

Future industries



Tasmanian Future Gas Strategy

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Ministerial Foreword

The global energy system is rapidly changing. Countries across the world are transitioning to cleaner, renewable forms of energy in order to meet ambitious climate targets.

Tasmania is uniquely positioned in this transition. With 100 per cent self-sufficiency in renewable electricity generation and net zero emissions for nine consecutive years, we are very much the envy of the nation and the world.

The Tasmanian Government has a clear vision for Tasmania to maintain its status as a world leader in renewable energy and build a truly sustainable, prosperous economy based on affordable and reliable green energy. Gas plays a vital role in this vision. The Future Gas Strategy lays out our government's vision for the future of gas in Tasmania over the next 20-30 years.

We recognise that Tasmania's gas network will decarbonise. As Australian and global gas markets increasingly demand renewable alternatives, it is not a matter of if, but rather of how and when the Tasmanian gas network transitions to renewable alternatives like hydrogen, biogas, biomethane and electrification.

Our government will support customer choice as this transition occurs. We recognise that renewable gases are not yet viable for many users and we will not introduce mandates or moratoriums against new gas connections. This approach ensures that Tasmanians can continue to access the fuel that best meets their needs as emerging renewable gases develop.

To support the development of renewable gases, the Tasmanian government will continue to invest in emerging industries like hydrogen and bioenergy. This includes our \$10 million investment to replace fossil fuels used in government boilers and our \$50 million investment to activate Tasmania's green hydrogen industry and establish the Tasmanian Green Hydrogen Hub at Bell Bay. These actions are key early steps in establishing Tasmania's renewable gas markets.

Locally-made renewable gases will support local jobs, increase energy security and drive down emissions. At the same time, our government will continue its strong investments in energy efficiency and electrification.

The Future Gas Strategy supports Tasmanian households, businesses and industry to make smart investment decisions about their future energy use. Our government's actions will support Tasmania's transition to a stronger, more secure, and cleaner energy system.

Hon Nick Duigan MLC

Minister for Energy and Renewables



Executive Summary

The Future Gas Strategy sets out the Tasmanian Government's vision for the future of gas in Tasmania during a period of uncertainty and rapid transition for the industry. The Strategy aims to help gas users and suppliers make informed choices and investment decisions.

There are three key factors influencing the future of gas in Tasmania: (1) growing uncertainty around the future availability of gas, (2) global and domestic price pressures, and (3) emissions reduction goals (from both governments and businesses).

All three factors support the need for Tasmania to consider alternatives to current fossil gas use. The Strategy sets out four alternatives: electrification, bioenergy, renewable hydrogen and other synthetic renewable gases. There is unlikely to be a single option to meet all needs, but rather, a mix of alternatives that will enable gas users to tailor solutions to their particular needs. Importantly, the government considers that gaseous fuels will continue to be an important part of Tasmania's energy mix into the future, although the source of these fuels is likely to change.

The government recognises that there are challenges for gas users to immediately adopt renewable alternatives, particularly for commercial and industrial users. These alternatives may not yet be economically or technically viable for many users. Fossil gas is therefore expected to continue to play an important role in Tasmania over the medium term while these other technologies are further developed.

The government will support an industry-led transition away from fossil gas and towards renewable alternatives over the longer term. The government is already providing significant support to develop these alternatives by supporting on-island production of renewable hydrogen and bioenergy. The government is also supporting businesses and households to invest in energy efficiency to reduce energy requirements and costs.

The government will lead by example, reducing its own reliance on fossil gas over the longer term. This is already supported by a \$10 million commitment to displace fossil fuels used in government-owned boilers.

The government will also consider introducing a target for the transition away from fossil gas to renewable alternatives. The government will work with industry and the community around the best form for a potential target and what an achievable timeframe is for the transition.

Importantly, the government does not intend to introduce mandates or moratoriums that interfere with the ability of energy users to choose the fuel that best meets their needs, but nor will it prolong the use of fossil gas beyond the time it is needed. This approach balances the need to minimise greenhouse gas emissions in the energy sector with the need to ensure a stable energy supply for businesses and households.

Stakeholder & Community Consultation

The government has been working to understand the views of business, households, and the community about the future role of gas in Tasmania. Critical to the Strategy's development has been understanding the key challenges, opportunities, priorities and issues facing Tasmanian gas consumers and the industry more broadly.

The Strategy has been developed in collaboration with a Gas Strategy Working Group, formed in November 2020. The Working Group is comprised of representatives from the following key industry and consumer organisations: Aurora Energy; Grange Resources; Hydro Tasmania; Tas Gas; the Tasmanian Council of Social Services; Tasmanian Gas Pipeline; the Tasmanian Minerals, Manufacturing and Energy Council and the Tasmanian Small Business Council.

The Working Group provided valuable and expert advice as the Strategy developed to ensure the varying interests across Tasmania's gas sector were heard.

There have been two phases of public consultation. A Discussion Paper was published in November 2021 which set out the current state of the gas market in Tasmania and some of the policy and market factors that are likely to influence its future.

A Draft Strategy was released in October 2022 as part of the second phase of consultation. The Draft Strategy outlined the government's vision for the future of gas in Tasmania, including natural gas, liquid petroleum gas (LPG), renewable gases and the role of increased electrification.

The Draft Strategy supported gas continuing to play a role in Tasmania's energy mix for some time to come, pending the further development of suitable and affordable alternative renewable fuel sources. It supported consumer choice and the ability of energy users to choose the fuel that best meets their needs, but it also made clear that the government would not prolong the use of natural gas beyond the time it is needed.

The Draft Strategy also made clear that the government would continue to support the development and take-up of alternative renewable gases, address barriers to gas users switching to low-emission fuels if and when they wished to do so, and encourage energy efficiency.

What we heard

Submissions were received from a range of stakeholders representing the interests of household, industrial and small business consumers, gas infrastructure providers, environmental groups and investors in emerging renewable industries.¹

¹ A copy of all non-confidential submissions can be found at ReCFIT's Consultation and Community page at https://recfit.tas.gov.au/consultation_and_community/recent_closed_consultation

There was strong support for the approach set out in the Draft Strategy with most stakeholders in favour of a steady phasing out of fossil gas.

The government has carefully considered areas of potential change identified by stakeholders which primarily focused on the need for stronger government signalling to provide a higher level of certainty around the future of gas in Tasmania and a shorter review period for the Strategy, given how quickly technologies are developing.

While the government does not consider it possible to set effective targets now, the final Strategy includes a commitment to explore if, and how, targets could be established to support Tasmania's transition away from fossil gas.

The government will also review the final Strategy within four years rather than five to ensure that the strategic direction for our gas sector keeps pace with the rapidly changing market.

The government is highly appreciative of the responses received. The feedback has informed the development of the Strategy and the government will continue working to ensure we are engaged and listening to the community as the gas sector transitions.



The Future of Gas in Tasmania

Gas is an important fuel source in Tasmania, providing just under 10 per cent of our current energy needs. There are around 13,700 residential customers and just over 1,100 commercial and industrial customers connected to the natural gas network. There are also many Tasmanian households and businesses not connected to the network using bottled gas. For further information on how gas is used in Tasmania, refer to Appendix A.

Gas is particularly important for its role supporting economic activity and employment in Tasmania. A study commissioned by the Tasmanian Gas Pipeline (TGP) and Tas Gas suggests that gas is linked to close to \$1 billion worth of economic output and over 8,500 direct and indirect jobs².

While the use of gas-powered electricity generation has been decreasing, it continues to provide a role as a back-up source of electricity generation.

