Victorian Energy Upgrades 2026-27 Targets Regulatory Impact Statement

Regulatory impact statement

VICTORIA State Government | Energy, Environment and Climate Action

Author

This document has been prepared by the Department of Energy, Environment and Climate Action.

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

DEECA is committed to genuinely partnering with Victorian Traditional Owners and Victoria's Aboriginal community to progress their aspirations.

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Glossary

Term	Definition
Accredited provider (AP)	Persons and entities authorised by the ESC to create certificates (VEECs)
Additionality	Activities that can be prescribed for the purposes of the VEU program must reduce 'additional' carbon-dioxide equivalent greenhouse gas emissions when compared to what would have happened without the VEU program. This is known as the 'additionality' requirement.
Additional VEECs	Additional certificates which are generated from non-mandatory electrification upgrades
AEMO	Australian Energy Market Operator
BCR	Benefit cost ratio
BRV	Better Regulation Victoria
CBA	Cost benefit analysis
CO_2	Carbon dioxide (a greenhouse gas)
COVID-19	The coronavirus (COVID-19) pandemic
Department	Department of Energy, Environment and Climate Action
DER	Distributed energy resources
Electrification	Electrification means replacing technologies or processes that use fossil fuels such as gas with electrically powered equivalents.
Energy efficiency	Within this RIS, energy efficiency refers to both energy efficiency and electrification upgrades
ESC	Essential Services Commission
GHG	Greenhouse gas
LPG	Liquefied Petroleum Gas
Proposed Minium Rental Standards	Introduction of minimum rental standards, via the proposed Residential Tenancies and Residential Tenancies (Rooming House Standards) Amendment (Minimum Energy Efficiency and Safety Standards) Regulations 2024, which will require end-of-life replacement of gas heating or gas hot water systems with efficient electric alternatives, as well as installation of low-flow shower roses and ceiling insulation in rented homes.
MWh	Megawatt hours
NEM	National Electricity Market
Non-additional VEECs	Certificates attributed to proposed mandatory electrification upgrades, such as those under the minimum energy efficiency standards
NPV	Net present value - for all present value calculations, a real discount rate of 4 per cent has been used, unless indicated otherwise
PBA	Project-based activity – customised (and generally large scale) project activities that improve energy efficiency at premises, for which VEECs may be created. Creation of VEECs requires a scoping approval, a project plan approval and an approved project impact report. The number of VEECs that can be created relies on a report from an approved Measurement and

	Verification Professional on the carbon-dioxide equivalent greenhouse gas emission reduction attributed to the project
PBA Regulations	Victorian Energy Efficiency Target (Project-based Activities) Regulations 2017
Prescribed activity	Activities that result in improvements to energy efficiency, which are listed in the Regulations as able to create VEECs
Proposed regulations	Victorian Energy Efficiency Target Amendment Regulations 2025
Proposed amendments to the building and planning regulations	Proposed regulations to require end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives via an amendment to building and planning regulations.
RIS	Regulatory Impact Statement
TJ	Terajoules
VEEC	Victorian Energy Efficiency Certificate – the certificate created by accredited person and sold to energy retailers to meet their obligation to surrender certificates. VEECs reflect the amount of carbon-dioxide equivalent GHG emissions reduction associated with each prescribed activity: 1 VEEC for each tonne of GHG reduced over the lifetime of the upgraded appliance.
VEET Act	Victorian Energy Efficiency Target Act 2007, the law that establishes the VEU program
VEET Regulations	Victorian Energy Efficiency Target Regulations 2018
VEU industry	Encompasses all businesses offering services under the VEU program, including accredited providers and third parties.
Victorian Energy Upgrades (VEU) program	The government program that provides incentives for households and businesses to improve the energy efficiency of their premises.

Executive summary

The Victorian Energy Upgrades program

The Victorian Energy Upgrades (VEU) program is a market-based scheme which provides financial assistance to households and businesses adopting more energy efficient appliances or undertaking other activities that improve energy efficiency.

The VEU program was established by the *Victorian Energy Efficiency Target Act 2007* (VEET Act) and commenced on 1 January 2009. The VEU program's objectives as set out in the VEET Act are to reduce carbon-dioxide equivalent greenhouse gas emissions and encourage the efficient use of electricity and gas.

The VEU program sets carbon-dioxide equivalent greenhouse gas reduction targets to be achieved through energy efficiency activities. These targets require energy retailers to purchase Victorian Energy Efficiency Certificates (VEECs) annually. Accredited providers[1] create these certificates when undertaking energy efficiency upgrades for Victorian households and businesses. Targets are currently set until 2025, with this regulatory impact statement (RIS) proposing options for annual targets for 2026 and 2027 to be set by 31 May 2025.

The Department of Energy, Environment and Climate Action (DEECA) has policy responsibility for the VEU program, which is regulated by the Essential Services Commission (ESC). DEECA has recently been funded to undertake a two-year strategic review of the VEU program. The review will deliver an updated VEU program that ensures continued alignment with key government objectives including electrification, energy affordability, emissions reduction targets and reliability. The scope of the review[2] includes consideration of the program purpose and objectives, VEEC metrics, targets, activities and eligible products, accredited providers, program regulation and costs and benefits. This strategic review commenced in July 2024 and is separate from the targets proposed in this RIS.

While the review is conducted over the next two years, it is critical that the program continues to encourage employment and investment in the energy efficiency sector, support Victorian households and businesses to save on energy, and transition away from gas. DEECA is proposing to set two years of targets for 2026 and 2027 to allow findings from the strategic review to inform the setting of targets for 2028 onwards. This RIS assesses the costs and benefits of the various target options. A RIS is required under the *Subordinate Legislation Act 1994* for regulatory proposals that may 'impose a significant economic or social burden on a sector of the public.'

Problem the VEU program helps solve

Emissions targets

Victoria has a legislated target of net zero carbon-dioxide equivalent greenhouse gas emissions by 2045 and legislated interim emissions reduction targets of 45–50% below 2005 levels by 2030 and 75–80% below 2005 levels by 2035.[3] The energy sector is one of the biggest contributors to Victoria's greenhouse gas (GHG) emissions and is projected to remain that way until the mid-2030s. Simultaneously, reducing emissions in the energy sector is one of the cheapest ways to meet Victoria's climate goals. A rapid transition to clean, zero-emissions renewable energy sources is critical to achieving Victoria's emissions reduction targets.

As the VEU program reduces energy demand through increasing energy efficiency via a market-based mechanism, the VEU will help Victoria to achieve the energy transition at lowest cost, by reducing gas usage and reducing the growth in electricity usage. Reduced growth in electricity use will in turn reduce the overall investment required in new clean electricity generation, and transmission and distribution infrastructure to support a decarbonised grid. This is in addition to the energy efficiency benefits of reducing energy costs for households and businesses and improving comfort, health and safety.

[1] Under the Victorian Energy Efficiency Target Act 2007, an accredited provider refers to an individual or organisation that has been authorised by the Essential Services Commission to create Victorian Energy Efficiency Certificates by carrying out approved energy efficiency activities.

[2] VEU Strategic Review Terms of Reference (2024), see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0024/714426/Victorian-energy-upgrades-review-terms-of-reference.pdf.

[3] See https://www.climatechange.vic.gov.au/climate-action-targets

VEU program targets

The VEET Act and the associated regulations provides the legislative and regulatory framework for the VEU program. Important elements of the VEU program, such as the activities that attract incentives, exemptions from the program and the number of certificates that must be surrendered by energy retailers each year are set out in the VEET Regulations. The targets directly correlate with the scope and scale of the activity under the VEU program.

Because the VEET Act requires new targets beyond 2026 to be set by regulations no later than 31 May 2025, failing to set the targets may create uncertainty for businesses and consumers in the VEU program, which would not potentially undermine its benefits but also cause structural adjustment costs and risks to participating businesses if there was to be an unexpected end to the program. In the absence of setting the targets, the VEU program could not achieve its intended outcomes or realise its benefits.

Electrification goals

Significant government action is underway to transition Victoria away from gas where possible. Despite proposed regulations and other government actions to encourage electrification, it is projected that a proportion of current gas users will replace gas appliances at the end of their life with gas alternatives or take up inefficient electric appliances which may have lower upfront costs, but lead to higher running costs over their life span and impact on peak demand. These higher running costs would apply to those users who take up inefficient electric appliances, as opposed to those who install more efficient electric appliances. The VEU program continues to play an important role in incentivising and encouraging efficient electrification, by reducing the upfront costs of energy efficient electric appliances and ultimately supporting lower energy bills and emissions.

Objectives of the Proposed Regulations

The objectives of the proposed regulations are to:

- reduce greenhouse gas emissions through efficient use of electricity and gas
- support energy affordability
- promote investment and innovation in the energy efficiency industry, including the support of Victorian jobs
- accelerate and encourage equitable outcomes in Victoria's energy transition.

Options

This RIS outlines five target options, under two modelled scenarios – the 'main regulatory scenario', and 'the alternative regulatory scenario'.

The main regulatory scenario assumes that other announced policy decisions, outlined below, are introduced:

- Proposed regulations to require end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives via an amendment to building and planning regulations.
- Introduction of minimum rental standards, via the proposed Residential Tenancies and Residential Tenancies (Rooming House Standards) Amendment (Minimum Energy Efficiency and Safety Standards) Regulations 2024, which will require end-of-life replacement of gas heating or gas hot water systems with efficient electric alternatives, as well as installation of low-flow shower roses and ceiling insulation in rented homes.
- An amendment to clarify the existing additionality requirement for the VEU program, under the VEET Act, to allow some mandated upgrades to be prescribed to receive incentives under the VEU program.[4]

Two target options are included under the alternative regulatory scenario, which assumes the above regulatory changes (that are currently progressing but have outcomes that are yet to be finalised) do not occur.

Each option makes assumptions about which upgrade activities would be required to make the target level feasible. See Table 1 below for a summary of the options assessed.

[4] The existing additionality requirement in the VEET Act could be interpreted to include a mandatory upgrade as a prescribed activity under the VEU program. Therefore, the proposed amendment will provide clarification that mandated upgrades have not previously been prescribed as activities that can receive incentives under the VEU program.

Table 1: Summary of the policy options

Option name	2026 target (VEECs)	2027 target (VEECs)	Activity assumptions	Regulatory assumptions
1	4 million	4 million	Current program workplan activities factoring in some activities likely to reach market saturation (see section 4.2.2)	**Main regulatory scenario** All relevant act amendments pass: • Proposed regulations to require end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives via an amendment to building and planning regulations. • Minimum rental standards • VEU additionality amendment
2	5 million	6 million	Option 1 plus: • A moderate number of new activities for households and businesses	
3	6 million	7.3 million	Option 2 plus: • A significant number of new activities for households and businesses	
Alt. 1	4 million	4.5 million	Current program workplan activities factoring in some activities likely to reach market saturation (see section 4.2.2), plus: • A moderate number of new activities for households and businesses	**Alternative regulatory scenario** No relevant act amendments pass: • Business-as-usual policy context continues
Alt. 2	4.5 million	5 million	Option Alt. 1 plus: • A significant number of new activities for households and businesses	

Impact analysis

This RIS assesses the impacts of setting the Victorian Energy Upgrades program targets for 2026 and 2027.

This RIS uses a cost-benefit analysis (CBA) approach to analyse:

- **Costs:** Total cost of the VEU program passed through to energy consumers, out-of-pocket costs for upgrades undertaken through the VEU program, and DEECA government costs.
- **Benefits:** Value of carbon-dioxide equivalent greenhouse gas emissions abated because of the VEU program, energy bill savings due to improved energy efficiency, and savings on retail energy prices through avoided infrastructure costs.

This is supported by a qualitative discussion to analyse:

- energy affordability and equity
- industry investment and innovation
- health benefits of energy efficiency and electrification
- risks and sensitivities of target options.

The preferred option proposed in this RIS was determined using the findings of both the CBA and the qualitative analysis.

The preferred option in this RIS (Option 2) is a target of:

- 5 million Victorian Energy Efficiency Certificates (VEECs) in 2026, and

- 6 million VEECs in 2027.

Each VEEC represents one tonne of carbon-dioxide equivalent (CO_2-e) greenhouse gas emissions avoided over the lifetime of the energy efficiency upgrade.

The proposed emission saving targets will be set in accordance with the *Victorian Energy Efficiency Target Act 2007* (VEET Act) and the Victorian Energy Efficiency Target Regulations 2018 (VEET Regulations). The draft Victorian Energy Efficiency Target Amendment (Targets) Regulations 2025 (proposed regulations) have been prepared in accordance with the preferred RIS option.

Impacts of the preferred option

The analysis in this RIS shows that there are several benefits associated with the preferred option (Option 2) and the proposed regulations. Setting the 2026-2027 targets to 5 and 6 million VEECs respectively (under Option 2) would deliver the best possible outcome to the state, when all factors have been considered.

Option 2 has the second-greatest benefit-cost ratio, demonstrating the significant value for money. Option 2 strikes a considered balance between the implementation risk of setting targets too high against maintaining a strong ambition for carbon-dioxide equivalent greenhouse gas emission reduction for Victoria. It has a very positive net present value at over $2 billion in net present savings for Victoria, even if it is not the highest net present value amongst the evaluated target options. Option 2 also has the best results for energy affordability and equitable distribution of benefits by supporting savings for both participants and non-participants.

As stated in section 6.1, the qualitative factors are not all equally weighted. When considering all factors holistically, DEECA considers the lower risks and higher energy affordability associated with Option 2 to outweigh the better performing aspects of option 3 on other qualitative factors, such as industry investment and health benefits.

These proposed targets will help the program to continue to reduce the state's emissions and align with Victoria's trajectory to achieve its interim emissions reduction targets and net-zero by 2045. It will also provide certainty to industry and consumers, drive investment in the energy efficiency sector and support energy affordability and equitable distribution of benefits.

Competition and small business impacts

The proposed regulations are unlikely to have significant adverse impacts on competition and small business. While the proposed regulations impose restrictions on the types of products and businesses which are eligible for incentives, these restrictions are necessary to ensure safety and quality standards and the integrity of the VEU program. As such, the overall benefits of these restrictions are considered to be greater than any impact on competition. By continuing to set targets, the proposed regulations support competition by creating a market in which there is greater demand for energy-efficient products and services by accredited providers. Additionally, the proposed regulations aim to reduce the financial barriers faced by small businesses to upgrade to more efficient appliances. Further, small businesses supplying their products and services to the VEU market will also benefit from ongoing demand through continuation of the program and consumers' confidence from regulated safety and quality standards.

Implementation and evaluation

DEECA is responsible for implementing the proposed regulations and will do so by amending the VEET Regulations by 31 May 2025. This provides industry and consumers with six months notice of the new targets.

DEECA recognises that the changes outlined in the preferred option (Option 2) for the proposed regulations may have an impact on stakeholders participating in or engaging with the program. Impacts are attributed to the immediate setting of targets, but also how the program can be further developed to best meet these targets. DEECA is committed to ensuring changes are communicated clearly and acknowledged transparently and is committed to developing new activities efficiently.

DEECA and the ESC will continue to monitor consumer feedback about the VEU program and collect and analyse data on the VEEC market. This will allow DEECA to assess whether the program is on track to meet targets and deliver its intended benefits.

DEECA will work with the ESC to monitor any risks associated with the targets and introducing new activities and identify any operational challenges to address as part of DEECA's work to continuously improve the program.

The proposed regulations set the targets until 2027. DEECA will need to establish a future set of targets for 2028 onwards prior to 2028. At this point, DEECA will review the operation of the VEET Regulations before remaking them, in line with the requirements set out in the *Subordinate Legislation Act 1994.*

To inform the next target setting process, DEECA will evaluate the performance against the 2026-2027 targets, their appropriateness and the effectiveness of the program.

There are several metrics which can be used to evaluate the effectiveness of the VEET Regulations, including certificate creation data, market information on VEEC prices, uptake data and community and stakeholder feedback. In the interim, the ESC is responsible for monitoring the effectiveness of the compliance and enforcement of the program.

1. Introduction and background

This RIS seeks stakeholder feedback on the costs and benefits of various options for designing targets for the VEU program. It includes proposed regulations to set the 2026 and 2027 targets. Amending the VEET Regulations offers an opportunity to revisit the necessity of the VEU program and determine its scope of activity for 2026 and 2027. Stakeholder feedback is welcome on any aspect of this RIS or proposed regulations by 16 January 2025.

1.1 About the Victorian Energy Upgrades program

The VEU program is a market-based incentive mechanism that has been operating since 2009. The program offers financial incentives to households and businesses to voluntarily undertake energy efficiency upgrades, to reduce energy bills and carbon-dioxide equivalent greenhouse gas (GHG) emissions.

The *Victorian Energy Efficiency Target Act 2007* (VEET Act) establishes the VEU program and confers functions and powers on the regulator, the Essential Services Commission (ESC), to administer the program.

Private businesses accredited under the program (accredited providers, or APs) provide these upgrades and create Victorian Energy Efficiency Certificates (VEECs) that they sell to energy retailers. Energy retailers are obliged to obtain and surrender a set number of VEECs each year corresponding to the amount of electricity or gas they sell. One VEEC represents one tonne of carbon-dioxide equivalent GHG emissions abated over the lifetime of the energy efficiency upgrade.

In 2023, over 506,000 households and 24,000 businesses received discounted energy efficient products and services, saving an average of $110 for households and $3,700 for businesses annually. The program supports employment, investment and innovation in the energy efficiency industry in Victoria.

Upgrades available to consumers include heating and cooling, hot water systems, low-flow shower roses, in-home displays, weather sealing, commercial lighting, pre-rinse spray valves, cold rooms and project-based activities (including whole-of-premises upgrades and large-scale solar).

The Victorian Energy Efficiency Target Regulations 2018 (VEET Regulations) currently prescribes the VEU target for the number of VEECs from 2022 to 2025.[5] The Minister must have regard to the yearly targets when setting the carbon-dioxide equivalent greenhouse gas reduction rates for a particular year.[6] This is because the yearly greenhouse gas reduction rates determine the liability for meeting the VEU targets proportionately amongst liable retailers.

The number of VEECs each retailer must surrender for a year is proportionally related to the amount of electricity and gas sold by the retailer to relevant customers in that year.[7] The electricity and gas sales are multiplied by a 'greenhouse gas reduction rate for each of electricity and gas for that year to determine the retailer's liability. In calculating the 2026 and 2027 greenhouse gas reduction rates, DEECA has undertaken modelling on the expected liable energy sales for the year to which the rates apply to. The forecast rates for 2026 and 2027 require forecasting based on a modelling of expected liable energy sales two to three years in advance. The proposed rates are subject to change as the modelling is refined closer to the year the rates apply.

The analysis within this RIS regarding the costs, benefits and proposed options for the 2026 and 2027 targets is also relevant for the purposes of the exposure draft of the Order to set the 2026 and 2027 greenhouse gas reduction rates. This is because when setting the greenhouse gas reduction rates, the Minister must have regard to the VEET scheme target in that year (if any).[8]

The greenhouse gas reduction rates are critical to give effect to the VEU target and must be made to ensure the benefits for the VEU program for Victorian households and business can be realised. Therefore, the

[5] Section 41A of the VEET Regulations

[6] Section 32(1) of the VEET Act provides for the Governor in Council to fix the greenhouse gas reduction rates for electricity and for gas by Order published in the *Victoria Government Gazette*, on the recommendation of the Minister. The rates must be set by no later than 31 December each year.

[7] If an energy retailer fails to surrender its required number of VEECs for a year, then it will be liable to pay a shortfall penalty for each VEEC it fails to surrender. Accredited providers generate VEECs by undertaking VEU upgrades and sell these VEECs to energy retailers.

[8] Section 31(1A) of the VEET Act.

impacts of the targets cannot be evaluated without considering the greenhouse gas reduction rates for the corresponding years of 2026 and 2027.

Whilst the setting of the targets and rates are two different decisions, they work to achieve the same effect in determining the number of VEECs an energy retailer needs to surrender to meet their obligations under the VEET Act. The rates and targets cannot be evaluated separately without firstly making an assumption about both. Therefore, it is necessary to evaluate both the rates and targets together rather than undertaking a separate RIS process, which would be duplicative.

Given the interrelationship between the VEU targets and the yearly greenhouse gas reduction rates, this RIS has been prepared to consider both the proposed target options for 2026 and 2027 and how they will impact setting the rates for the corresponding years.

In addition to seeking feedback on the target options, this RIS will also seek stakeholder feedback on the impacts of setting the greenhouse gas reduction rates for the years 2026-27.

The VEET Act requires that new annual targets for the 2026-27 period must be set in regulations by 31 May 2025. Details on how the VEU program operates and its legislative framework are set out in Appendix A.

1.2 How the targets are set for the VEU program

1.2.1 Historical approach to VEU target setting

The VEET Act requires annual targets for the VEU program to be set in five-year tranches. DEECA typically sets targets for five years to provide certainty to industry and develop sound target options. Forecasting accurate target options beyond five years is not considered possible given the inherent uncertainty that exists in the energy market.

The process to set targets requires a regulatory impact statement (RIS) to be prepared. For this RIS, two types of modelling were conducted:

- economic modelling – considers the quantified costs and benefits of regulatory options
- energy market modelling – considers the impact of target options on energy consumers and the grid.

Emissions reduction targets are set in number of VEECs, with one VEEC equivalent to one tonne of carbon-dioxide equivalent greenhouse gas emissions abatement over the lifetime of the upgraded appliance. The appropriate target level is determined by several factors, including balancing the desired level of emissions reduction from the scheme with other factors such as the benefits and costs to consumers, the relevant regulatory environment (discussed in section 4.3.1) and changes to the program (i.e. activity or industry specification changes). Refer to chapter 4 for further information on the factors considered in designing the target options in this RIS.

Figure 1 compares the targets for 2016 to 2023 with the number of VEECs registered to demonstrate the program's performance. As Figure 1 demonstrates, the VEU program has mostly exceeded its prescribed targets, resulting in a surplus of certificates being registered and surrendered by the end of each April to meet the previous year's target.[9] Certificate supply slowed in 2023, with multiple factors contributing to the reduced availability of certificates. This includes significant changes to the operating environment, with low-cost and high-volume upgrades (including weather sealing and shower roses) approaching market saturation, a shift to higher cost and more complex electrification upgrades, and potential impacts on program uptake due to inflation and reduced consumer confidence in the economy. While more complex electrification upgrades produce more VEECs per upgrade, they are not occurring at the same volume as low-cost upgrades, and hence have contributed to VEEC supply challenges. Additionally, the ban on telemarketing and doorknocking from May and August 2024 respectively may have short-term impacts on certificate creation as APs make appropriate adjustments to their business operations, but the impacts are expected to level off as other marketing methods become business-as-usual. An internal evaluation of the VEU program is currently underway and will include further analysis on the performance of the program to date.

[9] When a surplus of VEECs are created in a target year, the excess VEECs are carried over to meet the following year's target. When this occurs, there is an excess of VEECs available to energy retailers to meet their targets, which may reduce the likelihood of a certificate shortfall occurring (noting that shortfalls can still occur when there is enough VEEC supply in the market). A surplus of VEECs in the market typically means the VEEC price is lower. In this case, retailers are likely to pay a lower price for VEECs to accredited providers, as there is greater market certainty that targets will be met. Accredited providers are not left out of pocket, because retailers typically buy VEECs to meet the following years' targets to reduce their liability.

Figure 1: VEECs registered compared to target (millions). Note 2019, 2020 and 2023 targets met with surplus certificates from previous years

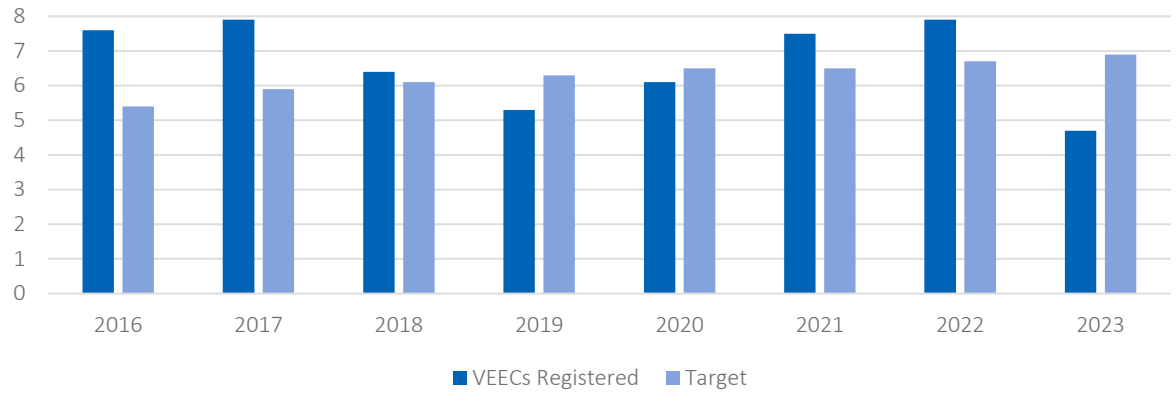


Figure 1 Source: Essential Services Commission

1.2.2 Strategic review of the VEU program and setting interim targets

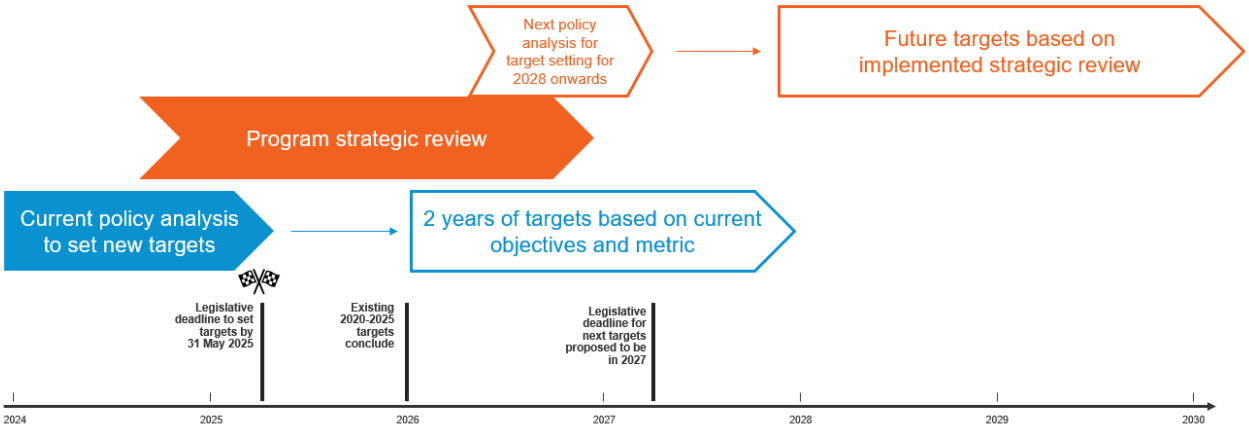
Section 30(g) of the VEET Act requires that regulations prescribe targets for each year of 2026-2030 and that those regulations must be made by 31 May 2025.

