

## Investor Presentation for New York Energy Capital Assembly

**Earths Energy** (ASX: **EE1**) (**Earths Energy**) (**Company**) is pleased to release the enclosed Company presentation.

This presentation will be utilised by the Company's CEO, Mr. Josh Puckridge, as part of his participation at the New York Energy Capital Assembly.

Mr. Puckridge will be a panellist at the conference, joining an esteemed group of industry experts, including:

- **Chris Murray**, Senior Advisor, United States Air Force, Office of Energy Assurance
- **Bridget Silva**, Chief Business Development Officer, Geothermal Holdings, Inc.
- **Charles Gertler**, Senior Advisor, Geothermal Commercialization, U.S. Department of Energy
- **Sean Marshall**, Business Development Manager – Geothermal Power, SLB New Energy
- **Greg Owen**, Vice President, New Ventures & Technical Services, GLJ (Moderator)

The panel is discussing the advancements and opportunities in the geothermal energy sector.

**Authorised for release by Earths Energy's Board of Directors.**

**ENDS**

To learn more about the Company, please visit [www.ee1.com.au](http://www.ee1.com.au), or contact:

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# Australian Geothermal Exploration & Development

Developing Commercial Baseload Geothermal Power from Reliable Australian Geology

June 2024

**NEW  
YORK**

ENERGY CAPITAL ASSEMBLY

**Panelist:** Josh Puckridge, Chief Executive Officer

**Earths Energy Limited is a company listed on the Australian Securities Exchange (ASX: EE1)**

**New York Energy Capital Assembly  
The Energy Council & NASDAQ**

# Earths Energy at a glance

## Bringing commercial green baseload power to Australian grids

ASX Listed Company (ASX: **EE1**) – Exclusively Australian, Exclusively Developing Renewable Energy Projects



### AUSTRALIAN

#### A Prime Destination for Geothermal Investment

- **High Impact Investing Opportunity** - No current geothermal production but multi-GW potential
- US engineering innovations significantly enhance project economics in Australia
- Australia faces a renewable energy deficit with ambitious 2030 targets fast approaching



### APPROACH

#### Developer Approach

- Targeting the development of multiple Projects with:
  - +100MWe combined installed capacity, and
  - 15% to +20% Project IRRs
- Strategic Infrastructure
  - Geothermal baseload power as a grid access point for intermittent renewables (i.e., solar and wind)



### SOUTH AUSTRALIA

#### Strategic Access to the South Australian Grid – long strikes of reliable geology

- Flinders West:
  - Up to 6.9MWe per km<sup>2</sup>
  - over 12,035 km<sup>2</sup>
- Large contiguous strike length of over 250km
- Large-scale development potential
- Direct grid access with priority for baseload power



### QUEENSLAND

#### Leveraging Company IP into Australia's East Coast Power Demand

- Strategic holdings with up to 3.7MWe per km<sup>2</sup>
- First mover advantage to supply commercial baseload geothermal energy to the east coast of Australia
- Provides access to grid supplying power to >75% of QLD population



# Corporate Snapshot

## High calibre team of industry leaders

### BOARD AND MANAGEMENT



**GRANT DAVEY**  
Executive Chairman

Entrepreneur with 30 years in mining and energy project leadership, Chairman of Frontier Energy (ASX: FHE), Director of Lotus Resources (ASX: LOT), and is a member of the Australian Institute of Company Directors.



**CHRIS BATH**  
Finance Director

A Chartered Accountant with over 25 years of senior management experience in energy and resources, including financial reporting, commercial management, project acquisition, and ASX compliance. Mr Bath is Executive Director and CFO of Frontier Energy Limited (ASX: FHE) and Company Secretary of Copper Strike Limited (ASX: CSE)



**JOSH PUCKRIDGE**  
Chief Executive Officer

Experienced Mining Executive with over 10 years' experience running ASX-listed companies. Mr Puckridge most recently ran Steam Resources as its Managing Director where he assembled one of the world's largest geothermal exploration and development projects. Josh maintains strong international networks of geothermal advisors and experts. He has focused on sourcing new technologies, such as supercritical CO<sub>2</sub> plant designs, which are particularly suited to commercially optimising Australian geothermal projects.

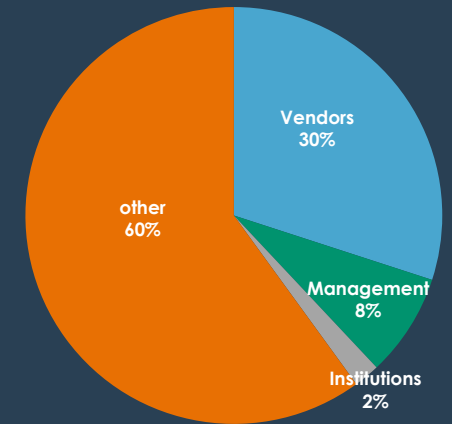


**DAVID WHEELER**  
Non-Executive Director

Over 30 years of experience in executive management and advisory, working with Pathways Corporate for family offices and ASX-listed companies. Mr Wheeler has international project experience in major regions and is a Fellow of the Australian Institute of Company Directors, holding multiple directorships.

### CAPITAL STRUCTURE

#### Shareholders



**750.3m**

Shares on issue

**\$9.0m**

Market Cap at 0.012cps

**127.7m<sup>1</sup>**

Options

**\$5.3m**

Cash (March 2024)

<sup>1</sup> – Various vesting periods, exercise prices and vesting conditions – see ASX announcements 4 January 2024 and 3 June 2024

# Geothermal in Australia

## Exploiting stable geology: bigger projects from longer strikes

“While Australia doesn’t have simple volcanic hydrothermal systems that have driven geothermal development around the world, it does have vast tracks of geologically stable ground capable of delivering reliable heat from manageable depths. This is Australia’s Geothermal advantage.”