However, there is uncertainty about the future of gas in Tasmania. This uncertainty is being driven by a range of local, national and international factors. Some of these factors are already having visible impacts on the price users are paying for gas. Other factors are likely to have an increasing impact over the medium to longer term.

Challenges facing natural gas in Tasmania

Gas supply security

Tasmania has no local gas reserves and imports all its gas from mainland Australia. Natural gas is imported to Tasmania from Victoria via the undersea TGP and bottled gas is most commonly imported via ships with pressurised storage.

There are no threats to Tasmania's gas supply in the short term. However, the Australian east coast gas market, which Tasmania is connected to via the TGP, is entering a period of significant structural transition, which may start to present gas supply challenges for Tasmania as soon as 2027.

The Australian Energy Market Operator (AEMO) observes that the Australian gas sector is transforming, driven by two significant trends³:

- Changes in supply: Supply from conventional sources in the south-east, in particular offshore Victoria, continues to decline. Alternative supply sources are mainly in the north (Queensland and the Northern Territory) and this gas will need to be transported south to meet domestic customer needs.

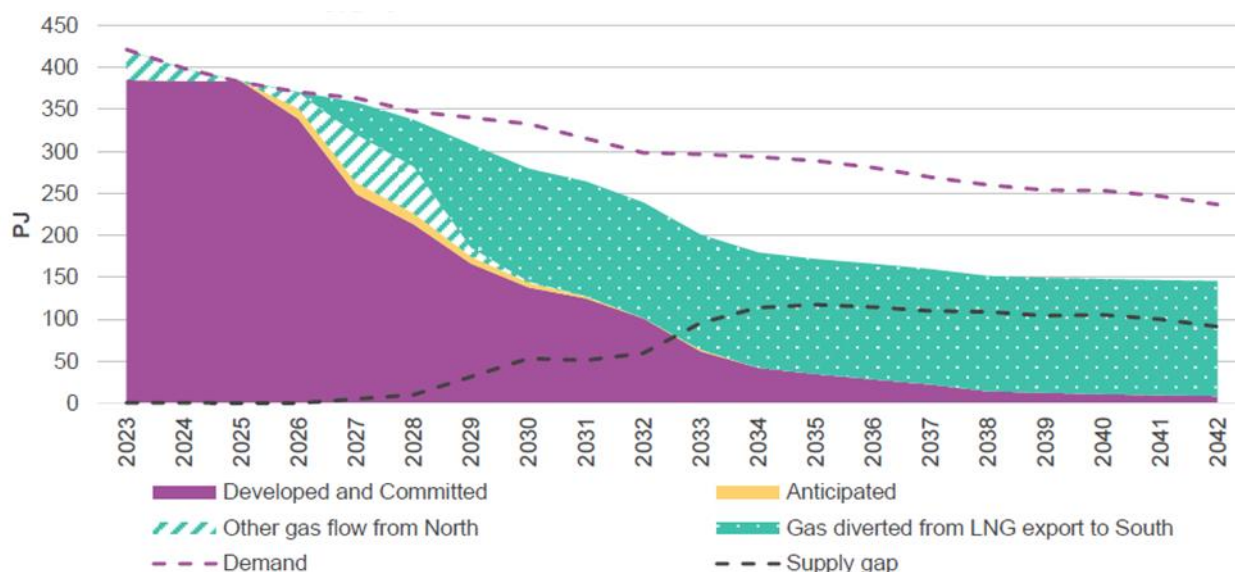
² Deloitte Access Economics, 2020, *Tasmanian Gas Pipeline Economic Analysis*, <https://www.tasmaniangaspipeline.com.au/volumes/documents/Tasmanian-Gas-Economic-Benefits-Executive-Summary.pdf>

³ Australian Energy Market Operator, *Gas Statement of Opportunities 2023*

- Uncertainty about the future of gas use in Australia: As Australia transitions to a net-zero emissions economy, the type and level of gas use is expected to be impacted by consumer choice, technology advances, public policy and the potential rise of hydrogen.

AEMO is forecasting supply shortfalls for south-eastern Australia as soon as 2027 (refer to Figure 1 below). In most scenarios, demand in south-eastern Australia is forecast to decline, driven by investment in energy efficiency, electrification and the growth of alternative fuels. However, projected supply is declining faster, and significant gaps are expected. The potential impact on Tasmania of this projected supply gap is unclear, given that Tasmania is only a small part of the broader south-eastern gas market.

Figure 1 Projected annual adequacy in southern regions, *Orchestrated Step Change (1.8°C)* scenario, with existing, committed and anticipated developments, 2023-42 (PJ)⁴



While the TGP has more than sufficient capacity to transport enough gas to meet Tasmania’s needs, there are limitations on the capacity of pipelines on the mainland to transport gas from supply centres in the north (Queensland and the Northern Territory) to the south-east demand centres (where shortfalls are forecast). The TGP originates at a location in the east coast gas network that allows multiple sources of gas to be transported to Tasmania, including from proposed LNG terminals. This ensures Tasmanian customers are not solely reliant on production from Bass Strait in the future.

Gas prices

Gas prices tend to be higher in Tasmania compared to the Australian mainland, due to the small size of the Tasmanian market and lack of economies of scale. Tasmania’s location in relation to the gas fields and small customer base, most of whom consume a low volume of natural gas, mean

⁴ Taken from Figure 46, Australian Energy Market Operator, *Gas Statement of Opportunities 2023*

comparatively high transport need to be recovered from a small number of customers, contributing to higher costs.

The gas commodity prices in Tasmania, and in the broader east-coast gas market, have seen a significant upward trend over the past 10 years.

In 2022, international events combined with higher gas demand primarily through increased gas-powered electricity generation, has caused a tightness in gas supply and increased domestic spot prices to record levels.

These higher prices have already started to flow through to bills for Tasmanian residential and business gas customers. Tas Gas Retail increased its prices in January 2023, with an increase of around seven per cent on its supply charge and approximately 10 percent on its usage charges for residential customers. Similarly, Aurora increased its retail gas prices in April 2023. For residential and small business customers, it increased the supply charge by 7.3 per cent and its usage charges by 24.5 per cent and 23.89 per cent for residential and small business tariffs respectively.

While rates for larger business customers vary, depending on contract arrangements, the government understands that these price increases have flowed through to some commercial and industrial customers.

The future price of gas remains uncertain as it is likely to be affected by a range of factors including international factors and demand for gas powered generation (GPG) in the national electricity market (NEM). GPG demand is inherently difficult to predict as it is critically dependent on weather and conditions in the NEM.



Emissions reduction goals

Gas consumption is a small but not insignificant source of greenhouse gas emissions in Tasmania, accounting for around 5 per cent of Tasmania's gross emissions (excluding the contribution of the *Land use, land use change and forestry* sector). Tasmania, as Australia's leading renewable energy state, has set a clear policy agenda to reduce greenhouse gas emissions, promote renewable energy and transition away from fossil fuels.

The Tasmanian Government has legislated a target of net zero emissions, or lower, from 2030. The government has also legislated the Tasmanian Renewable Energy Target, which will increase the State's renewable energy output equivalent to 200 per cent of renewable electricity generation levels (set at a baseline of 10,500 GWh) by 2040. The government has set an interim target of 15,750 GWh of electricity generation from renewable energy sources by 2030 (a target of 150 per cent).

To support business and the community to transition to a low emissions economy, the Tasmanian Government has also legislated a requirement for the development of Emissions Reduction and Resilience Plans for key industry sectors, including the energy sector.

