



Pilot  
Energy

# Delivering Clean Energy for the Mid West

Corporate Presentation

June 2022

PILOT ENERGY LIMITED  
ASX:PGY



# Compliance statements



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## Competent Persons Statement

This announcement contains information on conventional petroleum and carbon storage resources which is based on and fairly represents information and supporting documentation reviewed by Dr Xingjin Wang, a Petroleum Engineer with over 30 years’ experience and a Master in Petroleum Engineering from the University of New South Wales and a PhD in applied Geology from the University of New South Wales. Dr Wang is an active member of the SPE and PESA and is qualified in accordance with ASX listing rule 5.1. He is a former Director of Pilot Energy Ltd and has consented to the inclusion of this information in the form and context to which it appears.

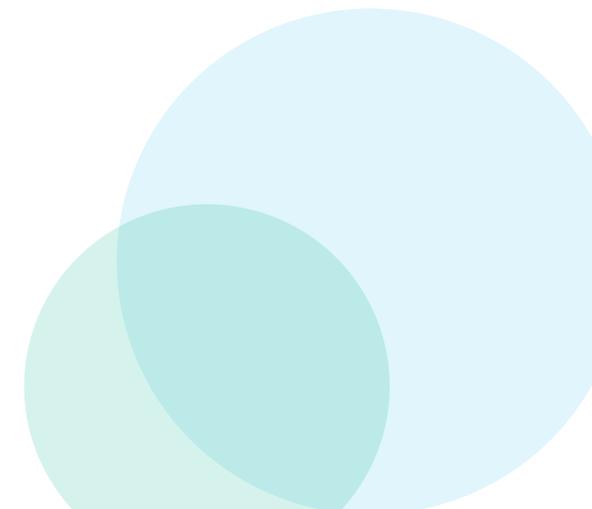
## Authorisation

This presentation has been authorized by the Chairman and Managing Director on behalf of the Board of Directors of Pilot Energy Limited

## Mid West WSP Feasibility Study Reporting Conditions

Pilot has agreed the following conditions with the ASX in relation to the Mid West WSP feasibility study:

1. The Company must continue to spend funds on its existing and proposed oil and gas projects.
2. The Company must disclose in each quarterly activities report until September 2022, the proportion of expenditure incurred in relation to exploration and evaluation on the oil and gas projects and the Mid West Wind and Solar Project.
3. The Company must disclose as separate line items in each quarterly activities report until September 2022, expenditure incurred in relation to exploration and evaluation on the oil and gas projects and the Mid West Wind and Solar Project.
4. Proceeding beyond the feasibility study stage of the Project (or incurring expenditure in excess of the budgeted feasibility expenditure in relation to the Project) constitutes a change in the nature and scale of the Company’s activities in terms of Listing Rule 11.1 and as such the Company will be required to comply with all of the requirements of Chapters 1 and 2 of the Listing Rules before it proceeds beyond the feasibility study or incurs expenditures in excess of the budgeted feasibility expenditure on the Project.

