

Clean energy to help fill Western Australia's growing supply gap Definitive Feasibility Study





# **Disclaimer**

#### FORWARD LOOKING STATEMENT

Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from those expressed or implied by such forward-looking information, including risks associated with investments in private and publicly listed companies such as Frontier Energy Limited (Frontier or Company); risks associated with general economic conditions; the risk that further funding may be required but unavailable for the ongoing development of the Company's projects or future acquisitions; changes in government regulations, policies or legislation; unforeseen expenses; fluctuations in commodity prices; fluctuation in exchange rates; litigation risk; the inherent risks and dangers of development of the Company's Waroona Renewable Energy Project (Project); changes in laws or regulations; future actions by government; breach of any of the contracts through which the Company holds property rights; defects in or challenges to the Company's projects; reliance on key personnel, retention of key employees and the impact of the COVID-19 pandemic on the Company's business and operations.

Forward-looking information is based on the reasonable assumptions, estimates, analysis and opinions of management of the Company made in light of their experience and their perception of trends, current conditions and expected developments, as well as other factors that management believes to be relevant and reasonable in the circumstances at the date that such statements are made, but which may prove to be incorrect. The Company believes that the assumptions and expectations reflected in such forward-looking information are reasonable.

Assumptions have been made regarding, among other things: the energy market, the Company's peers, the Company's ability to carry on its future development works, construction and production activities, the timely receipt of required approvals, the price of electricity, the ability of the Company to operate in a safe, efficient and effective manner and the ability of the Company to obtain financing as and when required and on reasonable terms. Readers are cautioned that the foregoing list is not exhaustive of all factors and assumptions which may have been used.

Although the Company has attempted to identify important factors that could cause actual results to differ materially from those contained in forward-looking information, there may be other factors that cause the Company's results not to be as anticipated, estimated or intended. There can be no assurance that such information will prove to be accurate, as actual results and future events could differ materially from those anticipated in such information. Accordingly, readers should not place undue reliance on forward-looking information. The Company does not undertake to update any forward-looking information, except in accordance with applicable securities laws.

#### NO LIABILITY/SUMMARY INFORMATION

Frontier has prepared this presentation material (Presentation) based on information available to it at the time of preparation. No representation or warranty, express or implied, is made as to the fairness, accuracy or completeness of the information, opinions and conclusions contained in the Presentation. To the maximum extent permitted by law, the Company, its related bodies corporate (as that term is defined in the Corporations Act 2001 (Commonwealth of Australia)) and the officers, directors, employees, advisers and agents of those entities do not accept any responsibility or liability including, without limitation, any liability arising from fault or negligence on the part of any person, for any loss arising from the use of the Presentation or its contents or otherwise arising in connection with it.

#### **ACKNOWLEDGEMENT OF COUNTRY**

Frontier Energy acknowledges the traditional custodians throughout Australia and their continuing connection to the land, waters and community. We pay our respects to all members of the Aboriginal communities and their cultures; and to Elders both past and present.

# Energy transition in WA is already seeing higher energy prices

# Current status of the renewable energy transition

- In WA and Australia ~35% of electricity generated in 2023<sup>1</sup> was from renewables, well short of the 2030 target of 82%
- The energy transition affects both supply (replace fossil fuels with renewables) and demand (electrify everything)
  - AEMO forecasts WA electricity demand to increase between 78% and 220% over the next decade

## Record demand already being seen

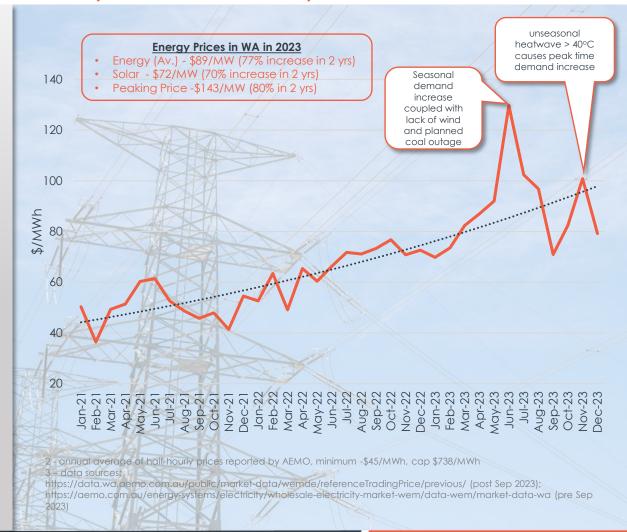
- WA experienced the seven highest demand days since the beginning of the WEM over the past 12 months<sup>2</sup>
  - Record demand 4.233MW on 18 February at 5.55pm gas (58%) and coal (32%) were the major energy contributions

# Energy prices are also at record highs

- Average prices up more than 70% in the past two years
- Reserve Capacity Prices (RCP) up by 78% over the past three years (\$251,000 in 25/26)<sup>3</sup>
- 1 https://opennem.org.au/energy

2 - https://aemo.com.au/-/media/files/stakeholder\_consultation/working\_groups/wa\_meetings/real-time-market-insights-forum/real-time-market-insights-forum-20-february-2024.pdf?la=en

