

## Earths Energy and Baker Hughes enter MoU to collaborate on geothermal technology

Earths Energy (ASX:EE1) (Earths Energy, EE1 or the Company) is pleased to announce a strategic relationship with Baker Hughes through a Memorandum of Understanding (MoU). Baker Hughes is renowned for its innovative energy technology solutions across 120 countries. This collaboration is further strengthened by Baker Hughes' 2022 investment in GreenFire Energy, a global leader in Advanced Geothermal Systems (AGS). Under the MoU, EE1 and Baker Hughes will collaborate to assess the application of AGS technology on EE1's prospective Australian geothermal exploration portfolio.

### HIGHLIGHTS

- **EE1 and Baker Hughes enter MoU to progress geothermal exploration, appraisal, and development**
  - Baker Hughes is an energy technology company that provides solutions to energy and industrial customers worldwide. Built on a century of experience and conducting business in over 120 countries, its innovative technologies and services are taking energy forward – making it safer, cleaner and more efficient for people and the planet.
  - Baker Hughes, through its 2022 investment in GreenFire Energy, is developing closed-loop Advanced Geothermal Systems, utilising the proprietary "GreenLoop" system to exploit geothermal resources inaccessible with traditional technologies.
  - EE1 is planning to explore, develop, and commercialise its strategically located Australian geothermal projects by leveraging the technology capabilities of Baker Hughes.
- **Technology is key to unlocking vast untapped geothermal potential, a renewable energy source that provides 24/7 baseload power**
  - The amount of heat within 10 km of the Earth's surface is estimated to contain 50,000 times more energy than all oil and gas resources worldwide<sup>1</sup>, yet it remains largely unexploited using existing technologies.
  - As highlighted by independent consultant Wood Mackenzie, the 'technological breakthrough that could catapult today's tiny, exclusively hot-spot energy source into a global industry may now be near at hand.'<sup>1</sup>
- **Next Steps**
  - The parties will review the geothermal field evaluation work performed to date, along with well construction plans.
  - The parties will progress subsurface and surface development planning and execution phases.

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<sup>1</sup> <https://www.woodmac.com/news/the-edge/geothermal-close-to-breakthrough/>



**Managing Director Matt Kay commented:** “We are very excited to be able to collaborate with Baker Hughes, a long-trusted world leader in energy technologies including geothermal. We are also highly impressed by the Advanced Geothermal Systems capability that Baker Hughes brings through its investment in GreenFire Energy. GreenFire Energy is the global leader in Advanced Geothermal Systems, having completed proven projects and now with activities underway in more than 10 countries. This collaboration provides the opportunity to catapult EE1 and the geothermal industry in Australia.”

**Graham Gillies, Vice President of Baker Hughes – Asia Pacific commented:**

“Baker Hughes has operations in over 120 countries, our innovative technologies, including Advanced Geothermal Systems, are taking energy forward – making it safer, cleaner, and more efficient for people and the planet. We are excited by the opportunity to apply our innovative technologies, including Advanced Geothermal Systems in this collaboration with EE1 to advance Australia's progression to a Net Zero future.”

**Baker Hughes brings extensive industry capability**

Built on a century of experience and with over 58,000 employees, Baker Hughes has been involved in the geothermal industry for more than 40 years, adapting oil and gas technology to develop geothermal power.

Baker Hughes’s comprehensive technology portfolio drives reliable and predictable performance across the well lifecycle.

DESIGN AND SOFTWARE SERVICES	SUBSURFACE SYSTEMS			SURFACE SYSTEMS	
<b>RESERVOIR MODELING</b>	<b>WELL CONSTRUCTION</b>	<b>EVALUATION &amp; MONITORING</b>	<b>COMPLETION &amp; PRODUCTION</b>	<b>EQUIPMENT</b>	<b>PLANT ENGINEERING &amp; MONITORING</b>
JewelSuite™ subsurface modeling JewelSuite geomechanics JewelSuite reservoir modeling Connection to simulation engines	Drill bits Drilling services Drilling & completion fluids Cementing	Wireline services Coring Wellbore monitoring Integrated reservoir characterization	Completions & well intervention Hydraulic fracturing/stimulation Artificial lift Specialty chemicals	Surface trees Wellhead systems Flow control Field service	Steam turbines Turboexpander generator Digital solutions Artificial intelligence application Microseismic and fiber-optic monitoring

**Figure 1 – Baker Hughes technology portfolio<sup>2</sup>**

These expert technologies are crucial to developing geothermal energy.

