Institute for Energy Economics and Financial Analysis

Briefing Note

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Electrification regulations in Victoria would lower energy bills and reduce gas supply gaps

- *Victorian households could save $6.3 billion over 10 years at a cost of $3.5 billion if all new and existing dwellings were electrified.*
- *Excluding existing gas cooktops would reduce savings to households to $5.6 billion over 10 years at a cost of $2.7 billion.*
- *If implemented by 2026, these measures could significantly lower the risk of near-term gas supply gaps.*
- *Targeting only new residential dwellings offers the lowest benefits – $2.3 billion in energy bill savings over 10 years at a cost of $1.3 billion, with minimal impact on gas supply gaps.*

Summary

In this briefing note, we have analysed a set of regulatory options proposed by the Victorian government to transition households to efficient electric appliances. They are:

Option 1: Electrification of all new residential and new commercial buildings.

Option 2: Electrification of all new and existing residential buildings and all new and existing commercial buildings, excluding existing commercial kitchens.

Option 3: Electrification of all new and existing residential buildings (excluding existing residential cooking) and all new commercial buildings.

Option 4: Electrification of all new and existing residential buildings.

IEEFA's findings are summarised in Table 1.

Table 1: Household and statewide savings under proposed electrification options

	Household level			State level (over 10 years)		
	Net upfront cost	Annual bill savings	Payback	Total net upfront cost	Total bill savings	Net present value (NPV)
Option 1	**$2,574** ($1771 after rebates)	**$719**	**3.6 years** (2.5 after rebates)	**$1.3bn**	**$2.3bn**	**$716m**
Option 3	**$2,908** (net benefit after rebates)	**$945**	**3.1 years** (immediate after rebates)	**$2.7bn**	**$5.6bn**	**$2.06bn**
Options 2 & 4	**$3,886** (breakeven with gas after rebates)	**$1,326**	**2.9 years** (immediate after rebates)	**$3.5bn**	**$6.3bn**	**$1.91bn**

Source: IEEFA analysis

Context

Victoria's historic sources of low-cost fossil gas are nearing depletion, and the cost of gas has risen, in part due to the exporting of gas overseas. Victoria now faces the risk of peak day gas supply gaps as soon as 2028, with more structural gaps at an annual scale from 2029.

While most supply-side solutions to solve these gaps would result in higher costs to consumers, reducing gas demand through electrification is an alternative solution that reduces consumer costs.

IEEFA research has explored the financial case for household electrification in Victoria. It found that a phase-out of gas appliances is the most sensible first step to mitigate future gas supply gaps, reduce energy costs, and help meet emissions reduction targets.

The Victorian government has released a Regulatory Impact Statement (RIS) proposing four options for a gradual transition to efficient electric household appliances, in addition to some commercial electrification measures (Table 2).

Table 2: Electrification options in the Victorian government's Regulatory Impact Statement

	Electrification of new buildings		Electrification of existing buildings (as gas appliances reach end of life)			
	Residential	Commercial	Residential cooktops	Residential other appliances	Commercial kitchens	Commercial other users
Option 1	✓	✓	✗	✗	✗	✗
Option 2	✓	✓	✓	✓	✗	✓
Option 3	✓	✓	✗	✓	✗	✗
Option 4	✓	✓	✓	✓	✗	✗

We have grouped Options 2 and 4 together in this briefing note, as they include the same residential requirements. Commercial electrification is outside the scope of this analysis.

Modelling approach

IEEFA first modelled the potential impacts of a phase-out of gas appliances in Victoria in 2023. Since then, we have extended our models to explore more detailed costs and impacts of electrification and other household demand-side opportunities.

This briefing note draws on these updated modelling capabilities to provide an independent assessment of the likely costs and benefits to households of the Victorian government's proposed electrification regulations.

