

# Building a near term, low cost green hydrogen company

Australian Non-Deal Roadshow



ASX: FHE  
August 2022

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## PRE-FEASIBILITY STUDY

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# The global green energy transition



## The global push towards green energy solutions

- Reduce emissions targets
  - *Net zero by 2050*
- Greater emphasis on nationalised energy capacity
  - *Russian-Ukraine conflict*
- Cost of renewable energy has dropped compared to hydrocarbons
  - *Price competitive*



## The Australian context

- Change in Federal Government has accelerated the transition
  - *43% reduction in emission targets by 2030<sup>1</sup>*
- Increased funding available for renewable energy solutions
  - *CEFC & ARENA*
  - *LGC (Carbon Credit Eq.)*
- Australia lags the developed world despite some of the best conditions for renewable energy



## Hydrogen is the solution for renewable storage

- Battery storage remains expensive and limited capacity
- Grid power used for EV has mixed energy sources
  - *Mainly hydrocarbon*
- Renewable energy generally needs to be consumed when produced
  - *Sun doesn't always shine*
  - *Wind doesn't always blow*
  - *Water doesn't always flow*

**Hydrogen is a readily available and proven solution to store renewable energy for consumption when suitable**

<sup>1</sup> - <https://www.pm.gov.au/media/albanese-government-passes-climate-change-bill-house-representatives>



# Hydrogen is critical for a zero carbon future



## What is hydrogen?

- Well understood technology
- Multiple colours depending on energy source
  - Grey – Fossil fuels
  - Green – Renewables
  - Blue – Carbon capture
  - Pink – Nuclear
- Demand for all hydrogen (any colour) in 2020 was 90MT
  - Majority grey (900Mt CO<sub>2</sub> emissions)<sup>1</sup>



## Why has hydrogen not been considered until now?

- Traditional fuel sources were readily available (coal/O&G)
- Global demand for energy increasing
- Shift in demand for low emission, renewable energy  
Significant reduction in cost
  - Cost of renewable energy has reduced
  - Cost to convert into hydrogen is forecast to fall further
- Green hydrogen market is forecast to grow from \$2.1Bn in 2021 to \$135.7Bn 2031<sup>2</sup>



## Who are the major players and what are the barriers to entry?

- Major hydrocarbon producers are transitioning into hydrogen
  - Offset current strategy
  - Demanded by investors
- Major investment required for associated infrastructure (storage, ports, desalination)
  - Requires significant initial production to justify cost
- Limited number of projects with access to existing infrastructure and market for sales (ie: not remote)



# Frontier Energy – Bristol Springs Hydrogen Project

Existing infrastructure surrounding the project puts Frontier in a class of its own in the junior sector

## Bristol Springs Project (BSP)

- 120km south of Perth surrounded by major infrastructure critical for green hydrogen
  - Reduces the initial capital requirement, operating expense and ability to scale production
  - Surrounded by likely first movers/adopters of green hydrogen
- Solar energy to be the renewable energy solution given favourable conditions

## PFS outlines one of Australia's lowest cost, near term green hydrogen projects

- Low Cost – A\$2.83/kg of hydrogen (inclusive of capital costs) with further reduction likely
  - Current forecast average costs to produce green hydrogen between \$6 to \$9 per kg<sup>2</sup>
- Production - 4.4Mkg pa with potential to increase significantly in the future

## Significant growth potential outside of Stage One development

- Own the land (846ha = 438MW) – Simplifies development (approvals timeline & native title)
  - Stage One - 114MW (195ha land size)
- Additional opportunities being assessed within the greater SW WA region

## Government support and funding

- Federal and State Governments driving the development of a green hydrogen industry
- Existing funding (loans and grant) indicate minimal dilution with favourable terms