Australia, as a signatory to the Paris Climate Agreement, has committed to reducing national greenhouse gas emissions by 43 per cent on 2005 levels by 2030, and reaching net zero emissions by 2050. To help achieve this target, the Australian Government announced reforms to the Safeguard Mechanism which will compel Australia's largest industrial emitters to reduce their direct (scope 1) emissions. The six Tasmanian facilities currently covered by the Safeguard Mechanism will be impacted and are likely to be considering less emission intensive alternatives. The reforms to the Safeguard Mechanism commenced on 1 July 2023.

The strong emissions reduction targets seen across Australia and government policies such as the Safeguard Mechanism create an imperative for the decarbonisation of gas. Australia's gas industry recognises this imperative. In September 2020, Australia's peak gas industry body, in partnership with Energy Networks Australia, released Gas Vision 2050. The Vision represents the gas industry's commitment to lowering carbon emissions in line with the aims of the Paris Agreement on climate change. The 2022 update to the Vision sets out industry-led targets for the future of gas in Australia. In addition to these whole-of-industry targets, many individual gas pipeline and distribution businesses have adopted their own net zero emissions targets.

Gas Energy Australia (GEA), as the national peak body representing the downstream gas fuels industry, has made a strong commitment for the industry to reach net zero emissions by 2050. The report "Pathway to zero emissions for LPG" commissioned by GEA, explores potential pathways for achieving this goal.

There is, in short, an industry commitment to the decarbonisation of gas in Australia. As the national gas industry decarbonises, supported by ambitious emissions reduction commitments from all

jurisdictions, it is clear that it is not a question of if, but rather of how and over what timeframe Tasmania moves to decarbonise its gas sector.

Alternatives to Fossil Gases

There are a number of potential options for replacing natural gas and LPG with less emission-intensive options. However, not all alternatives are sufficiently proven in a commercial sense.

While industrial gas users face significant challenges, particularly in replacing natural gas for process heating, the Australian Renewable Energy Agency in its report *Renewable Energy Options for Industrial Process Heat*, confirmed that there are demonstrated and available renewable energy technologies for every application of process heat.⁵

There is unlikely to be a single option to meet all needs, but rather, a mix of alternative fuels that will enable large gas users to tailor solutions to their particular needs. Some of these options are discussed below.

Electrification

Electrification involves replacing the use of gas with electricity, for example by replacing a gas heater with an electric heat pump. Electrification is a strong option in many contexts in Tasmania, particularly in light of Tasmania's ability to produce competitively priced, reliable and renewable electricity. Although, investment in new renewable generation will be required if Tasmania is to meet future demand without jeopardising its 100 per cent renewable status.



⁵ Renewable Energy Options for Industrial Process Heat, Australian Renewable Energy Agency, 2019

For many household users, the cost of converting gas appliances to electric is likely to be a barrier in the short-term, but may be less of a barrier over time as equipment nears the end of its life and needs to be replaced. However, electrification will not be a viable option for all gas users. In particular, electrification may not be suitable, or may be cost prohibitive, for a range of industrial heating purposes, especially where flash heating, high temperatures, and precise control is required.

Renewable Gases

Gaseous fuels will continue to be an important part of Tasmania's energy mix in the long term, especially for commercial and industrial users.

Hydrogen

Renewable energy can be used to power the electrolysis of water, producing hydrogen and oxygen gas. Hydrogen produced in this way is commonly termed renewable hydrogen or 'green hydrogen' and has near zero carbon emissions associated with its production or use.

Hydrogen can be blended with natural gas or used in place of natural gas and LPG for a range of uses including heating in homes and businesses, in heavy industry, for electricity generation and as a chemical feedstock. Although hydrogen is not yet commercially viable as a large-scale natural gas or LPG substitute, the Tasmanian, Australian and global hydrogen markets are rapidly developing. There is a strong market expectation that commodity prices will fall and hydrogen will become a cost-competitive fuel option.

However, substituting hydrogen into our natural gas networks would involve additional transition costs. These costs include converting infrastructure, meters and end-use appliances, as well as potential ongoing costs to satisfy additional safety, training and licensing requirements.



Bioenergy

Bioenergy refers to renewable energy derived from organic by-products and waste streams.

There are three potential pathways for bioenergy to displace natural gas in Tasmania: biogas, biomethane and direct combustion of solid waste.

Biogas is a mixture of methane and other gases that can be produced from raw materials such as waste from agricultural, municipal, and forestry sources, including sewage, garden and food organics, sawdust, straw, and manufacturing organic waste. Biogas is made from biomass that can be regrown and is considered a net zero energy source under the Australian National Greenhouse Gas Accounting Framework.

In some instances, biogas can directly replace the use of natural gas or bottled gas. Biogas already fuels some industrial processes in Tasmania. For example, Cascade Brewery has displaced natural gas with biogas generated from an anaerobic digester. Approximately 70,000m³ of biogas is produced and burned annually in a modified natural gas boiler to provide steam used throughout the brewing process. Such on-site (behind-the-meter) consumption of biogas is in some cases already cost competitive with natural gas.

Biogas is generally not suitable for injection into the gas grid due to its high content of non-methane gases. However, biogas can be upgraded into methane (by removing carbon dioxide and other gases), which is the same molecule as natural gas. The resultant gas, biomethane, can be directly substituted for natural gas and injected into the gas grid to be transported via the distribution network for various uses such as heating or industrial manufacturing.

Bioenergy can also provide an alternative to natural gas through the direct combustion of solid biomass. For example, existing natural gas boilers could be converted to direct combustion of woody biomass. An independent review of Tasmania's *Climate Change (State Action) Act 2008* also identified a role for bioenergy in manufacturing and industrial processes that require high temperatures.⁶

Other synthetic renewable gases

Methane and other gases can be synthetically derived from renewable sources. For example, renewable methane can be produced by adding a further step to hydrogen electrolysis to chemically react hydrogen with carbon to form methane (CH₄). The required carbon can be captured either from the atmosphere or as by-products of combustion processes. This technology is still in the relatively early stages of development.

Renewable methane may have some advantages over hydrogen as a replacement fuel for natural gas. As renewable methane is of a similar chemical composition to natural gas, existing gas appliances would require no upgrades to be compatible with renewable methane. Renewable

⁶ Independent Review of the *Climate Change (State Action) Act 2008*, Final Report, June 2021, Jacobs Australia Pty Ltd.

methane may also be injected into steel transmission pipelines (such as the TGP) without technical or safety concerns. However, the commodity cost of renewable methane is likely to always be higher than hydrogen given that it involves an additional process using additional energy.

Blending renewable gases

Blending renewable gases (biomethane, hydrogen and renewable methane) into our natural gas networks provides an opportunity to gradually build the market for renewable gases. Displacing natural gas (as a fossil fuel) will also lower carbon emissions and optimise the use of existing infrastructure as the markets develops.

Currently, hydrogen can be blended with natural gas at low levels through the gas distribution network without needing to replace pipelines, appliances and meters.

The amount of hydrogen in the blend is limited by the capacity and tolerance of the end-use equipment connected to the grid and not all end-use appliances have the same tolerance.

Hydrogen also has a lower volumetric energy density than natural gas. If hydrogen molecules are injected into a pipeline, displacing some natural gas molecules, the resulting gas blend does not carry the same amount of energy. As a result, more gas must be consumed to meet the same energy needs. Given a relatively small amount of natural gas is replaced in low level blends, the emission reduction benefits are therefore also limited.

The pathway to higher level blends of hydrogen remains uncertain with a range of technical barriers and cost implications to be considered. In particular, high blends of hydrogen in steel pipelines can cause pipeline embrittlement and many existing end-use appliances are not compatible with hydrogen. Higher level blends would require conversion or replacement of a range of equipment, including compressors, seals, gas meters, burners, storage sites and end-use appliances.

