

- **Carpentaria-3H (“C-3H) has been shut-in following completion of extended production testing. The 90-day initial production rate (IP90) achieved for C-3H was 3.1 TJ per day**
- **Carpentaria-2H and C-3H are now available to form part of the Carpentaria Pilot Project well inventory with the intention to tie into facility infrastructure for production**
- **APA will spend up to \$5 million on Engineering and Design Concepts and may provide funding support for midstream gas infrastructure facilities associated with Empire’s Carpentaria Pilot Project to transport up to 25 TJ per day to market**
- **Carpentaria Pilot Project is progressing towards a final investment decision (“FID”)**
- **Cash at the end of the Quarter was \$15.1 million and \$29.3 million at the date of this report following receipt of a total Research and Development Tax Offset of \$15.6 million after Quarter-end**

Comments from Managing Director Alex Underwood:

"The Empire team has had another busy and productive Quarter focused on flow testing at C-3H and moving towards FID on the EP187 pilot project.

We carried out additional flow testing on C-3H with a pleasing improvement in productivity post-shut in. The technical team is carrying out post-flow testing analysis that continues to build our understanding of how to optimally fracture stimulate the Middle Velkerri B as we move towards the production phase. We are confident that this learning will drive increasing productivity in future wells.

The entire Empire team continues to make great progress towards FID on the pilot project. The initial development plan is well advanced, with the number and location of development wells being delineated, and capital expenditure estimates are maturing.

Empire has a range of funding options at its disposal and all are being progressed. With 100% working interest in all of our properties and no private royalties sold, we have optionality to potentially sell down an asset level interest to an industry player, and conversations with potential JV partners have commenced.

We have started a formal gas marketing process. With extreme tightness in NT and East Coast gas markets continuing as existing sources of supply decline, we are well placed to sell pilot project gas volumes on attractive terms.

The receipt of a \$15.6 million R&D tax refund last week, taking our cash balance to over \$29 million currently, leaves Empire well-funded to carry out all of these activities as we progress towards an FID decision in the coming months."

Northern Territory Operations Update

Carpentaria-3H Extended Production Testing (“EPT”)

Carpentaria-3H (“C-3H”) was shut-in early October following ~63 days of extended production testing, undertaken after a 5-month period of shut-in and soaking, following the initial 27 days of production testing conducted in Q1 2023. The initial production period, undertaken in January and February 2023, immediately followed hydraulic stimulation of the well and involved a brief initial period of clean up. The slug flow encountered during the first phase was curtailed following the shut-in period and steady production ensued. Ongoing clean-up of C-3H resolved the issue.

As previously announced during the Quarter, the post shut-in IP30 was 3.8 TJ per day (3.3 mmscf per day) along the 40 stage 1,989 metre (6,526 foot) hydraulically stimulated horizontal section. Over the duration of the second phase testing the well averaged 3.1 TJ per day (2.7 mmscf per day). On day 63 of the second phase testing, C-3H was flowing at 2.3 TJ per day (2.0 mmscf per day) at which point the well was shut-in having achieved objectives of the test for Carpentaria Pilot Project (“Pilot Project”) planning. The combined IP90 for C-3H over the two test periods was 3.1 TJ per day (2.7 mmscf per day).

The Empire technical and operations teams are currently reviewing the production data and will incorporate into ongoing Pilot Project planning for this very low CO₂ gas resource (sub 1%). Gas and water samples have also been collected during production testing for tracer analysis and stage contribution. This work will be incorporated into ongoing completion optimisation and design to accelerate Empire’s pathway along the Beetaloo specific cost and learning curve.

Carpentaria-2H and C-3H are both currently shut-in and are available as future production wells. Empire plans to connect both wells and additional development wells to Pilot Project midstream infrastructure.



