



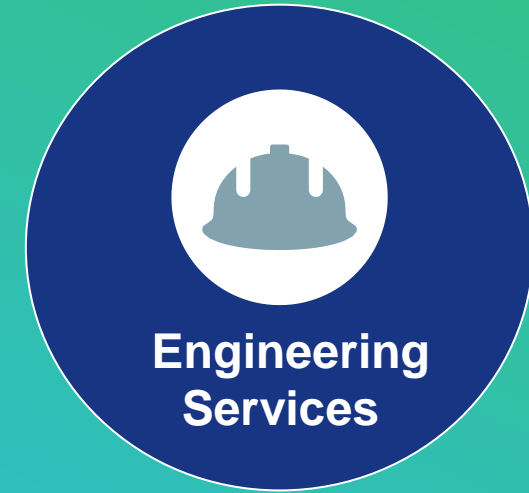
2023 Australian Domestic Gas Outlook Conference

Role of Biomethane in a Net-Zero Future

We are

Creating sustainable energy solutions with communities

We deliver

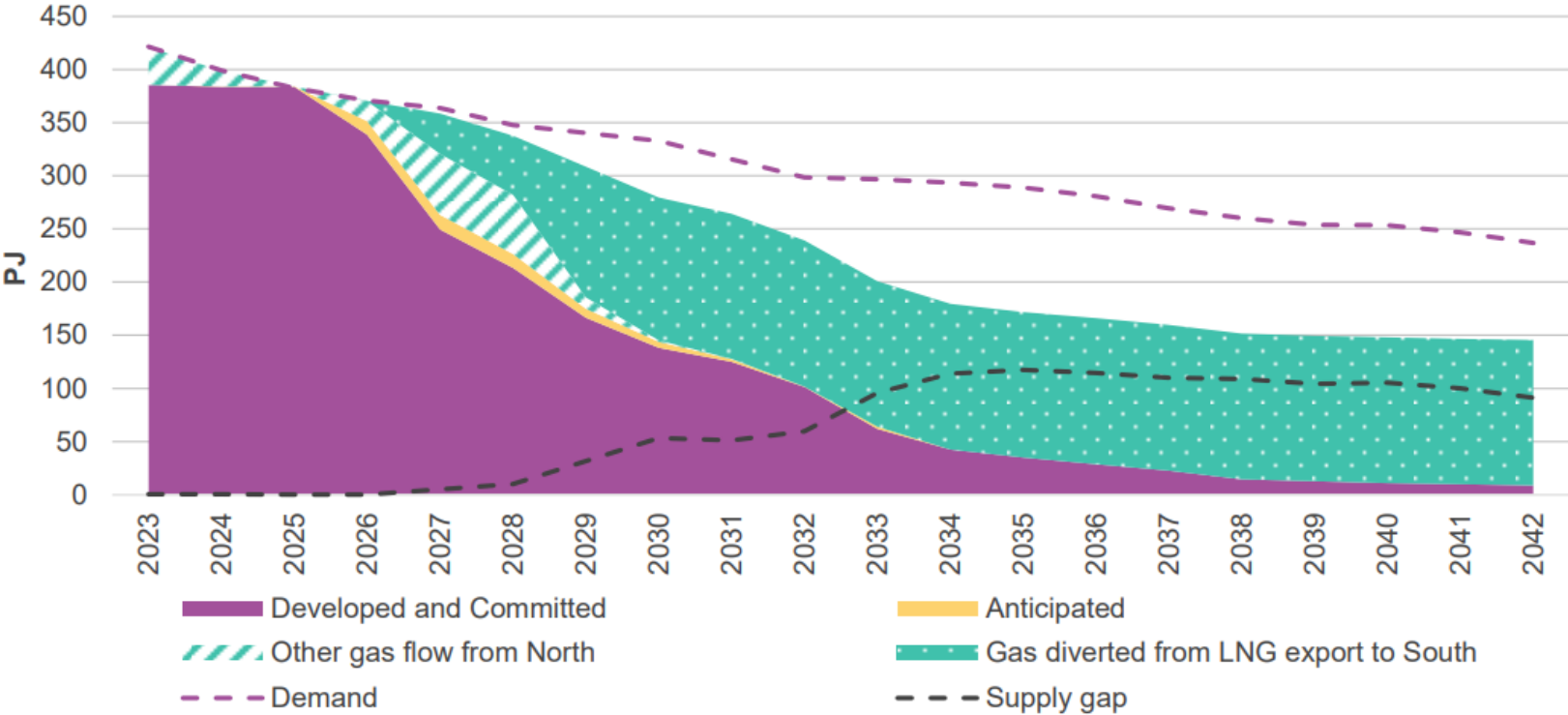


We're