In the 2024-25 budget, the Victorian Government announced $5.9 million over two years to fund a strategic review of the VEU program. The scope of the review[10] includes consideration of the program purpose and objectives, VEECs, targets, activities and eligible products, accredited providers, program regulation and costs and benefits.

The strategic review commenced in July 2024. It will complement other reforms and continuous improvement of the VEU program. Work on the VEU target setting will continue as required to ensure the effective business as usual operation of the program.

DEECA proposes to set interim targets for 2026 and 2027 only, in order for targets beyond 2027 to be informed by the findings and recommendations of the review. Confirming the first two years of targets will balance this with the need to support ongoing investment in energy efficiency and in the VEU program. Any identified legislative changes following the strategic review would not be expected to take effect before the 2026 and 2027 targets are required to be set.

Figure 2: Overview of the 2026-27 target setting alongside the VEU program review (2026-28)



[10] VEU Strategic Review Terms of Reference (2024), see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0024/714426/Victorian-energy-upgrades-review-terms-of-reference.pdf.

1.2.3 Evaluation of the Victorian Energy Upgrades program

In the Regulatory Impact Statement - *Victorian Energy Efficiency Target Amendment (Prescribed Customers and Targets) Regulations 2020*, which contained the impact analysis for setting the targets to 2025, DEECA made a commitment to review the operation of the VEET Regulations before remaking them again for the next target period, in line with the requirements set out in the *Subordinate Legislation Act 1994*.

As such, DEECA is currently undertaking a comprehensive internal evaluation of the VEU program against three key evaluation questions, with a focus on the 2021-25 target period:

- How are the benefits and costs of the VEU program distributed?
- How has the VEU program delivered against its legislated objectives and intended outcomes?
- How well is the program operating from consumer and industry perspectives?

Early findings and recommendations from this evaluation have informed the target setting process for 2026-27. The final evaluation report will be published prior to making the 2026-27 targets in the VEET Regulations.

The evaluation is separate to the strategic review of the VEU program (see section 1.2.2).

A key evaluation finding is that overall, VEEC prices for the 2021-25 period have mostly aligned with prices projected in the analysis underlying the 2020 targets RIS. For example, VEEC prices in 2024 are less than 2% higher than forecast VEEC prices in the analysis underlying the 2020 targets RIS. Further, in relation to other schemes across Australia, VEECs are priced relatively similarly to NSW's Energy Savings Certificates (ESCs) on an equivalent metric basis. ESCs have recently been trading at $19/MWh of saved gas, whereas after converting the VEEC metric to energy savings, VEECs have recently been trading at $20.9/MWh of saved gas. VEECs represent five times as much gas savings, and 2.5 times as much electricity savings as ESCs.

1.2.4 Scope of this RIS and how it aligns with other changes to the VEU program

The scope of this RIS is to set the VEU targets for 2026 and 2027. Other changes within the VEU program are outside the scope of this RIS.

The current targets for 2022 to 2025 for the VEU program are:

- Larger than any previous targets, increasing to 7.3 million certificates in 2025.
- Generating greater energy savings as the energy system decarbonises, with each VEEC representing more energy savings than in previous years.
- Anticipated to result in more substantial upgrades and greater energy savings at each premises (as simpler, lower cost upgrades such as lighting are phased out, as many of these upgrades have already been delivered and the program transitions to more ambitious goals over time).
- Anticipated to result in a more diverse range of upgrades; as the program now includes electrification upgrades, where consumers are supported to switch from gas appliances to electric appliances.

The government has made changes to the VEU program as part of its commitment to decarbonisation, detailed below.

Strengthening consumer protections in the VEU program

To ensure the program continues to be one of the largest contributors to emissions reductions in Victoria, the government introduced reforms to protect consumers, maintain trust and confidence and safeguard the program's integrity:

- On 1 July 2022, the VEU Code of Conduct commenced operation. The Code of Conduct sets out minimum standards that accredited providers and scheme participants must follow across the consumer journey with the VEU program, including marketing and sales.
- The Victorian Energy Efficiency Target Amendment Bill 2022, which introduced new enforcement and compliance powers for the ESC as the VEU program regulator, came into effect on 1 July 2023.
- On 1 November 2023, the fees the ESC collects for its administration of the VEU program were updated to achieve cost recovery and ensure the ESC has sufficient resources to effectively regulate the VEU program.

- On 1 May 2024, a ban on telemarketing under the VEU program was introduced. A further ban on doorknocking methods was introduced on 1 August 2024. These bans were implemented to protect consumers from high-pressure sales tactics and other inappropriate marketing.

Support for electrification

The Victorian Government has introduced support for homes and businesses by providing access to energy efficiency products through the VEU program:

- On 31 May 2023, new activities which provide incentives for replacing gas appliances with efficient electric alternatives commenced. Since these activities were introduced, more than 19,000 space heating and cooling and 29,000 hot water upgrades have replaced inefficient gas appliances.[11]
- On 25 October 2024, the VEU program was expanded to include incentives to purchase induction cooktops.

Some Large Energy Users are outside the VEU program

As noted in section 1.1, energy retailers are obligated to acquire VEECs, which represent emission reductions achieved via VEU program upgrades. The direct costs of the program are passed on to all energy consumers, except some large energy users (LEUs) who are listed as being exempt.

Exempt large energy users do not incur program costs and cannot access incentives for energy saving upgrades unless they opt in.

Some of Victoria's largest energy users and shopping centres are exempt from participating in the VEU program, based on previous participation in the Environment Protection Authority's Environment and Resource Efficiency Plan program, which ended in 2013. There is no legislative or regulatory mechanism for reviewing these historical exemptions. This means that while new businesses in Victoria incur VEU costs, they compete with some existing businesses that do not incur VEU costs.

Separate to this RIS, DEECA is considering reforms to the exemption provisions and related criteria to update the large energy user provisions which apply to businesses who are exempt from the costs of the VEU program.[12] As part of any changes to the criteria for exempting large energy users, DEECA will consider issues of equity and energy efficiency.

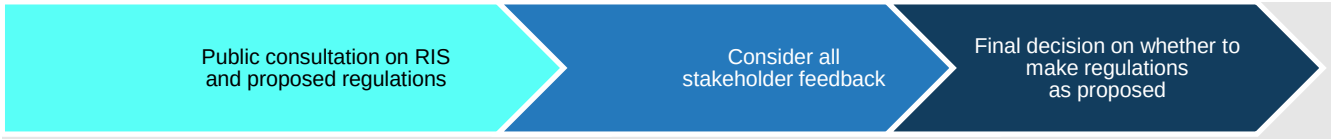
1.3 Assessment and consultation requirements

Before setting any targets under the *Subordinate Legislation Act 1994,* a RIS is required to:

- present detailed and transparent design options for the proposed regulations
- consider stakeholder feedback
- demonstrate how the options were evaluated
- seek feedback on the preferred target level and proposed regulations.

Before new regulations are made, the *Subordinate Legislation Act 1994* requires the below key steps shown in Figure 3 be undertaken.

Figure 3: Key steps required under the Subordinate Legislation Act 1994



A RIS must consider the impact of changes that impose a potentially significant economic or social burden on a sector of the public. A RIS must:

- state the objectives of the proposed changes

[11] As of 30 October 2024.

[12] If you have any questions on the proposed changes to the Large Energy Users exemption framework, please email energy.upgrades@deeca.vic.gov.au

- explain the effect of the proposed changes
- identify other practicable means of achieving those objectives, including other regulatory as well as non-regulatory options
- assess the costs and benefits of the proposed changes and of any other practicable means of achieving the same objectives
- state the reasons why the other means are not appropriate.

The Commissioner for Better Regulation undertakes an independent assessment of the adequacy of RIS' prepared in Victoria, in accordance with the Victorian Guide to Regulation. The Commissioner has determined that this RIS meets the requirements of the *Subordinate Legislation Act 1994* and has issued a letter of adequacy.

1.3.1 Structure of this RIS

This RIS is structured as follows:

- Chapter 1 sets out the introduction and background to this RIS and how to provide feedback.
- Chapter 2 sets out the key problems that the 2026 to 2027 targets will address.
- Chapter 3 describes the objectives of the proposed regulations (which will formally set the 2026 to 2027 targets).
- Chapter 4 describes the policy options considered in this RIS, how they were selected and why other options were deemed not feasible.
- Chapter 5 analyses the costs, benefits and market impacts of the preferred and alternative policy options.
- Chapter 6 analyses competition impacts including impacts on small businesses.
- Chapter 7 outlines how the preferred policy option will be implemented and evaluated.
- The appendices provide more detail on:
    - How the VEU program works (Appendix A)
    - National energy policies and commitments (Appendix B)
    - Emissions factors (Appendix C)
    - Residential economic modelling (Appendix D)
    - Business economic modelling (Appendix E)
    - Essential Services Commission fees (Appendix F)
    - Energy market modelling report (Appendix G)

The RIS has been prepared through consultation and engagement with Better Regulation Victoria (BRV) and the VEU program regulator, the ESC.

1.3.2 How to provide feedback

Interested parties and stakeholders are invited to make submissions to DEECA on the target options and proposed regulations by **16 January 2025.** Feedback is sought from all interested stakeholders, including consumer groups, businesses in the energy efficiency industry, APs in the VEU program, tradespeople, product suppliers, marketing companies, peak industry groups and members of the public.

Feedback is welcome on:

- the preferred option to set the 2026 to 2027 targets
- proposed regulations to formally set the 2026 to 2027 targets (available via the Engage Victoria website)
- any other aspect of this RIS.

All relevant materials and information on consultation forums can be accessed through the Engage Victoria website. For further assistance or to obtain a copy of the RIS, please call 136 186.

Submissions can be made online, via email or via hard copy as follows:

Options for submission	Detail
Engage Victoria website	https://engage.vic.gov.au/victorian-energy-upgrades-program-targets
Email	energy.upgrades@deeca.vic.gov.au
Post	Manager, Demand Side Policy Victorian Energy Upgrades Branch Department of Energy, Environment and Climate Action PO Box 500 EAST MELBOURNE VIC 8002

DEECA will consider all submissions received in response to the proposed regulations. After considering feedback, the Minister for Energy and Resources will amend the VEET Regulations to formalise the targets and DEECA will publish a notice of decision and a statement of reasons.

2. What is the problem being addressed?

This chapter describes the context behind this RIS, the current regulatory environment, the need for action and the key problems that the proposed regulations seek to address.

2.1 Defining the problem

2.1.1 Energy efficiency and electrification play an important role in reducing carbon-dioxide equivalent greenhouse gas emissions in Victoria

This section explores the benefits of energy efficiency and electrification in reducing greenhouse gas emissions.

Climate change is a critical issue for Victoria and the global community. Carbon-dioxide equivalent greenhouse gas emissions resulting from the extraction and burning of fossil fuels are major contributors to climate change and air pollution.

The energy sector (including electricity and gas) is one of the biggest contributors to Victoria's carbon-dioxide equivalent GHG emissions and is projected to remain that way until the mid-2030s (see section 2.2.1). Simultaneously, reducing emissions in the energy sector is one of the cheapest ways to meet Victoria's climate goals. A rapid transition to clean, zero-emissions renewable energy sources is critical to achieving Victoria's emissions reduction targets.

The decarbonisation of energy will address the main source of Victoria's emissions and will be instrumental in facilitating emissions reductions through electrification, for instance, in the transport, industry, buildings and agriculture sectors.

Energy efficiency improvements are a cost-effective emissions reduction strategy with significant advantages.[13] Improving energy efficiency within households, businesses and industries will complement the decarbonisation of Victoria's electricity network. Reducing energy demand through increasing energy efficiency will help Victoria to achieve the energy transition at lowest cost, as reduced energy use will in turn reduce the overall investment required in new clean generation, and transmission and distribution infrastructure to support a decarbonised grid. This is in addition to the energy efficiency benefits of reducing energy costs for households and businesses and enhancing comfort, health and safety.

Energy efficiency is crucial for reducing carbon-dioxide equivalent GHG emissions in Victoria. The role of energy efficiency is evolving from being a consideration at end-use alone to include consideration of the benefits for the energy system as a whole by reducing overall demand on the energy system.[14]

Electrification is the process of replacing technologies or processes that use fossil fuels such as gas, with electrically powered equivalents. These replacements are typically more efficient and have a growing impact on emissions as electricity generation is decarbonised. The Victorian Government's Gas Substitution Roadmap (GSR) emphasises the need to reduce greenhouse gas emissions by replacing gas with relatively cleaner energy alternatives.[15] In 2023, the International Energy Agency (IEA) noted that the electrification of transport and heating is occurring as renewable energy is contributing a rapidly increasing share of electricity production.[16] As electrification raises electricity demand, there is a need to electrify as efficient as possible to avoid unnecessary and costly additional electricity generation infrastructure.

The barriers to optimal investment in energy efficiency are explored below in section 2.1.2, which demonstrates the need for the VEU program to incentivise upgrades.

A key factor influencing the cost of the energy transition will be how the system adapts to meet demand, particularly at peak times. Reducing demand can reduce potential impacts on system security and reduce the need for additional investment in supply and grid services.

[13] Energy Efficiency, International Energy Agency, see: https://www.iea.org/energy-system/energy-efficiency-and-demand/energy-efficiency

[14] Ibid.

[15] Gas Substitution Roadmap Update 2023, see https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

[16] Ibid.

Essentially, programs like VEU which lower demand placed on the grid can reduce the cost of the transition and increase the pace of the transition without compromising reliability. The cost of the transition will depend on how technical limits are overcome and how the system adapts to meet demand, particularly at peak times. As discussed above, reducing demand will lower the investment required in new clean generation, and transmission and distribution infrastructure.

2.1.2 Role of the VEU program in incentivising energy efficiency

This section explores the benefits of using the VEU program to encourage uptake of energy efficiency and electrification activities and upgrades.

The VEU program plays an important role in addressing barriers to uptake of energy efficiency upgrades, while supporting investment and employment in the sector. This ultimately supports energy affordability and reduces the upfront costs of upgrading.

There are barriers to optimal uptake of energy efficiency upgrades

Recent research suggests that barriers to accessing energy efficiency continue to exist for Victorian households and businesses (Table 2). In particular, those who rent or reside in public housing are not as easily able to invest in energy efficient products.[17]

As a market mechanism, the VEU program is an efficient and effective approach to address these barriers and achieve energy efficiency. The VEU program supports investment and employment in the sector, which ultimately supports energy affordability and reduces the upfront costs to upgrade.

By incentivising consumers to undertake upgrades, the VEU program can support further emission reductions in Victoria, to contribute to the achievement of Victoria's net zero target by 2045 and mitigate the impacts of climate change.

Under the Victorian Government's proposed amendments to the VEET Act through the proposed *Victorian Energy Efficiency Target Amendment (Energy Upgrades for the Future) Bill 2024*[18]*,* it is proposed to clarify the current "additionality" requirement to allow the VEU program to provide incentives to upgrades mandated by other regulations, such as the proposed minimum rental standards. Should the amendment be implemented, it will expand the ability of the VEU program to support energy consumers and accelerate the energy transition. For more detail refer to 4.4.1.

Table 2: Barriers to energy efficiency in households and businesses

Barrier	Evidence	Role for VEU
Lack of knowledge: Many consumers do not have full information which may prevent cost effective upgrades being undertaken	A 2022 article found that rental providers generally have a lack of knowledge relating to their rental property conditions and energy efficiency options.[19] Lack of knowledge is a key barrier for commercial and industrial businesses investing in energy efficiency and electrification upgrades. As part of the Gas Substitution Roadmap development, the Government surveyed a broad range of industrial gas users and found that many businesses are uncertain about potential	The VEU program encourages accredited providers to contact Victorian households and businesses through approved marketing methods[22] to disseminate information about energy efficiency.[23] Government programs are often trusted sources of information, and the VEU program provides accurate information on the website. Additionally, the VEU program has strict criteria on the energy efficiency of products installed under the program.

[17] Sustainability Victoria, State of Sustainability Report 2023, see: https://assets.sustainability.vic.gov.au/asset-download/Document-State-of-Sustainability-Report-2024.pdf

[18] https://www.premier.vic.gov.au/moving-extend-victorian-bill-saving-upgrades-2045.

[19] Science Direct, Energy efficiency in the private rental sector in Victoria, see: https://www.sciencedirect.com/science/article/abs/pii/S2214629622000408

[22] Approved marketing methods include digital advertising (e.g. texts, emails, social medial, websites), traditional media marketing (e.g. radio, television, newspapers) and direct marketing (e.g. stalls, leaflets, brochures etc).

[23] The Victorian Government introduced a ban on telemarketing and doorknocking under the VEU program. From 1 May 2024, accredited providers and scheme participants are banned from using telemarketing methods to market energy efficient products and services in the VEU program. The ban on doorknocking methods commenced 1 August 2024. See: https://www.energy.vic.gov.au/households/victorian-energy-upgrades-for-households/about-the-veu-program/your-rights-under-the-veu-program-code-of-conduct

Barrier	Evidence	Role for VEU
	savings and options for decarbonisation, and seek support for further investment.[20] 2024 VEU market research also found that a lack of knowledge on which upgrades to undertake for improved energy efficiency and comfort levels, and the associated energy bill savings are some of the top barriers for both owner-occupiers and renters for making energy efficient upgrades.[21]	
Split incentives or principal agent relationships: One person (the agent) can make decisions or take actions on behalf of, or that impact, another person (the principal) and yet these two people have different objectives	A 2022 Australian National University (ANU) paper found that renters typically do not have full information on the energy characteristics of properties. This results in the renter being unwilling to pay a higher rent for homes with more energy efficient products.[24] Rental providers often have an inadequate incentive to invest in energy efficiency unless they must comply with mandated requirements such as the proposed Minimal Rental Standards. Additionally, split incentives are also present when it comes to the costs to upgrade the electricity network. The individuals or businesses who purchase inefficient electric appliances are not the ones paying the upfront costs to upgrade the infrastructure or expand the electricity network to manage peak demand. While consumers eventually pay these costs via their energy bills, there is still insufficient price signals at the time of making purchasing decisions, resulting in sub-optimal outcomes.	The VEU program is available to renters and the program encourages collaboration between rental providers and tenants to work together on upgrades, to ensure that both parties benefit from the energy savings.[25] The VEU program makes these upgrades more affordable. For rental providers, installing energy-efficient products can enhance their property's appeal to tenants and cuts maintenance and operating costs.[26] A cooperative approach between rental providers and tenants helps to overcome the split incentive barrier by aligning the interests of both parties towards energy efficiency. By encouraging energy efficient upgrades, VEU program also helps reduce electricity demand and peak demand, which reduces the increases in infrastructure and therefore benefits all Victorian through lower electricity costs.
Up-front costs: Many households and businesses lack the ability to pay for upgrades which have a large up-front cost and may be unable or unwilling to access finance for the upgrade	The 2022 ANU paper noted that net wealth was a key factor which may affect household consumption and expenditure on energy. Higher net wealth households have a more relaxed budget constraint to invest in energy efficiency.[27] In the 2024 VEU market research, 65% of owner-occupiers surveyed agreed that high upfront costs are the biggest barrier for making energy efficiency upgrades. Upfront costs were also highlighted as a large barrier for businesses in the 2022 Gas Substitution Roadmap. Capital costs was still cited as a barrier; respondents noted that funding support, incentives and consistent energy policy are crucial for	The program reduces upfront cost for consumers. This counters the tendency for other consumers to engage in hyperbolic discounting[29], where they may otherwise prioritise lower upfront cost of cheaper, less efficient appliances over reduced operational costs of more efficient appliances.

[20] Victorian Government, Gas Substitution Roadmap 2022, page 34, see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0025/586411/Victorias-Gas-Substitution-Roadmap.pdf

[21] Quantum Market Research, Victorian Energy Upgrades market research February 2024.

[24] Australian National University, Effects of renting on household energy expenditure, see: https://ccep.crawford.anu.edu.au/sites/default/files/publication/ccep_crawford_anu_edu_au/2022-05/ccep2202_best_burke.pdf

[25] Victorian Energy Upgrades for homes, see: https://www.energy.vic.gov.au/victorian-energy-upgrades/homes/renters-landlords-and-body-corporate

[26] Ibid.

[27] Ibid.

[29] Hyperbolic discounting refers to a person's tendency to prioritise immediate rewards over long-term benefits, even if the immediate reward is objectively less valuable.

Barrier	Evidence	Role for VEU
	increasing uptake of decarbonisation options.[28]	
Disempowerment: Individuals (particularly those of a lower socio-economic status) may lack the power to make decisions in relation to energy efficiency at their premises	An academic article by Lang et al. (2022) stated that low-income status groups often are unable to afford high energy bills, demand energy efficiency improvements, find alternative housing or meet the expenses of moving home to better performing homes. They also have higher proportional use on average and spend more of their income on energy.[30]	The VEU program's minimal eligibility criteria are intended to ensure every Victorian household and business can take part in the program and access discounted energy efficient products and services. The program is not means tested, so people of all incomes can access incentives. The program is also available to renters, so renters do not have to miss out on the benefits of energy efficiency.
Bounded rationality: Bounded rationality refers to the limitations in human decision-making caused by cognitive constraints such as time and information overload**.**	Economic literature shows that individuals often exhibit a status quo-bias, which is a preference to either keep their current appliances or replace their appliances with similar appliances without considering more energy efficient products.[31] Additionally, many consumers are not aware of the externalities of sub-optimal or inefficient energy use (including climate impacts, which are not considered in the price of energy or appliances). While purchasing an inefficient appliance may involve a lower upfront cost, this does not account for higher ongoing energy bills and emissions, or the increased investment in energy infrastructure and the grid arising from this higher (avoidable) energy usage. Further, inefficient energy use makes managing peaks, both high and low, more challenging and costly. Businesses often require complex and bespoke projects to upgrade their processes and equipment to be more energy efficient. Australian industrial energy efficiency was ranked 22nd out of OECD countries, the lowest in the developed world.[32] In the Gas Substitution Roadmap, businesses also called for help to better understand costs, commercial and technical viability of existing alternatives to gas (e.g. for heat).[33]	Having approved products installed by accredited providers partly addresses some of the bounded rationality barriers by ensuring a product is fit for purpose and can be installed in a way that is easy for the consumer to utilise. By reducing the upfront costs of efficient appliances, consumers avoid the externalities (such as climate impacts) of suboptimal or inefficient energy use. For example, most consumers may not account for the long-term benefits of energy efficiency when making a purchasing decision, and may opt for products that are cheaper, more readily available or already familiar. By lowering the cost of energy efficient appliances, a consumer is more likely to choose this appliance, which ultimately supports reduced emissions, regardless of whether the consumer is aware of this additional benefit. The VEU program also provides rebates to facilitate services to assist businesses to undertake project-based activities. The VEU program also offers rebates for gas efficiency upgrades for commercial and industrial equipment that is not able to be electrified.

The energy transition will require accelerated investment in energy efficiency service providers and changes to Victoria's jobs and skills

As Victoria's energy sector transitions to meet Victoria's emissions reduction targets and transition the energy system to net-zero, the workforce will need to change, and the energy efficiency industry will need to scale up. The energy workforce's capabilities need to be rapidly expanded and upskilled, to ensure Victoria has a strong

[28] Victorian Government, Gas Substitution Roadmap 2022, page 34, see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0025/586411/Victorias-Gas-Substitution-Roadmap.pdf

[30] Lang, M., Lane, R., Zhao, K. and Raven, R., 2022. Energy efficiency in the private rental sector in Victoria, Australia: When and why do small-scale private landlords retrofit? Energy Research & Social Science, 88. See: https://www.sciencedirect.com/science/article/abs/pii/S2214629622000408

[31] Blascj, J and Daminato, C (2018), Behavioural anomalies and energy-related individual choices: The role of status-quo bias. The Energy Journal, Vol. 41, No. 6

[32] Energy Efficiency Council, Australia ranks worst for energy efficiency in developed world, June 2018, see: https://www.eec.org.au/news/eec-news/article/australia-ranks-worst-for-energy-efficiency-in-developed-world

[33] Victorian Government, Gas Substitution Roadmap 2022, page 34, see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0025/586411/Victorias-Gas-Substitution-Roadmap.pdf

workforce to meet the state's interim emissions reduction targets and target of net zero emissions by 2045. Skill shortages need to be addressed, to guarantee the benefits of the energy transition and ensure targets are achieved.[34]

With more than two million homes connected to gas in Victoria, a significant amount of work by plumbers and electricians will be required to replace appliances and fully convert these homes to electricity. The Victorian Government's Gas Substitution Roadmap (GSR) emphasises the need to reduce greenhouse gas emissions by replacing gas with relatively cleaner energy alternatives. Since the VEU program introduced electrification activities in June 2023, the program has seen strong growth in uptake, with more than 29,000 heat pump water heaters installed to replace gas water heaters and over 22,000 gas heaters being replaced by efficient electric alternatives. However, Victoria still requires a sixfold increase in electrification uptake in order to be on track to reach net zero by 2045.