Josh Puckridge, Chief Executive Officer

### Why are there no geothermal projects currently in Australia?

- **Not a supportive environment historically** - level of emissions was not a historical driver and fossil fuels were relatively low-cost i.e., coal
- **Not suitable for conventional technologies** - historic focus on remote “deep hot rocks” rather than “warm rocks” around infrastructure, negatives included:
  - (-) **Depth & High Cost:** Deep hot rocks = 4,000 to 5,000m depth with temperatures >200°C
  - (-) **Remote Drilling:** Target resources were remote locations lacking infrastructure and far from customers

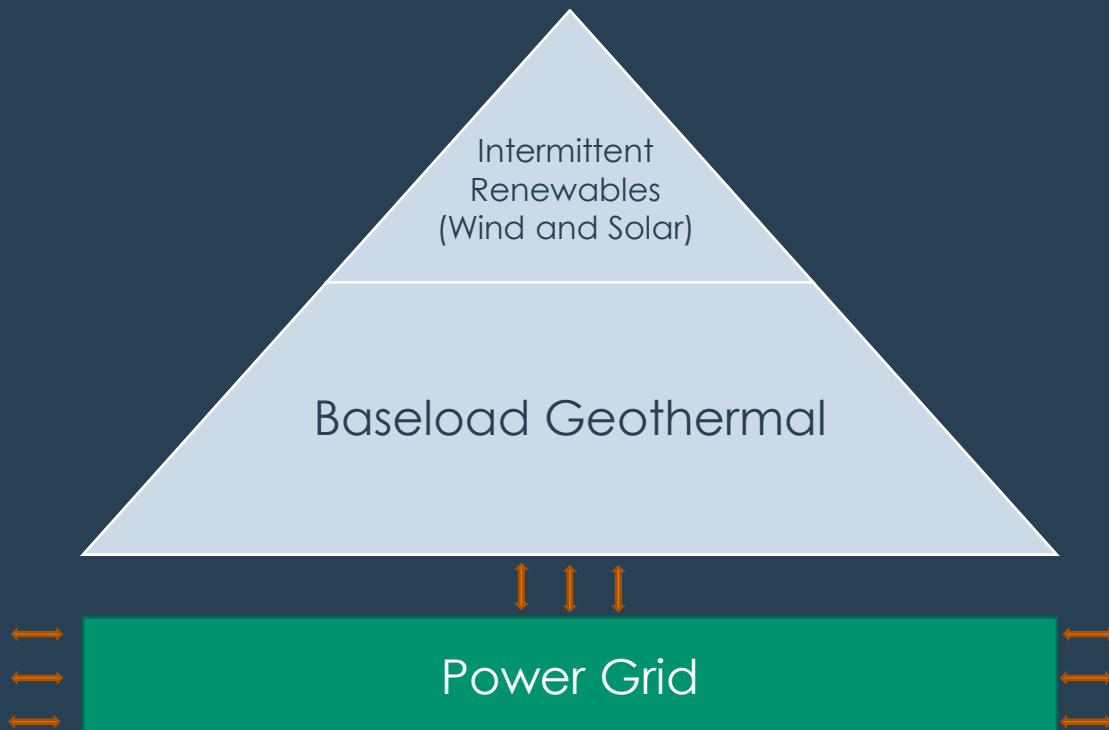
### Australia now has the building blocks in place for geothermal

- **Renewable target** of 82% renewable electricity by 2030
  - *In 2023, we were only at 38%<sup>1</sup>*
- **Geology is well understood** and generally supported by legacy oil and gas well and seismic data
- **The home of geothermal ambition:** Australia pioneered Enhanced Geothermal Systems before the technology and engineering was refined to its current standard
- **Next-generation geothermal technologies** – aim to create conditions for geothermal energy in areas where natural exploitation was otherwise impossible, unlocking Australia’s potential
  - *Binary cycle power plants can utilise lower temperature geothermal reservoirs*
  - *Closed loop technology can access non-permeable heat reservoirs*
- **Infrastructure in place**
  - *The East Coast has one of the world’s longest interconnected power systems (NEM), allowing direct access to market*
- **Financial assistance** is available from Federal and State governments to support energy transition
  - *Regional Communities Reliability Fund, National Clean Energy Fund, Commonwealth Capacity Investment Scheme, etc*

1 - <https://opennem.org.au/energy> - renewable electricity supplied to the NEM

# Earths Energy Competitive Advantage

Geothermal baseload power is the backbone of a reliable renewable energy grid



- **Grid Access Assurance:** Geothermal energy secures grid access for projects, such as the Company's Flinders West project
- **Supporting Renewable Development:** Leading with baseload geothermal power would justify the development of other intermittent renewable projects in the area, by the Company and other developers
- **Grid Relevance and Priority:** Developing geothermal projects ensures the Company's relevance and priority in grid integration
- **Optimising Energy Supply:** During periods of high wind or solar supply, lower-cost renewable energy can be directly fed into the grid
- **Innovative Energy Storage:** The Company is trialling various thermal energy storage technologies to store excess geothermal energy, ensuring efficient energy deployment during peak intermittent periods