Biomethane and synthetic methane can also be injected into the existing gas network and blended with natural gas. This can be done at lower cost due to infrastructure upgrades not being needed.

Energy Efficiency

While not a direct replacement for fossil gases, energy efficiency presents an important opportunity for businesses and households to initially reduce the amount of fossil gas they use and then reduce the total energy required from alternative sources. Increased energy efficiency is likely to make the transition to alternative options smoother.

Energy efficiency also helps to reduce the energy bills of households and businesses. This can be especially important where an alternative may currently be more expensive than natural gas.

Energy efficiency generally requires upfront investment in building or equipment upgrades. Some energy efficiency upgrades can have relatively quick payback periods in energy bill savings and are well supported through government loan programs.

Challenges to the adoption of alternatives

A range of challenges remain for commercial and industrial gas users seeking to switch to renewable alternatives. Principally, alternatives are not yet sufficiently economic such that a business can remain competitive and sustainable, nor are they being employed at the necessary scale.

Additional challenges include that the level of industrial experience in generating heat using renewable fuels remains low and business often have a low appetite for risk.



An industry-led transition towards renewable alternatives

A continued role for gas in Tasmania's energy mix

The continued availability of gas is important to both Tasmania's economic and emissions-reduction objectives. Consequently, the Tasmanian Government's view is that gas will continue to play a role in Tasmania's energy mix for some time to come, pending the further development of suitable and affordable alternative renewable fuel sources.

Numerous Tasmanian businesses, including some of the State's largest employers, rely on fossil gas. If fossil gas were to cease to be available and affordable before there was a commercially viable, reliable renewable gas alternative, there is a risk that some industrial users would reconsider the viability of their operations in Tasmania. Those that continue their current operations may be forced to revert to more emissions-intensive fuel sources which were relied on prior to the introduction of natural gas. At 51.53 kilograms (kg) of carbon dioxide equivalent (CO₂-e) per GJ of energy, natural gas produces significantly less greenhouse gas emissions than fuels such as diesel (70.20 kg CO₂-e) and bituminous (black) coal (90.24 kg CO₂-e)⁷.

Transitioning away from gas before suitable alternative fuels become widely available would therefore have an adverse impact on Tasmania's economy and employment, while doing little to reduce greenhouse gas emissions.

It is also important to recognise that current natural gas infrastructure is likely to be valuable in Tasmania's future decarbonised gas network. While it is uncertain which renewable gas, or mix of gases, will prove most effective in Tasmania, it is likely that renewable gas providers will be able to utilise much of the pre-existing gas infrastructure like distribution networks, pipelines, metering equipment, and even human expertise. If natural gas becomes unavailable before there is a viable alternative, this key infrastructure may fall into disrepair or be lost completely. Any such outcome would hinder Tasmania's transition to a decarbonised gas network.

There is a role for government in actively supporting the transition to renewables

The rapid development of alternative renewable gases and the broader domestic and international energy transitions already underway mean that the decarbonisation of Tasmania's gas network is inevitable. Recognising this, the government will not seek to prolong the use of natural gas and LPG beyond the point that renewable alternatives become widely available and commercially viable.

⁷ National Greenhouse Accounts Factors: 2022 at <https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors-2022>

Gas-reliant industries will likely require government help to develop and adopt new technologies, including hydrogen. There is also a need for government to assist less gas-reliant manufacturers, such as food processors, to understand their energy options.

The transition away from fossil gas offers many potential benefits to Tasmania. Decarbonisation creates an opportunity for the on-island generation of renewable gases. Tasmania can leverage its competitive advantages, which include, renewable energy, and the ready availability of water and biomass, to produce its own renewable gas alternatives such as hydrogen and biogas.

On-island generation of renewable gases would strengthen Tasmania's energy security by reducing our reliance on imported gas. International gas markets are currently experiencing high volatility, particularly given the Russian invasion of Ukraine. On-island renewable gas generation would provide the Tasmanian gas network with greater energy independence, protecting gas users against commodity shortfalls and price volatility driven by external events.

Transitioning to renewable gas alternatives made on-island will also open new markets for the Tasmanian economy. Renewable gases represent potential export opportunities to both mainland Australian and international markets. Tasmania's Renewable Hydrogen Action Plan targets exporting Tasmanian-produced green hydrogen by 2025 - 2027. These export markets will offer increasing value as international demand for renewable fuel grows.

Decarbonising Tasmania's gas supply will also create opportunities for domestic production of high value products with "green" credentials, like green ammonia, green steel and green aluminium.

There are significant opportunities in decarbonising Tasmania's gas network. To maximise the benefit of these opportunities for Tasmania, the government will actively support the transition to renewables.

Stages of transition

While the precise timeframes are uncertain, the government conceives of Tasmania's gas use undergoing a transition involving four broad phases, beginning with the introduction of reticulated natural gas into Tasmania in 2003, which provided a flexible and cost-effective fuel source that enabled many large industrial users to shift away from significantly more emissions-intensive fuels such as coal and fuel oil.

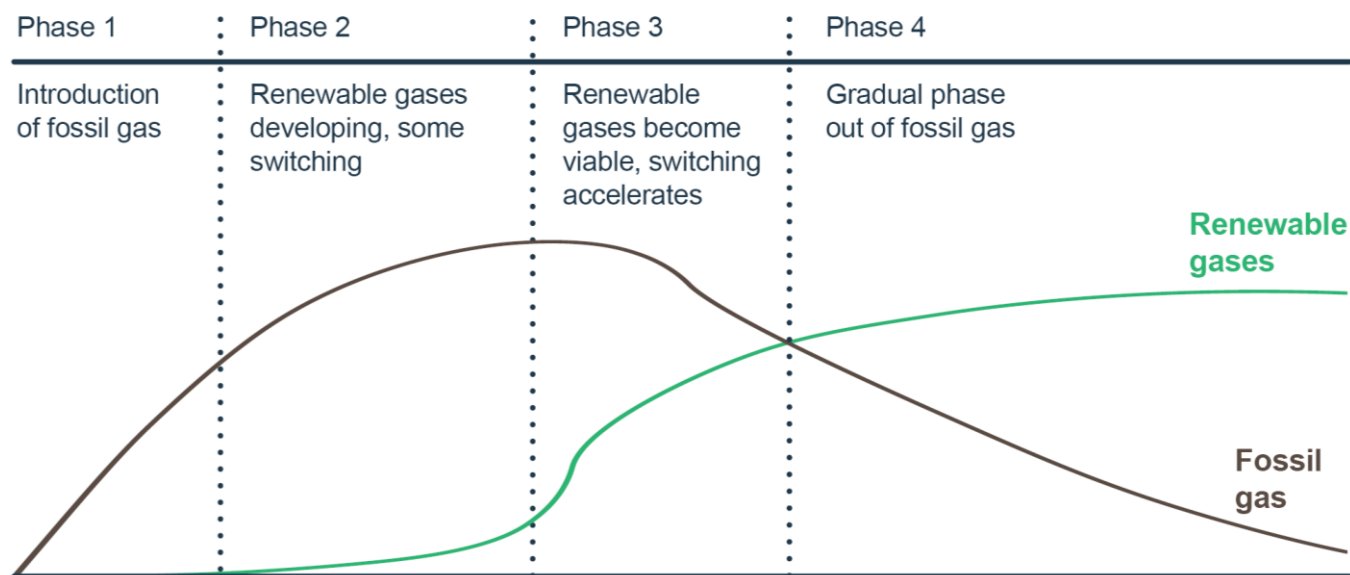
We are currently in the second phase of the transition, in which renewable alternatives to gas are being developed, but are not yet widely available or financially viable for many gas consumers. There is some uptake of renewable gases, but not enough to materially affect gas usage. In this phase, government policy is focused on assisting the development of renewable gases while supporting emissions reduction through improved energy efficiency and exploring options to replace the government's own gas consumption with low-emission alternatives.