<sup>2</sup> bakerhughes.com



## Joint Steering Committee to govern the relationship and drive towards execution phase and binding agreements over the next 2 years

Governance arrangements have been put in place to ensure both EE1 and Baker Hughes' commit the time and resources required to progress opportunity assessment.

The parties will review the geothermal field evaluation work performed to date, along with well construction plans to identify potential risks, opportunities and areas for further assessment and improvement.

The Committee will review field development, and well design plans, supply of services and technology for subsurface evaluation, drilling, well completion, steam production, steam gathering and power generation, for both planning and execution phases.

### Geothermal Energy – Vast Untapped Potential

The geothermal energy industry has been active globally for over 100 years and geothermal power plants have been installed in 30 countries<sup>3</sup>.

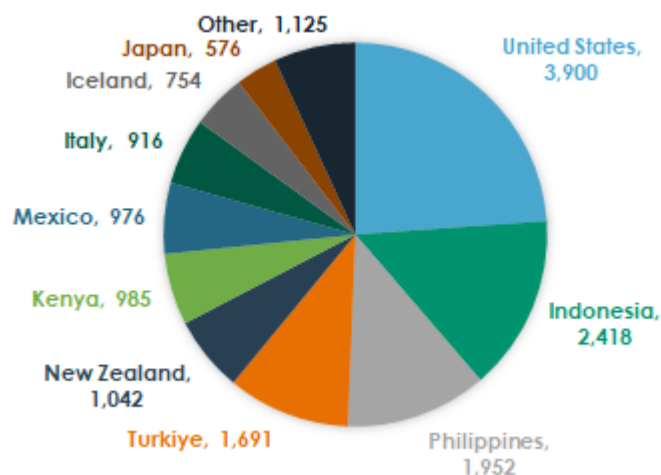


Figure 2 – Global installed geothermal capacity<sup>4</sup>

The largest geothermal energy producer, the US, has capacity of 3.9GW, a similar size as the entire WA electricity grid.

While well-developed in other countries, the Australian geothermal industry is in its infancy, due largely to Australia's historic abundance and acceptance of fossil fuels.

Historically, the global geothermal industry focused on "hot rocks", >200°C in tectonically and volcanically active areas, such as the Pacific Ring of Fire.

<sup>3</sup> <https://www.thinkgeoenergy.com/geothermal/geothermal-energy-production-utilisation/>

<sup>4</sup> <https://www.thinkgeoenergy.com/thinkgeoenerys-top-10-geothermal-countries-2023-power-generation-capacity/>



Technological advancements mean that the geothermal industry is on the cusp of a global renaissance with “geothermal anywhere” becoming the industry’s new tagline. Independent research firms, such as Wood Mackenzie, have written that the new technologies have the potential to exponentially grow the industry to 1,000 GW by 2050.