# South Australia Portfolio:

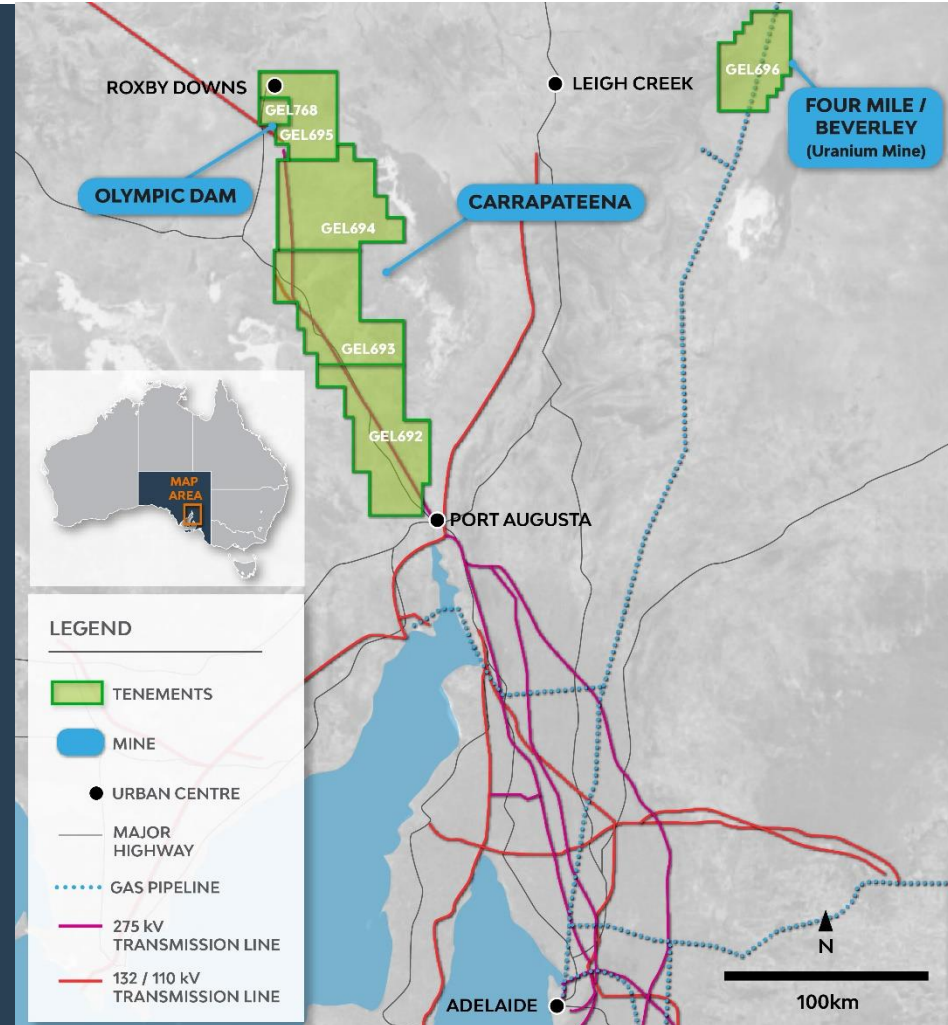
## Mines and Lines – a valuable stretch of ground

### The leading renewable energy transition State

- South Australia is the leading Australian state for renewable energy transition
- Earths Energy has secured blocks totalling 12,035 km<sup>2</sup>
- Located on trend with major transmission lines and mines including Olympic Dam, Carrapateena and Four Mile / Beverley

### Significant geothermal resource potential

- Geothermal offset well data, available seismic and indicative, regional-scale geophysical mapping were applied by an Independent Technical Expert<sup>1</sup>
- The Independent Technical Expert's indicative aggregate estimates of Electric Resource Potential for Earths Energy's granted South Australian acreage range from 9,700MW-e to 54,100MW-e<sup>2,3</sup>



1 – these analyses have been performed by Dr. Arnout JW Everts who holds a PhD in Geology from VU University Amsterdam and has 33 years of industry experience – see Independent Technical Expert's Statement included in this presentation

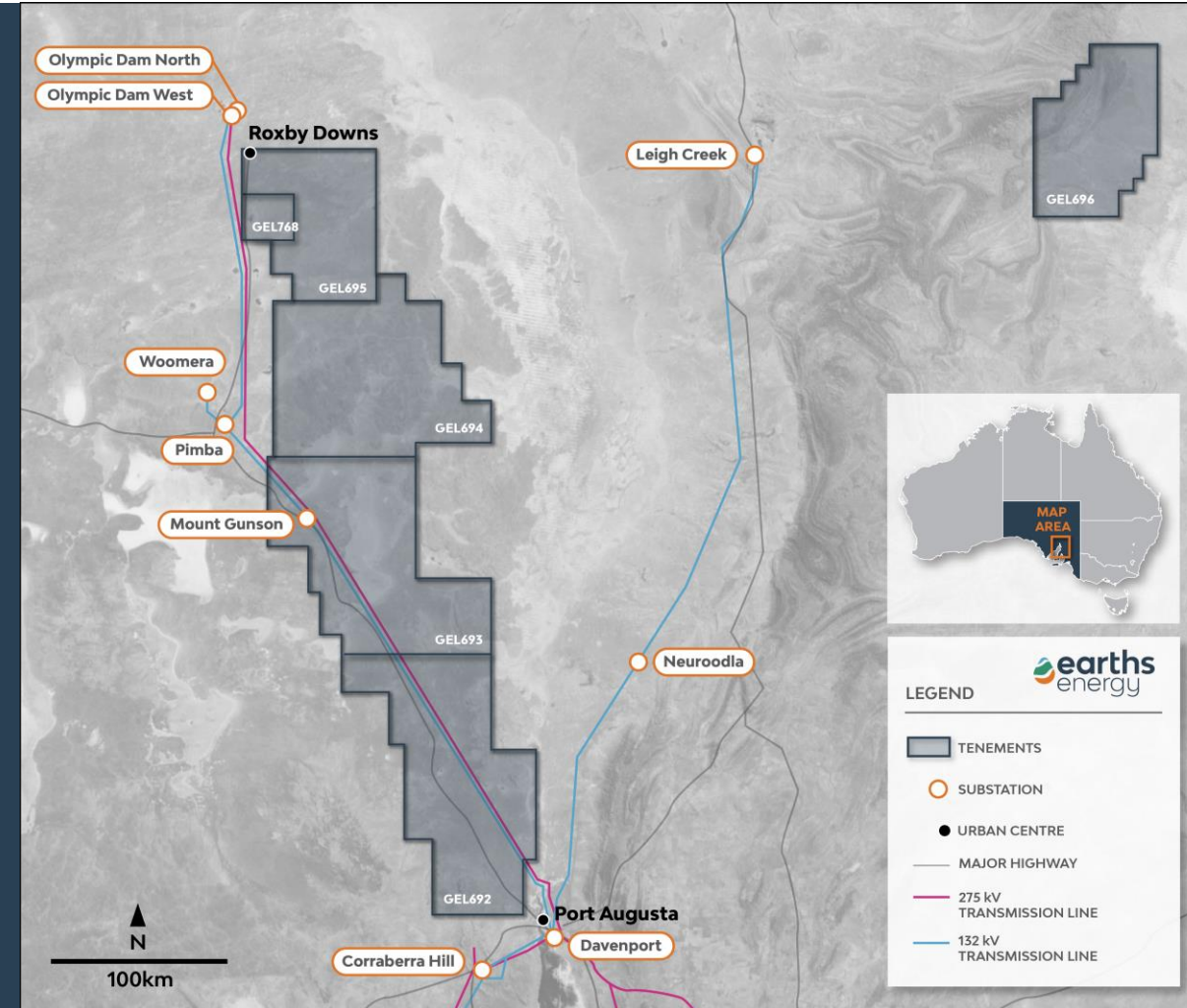
2 - assuming a plant load-factor of 0.9 and a range (P90 to P10) 1.9 – 7.9MWe/km<sup>2</sup> (Megawatt electrical per square kilometer) for GELA696; assuming a plant load-factor of 0.9 and a range (P90 to P10) 1.1 – 6.9MWe/km<sup>2</sup> for GELA692/693/694/695/768