In the third phase, renewable gases will become widely available and increasingly commercially viable for most users. There is a more rapid uptake of renewable gases by both communities and industry, resulting in a material decline in natural gas and LPG usage. In this phase, government policy will need to increasingly focus on assisting gas consumers to adopt renewable alternatives. This includes ensuring that the appropriate infrastructure is in place to transport renewable gases and that fossil gas remains available for individual users up until the point where it is viable for them to convert to renewable alternatives.

The fourth phase of the transition will see the settling of Tasmania’s gas market as renewable gas solutions mature and usage of natural gas and LPG tails off. In this phase, renewable alternatives will have been developed for all key processes and the growth in renewable gas will slow as businesses complete their transitions. Government policy will need to focus on ensuring equitable access to renewable alternatives for consumers who were previously dependent on fossil gas. Relative to the size of Tasmania’s economy, renewable gas usage may plateau slightly lower than the historic peak of natural gas due to electrification and increased energy efficiency.

The transition from fossil gas to renewable alternatives is broadly depicted in Figure 2 below.

Figure 2: Phases in the gas transition



Government actions to support the transition

The Tasmanian Government is undertaking a range of actions that will support the transition towards renewable alternatives.

1. Supporting consumer choice: No mandates or moratoriums against new natural gas connections

The government sees a continued role for natural gas in Tasmania's energy mix until the point that renewable gas alternatives become widely available. That point has not yet been reached and the government does not intend to implement mandates or moratoriums that prevent customers from choosing the fuel sources that best meet their needs.

The Tasmanian Government also understands that security of gas supply is an important issue. The government will ensure that the eventual decarbonisation of Tasmania's gas network is as orderly as possible and that, for example, the adoption of alternative renewable fuels by some users does not result in remaining gas customers facing unaffordable transmission costs. The government will continue to monitor the State's gas requirements and any impact changes may have on gas users.

2. Explore if, and how, targets could be established to support Tasmania's transition away from fossil gas

The government has not sought to define specific timelines for the transition away from fossil gas in recognition that there are significant uncertainties around the timeline for developing renewable gas alternatives and risks in forcing a premature transition, which are noted above. However, feedback on the draft Future Gas Strategy indicated that many stakeholders would value stronger signalling about how the government expects the transition to play out, potentially including targets and timeframes for the adoption of renewable gases and/or the phase-out of fossil gas.

The government will explore if, and how, targets could be established to support Tasmania's transition away from fossil gas with a view to potentially including those targets in a future update to this Strategy. The review will consider possible timeframes for Tasmania's transition as well as the nature of any targets that might best support that transition.

3. Continuing to support the development of green hydrogen

In March 2020, the Tasmanian Government released the Tasmanian Renewable Hydrogen Action Plan (TRHAP), with a vision for our island to become a world leader in large-scale renewable hydrogen production for domestic use and export.

The TRHAP includes a \$50 million Tasmanian Renewable Hydrogen Development Funding Program, incorporating a \$20 million Tasmanian Renewable Hydrogen Fund, \$20 million in concessional loans

and \$10 million to further support domestic hydrogen production and use in Tasmania. From the first round of the Program, the government provided \$2.6 million to support three feasibility studies investigating large-scale renewable hydrogen projects in Tasmania. All three projects are now complete, and knowledge sharing reports are on the Renewables, Climate and Future Industries Tasmania website.

The Tasmanian Government has conditionally approved up to \$12.3 million to progress recommendations from a Renewable Hydrogen Industry Activation Study, including a trial of three hydrogen buses by Metro Tasmania for a period of up to five years. The hydrogen bus trial is progressing with buses arriving late 2023 and fully operational in 2024.

The government has committed to work with the incumbent natural gas distribution network infrastructure owner to explore opportunities for hydrogen blending at up to 10 per cent and to investigate potential trials of higher hydrogen blends in Tasmania's hydrogen-compatible gas distribution networks.

The Tasmanian Government is also committed to establishing the first Tasmanian Green Hydrogen Hub at Bell Bay. The hub would see provision of enabling infrastructure (water, port upgrades and transmission) to facilitate establishment of large-scale hydrogen production for both domestic and export use by the end of 2025.

4. Supporting the development of Tasmania's domestic bioenergy and biogas industries

In March 2023, the government released the Bioenergy Vision for Tasmania to identify how the State can unlock private sector investment in bioenergy.

Tasmania's bioenergy vision is to embed bioenergy as a valued renewable resource for the Tasmanian economy, community, and environment as an aid to energy production, waste management and resource recovery, and reduction of greenhouse gas emissions. The government will explore options to use bioenergy, including biogas, to decarbonise its economy by displacing fossil fuels used in heat generation and the production of transport fuels.

The Bioenergy Vision supports the development of a bioenergy sector that encompasses social, environmental, and economic values to achieve the best outcomes for Tasmanians. This includes a government policy and regulatory framework to provide a foundation for long term investment in the sector and stimulate private investment in commercially and environmentally sustainable bioenergy projects.

A Boiler Replacement Action Plan is currently being developed to investigate which government-owned fossil fuel boilers can be converted to renewable energy, including bioenergy.

The Boiler Replacement Action Plan will inform how the government spends the \$10 million allocated in the 2022-23 Budget to displace fossil fuels used in government-owned fossil fuel boilers.

5. National gas reform agenda

The government will continue to act to help improve the supply of gas to Tasmanian consumers at lowest cost by influencing the national gas reform program.

The National Gas Law (NGL) and National Gas Rules (NGR) provide a framework for the regulation of natural gas pipeline services in Australia, as well as broader elements of the natural gas markets.

Tasmania adopted the national regulatory framework in 2008 and changes to the national framework may impact on Tasmania's gas customers.

Tasmania is working with the Australian Government and other states and territories to undertake a range of reforms to improve the functioning of the east coast gas market and implement measures to deliver affordable and reliable gas. Tasmanian customers benefit from improved efficiency of the east coast gas supply market on which supply into Tasmania is wholly dependent.

Tasmania is also actively involved in developing national reforms that will support the next steps in the roll-out of hydrogen, biomethane and other renewable gases to be used in Australia's gas networks.

These reforms aim to ensure regulation allows for safe, low-level blending of hydrogen, biomethane and other renewable gases into existing gas distribution systems and for use in gas appliances in Australian businesses and homes.

The uptake of renewable gases including hydrogen provides an opportunity for direct replacement of natural gas and direct fuel-switching for Tasmania's larger industrial customers.

6. Tasmania's hydrogen regulatory review

The Tasmanian Government is progressing work at the State level (as well as with the Commonwealth and other jurisdictions through a national regulatory working group) to support the reform of regulatory frameworks applying to the development of a hydrogen industry and the export of hydrogen and hydrogen derivatives that is both consistent and practical.

Current priority activities include:

1. the review of relevant state based legislation and regulations essential to the entire hydrogen value chain;
2. regulatory amendments necessary to ensure Tasmania's regulatory frameworks support a hydrogen industry in the State including amending the *Gas Industry Act 2019* to ensure hydrogen and renewable gases are captured; and
3. increasing engagement with potential hydrogen users and industry proponents on any regulatory considerations related to hydrogen project development to address any issues or barriers.

7. Supporting energy efficiency

Improving energy efficiency is an important way in which Tasmanians can take control of their energy usage and reduce energy bills. As energy pricing challenges continue, improving energy efficiency is a practical option to manage energy costs.

