The hydrogen opportunity for Australia's gas and pipeline industry

David Norman, CEO
October 2021

We’ve come a long way since 2018

Next 5 years
Beginning of biogas and hydrogen innovation and pilot projects.

5 - 20 years
CO_2 reduction through blending of biogas and hydrogen in gas networks.

20 - 40 years
Potential conversion of entire networks to CO_2 free biogas and hydrogen.

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Collaborative research

100 organisations – Industry, Companies, State Governments and Research Universities

Effective, regular international linkages & collaboration

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Action orientated, industry led, applied research

Over AU$90m of cash and in-kind support

Three years in to a seven year research program

AU$23m (cash) already committed across 89 projects covering 3 core programs:

- **Future Fuel Technologies, Systems and Markets**
- **Social Acceptance, Public Safety and Security of Supply**
- **Network Lifecycle Management**

Trusted voice of reason and evidenced based knowledge to the energy transition deliberations - NHS, various state studies, H2<2 WG, Advisory Panels

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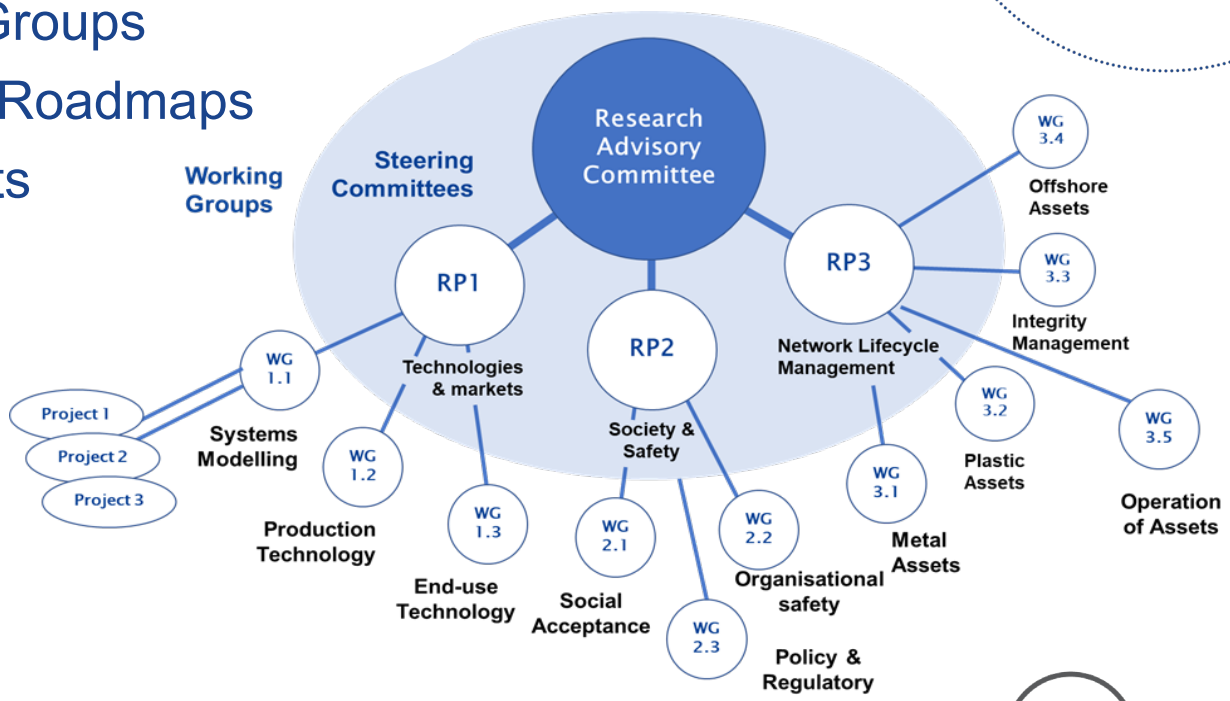
Research Management Structure

10 Focused Working Groups

10 Detailed Research Roadmaps

210 Industry Specialists

150 Researchers



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Research Projects

89 projects approved

30 projects completed / 59 active

$50mln+ cash and in-kind committed

50+ PhD scholarships

- All project information on our website
- Focus on research utilisation, commercialisation and supporting and driving impact
- Building/expanding lab testing capability

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RP1 & RP2 project examples

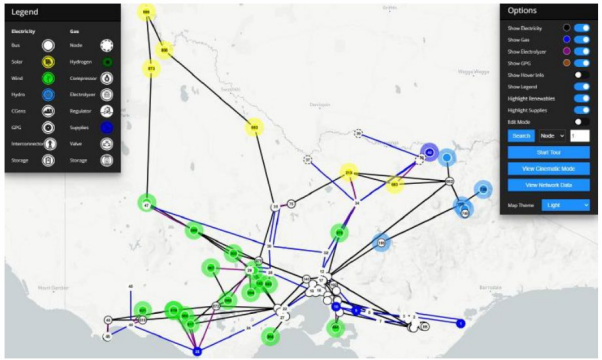
RP1: Future Fuel Technologies, Systems and Markets