## Capital Structure

**270.7m<sup>1</sup>**

Shares on issue

**33.4m**

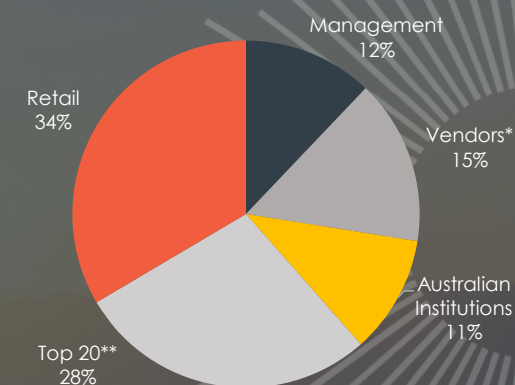
Options

**\$75m**

Market Cap  
At \$0.28 / share

**~\$4.8m**

Cash  
June 22  
Exc. \$8m investment in MZN



\*Vendor is escrowed until March 2024

\*\*Outside of Management, Aust. Insto and Vendors



# Location, Location, Location

The major barrier for entry into the sector is access to associated infrastructure that can add millions to the capital cost. Frontier is strategically located in the heart of this infrastructure with capacity. This reduces the capital cost and enabling gradual expansion.

## Landwehr Terminal – SWIS (330kv Lines)

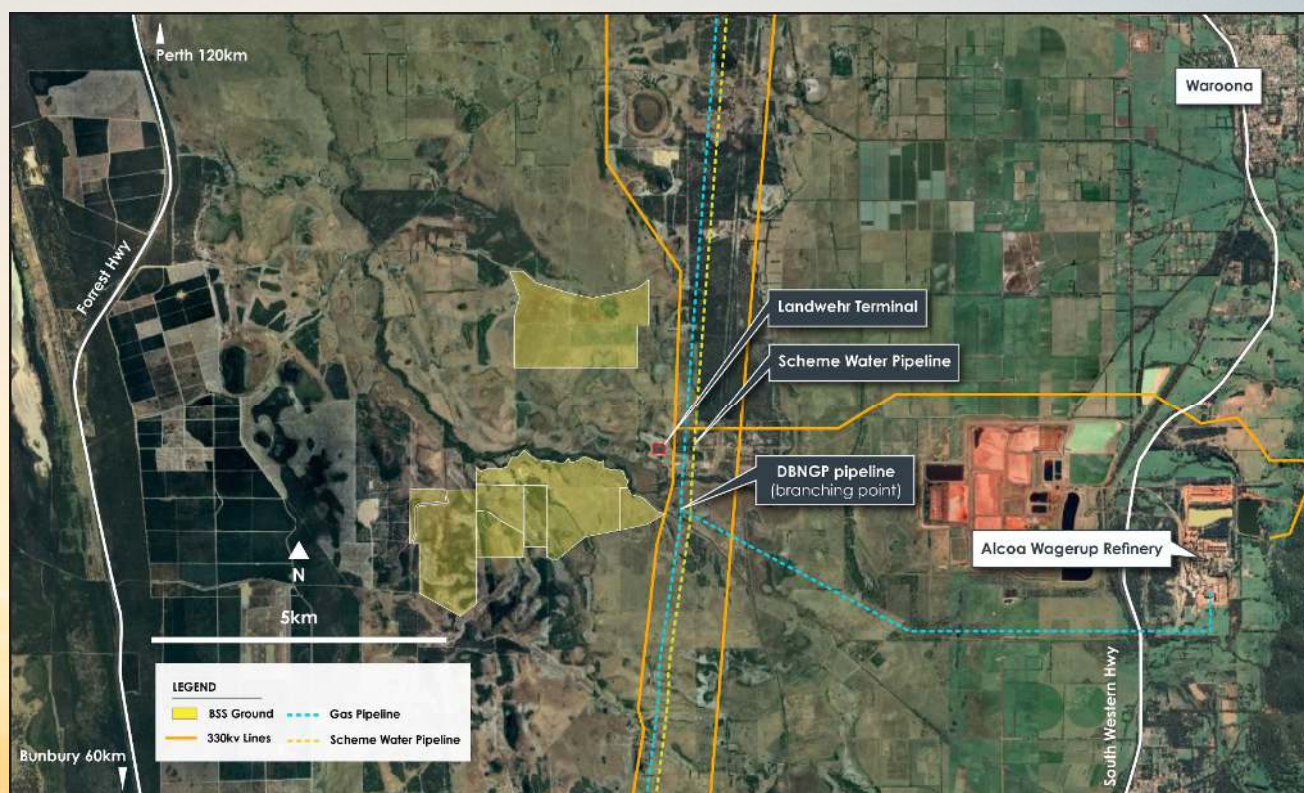
- Game changer for the Project compared to remote projects
- Secured access to a 'bay' - no further access available on existing infrastructure
- Provides additional revenue from overflow energy
- Acts as an effective battery
  - Major capital saving and greater flexibility

