

A Global Energy Outlook

for Australia's energy resources sector

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Australian Government
Department of Industry,
Innovation and Science

Industry
Growth
Centres

ADVANCE AUSTRALIA FURTHER

Why industry growth centres?

- Industry-led and independent
- Drive productivity and competitiveness
- Trusted brokers of innovation
- Transfer investment in knowledge and capabilities into commercial value and capacity here in Australia
- Connect to global export markets



NERA



Our vision:

**Australia as a global energy powerhouse:
a sought-after destination for investment and
the leading source of knowledge and solutions.**

87 Project partners

- Natural degradation of hydrocarbons – field testing & research
- International Program – SMART Australia
- Accelerator Program – RISE WA Cohort
- SME Innovation Vouchers
- Ocean Energy Cluster – cluster members
- Centralised Environmental Plans for Seismic Operations
- Decommissioning Initiative
- Tropical Cyclone Reanalysis
- Exmouth Integrated Artificial Reef
- Living Lab Subsea Test Structure
- LNG Futures Facility
- Unlocking Marginal Uranium Deposits
- Hydrate Risk in Subsea Jumpers
- Integration of Image Recognition Technology into water hull cleaning tool
- Subsea Innovation Cluster Australia
- CORE Innovation Hub
- EX-rated Robotic Crawler
- Abrasive Slurry Jet Injection
- Wireless Industrial Sensor Environment Program
- WA Data Science Innovation Hub
- HyFast – predicting hydrate blockages
- Open Innovation Platform
- Diagnostic Acoustic Sensing for coal resource exploration – research

15 Project partners

- Automating Groundwater Compliance Monitoring – field trial and regulatory engagement
- Radiological Risk Assessment Tools
- Hybrid CSG Wellsite Power – design & build
- Decommissioning Initiative

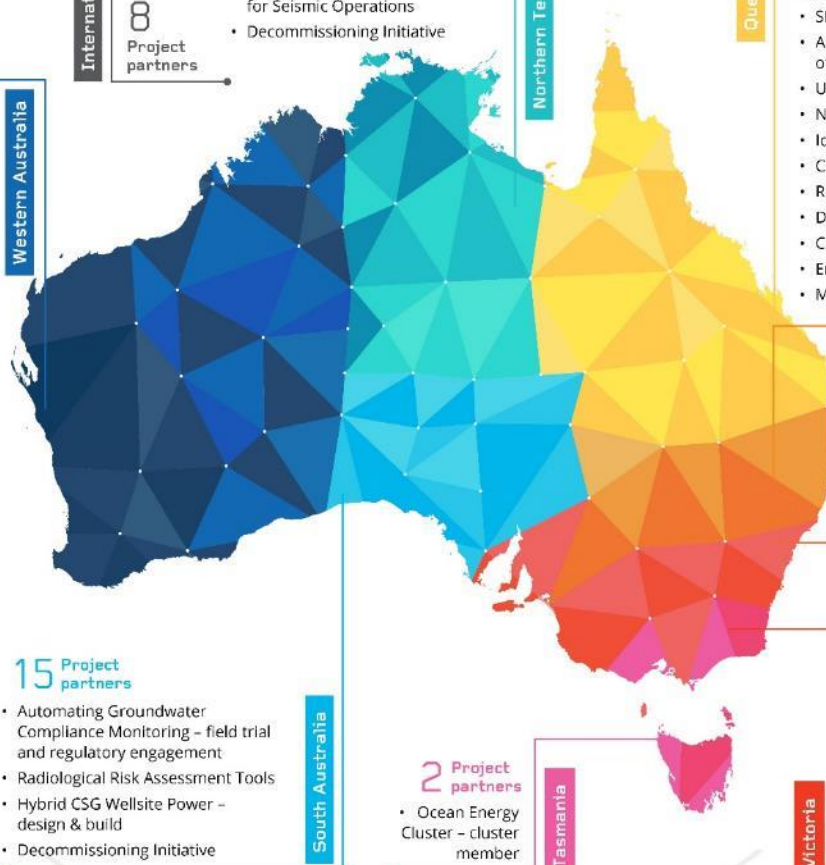
International

8 Project partners

- Metal 3D Printing – testing, application & research in Darwin
- Centralised Environmental Plans for Seismic Operations
- Decommissioning Initiative

7 Project partners

Northern Territory



23 Project partners

Queensland

- Hybrid CSG Wellsite Power – Installation in Roma
- International Program – SMART Australia
- Accelerator Program – RISE QLD Cohort
- SME Innovation Vouchers
- Automating Groundwater Compliance Monitoring – design & manufacture of prototype
- Unlocking the Tooleebuc Formation – research
- New Geostatistical Technique (Petrel plug-in) – research
- Identifying Different Sources of Methane in Groundwater – research
- Converting Tight Contingent CSG Resources – research
- Resetting our understanding of the Great Artesian Basin – research
- Diagnostic Acoustic Sensing for coal resource exploration – field trial
- CSG Wellhead Compression
- Enhancing Well Deliverability
- Machine learning driving future geological models