The Victorian government has published its own analysis of the proposed regulations, and there are a number of differences in scope between the government's analysis and IEEFA's, as summarised below:

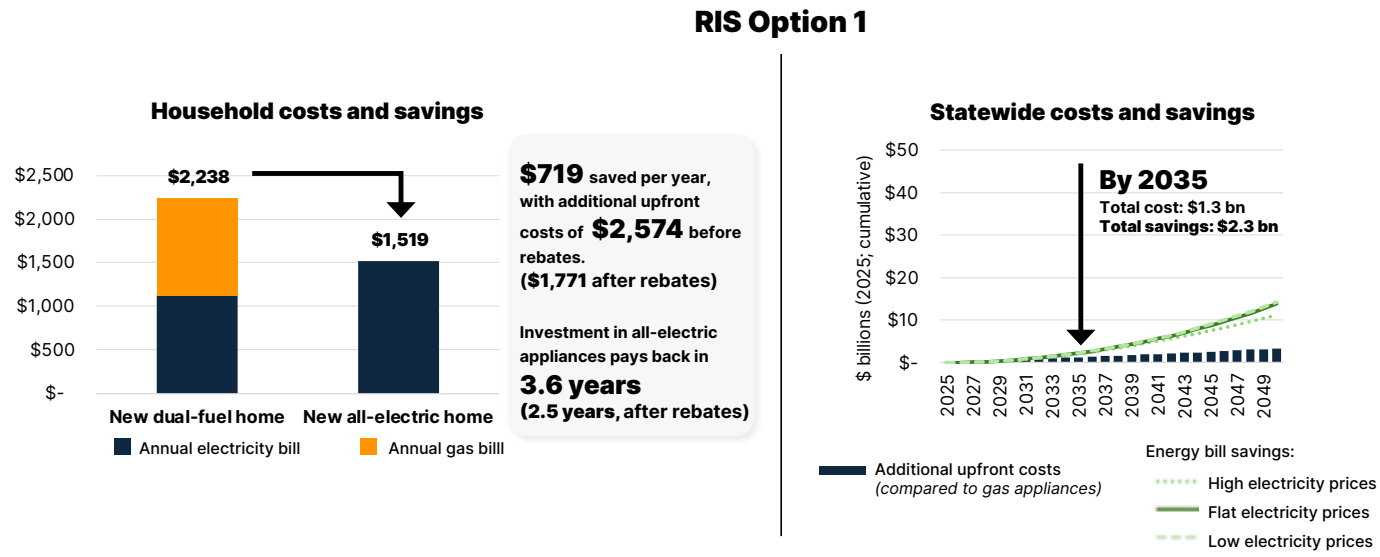
Included in this analysis	Excluded from this analysis
• Upfront costs and energy bill savings from residential electrification • Aggregation of these costs and benefits at a statewide level • Direct impacts of proposed regulations on residential gas consumption	• Costs and benefits of commercial electrification • Costs and benefits of additional consumer-driven electrification • Costs and benefits associated with any impacts on gas or electricity networks

Our approach aims to provide a reasonable minimum estimate of the net benefits of each RIS option. To analyse these options, we have updated several of our modelling assumptions in comparison to previous analysis. These updates generally result in more conservative outcomes than our prior modelling. For example, they factor in dwellings that may be exempt from the regulations.

Further details on the modelling approach in this briefing note, including key assumptions, are available in the Technical Appendix.

Analysis of RIS Option 1

Figure 1: RIS Option 1



Source: IEEFA analysis

RIS Option 1 would require all new residential buildings to be all-electric. This would extend other regulations already implemented by the Victorian government whereby new dwellings requiring a planning permit must be all-electric.

Our analysis of Option 1 compares a new dual-fuel home with gas ducted heating, instant gas hot water and a gas cooktop, to an all-electric new home with three reverse-cycle air-conditioners (RCACs), heat pump hot water system and an induction cooktop. We assume a new home is built to a Nationwide House Energy Rating Scheme (NatHERS) seven-star standard as is required in Victoria.

Our analysis excludes any costs associated with commissioning a new gas connection for a dual-fuel home, which under current regulations may be borne by the customer, and may add material costs for homes in greenfield developments.

We found that the appliances in a new all-electric home would cost about $2,574 more than the equivalent gas appliances. However, the household would save about $719 a year on its energy bills, with the additional upfront costs recouped in 3.6 years.