## Water access

- Water is essential for green ~9L for 1kg of hydrogen
- Multiple water options available including scheme water - pipeline <1km from site
- Avoids desalination – major cost and environmental approvals

## Local skilled workforce with proximity

- 8km to Waroona, 60km to Bunbury, 120km from Perth
  - Population - Waroona (4k), Bunbury (89k) & Perth (2.1m)





# First adopters of the industry all within close proximity



Whilst the hydrogen industry is still in its infancy there are a clear number of sectors that are likely to be “early adopters” to transition away from hydrocarbons. Major infrastructure regarding each of these industries are within 10 km of the Project



**Gas Terminal  
DBNGP pipeline**  
4km from BSS

10% hydrogen can  
go into the pipeline  
(currently 0%)



**Long Haulage  
Transportation**  
5km from Forrest Hwy  
8km from SW Hwy

Cost comparable to  
diesel (today)



**Landwehr Terminal  
SWIS**  
3.5km from BSS

Energy storage for  
peak demand



**Existing Port  
Infrastructure**  
Bunbury port – 60km  
Kwinana Port – 85km  
Henderson Port – 95km

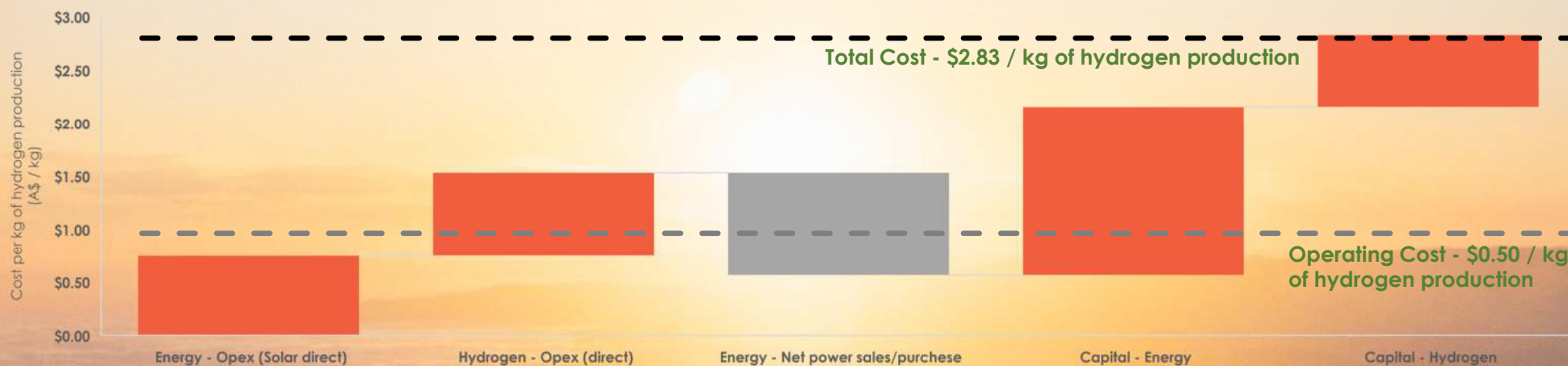
Long term export  
potential



# PFS outlines Low-Cost Green Hydrogen Production

## Bristol Springs Project - Stage One

- Stage One solar farm (114MW) - produce 4.4 million kilograms of green hydrogen pa
- Low estimated cost (inclusive of capital)<sup>1</sup> of \$2.83 per kilogram of hydrogen produced
  - Based on publicly available data, this is expected to place the Project as one of the lowest cost producers of green hydrogen in Australia
  - *Inclusive of total capital costs \$236.8m (\$166.3m solar, \$69.9m Hydrogen)*
- Potential to reduce costs further through optimisation, Behind-the-meter power supply and purchase refinement, reduce water costs and changing demand for Large Generating Certificates (LGC) (ie – carbon credits)
- Expansion Potential - Study identifies additional 438MW renewable energy to increase future green hydrogen expansion
  - *Expanded production is expected to be at lower costs compared to Stage One due to shared capital and economy of scales*