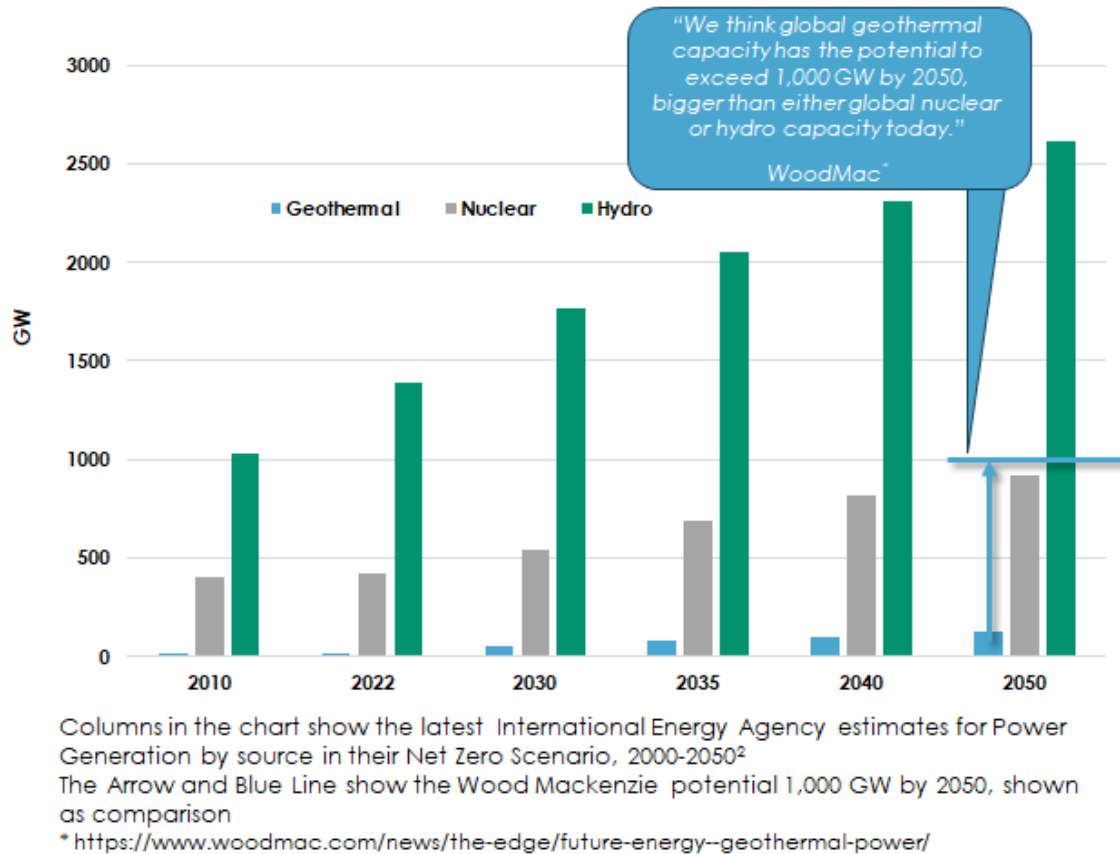


Figure 3 – Geothermal potential

### Advanced Geothermal Systems provide the potential to unlock material geothermal resources in Australia

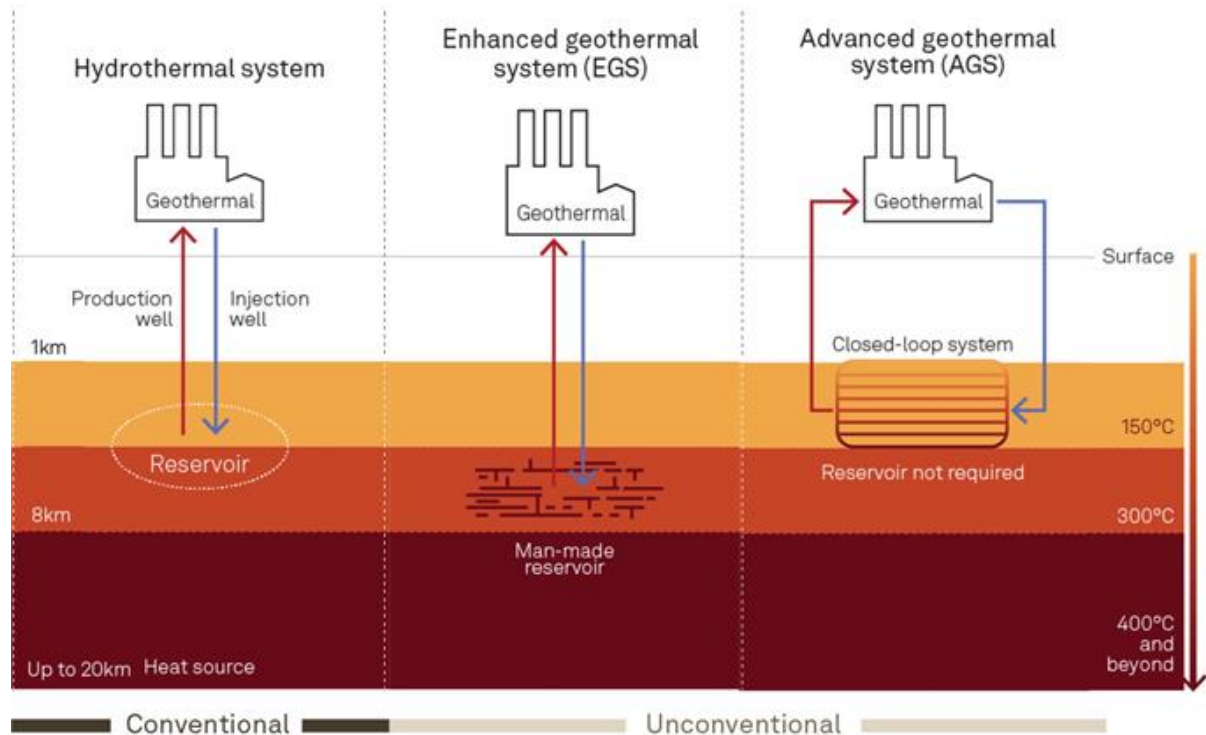
Earths Energy's core strategy is to assist in unlocking Australia's vast geothermal potential through the application of recently developed Advanced Geothermal System technologies.

“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 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.”<sup>5</sup>

<sup>5</sup> <https://about.bnef.com/blog/next-generation-geothermal-technologies-are-heating-up/>.



In an Advanced Geothermal System, 100% of fluid flows in a closed cycle or closed loop which does not require permeability of hot rocks, and has no fluid injection or emissions. The technology has been proven, is currently being scaled and is expected to operate with rock temperatures of less than 180°C.



**Figure 4 – Technological Advancements<sup>6</sup>**

Given AGS systems are closed loop, there are many advantages including:

- Improved air and water quality – Closed Loop Geothermal has zero emissions, little or no water consumption and no contact with subsurface water;
- Limited land usage / impact – a very small footprint, minimal visual impact, and no noise pollution;
- High degree of safety – no waste streams, no hazardous chemicals, no risk of fire or explosion; and
- Wildlife protection – not hazardous to birds, animals, or fish.

<sup>6</sup> <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/011124-infographic-next-generation-technologies-set-the-scene-for-accelerated-geothermal-growth-energy-transition>.