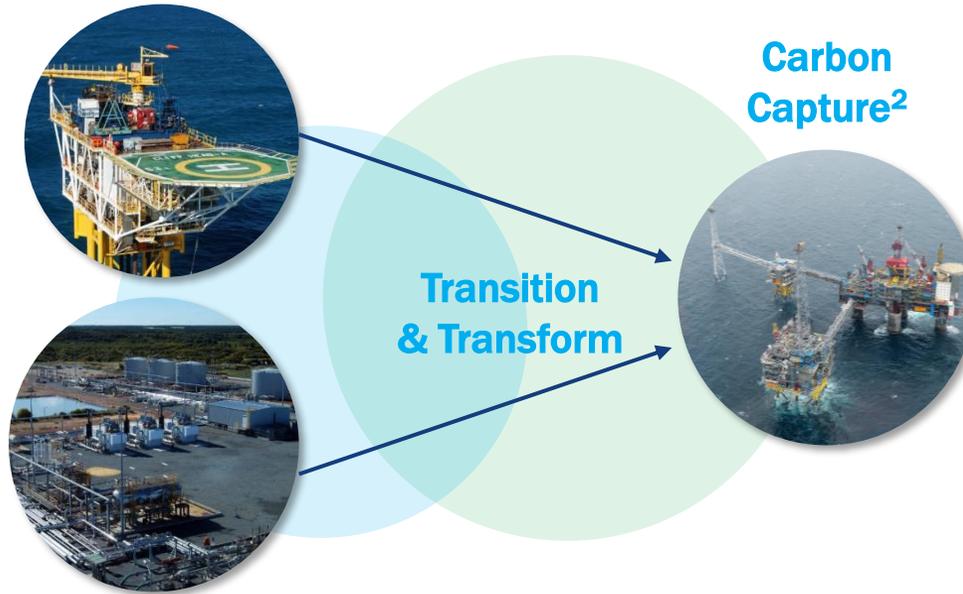


# Pilot's Clean Energy opportunity

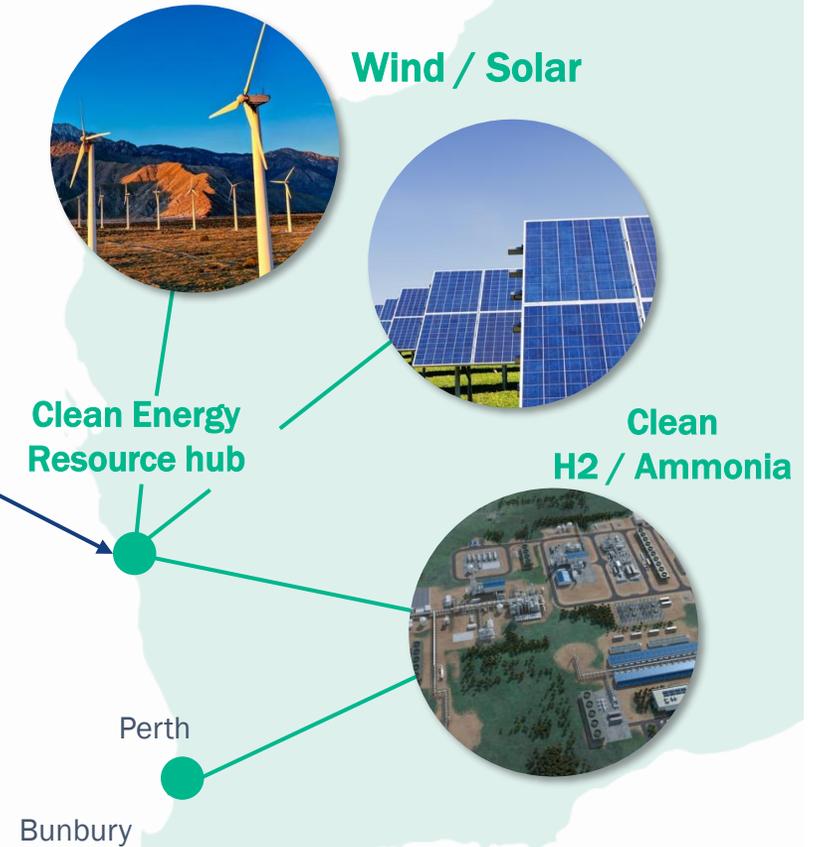
Transforming existing assets and established infrastructure to deliver competitive, low cost clean energy

## What we have

Existing Operations<sup>1</sup>  
&  
Established Infrastructure<sup>1</sup>



## What we're building



1: Cliff Head JV currently Triangle Energy (Global) Limited 78.25%/Pilot Energy 21.25%

2. Note: Image of Equinor Sleipner CCS Field. Credit - Øyvind Gravås and Bo B. Randulff

# Investment highlights



**Material world-class natural resources & renewables footprint**



**Ownership in key energy licenses & infrastructure**



**Leveraging existing operations into world-class clean energy projects**



**Feasibility studies confirm viability of significant CCS, Clean H2/Ammonia and renewable energy development**



**Significant near-term cash flow substantially funds development**



**Proven and experienced Board and Management team**

# The Energy Transition is underway



## Australia could take CCS stage by storm

Nation's geology offers abundant carbon storage

17 May 2022 2:34 GMT UPDATED 18 May 2022 12:42 GMT

By Amanda Battersby in Brisbane

Australia is well positioned to become a leading carbon, capture and storage (CCS) and carbon capture, storage and utilisation (CCUS) player on the global stage, according to Australian Petroleum Production & Exploration Association (APPEA) chairman, Ian Davies.



## Ammonia co-firing in thermal power plants could be worth US\$100 billion in 2050

18 May 2022



While hydrogen can be used in many sectors, its derivative, ammonia, has emerged as a key tool to provide flexible power generation and integrate variable renewables. Analysis by Wood Mackenzie, a Verisk business (Nasdaq:VRSK), shows that a 10% ammonia co-firing in global coal plants would translate to 200 million tonnes (Mt) of ammonia demand, a potential market of US\$100 billion by 2050.

## The West Australian

Energy | Oil & Gas | Politics | Renewable Energy

## McGowan reinforces backing for Scarborough gas project despite election's climate concerns

Sean Smith | The West Australian  
Wed, 25 May 2022 3:24PM | Comments

Sean Smith

WA Premier Mark McGowan has reinforced his backing for the huge Scarborough gas project in the face of growing calls since Saturday's change of Federal Government for the development to be blocked.

"Those approvals are all done," Mr McGowan said of Scarborough,

"There's significant offsets of the emissions from that project and obviously those issues will have to be worked through," he told journalists on Wednesday.

"But offsetting emissions and making sure we have carbon capture and storage are going to be important parts of what happens with gas projects in the future."



## 'Lesson learnt': CSIRO regrets not speaking up for CCS

Angela Macdonald-Smith and Mark Ludlow

May 18, 2022 - 6.18pm

The CSIRO admitted it should have been more vocal in advocating for the viability and need for carbon capture and storage, which is a widely accepted emission reduction technology in countries such as Norway.



Monday, May 30, 2022 Today's Paper Mind Games

## Labor victory revs up renewables with new policy promises

With a few key phrases in his acceptance speech, incoming Prime Minister Anthony Albanese signalled a major change coming for the green economy.

His declaration that Australia could "end the climate wars" and be a "renewable energy superpower" opens the door for a flood of money to pour into the clean energy sector, strategists say.



## WA to look at hydrogen power target

By Tim Dornin

Updated May 6 2022 - 11:31am, first published 11:29am



The West Australian government will investigate setting a target for the supply of energy fuelled by hydrogen.

This idea would set a target for retailers in the South West Interconnected System, WA's main electricity grid, to procure a certain percentage of electricity produced by renewable hydrogen.