# Grid provides additional income and battery capacity

The Landwehr Terminal is the game changer for BSS compared to more remote hydrogen projects. The Terminal provides increased income (reduced opex) and flexibility given it acts as a battery

## Excess power sales

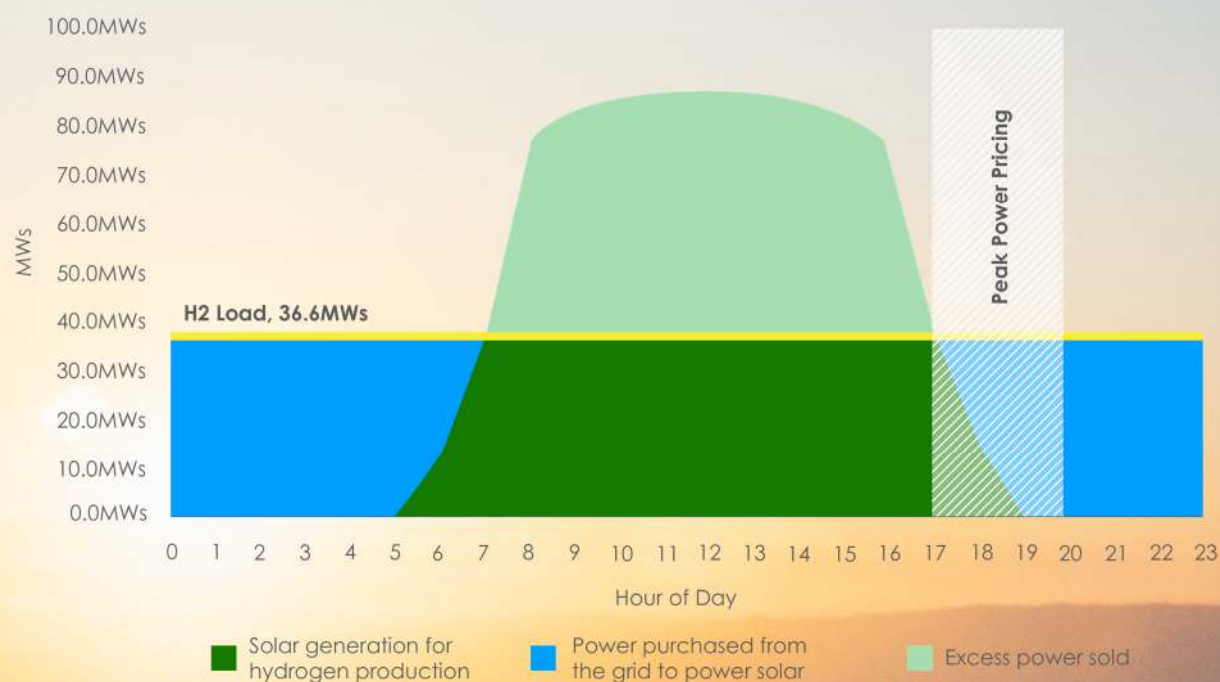
- During peak production excess power is sold into the grid
- LGC (carbon credit) remain with the Company

## Reserve capacity credits

- Electricity retailers are required to procure capacity credits in proportion to their share of the electricity load
- Twelve Peak SWIS Trading Intervals

## Replaces the requirement for a lithium ion battery

- Battery estimated cost \$1.9m / MW<sup>1</sup>
  - Limited life - 2 to 4 hrs
- Purchasing energy during offpeak times
  - Lower cost however service charges
- Retirement of LGC generated through solar production keeps hydrogen green



