



TOWARDS 2050:

**GAS
INFRASTRUCTURE IN
A NET ZERO
EMISSIONS ECONOMY**



Elissa McNamara – Project Director

WHO WE ARE AND WHAT WE DO



Prepare a statewide, 30-year infrastructure strategy



Advise government on specific infrastructure matters



Publish original research on infrastructure-related issues



Values are independence, influence, engagement, openness, innovation, people



Towards 2050:
Gas infrastructure in a
zero emissions economy

ADVICE CONTEXT



- Net Zero 2050



- DELWP Gas Substitution Roadmap

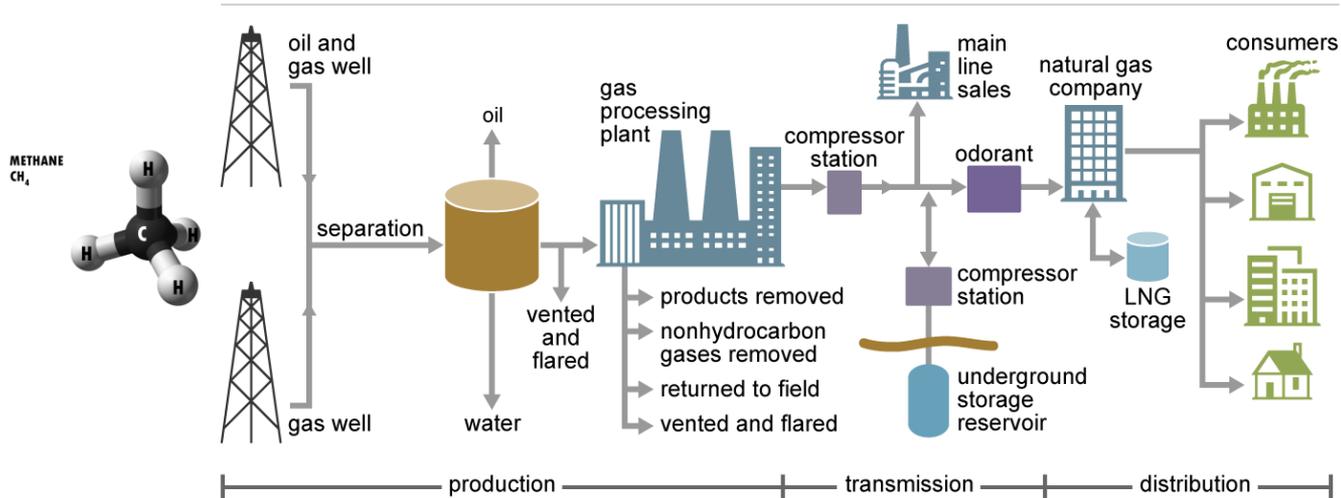
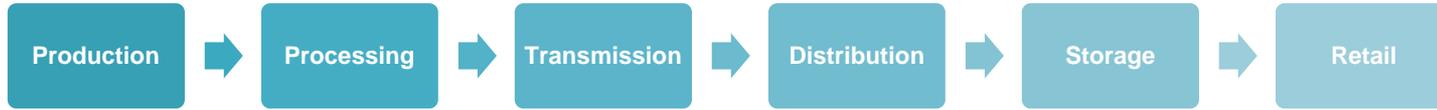


