# Appendix 3.1: GPA Engineering report on Evoenergy's gas network feasibility beyond 2045

## Revised 2026–31 access arrangement information

### ACT and Queanbeyan-Palerang gas network access arrangement 2026–31

Submission to the Australian Energy Regulator

**January 2026**

# Feasibility of Evoenergy Gas Network Beyond 2045

## 1 INTRODUCTION & BACKGROUND

The Australian Capital Territory (ACT) has announced a complete phase-out of natural gas and proposed decommissioning of the gas network by 2045 as part of its *Integrated Energy Plan* (IEP), consistent with its legislated target of achieving net zero emissions by 2045. This proposed transition will significantly affect the gas network's asset life planning and future viability.

In 2023, the ACT Government engaged GPA Engineering (GPA) to prepare the report *Green Gas Alternatives for the ACT's Commercial and Industrial Sector*[1], which evaluated the technical feasibility of electrification and green gas solutions for users in the ACT. The findings consistently indicated that electrification represents the most viable pathway for decarbonisation, with green gas limited to niche applications.

In 2025, Jemena and Evoenergy engaged GPA to support the development of a strategic plan for the decommissioning of the ACT gas network[2]. This work highlighted the operational, safety, environmental and cost considerations associated with the proposed decommissioning of the network in line with the *Integrated Energy Plan's* 2045 timeline.

These engagements provided GPA with a comprehensive understanding of the ACT gas network's future. This document brings together previous studies and outlines the implications for network viability, asset life planning, and the key considerations for a structured decommissioning strategy.

## 2 COMMITMENTS OF EVOENERGY'S INDUSTRIAL CUSTOMERS

**With no significant industrial load and most industrial customers already committed to electrification, long-term gas demand will decline significantly. Maintaining high pressure assets beyond 2045 would result in underutilised infrastructure which would undermine network efficiency and likely lead to significantly increased network charges for remaining users.**

Evoenergy's total annual industrial gas demand was approximately 1 PJ in 2024/25 (17% of total gas demand). These industrial customers are connected the high pressure network. Table 1 summarises Evoenergy's industrial customers[3] and their decarbonisation commitments.

**Table 1: Industrial Gas Users in the ACT**

| User | Types of Businesses / Organisations | Commitment |
|---|---|---|
| **ACT Government** (Approximately 35% of annual industrial consumption) | Hospitals<br>Laundry<br>Vehicle Refuelling (Buses)<br>Swimming Pools<br>Water Treatment<br>Schools/Training/Education (Buildings) | The ACT Government have committed to full electrification **by 2040**, including zero-emission public transport, all-electric new schools and hospital expansion, renewable-powered light rail, and transition of public assets away from gas (pg. 56 IEP). |

[1] Study Report - Green Gas Alternatives for the ACT's Commercial and Industrial Sector
[2] 240757-REP-001- The Playbook (Planning for the future of the ACT gas distribution network)
[3] These customers are classified as 'industrial' solely based on annual gas consumption exceeding 10 TJ, rather than the nature of their operations. Source: Evoenergy Demand Customers Consumption 2018–2025.

| User | Types of Businesses / Organisations | Commitment |
|---|---|---|
| **Federal Government (excluding defence)** (Approximately 20% of annual industrial consumption) | Offices (Buildings)<br>Swimming Pools<br>Art Gallery<br>War Memorial<br>Scientific Research | The Australian Government have committed to net zero operations by 2030 (excluding Defence and security agencies), including transitioning all Commonwealth entities to 100% renewable electricity by 2030 and electrifying buildings (**by 2040**)[4]. |
| **Federal Government (Defence)** (Approximately 10% of annual industrial consumption) | Training (Buildings)<br>Accommodation (Buildings)<br>Office (Buildings) | Defence will start its net zero transition by targeting its Estate, electrifying buildings, phasing out gas, and sourcing 100% renewable electricity **by 2030**, before moving to more complex areas like fleet and operational fuels[5]. |
| **Universities** (Approximately 20% of annual industrial consumption) | Training (Buildings)<br>Accommodation (Buildings)<br>Offices (Buildings)<br>Laboratories (Buildings) | Australian National University has a target to achieve below zero emissions **by 2040** and has committed to phasing out gas as part of its transition plan. The university has already begun electrifying its buildings[6].<br><br>The University of Canberra has aligned its sustainability goals with the ACT Government's **2045** targets, which include significant emissions reductions[7]. |
| **Private** (Approximately 15% of annual industrial consumption) | Hotel (Buildings)<br>Swimming Pools<br>Shopping Centres (Buildings)<br>Cogen<br>Asphalt Plant<br>Plastic Manufacturing | These businesses have varying degrees of decarbonisation objectives, influenced by corporate sustainability commitments and regulatory pressures. |