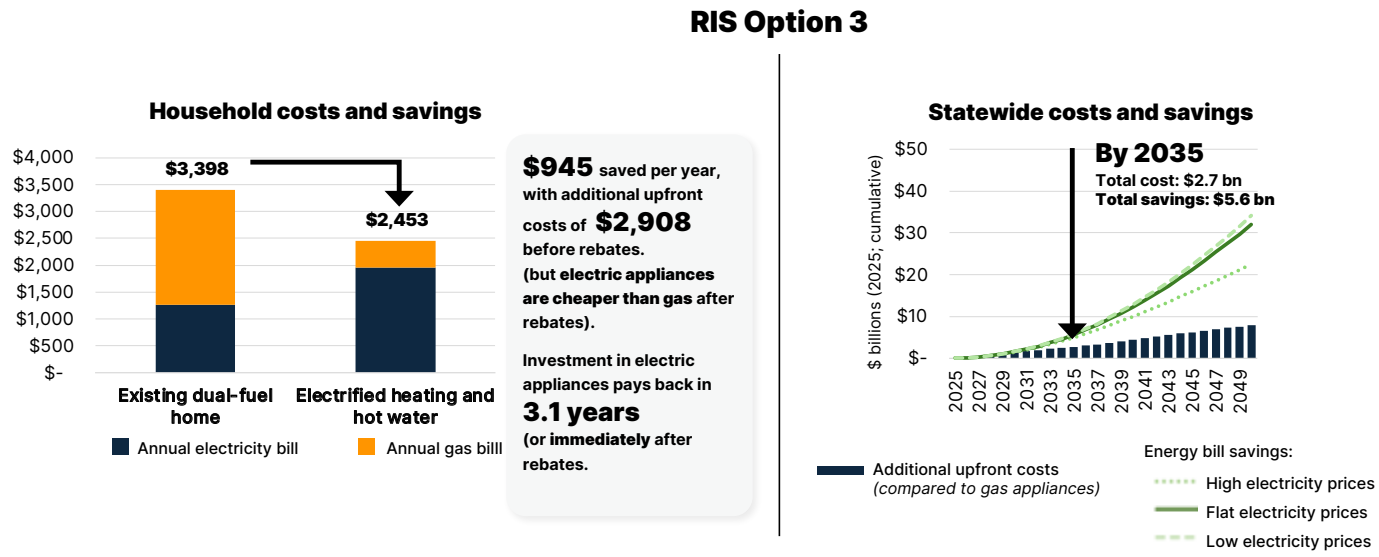
New homes may be able to access small subsidies for installing efficient RCACs under the Victorian Energy Upgrades (VEU) program, and for heat pump hot water systems under the Small-scale Renewable Energy Scheme (SRES). This could lower the additional upfront costs to $1,771, recouped in 2.5 years.

If Option 1 were implemented in 2026, it would likely generate $2.3 billion in statewide energy bill savings in the first 10 years, at a cost of $1.3 billion. The energy bill savings grow much faster than the costs – reaching $13.8 billion by 2050 compared with $3.4 billion in costs. The 10-year NPV of Option 1 was $716 million.

Option 1 represents a minimum step required to avoid long-term lock-in of higher consumer cost and gas demand. It would also limit the continued growth of residential gas networks, reducing further growth in stranded asset risk, and reducing the potential costs that may have to be recovered from consumers, network businesses or taxpayers.

Analysis of RIS Option 3

Figure 2: RIS Option 3



Source: IEEFA analysis

Option 3 incorporates the regulations in Option 1, but adds the requirement that gas heaters and hot water systems in existing dwellings would be electrified when they reach end of life.

Our analysis of Option 3 considers a typical household in Melbourne that would replace a gas ducted heating system with three RCACs at end of life, and replace a gas instant hot water system with a heat pump at end of life.

Space heating consumes more gas than any other end use in Victoria. Upgrading from a gas heater to RCACs delivers a very significant energy efficiency gain, and hence generates the largest savings of any individual appliance upgrade. Upgrading to a heat pump hot water system delivers a similar efficiency gain, and further savings.