The labour force impacts of the energy transition are already observable in Victoria, with demand for electricians accelerating rapidly and forecast to continue over the short, medium and long term. It is expected that demand for electricians will grow by more than 10 per cent between 2024 and 2029.[35] Additionally, Victoria will require skilled plumbers and other trades to meet the higher demand for electric heat pump space and water heaters. [36]

The energy transition presents an opportunity for new secure, sustainable jobs across the entire state.[37] The VEU program supports a just and equitable transition, by providing opportunities for the existing energy workforce to retrain and move into the energy efficiency workforce. As noted in the Gas Substitution Roadmap Update in 2023, such opportunities are particularly important for manufacturers and suppliers of gas appliances, as they will likely experience a long-term decline in demand – unless they diversify their products and services. Growing the energy efficiency industry will support these workers to transition and capitalise on the business opportunities created by the expected growth in demand for electric appliances.[38]

VEU encourages investment in the energy transition workforce, through providing incentives to households and businesses to upgrade and increasing consumer demand for upgrades. The VEU program also creates a market for businesses to participate in, attracting new workers to the industry.

Accredited providers, including their tradespeople (e.g. electricians and plumbers), play an important role in Victoria's energy sector as providers of trusted advice to households and businesses about their energy needs and investment options. Ensuring the workforce is equipped with up-to-date information about efficient electric technology is an important part of building the skilled workforce required to meet the state's electrification objectives.

Energy is an essential service and needs to be affordable

Energy is an essential service for businesses, particularly in environments where many businesses are facing financial pressures due to rising costs.

Investing in energy efficiency and energy management is also a risk management strategy, as the reduced operating expenses helps to shield businesses from uncertain and volatile energy prices.[39]

Energy is an essential service which must be affordable for all households, not just the 'average' household. Energy affordability refers to the cost burden that households face due to energy expenses. In recent years, there has been widespread concern about rising energy costs for households and businesses alike across Australia. Households prioritise paying energy bills over other expenditures, and low-income households spend a disproportionately high percentage of their income on energy compared to their higher earning counterparts.

Obligation programs such as VEU create financial incentives for households to undertake energy saving activities. The program is the primary means for the Victorian Government to support households to reduce their long-term energy costs, with the costs for the VEU program passed through to energy users on their bills.

[34] Victorian Energy Jobs Plan 2024, consultation paper, see https://engage.vic.gov.au/vejp

[35] Gas Substitution Roadmap Update 2023, see https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

[36] Jobs and Skills Australia, see jobsandskills.gov.au

[37] Victorian Energy Jobs Plan 2024.

[38] Gas Substitution Roadmap Update 2023.

[39] Energy Efficiency Council and ANZ, Putting Energy Efficiency to work, see: https://anz.turtl.co/story/putting-energy-efficiency-to-work/page/4/4?utm_source=anz-eec-landing-page&utm_medium=anzcom&utm_campaign=eec-1

Although the VEU program costs are passed through to all consumers in energy bills, the program has also reduced overall prices for all consumers whether they participate or not, by reducing demand and thereby avoiding the need to invest in additional energy generation and transmission and distribution infrastructure. It is vital that all Victorians are supported to access VEU incentives, so consumers are not paying for the costs of the program without participating and receiving the benefits of reduced energy bills and improved thermal comfort.

The VEU program has open eligibility criteria. Every Victorian household and business (except for some of the state's largest energy users) can take part in the program and access discounted energy efficient products and services. The VEU program does not require means-testing, so people of all incomes can access incentives. The program is also available to renters and homeowners, and there is no cap on how many homes a single person can upgrade.

Equity in the energy transition

Energy equity refers to the broader social justice issues associated with accessing affordable and reliable energy. Energy equity ensures that all people, regardless of where they live or their economic status, have fair access to energy services. This includes access to affordable and sustainable energy. Both energy affordability and equity are crucial for a just and inclusive energy transition.[40]

The share of Victorian households receiving payment difficulty support increased from 2.1 to 2.5 per cent from 2019 to 2023.[41] In December 2023, the lowest income households (below $20,000 per year) spent 13.6 per cent of their total income on energy costs, an increase of 1.2 percent compared to December 2022[42]. An example of the importance of equity and affordability is low-income energy consumers living in rental properties. In Victoria, there are around 310,025 households renting on low incomes.[43] Many of these low-income households are renting dwellings at the lower end of the market, which typically have less efficient, more expensive-to-run heating, are cold and draughty and are likely to remain on the increasingly expensive gas network.[44]

Energy efficiency in social housing could significantly improve thermal comfort and health outcomes, while reducing carbon-dioxide equivalent GHG emissions and energy costs.[45] While there are a range of energy saving programs available to Victorians, it is also important that access to energy efficient products such as appliances are more readily available to disadvantaged groups, such as social housing.[46]

An equitable distribution of VEU benefits is important to ensure that all Victorians can benefit from energy efficient homes and businesses. To achieve this, the VEU can support the participation of lower socioeconomic groups and renters. Inequitable distribution of program benefits disproportionately impacts non-participants and lower socioeconomic groups, as they could end up paying the program's costs without the benefits of having participated.

2.1.3 The need for future VEU targets to be set

The VEET Act and the associated regulations provides the legislative foundation for the VEU program. Important elements of the VEU program, such as the activities that attract incentives, exemptions from the program and the number of certificates that must be surrendered by energy retailers each year are set out in the VEET Regulations. Targets directly correlate with the scope and scale of the activity under the program.

Because the VEET Act requires new targets to be set by regulations no later than 31 May 2025, failing to set the targets may lead to reduced consumer and stakeholder confidence in the VEU program, which would not only potentially undermine its benefits but also cause structural adjustment costs and risks to participating

businesses if there was to be an unexpected end to the program. In the absence of setting the targets, the VEU program could not achieve its intended outcomes or realise its benefits.

Existing policies (listed in Appendix B) across all sectors of the Victorian economy may not be enough for the state to achieve net zero emissions by 2045.[47] The production and stationary use of energy make up the majority of Victoria's carbon-dioxide equivalent GHG emissions. A rapid transition to clean energy is key to reducing Victoria's emissions and combating climate change. Therefore, decarbonising the energy sector and reducing energy demand through significant additional measures will play a key role in reaching emissions reduction targets. The barriers to achieving these targets demonstrate the need for future VEU targets to be set, in addition to further government action.

Regarding electrification specifically, despite significant government action (see section 2.2.2) residual problems remain. Despite proposed regulations and other government actions to encourage electrification, it is assumed that a proportion of current gas users will transition into inefficient electric appliances due to the lower upfront costs, resulting in higher running costs and impacts on peak demand. Additionally, capturing the full spectrum of buildings in Victoria is essential to electrification and reducing gas usage. While residential (and some commercial) users of gas are able to switch to efficient and widely available electric substitutes, while managing their energy costs, the same is not necessarily true for industrial gas users. As such, the VEU program continues to play an important role in incentivising and encouraging electrification and gas efficiency. Gas appliances have a long life, with a gas appliance installed today expected to last for 14 to 20 years and may be extended further with regular maintenance. In the absence of additional government intervention, Victorian households and businesses may not be sufficiently incentivised to electrify gas appliances.

2.2 Policy context

2.2.1 Victorian climate change policy framework

Victoria's primary source of emissions is burning fossil fuels such as coal, oil and gas for energy and transport.[48] In 2021, Victoria produced 80.1 million tonnes of GHG (carbon dioxide equivalent, or CO_2-e) emissions, with per capita emissions at 12.2 tonnes per person. This is among the highest in the world, but lower than the national average of 18.1 tonnes.[49] [50]

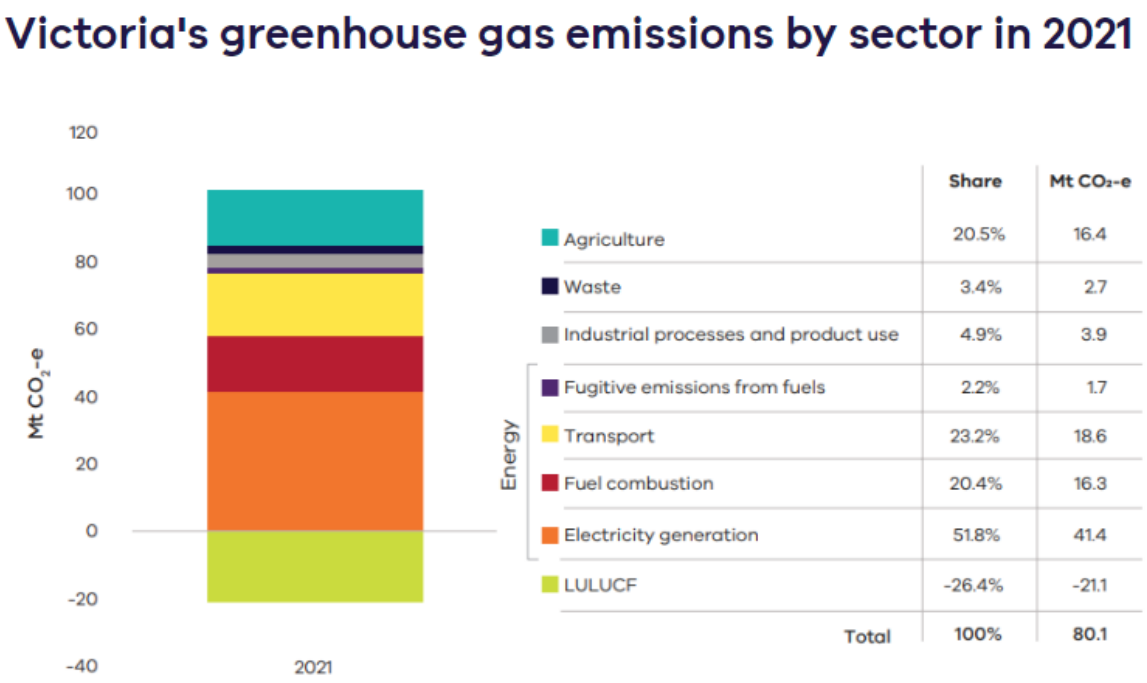
[47] Independent Expert Panel on Interim Emissions Reduction Targets for Victoria (2021-2025, 2026-2030), *Interim Emissions Reduction Targets for Victoria (2021-2030)*, Final Report (March 2019) see: https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0016/420370/Final-Report_Interim-Emissions-Reduction-Targets.pdf

[48] Victoria State Government, Climate Change, see: https://www.climatechange.vic.gov.au/victorias-greenhouse-gas-emissions-and-targets

[49] Greenhouse gas emissions, Understanding Victoria's contribution to climate change, see: https://www.climatechange.vic.gov.au/victorias-greenhouse-gas-emissions-and-targets

[50] The 2021 data is the latest for greenhouse gas emissions as federal data on emission becomes available for use two years after each reporting year.

Figure 4: Victorian's greenhouse gas emissions by sector



The VEU program is supporting the energy transition in Victoria by empowering households and businesses to lower energy bills.[51] The objectives of the VEU program are to encourage the efficient use of electricity and gas. These are two of the largest sources of emissions in Victoria, with electricity generation accounting for 52% of emissions and fuel combustion of gas accounting for approximately 16%.

The Victorian Government has set targets that provide a clear path to net-zero emissions. Victoria's emissions reduction targets are to reduce emissions below 2005 emissions levels by:

- 28-33% by 2025
- 45-50% by 2030
- 75-80% by 2035.[52]

There are two sources of emissions which are relevant for the scope of this RIS – gas, discussed in section 2.2.2 below, and electricity, discussed in section 2.2.3 below.

2.2.2 Gas extraction and use in Victoria

Victorian households have the highest gas usage in Australia, with 88% reporting use of gas appliances in a 2023 Sustainability Victoria survey.[53] Gas use is dominated by households, whereas electricity use is higher in Victoria's commercial sector.[54] Therefore, transitioning Victorian homes from gas to all-electric appliances is critical for Victoria to reach its emissions targets of net zero emissions by 2045.

The Australian Energy Market Operator (AEMO) has forecast a tightening supply and demand balance in the southern states, from as early as winter 2025. Between 2024 and 2028, AEMO's projects that total Victorian annual demand will reduce by around 6.2 percent.

[51] Victoria State Government 2024, *Cheaper, Cleaner, Renewable: Our Plan for Victoria's Electricity Future*, see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0014/715010/our-plan-for-victorias-electricity-future.pdf

[52] Victorian Government, Action on climate change, see: https://www.climatechange.vic.gov.au/victorian-government-action-on-climate-change

[53] Sustainability Victoria, State of Sustainability Report 2023, see: https://assets.sustainability.vic.gov.au/susvic/Document-SV-State-of-Sustainability-Report.pdf

[54] Sustainability Victoria, Tracking Victoria's Energy Transition – 1990 to 2020, November 2022, see: https://assets.sustainability.vic.gov.au/susvic/Tracking-Victorias-Energy-Transition_2020-Sustainability-Victoria.pdf

These forecasts reflect actions already undertaken and announced by the Victorian Government as well as reflecting the strategic directions outlined in the update to the Gas Substitution Roadmap. While this is a good start, gas supply is falling at a faster rate than demand.

The 2024 Victorian Gas Planning Report forecasts the following:

- *"The total available gas supply is forecast to reduce by 48% over the outlook period, from 297 petajoules (PJ) in 2024 to 154 PJ in 2028."*
- *"The reduction in forecast production capacity is caused by a reduction in offshore field production capacity in the Gippsland Basin, driven by the decline of the large legacy fields."*
- *"The Gippsland Basin Joint Venture (GBJV) has advised of planned closures of gas plants at Longford Gas Plant, starting with Gas Plant 1 in July 2024, followed by Gas Plant 3 later in the decade, reducing Longford's maximum daily supply capacity to 700 terajoules per day (TJ/d) and then to 420 TJ/d."*

In 2023, the Victorian Government released a Gas Substitution Roadmap (GSR) Update. It proposed several regulatory measures to phase out installations of new gas appliances, including minimum rental standards. Options for implementing these measures will be tested through several RISs released in 2024.

Renewable electricity combined with modern, energy efficient electrical appliances is the most cost-effective solution for managing Victoria's energy needs.[55] There are immediate benefits to switching to efficient electric appliances, including reducing reliance on traditional energy sources and minimising environmental impacts. Switching to an all-electric home will ensure Victorians can effectively maintain comfortable temperatures year-round with consistent energy supply for daily activities, all while keeping costs down.[56]

Contributing to the cost savings is the elimination of the gas connection fee, which typically ranges from $350 to $400 annually. A family residing in a standard, standalone home could reduce their yearly expenses by about $1,405 by transitioning from gas-based utilities to high-efficiency electric alternatives for heating, water heating and cooking. If the same home is equipped with solar panels, the potential savings could climb to approximately $1,790 each year.[57]

Households that take advantage of incentive programs such as the VEU are likely to achieve significant bill savings by installing energy efficient equipment. For new homes, there are significant advantages in the shift towards an all-electric design. These homes bypass the financial burden and inconvenience associated with a future transition from gas to electricity. Neighbourhoods fully powered by electricity can eliminate the expenses related to the installation of new gas pipelines and the distribution of gas infrastructure in the area. Standard electricity connections are suitable for new all-electric homes and these homes will benefit from immediate cost savings by having a single, integrated system for both heating and cooling, rather than separate systems for each (such as gas for heating and electricity for cooling).[58]

Alongside the VEU program, the Victorian Government is committed to other energy performance measures which include:

- as noted in the Gas Substitution Roadmap Update 2023, the Victorian Government is preparing a RIS to investigate options to progressively electrify all new residential and most new commercial buildings, along with the requirement for existing gas appliances in homes and relevant commercial buildings be replaced with efficient electric appliances at end-of-life. Gas cooktops in existing homes, as well as gas appliances in existing commercial buildings will be excluded from the preferred option in the RIS, while industrial, manufacturing and agricultural applications and Liquefied Petroleum Gas (LPG) are also excluded from consideration. The RIS will be released for public consultation in December 2024, before final regulations are decided upon in 2025.

[55] Victorian Government, Gas Substitution Roadmap, see: https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

[56] Ibid.

[57] Victorian Government, Gas Substitution Roadmap factsheet, see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0039/579882/Victorias-Gas-Substitution-Roadmap-Embracing-electricity-to-cut-your-bills-at-home..pdf

[58] Ibid.

- the second phase of the Energy Efficiency in Social Housing program will run between June 2024 and June 2027 and will deliver up to 45,000 individual energy efficiency upgrades, including 5,000 fully electrified homes, to improve the energy efficiency and liveability of older social housing dwellings.[59]
- on 1 May 2024, increased energy efficiency building standards for new homes became mandatory in Victoria. The National Construction Code update increased the minimum efficiency performance requirement of the building shell from 6 to 7 stars and introduced a Whole-of-Home annual energy use budget for fixed appliances, with potential to offset with rooftop solar.[60]
- in July 2023, the Victorian Government announced a phase out of new gas connections. Under this policy, new homes and apartment complexes will be built with electric appliances instead of gas-powered ones. However, this prohibition on new gas connections currently only applies to new dwellings, apartment buildings and residential subdivisions requiring a planning permit.
- in 2023 the Victorian Government also introduced a cap on gas network abolishment fees charged by gas distribution network service providers to ensure properties are not disincentivised from abolishing their gas connection, a ban on incentives for gas connections and gas appliances and established the State Electricity Commission.[61]
- in March 2021, minimum standards for rental properties were introduced, including requiring a rental provider to ensure that a heater is provided in the main living area.[62] The Victorian Government consulted on new and uplifted efficiency standards for rented homes and rooming houses in June 2024.
- in March 2017, the Residential Efficiency Scorecard program commenced. It provides consumers with tailored recommendations to improve the energy efficiency of their home. [63]

The Victorian Government also supports Victorian households to pay their energy bills through the Energy Assistance Program.

For information on national energy policies and commitments which are relevant to Victoria, please see Appendix B.

2.2.3 Electricity generation and use in Victoria

Approximately 58 per cent of Victoria's electricity come from the generation of electricity by three brown coal fire power stations to meet energy demand. 'Clean' renewable generators are increasingly involved in meeting this demand (11,745 MW of renewable generation in 2023, or 37.8 per cent of annual electricity generation[64]). Gas-fired generators make up the balance.

The National Electricity Market (NEM) and associated grid infrastructure spans four states, including Victoria. The main electricity generated originally came from large, centralised generators, which transport energy in one direction – from generators to distribution networks and on to consumers. Once turned on, most of these generators could supply a constant load of energy to the grid at any time. These design elements are being challenged by the increased amount of distributed and renewable generators.

Victoria has set the following targets to transition to renewable energy for electricity generation and storage:

- 95 per cent renewable electricity generation by 2035[65]
    - 9GW of offshore wind by 2040

[59] Homes Victoria, Energy Efficiency in Social Housing Program, see: https://www.homes.vic.gov.au/energy-efficiency-social-housing-program

[60] Victorian Government, 7 star energy efficiency building standards, see: 7 star energy efficiency building standards

[61] The State Electricity Commission's purpose is to create renewable, affordable, reliable energy for all Victorians. This strategy includes supporting households to go all-electric.

[62] Consumer Affairs Victoria, Rental properties – minimum standards, see: https://www.consumer.vic.gov.au/housing/renting/repairs-alterations-safety-and-pets/minimum-standards/minimum-standards-for-rental-properties

[63] Victorian Energy Efficiency Scorecard, Flash Report: July 2019, see: https://www.homescorecard.gov.au/__data/assets/pdf_file/0032/588434/Scorecard-Flash-Report_July2019_FINAL.pdf

[64] VRET 2022-23 progress report, see: https://www.parliament.vic.gov.au/4918ad/globalassets/tabled-paper-documents/tabled-paper-7543/vret-progress-report-2022-23.pdf

[65] Premier of Victoria, SEC to Power One of the World's Biggest Batteries, see: https://www.premier.vic.gov.au/sec-power-one-worlds-biggest-batteries

- at least 2.6GW of energy storage by 2030 and at least 6.3 GW of energy storage by 2035[66]
- by 2030, zero emission vehicles will make up 50 per cent of all new light vehicle sales.[67]

These storage and generation targets will be delivered by several policies:

- Supporting Victorians to switch to solar through the Solar Victoria's Solar Homes program, which provides rebates and interest free loans to eligible households for residential solar, batteries and energy efficient hot water.
- Victorian Renewable Energy Auctions, for renewable energy investment.
- Established the State Electricity Commission. The State Electricity Commission's purpose is to create renewable, affordable, reliable energy for all Victorians. The strategy to achieve this includes investing in renewable energy generation and storage.

2.2.4 Other sources of emissions

Reducing the use of electricity and gas is the primary focus of the VEU program. However, there are several other minor impacts the program has on Victoria's emissions, including:

- Emissions from refrigerants – many of the appliances installed under the VEU program use refrigerants, including reverse cycle air conditioners, heat pump water heaters, cool-rooms and refrigerators. Some refrigerants have a high global warming potential. The use of low global warming potential refrigerants is increasing however and standards relating to refrigerants are improving.
- Direct combustion of fuels other than gas – the VEU program includes Liquefied petroleum gas (LPG) but does not currently include diesel or the direct combustion of other fuels.
- Waste to energy technology – A small number of Project-based activities (PBAs) in the VEU program are utilising different types of biomass and technologies to displace gas with bioenergy. This includes projects that utilise biomass waste, such as pine saw dust and timber residues, as a feedstock in natural boilers to generate hot water and thermal heating and projects capturing methane from either wastewater or agricultural manufacturing waste in covered anaerobic lagoons to create heat and/or energy.

All other sources of emissions are out of scope for this RIS.

[66] Ibid.

[67] Victorian Government, Zero Emissions Vehicles, see: https://www.energy.vic.gov.au/renewable-energy/zero-emission-vehicles

3. Objectives

This chapter describes the objectives of the proposed regulations. It also lists other relevant legislative instruments, to add context and explain their interactions with the objectives of the proposed regulations.

3.1 Victorian climate and energy policy objectives

As section 2.2.1 describes, the Victorian Government has set targets to reduce greenhouse gas emissions by 45–50 per cent below 2005 levels by 2030 and by 75–80 per cent below 2005 levels by 2035. Reducing emissions from the energy sector is a major contributor to the achievement of these targets.

The Victorian Government's Climate Change Strategy outlines initiatives to decarbonise the electricity and gas sectors while ensuring affordable, safe, secure and reliable energy for Victorian consumers. These initiatives include increasing energy efficiency and productivity across the economy and moving from using gas to electricity.

As discussed in the problem statement, key policy objectives for the government are to transition to net zero greenhouse gas emissions by 2045, shift to renewable energy (through the VRET), support energy affordability, and support Victorian jobs.

These suggest the energy transition should be achieved:

- as quickly as possible, given the urgency of the climate change problem and at lowest cost and with as many co-benefits as possible, such as increasing comfort and healthy homes
- to ensure the security and stability of our energy supply systems
- in a manner that keeps energy prices affordable
- equitably, so no Victorians are left behind.

The VEU program materially contributes to this agenda by providing incentives to households and businesses to improve the energy efficiency of their premises, appliances and equipment and to transition from using gas to electric appliances and equipment. Energy upgrades from the program reduce greenhouse gas emissions and reduce consumers' energy bills.

3.2 VEET Act objectives

The objectives of the VEET Act are to:

- reduce greenhouse gas emissions
- encourage the efficient use of electricity and gas
- encourage investment, employment and technology development in industries that supply goods and services which reduce the use of electricity and gas by consumers.

3.3 Objectives of the proposed regulations

As a piece of subordinate legislation, the objectives of the proposed regulations should be consistent with the objectives of the VEET Act. The objectives should also reflect the Victorian Government's broader policy objectives, outlined in section 3.1, in a manner that provides the greatest benefit for the Victorian economy.

The objectives of the proposed regulations are to:

- reduce greenhouse gas emissions through efficient use of electricity and gas
- support energy affordability
- promote investment and innovation in the energy efficiency industry, including the support of Victorian jobs
- accelerate and encourage equitable outcomes in the Victoria's energy transition.

4. Options for addressing the problem

This chapter describes the policy options considered in this RIS, how they were selected and why other options were deemed not feasible.

The below Table 3 outlines the target options considered in this RIS. This chapter describes further detail on the reference case and assumptions used for each target option.

Table 3: Target options considered

Option name	2026 target (VEECs)	2027 target (VEECs)
1	4 million	4 million
2	5 million	6 million
3	6 million	7.3 million
Alt. 1	4 million	4.5 million
Alt. 2	4.5 million	5 million

4.1 The reference case

In this RIS, options are assessed against a 'reference case' in which the program has a target of zero, and a net impact of zero on the economy. This reference case is the most useful scenario to compare target options against.