3 - The estimates of Electric Power-Resource Potential are strictly indicative and should not be construed to be compliant with UNFC. The estimates serve to illustrate product potential pending successful proof of concept, successful geological de-risking via appraisal and overcoming commercial hurdles.



# South Australia Portfolio: Close to Lines and Mines

- **Prime Network Access:** Positioned to connect with existing 132kV and 275kV transmission networks from Port Augusta to Roxby Downs.
- **Strategic Tenements:** Located near key substations, including Olympic Dam North, Woomera, Pimba (132kV), Davenport, Mount Gunson, and Olympic Dam West (275kV).
- **Supporting Renewables:** Geothermal energy complements existing solar projects like Lincoln Gap (86MW) and Bungala (135MW), and supports future solar developments in Port Augusta by providing firming green energy.
- **Enhanced Grid Services:** Provides inertia, frequency control, and other essential network services to balance the grid and foster more renewable energy projects in the region.
- **Cost-effective Storage:** Offers lower-cost, long-life energy storage solutions, underpinning both renewable and grid requirements.





# Queensland Portfolio:

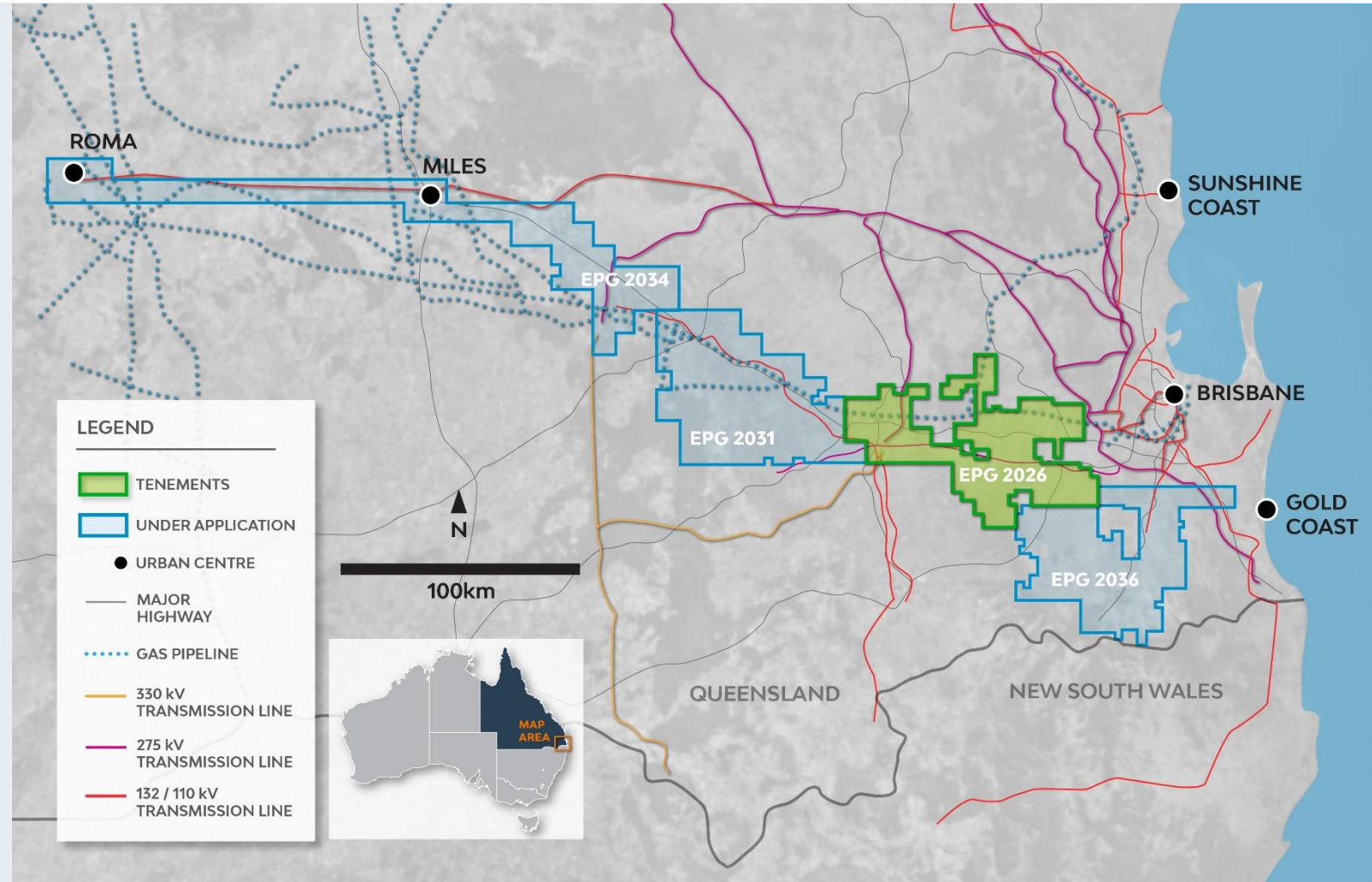
## Meeting east coast Australia's growing power demand