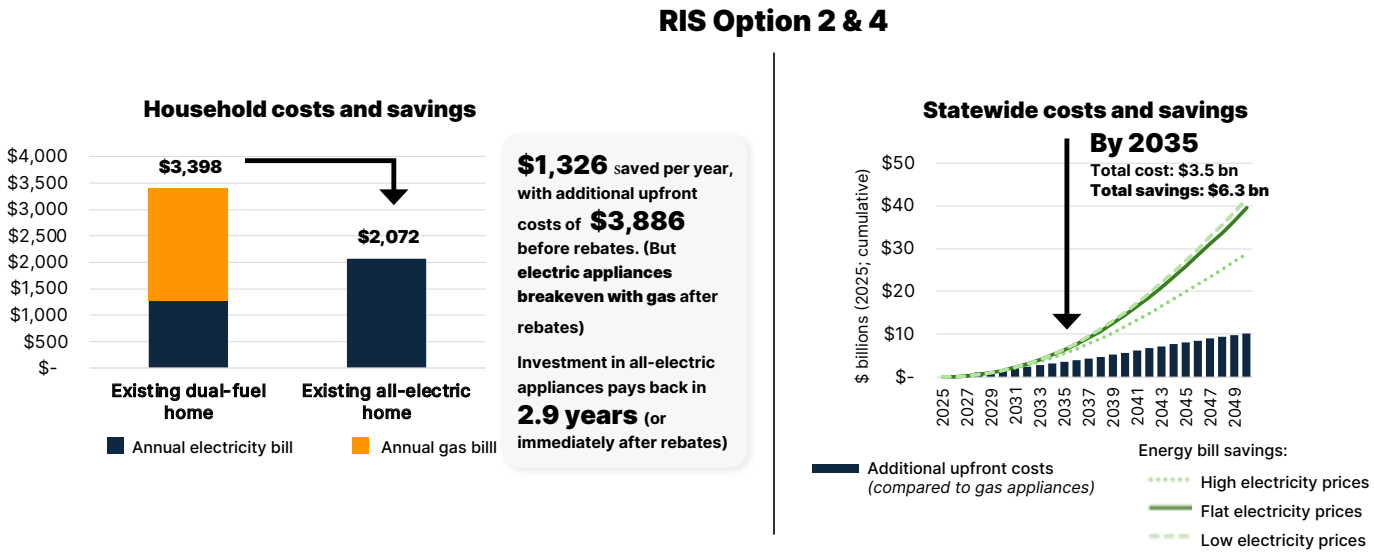
The efficient electric heating and hot water appliances cost about $2,908 more than their gas equivalents. Again, this is outweighed relatively quickly by the household energy bill savings – $945 a year – which pay back the additional upfront costs in 3.1 years.

However, homes that are replacing existing gas appliances may be eligible for much larger rebates under the VEU program. Those rebates could significantly reduce the cost of the efficient electric appliances, in some cases making them cheaper than gas appliances.

Implementing Option 3 in 2026 would likely generate $5.6 billion in statewide energy bill savings in the first 10 years, at a cost of $2.7 billion. This would rise to $32.1 billion in 2050, with $7.8 billion in costs. The 10-year NPV of Option 3 was much higher than Option 1 – at $2.06 billion.

Analysis of RIS Options 2 & 4

Figure 3: RIS Options 2 & 4



Source: IEEFA analysis

RIS Options 2 & 4 achieve the equal greatest level of residential electrification, by adding the requirement for gas cooktops to be replaced with an electric alternative at end of life.

Our analysis of Options 2 & 4 extends the analysis of Option 3, by adding the conversion of a gas cooktop to an induction cooktop at end of life. After fully electrifying its gas appliances, we assume a household would choose to abolish its gas connection, incurring a one-off upfront cost in exchange for avoiding the need to pay fixed daily gas charges.

Options 2 & 4 have the highest additional upfront costs – $3,886. Again, this unlocks higher energy bill savings – $1,326 a year – with a payback period of 2.9 years, the lowest of all options.

Once again, eligible households may have access to significant subsidies under the VEU program, in some cases reducing the upfront cost of efficient electric appliances to breakeven with gas.