<sup>1</sup> - <https://www.nrel.gov/docs/fy21osti/79236.pdf>. Exchange rates used 1.14 USD/AUD

# Government at all levels to assist in future project funding



## Federal

- Change in Government has accelerated decarbonisation strategy
- New legislation
  - Emissions reduce by 43% (below 2005 levels) by 2030 & achieve net zero by 2050
- Blending gas network
  - Reform the gas regulatory framework<sup>1</sup> to include hydrogen blends and renewable gases



## State

- Appointed a Minister for Hydrogen
- WA Targets by 2030:
  - WA's market share in global hydrogen exports is similar to its share in LNG today.
  - WA's gas pipelines and networks contain up to 10% renewable hydrogen blend
  - Renewable hydrogen is a large fuel source for transportation in regional WA (6.7Bn litres of diesel is imported into WA every year)



## Funding solutions

- Clean Energy Finance Corporation (CEFC) & Australian Renewable Energy Agency (ARENA)
  - Assist through government funding and grants
  - Major focus on hydrogen industry
- WA Government
  - \$3.8bn in new green power infrastructure replace coal
- Emergence of new ESG / climate focused funds

Targeting maximum leverage with minimum dilution

<sup>1</sup> – <https://www.energy.gov.au/government-priorities/energy-ministers/priorities/gas/gas-regulatory-framework-hydrogen-renewable-gases>



# WHY FRONTIER ENERGY?

## RENEWABLE ENERGY SOLUTION IN ONE OF AUSTRALIA'S FASTEST GROWING REGIONS

World-class supporting infrastructure for hydrogen production

Low operating and capital cost

Scalable production

Proven board with development & Government relationships

Robust market fundamentals with limited peers



## Milestones for 2022

**Pre-Feasibility Study**  
Completed 5 months post listing



**EPC Contractor (Solar) & Pre-FEED (Hydrogen)**



**Vertical Integration**  
Refuelling strategy  
Hydrogen technology



**Project Financing discussions commence**



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**ADDITIONAL  
INFORMATION**



# Appendix 1 - Directors



## Grant Davey – Non Executive Chair

Mr Davey is an entrepreneur with 30 years of senior management and operational experience in the development, construction and operation of precious metals, base metals, uranium and bulk commodities throughout the world.

He is currently a Director of Cradle Resources Limited (ASX: CXX) and Lotus Resources Limited (ASX: LOT) and is a member of the Australian Institute of Company Directors.



## Chris Bath – Executive Director

Mr Chris Bath is a Chartered Accountant and member of the Australian Institute of Company Directors, and has been CFO for companies listed on AIM, ASX and JSX.

Mr Bath is also a non-executive director of Cradle Resources Limited (ASX: CXX).



## Dixie Marshall – Non- Executive Director

Ms Marshall has more than 38 years' experience in media, advertising, politics, and communications across a range of platforms, including television, radio, newspapers, and digital. She has won awards for journalism, and more recently advertising.

She is the first woman Managing Director of Marketforce, WA's oldest advertising agency and previously worked from the Premier's Office for 6 years as the Director of Strategic Communications for the WA Government.