RIS processes often assess different regulatory and non-regulatory options with reference to a hypothetical 'base case', which reflects a scenario in which the government does not intervene. If the government did not intervene and meet its legislative requirement, the 2025 target would effectively remain constant for 2026 and 2027. As the VEET Act currently requires that annual targets be set until 2030, this is not a useful comparison. (see section 4.1.2 for further detail).

4.1.1 Rationale for using a reference case

Due to the analytical complexity of estimating the base case directly, the RIS uses a *reference case* to compare options. This reference case assumes a VEU target of zero. The reference case is an analytical tool to allow for the consistent comparison of options. The choice of reference case allows the options to be assessed in this RIS to focus on key regulatory design considerations affecting the program including:

- the magnitude of the annual target
- the trajectory of the annual targets
- the types of activities to be prescribed in future for the purposes of creating VEECs
- emissions factors
- the penalty for non-compliance (the shortfall penalty).

The preferred option that performs best against the reference case would also be the option that would perform the best against the base case, because target performances are being compared against each other. This approach is consistent with the analytical approach undertaken in the previous target setting RIS, where targets were set for the period 2021-25.

4.1.2 Further detail on why a hypothetical base case is not feasible

In a hypothetical base case where the government takes no action, this would mean that no regulatory amendments would be made to the *Victorian Energy Efficiency Targets Regulations 2018* (VEET Regulations)

to set the targets for 2026-27. Given the VEET Act currently requires annual targets to be set until 2030, this is not a realistic assumption.

A key step in giving effect to the targets each year is the making of the GHG reduction rates, which determine the number of certificates each energy retailer must surrender each year (i.e. their share of the target for that year). In making the GHG reduction rates, the Minister must have "regard to the scheme target for the year (if any)", allowing the Minister to set the rate if no target is made. Doing this would have the same effect at setting the target and would require a RIS analysis essentially identical to this RIS. Therefore, a base case where it is assumed the Minister determines the number of VEECs to be surrendered each year via the GHG reduction rate rather than setting a target would serve no useful purpose for comparison to options for setting the targets in regulations.

Section 32 of the VEET Act states that the GHG reduction rates (which impose the liability on retailers) are the same as for the previous year if not remade, the hypothetical base case could assume that the liability on retailers remains the same as for the 2025 target (effectively meaning the program's impacts are the same as those that result from the 2025 target).[68]

The base case of keeping the targets the same as the 2025 level is not a useful comparison for this RIS, as this would have significant effects on Victoria. As the VEET Act currently requires annual targets be set until 2030, this is not a realistic assumption.

4.2 Common features across options

Annual program targets are being set for two years, 2026 and 2027. The shortfall penalty and the modelling assumptions for some activities remain the same across all proposed target options.

4.2.1 Shortfall penalty rate

Under the VEET Act, energy retailers are required to surrender VEECs to the ESC to meet their obligations under the Act to offset a proportion of emissions from the energy they sell. If they do not surrender enough VEECs, they must pay a shortfall penalty. A shortfall penalty is a civil penalty calculated by multiplying the number of VEECs a retailer fails to obtain below the required amount by the shortfall penalty rate. The shortfall penalty rate for 2023 was $90 per certificate.

When an energy retailer incurs a shortfall penalty, it indicates that energy efficiency activities equivalent to the shortfall have not been purchased or surrendered and therefore greenhouse gas emissions equivalent to the amount of their shortfall have not been abated. This impacts the VEU program as the program cannot deliver the emissions reduction and avoided infrastructure cost benefits that it is intended to provide. As a result, energy retailers are responsible for paying a financial penalty instead of achieving emission reductions. Payment of the penalty ensures fairness and avoids perverse competitive advantage for an energy retailer that has chosen not to initiate energy efficiency activities itself to the level of its obligations or purchased this amount from others that that have undertaken energy efficiency activities and is a deterrent against such behaviour.

In setting the shortfall penalty rate, there are two major risks to consider:

- inaccurate modelling leading to higher certificate prices than forecast, due to a shortage of certificates at lower VEEC prices
- imperfect competition in the market, leading to higher VEEC prices.

Both of these risks would result in higher VEEC prices, but they interact differently with the shortfall penalty rate.

Inaccurate modelling risks are effectively mitigated by a high shortfall penalty rate, whilst imperfect competition in the VEECs market is made worse by a high shortfall penalty rate. Therefore, the optimum level for the shortfall penalty is at a level high enough to create a safe buffer for inaccurate modelling, but low enough that it operates as an effective limit on imperfect competition driving higher VEEC prices.

The sensitivity analysis (covered further in 5.3.4) outlines that potential modelling inaccuracies could in the 'worst case scenario' lead to VEEC prices being approximately $32 higher in Option 2 than modelled at $45 plus ESC fees and retailer administrative costs.

[68] The Governor in Council, on recommendation of the Minister, is required to publish a greenhouse gas reduction rate in a Ministerial Order annually under section 32(2) of the Act regardless of whether a new target has been set.

Given that this is approximately $85 in total, it is proposed to maintain the current shortfall penalty rate of $90 per VEEC. This will provide less disruption to the VEEC market, and effectively mitigate the risks of the VEEC price rising too high.

4.2.2 Modelling assumptions for activities

Note that any changes to activities within the modelling underpinning this RIS are assumed changes to the VEU program in the context for modelling of targets. Actual changes to prescribed activities in the VEU program will be subject to further policy work and public consultation, where the public and interested parties can suggest paths and options for the VEU program. The public is able to suggest assumptions to be used in the targets modelling – refer to the consultation questions in the survey on the Engage Victoria webpage.[69]

Under all options, it is assumed that some activities approach market saturation and as such, no longer receive significant uptake under the program. These assumptions will be subject to further analysis, but DEECA is required to make assumptions for the VEU targets models now. It is a conservative approach to assume these activities may receive very low uptake, if these activities do receive significant uptake, then the program will have more available certificates than this RIS assumes.

Incentives available for gas appliances

The following upgrades are designed to encourage the efficient use of gas. However, as noted in section 2 above, the GSR found that for many uses electrification is the most cost-effective pathway to reduce emissions. Therefore, it is unlikely that there will be significant uptake for the following VEU activities from 2026:

- Gas heating ductwork.
- Commercial scale gas fired hot water boilers.

It is expected that some hard to electrify industries will still undertake gas efficiency upgrades for industrial boilers under the program.

“Business as usual” activities

“Business as usual” activities are those that no longer require incentives. For example, LED lighting has become industry standard as the most efficient lighting technology. Most lighting has been upgraded to LED lighting, and if it hasn’t yet, will in future almost certainly upgrade to LED without requiring incentive support from VEU. Therefore, it is likely that there may no longer be a requirement for a building-based lighting activity beyond 2026.

Activities approaching market saturation

Several low-cost (often free to the customer after rebates are applied) residential activities, including shower roses, weather sealing and in-home displays, are projected to reach saturation in the coming years, with very low uptake expected beyond 2026 for the following activities:

- Strip weather sealing.
- Low flow shower roses.
- In-home display units.

4.3 Features that vary between options

Annual targets will be set for a two-year period. The regulatory scenario, mix of activities, program fees, target magnitude and trajectory are interdependent. For example, while a choice to continue with existing activities in the program may be feasible for a low target option, it may not be feasible to only include these same activities under a higher target, as it would impact achievability and cost of achieving the target. The costs and benefits of these options are explored in greater detail in the impact assessment section of this RIS (chapter 5).

[69] See https://engage.vic.gov.au/victorian-energy-upgrades-program-targets

4.3.1 Additionality

Under the VEET Act, activities that can be prescribed for the VEU program must reduce 'additional' greenhouse gas emissions compared to what would have happened without the VEU program.[70] This is known as the 'additionality' requirement.

Separate to this RIS, and subject to Government approval, amendments to the current 'additionality' requirement within the VEET Act are proposed to confirm that the VEU program can provide incentives for proposed mandatory electrification and energy efficiency upgrades.[71] This amendment of the additionality requirement is recommended as a policy measure as it enables the VEU program to effectively support the energy transition to enable the program to support proposed amendments to the building and planning regulations and proposed increased Minimum Rental Standards. If this legislative amendment is passed, the specific activities to be eligible for incentives where they are mandated will later be prescribed under the VEET Regulations through a separate regulatory process.

The post-2025 VEU targets will be key to supporting the electrification pathways contained within the Victorian Government's Gas Substitution Roadmap.[72] This is because most of the electrification needs to take place in existing homes through the replacement of existing appliances. The higher the ambition level of VEU targets, the more electrification is forecast to occur, which includes offering incentives to install a wider range of efficient electric appliances, such as heat pumps through the VEU program.

The above proposed amendment to 'additionality' will have a material impact on the scale of targets from 2026 onwards for the following reasons:

- The 2023 GSR proposed regulatory measures to phase out gas, including minimum rental standards and a phase out of new gas appliance installations. As replacing gas appliances with efficient electric alternatives will be required by regulation, they may no longer meet the 'additionality' requirement and may no longer be prescribed activities. Without changes to the current 'additionality' requirement in the VEET Act, these GSR measures may mean financial incentives cannot be offered under the VEU program and therefore cannot be counted towards the program targets.
- The GSR identified that more than two million gas appliances need to be replaced in Victoria.[73] Given the scale of this transition away from gas, a change to the 'additionality' requirements will have a material impact on the achievable scale of the VEU targets for 2026 onwards.

Further information on the impact of additionality on the proposed targets is included below, under the subheading "Regulatory scenario and target magnitude".

If the VEET Act requirements on additionality are not amended, incentives for proposed mandatory upgrades may not be available through the VEU program. If this occurs, there will be a significant proportion of Victorian energy consumers who contribute to the cost of the VEU program through their energy bills but cannot benefit from as many VEU incentives.

Additionally, if additionality is not amended and households and businesses undertake mandatory electrification upgrades where there are no prescribed minimum efficiency standards, it is likely that a number of consumers (particularly low-income consumers) will opt for the lowest cost electric appliances, which may not be the most energy efficient appliance available in the market. While the upfront costs may be lower, inefficient appliances cost more over the long-term due to increased energy consumption and therefore higher energy bills and emissions.

Furthermore, in this scenario, there may be limited support for upgrades that benefit renters under the VEU program (as electrification upgrades would be mandated by regulations, and free upgrades would be removed from the program). This will impact the rental providers' access to the VEU program, potentially exacerbating the risk of rental providers passing on costs of mandatory upgrades to renters via rent increases (noting that past evidence from previous updates of minimum rental standards suggests this risk is relatively low).

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[70] *Victorian Energy Efficiency Target Act 2007*, section 15(2).

[71] As referred to in the Executive Summary section of this RIS, the amendment to the current 'additionality' requirement will provide clarification that mandated upgrades have not previously been prescribed as eligible activities that can receive incentives under the VEU program.

[72] Victoria's Gas Substitution Roadmap, see: Victoria's Gas Substitution Roadmap (energy.vic.gov.au)

[73] Victorian Government 2023, Gas Substitution Roadmap Update, page 42, <https://www.energy.vic.gov.au/__data/assets/pdf_file/0027/691119/Victorias-Gas-Substitution-Roadmap-Update.pdf>.

A discount offered through the VEU program that lowers the upfront cost of appliances will incentivise some households and businesses to adopt more efficient appliances than they would have otherwise, thereby reducing electricity usage and its associated emissions. The discount may also incentivise households to upgrade appliances earlier than they otherwise would have if no discounts on upfront costs are available.

Regulatory scenario and target magnitude

The target magnitude, or size, is equal to the number of certificates required to be surrendered to the government by energy retailers at the end of the year. The target size for each option is significantly influenced by the regulatory scenario under which the targets exist.

Main regulatory scenario

Options 1, 2 and 3 all assume the "main regulatory scenario" occurs. In this scenario, all regulatory and legislative amendments currently being proposed that are relevant to the target levels are expected to pass and come into effect by 1 January 2026. Under the modelling for the 2026-27 targets, it is assumed that these amendments will be implemented:

- Proposed regulations to require end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives via an amendment to building and planning regulations.
- Introduction of new and uplifted minimum rental standards, via the proposed Residential Tenancies and Residential Tenancies (Rooming House Standards) Amendment (Minimum Energy Efficiency and Safety Standards) Regulations 2024, which will require end-of-life replacement of gas heating or gas hot water systems with efficient electric alternatives, as well as installation of low-flow shower roses, cooling, draught proofing and insulation in rented homes.
- Amendment to clarify the existing additionality requirement for the VEU program, under the VEET Act, to allow some mandated upgrades to be prescribed to receive incentives under the VEU program**.**

Note that the main regulatory scenario assumes that the above regulations proposed in public consultations are implemented in full, based on the preferred policy option.

The target levels set under options 1, 2 and 3 are more ambitious than the alternative regulatory scenario targets, as the main regulatory scenario assumes VEECs will be created for proposed mandatory electrification and energy efficiency upgrades. As those electrification and energy efficiency upgrades are mandated as well as incentivised, we anticipate an increase in uptake for those upgrades in the VEU program with lower incentives (i.e. lower VEEC prices).

As such, target options under the main regulatory scenario have a higher VEEC target, with a lower VEEC price, and a significant proportion of the VEECs generated will be considered "non-additional", which means they are VEECs generated as a result of other regulations. The impact analysis in this RIS has taken precautions to not "double-count" the impacts from non-additional VEECs; please refer to section 5.1 *Additionality and marginal costs*, for more details.

Alternative regulatory scenario

This RIS includes analysis on two additional target options, which have been prepared in the event that several regulatory changes (that are currently progressing but are yet to be finalised) do not occur. These two additional target options under the "alternative regulatory scenario" are target options alternative 1 and alternative 2. In this scenario, the business-as-usual regulatory environment continues, and none of the below regulations pass, as outlined in section 4.4.2

- No changes to the building and planning regulations, meaning no changes to legislated end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives.
- No introduction of increased minimum rental standards, via the proposed Residential Tenancies and Residential Tenancies (Rooming House Standards) Amendment (Minimum Energy Efficiency and Safety Standards) Regulations 2024.
- No changes to the additionality requirement for the VEU program, under the VEET Act.

As above, target options alternative 1 and alternative 2 have been developed in preparation for the possibility that the above amendments do not come into effect during the target setting period. Therefore, these alternative options have a lower level of ambition than the target options 2 and 3 (under the main regulatory scenario) and contain a smaller proportion of electrification activities.

4.3.2 New activities

To determine varying target levels, the modelling assumes that some options may require new or additional activities beyond the current VEU work program to generate sufficient certificates. As noted previously, any assumptions as to specific activities within the program are for modelling purposes only, and any new activities would be subject to further policy analysis and a separate regulatory process and public consultation.

The new assumed activities include a range of activities for the residential, commercial and industrial sectors. The target size is directly proportional to the level of ambition of emissions reductions to be achieved through the VEU program. As highlighted above, the main regulatory scenario includes higher target options as there is a greater available pool of upgrades available (such as proposed mandatory electrification and energy efficiency upgrades). The alternative regulatory scenario includes lower target options, as there is a smaller pool of available upgrades available.

4.3.3 Target trajectory

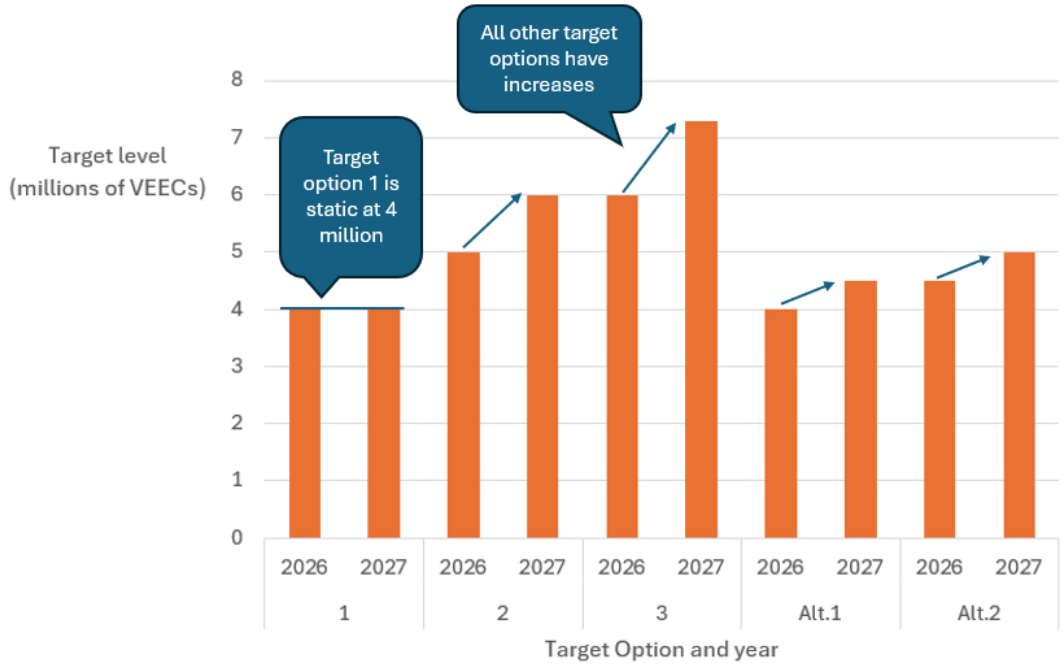
The proposed regulations set the annual targets for 2026-2027. However, the size of that target could be:

- static over two years, as was the case at the beginning of the program; or
- increasing over two years, as occurred between 2021-2025.

A static target would allow a steady amount of activity to occur in the VEEC market over the two years. However, an increasing target, focused on increasing emissions reductions, may be more consistent with the need to transition to a low emissions economy and ensure that Victoria in on the pathway to achieving electrification and the net zero by 2045 emissions reduction target (see Figure 5).

DEECA is assessing options that prioritise emissions reductions, in addition to a static target option.

Figure 5: Target trajectories compared across target options



4.3.4 VEU program fees

The VEU program is administered by the ESC in accordance with section 10(k) of the *Essential Services Commission Act 2001* (ESC Act), which states that the ESC is to perform the functions conferred on it by the VEET Act, being the administration of the VEU program. The Minister for Energy and Resources may make

fees for the VEU program under section 73 of the VEET Act, which provides that the Minister, after consultation with the Assistant Treasurer, may fix fees for the purposes of the VEET Act or regulations made under it. In fixing fees, consideration may be given to the administration and operation of the VEU program or more specifically, the costs the ESC incurs (as the regulator) to administer the VEU program. Consideration may also be given to legislative requirements and obligations.

In 2023, new fees for the VEU program commenced in two tranches on 1 July 2023 and 1 November 2023. These fees are set for three years until 2026. The ESC collects fees related to accreditation and other matters to administer the VEU program. In 2024, DEECA and the ESC reviewed the fees to make any necessary changes for the new VEU program targets for 2026 and 2027. The proposed revised fees are set to ensure that the ESC can fully recover its costs to administer the VEU program, including the resources necessary for reviewing and approving accreditation applications, certificate register applications, as well as undertaking audit and enforcement, amongst other functions.

The ESC has undertaken extensive analysis as well as economic modelling to determine the appropriate fees for the target period of 2026-27. As a significant proportion of ESC costs are covered by certificate fees, the changes in program targets for 2026 and 2027 will require new fees to ensure the ESC is able to recover its costs of administration.

The fees analysis recognises that the ESC has made services improvements in key areas such as response times to queries and complaints, implementing processes to improve service delivery in response to the 2023 legislative amendments, including accreditation and renewal processes and streamlining processes to create efficiencies and reduce processing times in internal approvals. An IT change project is also underway to replace the existing VEU IT system with a new Salesforce based system. This will upgrade capabilities in the current system which has been in place since the start of the program in 2009 and supports the majority of key processes within VEU including AP approval, product approval and certificate validation as well as being responsible for performing the underlying VEEC calculations. The investment in IT and capability build across registry, compliance and engagement, audit and enforcement is necessary to allow the ESC to drive efficiency and enhance compliance and enforcement outcomes, and would result in increased operational costs for 2026-27 compared to previous years.

As such, under all proposed target options for 2026-27, certificate fee and lodging an energy acquisition statement fee are proposed to increase. This is because the 2026-27 targets will be reduced from the 2025 level, resulting in the ESC's rising operational costs being recovered from a smaller number of certificates. The fees reflect higher operational costs and increased complexity of activities. The late lodgement of accreditation renewal fee, on the other hand, is proposed to be reduced following an internal review by the ESC of instances of late lodgement. Further information explaining the ESC costs and fees is available at Appendix F: ESC Fees.

Revised ESC fees for the proposed targets level are proposed in Table 4 below. These fees are proposed to be effective from 1 January 2026.

Table 4: Proposed fees for 2026-27

Fees for 2025/26 and 2026/27	Current fees	Option 1 (4M, 4M)	Option 2 (5M, 6M)	Option 3 (6M, 7.3M)	Option Alt. 1 (4M, 4.5M)	Option Alt. 2 (4.5M, 5M)
Certificate fee - creation	$2.33	$4.35	$3.61	$3.15	$4.30	$4.11
Annual fee	$1,000	$1,000				
Application of accreditation fee	$3,000	$3,000				
Extended accreditation fee	$1,500	$1,500				
Project-based activity fee	$500	$500				
Product application fee	$500	$500				
Lodging an energy acquisition statement fee	$3,122	$4,973	$4,829	$4,769	$4,899	$4,811
Opening a VEET registry account fee	$2,000	$2,000				

Review of reviewable decision fee	$750	$750
Late lodgement of accreditation renewal fee	$13,814	$7,376

4.4 Options to be evaluated

Taking into account the scope of this RIS (Chapter 1), the nature of the problem (Chapter 2), the policy objectives (Chapter 3), and the factors considered in designing the options (Chapter 4), five options were developed, to be evaluated against a reference case. See section 4.5 for a summary of the policy options assessed.

4.4.1 Main regulatory scenario

Options 1, 2 and 3 all assume the “main regulatory scenario” occurs, where all regulatory amendments that are relevant to the target levels are expected to pass, as outlined in section 4.4.1

Option 1: Status quo

The target levels outlined in option 1 (Table 5) assume a “status quo” scenario, based on the current workplan activities, factoring in some activities receiving less uptake in the future due to market saturation.

Table 5: Option 1 targets for 2026-27

Year	Total target level (VEECs)
2026	4 million
2027	4 million

Option 1 was selected for analysis because it was deemed to:

- provide a lower target option
- remain consistent over the target period
- support very high uptake of residential electrification activities (~85 per cent of total VEECs).

These activities are only tested in combination with a low target due to the expected low uptake of low-cost abatement opportunities, including low flow shower roses and strip weather sealing due to market saturation, and as a risk mitigation that new activities may not be introduced or electrification activities may not receive the modelled uptake.

Option 1 delivers significantly less emissions reduction than the current program target (7.1 million tonnes of greenhouse gas saved in 2024 and 7.3 million tonnes in 2025).

Option 2: New activities

The target levels outlined in option 2 (Table 6) assume the Option 1 workplan (current workplan activities), plus introducing a moderate number of additional activities for businesses and households to support increased certificate creation.

Table 6: Option 2 targets for 2026-27

Year	Total target level (VEECs)
2026	5 million

2027	6 million

Option 2 was selected for analysis because it was deemed to:

- provide a middle target option
- increase the target in 2027 to provide industry confidence in the future of the program
- introduce new activities to the program to correlate with program ambition and additional resources required
- support high uptake of residential electrification activities (~80 per cent of total VEECs).

This medium target option was assumed to include several new proposed activities, because if no new activities were introduced the certificate price would need to be higher to enable this level of uptake. This RIS uses target options to compare the results of differing policy choices for the program.

Option 2 delivers less emissions reduction than the current program target (7.1 million tonnes of greenhouse gas saved in 2024 and 7.3 million tonnes in 2025).

Option 3: Extra new activities

The target levels outlined in option 3 (Table 7) assume the Option 1 workplan (current workplan activities) plus significant new activities for households and businesses to support extensive certificate creation.[74]

Table 7: Option 3 targets for 2026-27

Year	Total target level (VEECs)
2026	6 million
2027	7.3 million

Option 3 was selected for analysis because it was deemed to:

- provide a high target option, while limiting this option to factor in uncertainty and risk. The high target option could have had targets higher than these levels, but this was assessed as introducing an unacceptable amount of risk that the targets would not be achievable.
- increase the target in 2027 to provide industry confidence in the future of the program
- introduce more new activities to the program to correlate with program ambition and additional resources required
- achieve emissions reductions at almost the same rate as is currently occurring under the program
- support high uptake of residential electrification activities (~80 per cent of total VEECs).

Option 3 delivers slightly less emissions reduction than the current program target (a target of 7.1 million tonnes of greenhouse gas saved for 2024 and 7.3 million tonnes for 2025).

4.4.2 Alternative regulatory scenario

Target options Alternative 1 and Alternative 2 both assume an “alternative regulatory scenario” occurs, as there is some uncertainty on which regulatory scenario eventuates. In this scenario a business-as-usual regulatory environment continues, and none of the below regulations are assumed to pass, as outlined in section 4.3.1:

- No changes to the building and planning regulations, meaning no changes to legislated end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives.

- No introduction of increased minimum rental standards, via the proposed Residential Tenancies and Residential Tenancies (Rooming House Standards) Amendment (Minimum Energy Efficiency and Safety Standards) Regulations 2024.
- No changes to the additionality requirement for the VEU program, under the VEET Act.