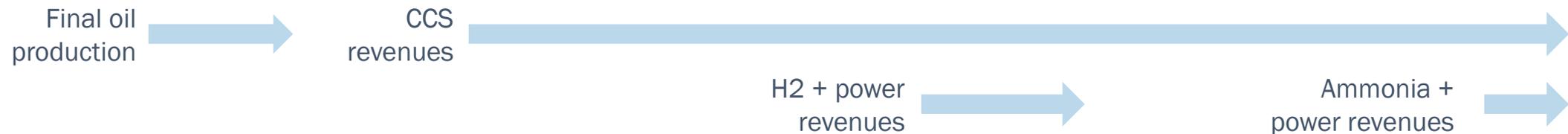
# Mid West Clean Energy Project value proposition

	Current	Stage 1 Carbon Capture		Stage 2 Blue H2		Stage 3 Clean Ammonia	
Timing	2022-2025	2024-2025	2026 onward	2025-2027		2027 onward	
Activity	Production	Conversion	CO2 Injection & storage	Construction	Production	Construction	Production

Operations



Market



# Carbon Capture and Storage (CCS) – the key enabler

Pilot's Mid West Clean Energy Project presents a material clean energy opportunity

**Substantial opportunity** – Cliff Head CCS project (PGY 57.5%/TEG 42.5%)\* alone is a substantial opportunity, but also provides foundation for future clean hydrogen and ammonia

**Unique position** – Cliff Head CCS a unique project unable to be replicated by others – only end-of-life offshore reservoir with Commonwealth regulatory pathway to CCS

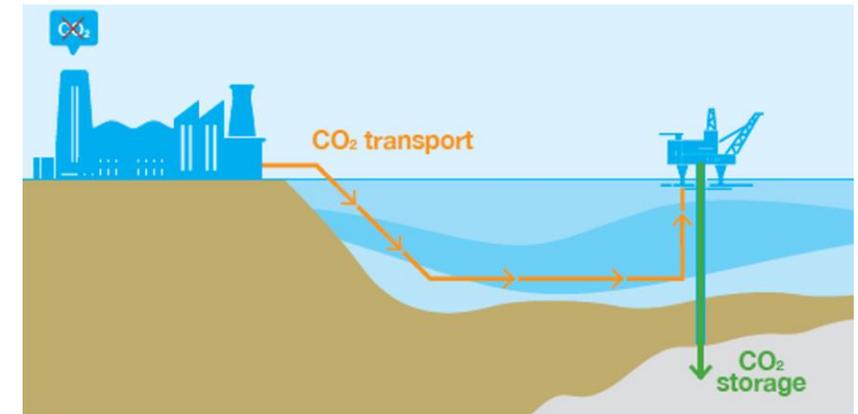
**Low Risk & Low Capex** – Straight-forward conversion using existing plant, pipelines, wells, platform and reservoir to facilitate CCS with significant expansion potential

**Organic funding** – Increased end-of-life oil production required for reservoir preparation - substantially funds conversion to CCS

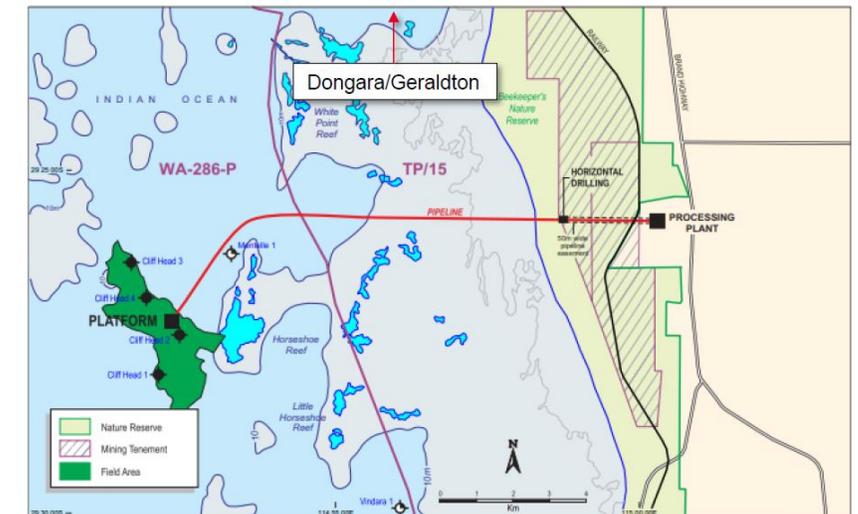
**High NPV impact** – Stage 1 CCS project delivers significant free cash flow and project NPV

**Ready, easily accessible market** – Up to 1.1 million tpa of easy-to-capture CO<sub>2</sub> emissions within 15-40km of Cliff Head CCS project onshore facilities

**Near-term term delivery** – Aiming for CCS start-up 2025/26 and further target to deliver first-to-market clean ammonia supply 2027



Cliff Head Field Layout



\* Refer footnote 1. on p8

# Near-term focus – Cliff Head CCS

CCS opportunity compelling and provides runway for producing low cost, clean hydrogen and ammonia