- Integrated hydrogen-gas-electricity model (covering NEM)
- Residential and commercial appliance test program
- Hydrogen production / process technology R&D

(Including Gas blending and deblending, methane pyrolysis, green methanol, solar photocatalysis)

RP2: Social Acceptance, Public Safety and Security of Supply

- Regulatory mapping of Future Fuels
- Citizens panels to deliberate role of future fuels
- National survey on public attitudes towards hydrogen



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RP3 ‘Network Lifecycle management’ Project examples

- Girth weld matching & strain capacity
- Pipeline abandonment
- Smart sign technology
- AS2885.info
- Pipeline damage from rotating equipment
- Hydrogen steel compatibility – Current key focus
  - Internal coatings / in-situ coatings
  - Material properties
  - Code of practice
- Plastic materials and elastomers
  - Hydrogen → material degradation
  - Biomethane and other ‘future fuels’
- Operations & Integrity
  - Metering
  - Gas mixing and capacity modelling

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Australia’s hydrogen opportunity

In collaboration with CSIRO, NERA and the Australian Hydrogen Council we have launched HyResource

https://research.csiro.au/hyresource

Australia has significant advantages

World-leading gas energy industry
Highly-skilled gas energy workforce
Natural resources and space
Existing trade relationships
Geology needed for storage
Existing fuel infrastructure
World class research universities
and engineering specialists

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Super-charging research to achieve Australia's hydrogen opportunity

Background for the Future Strategic Review

Future focus, capability and direction of the community, noting the accelerated rate of change occurring in the energy markets

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Forward Themes Identified

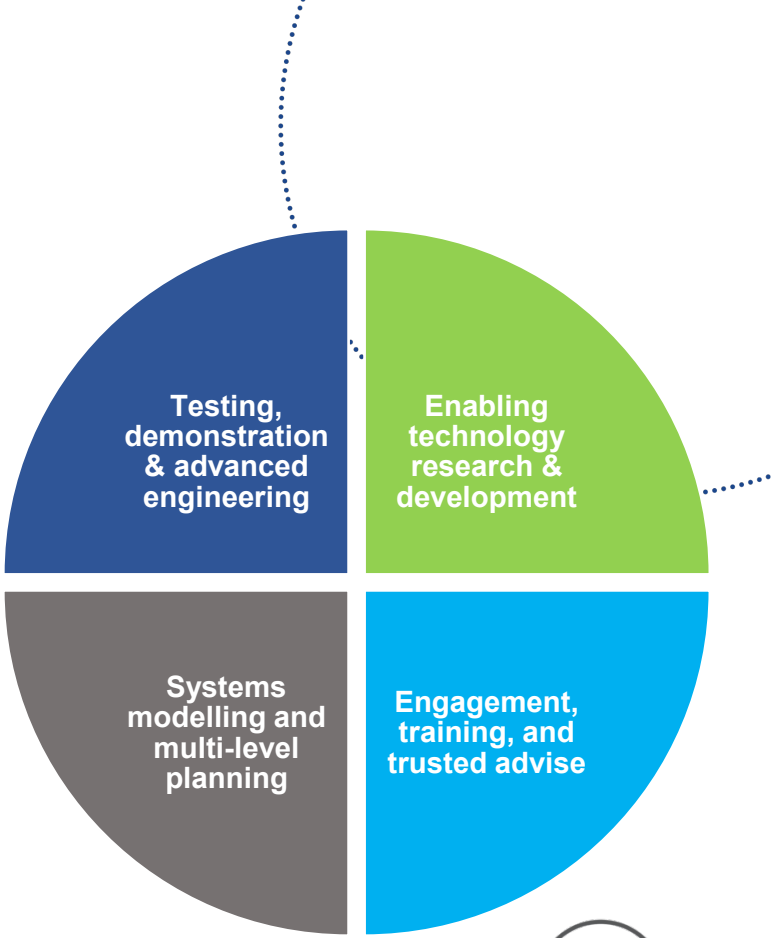
Multi-level planning – frictionless pathways to greener gas as an integral component of a ‘net zero’ emissions energy system

Policy, regulations and standards – enabling development at pace and scale via consistent and concise standards across jurisdictions

Evolving demand-side technology – industry and economic growth with fuels and technologies aligned with a secure decarbonisation pathway

Evolving supply-side technology – optimal investment in new and existing infrastructure hydrogen and gas blends securely to users

Facilitating progress – efficient sharing and use of information through communication, demonstration and collaboration during rapid and accelerating scale-up



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Closing Remarks:

- We are all at the epicentre of incredible change and opportunity as the world races to net zero
- This industry should be proud of its past, its actions over the last 5 years and be courageous and bold about its future
- The next phase is a rapid transition to action – and learning by doing
- Ever member of the APGA has the chance to benefit from and support the amazing new knowledge being created and utilised by active involvement in Future Fuels CRC.

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Enabling the decarbonisation of Australia's energy networks

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