3 - https://www.erawa.com.au/cproot/23833/2/2024-benchmark-reserve-capacity-price-for-the-202627-capacity-year.PDF



## Monthly WA Wholesale Electricity Price<sup>2,3</sup>

# Frontier's strategic advantages overcome key challenges in the clean energy transition

|             | Key issues   | How is this evident in WA?   | Frontier's Advantage  |
|-------------|--|--|---|
|             | <ul> <li>Network needs modifications / extensions</li> <li>New renewable generating assets in different locations to retiring fossil fuel assets</li> </ul>                                  | <ul> <li>Limited network connections,<br/>transmission capacity, and<br/>competing land uses in areas<br/>suitable for renewables</li> </ul>   | Located in a large capacity<br>section of the network with<br>two potential connections<br>accessible and large<br>freehold landholding |
|             | <ul> <li>Demand / Supply mismatch</li> <li>Quicker roll out of new energy consuming products (e.g. EVs) results in increasing demand</li> <li>Phase out of fossil fuel generators</li> </ul> | <ul> <li>WA electricity prices most expensive in Australia - \$84/MW compared to Victoria at \$26/MW<sup>1</sup></li> <li>Closure of the State owned coalfired power stations by 2029</li> </ul> | FID ready in 2024, targeting<br>production by 2026/27, at a<br>time when deficit is forecast<br>to worsen                               |
| <u>-4</u> + | <ul> <li>Renewable electricity supply is intermittent</li> <li>Peak renewable supply does not typically coincide with peak electricity demand</li> </ul>                                     | • Multiple stand-alone batteries<br>are planned  | Ability to integrate 80MW<br>320MWh battery into<br>120MWdc solar farm  |
|             | com.au/energy-systems/major-publications/quarterly-energy-dynamics-qed<br>.om.au/-/media/files/electricity/wem/planning_and_forecasting/esoo   |  |   |

# Perfectly positioned for the renewable energy transition

**BUILDING A SCALEABLE RENEWABLE ENERGY HUB** 



Stage One DFS complete 120MWdc Solar / 80MW fourhour Battery



Strongest ever market conditions for renewable energy deployment



Major expansion beyond Stage One to create a large renewables hub (incl hydrogen)



Strong financial position Fully funded until FID



445m Shares on issue

\$125m At \$0.28/ share Market Cap



Management 13% Institutio 18%

# Poised to become one of Australia's largest standalone renewable energy projects

# Waroona Renewable Energy Project - Snapshot

- 120km south of Perth near Waroona, WA
- Close to existing infrastructure essential for renewables, including network terminal, and skilled workforce

## Network

- Frontier has two network connections (one approved ETAC and one ETAC in progress) – future potential to export multiples of Stage One capacity
- Located on high voltage (330kV) transmission line unconstrained and amidst major industrial consumers

## **Approvals**

• Majority of permits and approvals in place

## Site

- 868ha of freehold land 100% controlled (no native title)
  - Previously used for grazing largely cleared

# Stage One DFS complete – Targeting FID by mid-2024

 Technical concept easily applied to adjacent areas to accelerate future expansion and capture high demand market conditions



# Stage One DFS delivers strong results and platform for growth

High energy prices are driven by increased demand and limited new supply

# Optimal Stage One Strategy - 120MWdc solar / 80MW 320MWh battery

- Strategy and facility size selected as it provided
  - Strongest economic returns in a ready made market
  - Lowest technical risk
  - Alignment with Government initiatives
  - Ability to quickly replicate and scale up

## Strong returns on all key financial output metrics

- All revenue/pricing assumptions provided by independent energy forecaster, Aurora Energy Research
- EBITDA<sup>1</sup> \$68.1m (5 year average)
- Rapid payback<sup>1</sup> for a 30 year operation
  - 4.6 years (pre tax) / 5.8 years (post tax)
- Strong IRR<sup>1</sup> (other renewable projects typically 8% 11%)
  - Ungeared 14.8% (post tax) & 18.0% (Pre tax)
  - Geared (70%) 21.6% (post tax) & 27.3% (Pre tax)
    - Initial debt market testing indicates gearing highly achievable
- Stage One only accounts for a minor fraction of the Project's long term potential

## **Production and Capex**

| Item                       | Units | Quantity |
|----------------------------|-------|----------|
| Life of operation          | Years | 30       |
| Solar                      |       |          |
| Solar Capacity             | MWdc  | 120      |
| Energy Production (Yr 1)   | GWh   | 258      |
| Battery – 4 hr             |       |          |
| Nominal capacity – 4 hr    | MW    | 80       |
| Storage capacity           | MWh   | 320      |
| Initial Capital Costs      |       |          |
| Stage One – Solar and BESS | A\$ m | \$304    |

## **Revenue and EBITDA**

| Financial Item            | Units | Year 1-5 Average | Year 1-10 Average |
|---------------------------|-------|------------------|-------------------|
| Reserve Capacity Payments | A\$ m | 27.1             | 23.9              |
| Energy Sales              | A\$ m | 32.5             | 33.6              |
| LGC                       | A\$ m | 12.1             | 9.8               |
| FCESS                     | A\$ m | 2.2              | 2.5               |
| Total Revenue             | A\$ m | 74.0             | 69.7              |
| Operating cost            | A\$ m | 5.9              | 6.3               |
| EBITDA                    | A\$ m | 68.1             | 63.5              |

