TOWARDS 2050

GAS INFRASTRUCTURE IN A NET ZERO EMISSIONS ECONOMY

INTERIM REPORT

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WHOA WE ARE AND WHAT WE DO

30-year infrastructure strategy

Independent advice to government

Research

Values: independence, influence, partnership, openness, innovation, people
TIMELINE

Dec 20
Advice request

Jan 21 – May 21
• Stakeholder consultation
• Literature review
• Inter-jurisdictional scan
• Scenario analysis

Jun 21
Interim report finalised

Jul 21 – Oct 21
• Stakeholder submissions and consultation
• Analysis and further technical work
• Consumer research

Oct 21 – Nov 21
• Developing final advice

Dec 21
Final report
EVIDENCE BASE

- Literature review
- Inter-jurisdictional analysis
- Scenario analysis
KEY EVIDENCE – LITERATURE REVIEW

• Victoria’s gas consumption is high compared with other jurisdictions
  • Majority of use is by households and the commercial sector – primarily for space heating
    • Industrial is also a significant user of gas, in particular manufacturing.
  • Emissions from natural gas account for almost one fifth of Victoria’s total.

• Victoria faces a gas shortfall without intervention although the scale and timing of this shortfall is uncertain.

• Opportunities to develop new natural gas reserves need to be balanced against the risk to meeting Victoria’s net zero 2050 targets.

• Hydrogen, biomethane and carbon capture and storage offer potential decarbonisation pathways and economic development opportunities for Victoria, as well as providing opportunities to reuse at least some of the existing gas infrastructure.

• These technologies are not yet proven at scale and none will provide a straightforward decarbonisation pathway for the industry.
• No single, clear pathway to net zero 2050 for gas
• Energy efficiency an immediate ‘no regrets’ measure
• A range of investments needed to diversify options
• Policies and regulation need to align with net zero
• Gas infrastructure transition is a long-term commitment
# SCENARIO ANALYSIS

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scenario A</td>
<td>Full electrification, no natural gas (by 2050), no CCS</td>
</tr>
<tr>
<td>Scenario B</td>
<td>Partial electrification, limited natural gas (in 2050), limited CCS</td>
</tr>
<tr>
<td>Scenario C</td>
<td>Green and blue hydrogen, electrification, no natural gas (by 2050), no CCS</td>
</tr>
<tr>
<td>Scenario D</td>
<td>Large-scale brown hydrogen, large-scale CCS, no natural gas (by 2050)</td>
</tr>
</tbody>
</table>
SCENARIO ENERGY MIX
## SCENARIO RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Scenario A</th>
<th>Scenario B</th>
<th>Scenario C</th>
<th>Scenario D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to net zero</td>
<td>Before 2050</td>
<td>Before 2050</td>
<td>Before 2040</td>
<td>2050</td>
</tr>
<tr>
<td>Cost to achieve net zero (comparative cost index)*</td>
<td>1.1</td>
<td>1.1</td>
<td>1.0</td>
<td>4.3</td>
</tr>
<tr>
<td>Annual hydrogen export by 2050 (PJ)</td>
<td>0</td>
<td>0</td>
<td>&gt;125</td>
<td>&gt;470</td>
</tr>
<tr>
<td>Absolute carbon emissions 2030 (Mt CO$_2$e)</td>
<td>59</td>
<td>59</td>
<td>28</td>
<td>366</td>
</tr>
<tr>
<td>Absolute carbon emissions 2050 (Mt CO$_2$e)</td>
<td>-8</td>
<td>-5</td>
<td>-56</td>
<td>715</td>
</tr>
<tr>
<td>Carbon capture and storage loadings 2050 (Mt CO$_2$e)</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>698</td>
</tr>
<tr>
<td>Potential job creation by 2050</td>
<td>8,767</td>
<td>8,826</td>
<td>13,013</td>
<td>17,477</td>
</tr>
</tbody>
</table>

### Estimated infrastructure upgrades

<table>
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<tr>
<td>Decommissioning of existing gas pipelines (2040)</td>
<td>40%</td>
<td>50-60%</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Decommissioning of existing gas pipelines (2050)</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Relative extent of electrical upgrades (2030)**</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Relative extent of electrical upgrades (2050)**</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

*Represents the relative infrastructure costs between scenarios, based on early strategic level assessments, where 1 represents the lowest cost scenario

**Represents the relative extent of new or upgraded infrastructure required in each scenario, where 1 represents the lowest level
STAKEHOLDER ENGAGEMENT

• Gas sector – producers and distributors
• Industrial gas users
• Consumers and advocates
• Government
• Academics and think tanks
### EARLY FINDINGS – INTERIM REPORT

**Doing nothing is not an option**

- Gas sector must decarbonise to meet emissions reduction targets – completing offsetting or capturing emissions is not practical
- Gas transition likely to take decades
- Next decade will be critical in meeting net zero by 2050
- 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

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# EARLY FINDINGS

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<th>The gas transition should address demand as well as supply</th>
<th>Policies and regulations need to align with Victoria’s net zero commitment</th>
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<td>• Energy efficiency is a ‘no regrets’ measure</td>
<td>• Opportunities to better align policies and regulations with net zero</td>
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<tr>
<td>• Immediate focus on the residential sector – thermal performance of existing buildings</td>
<td>• Some existing policies further embed gas use and increase risk of stranded assets and higher costs to consumers</td>
</tr>
<tr>
<td>• Action needed on energy efficiency potential in industry</td>
<td>• All future infrastructure decisions should be tested for compatibility with net zero</td>
</tr>
</tbody>
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NEXT STEPS

- Review interim report at engage.vic.gov.au
- Additional evidence base reports at infrastructurevictoria.com.au
- Submissions close 5pm Monday 16 August
- Final advice is due to government in December 2021
QUESTIONS?
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