Managing Director Alex Underwood, Hon Nicole Manison, Deputy Chief Minister of the NT, and Chairman Peter Cleary at NT Parliament House

Empire Executes Initial Agreement with APA Group (ASX: APA)

On 8 August 2023, Empire and APA announced they had executed an initial agreement for the establishment of midstream gas infrastructure early works and proposed long-form agreements furthering the memorandum of understanding as announced by Empire on 27 October 2021. Subject to entering long-form agreements and approvals by each party:

- APA will spend up to \$5 million on Engineering and Design Concepts for midstream gas infrastructure facilities associated with Empire's Pilot to transport up to 25 TJ per day to market; and
- APA may fund the Pilot midstream gas infrastructure facilities under a proposed partnering agreement ("Partnering Agreement"), materially reducing the capital requirements for Empire to commence commercial production. The Partnering Agreement would also comprise the transportation of large volumes of gas from the Beetaloo to Australian east coast markets.

Carpentaria Pilot Project Update

Empire is focused on progressing the Pilot Project towards a final investment decision. The Pilot Project is targeting a sales gas production rate of up to 25 TJ per day utilising the existing McArthur River Pipeline to Daly Waters and the McArthur River Mine. Empire is making material progress on the Pilot Project, advancing:

- Field Development Planning, including identifying locations for and the design of development wells and surface facilities;
- Pipeline access negotiations;
- A formal gas sales marketing process;
- Regulatory and indigenous approvals; and
- Planning for project financing.

Other Corporate News

Research and Development Tax Offset

The R&D Tax Incentive scheme is designed to encourage companies to undertake R&D activities and pioneer innovation in Australia. The scheme entitles companies with an aggregate global turnover of less than \$20 million to access a refundable tax offset of 43.5% of eligible expenditure on eligible R&D activities.

After Quarter end, Empire received an R&D Tax Offset for FY2022 of \$15.6 million in cash following finalisation of its 2022 tax return.

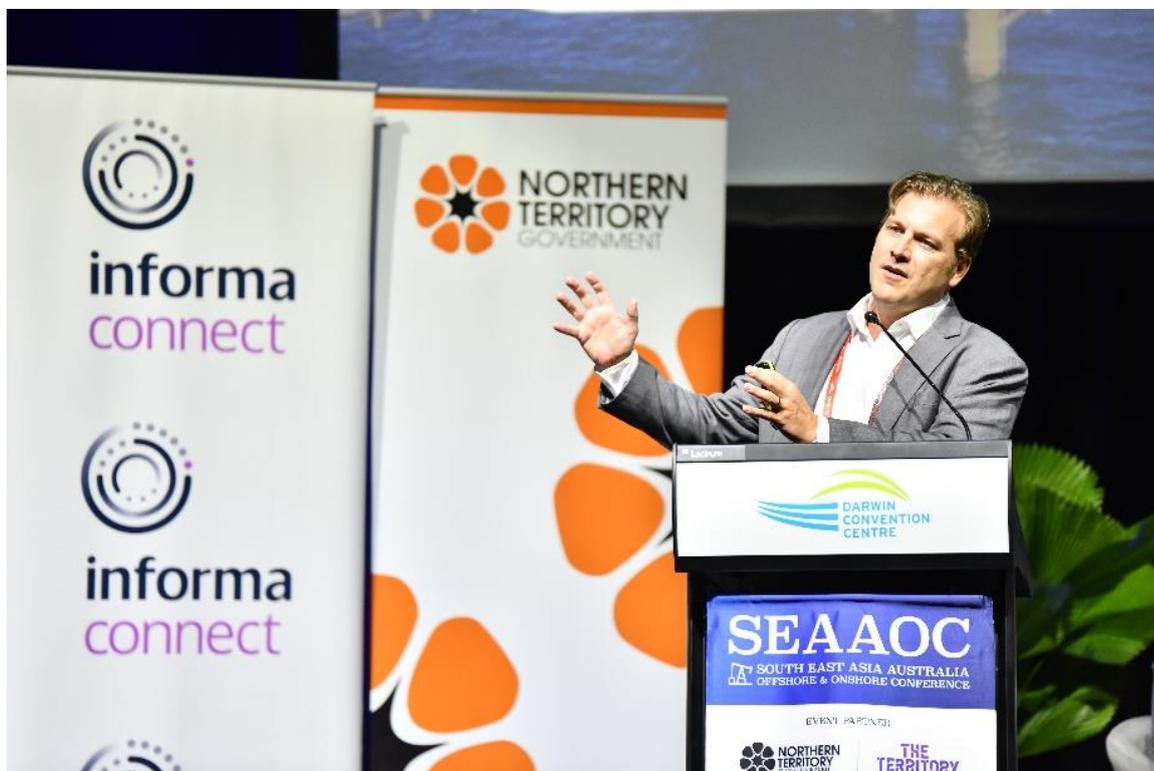
Proceeds will be applied to full or partial repayment of loan drawings under Facility A (Revolving Credit Facility) with Macquarie Bank, advancement of the Pilot Project and for additional working capital.