#### Returns

| Payback                    | Units | Pre Tax | Post Tax |
|----------------------------|-------|---------|----------|
| Years (pre tax / post tax) | Yrs   | 4.6     | 5.8      |
| IRR                        |       | Pre Tax | Post Tax |
| Ungeared                   | %     | 18.0%   | 14.8%    |
| Geared, leverage 70%       | %     | 27.3%   | 21.6%    |

# Multiple revenue streams all increasing in a rising market

Strong forecast average revenue of \$74m per year over the first 5 years

Reserve Capacity Payments (RCP) – \$27.1m (36% of revenue) – see Appendix 1 for detail

- Unique to WA not in any other Australian States
- Payment per MW based on RCP Yr 1 300,000 / MW locked in for 5 years

Energy Sales – Battery (peaking period) – \$19.6m (27% of revenue) – see Appendix 2

- Targeting high demand, high price period when renewables less reliable (5pm 9pm)
  - Average peak price in 2023 \$145/MW 78% increase over past 2 years
- Battery to charge during low or negative price periods (middle of the day) to maximise arbitrage

# Energy Sales – Solar direct - \$12.9m (18% of revenue) – see Appendix 2

- Sell energy during shoulder periods and charge battery in low price/peak supply
  - Minimal economic curtailment (<1%) compared to solar only (8%)

# LGC - \$12.1m (16% of revenue) - see Appendix 3

- Effectively a Government backed carbon credit for electricity producers
- Average actual price over the past 3 years (\$50/unit)

# FCESS \$2.2m (3% of revenue)

• Payment for assisting in maintaining security and reliability of supply

1 - https://www.erawa.com.au/cproot/23833/2/2024-benchmark-reserve-capacity-price-for-the-202627-capacity-year.PDF 2 - https://www.wa.gov.au/media/43698/download?inline



# Low operating costs ensure long term sustainable profitability

Long life, low operating costs in first world jurisdiction ensures favourable funding solutions

- Once constructed, renewable energy projects are typically always profitable (over the course of a year) due to their:
  - Low operating costs
  - Reliability of production
  - Limited additional capital development requirements
- Stage One opex is forecast at \$5.9m pa (5 year average)
  - This equates to a direct operating cost of approximately 2.4c/kwh (excluding financing costs) compared to revenue of 29.6c/kwh
- Strong annual EBITDA of \$68 million pa over the first 5 years of production



# Cashflow Waterfall - First 5 years of production (average)

## **Renewable energy solutions for Western Australia**

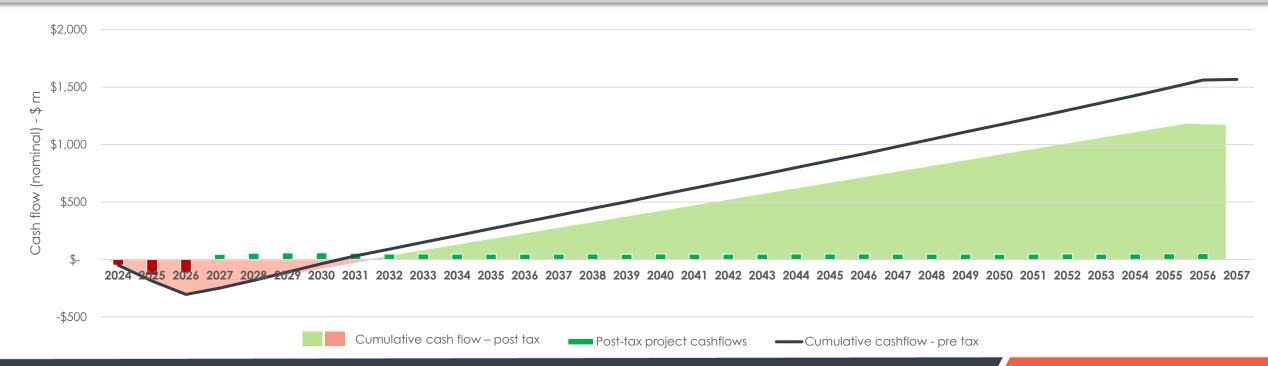
1 - https://www.erawa.com.au/cproot/23833/2/2024-benchmark-reserve-capacity-price-for-the-202627-capacity-year.PDF 2 - https://www.wa.gov.au/media/43698/download?inline

#### ASX:FHE / OTCQB: FRHYF | 9

# Quick payback with long sustained strong cashflows

# Rapid post tax payback in the fifth year of production

- Total Initial capital requirement \$304m; Operating life of 30 years
- Payback 5.8 years (post tax) and 4.7 years (pre-tax)
  - Stress test case sees a post tax payback at 7.2 years, highlighting the robustness of the Project
- Life of operation cumulative post tax cash flow (nominal) \$1.2Bn
- Strong cash flow to pay for expansion and future dividends