Implementing Options 2 or 4 in 2026 would likely generate $6.3 billion in statewide energy bill savings in the first 10 years, at a cost of $3.5 billion. The 10-year NPV was slightly lower than Option 3 – at $1.91 billion.

The main reason the 10-year NPV is lower for Options 2 & 4 compared with Option 3, despite offering a shorter payback period at a household level, is due to most of the additional savings deriving from avoided fixed daily gas charges. Homes must electrify all gas appliances to access these savings, with many homes unlikely to reach this point in the next 10 years.

However, the savings accelerate in the longer term – reaching $39.5 billion by 2050 at a cost of $10.2 billion.

A significant additional cost under this option – the abolishment fee imposed on households to disconnect from gas – could be lowered if the Victorian government were to implement a gas network phase-down plan. This plan could lay out a more orderly and cost-efficient means of decommissioning the network, which would likely be cheaper than each individual household paying for gas abolishment.

Impact on gas supply gaps

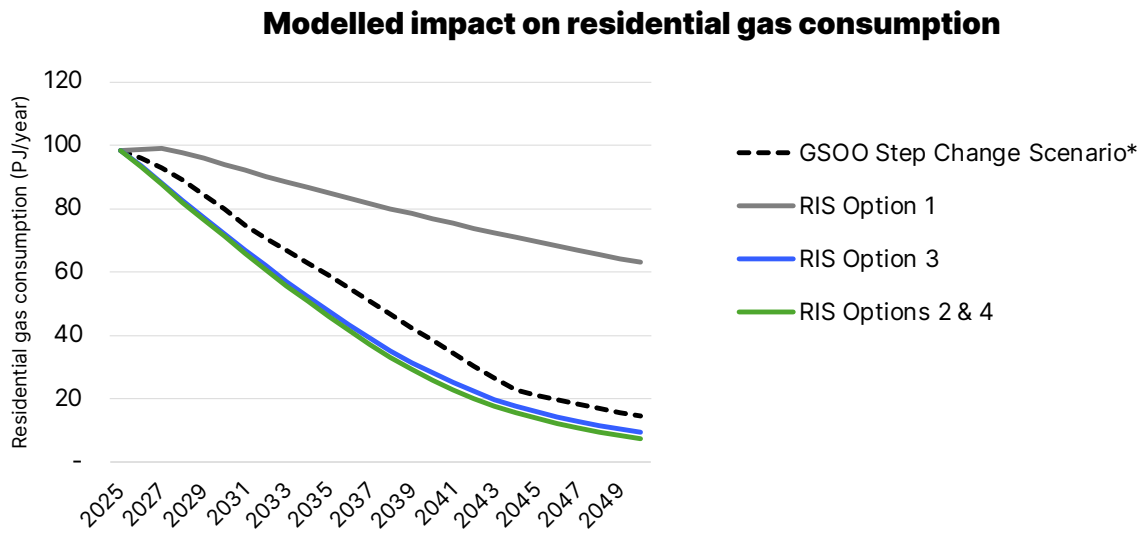
The Australian Energy Market Operator (AEMO)'s 2025 Gas Statement of Opportunities (GSOO) has warned that seasonal gas supply gaps in southern regions, including Victoria, may emerge as early as 2028, with structural gaps from 2029. This is a notable improvement on its 2024 forecasts, which predicted seasonal supply gaps from 2026, and at an annual scale from 2028.

This revision is driven by several factors, including a decrease in fossil gas consumption, particularly in the residential sector, and milder weather conditions. This highlights the role residential electrification can play in materially reducing the risk of gas supply gaps. However, it is not a given that further improvements will occur in the absence of more policy support for electrification.

AEMO's supply gap forecasts are based on its Step Change scenario, which already assumes a relatively strong level of uptake of residential electrification. In the absence of further regulations, it is likely Victoria's gas demand will exceed this forecast, leading to larger supply gaps.

All RIS options analysed here would deliver some long-term reduction in residential gas consumption. In Option 1, this would be limited to a slow decline driven by the demolition of existing gas-connected homes. In Options 2, 3 and 4, the reduction is far more substantial – going beyond AEMO's Step Change forecasts.