Empire Tenements

There were no changes to the petroleum tenements held by Empire and its subsidiaries during the Quarter.

A full list of tenements as at 29 March 2023 can be found on the Empire website:

<https://app.sharelinktechnologies.com/announcement/asx/abdb6b1722465c74923b427906ba9c71>



Managing Director Alex Underwood presenting at the annual SEAAOC conference at Darwin, NT

NT Petroleum Sector Update

- **16 October 2023: Tamboran Resources (ASX: TBN) announced that the Amungee NW 3H (A3H) well had reached a Total Depth of 3,837 metres, including a 1,100 metre horizontal section within the Mid Velkerri B Shale.** The well intersected the Mid Velkerri B shale at a vertical depth of 2,272 metres and encountered significant gas shows within the shale, in line with pre-drill expectation. The stimulation program is planned for the second quarter of 2024, following the Northern Territory wet season.¹
- **18 September 2023: Falcon Oil & Gas (TSXV: FO, AIM: FOG) announced that drilling operations on the Shenandoah South 1H well had been successfully completed.** The well was drilled to a total measured depth of 4,300 metres, including a horizontal section over 1,074 metres in length in the Amungee Member B-shale, with casing and cementing also complete.²
- **6 September 2023: the EnergyQuest *EnergyQuarterly September 2023* reported that daily production data for the Blacktip gas field available through AEMO showed a steep decline in production since 2021.** In April 2023 Global Data Oil & Gas Intelligence Center updated the remaining recoverable reserves to ~180 PJ. However, based on recent performance, remaining recoverable reserves are estimated to be 15-20 PJ, which is less than one year of NT gas demand. Santos CEO Kevin Gallagher revealed earlier this year that Bayu-Undan had been supplying emergency gas to the NT domestic market to cover the shortfall in supply from the Blacktip field. He said Santos was looking at running Bayu-Undan to provide ongoing domestic supply after the field ceased producing enough for export.³ As at 25 October 2023, AEMO reported that Blacktip was producing ~45 TJ per day⁴ significantly below the Eni, Power and Water Corporation gas contract for Blacktip of 105 TJ per day.

USA Operations Update

Empire's USA operations reported a negative EBITDA for Q3 2023 of US\$(288)k (Q2 2023: negative US\$(639)k). Empire continued to leave marginally economic wells shut-in over the Quarter so that they can be reopened as gas prices improve as the Northern Hemisphere moves into its winter season. Empire has also been managing costs throughout Q3 2023 to conserve its cash.

The average daily production for Q3 2023 was 3,820 Mcfe / day vs. Q3 2022 4,814 Mcfe / day, representing a decrease of 20.6% year-on-year. Empire has been advised by the local utility, National Fuel Gas Company (NYSE: NFG) that since Quarter-end, a key gas pipeline has reopened. This will have a positive impact on Empire's US gas volumes.