- IV's role

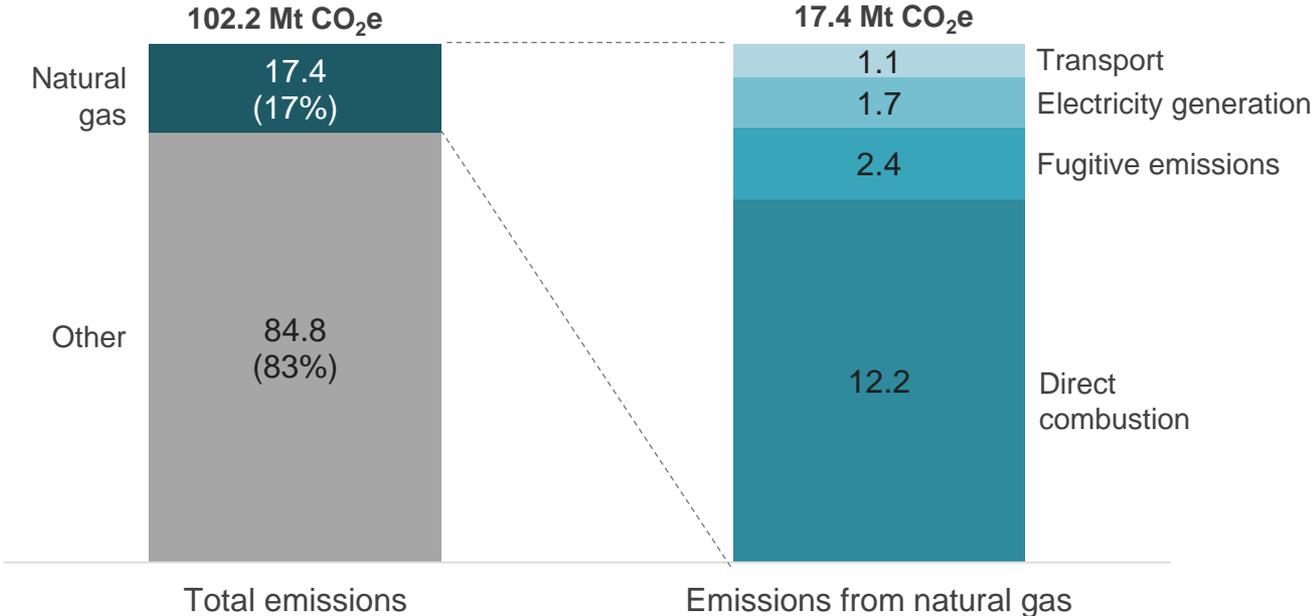


- Interim report June 2021
- Final Advice Dec 2021

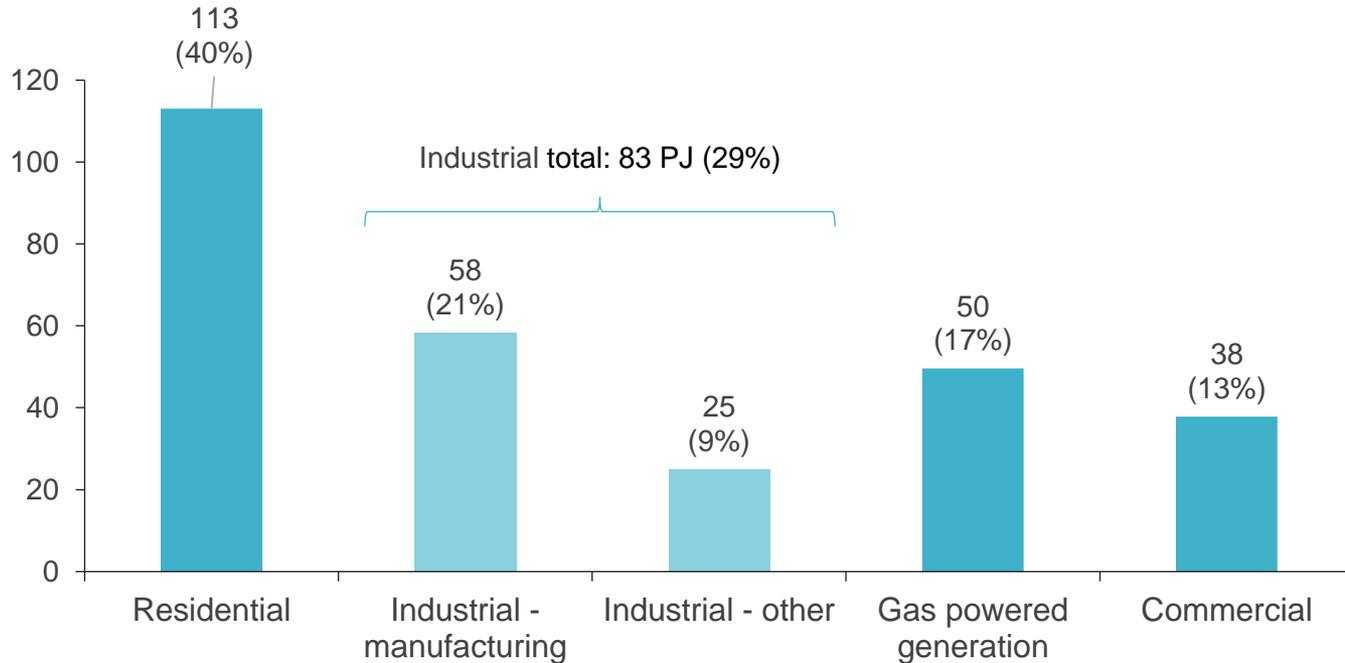
GAS INFRASTRUCTURE VALUE CHAIN



NET ZERO BY 2050: TACKLING VICTORIA'S EMISSIONS



RESIDENTIAL, COMMERCIAL AND INDUSTRIAL GAS USE IS SIGNIFICANT



ENERGY EFFICIENCY

POSSIBLE PATHWAYS

- Manage and reduce demand

A no regrets measure

- UK Government will spend £1.3bn on energy efficiency in 2021-22
- British Columbia spending over \$1 billion to improve energy efficiency of existing and aging housing stock
- Netherlands – all new buildings ‘Almost Energy Neutral’ from 2021
- Victorian Government spent \$797 million household efficiency in 2020/21



ELECTRIFY

- Victoria has a legislated target of 50% renewable energy by 2030.
- Reverse cycle air conditioning is more energy efficient, and costs less to run, than gas heating for an equivalent heating load.
- Increased demand on the network, especially winter.
- Increased need for new infrastructure or upgrades, land use implications.
- Not suitable for all applications, especially some industrial,



**POSSIBLE
PATHWAYS**

HYDROGEN

Brown hydrogen

- Fossil fuel (coal)
- CO₂ emissions

Blue hydrogen

- Fossil fuel (gas)
- CO₂ storage

Green hydrogen

- Renewable electricity
- Water electrolysis

- Existing pipelines may allow a blend of up to 20% hydrogen (depending on pipeline pressure).
- Domestic appliances are likely suitable for a maximum of 10% hydrogen blending without being modified.
- Hydrogen Park Murray Valley project in Wodonga - 10 MW electrolyser to produce green hydrogen for blending with natural gas
- Britain planning 100% hydrogen conversions by 2030 (not economy wide).



**POSSIBLE
PATHWAYS**

BIO- METHANE

POSSIBLE PATHWAYS

- Biogas can be used as a cost-effective in locations where organic feedstock is readily available.
- Victoria only has enough biomass for 25% of current gas consumption.
- Biomethane can be injected into the existing gas network without the need to modify gas pipelines or appliances.
- Proximity to the gas network is a significant cost factor