Option Alternative 1: New C&I activities

The target levels outlined in the alternative 1 target option (Table 8) assume a similar activity to the workplan of Option 1, in that it includes the current workplan activities (see section 4.2.2), but include a moderate number of new activities.

Table 8: Option Alternative 1 targets for 2026-27

Year	Total target level (VEECs)
2026	4 million
2027	4.5 million

Alternative option 1 was selected for analysis because it was deemed to:

- provide a middle target option that is realistic in the alternative regulatory environment
- increase the target in 2027 to provide industry confidence in the future of the program
- introduce a new activity to the program to correlate with program ambition and additional resources required
- support moderate uptake of residential electrification activities (~40 per cent of total VEECs).

Option Alternative 1 delivers significantly less emissions reduction than the current program target (7.1 million tonnes of greenhouse gas saved in 2024 and 7.3 million tonnes in 2025).

Option Alternative 2: Extra new activities

The target levels outlined in the alternative 2 target option (Table 9) assumes the alternative 1 target option workplan (current workplan activities plus a moderate number of new activities) also introduces significant activities to enable extensive certificate creation.

Table 9: Option alternative 2 targets for 2026-27

Year	Total target level (VEECs)
2026	4.5 million
2027	5 million

Alternative option 2 was selected for analysis because it was deemed to:

- provide a high target option that is realistic in the alternative regulatory environment
- increase the target in 2027 to provide industry confidence that the program may increase in ambition after the strategic review
- introduce new activities to the program to correlate with program ambition and additional resources required
- support moderate uptake of residential electrification activities (~30 per cent of total VEECs)

Option alternative 2 delivers significantly less emissions reduction than the current program target (7.1 million tonnes of greenhouse gas saved in 2024 and 7.3 million tonnes in 2025).

4.5 Summary of the policy options assessed

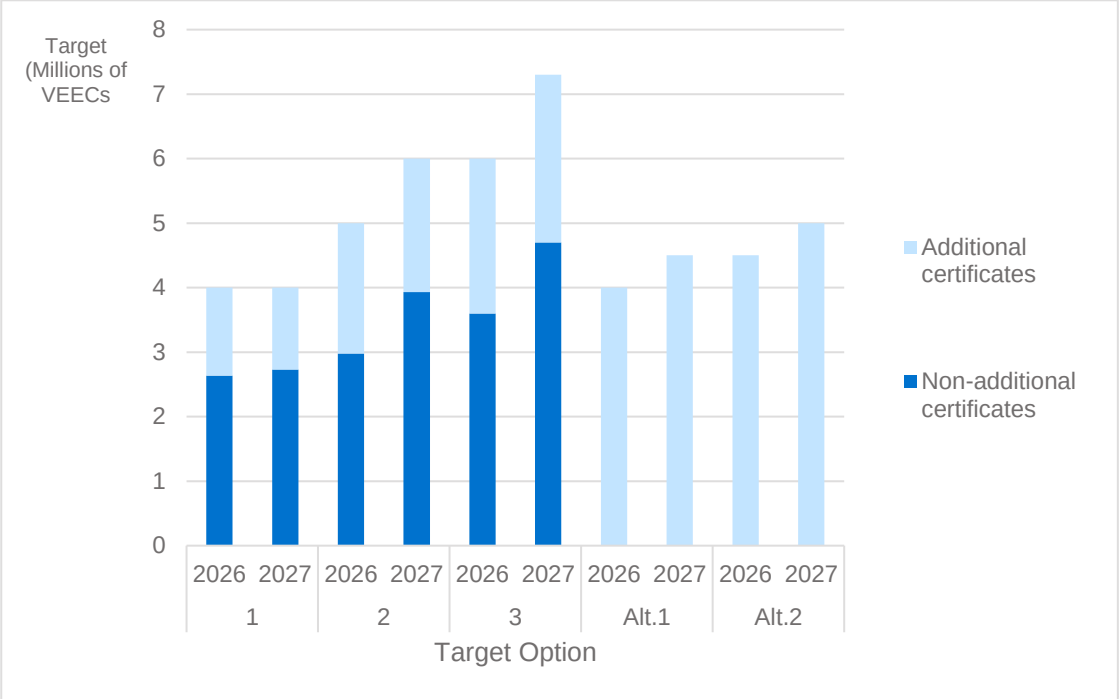
Table 10 below sets out each of the options described in section 4.4 of this RIS.

Table 10: Summary of the policy options

Option name	2026 target (VEECs)	2027 target (VEECs)	Activity assumptions	Regulatory assumptions
1	4 million	4 million	Current program workplan activities factoring in some activities likely to reach market saturation (see section 4.2.2)	**Main regulatory scenario** All relevant act amendments pass: • Proposed regulations to require end of life replacement of existing gas heating and hot water appliances for residential properties with electric alternatives via an amendment to building and planning regulations. • Proposed Minimum Rental Standards • VEU additionality amendment
2	5 million	6 million	Option 1 plus: A moderate number of new activities for households and businesses	
3	6 million	7.3 million	Option 2 plus: A significant number of new activities for households and businesses	
Alt. 1	4 million	4.5 million	Current program workplan activities factoring in some activities likely to reach market saturation (see section 4.2.2), plus: A moderate number of new activities for households and businesses	**Alternative regulatory scenario** No relevant act amendments pass: • Business-as-usual policy context continues
Alt. 2	4.5 million	5 million	Option Alt. 1 plus: A significant number of new activities for households and businesses	

Figure 6 displays the target options, including a breakdown of additional and non-additional certificates.

Figure 6: Proposed VEU targets for 2026-27



4.6 Policy options not assessed

DEECA considered other policy options, but they were not deemed feasible, and were hence not assessed as part of this RIS.

Decreasing trajectory

DEECA considered setting decreasing targets for the 2026-27 period (with the 2027 target lower than 2026) but found this approach unfeasible. DEECA anticipates higher market demand for electrification upgrades in 2027 due to growing community awareness of electrification benefits, increased knowledge of the electrification activities offered under the VEU program and expected increases in gas prices. Moreover, decreasing targets would require more adjustment from the energy efficiency industry, impacting both industry participants and consumers.

Setting targets for five year (2026-30)

In accordance with the current VEET Regulations, DEECA considered setting targets for the five-year period from 2026-2030 but found this unfeasible due to the VEU strategic review starting in late 2024. This review will address key issues, including the program's metrics and objectives in the energy transition. Expected to conclude in June 2026, the strategic review's recommendations could significantly influence future targets. Therefore, DEECA and the Minister for Energy and Resources have opted to set only 2026-27 targets to maintain program continuity and market confidence, with targets for 2028 onwards to be determined in 2027 based on the findings from the strategic review.

Not setting targets until after the strategic review

Not setting targets for 2026 onwards is not an option, as the Minister has a legislated obligation under the VEET Act to set VEU targets for 2026 onwards by 31 May 2025.

Additionally, not having targets means industry participants currently operating in the program, businesses in the energy efficiency upgrades sector, consumers, and energy retailers would be significantly impacted. It would also hinder Victoria's ability to meet emissions reduction targets, impacting efforts to address climate change.

5. Determining the preferred option

This chapter summarises the methods used to evaluate and compare the options and the costs, benefits, and market impacts of the preferred and alternative options.

5.1 Approach to option analysis

The decision-making tool used in this RIS is a Cost Benefit Analysis (CBA). Qualitative consideration of other factors which cannot be easily quantified is used to supplement the CBA. The CBA is an appropriate decision tool given that most factors can be quantified, and therefore benefit cost ratios (BCRs) and net present values (NPVs) are useful measures to compare target options.

The VEU targets are evaluated using two modelling stages, economic modelling and energy market modelling. The economic modelling was completed using two models, one for the residential sector and one for the business sector.

For each option, the VEEC price and the optimal target for that scenario is modelled based on economic modelling completed by independent consultants.

This modelling incorporates how consumer uptake, activity availability and broader regulation scenarios are likely to influence the likely VEEC price and energy savings at given targets levels over the 2026-27 period. VEEC price and energy savings are key factors that contribute to the impacts of policy decisions about optimal target levels for 2026-27.

This is followed by energy market modelling, which predicts how supply side energy generation and infrastructure investment will respond to different energy demand levels compared to the reference case of zero VEU targets.

The below Table 11 outlines the key inputs and outputs of each model.

Refer to Appendices D, E and F for further detail on all three models.

Table 11: Key inputs and outputs for each targets model

	Residential economic uptake model	Business economic uptake model	Energy market model
Key inputs	• VEEC price for each year	• Certificates required for each year	• Energy demand savings for electricity and gas, enabled by VEU • Other changes to energy market such as statewide demand, planned generation and distribution investment
Supporting inputs	• Consumer uptake preferences (how much of a difference a rebate makes to purchasing decisions) • Regulation scenario changes that can affect the above purchasing behaviour, such as the proposed increase to minimum rental standards	• Consumer uptake preferences (how much of a difference a rebate makes to purchasing decisions) • Activities within the program • Stock levels of consumers appliances • Population growth • Energy prices	• AEMO reference case demand and supply of electricity. See Appendix G for further detail.

	• Activities within the program • Stock levels of consumers appliances • Population growth • Energy prices • VEU Emissions factors	• Emissions factors	
Key outputs	• Certificates for each year • Uptake of activities to meet target • Energy demand savings for electricity and gas	• VEEC price • Uptake of activities to meet target • Energy demand savings for electricity and gas	• Electricity price (used to calculate bill impacts) • Emissions savings

Value of carbon-dioxide equivalent greenhouse gas emissions reduction

Estimating the value of greenhouse gas emissions reduction is based on the expected actual reduction of GHGs for each non-additional VEEC created as a result of the target option.

The trajectory of 'carbon values' is based on scenarios in the Intergovernmental Panel on Climate Change's (IPCC's) Sixth Assessment Report (2022) that are consistent with the Paris Agreement and are also consistent with the estimated costs of meeting Victoria's climate goals, as modelled by DEECA for analysis supporting Victoria's 2035 emissions reduction target.[75] This carbon abatement value is consistent with other policy methodologies across the department. Further information is provided in Appendix D.

Discount rate

Unless otherwise indicated, aggregated impacts over the assessment period are net present values, discounted back to 2026 dollars using a real discount rate of 4 per cent. [76] This matches Department of Treasury and Finance (DTF) Technical Guidelines on Economic Evaluation and other recent regulatory impact statements such as the proposed increase of Minimum Rental Standards.[77]

Assessing impacts involves a comparison of economic flows that occur at different points in time. The discount rate is used to compare economic effects occurring at different times. Discounting estimates the present-day value of future economic impacts. The discount rate is generally positive because resources invested today can, on average, be transformed into more resources later.

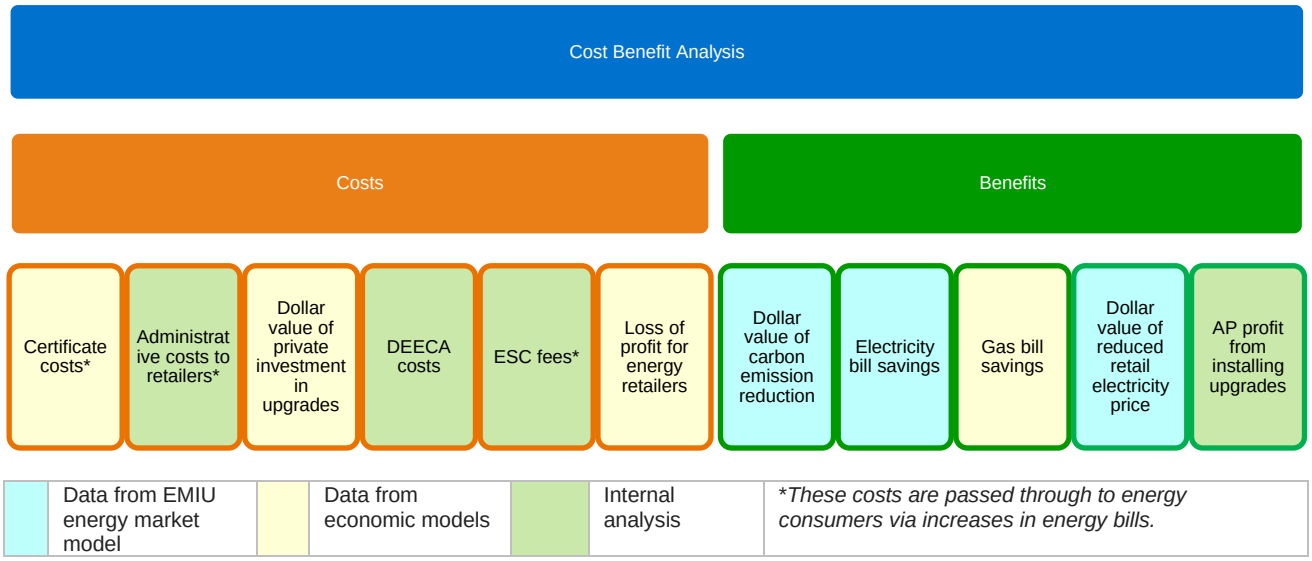
Cost benefit analysis

Figure 7 below outlines the costs and benefits associated with the VEU program, which are influenced by the program's target level. Estimates of costs and benefits draw on the residential and commercial economic uptake models, the energy market model and internal analyses undertaken by DEECA.

[75] Victoria's 2035 Emissions Reduction Target Supporting Analysis, see: https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0032/635594/Victorias-2035-Climate-Target-Supporting-Analysis.pdf

[77] Victorian Government, Minimum Standards for Rental Properties and Rooming Houses, see: Minimum Standards for Rental Properties and Rooming Houses

Figure 7: Breakdown of costs and benefits associated with VEU targets



Gas network and infrastructure costs

The above cost benefit analysis structure does not include an analysis on how changes to the gas network may have cost impacts on Victorians. Gas network charges are shared amongst all gas consumers; if more people disconnect from the gas network, the fixed costs will be distributed amongst fewer customers, resulting in higher network charges for those remaining on the network. However, DEECA assessed that the VEU program will have negligible impacts on the gas network based on the following reasons:

1. Under the main regulatory scenario, it is assumed that the electrification of existing gas appliances is driven by other market forces and potential policies. In this case, the VEU program plays a supporting role in residential sector electrification, by providing financial assistance and encouraging households to upgrade to a more efficient electric appliance rather than the minimum upgrade to comply with regulations. Since the VEU program is not the mechanism driving the replacement of gas appliances, its direct impact on gas network and infrastructure costs are expected to be negligible."
2. For business sector electrification, the VEU program is the driving force causing the electrification, but that sector is much earlier in the learning curve and uptake of electrification. DEECA assesses that there will be relatively few businesses completely electrifying and disconnecting from the gas network in 2026 and 2027.[78] This means that there will not be significant cost changes to the gas network based on these business electrification upgrades.

Modelling variables - Additionality and marginal costs

Under the main three target options, the VEU program's additionality requirement is amended to enable the VEU program to support the proposed increase to minimum rental standards and an amendment to the building and planning regulations. The residential economic modelling needed to modify its methodology for assessed costs and benefits. The modelling methodology is outlined below in Table 12. In summary, all variables except for rebate costs to the program are measured as additional or marginal. Additional measurements are defined as what would not have happened without the VEU program.

Refer to section 4.3.1 for further detail on how additionality is defined.

This approach represents the VEU program playing a supporting role, counting full certificate costs but only counting additional benefits that the VEU program creates.

[78] This assessment is based on 18% of small Australian businesses "seriously considering" disconnecting from the gas network in a 2024 survey from Energy Consumers Australia on Small Businesses. Within that group, most upgrades only happen once gas appliances reach end of life, and most gas appliances have a lifetime greater than 10 years. This roughly equates to less than 5% of businesses fully electrifying within the target period. Medium and larger businesses face larger costs and more complex projects, making them far less likely to fully electrify than small businesses in the target period.

Table 12: Modelling methodology regarding additionality

Variable	Modelling approach used regarding additionality
VEU rebate provided	The full VEU rebate is counted in the modelling and the cost-benefit analysis, regardless of whether the upgrade is an additional or non-additional upgrade. The rebate is technically a transfer between two different sets of energy consumers: from those paying higher energy prices to those receiving discounted energy efficiency upgrades. The transfer is counted on the 'costs' side via the rebate figure and on the 'benefits' side – implicitly – by reducing the upfront costs to upgrade technology (see below).
Upfront costs to upgrade technology	Marginal costs for households to upgrade technology are used. This compares the cost above and beyond what is required for households to comply with regulations. For example, a household may otherwise upgrade to a bare-minimum efficiency electric hot water system to comply with the proposed amendments to the building and planning regulations. The VEU program is able to provide a rebate that encourages them to upgrade to a more efficient system. The marginal cost difference between the two electric hot water systems is measured, not the counterfactual cost to replace their broken existing gas hot water system with a low efficiency electric system. Note this means in instances where the VEEC rebate is greater than the marginal cost, for example a heat pump becomes actually cheaper than a bare minimum electric system, that is then captured as a negative up front cost. The customer in that instance is still paying for an upgrade, but it is cheaper than what they'd have to pay for otherwise without the VEU program. Note switchboard upgrade costs are not considered in these residential assumptions, as these costs would happen without the VEU program. Commercial upgrades include switchboard costs.
Emissions savings	Emissions savings are similarly measured only as additional to other policies. Emissions savings are measured between the counter factual lower efficiency system and the actual higher efficiency system. Note additional gas savings are zero in this instance, as the household would have upgraded to an electric system in the counterfactual scenario, to comply with regulations.
Energy bill savings	Bill savings are similarly measured only as additional to other policies. Energy savings are measured between the counter factual lower efficiency system and the actual higher efficiency system. Note additional gas bill savings for these upgrades will be zero.
AP profits and retailer profits	These are both measured as additional. AP profits are based on additional certificates only, and retailer profits are based on additional energy savings.

There are other considerations related to setting future targets for the VEU program such as co-benefits which cannot be easily quantified in dollar terms. As such, those factors are not included in the cost benefit analysis, but will be discussed qualitatively, supported by some quantitative evidence where available, to provide a balanced analysis around the anticipated impacts of different target options.

Note that these qualitative factors are not equally weighted but are considered holistically in the final recommendation of which option is preferred.

Table 13 below outlines the other factors to be qualitatively considered in determining the preferred target option.

Table 13: Summary of factors to determine preferred target option

Factor	Description	Supporting evidence
Energy affordability and equity	This factor examines the impacts on energy affordability for consumers, including those that do and that do not participate in the program. In particular, it will consider the degree to which the certificate costs passed through to the energy consumers are offset by the bill savings from reduced electricity demand putting downward pressure on retail electricity price. The net benefit or cost for individual households or businesses will be assessed in the context of the current economy and cost of living crisis. This factor also assesses other forms of equity in the energy transition.	The evidence supporting the qualitative analysis in this area includes: - $ impact on average household bill - $ impact on average non-participant household bill - $ impact on average business bill - $ impact on non-participant business bill As part of this consideration, the RIS will also discuss how the benefits of different VEU target options will be distributed to low-income households, rental properties and businesses.
Industry investment and innovation	This factor examines the extent to which the option encourages investment, employment and technology development in industries that supply goods and services which reduce the use of electricity and gas by consumers.	The evidence supporting the qualitative analysis in this area includes: - Level of financial investment in industry - Number of jobs supported calculated via REMPLAN jobs
Health benefits	This factor considers the potential health benefits of energy efficiency and electrification upgrades to participating households and businesses.	Based on the mix of activities proposed under each target options and information from desktop research
Risks	Sensitivity analysis of assumptions	Testing of modelling risks impact on certificate prices

5.2 Cost benefit analysis

The following Table 14 summarises the costs and benefits of the different proposed options for the VEU program targets.

Table 14: Costs and benefits of the proposed options for the targets

Costs	Benefits*
Total cost of the VEU program passed through to energy consumers (incl. ESC fees and administrative costs to retailers)	Value of carbon emissions abated because of the VEU program
Out-of-pocket costs for upgrades undertaken through the VEU program	Energy bill savings due to improved energy efficiency, calculated for years subsequent to 2027
DEECA government costs	Savings on retail energy prices
Loss of profit for energy retailers (from reduced energy use by consumers)	Profit for APs from installing upgrades in the VEU program
**Please note that benefits have been calculated based on the upgrades which are considered additional only, i.e. above and beyond the minimum regulatory requirements.*	

Based on the outcomes of the cost-benefit analysis, the preferred target setting options are 5 million certificates in 2026 and 6 million in 2027, represented by Option 2. Table 15 gives an overview of the cost-benefit analysis conducted. Please note that DEECA has taken a conservative approach to estimating the benefits of the target options, and only considered benefits generated from additional upgrades (i.e. upgrades above and beyond

the minimum requirements by regulations). Benefits are only estimated until 2035, as the average appliance has approximately a 10-year lifetime prior to replacement.[79]

Table 15: Cost-benefit analysis summary

	Option 1	Option 2	Option 3	Alt Option 1	Alt Option 2
Targets (millions of VEECs)	**4, 4**	**5, 6**	**6, 7.3**	**4, 4.5**	**4.5, 5**
BENEFITS					
Residential bill savings ($ mil)	$116.6	$224.5	$279.6	$418.0	$712.0
Business bill savings ($ mil)	$852.5	$1,645.5	$1,972.8	$2,253.4	$2,312.0
Carbon emissions reduced ($ mil)	$225.5	$665.0	$959.4	$1,280.1	$1,358.6
Carbon emissions reduced[80] (million tonnes $C0_2$-e)	1.7	5.1	7.4	10.0	10.6
Savings on reduced retail electricity prices ($ mil)	$396.1	$581.4	$536.5	$386.7	$479.0
AP profit ($ mil)	$46.3	$77.7	$111.9	$414.7	$448.2
COSTS					
Total cost pass-through to energy consumers ($ mil)	$350.5	$522.4	$747.7	$1,036.7	$1,120.6
Residential out-of-pocket costs for upgrades ($ mil)	-$5.8	$63.3	$0.2	$88.5	$339.6
Business out-of-pocket costs for upgrades ($ mil)	$6.6	$111.1	$268.5	$499.9	$481.3
Government costs ($ mil)	$6.3	$6.3	$6.3	$6.3	$6.3
Loss of profit for energy retailers ($ mil)	$76.2	$157.3	$195.6	$257.0	$277.7
TOTAL					
Costs ($ mil)	$433.8	$860.4	$1,218.3	$1,888.3	$2,225.4
Benefits ($ mil)	$1,637.0	$3,194.1	$3,860.2	$4,752.8	$5,309.9
Total NPV ($ mil)	$1,203.2	$2,333.7	$2,641.9	$2,864.5	$3,084.5
Benefit-to-cost ratio	3.77	3.71	3.17	2.52	2.39

In the main regulatory scenario where all proposed regulations come into effect before the target period, option 3 has the highest forecast reduced carbon emissions of 7.4 million tonnes compared to option 2 at 5.1 million tonnes. It has a Net Present Value (NPV) of $2.6 billion, with option 2 having the second highest NPV of $2.3 billion. This is a concession of a slightly lower NPV but option 2 also comes with lower risks associated with higher ambition targets, as discussed in section 5.3.45.3.4.

There is some uncertainty on which regulatory scenario eventuates. While the alternative regulatory scenario targets are expected to deliver a high NPV, this will come at a greater cost to consumers due to higher VEEC prices. Achieving high consumer uptake without a regulatory environment to accelerate electrification uptake will require larger rebates.

Option 2 has the second highest benefit-to-cost ratio of 3.71, slightly behind option 1 at 3.77, whilst option 3 has a benefit-to-cost ratio of 3.17. This is because the higher ambition targets create larger benefits, but they cost comparatively more to achieve those benefits. These higher costs are mainly driven by the expected business bill savings as these higher target setting scenarios require more commercial and industrial activities to drive certificate creation. The balance between an increase in uptake of emissions reducing activities and the associated costs to achieve the set target, is largely determined by the underlying pool of opportunity and

[79] Note several appliances have much longer lifetimes, for example reverse cycle air conditioners.

[80] Note this is additional

the rate of returns for capital invested. Option 3 has diminished returns on capital invested for emissions reduction when compared to Option 2.

Option 1 presents a negative residential out-of-pocket cost. This is due to the comparative level of activity uptake that would otherwise be experienced by consumers in the reference case. Option 1 would deliver residential upgrades through the program at a lower cost point than if consumers had not had the subsidy from the program[81], see section 5.1.1. It is worth mentioning Option 3 also delivers a relatively low cost for residential upgrades when compared to the other options.

Government costs represent the operational budget allocated to the department to oversee the VEU program including activity design and policy changes. Each presented option will require prioritisation of allocated resources to support various levels of activity design and implementation. Fees associated with administrative cost recovered by the Essential Services Commission have been factored into the total costs passed through to energy consumers.

Business bill savings are largely determined by the expected energy saving potential of non-residential activities, however each activity has a unique expected lifespan for realising those energy savings. The analysis covers expected uptake only in 2026 and 2027 but calculates the expected energy savings out to the end of 2035 as the average activity lifespan is 10 years.

On the industry impacts, AP profit is the estimated profit that APs will make from the additional upgrades undertaken in 2026 and 2027 for each target option, which is estimated as a proportion of the additional VEECs costs. On the other hand, energy consumers using less electricity and gas will result in a loss of profit for energy retailers, which have been estimated as a proportion of the bill savings for households and businesses.

5.3 Other considerations

5.3.1 Energy affordability and equity

Historically, one of the key strengths of the VEU program has been its ability to make energy more affordable, particularly for participants that undertake VEU energy efficiency upgrades.