# Funding Strategy - Debt and strategic partnership process

Targeting minimal future dilution for existing shareholders through dual funding strategy

# **Debt Financing**

- Debt financing for renewable energy projects attract highly favourable terms compared to other industries
  - Long tenors and low interest rates
- Appointed Leeuwin Capital Partners, highly experienced advisor with experience in WA renewable energy sector
- Discussions with all major local banks and international banks already taken place
  - Information Memorandum and data room to be opened shortly
- Indicative debt proposals 2Q24

# Strategic Partnership

- The Company has received multiple unsolicited approaches over the past 12 months from a range of major groups
- The Company has appointed leading Australian advisory firm Barrenjoey as Corporate Advisor in connection with exploring a potential strategic partnership Project development
- The strategic partnering process has commenced and will seek to introduce a high-quality strategic partner that can provide equity capital to support FID of Stage One and accelerate additional growth Stages

| <b>~</b> | DEVELOPMENT TIMELINE   | Stage One                | Stage Two - indicative Stage Three - indicative   | Future Expansion<br>Potential |
|----------|--|--------------------------|---|-------------------------------|
|          | Size of project (solar/battery)<br>4 hour battery storage throughout | 120MWdc / 80MW           | 250MWdc / 160MW 400MWdc / 270MW   | 400MW+                        |
|          | Timing   | Target FID – mid<br>2024 | Right strategic partner will allow for accelerated development to commence within <u>6-12 months of Stage One FID</u> | Long term target              |

# **Frontier's Path to Production**

# BUILDING A SCALEABLE RENEWABLE ENERGY HUB





Strongest ever market conditions for renewable energy deployment

Growth potential of +1GW of renewable energy in an unconstrained section of the grid



Ongoing news flow as we progress project development through 2024

| Milestone 1Q24               | 2Q24           | 3Q24 | 4Q24                  | 2025           | 2026   | 2027 |      |
|------------------------------|----------------|------|-----------------------|----------------|--|------|------|
| DFS                          | and the second |      |                       |                | and the second s |      |      |
| Debt Financing               |                |      |                       |                |  |      |      |
| Strategic Partner            |                |      |                       | and the second |  |      |      |
| Final Investment Decision    |                |      | and the second second |                |  |      | ment |
| Project Development          |                |      |                       |                |  |      |      |
| First Production             |                |      |                       |                |  |      |      |
| Assess Stage Two Development |                |      |                       |                |  |      |      |



# For more information contact

Adam Kiley CEO +61 8 9200 3428 akiley@frontierhe.com

ASX: FHE OTCQB: FRHYF frontierhe.com



# Appendix 1 - Reserve Capacity underpins battery development

Unique to WA and a major driver in development strategy

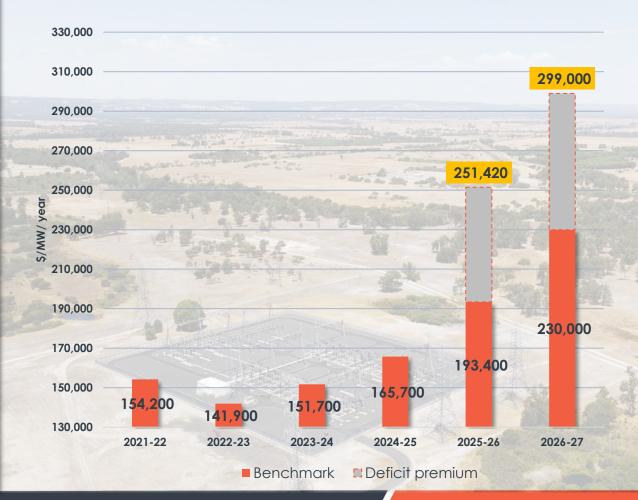
# Reserve Capacity Mechanism (RCM)

- RCM is unique to WA, not available in the Eastern States / NEM
- Under the RCM, generators receive annual payments per MW, based on a Reserve Capacity Price (RCP) determined by the Regulator
  - New generators can lock in the RCP for five years
- RCPs have increased strongly over the last five years
  - When the market is in deficit an additional 30% is applied to the RCP
  - AMEO has forecast a deficit moving forward

# Battery the new reference technology

- In Dec 2023<sup>2</sup>, the WA Government selected a 4-hour battery with a 330kV connection as the future benchmark technology
- Potential to extend lock in period from 5 years to 10 years
  - Provides a fixed guaranteed income

# **Reserve Capacity Payment<sup>1</sup>**



1 - https://www.erawa.com.au/cproot/23833/2/2024-benchmark-reserve-capacity-price-for-the-202627-capacity-year.PDF 2 - https://www.wa.gov.au/media/43698/download?inline

# Appendix 2 - Battery enables revenue uplift through arbitrage

Opportunity to increase received electricity price, while minimising risk of curtailment