- Biomethane can be compressed to a liquefied form
- Currently no biomethane production plant operating in Australia.

CARBON CAPTURE AND STORAGE

POSSIBLE PATHWAYS

- CCS is a mature technology, but it is highly dependent on site-specific geological formations and cost.
- A long-term carbon price or emissions regulation may be required to attract capital commitments for large-scale CCS and other capital-intensive projects.
- CCS will take significant policy support and government action to become a feasible pathway for gas decarbonisation.

ALIGN POLICIES TO NET ZERO

POSSIBLE PATHWAYS

- UK - energy network regulator has net-zero built into pricing approach
- Independent body advises on carbon budgets and policy pathways
- Carbon pricing
- • In Victoria, amending the Victoria Planning Provisions (VPP) to all all-electric
- Clear direction to provide industry certainty

EARLY FINDINGS

Doing nothing is not an option

- Complete reliance on offsetting or capturing emissions is impractical
- Gas transition likely to take decades (30 years).
- Next decade will be critical in meeting net zero by 2050 and keeping climate change to below 2 degrees.
- Victoria should start now.

A range of options needed to diversify risk while reducing emissions

- Too early to pick a pathway but there are strategies that reduce emissions now
- Explore multiple pathways and technologies
- Significant change for households and businesses
- Early consideration to behaviour change and to skills development

EARLY FINDINGS

The gas transition should address demand as well as supply

- Immediate focus on the residential sector – thermal performance of existing buildings
- Action needed on energy efficiency potential in industry

Policies and regulations need to align with Victoria's net zero commitment

- Opportunities to better align policies and regulations with net zero
- Some policies may further embed gas use and increase risk of stranded assets and higher costs to consumers
- All future infrastructure decisions should be tested for compatibility with net zero