Figure 4: Impact of RIS Options on residential gas consumption vs Step Change

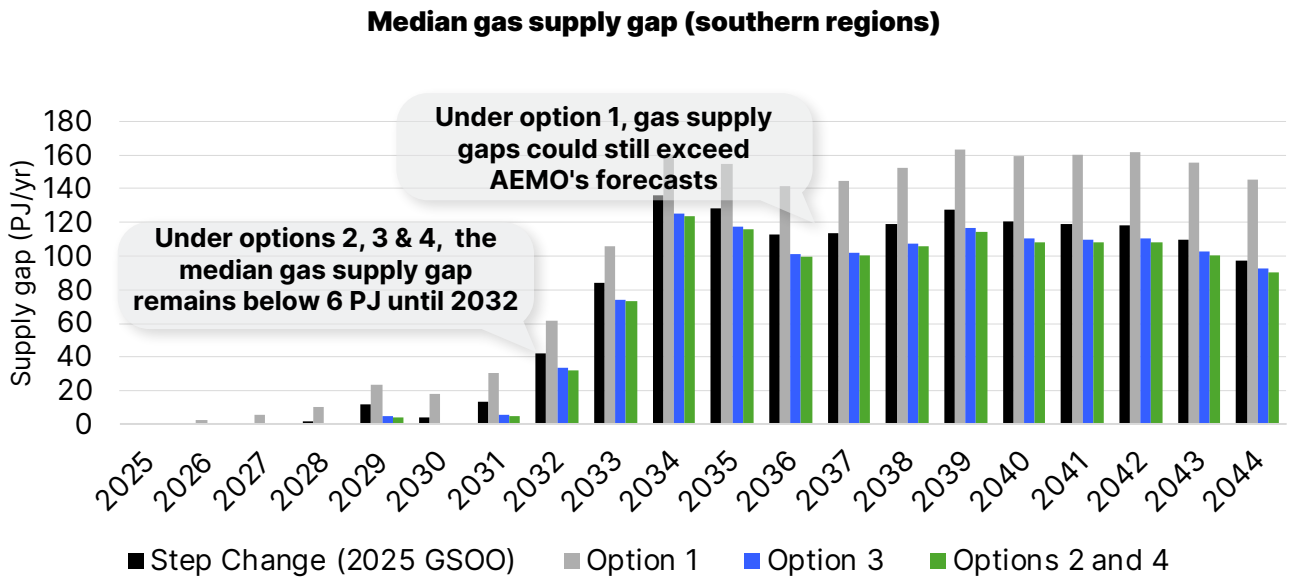


Source: IEEFA analysis; AEMO gas forecasting data portal.

The RIS options alone cannot fully offset the potential for long-term gas supply gaps. However, under Options 2, 3 and 4, near-term gas supply gaps could be reduced to a more manageable level. If these options were implemented in 2026, Victoria may be able to maintain gas supply gaps below the level of 6 petajoules (PJ) a year until 2032.

To realise these benefits in full, the additional electrified load should be met via non-gas generation such as renewables with storage. While gas generation is often used to meet peak electricity demands, there are a number of options that could compete with gas generation to reduce this requirement.