# 3 GREEN GAS ALTERNATIVES FOR COMMERCIAL AND INDUSTRIAL CUSTOMERS

**GPA's report "*Green Gas Alternatives for the ACT's Commercial and Industrial Sector*", prepared for the ACT Government consistently identified electrification as the most practical pathway to decarbonisation in the ACT, with green gas[8] limited to niche applications. Any niche application demand is expected to be minimal and could be met through bottled green gas rather than maintaining pipeline infrastructure.**

**Asset life planning should reflect a segmented approach aiming, at minimum, to decommission the majority of assets by 2045 in line with legislation, while treating any exceptional cases as isolated and temporary, not as a basis for a life extension.**

## 3.1 Appliance Suitability

GPA's report, prepared for the ACT Government[9], classified the existing appliances that have commercial and industrial fossil fuel use (LPG, stationary diesel, and natural gas connections) according to:

1. The technological difficulty of electrification, and
2. What the primary alternatives identified for decarbonisation are

The report found that 3% of appliances on the network were significantly difficult or impossible to electrify, while 22% of appliances had a preferred primary alternative of a green gas connection.

[4] Net Zero in Government Operations Strategy
[5] Defence Net Zero Strategy | Defence
[6] Below Zero Delivery Plan 24-25 and Progress Report Sep 23 - Jun 24.pdf
[7] Pathways to impact - University of Canberra
[8] The ACT Government's term for renewable gases biomethane and green hydrogen
[9] Study Report - Green Gas Alternatives for the ACT's Commercial and Industrial Sector

**Categorisation of ~2500 Commercial and Industrial Appliances in the ACT**[10]

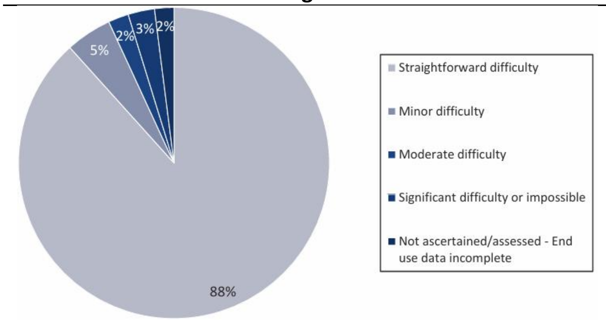


**Figure 1: Technological Difficulty of Electrification (pg. 21)**

**All Significantly Difficult or Impossible to Electrify Appliances in the ACT (pg. 37)**

Cemeteries
- Cremators

Fire/Flame
- Eternal Flame
- Decorative Fireplace
- Fire (training apparatus)

Creative Industries
- Bronze Crucible
- Glass Furnaces
- Glass Making Tools

Asphalt Plants
- Drum Heater
- Oil Heater

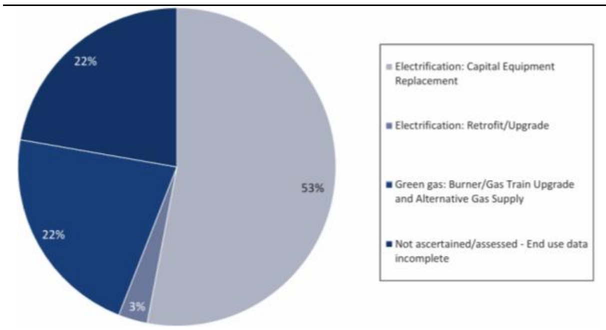


**Figure 2: Primary alternatives identified for decarbonisation (pg. 32)**

**All Preferred Primary Alternative of Green Gas Connection Appliances in the ACT (pg. 41)**

As well as the appliances listed above, there were certain appliance end uses deemed "easy to electrify" from a technological perspective but were evaluated to be more viable to decarbonise by a green gas alternative pathway due to other constraints (e.g., size and complexity).

These are:

Large Scale Commercial Appliances
- Fluid heating & space heating with installed gas capacity of > 1,600 GJ/h
- Laundry's
- Coffee Roasters

Power Generation
- Cogen
- Backup Generators

Not all appliances identified in the categorisation were connected to the Evoenergy gas network; for example, most backup generators use diesel, and some industrial applications rely on bottled LPG. When "Technological difficulty of electrification" criteria is applied to Evoenergy's industrial customer list, there is a significant decrease in annual demand (Table 2).

**Table 2: Evoenergy Industrial Connections**

| Customer | Annual Demand [(1)] |
|---|---|
| Industrial Total (Customers from Table 1) | 1 PJ |
| Industrial "Significantly difficult or impossible to electrify" Criteria Applied | 0.046 PJ |

[(1)] Criteria is applied at the total connection load (PJ), not at the appliance level.