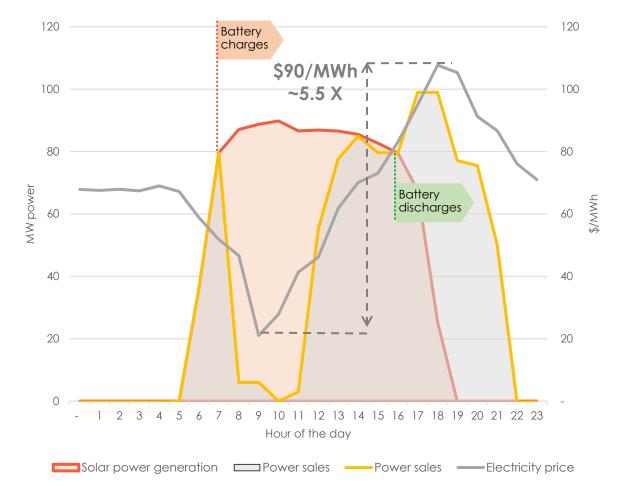
# Electricity price follows supply and demand

- WA has the most sunlight hours in the country and one of the highest installation rates of rooftop solar (PV) at 38%<sup>1</sup>
  - Expected to increase to ~ 50% by 2030
- Price dips during the day when solar generation peaks
- In the afternoon / evening, demand increases while solar generation declines, causing price to rise sharply

# Battery allows for revenue uplift and reduces curtailment risk

- The integration of a battery allows electricity sales to be 'shifted'- i.e. electricity is stored in low price periods and sold in high price periods
- 80MW four-hour battery sized to enable substantial shift of electricity sales
  - Solar energy sales early morning shoulder period
  - Battery charge morning to midday
  - Battery discharge combined with solar sales early evening (during peak electricity demand)

# Electricity revenue uplift example - January 2023



1 - https://aemo.com.au/-/media/files/electricity/wem/planning\_and\_forecasting/esoo/2023/

# Appendix 3 - Large Generation Certificates (LGCs) beyond 2030

The Federal Government has released a consultation paper on green certificates to replace LGCs beyond 2030

# Renewable Energy Guarantee of Origin (REGO) certificates: proposed design

- Federal Government is consulting on a replacement for LGCs (which are due to expire in 2030). REGOs could be introduced by 2024 as an alternative green certificate, to sit alongside the LGC scheme (and eventually replace it).
- A renewable MWh can only create one type of certificate, not both, to avoid double-counting
- Below-baseline generation would be eligible to make REGOs (i.e. a significant amount of Australia's hydro generation would become eligible)
- Small-scale systems, offshore systems, and systems that export power overseas directly would all be eligible, as would storage (if it surrenders a REGO to show it charged from renewable energy)
- All demand for REGOs will be voluntary

# Key attributes of each certificate

- Existing attributes of LGCs (fuel source, year of creation, state, creator, certificate owner)
- Time of generation (hour + date)
- Grid location (e.g. NEM, SWIS, DKIS, off-grid)
- Surrenderer and reason for surrender (e.g. to create a hydrogen Guarantee of Origin certificate, or to create a storage REGO certificate)
- Power station commissioning date

These additional attributes could allow for price differentiation of REGOs, with some buyers putting a premium on new plants (to demonstrate additionality) or seeking REGOs to match the time and location of their power use (24/7 CFE)



# Appendix 3A – Price forecasts and revenue – Electricity<sup>1</sup>

# Battery price and revenue

- The Base Case battery price forecast is ~\$150/MWh (close to Spot), with the Stress Test scenario ~\$120/MWh.
  - Early volatility due to adding battery storage >1GW by 2027 and rolling off ~1.3GW coal fired generation by 2029<sup>2</sup>
  - Revenue around \$23m per annum (nominal average)

## Solar price and revenue

- The solar price forecast captures only hours in which the battery is not being charged, i.e. very early morning before charging commences, and late afternoon once the battery has been charged and solar energy is again available for dispatch.
  - During low and negative price intervals in the morning and mid-day, the battery is charged and no solar power is dispatched to the grid. These intervals are excluded.
- The Base Case and Stress Test scenarios are above and below the Spot of \$75/MWh, respectively, with the Base Case showing near term price strength due to supply demand mismatch
  - Revenue around \$15m per annum (nominal average)

 These forecasts were developed by Aurora with specific reference to the Project's location in the grid, size of the solar farm and storage capacity of the battery.
 https://aemo.com.au/-/media/files/electricity/wem/planning\_and\_forecasting/esoo/2023/



# Appendix 3B – Price forecasts and revenue – RCP and LGC

# **RCP price and revenue**

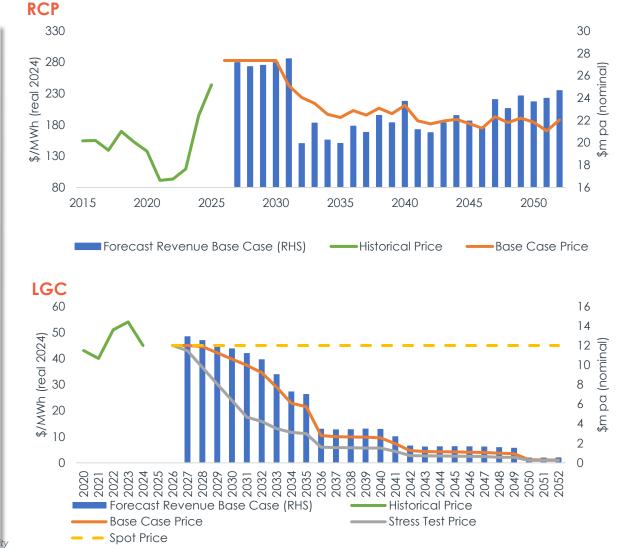
- The BRCP has been set at \$230,000 per MW for 2026/27<sup>1</sup>
  - As the market is forecast to be in deficit, an additional 30% premium is applied
  - New generators can lock this in for 5 years<sup>2</sup>
- Forecast beyond 2031 is provided by Aurora based on its wholistic model of the WEM, taking into account supply / demand and the cost to build and run new capacity
  - RCP Revenue averages \$23m (nominal)