¹ Tamboran Resources ASX release dated 16 October 2023 entitled "EP98/117 Operational Update: A3H drilled in record time in less than 18 days"

² Falcon Oil & Gas release dated 18 September 2023 entitled "Successful Drilling of Shenandoah South 1H Horizontal Well"

³ EnergyQuest *EnergyQuarterly September 2023*

⁴ AEMO Gas Bulletin Board

Description	3 months to 30 Sept 2023	3 months to 30 Sept 2022	2023 YTD	2022 YTD
Net Oil Production (Bbls)	859	1,078	2,159	2,273
Net Natural Gas Production (Mcf)	346,293	436,425	949,045	1,248,332
Net Gas Equivalent (Mcf):	351,447	442,893	961,999	1,261,970
Mcf/d	3,820	4,814	3,524	4,623
Weighted Avg Sales Price (US\$/Mcf)				
Before Hedge	2.03	6.22	2.64	5.47
After Hedge	2.03	6.22	2.70	5.47
Lifting Costs (incl. taxes):				
Total Natural Gas Equivalent (US\$/Mcf)	1.32	1.29	1.76	1.32

Balance Sheet & Liquidity

Empire's cash balance as at 30 September 2023, was \$15.1 million, of which \$9.6 million was held in Australian dollars, and US\$3.5 million was held in United States dollars.

Empire's total available liquidity as at 30 September 2023, was \$17.6 million, comprising total cash of \$15.1 million and \$2.5 million undrawn under the Facility A (Revolving Credit Facility) with Macquarie Bank. Empire also has the \$5.0 million Facility B (Performance Bond Facility) with Macquarie Bank which is available to meet environmental bonding obligations which was undrawn at quarter end. After Quarter-end, Empire drew-down a further \$1.7 million under the Facility A, resulting in current total borrowings under the Facility A of \$9.2 million.

During the Quarter, Empire made a debt repayment of US\$137,500 to the US Macquarie Bank Credit Facility secured against the Company's US gas production assets. The total outstanding balance under the US credit facility at Quarter-end was US\$4,887,510.

After Quarter-end, Empire received a total Research and Development Tax Offset of \$15.6 million. Empire's cash balance at the date of this report is \$29.3 million.

Empire's gas hedging book as set out in the table below comprising put options provides for upside gas price exposure while ensuring downside price protection and a level of cash flow stability:

Period	Volume mmbtu/month	Hedge Type	Strike Price US\$/mmbtu	Premium US\$/mmbtu
Oct 23 to Dec 23	25,000	Put Options	\$2.50	\$0.27
Oct 23 to Dec 23	25,000	Put Options	\$2.50	\$0.41

The Company made payments to related parties of \$351,746 during the Quarter. These payments comprised the Managing Director's salary, Non-Executive Directors' fees paid in cash and contracting fees paid to the spouse of the Managing Director for accounting support services under a short-term contracting services agreement that was approved by the Audit & Risk Committee of the Board.

Liquidity

Quarter Ended	30 Sep 2023	30 Jun 2023	31 Mar 2023	31 Dec 2022
Cash (A\$)	\$15,056,215	\$23,329,677	\$15,107,820	\$24,091,005
Debt (A\$) ⁵	\$(15,221,185)	\$(15,079,200)	\$(7,691,463)	\$(7,822,893)
Net Cash /(Debt)⁶	\$(164,970)	\$8,250,477	\$7,416,357	\$16,268,112

Note: at the date of this report, Empire's net cash is \$12.4 million.

Production and Development Expenditure (ASX Listing Rule 5.2.1)

Asset	Nature of Expenditure	Amount
New York and Pennsylvania		
	Production costs (infield operations, gas processing, and transportation)	313,743
	Production costs (wages, consultants, and other overheads)	236,257
	Other production costs	25,912
Total		\$575,912

Empire did not incur production and development expenditure on its other assets during the Quarter.