The Tasmanian Government is taking strong action to improve the energy efficiency of Tasmanian homes. The \$50 million Energy Saver Loans Scheme is providing interest-free loans of up to \$10,000 for Tasmanians to invest in energy efficient products, including solar PV, battery systems, reverse cycle air conditioning (heat pumps), insulation, and efficient electric hot water systems. Purchases of gas appliances are not eligible for support under the Energy Saver Loans Scheme.

Residential customers, small business customers and rental providers are able to access the Energy Saver Loans Scheme.

In April 2023, the government also launched the Business Energy Efficiency Scheme (BEES) to support commercial and industrial customers to purchase energy efficient products. BEES will provide support in the form of an interest free loan of up to \$10,000 over three years, and a low interest loan of up to \$50,000 over three years. BEES will support a loan pool of up to \$50 million.

8. Help low-income and vulnerable consumers to transition

Electrification is likely to be a strong decarbonisation option for many household and business consumers. However, the upfront cost of switching from gas to electric appliances may be a barrier to uptake, particularly for low-income and vulnerable gas users.

Many Tasmanians are on fixed incomes, including various forms of government assistance, with limited discretionary financial capacity to invest in capital improvements to housing. Low income earners also have comparatively little ability to respond to energy price increases by changing their consumption behaviour or converting to an alternative fuel, because their spending on energy usage is often non-discretionary. Additionally, those in rented accommodation have little ability to influence the energy efficiency of their homes and limited options to switch appliances as capital improvements remain the responsibility of the landlord.

The government will continue to explore options to support vulnerable households to transition to lower emissions fuel and build on its current initiatives such as the No Interest Loans Scheme (NILS) and funding for energy efficiency improvements to Tasmania's public housing. In 2021, the government committed to doubling the funding for NILS from \$1 million to \$2 million over a four year period, which assists concession-card holders with subsidies of up to 50 per cent toward the cost of energy efficient appliances, with a no-interest loan for the balance. In addition, \$15 million has been provided to increase the energy efficiency of Tasmania's public housing, including replacing gas space heating systems with efficient heat pumps.

9. Emissions Reduction and Resilience Plans

The recently amended *Climate Change (State Action) Act 2008* establishes a legislative framework to develop Emissions Reduction and Resilience Plans for key industry sectors including: energy; transport; agriculture; industrial processes and product use; land use, land use change and forestry; and waste. Sector-based plans will identify opportunities, gaps and barriers to build resilience to climate-related risks and to reduce emissions, including readiness of technologies, likely adoption timeframes, and pathways to build the required expertise. The Emissions Reduction and Resilience Plans will be developed in partnership with business and industry to ensure all plans are achievable and practical.

Importantly, an Emissions Reduction and Resilience Plan will also be developed for government operations, to continue to lead by example and include actions already underway to reduce emissions, such as transitioning the government vehicle fleet to 100 per cent electric vehicles by 2030 and the replacement of fossil fuel boilers in government buildings with renewables.

10. The adoption of renewable gases by government

The government will invest \$10 million over four years to replace fossil fuel boilers in government buildings with renewable energy-powered alternatives, including bioenergy. This commitment will promote the option of renewable gases in key infrastructure projects, as well as building both industry and community familiarity with renewable gas.

The Tasmanian government has also committed to completing a baseline emissions inventory assessment as part of the development of an Emissions Reduction and Resilience Plan for Tasmanian Government operations. The baseline assessment will be used to inform pathways to reduce emissions and inform the setting of targets to focus government actions.

11. Working with industry

The government will actively work with gas industry participants to ensure the decarbonisation transition is as orderly as possible and that solutions are developed that meet the needs of individual gas consumers. The transition to a decarbonised gas network will be a significant change for many Tasmanian businesses, but it will also offer important opportunities. Maximising the benefits of decarbonisation to Tasmania will require a two-way working relationship between the government and industry. In particular, there is a role for industry to consider the suitability of renewable gases in their processes and provide feedback to government on implementation challenges.

The government will continue to meet with the Gas Working Group, which includes gas network providers and consumer representatives, and undertake more informal individual consultation as needed. It is through such consultation with industry that the government will be best placed to manage emerging technologies, impacts on gas market participants, changing regulatory

requirements and any other challenges involved in decarbonisation. Through consultation, industry will in turn be better placed to capitalise on the benefit decarbonisation offers to their own businesses.

12. Reviewing the Tasmanian Future Gas Strategy within four years

The global energy system is in a period of unprecedented change. Tasmania’s gas market is not immune to this change. As the decarbonisation transition occurs, new technologies are developing, bringing both challenges and opportunities for Tasmanians. The government will review Tasmania’s Future Gas Strategy within four years to ensure that the strategic direction for our gas network keeps pace with the rapidly changing gas market.

Table: Summary of Government Actions to Support the Gas Strategy

Government Actions
1. Supporting consumer choice: No mandates or moratoriums against new natural gas connections.
2. Explore if, and how, targets could be established to support Tasmania’s transition away from fossil gas
3. Continuing to support the development of green hydrogen
4. Supporting the development of Tasmania’s domestic bioenergy and biogas industries
5. National gas reform agenda
6. Tasmania’s hydrogen regulatory review
7. Supporting energy efficiency
8. Helping vulnerable and low-income users to adjust
9. Emissions Reduction and Resilience Plans
10. The adoption of renewable gases by government
11. Working with industry
12. Reviewing the Future Gas Strategy within four years

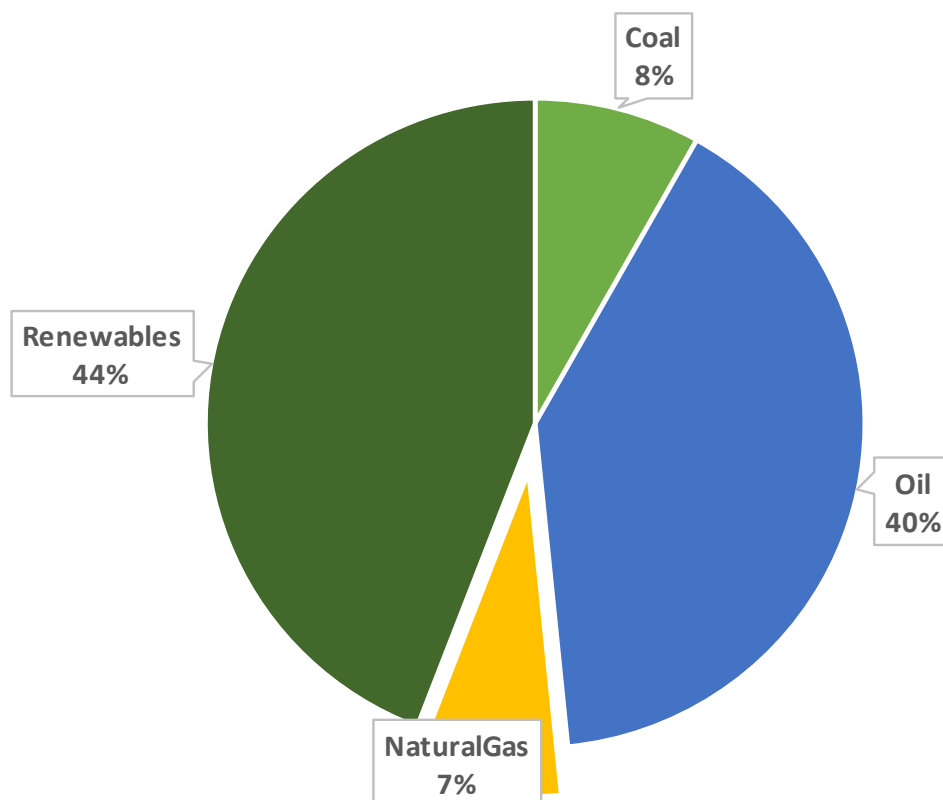


Appendix A: Gas in Tasmania

While gas is an important fuel, gas consumption in Tasmania, particularly by households, is very low compared to other Australian jurisdictions.