seeking

Solutions to the energy challenge

2023 AEMO Gas Statement of Opportunities

**2023 Gas Statement of Opportunities:
Projected annual adequacy in southern regions**



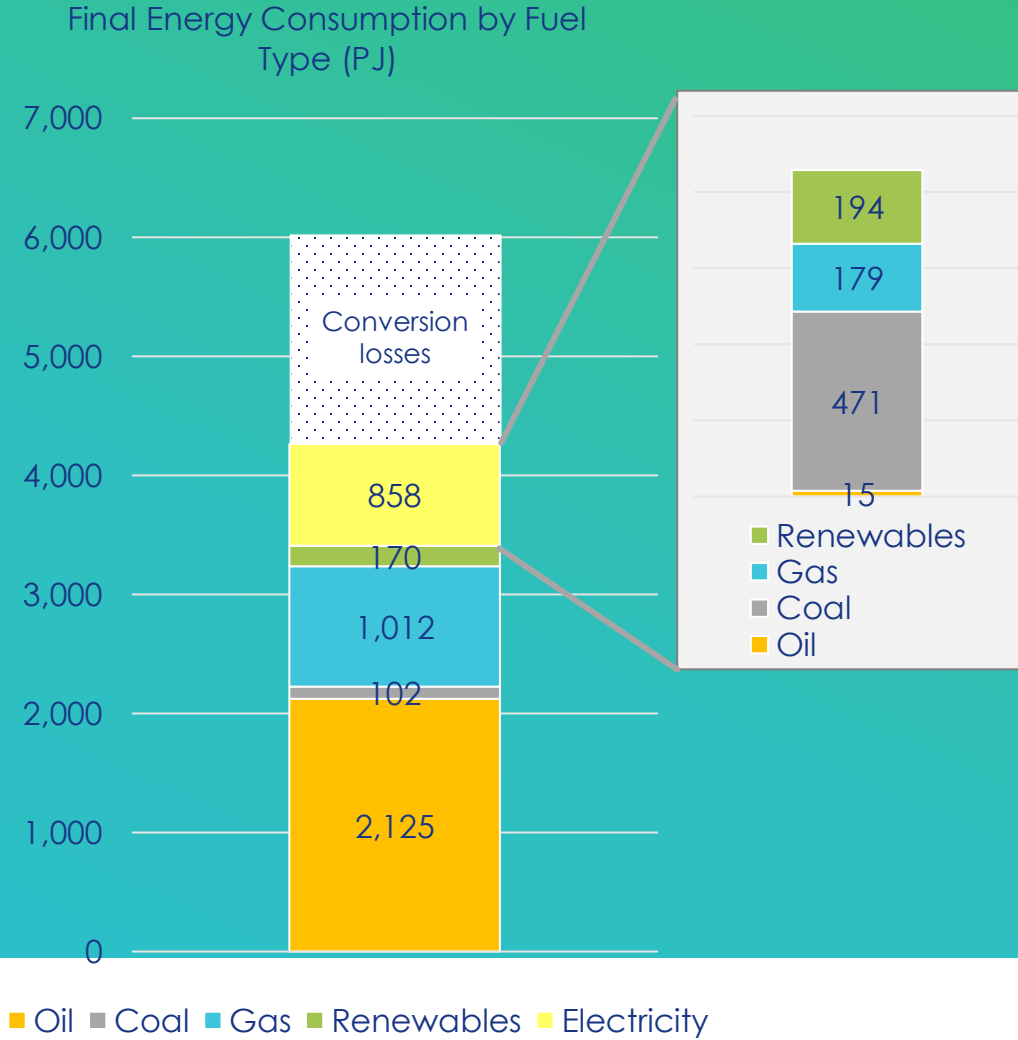
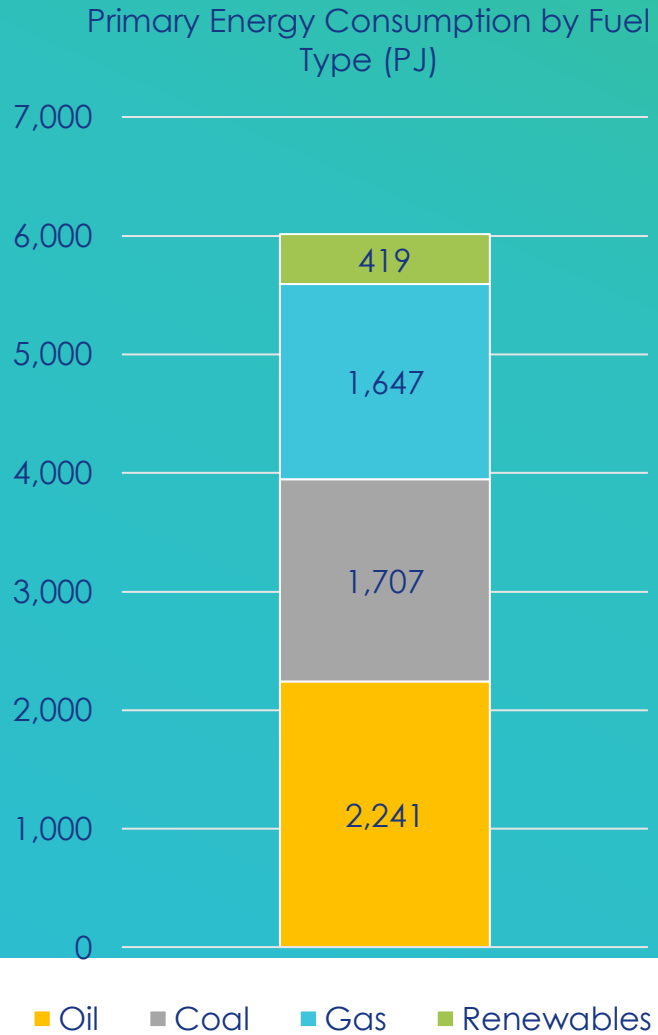
Assumes