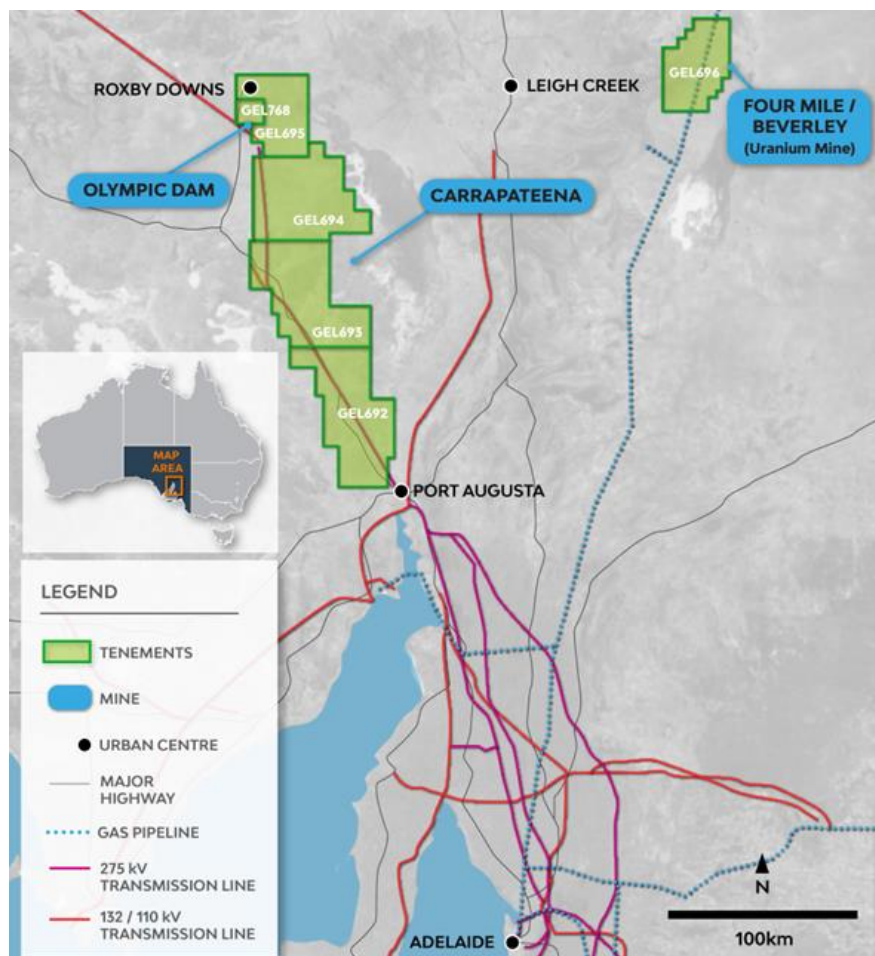


## EE1 tenure is well positioned close to infrastructure

EE1 has also secured a large acreage position close to both energy markets and infrastructure and has several further tenements in Queensland under application.

### South Australia: near Mines and Lines

Earth Energy's geothermal assets in South Australia span 12,035 km<sup>2</sup> in prime locations (See Figure 5). These blocks are strategically situated along major transmission lines and adjacent to large-scale mining operations such as Olympic Dam, Carrapateena and Four Mile / Beverly, all major consumers of energy in South Australia.



**Figure 5 – South Australian geothermal exploration licences (EE1 attributable: 84%)**

The Independent Technical Expert's indicative aggregate estimates<sup>7</sup> of Electric Resource Potential<sup>8</sup> for the granted South Australian acreage range from 9,700Mwe to 54,100Mwe<sup>9</sup>.

<sup>7</sup> Competent Person – 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.

<sup>8</sup> The estimates of Electric Power-Resource Potential are strictly indicative and should not be compliant with UNFC.

<sup>9</sup> Assuming a plant load-factor of 0.9 and a range (P90 to P10) of 1.9 – 7.9 MWe/km<sup>2</sup> (Megawatt electrical per square kilometer) for GEL 696 and a plant load-factor of 0.9 and a range (P90 to P10) of 1.1 – 6.9 MWe/km<sup>2</sup> for GELs 692/693/694/695/768.



## Queensland: meeting East Coast Australia's growing power demand

In Queensland, Earths Energy has one granted geothermal exploration permit, EPG 2026, which is located near Brisbane and substations and regional power networks. Additionally, the Company has three blocks under application that are located near the Gold Coast and major industrial activity in the Bowen and Surat Basin mining and coal seam gas areas (see Figure 6).