Figure 5: Forecast annual gas supply gaps for southern Australia

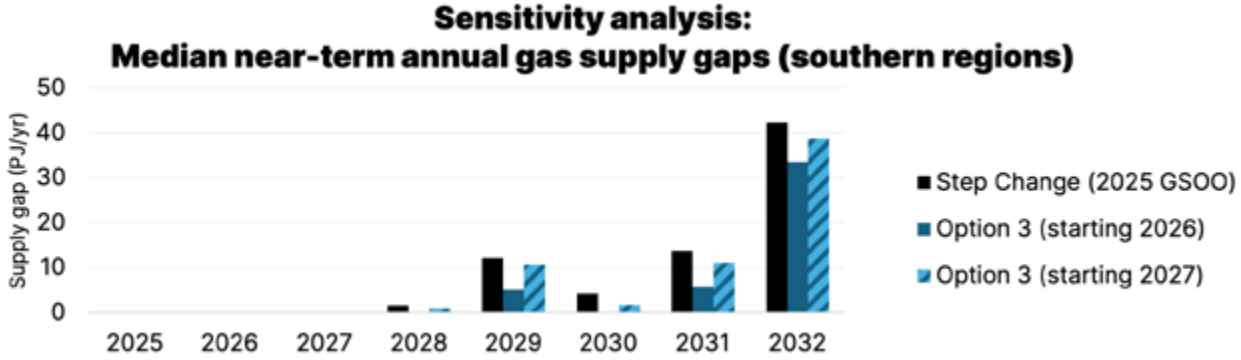


Sources: IEEFA analysis; AEMO 2025 Gas Statement of Opportunities. Note: Analysis is for gas supply gaps across all southern regions (NSW, Victoria, ACT, Tasmania and SA). Relative impacts would be greater at a Victorian level. This analysis excludes the impacts of commercial electrification under Options 1, 2 and 3, or any additional consumer-driven electrification, which would reduce supply gaps even further.

The analysis in this briefing note largely assumes that electrification regulations would be implemented in 2026. This aligns to modelling of the RIS commissioned by the state government, although the government has not committed to a preferred timeline.

We also modelled a sensitivity of Option 3 (Figure 6) with a delayed start of 2027. This had the effect of more than doubling the median gas supply gap in 2029 and 2031, and reintroduced the possibility of a small annual gas supply gap in 2028 and 2030.

Figure 6: Effect of electrification delays on annual gas supply gaps in southern Australia



Source: IEEFA analysis. Note: Residential gas demand reductions under Options 2 & 4 are very similar to Option 3, and the sensitivity analysis of these options yields similar results.

Delaying the onset of Option 3 to 2027 would significantly degrade the near-term benefits of gas demand reduction, implying a strong case for implementing the regulations as early as 2026.

Further cost-saving measures enabled by electrification

Each of Victoria's proposed electrification options would result in direct reductions in energy costs, and statewide gas demand. However, a critical benefit of electrification is that it unlocks further opportunities to reduce costs.

Figure 7 shows the hourly energy consumption for a typical Victorian household on a winter and summer's day (column a). From left to right, it explores the change in this profile as:

b: Gas loads are switched to efficient electric appliances.

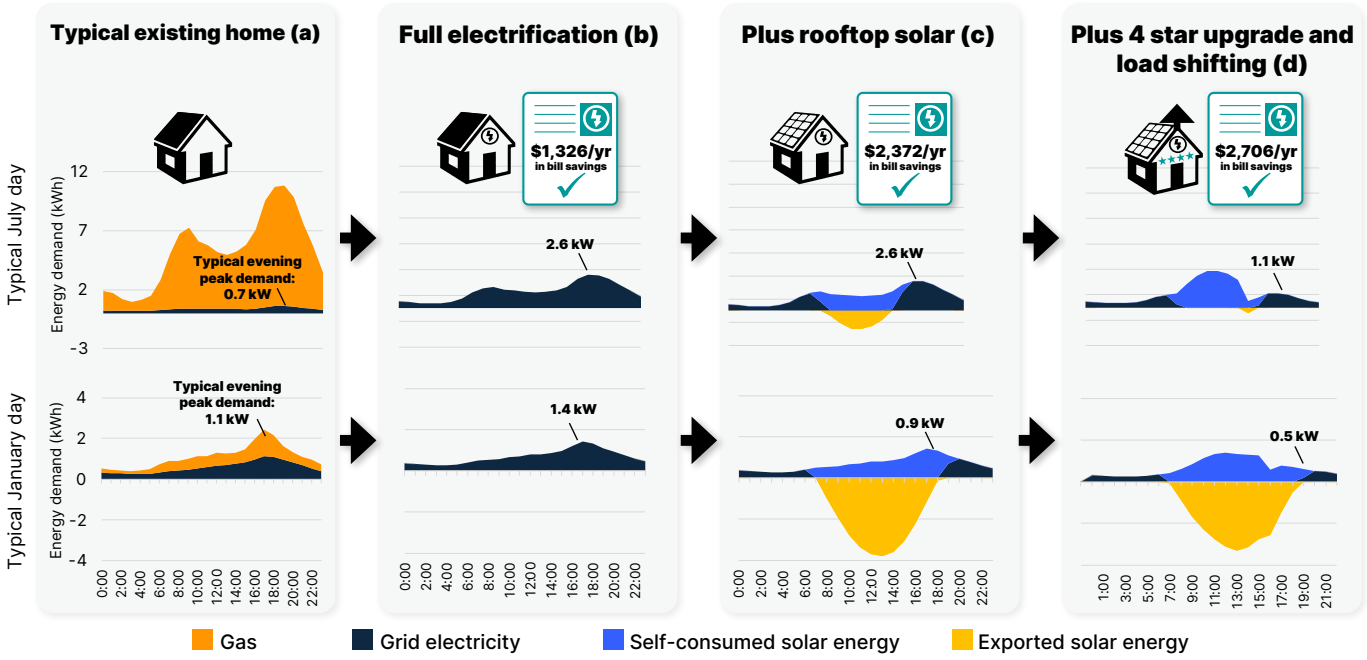
c: 9 kilowatts (kw) of rooftop solar is added.