This study also identified key challenges, risks, and opportunities associated with establishing a residual green gas network (biomethane) or supplying bottled green gas (rLPG[11]/biomethane) for customers unable to electrify, as summarised below:

**Table 3: Green Gas Delivery Mechanism Comparison**

| | Residual Green Gas Network (pg. 77) | Bottled Green Gas (pg. 80) |
|---|---|---|
| **Challenges** | • There are no obvious single point sources (within the ACT) to provide feedstock.<br>• In the past, waste to energy has been scrutinised by the ACT community. | • Bottled green gas is expensive compared to other alternatives.<br>• Not practical for applications needing large volumes of gas due to frequent cylinder changes.<br>• Likely needs to be sourced from larger markets, such as Sydney (NSW). |

[10] Study Report - Green Gas Alternatives for the ACT's Commercial and Industrial Sector. All page number references (pg.) in this document refer to this report.

[11] Renewable LPG (rLPG) is a sustainable alternative to conventional LPG, produced from organic feedstocks

| | Residual Green Gas Network (pg. 77) | Bottled Green Gas (pg. 80) |
|---|---|---|
| **Risks** | • Biomethane can contain siloxanes, which break down into silica deposits that may damage appliances.<br>• Biomethane availability is limited and may face demand competition from other regions, though early action could help secure supply. | • Supply chain disruptions, if the supply is limited or interrupted, bottled green gas will be unavailable for appliance use. |
| **Opportunities** | • The ACT's faster progress gives it a head start in securing biomethane supply.<br>• A renewable gas certification scheme ensures compliance and transparency.<br>• A biomethane network could provide energy storage to improve reliability during outages. | • Bottled green gas allows businesses without network access to keep using existing appliances (e.g., pottery kilns at ANU).<br>• Provides a short-term decarbonisation option for businesses with costly or new equipment that isn't yet viable to electrify.<br>• Can serve both stationary and mobile appliances.<br>• Suitable for intermittent needs, offering a potential source for backup power or replacing other fossil fuels. |

### 3.2 Geographic Location of Reduced Network

As part of the same study, GPA mapped the locations of commercial and industrial users for which the use of green gas was preferable. Highlighting that if a residual green gas network was to be maintained, it would be limited to a few key suburbs (notably the CBD, Fyshwick, Belconnen, and Mitchell).


**Figure 3: Location heat map of appliances for which use of green gas (via burner/gas train upgrade and alternative gas supply) was evaluated as the primary decarbonisation alternative (pg. 34)**

This study concluded that "*While a residual green gas network is technically viable, further analysis needs to be completed to determine what would be required to enable its economic viability. For a green gas network to function (economically and practically), there is a minimum throughput to make it viable to sustain, below which it would need to shut down completely*" (pg. v).

Based on current (2025) viability insights:

1. While certain network segments could theoretically remain in service for niche applications, these cases represent a small number of separate networks supporting geographically clustered loads. Significant portions of the existing gas infrastructure would still need to be decommissioned outside any residual networks (see Figure 4).
2. Estimated residual demand is extremely low and any continued service could be delivered through bottled green gas rather than maintaining reticulated high pressure infrastructure.
3. The dispersed nature of remaining loads means that even a reduced network would require extensive infrastructure to operate, making it inefficient and creating major cost recovery challenges that would drive up tariffs for the remaining users.