<b>Interest<sup>1</sup></b>	<ul style="list-style-type: none"> <li>Pilot = 57.5% &amp; operator</li> <li>Triangle Energy (Global) Limited = 42.5%</li> </ul>	
<b>Scale</b>	<ul style="list-style-type: none"> <li>Injection rate = 0.55Mtpa increasing to 1.1 Mtpa for 15+ years</li> <li>Total storage = Up to 15.8 Mt (3C)</li> <li>Additional upside case continuing 1.1 Mtpa through to 2050 under review</li> </ul>	
<b>Timing</b>	<ul style="list-style-type: none"> <li>FEED = 2022/2023</li> <li>FID = Mid 2023</li> <li>CCS Operations start-up = 2026</li> </ul>	
<b>Indicative Key Metrics<sup>2</sup> (100% project)</b>	<p><b>Capex</b></p> <ul style="list-style-type: none"> <li>Final Production capex = A\$13 million</li> <li>Initial facilities and well capex = A\$110 million (Commencing early 2025)</li> <li>Expansion capex = ~A\$60 million to increase injection to 1.1 Mtpa</li> <li>Net initial funding requirement after contribution from oil production cash flow reduces to circa A\$70 million (Pilot share ~\$40M)</li> </ul> <p><b>Cash Flow</b></p> <ul style="list-style-type: none"> <li>Pre-injection = ~A\$40 million cash flow contribution from oil production from 2023 through to 2025</li> <li>Start up initial 0.55 Mtpa = A\$15 – 18 million pa cash flow</li> <li>Projected 1.1 Mtpa from 2029 = A\$50 – 60 million pa cash flow</li> <li>Project cash flow = A\$500 - 550million</li> </ul> <p><b>Project Economics</b></p> <ul style="list-style-type: none"> <li>Project NPV (8%) = A\$110 – 210 million</li> <li>Project IRR = 30–40%</li> <li>Project Payback = ~4 years</li> <li>Estimated Opex per tonne = ~A\$9 – 16</li> <li>Range based on 0.55 Mtpa vs 1.1 Mtpa injection case</li> </ul>	



Location of Major CO2 emissions and sources to Cliff Head CCS Project

1. Current interests stated in the CH CCS Project are subject to the achievement of certain milestones (refer ASX Announcement dated 26 April 2022)

2. Any forward-looking statements (including projections) contained in the 'Indicate Key Metrics' are estimates only. The indicative estimates are based on inputs from the previously advised completed feasibility studies and internal assessment of operating expenditures. Such estimates are subject to market influences and contingent upon matters outside the control of Pilot Energy and therefore may not be realised in the future.

# Carbon Capture and Storage – a proven solution

CCS is the process of capturing and permanently storing carbon dioxide preventing release into the atmosphere

## Carbon capture and storage

- CCS involves capture of CO<sub>2</sub>, compressing it for transportation and injecting it deep into a rock formation for long-term storage
- Underground storage is usually at depths of 1km or more to be stored in depleted oil and gas reservoirs or deep saline aquifers
- Proven and well established process – first started in 1972 – with current installed capacity globally of ~40Mtpa<sup>1</sup>
- Large-scale projects deliverable in the very near-term utilising existing oil & gas pipelines, infrastructure, wells and reservoirs

1: Global CCS Institute Report, [Global Status of CCS 2021: CCS Accelerating to Net Zero](#)

## Methods for storing CO<sub>2</sub> in deep underground geological formations

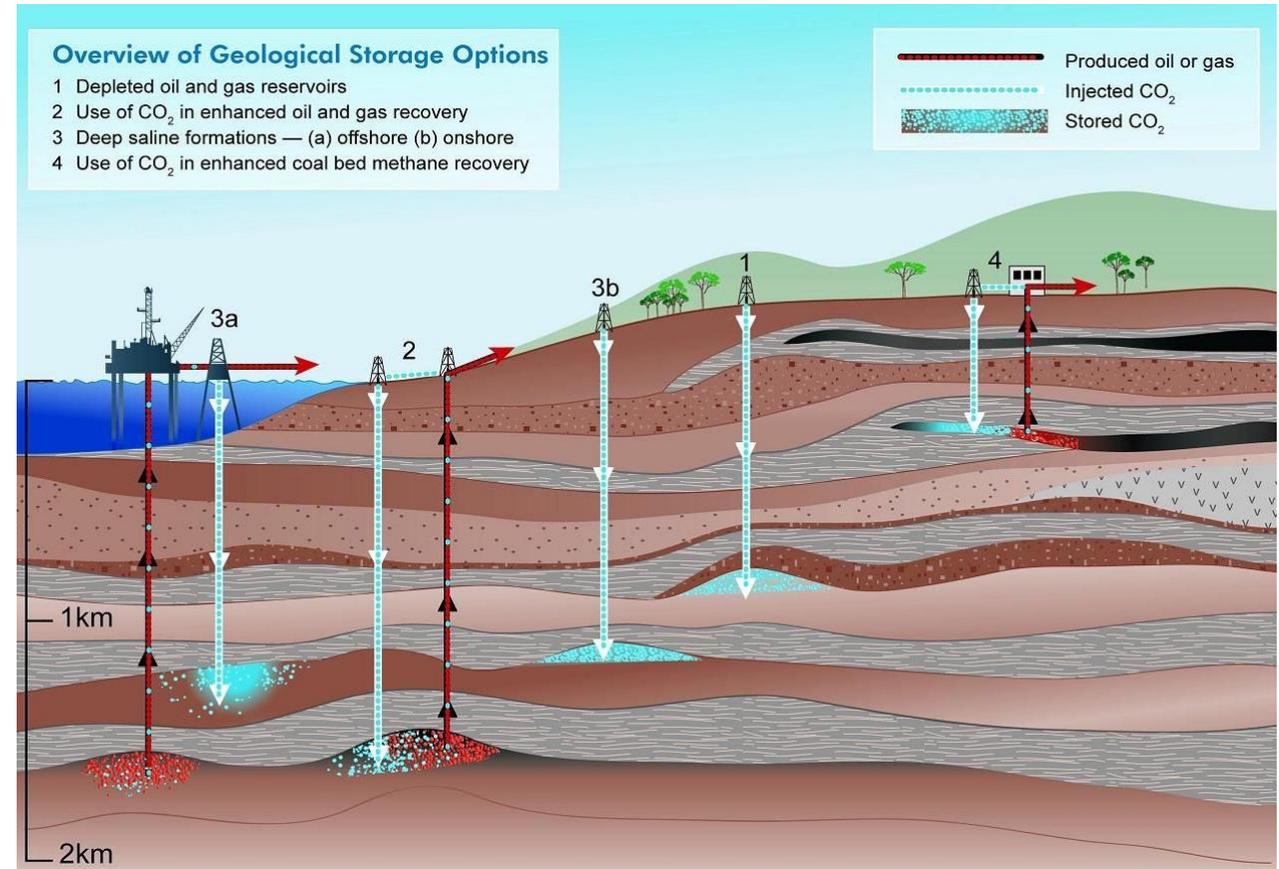


Image Source: IPCC Special Report on Carbon Dioxide Capture and Storage, United Nations Intergovernmental Panel on Climate Change