Natural gas accounted for around 7 per cent of Tasmanian energy consumption in 2020-21, with LPG accounting for another 1.3 per cent of total energy consumption.⁸

Figure A1: Share of primary energy consumption in Tasmania by Fuel, 2020-21



Source: Department of Climate Change, Energy, the Environment and Water, Australian Energy Update 2022, Table C and ReCFIT calculations

The limited role of natural gas in Tasmania's energy mix is at least partly attributable to the relatively recent introduction of natural gas into the State and the limited reach of the reticulation network, which currently passes around 60,000 premises.

Tasmania's first residential natural gas consumer was connected in August 2004 and since then, approximately 13,700 residential customers, or around 6 per cent of Tasmanian households, have connected to the natural gas network. Just over 1,100 commercial and industrial customers are connected to the network.⁹ Connections have continued to grow at a modest pace in recent years.

⁸ Department of Industry, Science, Energy and Resources, Australian Energy Update 2022, Table F and ReCFIT calculations

⁹ Office of the Tasmanian Economic Regulator, Energy in Tasmania 2021-22 and ReCFIT calculations

The Tasmanian natural gas network

Since 2003, natural gas has been supplied to Tasmania through an underwater pipeline from Victoria. This pipeline, the TGP, is the only transmission pipeline operating and transporting gas to Tasmania. The pipeline runs from Longford in Victoria to Five Mile Bluff (near Bell Bay), then west to Port Latta and south to Bridgewater.

Some major industrial customers are supplied directly from the transmission pipeline, with smaller industrial customers and commercial and residential customers being supplied via the distribution network.

The distribution network transports gas at lower pressures than the transmission network. It is 840 km in length and delivers around 3.6 PJ per annum of natural gas to approximately 15,000 customers.

Tasmania's gas distribution and transmission pipelines are regulated by both state and national regulatory instruments. The *Gas Industry Act 2019* (Tas) covers licensing for gas retailing, and the building, operation, and maintenance of gas infrastructure.

The *Gas Safety Act 2019* (Tas) regulates safety and technical standards to ensure gas infrastructure is constructed, maintained and operated safely. The Director of Gas Safety is responsible for performing the functions imposed by this Act.

The NGL and NGR were adopted by Tasmania in 2008. Given Tasmania's gas pipelines are subject to the lighter form of regulation, pipeline operators are not subject to pricing regulation. Pipeline operators negotiate with users of the pipelines for the supply of gas on a commercial basis, with contracts typically being three to four years in length.

Full retail contestability applies to the Tasmanian gas retail market. The price of natural gas is not regulated in Tasmania with Aurora Energy and Tas Gas Retail, the two main natural gas retailers, offering a single residential tariff and a single business tariff.¹⁰

¹⁰ Tasmanian Economic Regulator, Comparison of Electricity and Gas Prices Available to Smaller Customers in September 2022

Bottled gas

There are some areas of Tasmania that are not connected to the main gas network and instead use LPG, Liquefied Natural Gas (LNG) or Compressed Natural Gas (CNG) supplied in bottles or cylinders.

LPG and LNG are used for similar purposes, but natural gas is comprised mostly of methane, while LPG is a combination of flammable hydrocarbon gases, primarily butane and propane. These gases are liquefied using pressure (LPG) or temperature (LNG), and transported to the point of consumption in tanks or large cylinders.

Tasmania has an LNG plant at Westbury that currently supplies gas to a range of customers across several industries, including agriculture and transport. The plant takes natural gas from the TGP, which is processed, and then liquefied to be stored in tanks and transported to road tankers for distribution around Tasmania.

LPG is imported into Tasmania via sea transport and to households and businesses around Tasmania via road transport.

The price of LPG can vary and is dependent on the global market supply and exchange rates.



How gas is used

Gas is a versatile fuel and while the level of gas consumption is comparatively small in Tasmania, it currently plays an important role in our energy mix.

Industrial users account for a relatively high proportion of the gas consumed in Tasmania compared to mainland states, with approximately three quarters of Tasmania's reticulated natural gas consumption attributable to 16 large industrial users.¹¹

Many of Tasmania's large industrial operations, which employ a significant number of Tasmanians, rely on natural gas as a fuel source for heat purposes, while natural gas can also be used as a feedstock for the manufacturing of plastics or other organic chemicals.

Households in Tasmania commonly use gas for space heating, water heating and cooking. LPG is also used as a fuel for barbecues and vehicles. Similar to households, the main uses of gas by commercial users include space heating, water heating and cooking. Gas boilers are often used to heat large premises such as schools and hospitals.

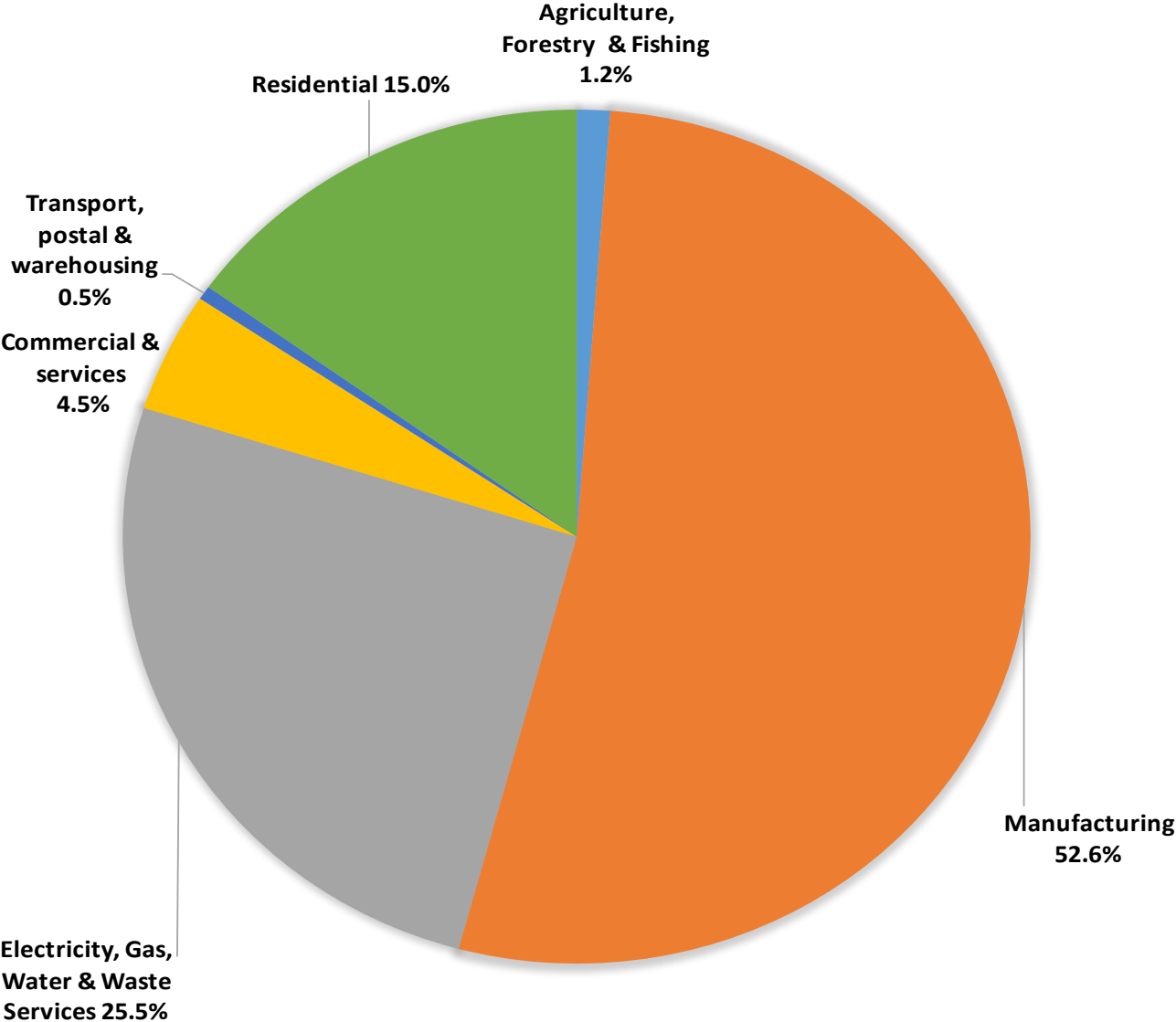
There is comparatively high residential use of LPG in Tasmania (around 36,200 households) with more LPG being consumed by households than natural gas.¹²