⁵ Debt is comprised of US\$4,887,510 owing under the USA Senior Secured Facility and A\$7,500,000 owing under Facility A (Revolving Credit Facility) with Macquarie Bank Limited

⁶ Net Cash / (Debt) is defined as AUD equivalent cash minus AUD debt for the purposes of this calculation

Exploration Expenditure (ASX Listing Rule 5.2.2)

Asset	Nature of Expenditure	Amount
Capitalised		
EP187	C-2H & C-3H Extended Production Testing	1,530,086
	Carpentaria-4V Drilling	55,427
Total Capitalised		\$1,585,513
Expensed		
EP182(A)	Environmental and cultural monitoring	98,019
EP184	NTG & NLC Payments & Fees	140,132
EP187	Annual licensing fees (NLC and NT Government)	830,546
	Environmental and cultural monitoring	536,089
	Carpentaria Pilot Project - FEED	527,326
	Other expenses	500,834
EP167 and EP168 (Western Beetaloo)	Project management and NTG fees	147,492
Total Expensed		\$2,780,438

Empire did not incur exploration expenditure on its other assets during the Quarter.



Community engagement at the Katherine NT Show held in July 2023



C-3H Extended Production Testing

ExxonMobil Global Outlook

During the Quarter, ExxonMobil released its *Global Outlook, Our view to 2050*. The report highlights that natural gas plays a vital role in satisfying the energy needs of consumers worldwide while helping to mitigate the risks of climate change. The report stated that choosing natural gas as a lower-carbon alternative to coal improves air quality and reduces carbon intensity. The report stated that gas is a reliable and flexible fuel for electricity generation and a lower-carbon industrial fuel. It's also convenient for home use.

Key points from *Global Outlook, Our view to 2050* include:

LNG / Gas Demand Outlook

- In 2021, LNG trade met about 10% of global natural gas demand. By 2050, LNG trade will meet nearly 20% of the world's natural gas needs.
- Asia Pacific will absorb about 85% of the growth in LNG from 2021 to 2050, helping the region to reduce its carbon intensity while sustaining economic growth.
- India and other Asia Pacific importers are expected to look to LNG to supplement domestic natural gas production, often leveraging existing natural gas infrastructure.
- In China and other developing nations in the Asia Pacific region, natural gas demand is expected to double from 2021 to 2050.
- Outside of Asia Pacific, many developing countries are expected to leverage domestic natural gas supplies to meet rising electricity demand and fuel industrial growth.