The cost of the VEU program is passed on by energy retailers to energy consumers during the target period. Therefore, it is important to consider the impacts of the proposed targets on consumer energy bills and energy affordability, and whether the costs and benefits of the VEU program are equitably distributed.

This section examines the impacts on energy affordability and equity for all consumers, including program participants and non-participants. In particular, it will consider the degree to which the certificate costs passed through to the energy consumers are offset by the bill savings from reduced electricity demand putting downward pressure on retail electricity price. This section also considers the bill impacts on participants, as well as how program benefits are distributed across different consumer groups. The net benefit or cost for individual households or businesses will be assessed in the context of the current economy and cost of living crisis. This section includes a discussion on the following considerations:

- Energy bills of non-participants
- Energy bills of participants
- Distribution of program benefits and costs across different consumer groups, including residential and non-residential consumers, and renters and owner-occupiers.

The distribution of benefits and costs for consumers is being considered as part of the Strategic Review of the VEU program (see section 1.2.2 for more detail). Energy affordability and equity for low-income households has been discussed qualitatively in this RIS due to a lack of quantitative data and modelling limitations.

Implications for energy bills of participants

[81] This is different to the more common VEU upgrade scenario where in the reference case the consumer upgrades to a less efficient but cheaper appliance. In that more common scenario, the rebate provided persuades the customer to choose a more expensive but more efficient appliance. However, in these particular upgrades, the rebates actually make the more efficient appliance cheaper than the less efficient option. This is captured as a 'negative out-of-pocket cost', as the customer is experiencing less cost than in the reference case where they replace their broken appliance.

DEECA calculated the program costs for households and businesses that participate in the program. The annual average bill impacts for households and businesses over the ten-year period of 2026-2035 will result in significant savings for participants.

The average annual bill impacts for participants are calculated by subtracting the average annual pass-through costs to energy consumers and the marginal costs for upgrades from the average annual bill savings for participants and the average annual savings on retail electricity prices.

As shown in Figure 8 and Table 16, the bill impacts for residential participants ranges between an average annual bill saving of $239 to $338 for options 1 to 3 (under the main regulatory scenario) and between $756 to $929 for the alternative options (under the alternative regulatory scenario).

Figure 9 and Table 16 show that the bill impacts for business participants ranges between an annual average bill saving of $2,433 to $8,096 for options 1 to 3 (under the main regulatory scenario) and between $2,218 to $2,342 for the alternative options (under the alternative regulatory scenario). Note that at the low target levels in option 1, a much higher percentage of the target is filled by residential upgrades. Only the highest return business activities are predicted to see significant uptake. This effect means that there are fewer business upgrades, but they are concentrated high value upgrades and the savings are high at over $8000 for participating businesses.

Figure 8: Annual average bill savings for residential participants

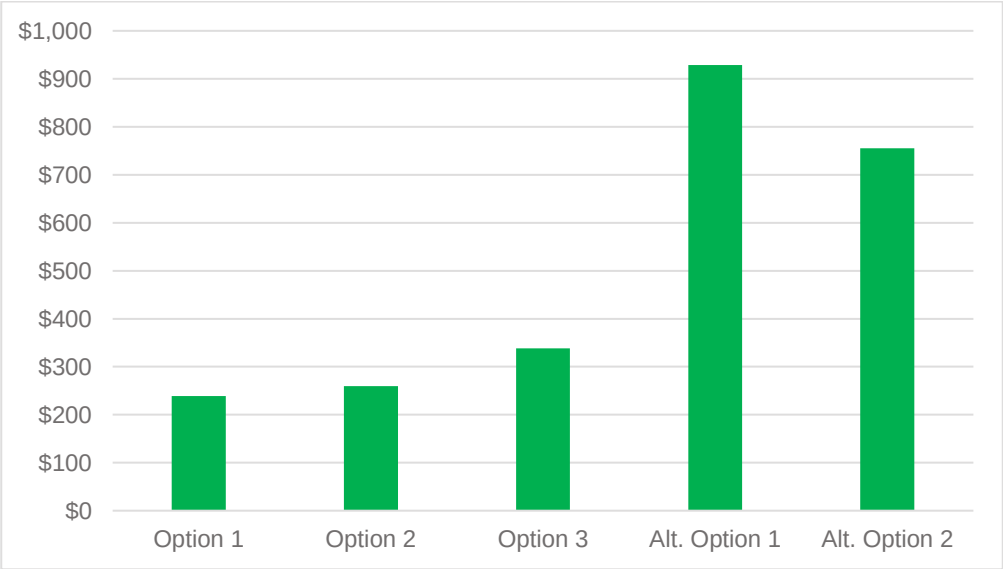


Figure 9: Annual average bill savings for business participants

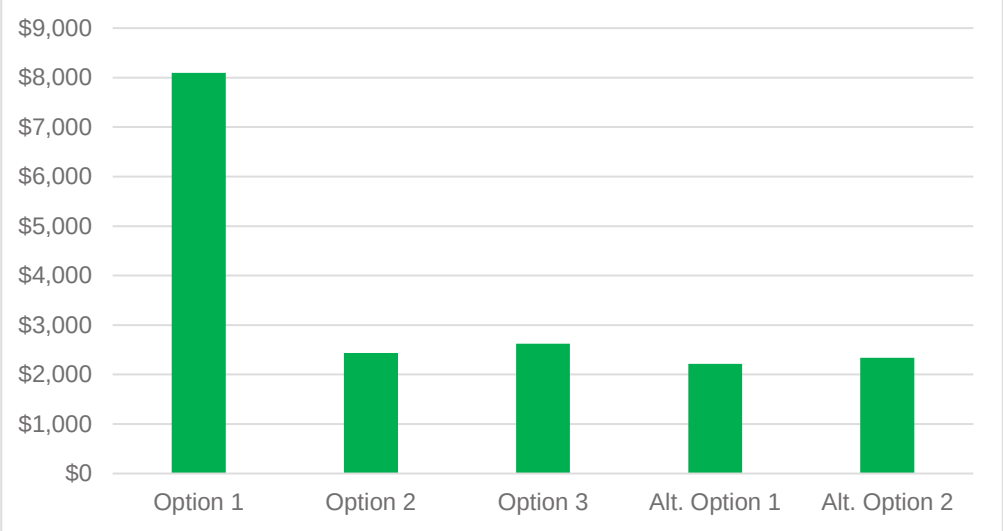


Table 16: Annual average bill savings for participants

Option	Residential		Business	
	Bill savings	Percentage bill savings	Bill savings	Percentage bill savings
Option 1	$239	17%	$8,096	29%
Option 2	$260	19%	$2,433	9%
Option 3	$338	24%	$2,624	9%
Option alt. 1	$929	66%	$2,218	8%
Option alt. 2	$756	54%	$2,342	8%

Distribution of costs and benefits

DEECA undertook analysis to determine how benefits are distributed across Victorian demographic groups under the VEU program, to assist in determining whether cross-subsidies are likely to result from the VEU program.

For the purposes of this RIS, the following demographic groups were considered in terms of how they can participate and benefit from the VEU program:

- Residential consumers compared to business consumers
- Renters compared to homeowners.

Note several types of demographics were not able to be considered, due to lack of reliable data and modelling results not providing an adequate level of detail:

- Low-income households compared to high-income households
- Regional dwellings compared to metropolitan dwellings.

Note however that many low-income households should benefit from lower energy bills due to the proposed minimum rental standards and the VEU program's proposed support of those regulations.

Regional dwellings have typically participated in the VEU program have been reasonably well represented, at approximately 70-80% metropolitan, 20-30% regional, and DEECA expects this distribution of benefits will continue under all target options.

Residential consumers compared to business consumers

It is crucial that the number of households and businesses participating in the VEU program is maximised to ensure that the benefits of energy efficiency improvements are available to both sectors. Victorians are experiencing increases in retail electricity and gas prices and small businesses are often overlooked in these discussions.[82]

Option 3 is the best performing option on this dimension, as it is projected to receive a balance of VEEC uptake from both residential and business consumers. Option 2 is also projected to receive fairly balanced VEEC uptake from both sectors, with a considerable portion from businesses.

VEEC uptake under option 1 is consistent with historical data where more upgrades are undertaken by residential consumers over business consumers. Underrepresentation of businesses in option 1 may limit business consumers' ability to upgrade to energy-efficient systems thereby limiting the ability to fully capitalise on potential emissions reductions from this sector.

Alternative option 1 and alternative option 2, under which legislative amendments relevant to the targets do not pass, see the majority of VEECs being taken up by businesses. These alternative options provide a high potential for business-related emissions reductions and energy efficiency gains. However, significantly less

[82] Energy Consumers Australia (2024), see: https://energyconsumersaustralia.com.au/news/newsletter-may-2024

VEECs received by residential consumers may potentially result in equity issues, as residential consumers may face fewer opportunities for energy efficiency improvements.

Renters compared to homeowners

Homeowners typically have higher uptake of the VEU program than renters because of their ability to make decisions about property improvements and their greater interest in long-term energy savings. Renters have lower participation rates because of the need for rental provider approval, the temporary nature of their residence and potential gaps in program awareness or suitability. Ensuring renters are provided with energy efficient and energy saving upgrades that also improve comfort and health benefits is crucial for fostering a healthy and equitable housing market, especially as renting is becoming an increasingly long-term housing solution.[83]

Research consistently shows that rental properties are generally of poorer quality, especially in terms of energy efficiency.[84] In the case of installation of solar panels, both private and public renters are at a disadvantage in accessing this technology given they typically do not have the ability to install rooftop solar systems in the way that a homeowner of a detached dwelling could.[85] Access to renewable energy and energy efficiency upgrades for renters is crucial for promoting environmental sustainability, economic benefits and social equity, as well as achieving the broader objectives of the VEU program.

Option 3 performs best on this equity dimension, as it achieves emissions reductions at almost the same rate as is currently occurring under the program, while supporting the greatest number of upgrades for rental providers complying with the proposed minimum rental standards, which will provide flow-on benefits to renters. Options 1 and 2 have lower targets and therefore provide fewer rebates to rental providers complying with the proposed minimum rental standards.

While the three options above (all under the main regulatory scenario) are projected to see a larger proportion of VEECs supporting upgrades under the proposed minimum rental standards than homeowners, these flow-on benefits to renters will reduce the barriers to uptake discussed above, improving equity outcomes for renters in Victoria. Further, there will still be plenty of support available to homeowners to receive the benefits of the VEU program.

Alternative option 1 and alternative option 2, under which legislative amendments relevant to the targets do not pass, are projected to see less VEECs taken up by households and do not assume VEU discounts could be provided to rental providers. These alternative options provide the least support for the residential sector overall, particularly renters. This may result in equity issues, as renters contribute to the costs of the program via their energy bills, but struggle to benefit from participating in the program.

Implications for energy bills of non-participants

DEECA calculated the program costs for households and businesses that do not participate in the program. Business non-participants have been divided into small to medium businesses and large businesses. Historically, non-participants benefited from the program, as they saved more on their energy bills because reduced electricity infrastructure costs outweighed the impact of program pass through costs. However, this is no longer the case for all target options. The annual average bill impacts for households and businesses over the ten-year period of 2026-2035 will result in small increases in energy bills for non-participants for some target options. Under option 1 and 2, both residential and small to medium business non-participants are expected to save on their energy bills, with a proportionately small cost to large business non-participants.[86]

The average annual bill impacts for non-participants are calculated by subtracting the average annual program pass-through costs to energy consumers from the average annual savings on retail electricity prices.

As shown in Figure 10 and Table 17, the bill impacts for residential non-participants ranges between an average annual bill saving of $0.32 to $3.35 for options 1 to 3 (under the main regulatory scenario) and a bill

[83] Minimum energy efficiency and safety standards for rental homes – Regulatory Impact Statement (2024)

[84] Daniel et al. (2020), *Warm, cool and energy-affordable housing policy solutions for low-income renters*, see: https://www.ahuri.edu.au/sites/default/files/migration/documents/AHURI-Final-Report-338-Warm-cool-and-energy-affordable-housing-policy-solutions-for-low-income-renters.pdf

[85] Ibid.

[86] Small to medium businesses are defined in this analysis as using 90.5MWh of electricity and 1,130 GJ of gas per year. Large businesses are defined in this analysis as using 18.9GWh of electricity, and 32TJ of gas per year. Households are defined in this analysis as using 4MWh of electricity and 51GJ of gas.

increase between $4.41 to $4.69 for the alternative options (under the alternative regulatory scenario). These impacts could potentially be offset to become bill savings if promotion of the program is successful in raising awareness and encouraging higher uptake of upgrades.

Figure 11 and Table 17 show that the bill impacts for small to medium business non-participants ranges between an annual average bill saving of $1 to an increase of $62 for options 1 to 3 (under the main regulatory scenario) and bill increases between $158 to $162 for the alternative options (under the alternative regulatory scenario).

Figure 12 and Table 17 show that the bill impacts for large business non-participants ranges between an annual average bill increase of $1,805.15 to $15,662.96 for options 1 to 3 (under the main regulatory scenario) and bill increases between $35,048.14 to $36,161.37 for the alternative options (under the alternative regulatory scenario).

Figure 10: Annual average bill impacts for residential non-participants (negative figures are savings)

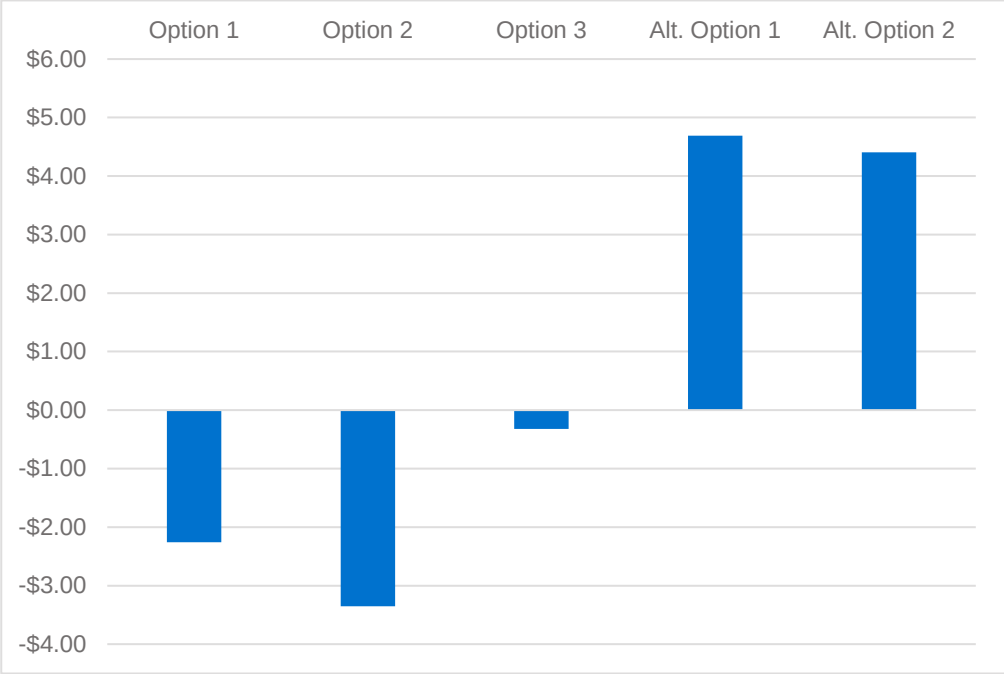


Figure 11: Annual average bill impacts for small to medium business non-participants (negative figures are savings)

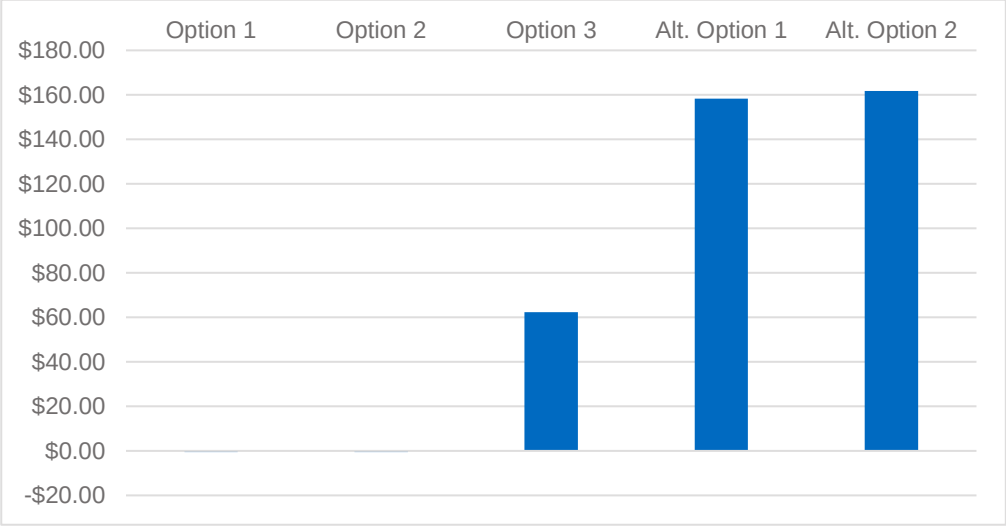


Figure 12: Annual average bill impacts for large business non-participants

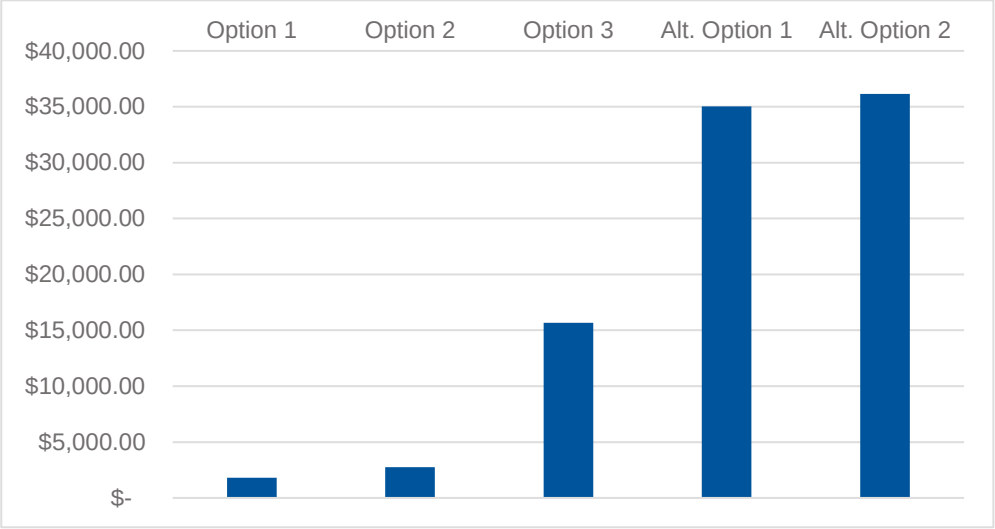


Table 17: Annual average bill increases for non-participants (negative figures are savings)

Option	Residential household		Small to medium business		Large business	
	Bill impacts	Percentage bill impacts	Bill impacts	Percentage bill impacts	Bill impacts	Percentage bill impacts
Option 1	-$2.26	-0.16%	-$1.00	0.00%	$1,805.15	0.06%
Option 2	-$3.35	-0.24%	-$1.00	0.00%	$2,747.57	0.09%
Option 3	-$0.32	-0.02%	$62	0.22%	$15,662.96	0.49%
Option alt. 1	$4.69	0.33%	$158	0.56%	$35,048.14	1.10%
Option alt. 2	$4.41	0.31%	$162	0.57%	$36,161.37	1.14%

Of the main regulatory scenario options, options 1 and 2 are the preferred options, as they result in the greatest savings to both small to medium business and households that do not participate in the VEU program, with proportionately small bill increases for large business non-participants. Option 3 is the next best option, with a small saving for household non-participants and a small but not unreasonable cost to small to medium business non-participants.

Of the alternative scenario options, alternative option 1 is preferred as it has the lowest costs to non-participants of the two alternative options. The alternative scenario options have significantly higher costs to non-participants, as the alternative regulatory scenario is associated with a higher VEEC price. This higher VEEC price is required to create a greater discount to motivate consumers to undertake VEU upgrades, as there are no mandatory upgrades in this alternative scenario to encourage uptake of upgrades. However, this higher VEEC price results in a greater pass-through cost to those consumers that do not participate in the program.

Analysis of energy affordability and equity for different options

The above discussion on energy affordability and equity is summarised in Table 18 below.

Overall, the annual average bill impacts per household or business over the ten-year period of 2026-2035 show significant savings for participants and minimal costs for non-participants. Of the main regulatory scenario options, option 2 is expected to have the greatest overall benefit for energy affordability, followed by options 1 and 3. The alternative options have significant bill savings for participants, but also the largest impacts on non-participants. Of the alternative scenarios, alternative option 2 is preferred, as it has the greatest overall benefit for energy affordability, followed by alternative option 1.

Both options 2 and 3 in the main regulatory scenario are expected to provide a balanced distribution of program costs and benefits across the residential and non-residential sectors and encourage upgrades in rental properties to achieve more equitable distribution of program benefits to renters compared to owner-occupiers. Options Alt. 1 and Alt. 2 will provide more opportunities for business upgrades, with the risk of program benefits being disproportionately shifted away from the residential to commercial sector.

Table 18: Summary of qualitative discussion on energy affordability and equity

Option	Non-participant bills	Participant bills	Distribution of benefits and costs
Option 1	Preferred Lowest bill impact: both businesses and households benefit	Significant bill savings Business savings dominate	Good outcome Businesses have slightly higher uptake No impact on non-participants
Option 2	Preferred Low bill impact: both businesses and households benefit	Preferred Significant bill savings Proportional savings for business and residential consumers	Preferred Balanced distribution across consumer groups, no impact on non-participants
Option 3	Good outcome Moderate impact: households benefit	Preferred Significant bill savings Proportional savings for business and residential consumers	Good outcome Balanced distribution across consumer groups, but moderate impacts on non-participants
Option alt. 1	Not preferred Large impact	Significant bill savings Residential savings dominate	Not preferred Benefits skewed towards non-residential consumers
Option alt. 2	Preferred option for alternative scenario		
	Largest impact	Significant bill savings Residential savings dominate	Not preferred Benefits skewed towards non-residential consumers

Legend: = Best outcome = Second preference = Good outcome = Not preferred

5.3.2 Industry investment and innovation

One of the objectives of the VEET Act is to encourage investment, employment and technology development in industries that supply goods and services which reduce the use of electricity and gas by consumers. This consideration assesses which target option will best support industry investment and innovation in the energy efficiency industry to support ongoing opportunities to reduce greenhouse gas emissions and increase energy efficiency. This section includes a qualitative discussion on the following considerations:

- Employment
- Additional upgrades
- New activities

Employment

Figure 13 below shows the estimated number of total jobs supported by the VEU program in 2026-27 for each of the target options. These estimated were based on REMPLAN Economy modelling from the total costs of VEECs for each year. “Non-additional jobs” are associated with upgrades mandated by other regulations, whereas “additional jobs” are jobs supported by the VEU program above and beyond what would otherwise have happened.

All three options in the main regulatory scenario result in a lower number of jobs supported than the previously estimated job figure of 2,200 for the 2022-25 target period. This is due to the lower target level in 2026-27, as

well as lower expected VEEC prices for this period. However, the number of jobs supported in these options are all higher than the base case, where no jobs would be supported because no targets would be set. The main regulatory scenario also contains a combination of additional and non-additional jobs supported, with non-additional jobs making up the majority. This is because many upgrades in this scenario are expected to be driven by other policies, and therefore the VEU program cannot claim full credit for supporting these jobs, as they were likely to occur regardless of VEU.

The options under the alternative regulatory scenario are entirely comprised of additional jobs, as this scenario assumes none of the regulatory policies proceed (outlined in section 4.4.2) and VEU would take full credit for all upgrades and therefore all jobs supported. The jobs supported under the alternative regulatory scenario are higher than the main regulatory scenario, as the VEEC price is much higher in these scenarios, supporting greater industry investment.

Overall, option alt. 2 supports the greatest total number of jobs, closely followed by option alt. 1. Of the main regulatory scenarios, option 3 is the preferred option as it supports the most total jobs, followed by option 2 and finally option 1.