# CCS globally

CCS project capacity in development grew 48% from December 2020 to September 2021



- Commercial CCS facilities in operation and construction
- Commercial CCS facilities in development
- Pilot Energy

Capacity of CSS Facilities in Development (Mtpa)

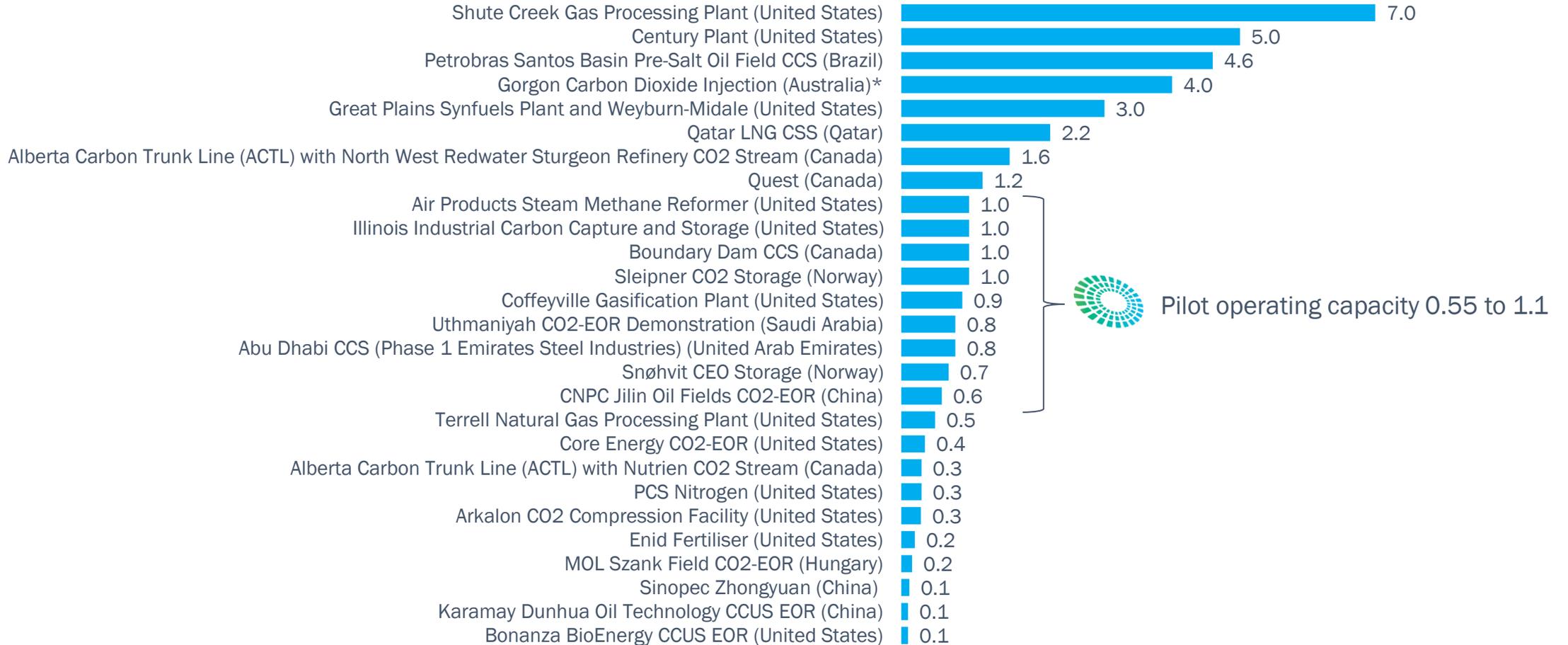


- Early development
- Advanced development
- In construction

Source: Global Status of CCS 2021 report, Global CCS Institute

# Operational capacity of large-scale CCS facilities worldwide as of 2021

## Carbon Dioxide Capture Capacity in million metric tons per year, 2021



[www.statista.com/statistics/1108355/largest-carbon-capture-and-storage-projects-worldwide-capacity/](https://www.statista.com/statistics/1108355/largest-carbon-capture-and-storage-projects-worldwide-capacity/)

# Cliff Head CCS impact

0.5  
mtpa

Initial planned annual Cliff  
Head CCS CO<sub>2</sub>  
sequestration

35,000  
p.a.

Equivalent hectares of  
agroforestry planting per  
annum<sup>(1)</sup>

57  
million  
p.a.