### Large and strategic footprint

- One tenement granted and three under application
- EPG2026 provides access to grid supplying power to >75% of QLD population
  - Major transmission lines and power substations located on tenement
- Tenements under application are located near major industrial activity in the Bowen and Surat Basin mining areas

### Significant geothermal resource potential

- 'Sweet spots' for potential energy generation have been identified on EPG 2026 and EPG 2031
- Indicative aggregate estimates of Electric Resource Potential<sup>1</sup> on EPG 2026 range from 200 MW-e to 1,100 MW-e<sup>2,3</sup>



1 – Independent Technical Expert - these analyses have been performed by Dr. Arnout JW Everts who holds a PhD in Geology from VU University Amsterdam and has 33 years of industry experience – see Independent Technical Expert's Statement included in this presentation

2 - assuming a plant load-factor of 0.9 and a range (P90 to P10) 1.1 – 3.7 MWe/km<sup>2</sup> (Megawatt electrical per square kilometer)

3 - The estimates of Electric Power-Resource Potential are strictly indicative and should not be construed to be compliant with UNFC. The estimates serve to illustrate product potential pending successful proof of concept, successful geological de-risking via appraisal and overcoming commercial hurdles.





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# 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 Earths Energy Limited (Earths Energy 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 (whether in Australia or elsewhere); unforeseen expenses; fluctuations in commodity prices; fluctuation in exchange rates; litigation risk; the inherent risks and dangers of development operations in general; risk of continued negative operating cashflow; the possibility that required permits may not be obtained; environmental risks; general risks associated with the feasibility and development of the Company's projects; future actions by government whether in Australia or elsewhere and whether or not they could have reasonably be foreseen or not; breach of any of the contracts through which the Company holds property rights; defects in or challenges to the Company's property interests; uninsured hazards; disruptions to the Company's supplies or service providers; 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.

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# Independent Technical Expert's Statement

The information in this release that relates to resource estimates through the mapping of prospective areas and gross rock volumes, review of reservoir temperature and properties of rock formations, pore fluids and fracture systems within the metasediments and basement rocks of Earths Energy Energy's South Australian assets is based on analysis of data provided by Earths Energy and sourced from open-domain databases. These analyses have been performed by Dr. Arnout JW Everts who holds a PhD in Geology from VU University Amsterdam and has 33 years of industry experience and a proven track record of technical leadership, project management, and technical task and project delivery. His areas of expertise include techno-commercial project due-diligence, field (re)development, oil & gas reserve and resource assessments, geothermal resources and exploitation viability, underground storage of CO2 (CCS) and hydrogen. Through his career, Dr Everts has participated in and/or led over 100 energy projects spanning the entire project life-cycle, from frontier exploration to late field-life including unconventional. In recent years his focus has shifted to renewables, i.e., geothermal and CCS. Dr Everts is an Active Member of AAPG (American Association of Petroleum Geologists), EAGE (European Association of Geoscientists and Engineers) and GSM (Geological Society of Malaysia), a Professional Member of AGA (Australian Geothermal Association) and he has contributed as lead author or co-author to around 30 research papers and extended abstracts in international scientific journals including papers on geothermal resource potential and assessment. As EuroGeologist title holder (registration no 1435) Dr Everts is entitled to sign off on Company Reserves and Resources reports submitted to regulatory bodies.

Dr. Everts has consented in writing to the inclusion in this release to the matters based on his information in the form and context in which it appears. Dr. Everts is engaged by Earths Energy as an independent consultant and is not employed by the Company.

# Appendices

# Technology advancements

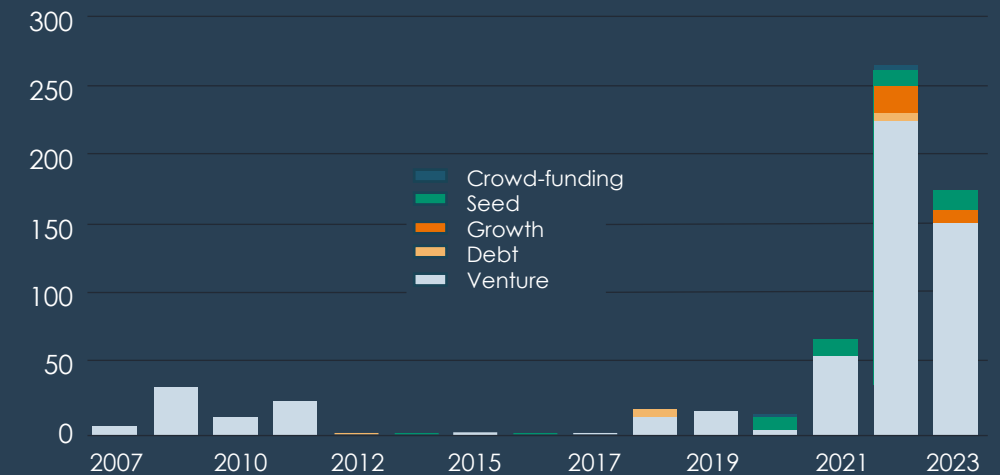
## Driving increased drilling and investment

### Investment is ramping up rapidly

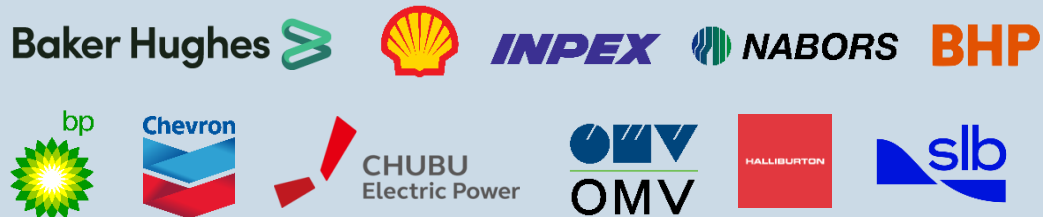
- Interest in next-generation geothermal technologies is driving record levels of geothermal drilling and R&D Investment
- In the last 3 years, geothermal start-ups secured over half a billion US Dollars in early stage funding
- Rystad Energy<sup>2</sup> has forecast that installed capacity for geothermal power generation will reach 32 gigawatt-electric (GWe) globally by 2030, nearly double the installed capacity today
- They also estimate that the geothermal power industry is projected to record total investments for geothermal power projects of US\$6.4 billion in 2023 and is then expected to grow at a CAGR of approximately 10.2% until 2030, resulting in a market size of US\$14 billion

