), that can be converted into green hydrogen which in turn can feed the Peaking Plant, which supplies electricity when required at peak times. Any excess solar electricity can be sold directly into the WEM during peak or off peak times.

Authorised for release by the Board of Frontier Energy Limited

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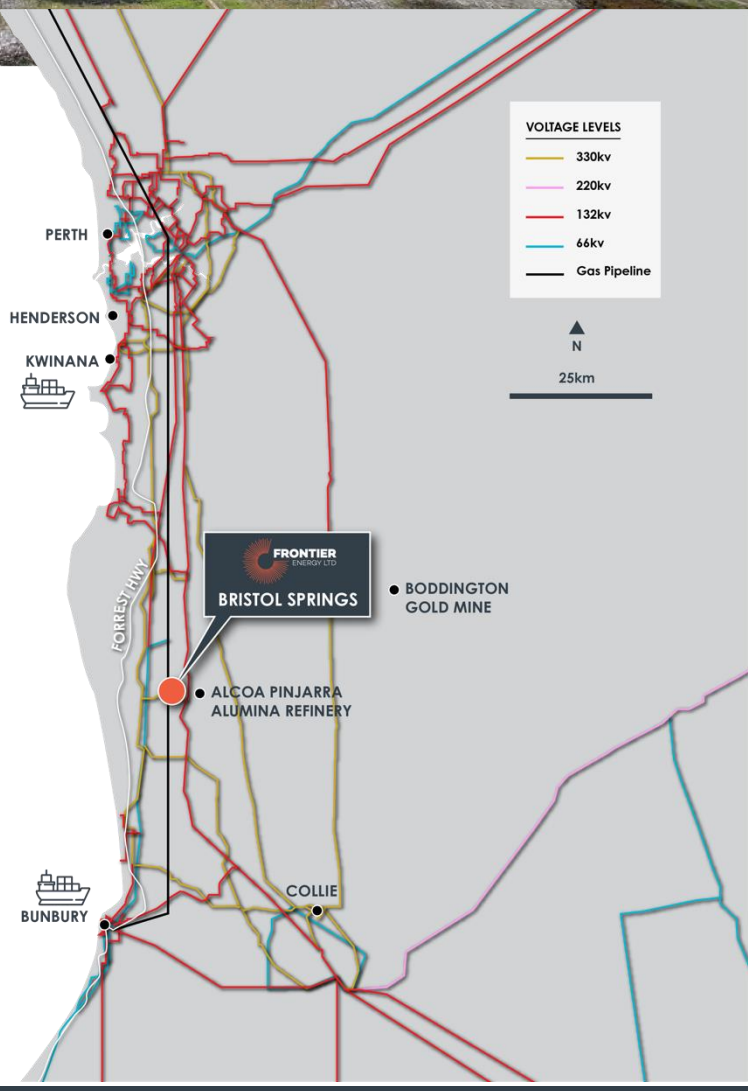
About Frontier Energy

Frontier Energy Ltd (ASX: FHE; OTCQB: FRHYF) is developing the Bristol Springs solar and green hydrogen Project (the Project) located 120km from Perth in Western Australia.

The Company recently completed a Definitive Feasibility Study[1] that outlined the Project's potential to be both an earlier mover and one of the lowest cost green hydrogen assets in Australia.

The Project benefits from its unique location surrounded by major infrastructure. This reduces operating and capital costs compared to more remote hydrogen projects, whilst also being surrounded by likely early adopters into the hydrogen industry in the transition from fossil fuels.

[1]ASX Announcement 20th March 2023



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For a comprehensive view of information that has been lodged on the ASX online lodgement system and the Company website, please visit asx.com.au and frontierhe.com, respectively.