Equivalent number  
of tree plantings per  
annum<sup>(2)</sup>

## Sources

1. Source: The FLR Carbon Storage Calculator applies data from the Global Removals Database developed by Winrock International under funding from the International Union for Conservation of Nature (IUCN), later published in Bernal et al. "Global Carbon Dioxide Removal Rates from Forest Landscape Restoration Activities." Carbon Balance and Management, vol. 13, no. 1, 2018, doi:10.1186/s13021-018-0110-8
2. Source: average 1,600 trees per hectare (NHS Forest)

# Cliff Head CCS Project implementation



## Clear staged process to enable CCS

	Storage Reservoir Preparation	Pre-CO2 Injection	CO2 Injection
<b>Operation</b>	Final oil production	Facility Conversion & Installation	CO2 Injection
<b>Objective</b>	Prepare Cliff Head oil field reservoir for CO2 injection	<ul style="list-style-type: none"> <li>Prepare Cliff Head wells and infrastructure for CO2 injection</li> <li>Install onshore CO2 receiving facilities</li> </ul>	Commence supercritical CO2 injection at a continuous rate of at least 550,000 tpa for at least 15-years
<b>Timing</b>	<b>CY Q1 2023</b>	<b>Late CY 2024-2025</b>	<b>CY 2026</b>
<b>Duration</b>	<b>36-48 months</b>	<b>6-12 months</b>	<b>20+ years</b>
<b>Permitting</b>	Existing production license	GHG Declaration + CO2 injection license	GHG Declaration + CO2 injection license
<b>Work Activities</b>	<ul style="list-style-type: none"> <li>Increase production to up to 60,000 BWPD from existing wells</li> <li>Install additional rental oil/water separation units</li> <li>Install additional 200 kW power unit module on CHA</li> <li>Re-commission water disposal well at ASP</li> </ul>	<ul style="list-style-type: none"> <li>Workovers 3 existing water injection wells and 2 production wells</li> <li>Externally reinforce existing pipelines for CO2 operation</li> <li>Construct onshore CO2 receiving facilities</li> <li>No further drilling required to accommodate 550,000 tpa injection rate and 6Mt of CO2 storage</li> </ul>	<ul style="list-style-type: none"> <li>Transport supercritical CO2 to CHA via existing onshore/offshore 10" pipelines</li> <li>Inject supercritical CO2 into reservoir through 5 existing wells</li> <li>Deepen two existing wells + drill 1 new well to increase storage capacity to up to 16Mt and injection rate to at least 1.1 mmtpa</li> </ul>
<b>Expected Outcomes</b>	Creation of ~6 million tonnes of CO2 storage capacity with expected additional oil production generating significant free cash flow	Completion of a conversion of all offshore and onshore facilities necessary to commence CCS injection operations	Commence continuous CCS injection operations

# Blue Hydrogen – the next stage

## The clean and cost competitive advantage

### Blue Hydrogen is only possible with CCS

#### Lowest cost clean hydrogen option

- Majority of locations, blue hydrogen will be the lowest-cost clean production option<sup>1</sup>
- A\$6.00/kg hydrogen is cost competitive with petrol/diesel for transport at A\$1.70/litre

#### Clean with direct/integrated carbon capture and storage

- Established technologies able to capture in approximately 98% of CO<sub>2</sub> produced
- Producing 40,000 tpa of blue hydrogen eliminates 475,000 tpa of CO<sub>2</sub> emissions<sup>2</sup>

#### Proven and well established, scalable technologies

- 98% of current hydrogen produced through steam reformation (SMR)<sup>3</sup>
- SMR Hydrogen production has been in commercial use for over 100-years
- Blue hydrogen production has been in commercial operation since 1982

#### Deliverable now to facilitate the development of clean hydrogen/ammonia supply chain

- Provides a clean, cost competitive energy option
- Facilitates, accelerates transition to green hydrogen using Mid West renewable energy

#### Sources

1. Global CCS Institute Blue Hydrogen Report April 2021. Figure 6 (RHS of slide) taken from the same report.
2. CE Delft Feasibility Study into blue hydrogen July 2018 estimates that blue hydrogen production with 95% direct/integrated carbon capture and storage will produce 0.64/kg of CO<sub>2</sub> process emissions per kg of hydrogen produced resulting in total annual CO<sub>2</sub> process emissions of ~25.6 kTonnes of CO<sub>2</sub>
3. Global CCS Institute 2021.

### Levelized Cost of Hydrogen

LCOH (AUD/kg)



**Through CCS, Pilot's LCOH is expected to be in the range of A\$1.85 to A\$2.13**

Sources: SP Global, Cost, logistics offer "blue" hydrogen market advantages over "green" alternative 19 March 2020 and Pilot Feasibility Study ASX release 28 March 2022

# Beyond Hydrogen to clean Ammonia

Ammonia from blue hydrogen is both a low cost and clean energy source and supply vector for hydrogen

## Clean Ammonia emerging as a cost competitive replacement for LNG

### Established market and supply chain

- Essential global commodity
- One of the most demanded industrial chemicals
- Well established, large-scale production and supply chain