# LGC price and revenue

- LGCs have fulfilled their purpose, and could be replaced by a Guarantee of Origin Scheme from 2030.
- Despite this, LGC prices have remained strong, with Spot \$45 and range between \$40 and \$68 over the past three years.
- A carbon fungibility scheme could result in LGC prices of \$8 35 in the 2030s, and this informs the Base Case.
  - Revenue averages \$5m, declining from an initial level of ~\$12m post 2030



2 - https://www.aemo.com.au/energy-systems/electricity/wholesale-electricity-market-wem/wa-reserve-capacity-mechanism/certification-of-reserve-capacity-market-wem/wa-reserve-capacity-mechanism/certification-of-reserve-capacity-market-wem/wa-reserve-capacity-mechanism/certification-of-reserve-capacity-market-wem/wa-reserve-capacity-mechanism/certification-of-reserve-capacity-mechanism/certification-of-reserve-capacity-market-wem/wa-reserve-capacity-mechanism/certification-of-reserve-capa



# Appendix 4 - The WEM is a tenth of the size of the NEM, and operates with a capacity market alongside the day-ahead and balancing wholesale markets

|                                    | WEM  | NEM  |  |
|------------------------------------|--|--|--|
| Installed capacity (MW)            | ~7GW<br>(+2GW rooftop solar)   | >50GW<br>(+20GW of rooftop solar)  |  |
| Annual operational demand          | ~18TWh   | ~190 TWh   |  |
| Peak operational demand            | 4GW  | 36GW   |  |
| Market structure                   | <ul> <li>Separate energy + capacity</li> <li>Day ahead market and<br/>balancing market</li> <li>Pooled</li> <li>Physical</li> <li>Only operates in the SWIS</li> </ul> | <ul> <li>Regional energy<br/>only</li> <li>Spot market only</li> <li>Pooled</li> <li>Financial</li> <li>5 state network</li> </ul> |  |
| Maximum spot price                 | \$738/MWh  | \$16,600/MWh in FY24   |  |
| Regulatory bodies                  | <ul> <li>Economic Regulation Authority<br/>(ERA)</li> <li>Energy Policy WA</li> </ul>  | • AER<br>• AEMC  |  |
| Market operator                    | AEMO   | AEMO   |  |
| Largest three generation companies | Synergy (state-owned), Alinta,<br>Bluewaters (JV)  | AGL, Origin Energy,<br>Stanwell (state-owned)  |  |



Sources: AEMO, Western Power, Aurora Energy Research, Energy Policy WA, ERA

# Appendix 5 - Frontier's key advantage – grid connections at a central node

Batteries

Frontier's high quality, unconstrained connection onto the network enables uncurtailed renewable energy sales

- The SWIS is the major electricity network in WA
  - Peak operating demand 4GW
- WA Government plans to expand the grid, however most upgrades will not occur until post 2030
  - Excluding approvals, permitting and development etc which can take a further +6 yrs

# Frontier can potentially access two grid connections on the large voltage line (330kV) – low constraint and surrounded by major industrial consumers

• An independent report<sup>1</sup> highlighted that before 2030, only Landwehr Terminal (Project location) can accommodate new large-scale renewable generation of 250MW or greater

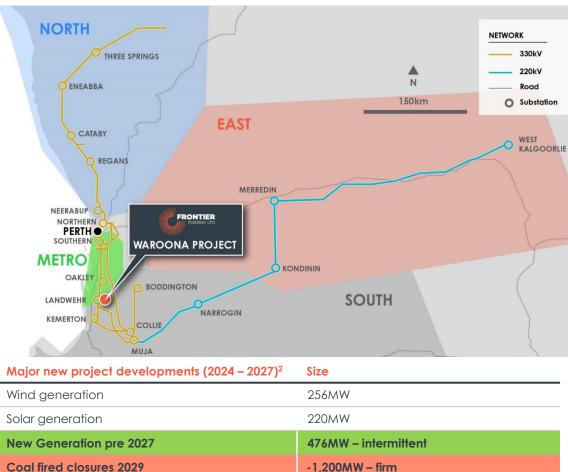
# AEMO's 2023 ESOO report<sup>2</sup> forecasts a decade of deficits

- Major capacity deficit forecast: > 1.0GW by 2027 & 4.0GW by 2032
- AEMO forecasts demand increase of 78% to 220% over 10 years