- No major weather events or cold snaps
- No generation outages
- No Upstream production challenges












Source: AEMO, 2023 Gas Statement of Opportunities

Australian Energy Mix



The Decarbonisation Challenge: a societal transformation

Givens	Choices	Outcomes
 Security	 Reliability	 Access/equity
 Safety	 Affordability	 Economic impact
 Sustainability	 Doability	 Communal / individual
Can't be compromised	To be optimised	For a just transformation

Reliability: and the Role of Gas



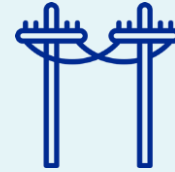
Hard to Heat



Hard to Firm



Hard to Build



Hard to Strengthen



Hard to Supply



Hard to Migrate



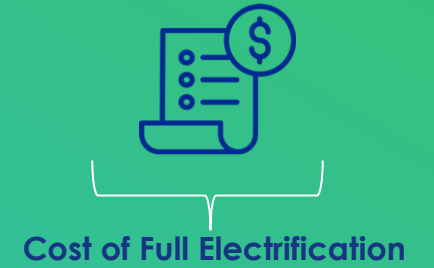
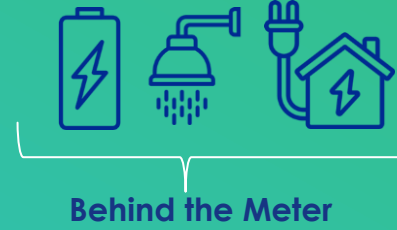
Hard to Move



Hard to Beat

Affordability: the Cost to Decarbonise

Full Electrification



\$XX

+

\$XX

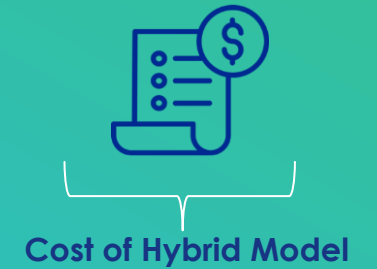
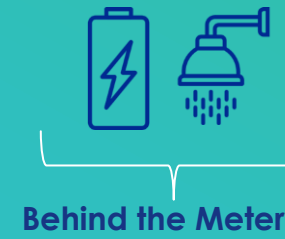
+