Figure 13: Total number of jobs supported by VEU program in 2026-27

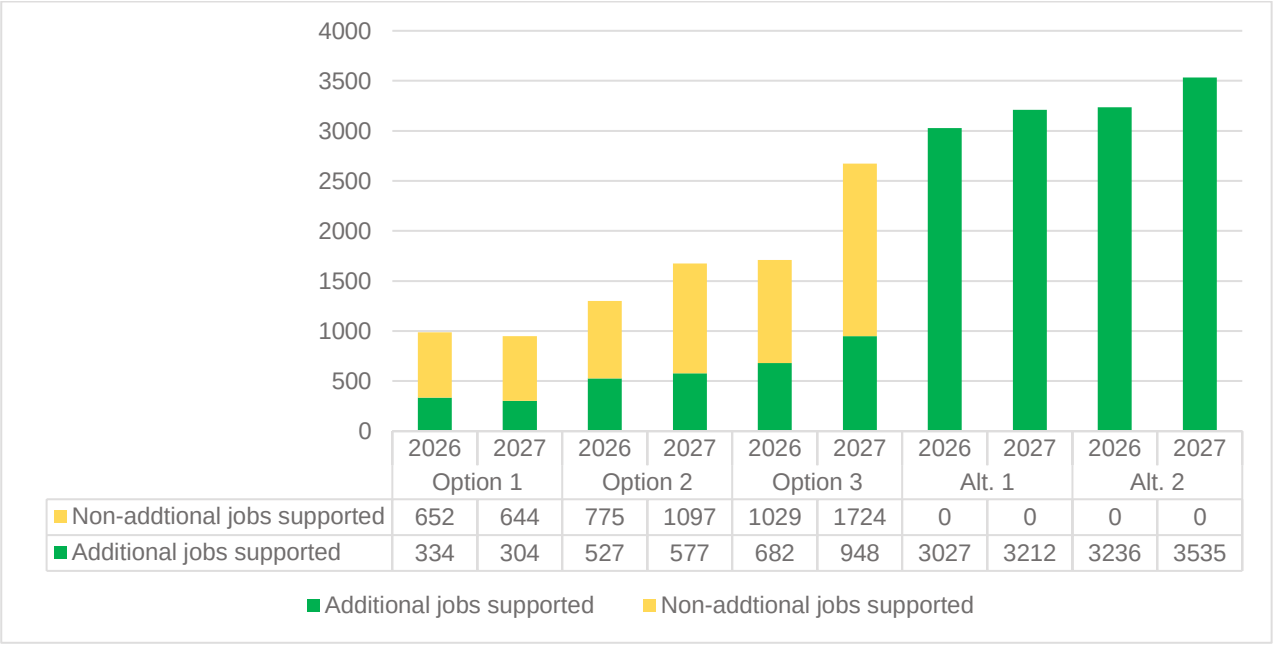


Table 19 further breaks down the number of additional jobs supported in terms of direct and indirect jobs. Direct jobs refer to the employment directly supported by VEU program activities, such as staff employed by APs, installers, sales and marketing. Indirect jobs include supply chain effect and consumption effect; the former refers to employment benefits along the supply chain, including manufacturing, import, transportation, and the latter refers to the flow-on employment effect when wages and salaries paid to employees are spent in the wider economy.

Table 19: Additional direct and indirect jobs supported by each option[87]

Option	Year	Direct effect (jobs)	Supply chain effect (jobs)	Consumption effect (jobs)	Total (jobs)
1	2026	96	142	96	334
	2027	88	129	87	304
2	2026	152	224	151	527
	2027	166	245	166	577
3	2026	196	290	196	682
	2027	273	403	272	948

[87] Modelled using REMPLAN Economy

Alt. 1	2026	872	1286	869	3027
	2027	925	1365	922	3212
Alt. 2	2026	932	1375	929	3236
	2027	1018	1502	1015	3535

Number of additional upgrades

As discussed in section 4.4.1, Options 1, 2, and 3 (main regulatory scenario) include both "additional" certificates from non-mandatory upgrades and "non-additional" certificates from proposed mandatory upgrades, like those under the proposed minimum rental standards. In contrast, options alt. 1 and alt. 2 (alternative regulatory scenario) consist only of additional certificates, designed for the scenario where proposed regulations mandating replacement of gas appliances at end-of-life do not pass.

While option 3 offers the greatest overall industry benefit due to its large target and number of certificates, its financial benefit is lower compared to the alternative options, as it includes non-additional certificates and assumes a lower certificate price due to mandatory upgrades. This lower price offers less benefit to industry but improves affordability and equity for consumers. Options alt. 1 and alt. 2, with only additional certificates and a higher forecast certificate price, provide the greatest financial benefit to industry, but also higher pass-through costs to consumers. Despite this, options 2 and 3 in the main scenario still offer the highest total benefit in terms of the number of upgrades available.

New activities

In the past, when new activities have previously been introduced to the VEU program, there has been a noticeable uptick in investment in these technologies, due to the increased demand created through VEU discounts.

Setting targets that incentivise a wide range of energy efficiency, electrification, distributed energy resources, and demand management upgrades encourages innovation and investment in emission-reduction solutions. Introducing new activities encourages industry to invest in upskilling workers and developing supply chains. More complex upgrades, like electrification activities, offer further opportunities for worker training and industry growth.

Option 3, with the greatest number of new activities offers the highest potential for industry investment and innovation, supporting both upskilling and supply chain expansion. Option 2 follows closely, offering a moderate level of new activities and the second-largest target. Option 1 provides the least benefit for industry investment and innovation, as it assumes no new activities and offers minimal worker upskilling opportunities.

Analysis of industry benefits of different options

The industry benefits of different options discussed above are summarised in Table 20 below. Overall, all options will encourage ongoing innovation by continuing to set targets.

Of the main regulatory scenario, option 3 is expected to have the greatest overall benefit to industry and innovation, followed by options 2 and 1.

Of the alternative regulatory scenario, alternative option 2 is preferred, followed by alternative option 1.

Table 20: Summary of qualitative discussion on industry benefits

Option	Additional upgrades	New activities
Option 1	Both additional and non-additional certificates Some additional financial benefit to industry	No new activities BAU support for skilled workers and supply chains
Option 2	Both additional and non-additional certificates Modest additional financial benefit to industry	Second highest target and moderate level of new activities Significant support for skilled workers and supply chains

Option 3	Both additional and non-additional certificates Significant additional financial benefit to industry	Significant new activities and highest target Strong support for skilled workers and supply chains
Option alt. 1	Additional certificates only Second highest additional financial benefit to industry	Moderate level of new activities Some support for skilled workers and supply chains
Option alt. 2	Additional certificates only Greatest additional financial benefit to industry	Third highest target and significant new activities Significant support for skilled workers and supply chains

5.3.3 Health benefits of energy efficiency and electrification

Energy efficiency upgrades are associated with several health and comfort benefits in both homes and workplaces, and non-residential buildings. Energy efficiency upgrades are a cost-effective measure to support improved health and reduce healthcare related costs. [88]

The potential benefits of energy efficiency measures include improved physical health such as reduced symptoms of respiratory and cardiovascular conditions, rheumatism, arthritis and allergies, as well as fewer injuries. In cold climates, energy efficiency improvements can lower rates of excess winter mortality, while in hot climates; they can help reduce the risk of dehydration and negative health impacts. Additionally, people working in energy efficient buildings are less likely to suffer from fatigue, headaches or skin irritations.[89]

This section includes a qualitative discussion on how the following considerations can impact health outcomes:

- Thermal quality
- Gas usage.

Thermal quality

Thermal quality refers to whether the indoor temperature is comfortable and healthy.[90] Buildings with inefficient thermal quality are associated with adverse health and societal impacts, including respiratory and cardiovascular problems.

Building shell upgrades, such as weather sealing, window glazing and other new types of building shell upgrades, can support improved thermal quality, by both protecting inhabitants from the weather and hot or cold outdoor temperatures and retaining warm or cool air indoors. These upgrades make it more affordable for occupants to maintain indoor air temperatures at healthy levels, particularly when combined with efficient heating and cooling systems. A well-functioning heating and cooling system ensures a comfortable indoor environment, helping to cost-effectively mitigate the adverse effects of extreme heat and cold temperatures, while reducing emissions.[91]

All target options assume that due to potential market saturation, uptake for strip weather sealing upgrades will be very low.

Option 3 has the greatest outcomes for thermal quality, as it assumes new thermal shell activities are introduced and is the highest target option, while supporting the most heating and cooling upgrades. Option 2 has the second-best outcomes for thermal quality, as it is a moderate-high target level and supports the second most heating and cooling upgrades. This is followed by option alt. 2, which introduces additional thermal shell activities and is a moderate target level, but supports the lowest number of heating and cooling upgrades. Finally, option 1 and option alt. 1 are the least preferred options for thermal quality, as they are low target options, however option 1 supports more heating and cooling upgrades than option alt. 1.

[88] Sustainability Victoria (2022) The Victorian Healthy Homes Program, see: https://assets.sustainability.vic.gov.au/susvic/Report-Energy-Victorian-Healthy-Homes-program-research.pdf.

[89] IEA (2019), *Multiple Benefits of Energy Efficiency*, IEA, Paris, see: https://www.iea.org/reports/multiple-benefits-of-energy-efficiency, Licence: CC BY 4.0.

[90] IEA (2019), *Multiple Benefits of Energy Efficiency*, IEA, Paris https://www.iea.org/reports/multiple-benefits-of-energy-efficiency, Licence: CC BY 4.0.

[91] Sustainability Victoria (2024), *Save energy in the home*, see: https://www.sustainability.vic.gov.au/energy-efficiency-and-reducing-emissions/save-energy-in-the-home

Gas usage

Gas is used in over 2 million homes in Victoria. Appliances that are typically found in homes and business include gas heating (including open-flued room gas heaters), gas hot water systems and gas cooktops and stoves. There are several health risks of using gas, including gas leaks and health issues of ongoing exposure to gas particulates.

Several medical studies suggest that indoor gas appliances are associated with various health concerns, including respiratory issues in children.[92] Approximately 12 percent of childhood asthma cases in Australia could be attributed to harmful particles emitted by gas stoves.[93] Additionally, gas appliances introduce toxic chemicals such as volatile organic compounds (VOCs) into indoor environments, which is associated with heightened risks of asthma, cancer and other illnesses.[94]

Gas leaks can lead to asphyxiation and carbon monoxide poisoning. While gas itself is not toxic, it can pose serious health risks in enclosed spaces by displacing oxygen, leading to nausea, dizziness and asphyxiation if individuals are exposed to high concentrations for an extended period.[95] Carbon monoxide (CO) is a by-product of gas combustion.[96] CO poisoning poses a significant risk in environments where faulty gas appliances or inadequate ventilation systems are present. CO poisoning can range from mild to severe symptoms, and in extreme cases, death. [9798] In Victoria, three deaths have been attributed to CO poisoning associated with open flued gas space heaters between 2010 and 2018.[99]

As highlighted above, there are several health implications of indoor air pollution from gas appliances. The main regulatory scenario supports a high level of electrification upgrades for heating and cooling and a significant level of upgrades to induction cooktops. The alternative scenario supports a moderate level of electrification upgrades for heating and cooling, and a greater level of induction cooktop upgrades than in the main regulatory scenario. However, option 3 supports the greatest number of total electrification upgrades, followed by option 2 and option 1. Option alt. 1 is the fourth best option, followed by option alt. 2.

Analysis of health benefits of different options

The health benefits of different options discussed above are summarised in Table 21 below. Overall, all options will encourage improve health outcomes associated with energy efficiency and electrification upgrades.

Of the main regulatory scenario, option 3 is expected to produce the greatest health benefits, followed by options 2 and 1.

Of the alternative regulatory scenario, alternative option 1 is preferred, followed by alternative option 2.

Table 21: Summary of qualitative discussion on health benefits

Option	Thermal quality	Gas usage
Option 1	Low target Moderate support for heating and cooling upgrades	Moderate support for electrification upgrades

[92] Australian Journal of General Practice (2022), Health risks from indoor gas appliances, see: https://www1.racgp.org.au/ajgp/2022/december/health-risks-from-indoor-gas-appliances

[93] Knibbs et al (2018), Damp housing, gas stoves, and the burden of childhood asthma in Australia, Medical Journal of Australia, 208: 299-302.

[94] Harvard Health Publishing (2022), Have a gas stove? How to reduce pollution that may harm health, see: https://www.health.harvard.edu/blog/have-a-gas-stove-how-to-reduce-pollution-that-may-harm-health-202209072811>

[95] Queensland Government, Using natural gas and LPG safely, see: https://www.qld.gov.au/emergency/safety/home/gas/gas-safety

[96] Victorian Building Authority, Carbon Monoxide, see: https://www.vba.vic.gov.au/consumers/guides/carbon-monoxide

[97] Better Health Victoria, Gas heating – health and safety issues, see: https://www.betterhealth.vic.gov.au/health/healthyliving/gas-heating-health-and-safety-issues

[98] Department of Health (2023), Carbon monoxide poisoning, see: https://www.health.vic.gov.au/health-advisories/carbon-monoxide-poisoning

[99] Victorian Government (2018), Victorian Government response to the Coroners Court inquest into the death of Sonia Sofianopoulos, see: https://www.energy.vic.gov.au/__data/assets/pdf_file/0026/590336/Victorian-Government-Response-to-Coroners-Court-Open-Flue-Gas-Heaters-October-2018.pdf

Option 2	Moderate target Good support for heating and cooling upgrades	Good support for electrification upgrades
Option 3	Highest target Introduces additional thermal shell upgrades Strong support for heating and cooling upgrades	Strong support for electrification upgrades
Option alt. 1	Low target Low support for heating and cooling upgrades	Low support for electrification upgrades
Option alt. 2	Moderate target Introduces additional thermal shell upgrades Minor support for heating and cooling upgrades	Minor support for electrification upgrades

5.3.4 Risk and sensitivity analysis

All target setting modelling results are sensitive to risks. These risks include:

- unknown emergent risks which delay DEECA's activity development work program
- policy or technical investigation finds that a new activity is not justified
- safety issues for new activities are identified
- unforeseen legal issues block activity from being introduced
- ESC is unable to implement or adjust administration procedures for an activity
- an unstable market responds with price volatility to changes to the program
- unproven activities do not receive consumer uptake that is forecast
- technology supply chains cannot handle the increased volume forecast by the modelling.

Several of the above risks eventuated in the 2020-2025 VEU targets period:

- COVID-19 delayed the work program significantly with ongoing consequences
- refrigerated cabinets (RC) compliance issues delayed the work program, diverting significant resources from other activities
- legal complexities delayed the introduction of induction cooktop activity beyond expected timeframes.

Based on this recent experience, this sensitivity analysis looked at several key risks and how they might affect the modelling results. The below table outlines inputs assumptions that were modified in this analysis, and what risks changing those assumptions represent. Note this sensitivity analysis focused on the two most likely target scenarios to be the preferred option, options 2 and 3 in the main regulatory scenario. This was a result of limited resourcing and time constraints on this analysis.

Table 22: Risks and risk modelling assumptions

Modified input assumption into modelling	Risks represented by changing these assumptions
Several new activities are not able to be introduced	• Unknown emergent risks delay DEECA's activity development work program • Policy and technical investigation finds that a new activity is not justified • Safety issues for new activities are identified • Unforeseen legal issues block activity from being introduced • Regulator is unable to implement or adjust administration procedures for an activity due to regulatory complexities

An identified key electrification behaviour assumption: • Household uptake rate function for electrification upgrades is 25% lower than forecast	• Unproven activities do not receive consumer uptake that is forecast • Technology supply chains cannot handle the increased volume forecast by the modelling • An unstable market responds with price volatility to changes to the program
A combination of a range of more conservative assumptions around consumer behaviour: • Renters upgrade at 20% of the rate of private households (otherwise assumed to be 30% • Limiting the maximum uptake rate of electrification upgrades if incentives become greater than the marginal cost difference (electrifying may be cheaper than gas replacements in this risk scenario, but consumer uptake has already hit a maximum uptake rate). • Uptake rate multiplier under the proposed amendments to the building and planning regulations does not accelerate uptake, only the pool of opportunity for upgrades.	• Unproven activities do not receive consumer uptake that is forecast • Technology supply chains cannot handle the increased volume forecast by the modelling • An unstable market responds with price volatility to changes to the program

The below table (Table 23) outlines how modifying these assumptions impact the forecast VEEC price.

Table 23: Impact of assumptions on VEEC price

Modelled VEEC price sensitivity to risks	Target Option 2 (5m, 6m)		Target Option 3 (6m, 7.3m)	
	2026	2027	2026	2027
Main modelled scenarios (no risks eventuate)	$47	$50	$51	$63
One or more new activities not able to be introduced				
Risk modelling of consumer electrification behaviour is inaccurate				
Combination of above risks				
Risks modelling inputs for industry and consumer response to mandatory upgrades is lower than modelled				+$39.02
Risk modelling of both consumer behaviour, industry and supply chain in inaccurate (combination of above risks)		+$32.42	+$20.28	+$51.79

Less than $10 impact on VEEC price

$10-$20 impact on VEEC price

Most sensitive to VEEC price, $20-55 impacts

This sensitivity analysis outlines that the most sensitive assumptions are around electrification uptake behaviour and supply chains for electrification upgrades. For target option two, this results in a VEEC price increase of $32.42 in 2027.

This sensitivity analysis then fed those new certificate prices back into the NPV calculations to sense check how sensitive those results are (Table 24). Note other modelling was not iterated, given that this was a sensitivity analysis only the certificate pass-through costs were adjusted.

Table 24: Sensitivity analysis on higher certificate prices

	Units	Option 2	Option 3
Total NPV	NPV ($ millions, 2026)	$2,148	$2,199
Benefit-to-cost ratio	-	3.32	2.46
Bill only BCR	-	2.62	1.83
Benefits	NPV ($ millions, 2026)	$3,072	$3,707
Costs	NPV ($ millions, 2026)	$924	$1,507

These results indicate that the NPVs are still positive in Options 2 and 3, and both have good benefit cost ratios. The secondary outcome of this sensitivity analysis was to inform the shortfall penalty rate, as discussed in section 4.2.1.

Table 25: Certificate costs in modelled riskiest scenario

	Option 2		Option 3	
	2026	2027	2026	2027
Total certificate costs under worst case risk scenario in sensitivity analysis. These costs include: • Market certificate costs • ESC fees • Retailer administration costs, and price increases due to modelled risks	$52	$76	$68	$101

5.4 Identification of the preferred option

5.4.1 Summary of results

Table 26 below summarises the impacts for all identified options from the above CBA and other qualitative considerations, ranking the qualitative dimensions in order of what performs best.

Table 26: Impacts of the identified options and qualitative considerations

	Main regulatory scenario			Alternative regulatory scenario	
	Option 1	Option 2	Option 3	Alt. Option 1	Alt. Option 2
NPV ($ mil)	1,203	2,333	2,642	2,835	3,048
BCR	3.77	3.71	3.17	2.50	2.37
Energy affordability and equity	Second best performing	Highest performing	Third best performing	Highest performing	Second best performing
Industry investment and innovation	Third best performing	Second best performing	Highest performing	Second best performing	Highest performing
Health benefits	Third best performing	Second best performing	Highest performing	Second best performing	Highest performing

Risks	N/A not analysed	Lower risk	Considerably higher risk	N/A not analysed	N/A not analysed

Overall, for the main regulatory scenario, option 3 has the highest NPV and the largest benefits for industry investment and innovation, and health benefits. However, option 3 carries higher implementation risks, and thus a bigger range of expected outcomes based on sensitivity analysis. Option 2 has the second highest BCR, demonstrating better value for money, and is deemed the most preferred option when considering potential impacts on energy affordability, equity and implementation risks.

Note as stated in section 5.1, the qualitative factors are not all equally weighted. When considering all the factors holistically, DEECA considers the lower risks and higher energy affordability to outweigh the better performing aspects of option 3 on the other qualitative factors.

5.4.2 Preferred option

The preferred option put forth by this RIS is Option 2. Setting the 2026-2027 targets to 5 and 6 million certificates respectively would deliver the best possible outcome to the state, when all factors have been considered.

Option 2 has the second-greatest benefit cost ratio and strikes a considered balance between risks of setting targets too high that are vulnerable to a range of risks, against maintaining a strong greenhouse gas emission reduction ambition for Victoria. Option 2's net present value is still a very positive outcome at over $2 billion in net present savings for Victoria, even if it is not the highest net present value amongst the evaluated target options. Option 2 also has the best results for energy affordability and equitable distribution of benefits, supporting savings for both participants and non-participants. Overall, option 2 is the most ambitious target option in which non-participating households and small businesses benefit from the VEU program.

While Option 3 has the highest net present value of the options in the main regulatory scenario due to being a more ambitious target with higher carbon abatement benefits, this option is not preferred as it will result in a net increase to non-participating consumers' annual energy bills. Option 3 also has considerably higher risks compared to Option 2, as a higher target is more susceptible to movements in the underlying assumptions relating to consumer uptake and the introduction of new activities.

In the alternative regulatory scenario, alternative option 2 is preferred. This is due to alternative option 2 having a greater net present value. DEECA recognises that alternative option 2 does not have as favourable results for energy affordability for non-participants. However, Victoria must balance energy affordability with maintaining strong greenhouse gas emission reductions and continuing to support the VEU industry while the strategic review is underway.

6. Small business and competition impacts

This chapter assesses the small business and competition impacts from the preferred option.

6.1 Competition impacts

As Victoria is party to the Competition Principles Agreement, regulation in Victoria is required to include a competition assessment.[100] The Competition Principles Agreement sets out that any new primary or subordinate regulation should not restrict competition except where:

- restriction of competition is required to meet the government's objectives; and
- the benefits of restriction outweigh the costs.

Restrictions on competition can be identified where there will be changes to the way a market functions due to the implementation of the proposed regulation. Specifically, restriction can occur where:

- the number or range of suppliers is limited
- the ability of suppliers to compete is limited
- the incentive of suppliers to compete vigorously is reduced
- the choices and information available to customers is limited.

This is the 'competition test' which must be applied when making or amending regulations. It is important to note that the competition assessment does not preclude any option being selected as the preferred option, rather it requires that any restriction to competition should ensure that the benefits outweigh the costs and that the desired objectives can only be achieved by limiting competition.

In some cases, regulation can affect competition by preventing or limiting the ability of businesses and individuals to enter and compete within particular markets. The primary cost of a restriction on competition is that it reduces the incentives for businesses to act in ways that benefit consumers, that can result in lower innovation and productivity, reduced choice of products and/or higher prices.

The features of regulations that have potential to restrict competition either directly or indirectly are set out in Table 27.

Table 27: Types of regulation that may affect competition[101]

Category of restriction	Examples
Barriers to entry or exit	Governs the entry and exit of businesses or individuals into or out of markets. Creates or protects a single buyer or seller. Limits the number or types of businesses that can carry out a particular activity. Restricts who can own or operate a business. Gives existing businesses access to information that is not available to new market participants.
Conduct restrictions	Controls prices or production levels. Restricts certain activities (e.g., advertising). Imposes requirements on product quality. Restricts the quality, quantity or location of goods and services available.

[100] Better Regulation Victoria (2024), *Victorian Guide to Regulation.*

[101] Based on Assessment against the Competition Test, guidelines published by NSW Department of Finance, Services and Innovation, 2017, with additional examples from Competition and Regulation Guidance Note published by Australian Government Department of the Prime Minister and Cabinet Office of Best Practice Regulation March 2020 and the Legislation Impact Assessment Guidelines published by Tasmanian Department of Treasury and Finance December 2016.

	Restricts access to inputs used in the production process (e.g., infrastructure and employment standards), restricts the price of or type of inputs used in the production process. Limits consumer access to particular goods or services.
Increase in business costs	Imposes specific levies and/or imposts on a particular industry. Imposes high administrative or compliance costs.
Advantage for some firms over others	Imposes requirements on certain firms, but not on competing businesses. Sheltering some activities from the pressures of competition. Advantages government businesses over the private sector. Gives one business access to infrastructure, but not others.

Some regulatory arrangements may impose more than one restriction, and some restrictions may fall into more than one category.

Do the proposed regulations restrict competition?

Any affirmative answers to the questions in Table 28 indicate that the proposed regulations may be considered to restrict competition:

Table 28: Competition assessment questions

Question	Answer	Explanation
Are the proposed measures likely to limit the numbers of producers or suppliers to: • only one producer? • only one buyer? • less than four producers?	No	Continuing to set targets for the VEU program will ensure that there will be an ongoing market for energy efficient appliances. There are currently 116 active accredited providers working under the VEU program who will continue to be eligible to provide upgrades.
Would the proposed measures restrict the ability of businesses to choose their output, price or service quality?	No	The proposed regulations do not restrict or prescribe how upgrades under the VEU program will be delivered. Suppliers are free to deliver their products as before. Similarly, the regulations do not impose restrictions on accredited providers and scheme participants. Households and businesses can freely choose their preferred brand and suppliers available through the VEU program. Households and businesses will continue to be able to purchase equivalent products and upgrades outside the program if they prefer.
Would the proposed measures discourage entry into the industry by new firms/individuals or encourage exit from existing providers?	No	There is potential for the VEU program to crowd out other energy services which are not included as activities within the scheme. For example, gas appliance retailers or wholesalers cannot offer upgrades to gas appliances under the VEU program. However, this restriction is justified as the VEU program could not operate without prescribed activities, as the VEU program incentivises upgrades to support their uptake. Additionally, impacted businesses have the opportunity to switch their business to offer upgrades available under the VEU program. Setting targets for the VEU program will continue to support demand for eligible appliances, thereby encouraging new firms and accredited providers and scheme participants to enter the market. Under the VEU program, only accredited providers are able to create VEECs. To become a VEU accredited provider, a business must pay $3,000 to become an accredited provider, and then pay an annual fee of

		$1,000 to renew accreditation.[102] This may act as a limitation for small businesses to become an accredited provider, as not all businesses will be able to afford the program fees. However, there are several other ways that small businesses can be involved in the VEU program, such as through working with an accredited provider or aggregator to install VEU upgrades and provide discounts to their customers. Therefore, this is not considered a restriction on competition as the objectives of the regulation (i.e. creating VEECs) can only be achieved by restricting competition (i.e. requiring businesses to become an accredited provider to produce VEECs). In addition, the VEU program fees have been set in a manner that the upfront fees e.g. accreditation or product registration fees, amongst others, have been discounted and capped to reduce barriers to entry for smaller APs. This is a deliberate measure to encourage competition and innovation in the VEU industry.
Would the proposed measures impose higher costs on a particular class or business or type of service (e.g. small business)?	No	The proposed regulations are aimed at reducing the costs incurred by households and businesses in adopting energy efficient appliances. However, by making the proposed regulations, a liability on energy retailers is created. This adds a cost to energy retailers' operations. The additional cost to retailers is considered small in the context of their normal operating costs and retailers can pass the costs (and savings) of the program to their customers. As the liabilities are in proportion to the amount of energy each retailer supplies to their customers, the regulations do not alter the relative competitive positions of retailers. Therefore, the impact of the proposed regulations on the energy retail market is not expected to result in a material reduction in competition.
Are the proposed measures likely to make it more difficult for consumers to move between or leave service providers?	No	The proposed regulations do not impose any new restrictions on households and businesses in choosing their preferred appliance manufacturer and accredited providers.
Would the proposed measures affect the ability of businesses to innovate, adopt new technology or respond to the changing demands of consumers?	No	The proposed regulations do not place any restrictions on the way eligible suppliers can provide their products, and how accredited providers and scheme participants provide their services. By supporting demand for energy efficient appliances, the proposed regulations can incentivise innovation and continuous quality improvements.