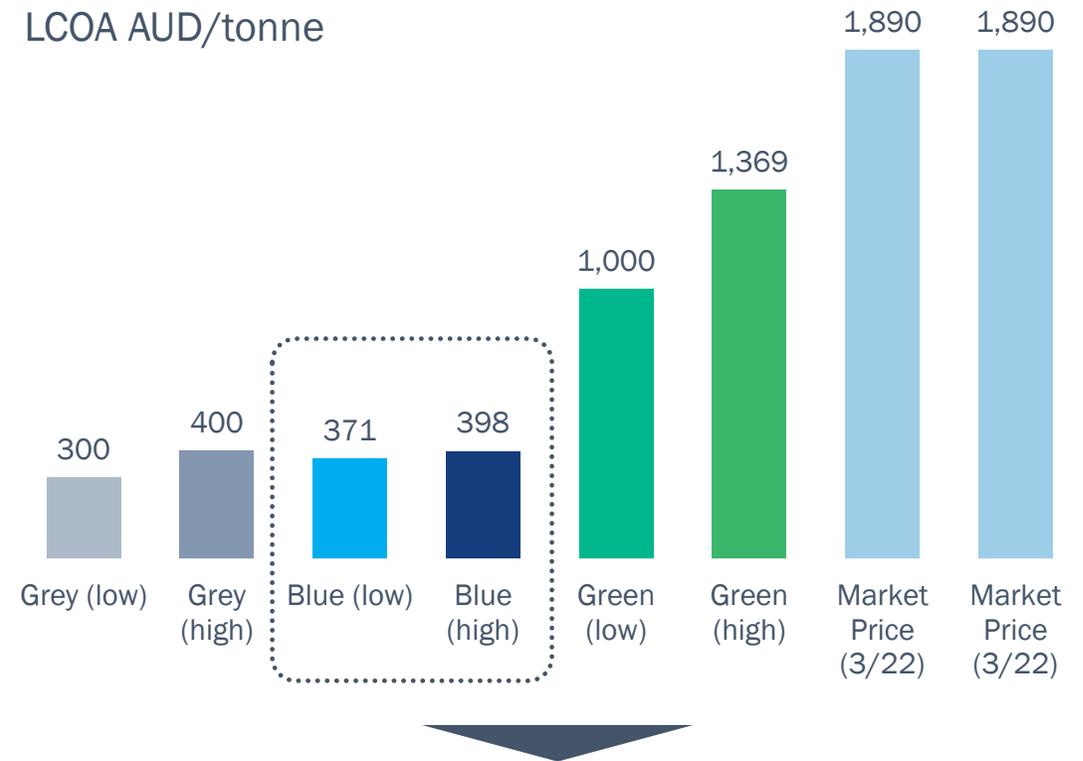
### Excellent solution for transport and supply of hydrogen

- Excellent “vector” for transport/supply of H2
- Lowest cost form of hydrogen transport and supply
- Easily stored in simple, inexpensive pressure vessels
- Transportation and distribution simpler and cheaper than H2 delivery

### Clean CO2-free energy source

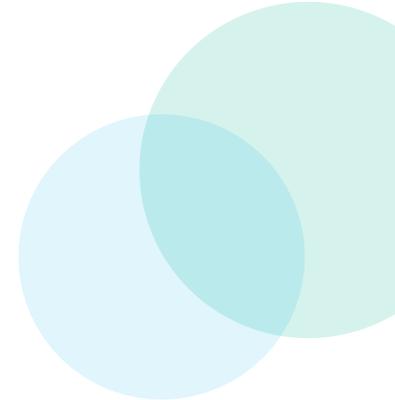
- Proven CO2-free fuel
- Either blue or green H2 can be used produce clean ammonia
- Can significantly reduce CO2 emissions for power generation
- APAC power companies already seeking large clean ammonia supplies to displace coal

## Levelized Cost of Ammonia LCOA AUD/tonne

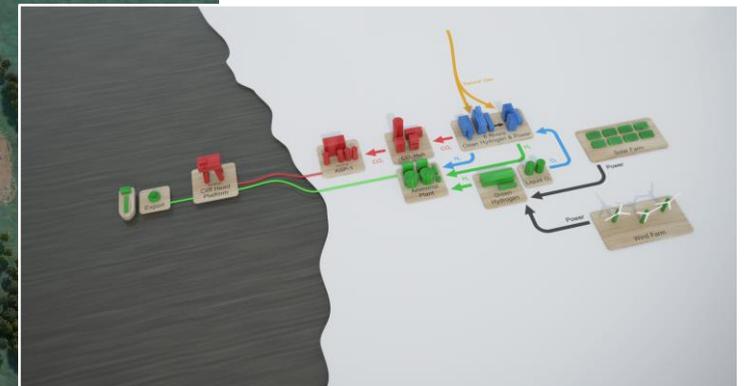


**Through CCS, Pilot’s LCOA is expected to be in the range of A\$370 to A\$400 per tonne**

# Mid West Clean Energy Project – bringing it all together



Mid West Clean Energy Project video



## Key next steps

Over the next 12-months Pilot (as operator) together with JV Partner Triangle Energy will be focused on the activities to deliver the Cliff Head CCS Project



### Corporate

- Analyse & implement feasibility studies
- Commence engagement with prospective CCS project partners



### Project implementation

- Permitting – Engaging with regulators to secure the necessary regulatory approvals;
- Site Acquisition – Completing project site selection and commencing site acquisition;
- Commercial Offtake – Engaging with prospective parties for commercial CCS off-take;
- EPCM Contractor – Commence engagement with potential EPC contractors; and
- Pre-FEED – Commence detailed Front-End Engineering & Design (pre-FEED) and costings for CCS and Blue Hydrogen



Next 12-months aimed at securing all necessary regulatory approvals, securing commercial off-take arrangements and completing a full bankable feasibility study and FEED to enable final investment decision (FID) for the Cliff Head CCS Project.