# How will the gap be filled?

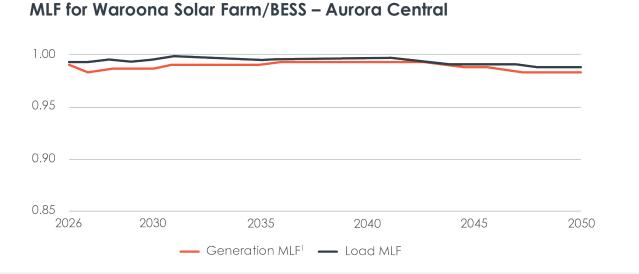
- Reliance on batteries, to be charged with excess PV solar
- New utility scale renewable generation falls significantly short of replacing coal fired generation planned to be closed by 2029

1 - ASX - 2 November 2023; 2 - https://aemo.com.au/-/media/files/electricity/wem/planning\_and\_forecasting/esoo



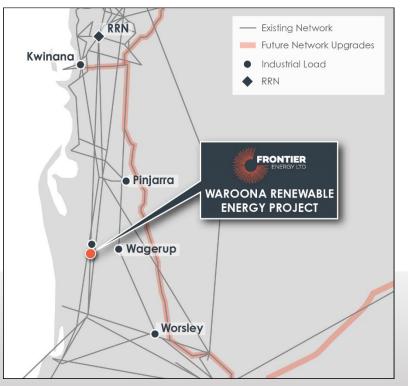
1,335MW – 4 hour discharge

# Appendix 6 - Waroona Solar Farm/BESS is expected to see robust MLFs over the forecast horizon, due to its well-connected surrounding network and adjacency to the industrial load



- Waroona Solar Farm/BESS' generation MLFs are expected to remain highly robust over the forecast horizon, residing in the 0.984 0.993 range, so are the Waroona BESS' load MLFs, residing in the range of 0.987 0.999.
- Key factors that result in Waroona Solar Farm/BESS' robust MLFs include:
  - Being adjacent to the industry load centres, particularly the Wagerup alumina production facility, means the Waroona Solar Farm will make minimal contribution to the network loss and therefore receive high generation MLFs
  - The transmission lines connecting Waroona Solar Farm to the RRN and industrial loads are at high voltage (330 kV), which makes the Waroona Solar Farm's MLFs robust

Central scenario WA network augmentations



- The low density of solar farms around Waroona area means the Waroona Solar Farm usually generates at times when the network congestion is low
- Future network upgrades throughout the 2030s further improves the network robustness around Waroona Solar Farm/BESS, resulting in continuously robust generation and load MLFs

### Renewable energy solutions for Western Australia

1) Waroona Solar Farm and Waroona BESS share the same generation MLFs Source: Aurora Energy Research

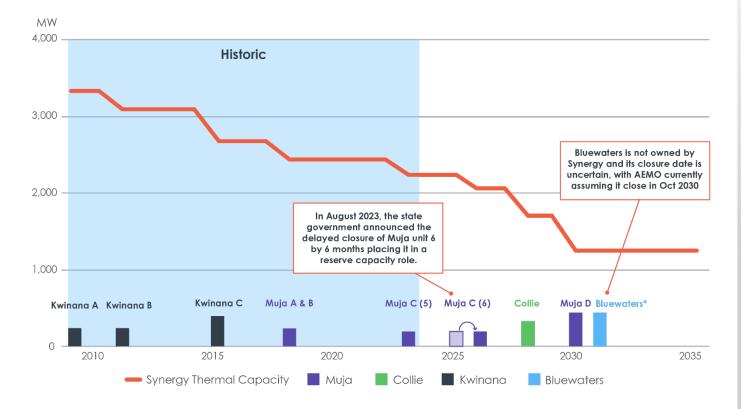
# Appendix 7 - Renewable and battery projects for the SWIS

WA renewable energy projects with announced development plans<sup>1</sup> – 476MW new generation capacity so far announced, while 1,200MW to be closed by 2029. 1,335MW battery storage is planned to firm up renewables

| Project   | Forecast production | Size   | Owner         |  |
|---|---------------------|--|---------------|--|
| Wind  |                     |  |               |  |
| Flat Rocks Wind Farm Stage 1  | FY2024              | 76MW   | Enel          |  |
| Flat Rocks Wind Farm Stage 2  | FY2026              | ~100MW   | Water Corp    |  |
| King Rocks Wind Farm  | FY2026              | ~150MW   | Synergy       |  |
| Total wind  |                     | 256MW  |               |  |
| Battery   |                     |  |               |  |
| Neoen Battery Stage 1   | FY2025              | 200MW/800MWh                                   | Neoen         |  |
| Collie Big Battery  | FY2026              | 500MW/2000MWh                                  | Synergy       |  |
| Kwinana Big Battery Stage 2   | FY2025              | 200MW/800MWh                                   | Synergy       |  |
| Neoen Muchea BESS   |                     | 200MW/400MWh                                   | Neoen         |  |
| Alinta Wagerup BESS2  | FY2025              | 100MW/200MWh                                   | Alinta        |  |
| Total Battery   |                     | 1,200MW/4,800                                  |               |  |
| Mixed technology  |                     |  |               |  |
| Cunderdin Solar Farm and BESS   | FY2024              | 100MW - 55MW/220MWh                            | GPG (Naturgy) |  |
| Waroona - Stage 1 Solar Farm and BESS   | FY2026              | 120MW - 80MW/320MW                             | Frontier      |  |
| Mixed Total   |                     | 220MW – 135/540MW                              |               |  |
| Total New Energy Development projects by 2027   |                     | 476MW (wind and solar) + 1,335/5,340 (battery) |               |  |
| Planned closures of coal fired power stations   | 2029                | -1,200MW                                       |               |  |
| - https://aemo.com.au/-/media/files/electricity/wem/planning_and_forecasting/esoo/2023/ |                     |  |               |  |