\$XX

=

\$YY

The Hybrid Model



\$XX

+

<\$XX

+

<\$XX

=

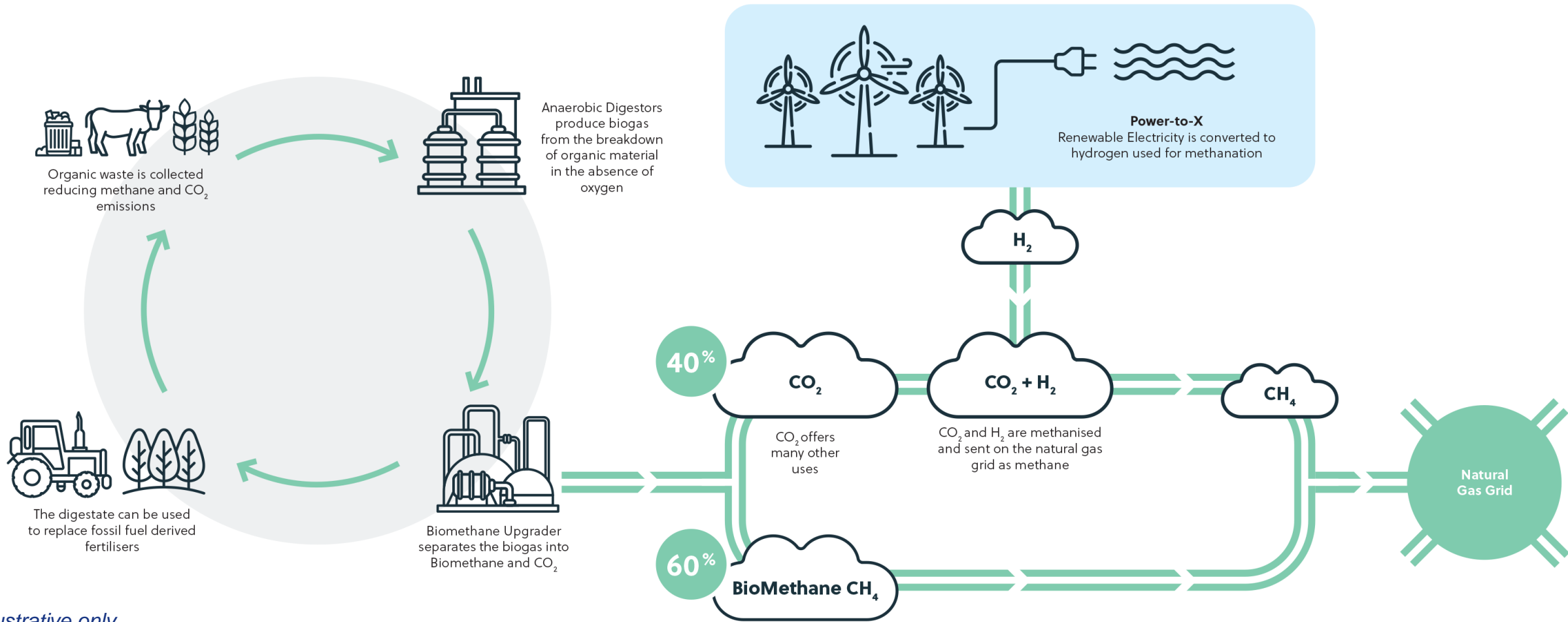
<\$YY

Doability: and The Sydney CBD



- **1.5 million gas** connections across Sydney and NSW
- **Residential mix:** high-rise, single-dwellings
- Biomethane as a (soon to be) **'here and now' product**

Biomethane Production



Illustrative only

Global Potential for Biomethane

United States

- 2,300 sites producing biogas across 50 states
- Primary pathway landfill gas collection
- World-leading use of biomethane in transport sector

United Kingdom

- More than 80 biomethane plants connected to the grid
- Green Gas Certification Scheme, Non-Domestic Renewable Heat Incentive, Green Gas Support Scheme
- Mostly injected into low-pressure distribution network, some plants starting to inject into the high-pressure transmission system