### Funding for next-gen geothermal has surged<sup>1</sup>

Disclosed deal value for selected geothermal start-ups (US\$m)



Geothermal Potential is attracting Major Players



Investing in a number of exciting new technology providers





# Australia is well positioned to continue with geothermal development

## A unique geothermal portfolio in Australia

Earths Energy has secured a substantial geothermal tenement footprint near known demand in South Australia and Queensland

### Why Geothermal?

- **24/7 renewable energy production:** Differentiated from other renewables
- **Proven Base Load Power:** 16.3GWe installed capacity in over 30 countries<sup>1</sup>
- **Advantages over other Renewables:** Flexible, not weather dependent, small land footprint, abundant, scalability, low ongoing capex and carbon intensity, modular
- **Advanced Geothermal Systems:** Significant recent technology advancements (Advanced Closed Loop Technologies) to enable access to a greater resource in more locations
- **Regulatory and Capital Support:** from Governments and major international investors for a rapid energy transition

### EE1 positioned to succeed in the renewable energy industry

- **Early mover in Australia:** Assembled prospective and advanced geothermal projects across both Queensland and South Australia
- **Leading Technology Partner:** Collaboration with Baker Hughes and GreenFire Energy, a global leader in Advanced Geothermal Systems
- **Existing infrastructure:** Portfolio of assets is near existing infrastructure and customers for early commercialisation
- **High calibre team:** Established a high calibre team of industry leaders

“...the amount of heat within 10 km of the Earth’s surface...estimated to contain **50,000 times more energy than all oil and gas resources worldwide**”

**International Renewable Energy Agency<sup>2</sup>**

“... we think global **geothermal capacity has the potential to exceed 1,000 GW by 2050**, bigger than either global nuclear or hydro capacity today.”

**Wood Mackenzie<sup>3</sup>**

“...if geothermal goes global, we estimate that cumulative investment through 2050 could be **US\$1 trillion... a technological breakthrough** that could catapult today’s tiny, exclusively hot-spot energy source into a global industry may now be near at hand.”

**Wood Mackenzie<sup>4</sup>**

# Advanced Geothermal Technologies

## Key to unlocking the vast resource

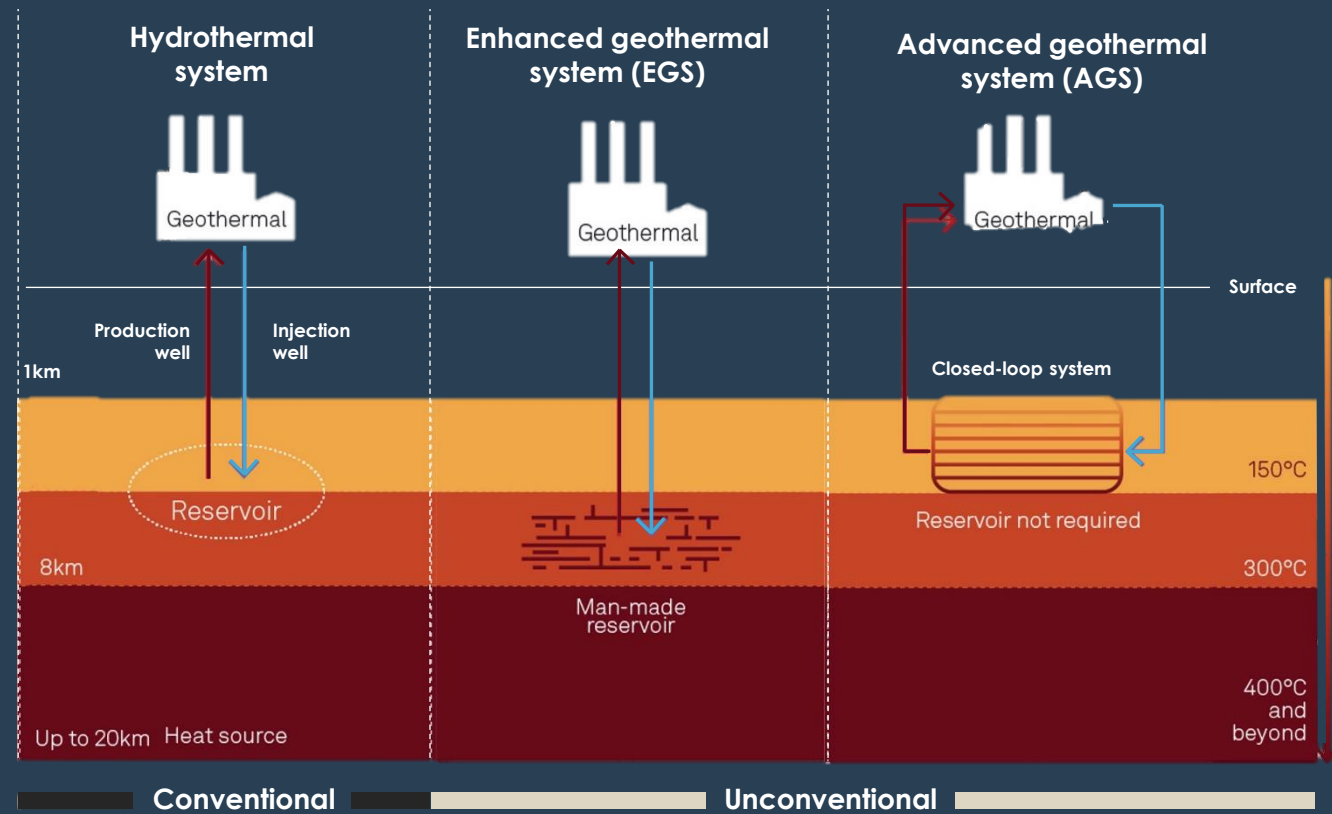
### Binary cycle power plants and advanced closed loop technology

“The development of geothermal power has historically been confined to hydrothermal sites – shallower resources with high temperatures, naturally occurring water and sufficient rock permeability. However, these resources are highly constrained...

