# Implications of a Renewable Gas Target for future fuels deployment

**Future Fuels CRC**

***Policy and Regulatory Research Forum***

**5 April 2022**

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# Origin of the project

Future Fuels CRC’s objective to support transition of Australia’s energy sector to low-carbon fuels

Emergence of new clean gas products

Implications for Australia’s gas network infrastructure

Role in transport, heavy industry, exports

Substantial set-up costs, economies of scale and first-mover issues

Need for markets and regulatory regimes to evolve with the technology

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# Broad outline

Investigate the implications of and role for Renewable Gas Target (RGT) mechanisms in Australia

Concerned with mechanism design issues and macroeconomic impacts

Project involving University of Adelaide economists and a group of industry partners

Project running April-December 2022

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# Who we are

University-industry collaboration involving

- University of Adelaide economists with experience in energy market policy and computable general equilibrium modelling
- Industry partners including ENA, APGA, Australian Gas Infrastructure Group, Jemena, ATCO, AusNet Services, Dept of Planning and Environment NSW, Department of Environment, Land, Water and Planning – Victoria
- Commissioned by the Future Fuels CRC

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# What are renewable gases?

Renewable gases are gas products which, when viewed along the entirety of their supply chain, can be combusted without adding to emissions

Prime candidate is green hydrogen – produced by electrolysis powered by renewable electricity

Other possibilities include, biomethane, ethanol and blue hydrogen (with full CCS or offsets)

Widespread and growing interest in green hydrogen around the world

Prospects for substantial technological breakthroughs around green hydrogen – both in production technologies and products that use it

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# What is an RGT mechanism

A renewable gas target (RGT) mechanism is a mechanism intended to grow the role of renewable gases

Variety of possible objectives including

- increase renewable gas share of final gas consumption
- increase domestic production of renewable gases

Needs to be seen in the context of

- non-gas energy sources – electricity and fossil fuels broadly
- broader emission-reduction efforts

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# Why investigate RGT mechanisms?

Allow stakeholders to better assess the design considerations around Renewable Gas Target (RGT) mechanisms and their implications for broader adoption of future fuels

By combining economic analysis and macroeconomic modelling explore the detailed impacts of alternative approaches to RGT implementation

Enhance stakeholder confidence with respect to how RGT mechanisms may be implemented and their impacts on the sequence of events and investments necessary to ensure success and manage risks

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# Broad aims of the project

Develop a broader understanding of the implications of RGT mechanisms for future fuels

Explore aspects of the design of an RGT to inform stakeholders on the likely outcomes of alternative RGT policies for the future fuels sector and the broader economy

Develop policy scenarios for investigation and counterfactual comparators in collaboration with industry partner

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# Specific objectives

1. Understand the way in which RGT mechanisms may impact on the provision and uptake of future fuels in the Australian energy mix
2. Undertake a review of the performance of similar policies (e.g. the RET)
3. Provide industry with the evidence needed to engage with other stakeholders around RGT and related energy and emission policies
4. Draw out knowledge from industry partners about how RGTs might impact on their business, and synthesise this with broader evidence
5. Understand the how the introduction of RGTs might affect the interface between gas and electricity markets
6. Develop capacity to identify the nature of possible unintended implications for future fuels in the energy transition

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# Structure of project

Two closely-integrated streams

- Evaluation of policy implications of renewable gas targets led by A/Professor Liam Wagner, University of Adelaide
- CGE modelling led by A/Professor Jim Hancock, University of Adelaide, supported by Suraya Abdul Halim and Tania Dey

These streams run in parallel with feedback from each to the other

Guided by a Steering Committee involving the researchers and industry partners

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# Policy evaluation stream

Identification and review of existing related schemes

Domestic examples – NSW Renewable Hydrogen Target, Qld Gas Electricity Scheme, Renewable Electricity Target

Models adopted overseas – Germany, Japan, Korea, UK, France, EU

Draw out information regarding

- Policy objectives – emissions reduction, industry development
- Design alternatives
- Implementation issues and unintended consequences
- Scheme efficacy
- Lessons for RGT mechanisms in Australia

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# Computable general equilibrium modelling

**Allows assessment of differential macroeconomic impacts across States and sub-state regions**

**Work under RP1.1-01 extended existing Victoria University Regional model to incorporate:**

- Future fuels - green hydrogen, blue hydrogen, biofuels
- Offsets - biosequestration, direct extraction
- With varying degrees of emission reduction effort

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# CGE questions

**What are the impacts of different RGT poicy scenarios for:**

- **high-level macroeconomic aggregates – GDP, employment, household consumption levels**
- **Australia’s energy mix**
- **macroeconomic aggregates at the State level**
- **emission levels and the requirement for offsets**

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# Possible CGE modelling scenarios

A base case involving

- existing policy settings
- a comprehensive measure to reduce emissions - e.g. emissions tax, tradeable emission permits

Policy scenarios such as

- an integrated national RGT
- production-focussed state RGT schemes
- fuel-mix focussed state RGT schemes

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