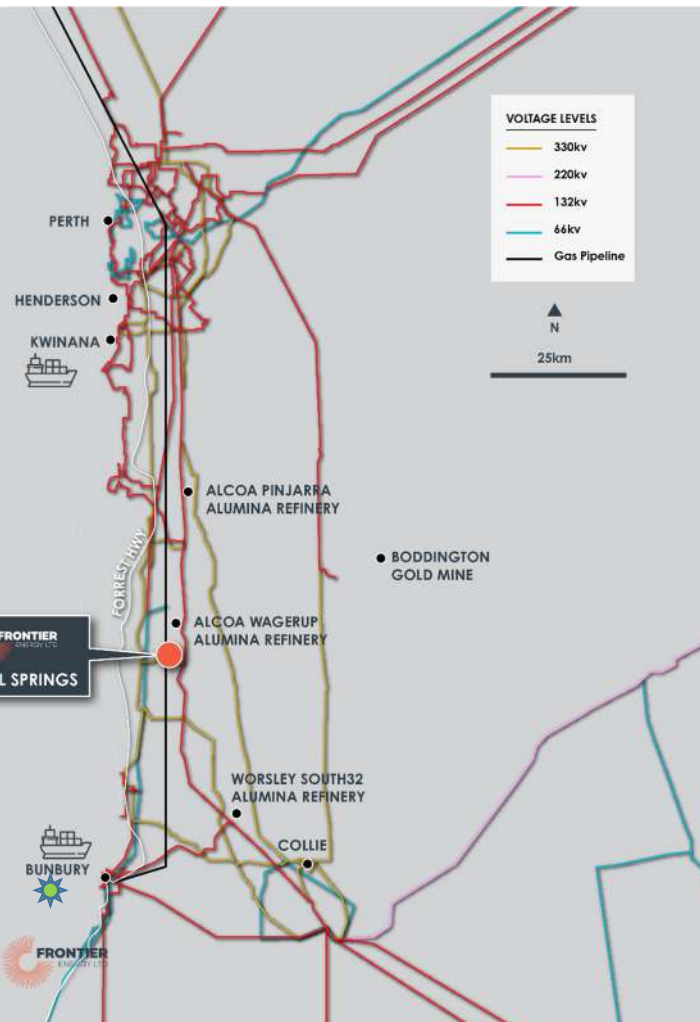


## Amanda Reid – Non- Executive Director

Ms Reid has a significant background in government relations providing advice to a wide cross section of companies and organisations for more than 15 years for two national government relations and corporate communications firms. This included five years as Partner at GRA Partners. She was also a senior adviser in previous WA State Governments with responsibility for managing a strategic communications unit.

She has held non-executive board positions across both private companies and not-for-profit organisations and is a member of the Australian Institute of Company Directors.

# Appendix 2 – What Is The SWIS



## SOUTH WEST INTERCONNECTED SYSTEM (SWIS)

- Kalbarri → Kalgoorlie → Albany (*Pilbara and Esperance are isolated*)
- Synergy → 1.1 million customers – 12,300 GWh & \$2.9B revenue (*Synergy annual report 2021*)

## SWIS ENERGY CONTRIBUTION<sup>1</sup>

<b>Renewable</b>	<b>32.3%</b>	<b>Hydrocarbons</b>	<b>67.7%</b>
• Solar (rooftop)	13.2%	• Gas	28.6%
• Solar (industrial)	1.8%	• Coal (Black)	39.1%
• Wind	16.8%		
• Bioenergy	0.5%		