Next-generation geothermal technologies – like Enhanced Geothermal Systems (EGS) and Advanced Geothermal Systems (AGS) – aim to create conditions for geothermal energy in areas where natural exploitation was otherwise impossible. This has the potential to unlock geothermal energy for many countries.” BloombergNEF<sup>2</sup>

- Technological advancement, in the form of binary cycle power plants, have enabled use of geothermal fluids at lower temperatures (80°C - 180°C) and shallower depths
- In an Advanced Geothermal System, 100% of fluid flows in a closed cycle - Does not require permeability of hot rocks, No fluid injection or emissions, Technology has been proven, is currently being scaled

### Next Generation Geothermal<sup>1</sup>



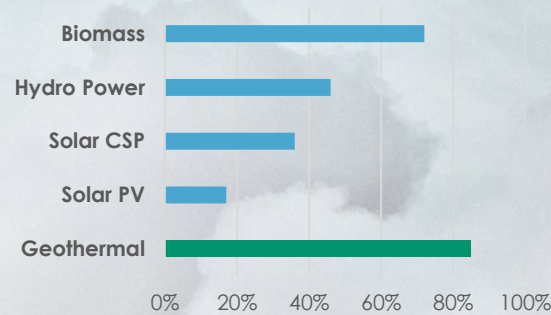
# Geothermal

## A structurally advantaged source of renewable energy

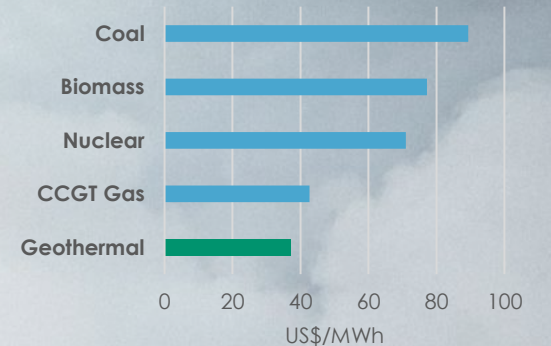
### Structural advantages - high capacity factor and low cost

- 24/7 renewable energy production
- Geothermal has the highest capacity factor of renewables
  - *Geothermal capacity factor is > 80%, compared to < 50% for other key renewable energy sources such as wind and solar<sup>1</sup>*
- Geothermal is the lowest cost dispatchable source of power in the USA
  - *Lowest levelized cost of electricity (LCOE) for dispatchable technologies in the USA at US\$37.3 per MWh<sup>2</sup>*

### Capacity Factor – renewable<sup>1</sup>

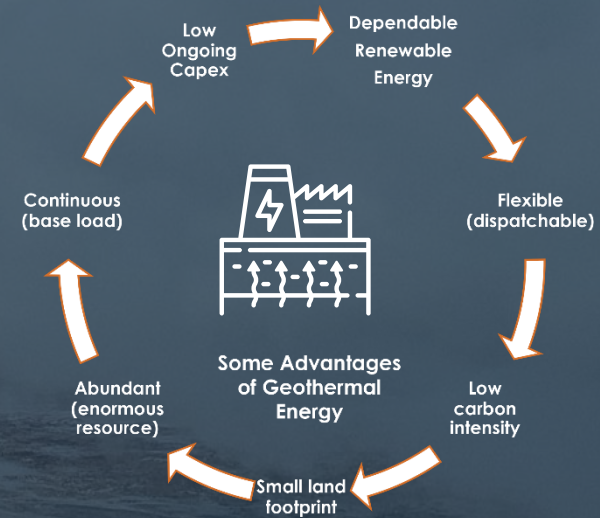


### LCOE – dispatchable<sup>2</sup>



### Advantages over alternative sources of Renewable Energy

- Small land footprint - Minimal land use
- Abundant (enormous resource) - Scalability
  - *“There’s enough heat flowing from inside the earth to meet total global energy demand twice over.” (MIT Technology Review)<sup>3</sup>*
- Low ongoing capex
- Modular
- Low Carbon Intensity





# Geothermal growth

## Steady but historically constrained to favourable locations

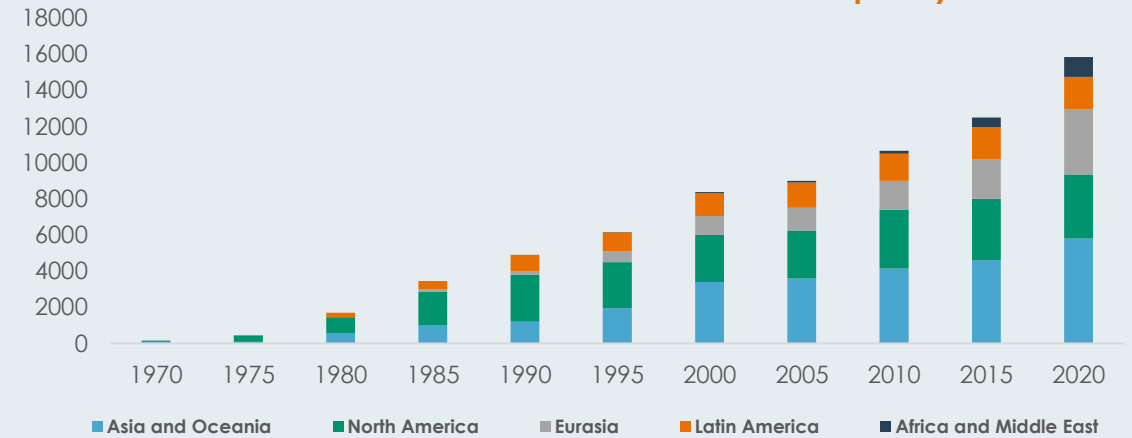
### Geothermal energy is well established globally