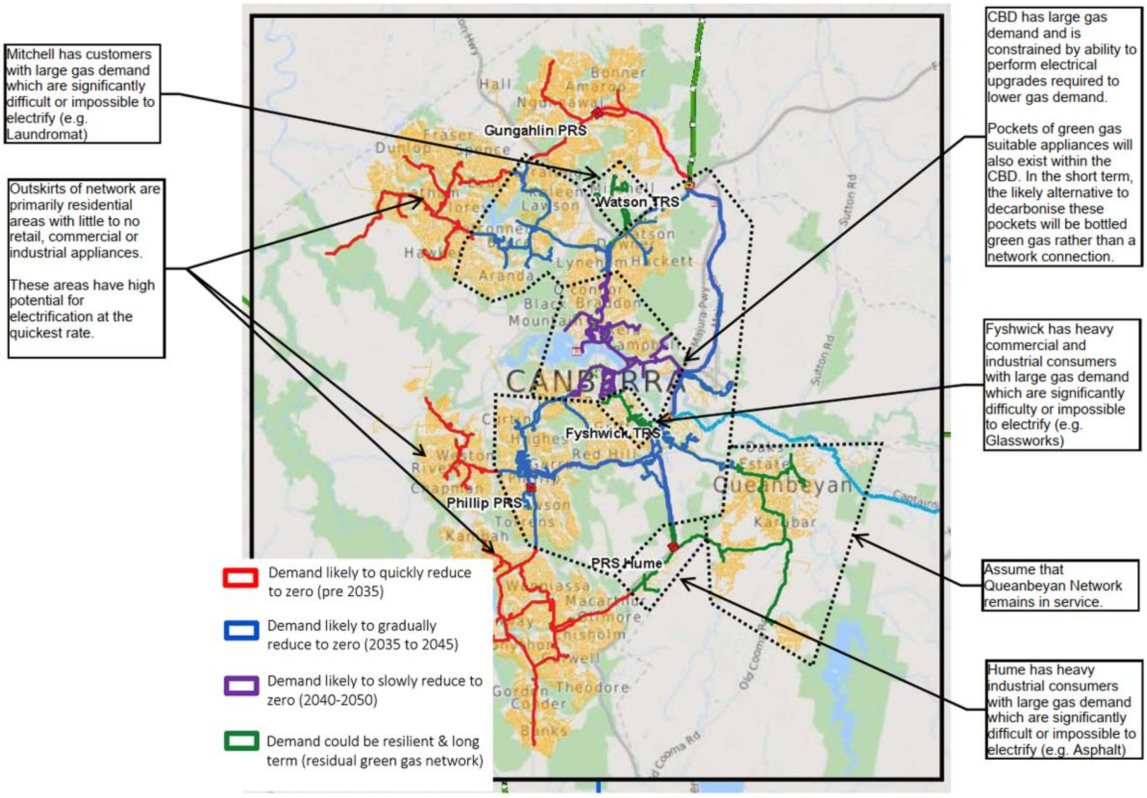


**Figure 4: Predicted location of future gas demand within the ACT gas network (pg. 58)**

## 4 NETWORK DECOMMISSIONING IMPLICATIONS

**Best-practice asset management supports proactive decommissioning aligned with policy timelines, ensuring operational efficiency and risk mitigation. Delaying staged decommissioning increases safety risks and stranded asset exposure.**

During 2025, GPA, Evoenergy and Jemena investigated options for the safe and efficient decommissioning of the ACT gas network (this was achieved through workshops, scenario modelling and internal stakeholder engagement[12]).

[12] 240757-REP-001- The Playbook (Planning for the future of the ACT gas distribution network)

This work highlighted the following critical findings:

- Residual niche networks would require very high network tariffs to recover costs, creating a strong risk of customer attrition and further undermining economic viability.
- Delays in aligning customer disconnection with network decommissioning widen the “tipping point” gap, leading to uncontrolled expenditure and increased safety risks.
- Logical, geographic-based strategies such as street-by-street and area-by-area approaches are significantly more efficient than ad hoc customer-led abolishment. These methods deliver economies of scale, predictable workflows and reduced reputational risk.
- Street-by-street disconnections are operationally preferable because they align with existing processes, minimise the scale of flare/purge activities and allow integration with appliance electrification upgrades.
- Clear timelines and enforceable milestones are essential to avoid prolonged OPEX burdens, regulatory uncertainty and risks associated with partially dormant networks.
- Early readiness through governance, stakeholder engagement and regulatory alignment is critical to enable a smooth transition from planning to execution.
- Workforce planning must anticipate a shift from specialist gas technicians in early stages to general construction labour during high-volume decommissioning phases.
- Investigating regulatory mechanisms for forced disconnection or a formal “right to disconnect” is necessary to manage late-stage customers and avoid operational inefficiencies.

Based on these considerations, a preferred plan was developed to support Evoenergy’s transition towards the 2045 net zero target. This plan balances cost, safety and customer impacts, supported by strategic priorities designed to maintain agility throughout the process as conditions evolve.

## 5 CONCLUSION

The ACT’s proposed phase-out of natural gas by 2045 establishes a clear end-of-life horizon for Evoenergy’s gas network. While a residual network configuration may be technically feasible, it would likely be economically unsustainable under current market conditions and likely require significant external support to remain viable.

Studies consistently identified electrification as the most cost-effective decarbonisation pathway in the ACT, with green gas limited to niche applications that could be more efficiently delivered as bottled rLPG rather than through pipelines. Without consideration of the true comparative cost of these alternatives (including assessment of likely customer demand for rLPG), certainty on residual demand cannot be achieved.

Any residual network(s) would not include the entire network and asset base. The majority of assets would need to be decommissioned by 2045. At most, only a limited portion of the existing network could be considered for extension beyond 2045, and certainly not the full asset base. Even if technically feasible, a residual network would likely be economically unsustainable due to high network charges for a small customer base.

Delaying staged decommissioning would increase safety, environmental, and financial risks, whereas proactive planning aligned with the 2045 target is the best pathway to ensure cost efficiency and mitigate uncertainty. Evoenergy should therefore adopt a structured decommissioning approach consistent with the proposed timelines to enable an orderly, safe and equitable transition away from gas.