## WA - ENERGY TARGET BY 2040

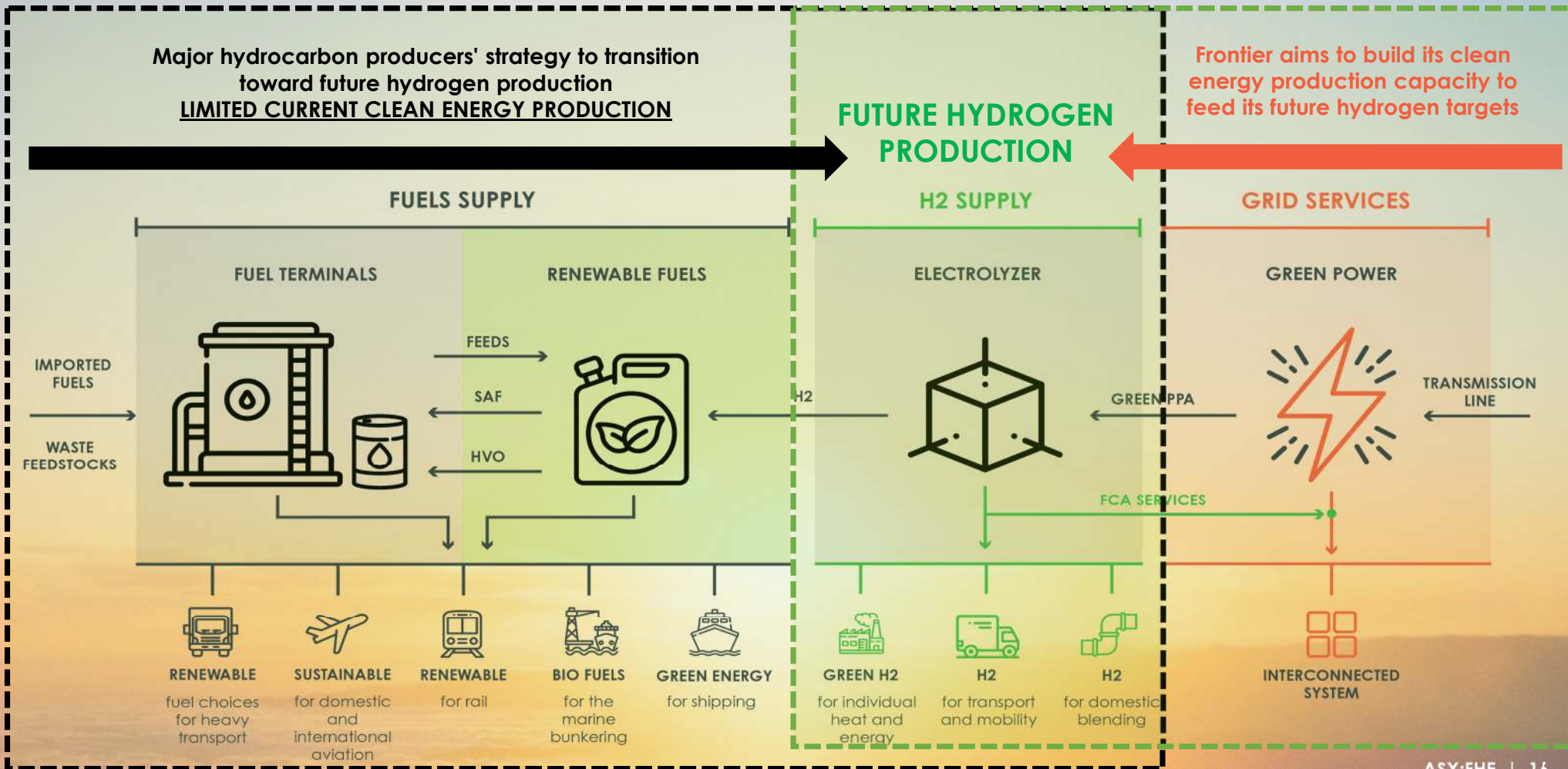
- +70% renewable energy
- +100% increase in energy consumption (under multiple forecast scenarios)

<sup>1</sup> - [www.brighterenergyfuture.wa.gov.au/whole-of-system-plan/](http://www.brighterenergyfuture.wa.gov.au/whole-of-system-plan/) (March 2021 to March 2022)