Europe

- Goal of 35 billion cubic metres of biomethane per year by 2030 in the EU
- 20,000 biomethane plants in Europe - 10,000 in Germany alone
- 20%+ biomethane in Denmark's gas networks, 11% in Italy
- By 2050, biomethane could cover 62% of EU gas demand

Central America and South America

- Hold ~20% of global bioenergy potential
- Brazil producing biogas primarily from landfills

Asia

- Holds ~30% of global bioenergy potential
- Policies support household digesters in rural China
- Growth in Thailand in 2,000s thanks to enabling policies

Global bioenergy potential

600

Mtoe

(million tonnes of oil equivalent)

 Renewable Gas


Jemena
bringing energy to life

Domestic Potential for Biomethane



Australia's theoretical bioenergy resource potential is significant

- Domestic Gas Consumption 2019-20: **1,142PJ**
- Biogas potential in New South Wales: **553PJ**
- New South Wales residential gas use: **circa 27PJ**

Biowaste in proximity to Jemena's New South Wales Gas Network



 **Renewable Gas**


Jemena
bringing energy to life

Malabar Biomethane Project



Volume
95 TJ/a



Anaerobic Digestion (AD)



Membrane
Biogas Upgrading technology



Combined heat and power
(CHP)

Opportunities



Co-digestion
Additional food waste



Bio-Methanation trial



Blueprint for new
facilities



Above: Malabar Biomethane Demonstration Project



**34 PJs
Identified**

Challenges



Certification scheme for
renewable gas



Construction agreements



Regulation and trading

Biomethane Demonstration Projects

Malabar
Biomethane
Demonstration
Project

Project A

Second
Biomethane
Demonstration
Project

Project B

Third
Biomethane
Demonstration
Project

Project C

 **Renewable Gas**


Jemena
bringing energy to life



May 2023
Commissioning

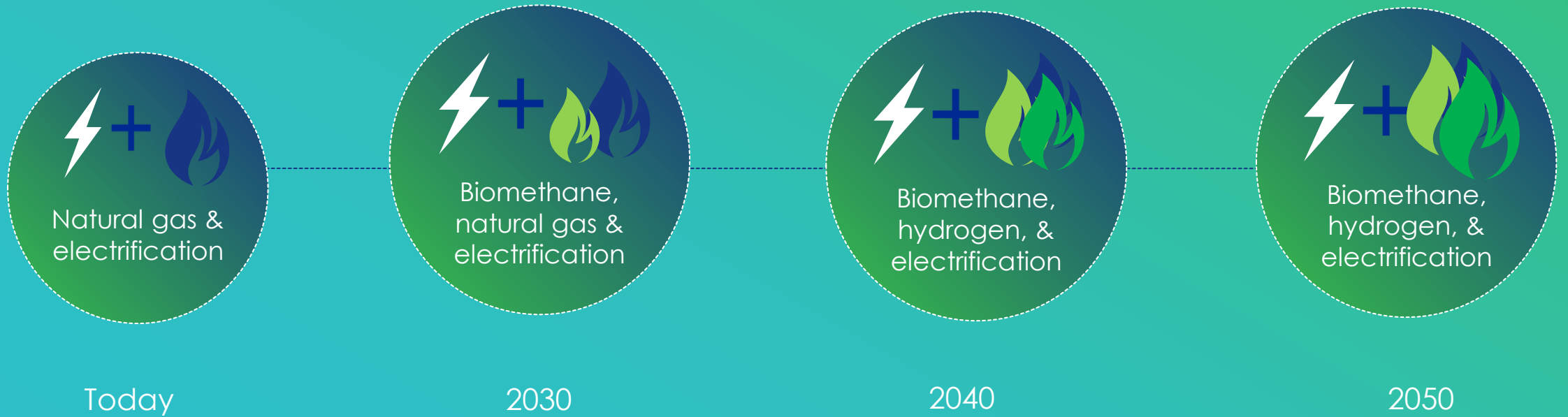
 **GreenPower®**

Renewable Gas Certification
Scheme



Abatement of 5,000 t of CO2
the equivalent of taking
2300 cars off the road

Step Change to Decarbonisation



-  Natural Gas
-  Biomethane
-  Hydrogen

 **Renewable Gas**


Jemena
bringing energy to life

Developing a Biomethane Industry