d: The thermal efficiency of the home is upgraded from two to four stars, hot water loads are shifted to the middle of the day, and excess solar is deployed to pre-heat and pre-cool the home.

These further measures can unlock significant additional energy bill savings for consumers. It also has a significant effect on reducing peak evening demand – which, as shown by CSIRO research, has the potential to lower overall system costs.

Furthermore, as solar feed-in tariffs in Victoria trend towards zero, self-consumption is increasingly the most optimal way for households to utilise their excess rooftop solar.

Figure 7: Effects of measures on household gas use and savings (summer vs winter)



Source: IEEFA analysis. Note: Load-shifting in (d) includes moving hot water loads to the middle of the day, pre-heating and pre-cooling. Analysis of pre-heating and pre-cooling potential is drawn from RACE for 2030 (2021). We assume homes must have at least a 4-star rated thermal shell to fully benefit from pre-heating and cooling.

All of the above demand-side actions could be deployed before considering residential batteries – an additional technology that could have a profound impact on household energy consumption and grid firming.

Conclusion

Residential electrification remains the most attractive first step for Victoria to mitigate the impact of upcoming supply gaps.

RIS Options 2 and 4 yield the highest benefits – delivering $6.3 billion in energy bill savings over 10 years at a cost of $3.5 billion, with a 10-year NPV of $1.91 billion. Savings will accelerate as more homes disconnect from the gas network, and increasing the cost efficiency of decommissioning the gas network would lower costs under this option.

Option 3 gives the highest 10-year NPV – $2.06 billion – delivering $5.6 billion in energy bill savings over 10 years at a cost of $2.7 billion. This option is likely to lead to longer-term energy bill savings as more homes disconnect from the gas network.

Option 1 alone is the least impactful – delivering $2.3 billion in energy bill savings over 10 years at a cost of $1.3 billion, with a 10-year NPV of $716 million. However, it reflects a minimum step that would be required to avoid future cost lock-in for consumers, and to avoid lock-in of future gas demand that would make it very challenging to address future gas supply gaps.

Options 2, 3 and 4 would have a similar impact on statewide residential gas consumption, and could constrain gas supply gaps to below 6PJ a year until 2032. This is contingent on those regulations starting in 2026, and the benefits are significantly degraded if regulations are delayed by as little as one year.

Based on this analysis, IEEFA recommends the following:

1	**The Victorian government should strongly consider implementing RIS Options 2 or 4.**
2	**Proposed regulations should be implemented in 2026 at the latest, to have the maximum near-term benefits on reducing gas supply gaps.**
3	**If this timeline is not feasible for Options 2 & 4, the Victorian government should consider implementing Option 3, which would deliver similar reductions in gas demand.**
4	**The Victorian government should consider further cost saving opportunities enabled by electrification – including household thermal efficiency upgrades, increasing uptake of rooftop solar and enabling load-shifting.**

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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