- Geothermal energy has been produced for over 100 years and geothermal power plants have been installed in 30 countries
- As of January 2024, global geothermal power generation capacity stood at 16,335 MWe with 208 MWe capacity installed during 2023<sup>1</sup>
- Over 400 plants worldwide, on average ~40MWe

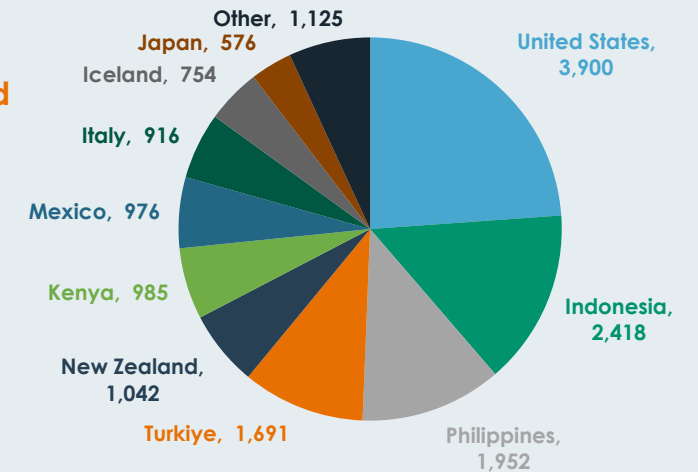
### Has historically been constrained to specific environments

- Despite its huge potential, growth over the last decade of geothermal electricity generation has been steady rather than spectacular compared to other renewable sources of energy such as wind or solar.
- Historically the global industry focused on “hot rocks”, >200°C in tectonically and volcanically active areas, e.g. Pacific Ring of Fire
- Permeability of rocks has been key to enable transport of heat through the rocks to surface in fluid

Historical Geothermal Generation – Installed Capacity MWe<sup>1</sup>



Top 10 Geothermal Countries – MWe Installed Capacity end-2023<sup>2</sup>



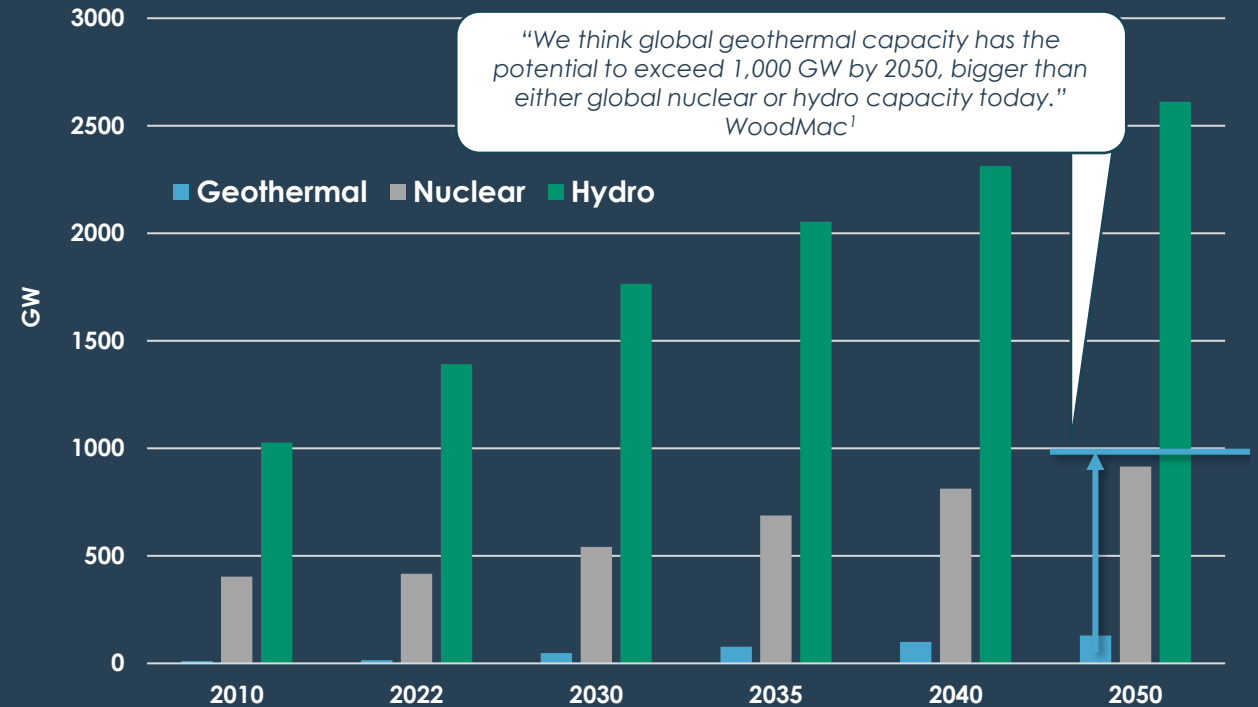
# Potential impact of technology

## Unlocking Australia and the World's vast Geothermal resource

### The bulk of geothermal resources remain unexploited

- The International Energy Agency estimates that geothermal derived power generation will increase circa eight fold between now and 2050<sup>2</sup>
- Unlocking the 'location restriction' by further technological advances has the potential to release a huge clean base-load geothermal resource.
  - *The International Renewable Energy Agency reported<sup>3</sup> that the amount of heat within 10 km of the Earth's surface was estimated to contain 50,000 times more energy than all oil and gas resources worldwide.*
- Independent research firms such as Wood Mackenzie have written that this level of growth may only be the tip of the iceberg due to the impact of new technologies

### Geothermal has potential to exceed 1,000 GW by 2050<sup>1</sup>



Columns in the chart show the latest International Energy Agency estimates for Power Generation by source in their Net Zero Scenario, 2000-2050<sup>2</sup>  
The Arrow and Blue Line show the Wood Mackenzie potential 1,000 GW by 2050, shown as comparison