# Appendix 8 - Synergy has more than 2GW of thermal capacity today, but has announced closure dates for each coal unit

Synergy coal and gas plant capacity, and coal plant retirements<sup>1</sup>



1) Coal is likely to retire at the end of the capacity year (September 30th) to meet capacity obligations. In Aurora's modelling, these retirements are implemented on an annual basis by financial year so the effective implemented retirement date is June 30th.

2) Based on 22 March 2023 Reserve Capacity Mechanism Review Working Group discussion paper; Bluewaters would need to operate at a 50% load factor or less, or close one unit, to remain eligible for capacity credits based on a threshold of 4,000tCO2-e per MW of capacity. Sources: EPWA, AEMO, WA government

## Coal closure schedule

- State-owned Synergy is the largest participant in the WEM, and is expected to decarbonise in line with state government objectives (80% reduction in emissions from 2020 to 2030), with coal unit closures announced with several years' notice.
- In August 2023, the state government announced that Muja unit 6 will have a 6 month delay to its closure date to supply capacity over the 2024-25 summer. It is expected to only operate in a reserve capacity role requiring prior notice from AEMO to synchronise with the grid.
- Under the Reserve Capacity Mechanism review, carbon emissions are expected to affect a plant's accreditation of capacity credits. Under the prosed implementation plan, coal assets could see zero accredited capacity from the 2029 capacity year<sup>2</sup>
- The WA Government has announced that Synergy will spend \$3.8b on replacement capacity, and has committed to not build any new gas-fired power plants after 2030
- Bluewaters, the privately-owned 434MW coal-fired power station, is yet to announce a closure date. However, Sumitomo (a half-owner) has written down its share of the plant's value to \$0

# Appendix 9 - Stage One – 120MW Solar/80MW 4-hour Battery

Superior and stable returns, increased funding optionality and lower development risk compared to alternatives. Frontier continues to assess opportunities, including in hydrogen, for future expansion

|                                  | Solar (only)  | Solar/BESS   | Hydrogen  |
|----------------------------------|---|--|---|
| Market (price) Risk              | High<br>• Large rooftop solar (PV) penetration means risk of<br>low solar price / curtailment<br>• Limited reserve capacity (10% or ~\$4m)  | Low<br>• Reserve capacity – 100% (\$24m + \$4m) locked in<br>• Battery provides opportunity to 'shift' energy<br>generated at low price periods to peak periods<br>• WA peak energy prices at all time highs | High <ul> <li>Hydrogen market still in its infancy</li> <li>Currently requires the development of our own offtake (e.g. a dual fuel peaking power plant)</li> </ul>   |
| Technical Risk                   | Low <ul> <li>Mature and well-established technology</li> </ul>  | <ul> <li>Low/medium <ul> <li>Industry is rapidly maturing in WA</li> </ul> </li> <li>High efficiency to store and release solar electricity <ul> <li>(~85%)</li> </ul> </li> </ul>                           | <ul> <li>High</li> <li>Largest electrolyser in Australia currently 10MW, whereas 'right size' for WREP would be ~72MW</li> <li>Relatively low efficiency to convert solar electricity to H<sub>2</sub> and back into usable energy</li> </ul> |
| Funding Risk                     | High <ul> <li>Lowest capital investment; however,</li> <li>Without a Power Purchase Agreement (PPA), debt leverage likely to be limited</li> </ul>  | Low<br>• Medium capital investment<br>• High debt leverage potential due to substantial<br>fixed Reserve Capacity Payments   | <ul> <li>High</li> <li>Largest capital investment, as investment in own offtake (e.g. peaking power plant) is required</li> <li>Large Government support required to attract debt</li> </ul>  |
| Overall assessment /<br>Comments | <ul> <li>Lowest capital and technical risk, however revenue<br/>not maximised due to low Reserve Capacity<br/>Payment and curtailment risk</li> <li>No PPA = minimal fixed returns, lowering fundability</li> </ul> | <ul> <li>Best economic returns and technical risk</li> <li>~40- 50% fixed income (RCP) = increased leverage</li> <li>Arbitrage exposure to energy price upside</li> <li>DFS – February 2024</li> </ul>       | <ul> <li>Future market with excellent potential however still<br/>in its infancy</li> <li>Existing infrastructure and Stage One development<br/>gives FHE major advantage to be first mover in the<br/>future</li> </ul>                      |