Global Emissions Reduction

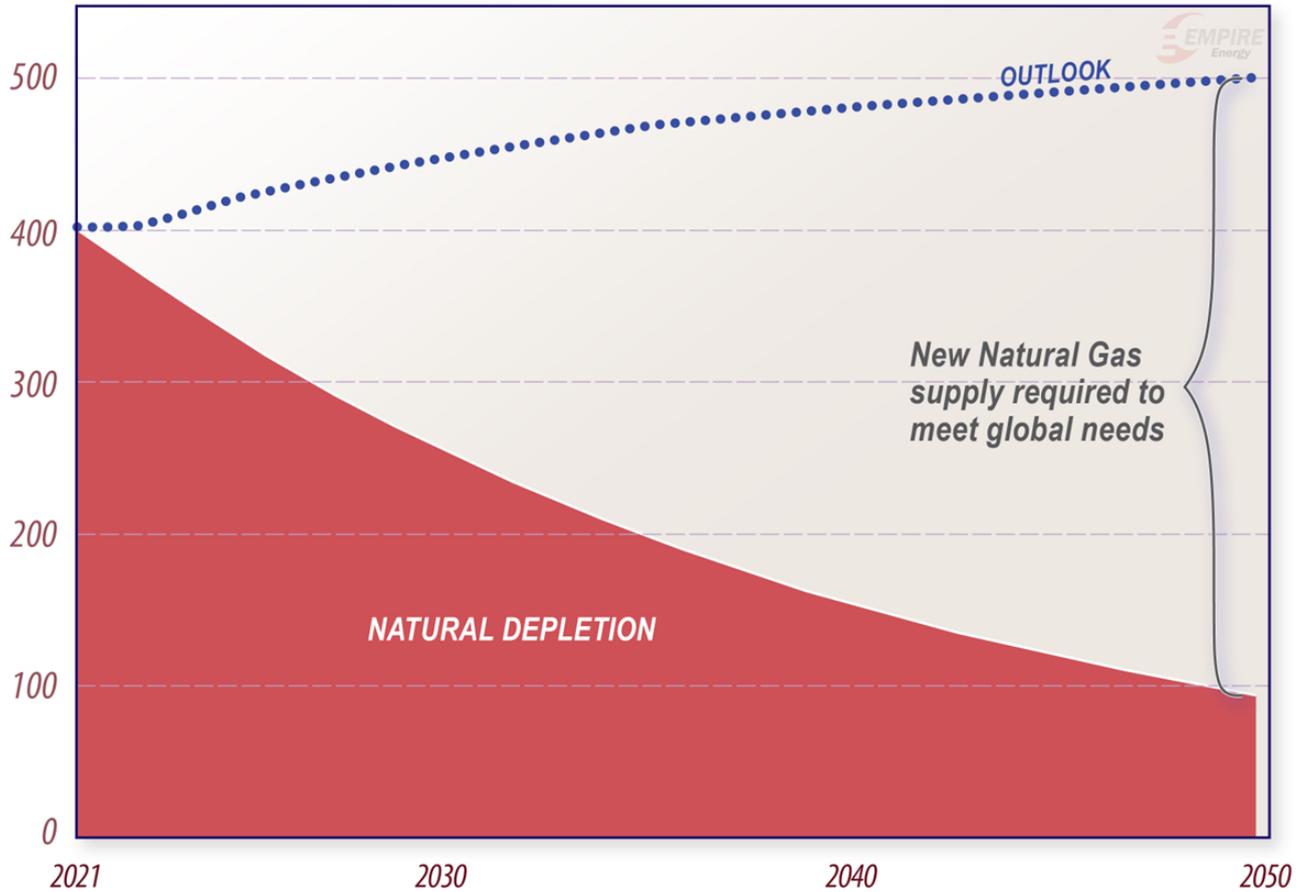
- With the same boiler efficiency, burning natural gas to produce heat emits about 40% less CO₂ than burning coal.
- Choosing flexible, highly efficient gas-fired electricity generation to replace older, inefficient coal plants can reduce CO₂ emissions by up to 60% while producing fewer air pollutants.
- Every 1% of global primary energy shifted from coal to natural gas can reduce energy-related CO₂ emissions by almost 1% in 2050.
- China's 'war on smog' and 'blue-sky' policies have led to measurable improvements in urban air quality while boosting demand for LNG imports.

Without continued investment to sustain existing fields and develop new ones, the supply of natural gas is expected to decline. The estimated natural decline rate is 5% per year for natural gas. As shown in the chart below, the decline rate creates a significant need for continuous investment just to sustain 2021 production levels. Ceasing investment in gas could cause supplies to fall well short of demand, both for the near term and in the broad range of scenarios.⁷

⁷ <https://corporate.exxonmobil.com/what-we-do/energy-supply/global-outlook/energy-supply#Naturalgas>