## BRISTOL SPRINGS PROJECT – LANDWEHR TERMINAL

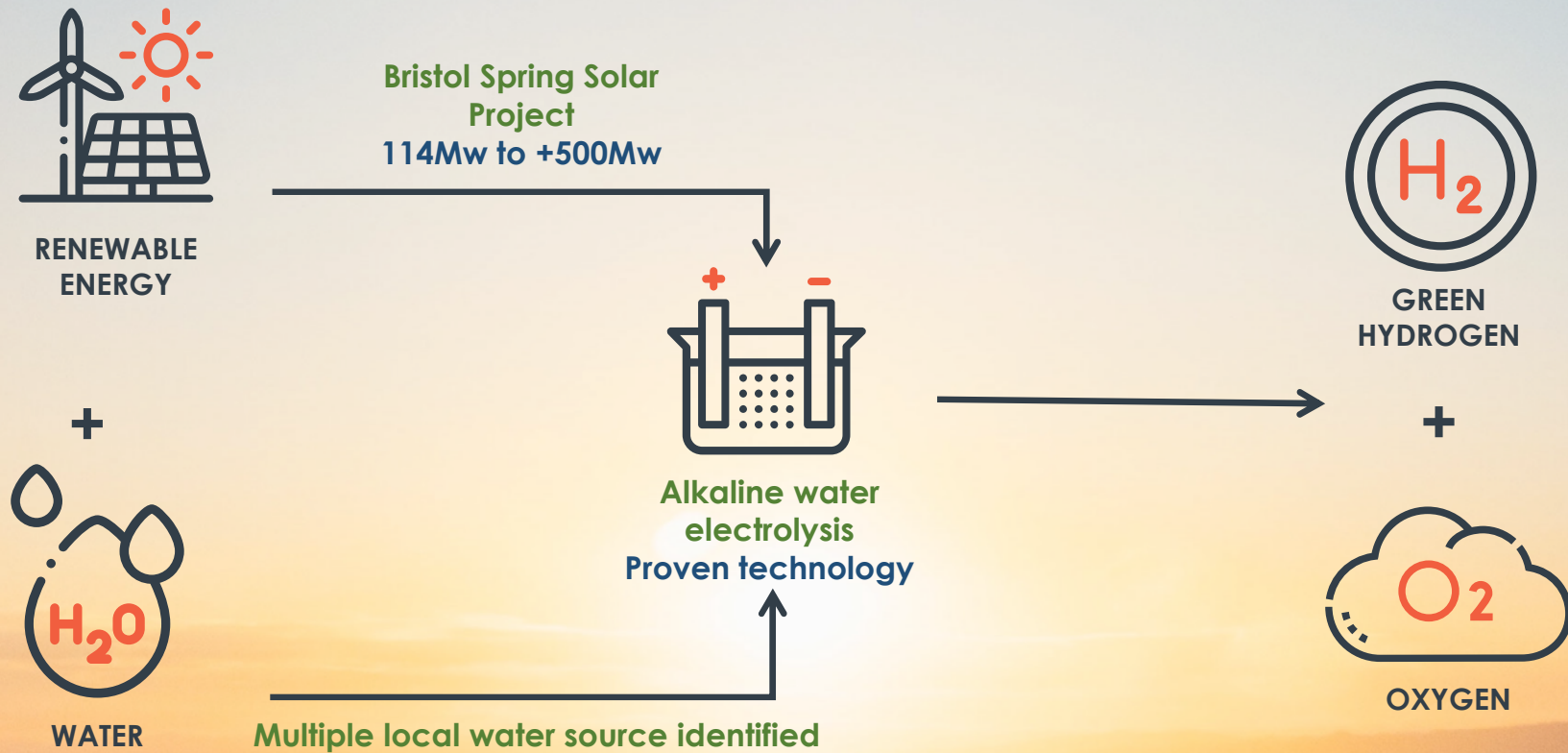
- Secured access to the Landwehr terminal including allocation of a bay
  - *no further access available on existing infrastructure*
- 330Kv lines – largest lines on the network
  - sufficient for current and future requirements

# Appendix 3 - What Global Energy Transition Looks Like





# Appendix 4 - Green Hydrogen Flowsheet



## Appendix 5 - Refuelling Station Strategy

- Frontier's long-term strategy is to become vertically integrated across the green hydrogen industry
- An order has been placed for a hydrogen refuelling station
  - *Prime location in Central Perth currently being finalised*
  - *One of the first hydrogen refuelling stations to be built and operating in Western Australia*
- Initial refuelling station has targeted completion by 2023
- Additional locations across Western Australia are being considered with the strategy to roll out "a hydrogen highway"

### Western Australia fuel strategy

- Strategy to reduce reliance on imports (diesel)
  - *WA currently imports 6.7 billion litres of diesel per annum<sup>1</sup>*
- Hydrogen has been identified as a key fuel to reduce this reliance
- Hydrogen is ideally suited for long haul transportation and mining industry



<sup>1</sup> 'Foreign oil dependence a 'massive vulnerability'', ABC News <https://www.abc.net.au/news/2022-03-21/calls-for-evs-to-wean-australia-off-foreign-oil-imports/100911930>