¹¹ Tas Gas submission, 2022

¹² Department of Climate Change, Energy, the Environment and Water, Australian Energy Update 2022, Table F

Figure A2: Industry share of total gas use (LPG and natural gas) in Tasmania, 2020-21



Source: Department of Climate Change, Energy, the Environment and Water, Australian Energy Update 2022, Table F and ReCFIT calculations.
Note: The use of natural gas for electricity generation fluctuates significantly from year to year and has accounted for a much larger share of total gas use in some previous years.

Gas powered electricity generation

Gas continues to play an important role as a back-up source of energy for electricity generation in Tasmania. The Tamar Valley Power Station (TVPS) is the largest single gas consumer in Tasmania when in operation. AETV, a subsidiary of Hydro Tasmania, operates the TVPS. It consists of a combined cycle gas turbine and four open cycle gas turbine units with a combined generating capacity of 372 MW.

Gas fired power generation in Tasmania is highly variable. The variation is dependent on a range of factors including the availability of hydro and wind generation, relative power prices and demand in Tasmania and Victoria, rainfall and the availability of the Basslink interconnector.

While the use of gas-powered electricity generation has been decreasing, particularly as new renewable generation assets are constructed on-island, the TVPS continues to be available and operating on a commercial basis, providing gas-fired electricity generation and ensuring adequate system strength. The government committed to retaining the TVPS at the 2021 election, and the combined-cycle turbine remains available should it be required, including for energy security purposes.

Construction of the Marinus Link interconnector may mean that gas will play a less important role in electricity generation for energy security in the future as Tasmania will have greater capacity to import electricity from the mainland when needed and/or mainland prices are lower. However, gas could continue to have an important role in providing dispatchable electricity generation at times of high demand.



Appendix B: Definitions

Term	Definition
Australian Renewable Energy Agency (ARENA)	Established by the Australian Government on 1 July 2012 as an independent statutory authority to manage the government's renewable energy programs.
Australian Energy Market Commission (AEMC)	An independent statutory body that makes rules governing the electricity and natural gas markets, including the retail elements of those markets.
Australian Energy Market Operator (AEMO)	An independent body established to manage the National Electricity Market and Australian gas to ensure that all Australians have access to reliable, secure and affordable energy.
Australian Energy Regulator (AER)	Oversees economic regulation and rule compliance in Australia's national energy markets. It forms part of the Australian Competition and Consumer Commission (ACCC) and enforces the rules set by the AEMC.
Biogas	Gases produced by microbial breakdown of organic matter in the absence of oxygen. Biogas is predominantly comprised of methane and carbon dioxide with lesser amount of other gases
Bioenergy	Bioenergy is energy produced from organic matter. It can be produced from almost any organic matter of agricultural, industrial, municipal and forestry origin.
Bioenergy Vision	The development of a Bioenergy Vision is a deliverable under the Tasmanian Renewable Energy Action Plan and will be published in 2022.
Biomethane	Methane produced by anaerobic digestion
Compressed Natural Gas (CNG)	Compressed natural gas is natural gas mainly comprised of methane that is stored under high pressures (while remaining in its gaseous form).
Discussion Paper	A Discussion Paper was published by the Tasmanian Government in November 2021, as the first phase of a consultation process.
Distribution network	A network of distribution pipelines delivers gas from points along transmission pipelines to industrial customers, and from gate stations to customers in cities and towns. A distribution network typically consists of high, medium and low pressure pipelines.
Gas Statement of Opportunities (GSOO)	Annual Report released by AEMO forecasting annual gas consumption and maximum gas demand, and reports on the adequacy of eastern and south-eastern Australian gas markets to supply forecast demand over a 20-year outlook period.
Gas fired power generation	Natural gas is combusted in a gas turbine burner which drives a generator to produce electricity.
Gigawatt hours (GWh)	Standard unit of energy representing one billion watt hours and is equivalent to one million kilowatt hours

Term	Definition
Liquefied Natural Gas (LNG)	Natural gas that has been cooled to a liquid state, for the purposes of transporting it.
Liquid Petroleum Gas (LPG)	A gas liquefied by compression, consisting of flammable hydrocarbons, as propane and butane, obtained as a by-product from the refining of petroleum or from natural gas.
National Gas Law (NGL) and National Gas Rules (NGR)	The NGL and NGR bring responsibility for regulation of access to natural gas pipeline services provided by transmission and distribution pipelines under the national energy market framework. The NGR: <ul style="list-style-type: none"> • govern the wholesale gas balancing markets in the eastern gas market; • govern the wholesale and retail gas markets of northern and eastern Australia; • provide the basis for third party access to regulated transmission and distribution pipelines and an information and arbitration framework for non-regulated pipelines; • facilitate the provision of services to retail customers; • govern the operation of the Short Term Trading Market (STTM) in Brisbane, Sydney and Adelaide, the Declared Wholesale Gas Market in Victoria, the Gas Supply Hubs and the Natural Gas Services Bulletin Board; and • govern the secondary trading of pipeline capacity.
Natural Gas	Natural gas is an odourless and colourless gas (mainly consisting of methane) formed from the decomposed remains of plants and animals.
Petajoule (PJ)	Standard unit of energy - one petajoule is 10^{15} joules or 278 gigawatt hours
Renewable Methane	Renewable methane is produced by reacting renewable hydrogen with carbon to form methane (CH ₃). The required carbon can be captured either from the atmosphere or as by-products of combustion processes.
Tamar Valley Power Station (TVPS)	The TVPS is a gas fired power plant (consisting of a combined cycle gas turbine and four open cycle gas turbine units) located at Bay Bell. It is operated by AETV, a subsidiary of Hydro Tasmania.
Tasmanian Renewable Energy Action Plan (TREAP)	A Plan published by the Tasmanian Government in December 2020 setting out its vision and a suite of actions to grow Tasmania's renewable energy sector
Tasmanian Renewable Hydrogen Action Plan (THRAP)	A plan published by the Tasmanian Government in March 2020 setting out its vision and a suite of actions for Tasmania to become a world leader in large-scale renewable hydrogen production for domestic use and export.
TGP	Tasmanian Gas Pipeline - Tasmania's gas transmission network (see definition below)
Transmission network	Transmission pipelines transport natural gas from processing or storage facilities over long distances to domestic markets. The pipelines typically have wide diameters and operate under high pressure to optimise shipping capacity.



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