New South Wales

16 Project partners

- Machine learning driving future geological models
- Natural degradation of hydrocarbons – field testing
- Ocean Energy Cluster – cluster member
- Automating Groundwater Compliance Monitoring – manufacturing of sensors
- Scheduling system for coal export terminals
- Unlocking Marginal Uranium Deposits – research
- Tropical Cyclone Reanalysis
- SME Innovation Vouchers

Australian Capital Territory

3 Project partners

- Natural degradation of hydrocarbons – field testing

5 Project partners

- Natural degradation of hydrocarbons – field testing
- Metal 3D Printing – design & manufacture in Melbourne
- Automating Groundwater Compliance Monitoring – research
- Ocean Energy Cluster – cluster member
- Decommissioning Initiative

Victoria

Tasmania

2 Project partners

- Ocean Energy Cluster – cluster member

South Australia

NERA's Impact

\$15.6 million

NERA's collaborative project fund

+160

Project partners

\$10 billion

of value NERA is helping to unlock
to the Australian economy



Australia Has Developed One Of The Strongest Energy Resources Industries Globally

- Built on world-leading innovation
- Sustaining **98,000 direct jobs**
- **10 x** that number of jobs created through the rest of the economy
- High value and high opportunity
- Maintaining strong sector investment is important



Global Energy Outlook

- Global primary energy demand will expand by 25% between 2017 & 2040 (International Energy Agency)
- Natural gas is expected to be the world's fastest growing fossil fuel — 2040 demand +45% to today
- Energy resources — exploration, development and consumption driven by global and domestic demand



Australia's Energy Resources Sector

- Energy exports are forecast to be \$117B in 2019-20
- Australia's O&G industry is currently the world's largest exporter of LNG (although Qatar challenging)
- 16 nuclear reactors under construction in OECD countries
- Coal production expected to grow by 14.5% by 2040



Opportunities & Challenges

- Innovation is the key to lift production, reduce costs & optimize performance
- Transition to less carbon intensive energy sources — renewables
- Harness automation, digitalization, develop future workforce skills
- Improve supply chain integration



\$2 million Future Technology Project Fund

NERA's \$2m project fund is open to applicants with projects/initiatives that have one or more of the following focus areas impacting the energy resources sector and align one or more of NERA's **knowledge priorities**. Project proponents who can demonstrate innovative approaches, clear commercialisation applications and clear project timeframes should consider applying.



Remote operations,
robotics & AI



Unconventional
gas technologies



Hydrogen



Decommissioning

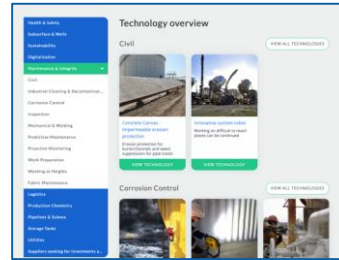
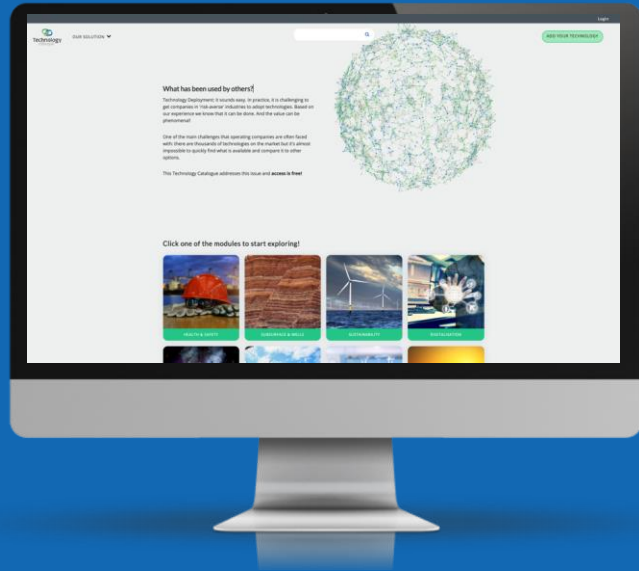
Submit by
30 Sept
2019

www.nera.org.au

Technology Catalogue

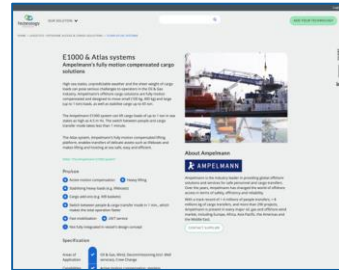
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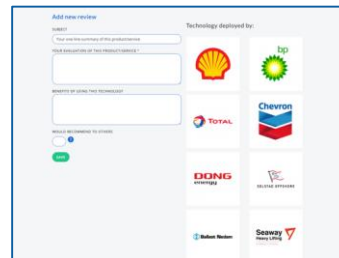
MODULES & SUBMODULES

Technologies are grouped in modules around specific business challenges & opportunities. Each module contains multiple submodules to ease navigation.



TECHNOLOGY PAGE

A page per technology summarising the technology, the pros and cons, specifications, deployment record and contact info.



REFERENCES & REVIEWS

Nothing gives more confidence to start using technology than deployment records and reviews by industry experts and end-users. This is particularly true in risk-averse industries.



NERA

NATIONAL
ENERGY RESOURCES
AUSTRALIA

Creating connections for growth

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 NERA – National Energy Resources Australia



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