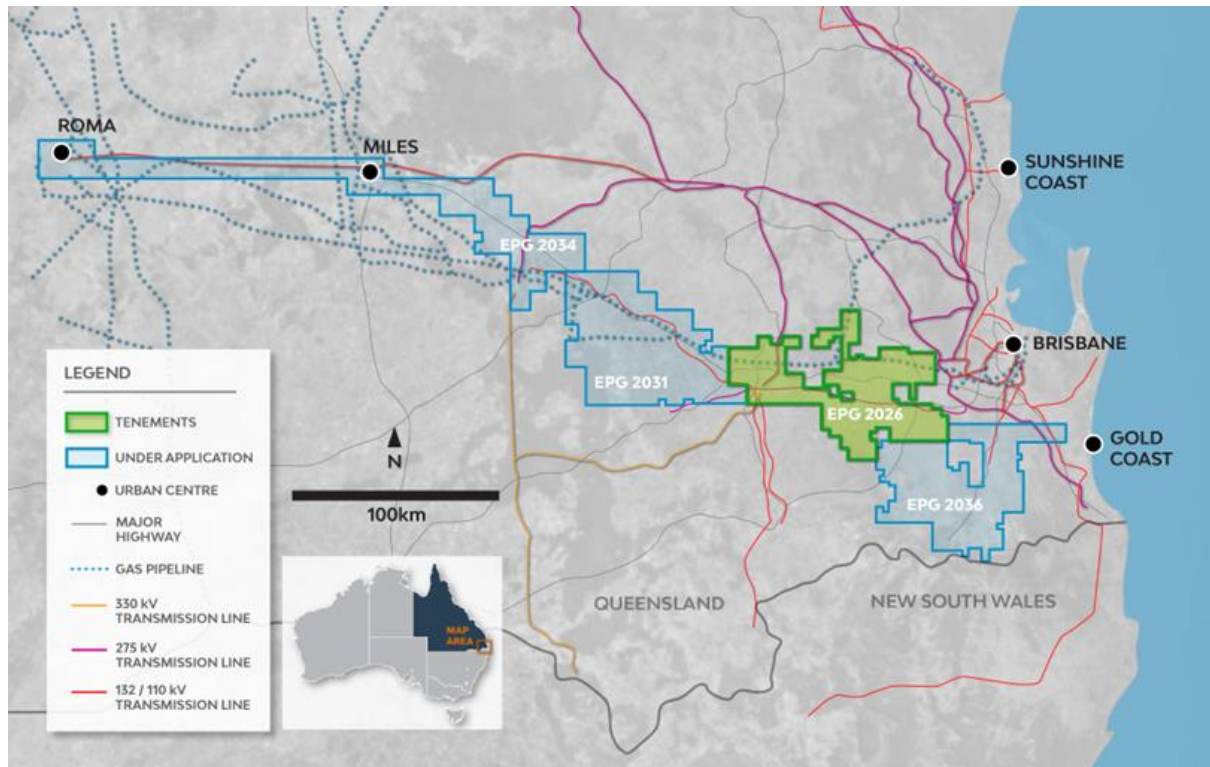


Figure 6 – Queensland geothermal exploration licences and applications

These tenements, particularly EPG2026 and EPG2031, exhibit considerable geothermal potential, with identified 'sweet spots' that have a promising estimated electrical power capacity. The Independent Technical Expert's indicative aggregate estimates<sup>6</sup> of Electric Resource Potential<sup>7</sup> for the granted Queensland permit range from 200 Mwe to 1,100 Mwe<sup>10</sup>.

<sup>10</sup> Assuming a plant load-factor of 0.9 and a range (P90 to P10) of 1.1 – 3.7 MWe/km<sup>2</sup> (Megawatt electrical per square kilometer).



**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:

Matt Kay  
Managing Director  
mattk@ee1.com.au

Aiden Bradley  
NWR Communications  
aiden@nwrcommunications.com.au

## About Earths Energy

Earths Energy has entered into binding Sale Agreements to acquire 84% interest in Volt Geothermal Pty Ltd ("Volt") and Within Energy Pty Ltd ("Within"), who hold geothermal projects in South Australia and Queensland, respectively (collectively the "Projects"). The Projects comprise of prospective geothermal exploration licences, surrounded by key existing infrastructure for electricity generation, including powerlines and sub power stations. The Company plans to focus on systematically exploring early-stage geothermal targets and developing geothermal resources at the Projects. This will involve a fit-for-purpose exploration programme analysing subsurface geology to identify thermal resource potential at different well depths, undertaking preliminary survey and resource assessments based on offset well data, exploration location definition and exploration drilling. This will determine priority targets for exploration drilling for geothermal resources.

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