GLOBAL NATURAL GAS SUPPLY AND DEMAND

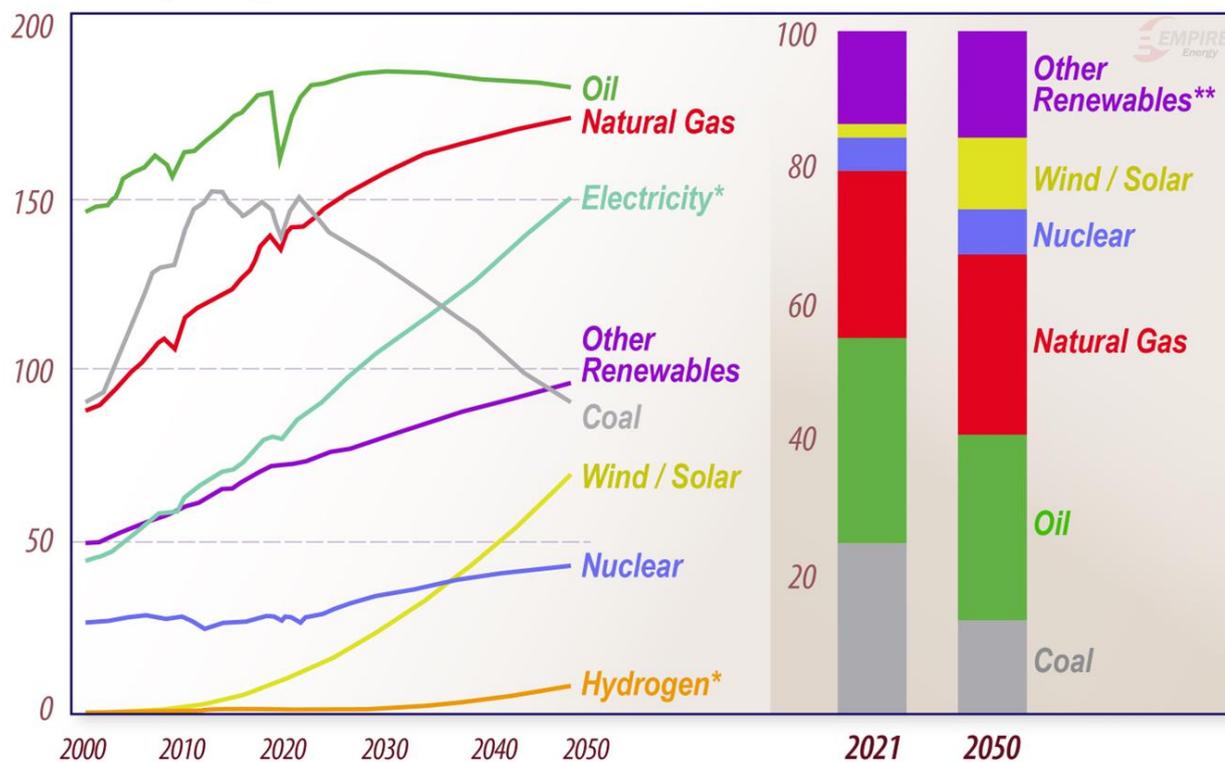
Billion cubic feet / day



Source: 2022 IEA World Energy Outlook;
 IPCC: AR6 Scenarios Database hosted by IIASA release 1.0 average IPCC C3: "Likely below 2°C" scenarios;
 ExxonMobil Analysis

GLOBAL ENERGY DEMAND BY FUEL
Primary energy - Quadrillion Btu

PERCENT OF PRIMARY ENERGY



* Electricity and Hydrogen are secondary energies derived from the primary energies shown

** Includes biomass, biofuel, hydropower and geothermal

Source: ExxonMobil, 2023

This ASX release has been authorised by the Board of Directors

For queries about this release, please contact:

Alex Underwood, Managing Director

Ph: (02) 9251 1846

About Empire Energy

Empire Energy holds 28.9 million acres of highly prospective exploration tenements in the McArthur Basin and Beetaloo Sub-basins, Northern Territory. Work undertaken by the Company since 2010 demonstrates that the Eastern depositional Trough of the McArthur Basin, of which the Company holds around 80%, has enormous conventional and unconventional hydrocarbon potential. The Beetaloo Sub-basin, in which Empire holds a substantial position, has world-class hydrocarbon volumes in place and a ramp up in industry activity to appraise substantial discoveries already made by major Australian oil and gas operators is ongoing.

Empire Energy is an experienced conventional oil and natural gas producer with operations in the Appalachia region of the USA (New York and Pennsylvania). Empire has been successfully developing and producing oil and gas since 2006.



C-2H/C-3H wellpad

Registered Office

Level 5, 6-10 O'Connell Street
Sydney NSW 2000

Phone: +61 2 9251 1846

Facsimile: +61 4 9251 1022

Website: empireenergygroup.net

Media and Investor Enquiries

Nick Kell

Phone: +61 2 9251 1846

Empire Energy Group Limited

ABN 29 002 148 361

Securities Exchange

ASX: EEG

Share Registry

Computershare Investor Services

Phone: 1300 850 505