# Corporate overview



## ASX Code: PGY

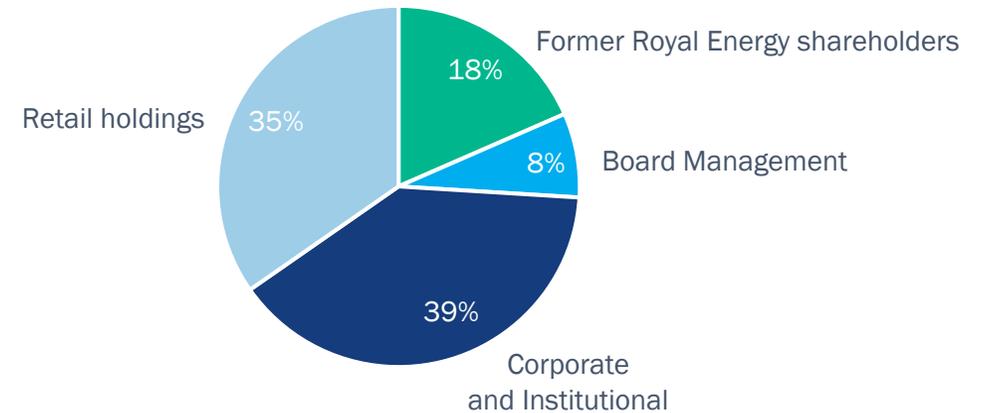
### Capital Structure

Issued shares	504.4 million
PGY share price	~\$0.02 (10/5/22)
• 12 month range	~\$0.02 to \$0.09
Market Capitalisation	~\$11 million
• 12-month range	~\$10 million to ~\$47 million

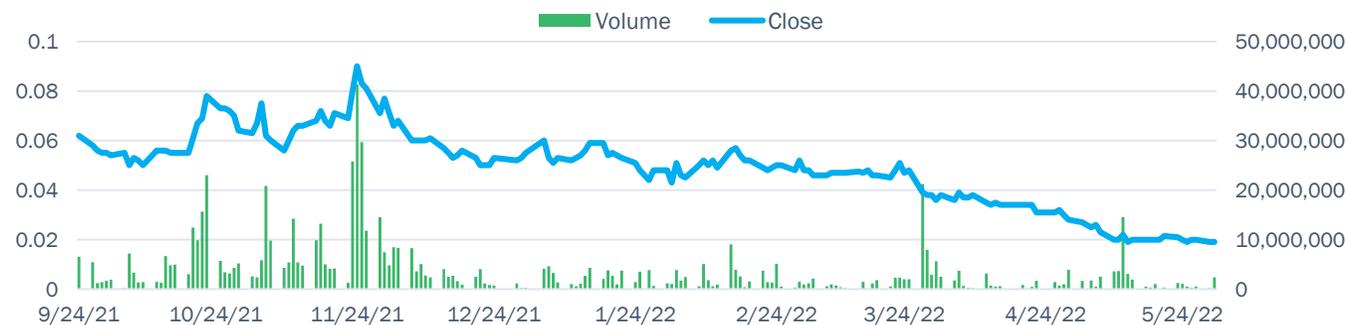
### Development Pipeline

Stage 1	Carbon Management	Up to 1.1 million tpa
Stage 2	Clean H2 Production	Up to 85,000 tpa
Stage 3	Clean H2 to Clean NH3	Up to 500,000 tpa

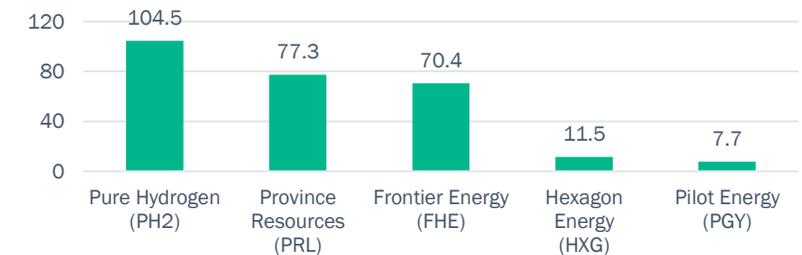
## PGY Shareholder Analysis



## Share Price



## Clean Energy Companies Enterprise Value (\$m)<sup>1</sup>



1. Enterprise Value = Market Capitalisation at 30 May 2022 less cash balance as of 31 March 2022. Source: Bloomberg

# Proven, experienced Board



**Brad Lingo**

**Executive Chairman**

30+ years international senior executive experience  
 Upstream/midstream energy, energy infrastructure, finance  
 Proven track record of creating & growing shareholder value



**Tony Strasser**

**Managing Director**

Extensive oil & gas experience including project and financial management, corporate finance and M&A 25+ years  
 Proven record in oil & gas with shareholder backing through multiple ventures



**Daniel Chen**

**Non Executive Director**

17+ years of international business, project management and leadership experience in large scale transport and logistics  
 Corporate advisor to private Australian oil & gas companies since 2018



**Bruce Gordon**

**Non Executive Director**

Corporate Finance and Corporate Audit Specialist in the Natural Resources Sector  
 25+ years acting for, and advising, ASX and International oil and gas companies.  
 Extensive public company accounting, financial reporting and corporate governance knowledge



# Management Team



**Cate Friedlander**

## Company Secretary & General Counsel

Experienced corporate / commercial lawyer in upstream & midstream energy - ASX and international.

Chartered Governance Professional.

Member of Governance Institute of Australia.



**Nick Watson**

## Head of Renewables & Commercial

20 years energy industry experience

Corporate/strategic development and operational experience across hydrogen, energy and oil & gas



**Mike Lonergan**

## Head of Upstream

Michael is a petroleum geophysicist with 35 years of domestic and international oil and gas experience across a wide range of E and P assets. He has held senior technical and project management roles during his career, having worked for Delhi Petroleum, Oil Company of Australia, Origin Energy, Rohol-Aufsuchungs Aktiengesellschaft, Mosaic Oil, AGL, Pangaea Resources and Denison Gas.



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