Are any restrictions on competition justified?

The impost on energy retailers is small, relative to their scale, and unlikely to materially affect their ability to compete. Further, other savings associated with the proposed regulations reduce the overall costs to the energy sector, putting downward pressure on energy prices.

Any potential impacts on competition are considered justified given:

- the proposed regulations are expected to result in net benefits that outweigh the costs; and

[102] For a full list of VEU program fees, please visit https://www.esc.vic.gov.au/victorian-energy-upgrades/about-victorian-energy-upgrades-program/veu-program-fees

- the benefits (which are driven by improvements in energy efficiency) can only be achieved by the regulations giving operational effect to the program established under the VEET Act by setting a target necessary to result in emissions abatement.

In addition, the proposed regulations create a robust market in certificates that supports the objectives of the VEET Act to encourage investment, employment and technological innovation in industries that supply goods and services which reduce the use of electricity and gas by consumers. In the absence of the proposed regulations, these activities would not occur.

6.2 Small business impacts

To ensure the impacts of regulation on small business are examined appropriately, an assessment of the effects on small businesses is required. This aims to ensure that regulation does not impact business growth and productivity unreasonably, especially for small businesses.

Small businesses can experience disproportionate impacts from regulation due to limited resources or capability to interpret compliance requirements, and the cumulative burden of different requirements. The lack of economies of scale may affect these businesses' ability to comply with different options.

The VEU program provides a range of benefits for small businesses. These benefits include energy bill savings for both participating and non-participating small businesses in the preferred target option. Benefits also include significant opportunities for small businesses in the energy efficiency and electrification industry to provide goods and services to assist households and businesses with energy upgrades.

One potential restriction for small businesses is that under the VEU program, VEECs can only be created for the installation of approved products. This technically limits competition, as it reduces the pool of products available for installation and therefore reduces competition. However, in the case of VEU, it is beneficial to only allow installation of approved products to ensure that the only products being incentivised are those that meet the VEU program's energy efficiency standards.

Overall, the proposed regulations have a positive impact on small businesses, as small businesses will benefit from targets being set, as they will be able to continue to receive VEU discounts to undertake energy efficiency upgrades and reduce their ongoing energy costs. Introducing the proposed regulations will also benefit small businesses that supply to the VEU program and those that undertake installations by continuing to support demand for their products and services.

7. Implementation, monitoring and evaluation

This chapter outlines how the preferred policy will be implemented, communicated and evaluated by DEECA and the ESC as regulator of the VEU program.

7.1 Implementing the change

The targets will be set through amending the VEET Regulations (see proposed regulations) by 31 May 2025. This provides industry and consumers with seven months' notice of the new targets.

DEECA expects to be advised of the outcomes of other relevant regulatory processes in the upcoming months (Table 29). These will influence which regulatory scenario the VEU program operates in, which may change the preferred option for the 2026-27 targets.

Table 29: Timeline of interacting regulatory processes

Regulatory process	Impact	Timeframe
Minimum standards for rental properties and rooming houses (via amendment to the *Residential Tenancies Regulations 2021 and Residential Tenancies (Rooming House Standards) Regulations 2023)*	Rental providers required to replace hot water and heating systems with energy efficient electric appliances when their current appliance reaches end of life	RIS released in June 2024 Decision expected in late 2024, subject to Ministerial approval.
Building electrification (via amendment to building and planning regulations*)*	Options to electrify residential homes and commercial buildings	RIS to be released late 2024 with preferred option.
VEET Act Amendment	Clarification of additionality requirement for mandated upgrades to allow mandated upgrades to be prescribed under the VEET Regulations to receive VEU incentives	Prior to May 2025.

As outlined in section 5.4.1, under the main regulatory scenario (where the above act amendments and regulations pass), DEECA proposes to implement option 2 as the preferred option, subject to stakeholder feedback to the RIS. DEECA will commence work to prescribe new activities and prescribe activities mandated by other regulations to be eligible for VEECs.

Under the alternative regulatory scenario (see section 4.3.1) where the proposed regulations and legislation do not pass, DEECA proposes to implement option alt. 2 as the preferred option, subject to stakeholder feedback to this RIS. In this scenario, DEECA will commence work to prescribe new activities.

DEECA acknowledges uncertainty associated with the outcomes of the proposed regulatory and legislative amendments and has made reasonable assumptions to present and analyse five options covering the spectrum of expected outcomes. As the decisions around those proposed changes are expected to become known by May 2025, DEECA will factor these into the recommended targets provided to the Minister of Energy and Resources, following the public consultation period. Depending on the timing of these decisions, the response to consultation may incorporate explanations of adjustments to the assumptions in the final regulatory environment that the targets will be set within.

As noted in section 1.1, the Minister for Energy and Resources must have regard to the yearly emission reduction targets when setting the greenhouse gas reduction rates for a particular year, because these rates determine the liability for meeting the VEU targets proportionally amongst liable retailers. The number of VEECs each retailer must surrender for a year is calculated by the greenhouse gas reduction rates for electricity and gas for that year multiplied by the quantity of electricity and gas sold to the relevant customers

in that year.[103] The rates therefore are critical to give effect to the target and must be made to ensure the benefits for the VEU program for Victorian households and business can be realised. In addition to seeking feedback on the proposed target options and regulations, this RIS also seeks stakeholder feedback on the impact of setting the greenhouse gas reduction rates for the years 2026-27.

DEECA recognises that the proposed changes in the preferred option (Option 2) for the proposed regulations may have an impact on stakeholders participating in or engaging with the program. Impacts are attributed to the immediate setting of targets, but also how the program can be further developed to best meet these targets. To provide ease of implementation, DEECA is committed to:

- Ensuring changes are communicated clearly
- Acknowledging the changes transparently
- Developing new activities efficiently.

7.2 Communicating the change

Key VEU stakeholders were aware in advance that work to set the next tranche of targets would commence in 2024. Additionally, all consumers can view the public VEU work program[104] to view upcoming policy work and consultations.

DEECA will ensure that changes are communicated on multiple occasions and in various formats, including through meetings, publishing informative documents online, updating the Engage Victoria page and by hosting a webinar if needed.

DEECA will communicate the new targets by:

- publishing a government response to stakeholder feedback on this RIS on the Engage Victoria webpage[105]
- gazetting the final regulations to set the targets
- delivering communications to households and businesses via a quarterly newsletter
- delivering targeted communications for the VEU industry via the mailing list[106] and DEECA's industry news updates webpage.[107]

The ESC will communicate the proposed targets to accredited providers and scheme participants as required to administer and regulate the VEU program.

7.3 Monitoring, review and evaluation

DEECA and the ESC will continue to monitor consumer feedback about the program. DEECA and the ESC will continue to regularly collect and analyse data on VEEC creation, price and activity uptake to monitor the VEEC market. This will allow DEECA to assess whether the program is on track to meet targets and deliver the intended benefits.

DEECA and the ESC will monitor the introduction of any new activities and identify any operational challenges to address as part of DEECA's work to continuously improve the program.

Additionally, DEECA and the ESC will work together to monitor the risks outlined in section 5.3.4 of this RIS and implement mitigation measures should any of the risks eventuate.

[103] If an energy retailer fails to surrender its required number of VEECs for a year, then it will be liable to pay a shortfall penalty for each VEEC it fails to surrender.

[104] DEECA 2024, *Industry market update and work program*, see: https://www.energy.vic.gov.au/victorian-energy-upgrades/installers/industry-market-update-work-program

[105] See https://engage.vic.gov.au/victorian-energy-upgrades-program-targets

[106] DEECA 2024, *Victorian Energy Upgrades for installers,* see*:* https://www.energy.vic.gov.au/victorian-energy-upgrades/installers>.

[107] DEECA 2024, *VEU latest industry news*, see: https://www.energy.vic.gov.au/victorian-energy-upgrades/installers/veu-industry-latest-news>.

DEECA intends to undertake further modelling and data collection on the distribution of costs and benefits between renters and homeowners, household income groups and for vulnerable and/or at-risk Victorians for future target periods.

The ESC will continue to regulate the VEU program and engage with industry to ensure ongoing compliance.

The proposed regulations set the targets until 2027. In 2027, DEECA will need to establish a future set of targets for the 2028-2030 period. At this point, DEECA will review the operation of the VEET Regulations before remaking them again in line with the requirements set out in the *Subordinate Legislation Act 1994.* To inform this future target setting RIS process, DEECA will evaluate the appropriateness of the 2026-2027 targets and the effectiveness of the program. This evaluation may occur as part of the strategic review of the VEU program, or separately to support the future target RIS. If DEECA undertakes a separate evaluation to support the next targets RIS, the scope of this evaluation would be limited by the data and insights available in the first 12-18 months of the 2026-2027 target period.

It is expected that the review of the effectiveness of the program will draw on evidence including:

- the number of activities created for each type of activity and the level of surplus certificates
- market information on the prices of VEECs
- the number of households and businesses that participate in the program
- information on how low-income consumers engage with the program
- consultation with community on the operation of the program.

DEECA will continue to work closely with the ESC on the data generated by the program. This includes the number of accredited providers engaged in the program and uptake of new activities. This will help with measuring the impact of the proposed targets on accredited providers and the VEU industry more broadly. DEECA and the ESC will also investigate other relevant data sources to be collected and analysed for the purpose of program monitoring and evaluation.

Appendix A: How the VEU program works

This appendix provides a high-level summary about the design and operation of the VEU program.

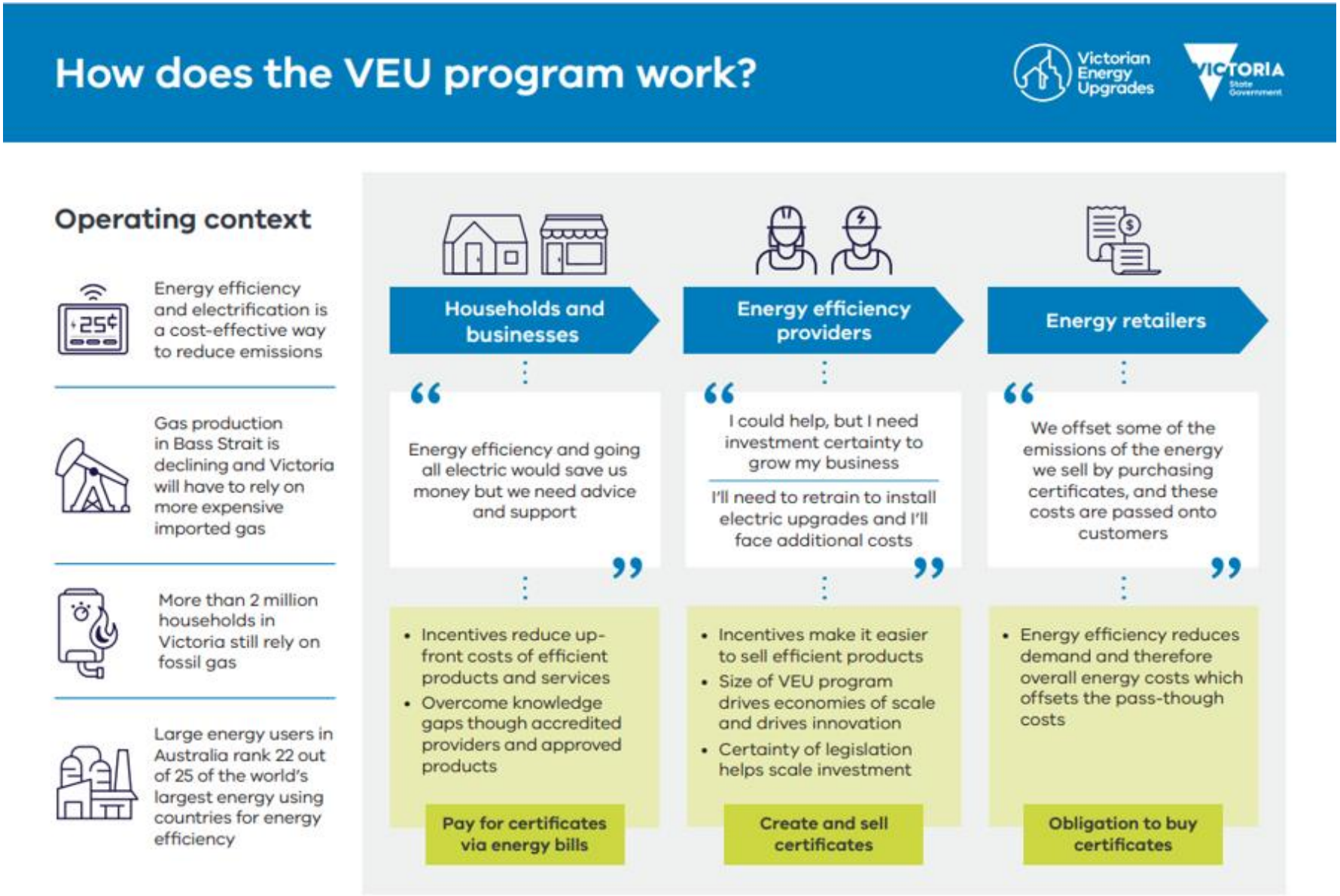
The VEU program is the state's largest energy efficiency program and a key measure in Victoria's *Climate Change Strategy*. It is a market-based program designed to promote energy efficiency by providing incentives for upgrades undertaken in Victorian households and businesses. Incentives are provided for a broad range of upgrades, including energy efficient hot water systems, heating and cooling, and weather sealing.

How the VEU program works

1. **Consumers receive discounted energy efficient upgrades**
   - The VEU program provides incentives to consumers to invest in energy efficiency upgrades. It does this by creating tradeable certificates, referred to as Victorian Energy Efficiency Certificates (VEECs, or certificates). Certificates represent the amount of emissions reduced by the upgrade.
   - These VEECs can be used to lower the costs to consumers of upgrades. The costs that consumers see for a technology upgrade is discounted due to the subsidy from the VEECs. As a result, more consumers can access upgrades and reduce their energy bills.
2. **Accredited providers create and sell VEECs**
   - When APs (businesses accredited to operate under the VEU program) undertake eligible energy efficiency upgrades in homes or businesses, they create VEECs. VEECs are registered with the ESC and then sold by APs to energy retailers, who must meet an emission savings target each year based on their annual electricity and gas sales. Each VEEC represents one tonne of greenhouse gas emissions saved over the lifetime of the upgrade. The value of VEECs is created through this market.
   - This value enables APs to reduce the costs paid by consumers when investing in energy efficiency upgrades.
   - Currently, VEECs can be created in two ways:
     - through upgrades that use a simplified approach, whereby the greenhouse gas abatement (and the number of VEECs) for each activity is 'deemed' through a standard method
     - through project-based upgrades, which are customised, generally large scale and involve measurement of the actual energy saved.
3. **Energy retailers buy VEECs**
   - Energy retailers are obliged to buy VEECs to meet the energy saving target for the year. Energy retailers have a greenhouse gas emissions liability which must be met by the surrendering of certificates.
   - The number of VEECs a retailer needs to surrender each year depends on the amount of energy they purchase from the wholesale energy market. Each retailer is responsible for a share of the annual VEEC target.
   - Energy retailers pass the cost on to their customers – including those not participating in the VEU program but excluding some large energy users who are exempt– through higher energy prices. Historically, this additional cost to consumers has been more than offset by the reduced demand for energy brought about by improved energy efficiency, which puts downward pressure on retail energy prices.
4. **Suppliers invest in new technologies**
   - Suppliers of VEECs invest in new business models to deliver upgrades at scale. This has seen new technologies develop and rapidly achieve market penetration (for example, LED lighting). This has resulted in significant employment both to identify and deliver installations, in the manufacturing of products, and investments to generate new upgrades.

For a diagram summarising how the VEU program works, see Figure 14.

Figure 14: How the Victorian Energy Upgrades program works



Appendix B: National energy policies and commitments

This appendix provides an overview of national and state energy policies and programs that support emission reduction targets.

National policies

Various national policies and programs are designed to reduce energy sector emissions:

- The National Energy Productivity Plan (NEPP), launched in December 2015, aims to improve Australia's energy productivity by 40 per cent by 2030. This includes enhancing building efficiency and quality, strengthening energy efficiency standards for new appliances and equipment, removing market barriers to new technologies and services, empowering energy consumers, and supporting innovation and competition in energy markets.
- The National Energy Performance Strategy (NEPS), released in April 2024, provides a long-term framework to manage energy demand, so our community can enjoy the economic, climate and health benefits of improved energy performance. The framework will also contribute to Australia meeting our legislated emissions reduction and renewable energy targets.[108]
- National Greenhouse and Energy Minimum Standards Determinations (GEMS Determinations) set out what products are covered by energy efficiency regulations and establish the requirements that must be met by those products before they can be registered and supplied in Australia.
- The National Construction Code (NCC) sets minimum energy performance standards for newly constructed (or significantly renovated) residential and commercial buildings.
- The Renewable Energy Target (RET) is an Australian Government scheme which aims to reduce greenhouse gas emissions in the electricity sector and increase renewable energy generation. The RET sets a target to deliver an extra 33,000 gigawatt-hours (GWh) of electricity from renewable sources each year from 2020 to 2030.[109]
- The Commonwealth Government Emissions Reduction Fund is a voluntary scheme that incentivises organisations and individuals to adopt new practices and technologies to reduce their emissions or store carbon. This is complemented by the Safeguard Mechanism, which requires Australia's highest greenhouse gas emitting facilities to reduce their emissions in line with Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050.
- The $1 billion Clean Energy Finance Council Household Energy Upgrades Fund (HEUF) is focussed on helping homeowners fast track their transition to cheaper, cleaner energy. Through the HEUF, the Clean Energy Finance Council works with established co-financiers to provide discounted consumer finance to fast-track sustainability improvements in existing homes.

Victorian policies and commitments

Where possible, Victorian policies are developed to leverage and complement the above policies to assist Victorians to save on their energy bills, tackle climate change and build a cleaner, renewable future:

- The Victorian Government supports households with their energy bills through the Energy Assistance Program which provides free, tailored, one-on-one help navigating the energy market and saving money on their energy bills.[110]
- The Solar Homes Program provides Victorians with rebates or interest-free loans to install solar panels, batteries, and hot water systems.[111]

[108] Department of Climate Change, Energy, the Environment and Water, see: https://www.dcceew.gov.au/energy/strategies-and-frameworks/national-energy-performance-strategy

[109] Australian Government, Clean Energy Regulator, see: https://cer.gov.au/schemes/renewable-energy-target#:~:text=The%20RET%20sets%20a%20target,less%20carbon%2Dintensive%20energy%20system

[110] Victorian Government, What's happening in the energy market, see: https://www.energy.vic.gov.au/about-energy/whats-happening-in-the-energy-market>

[111] Solar Victoria, see: www.solar.vic.gov.au

- Victorian Renewable Energy Target auctions[112] help the state meet its renewable energy targets by providing long-term contracts that create investment certainty to build new energy generation projects.
- The State Electricity Commission of Victoria (SEC) is a government-owned renewable energy company supporting households to go all-electric to reduce their energy bills and emissions.[113]
- The Gas Substitution Roadmap (GSR) outlines key reforms to support the renewable gas industry and rapid electrification for homes and businesses, to achieve net zero emissions while cutting energy bills and ensuring reliability.[114]

Setting targets for the VEU program post 2025 is essential to build upon these policies and maximise benefits which reduce emissions, create new jobs, and improve health for Victorians, while minimising costs to the state to transition to a net zero emissions economy.[115]

[112] See https://www.energy.vic.gov.au/renewable-energy/victorian-renewable-energy-and-storage-targets

[113] See https://www.secvictoria.com.au/

[114] See https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

[115] Independent Expert Panel, Interim Emissions Reduction Targets for Victoria (2021-2030), see: https://www.climatechange.vic.gov.au/__data/assets/pdf_file/0016/420370/Final-Report_Interim-Emissions-Reduction-Targets.pdf

Appendix C: Emissions factor

This appendix provides a high-level analysis of previous and current emissions factor forecasts.

These proposed emissions factors minimise disruption to consumers considering electrifying their homes and businesses. Electrification upgrades will continue to receive the same amount of VEEC rebate, as will electricity efficiency upgrades. The emissions factors also provide certainty for APs in planning their business models.

The electricity emissions factors for 2026 and 2027 are proposed to be fixed at the 2025 level of 0.393 tonnes of CO_2e/MWh:

Table 30: Emissions factors

Year	2025	2026	2027
Electricity Emissions factor	0.393	0.393	0.393

Monitoring of previous emissions factor forecasts

It is worth noting that forecast emissions factors are based on ten year average appliance lifetimes, so emissions are averaged over the following ten year periods. This means that we cannot yet confirm how accurately the emissions factors were forecast in 2019. Despite this, updated modelling indicates that the emissions factors have not decreased as rapidly as forecast. There are two key reasons for this:

- Maximum potential build rate of pumped hydro capacity. Previous forecasts modelled a significant amount of pumped hydro across the NEM. This forecast has since been moderated, due to updated pumped hydro cost and schedule forecasts.
- Updated AEMO scenarios and policy assumptions. This is purely a function of more time having passed and updated forecasts and announced policies being available as input assumptions.

Based on this updated modelling, DEECA has proposed fixing the emissions factors for 2026 and 2027 at the same level as 2025, rather than continuing to decrease the factors as has happened throughout the current targets period.

Current and future emissions factor forecasts

Table 31: Historical emissions factor and proposed emissions factors for 2026-27 target period

Emissions factor model	2020	2021	2022	2023	2024	2025	2026	2027
Current emissions factors	1.0950	0.9546	0.8142	0.6738	0.5334	0.3930		
Proposed emissions factors for this target period							0.3930	0.3930

Appendix D: Residential economic model detail.

This appendix provides a high-level overview of the model which was developed to predict future behaviour of residential-type activities under the VEU program over the years 2022 to 2027.

Overview

An independent consultant developed a spreadsheet model to predict the future behaviour of the Victorian Energy Upgrades (VEU) Scheme certificate market for residential-type activities over the years 2022 to 2027 under a range of scenarios and certificate price settings. The model was developed initially for the VEET[116] Business Impact Assessment (2007) and has been updated and improved for all subsequent VEET/VEU target setting exercises undertaken between 2011 and 2019, as well as for the current modelling exercise.

The model simulates the performance of the VEU residential certificate market by estimating the annual uptake of all residential activities and annual certificate creation for a specified VEU certificate (VEEC) price in each calendar year. It has been tuned using the historical VEU certificate creation data for the 2022 and 2023 calendar years, and the projected certificate creation in 2024, based on VEU activities undertaken in these years, to help ensure that it is as accurate as possible in the short to medium term.

The model allows the user to select one of two different VEU scenarios to be modelled:

- **Main regulatory scenario** – Both the proposed Minimum Rental Standards (MRS) and proposed amendments to the building and planning regulations, implemented from 2026. The additionality requirements in the VEET Act are also amended which allow all energy savings achieved in households impacted by the MRS and amendments to building and planning regulations to be counted towards the number of VEECs created.
- **Alternative regulatory scenario** – VEU only, with no other policies and no changes to the additionality requirements in the VEET Act.

While the main aim of the current exercise is to establish new VEU targets for 2026 and 2027, the market for residential-type activities is also modelled for the 2022 to 2025 (current) target years. This is partly to compare the modelled outputs with the historical (2022 to 2024) performance of the market, and partly because the uptake of VEU residential activities from 2022 to 2025 has some impact on the 'market capacity' (see below) in 2026, and therefore the modelled uptake of activities from 2026.

The updated model accounts for changes to the VEU activities and certificate algorithms since 2019, including activities that were removed from the scheme in 2022[117] and 2023[118], new electrification activities introduced in mid-2023[119] and changes to the certificate algorithms and emission coefficients. It covers all existing VEU residential-type activities (Sch 1 to 30, 45) that are likely to generate some certificates, as well as several possible new activities[120].

How the residential model works

The model estimates the total uptake of the various residential-type VEU activities in each target year modelled, *based on a certain certificate price* (the key independent input to the model), and therefore also estimates the number of certificates generated for each measure and the total number of residential certificates generated in the VEU Scheme. In addition to this, the model estimates the cost of creating the certificates, the consumer financial contribution which is required for the energy efficiency measures taken up, the total annual electricity and gas savings generated over the lifetime of the energy efficiency measures which are implemented, and the monthly and daily profile of the energy savings in each year.

[116] Victorian Energy Efficiency Target - the original name of the scheme and is still the title used for the Act.

[117] Residential lighting upgrades (Activity 21) were removed in February 2022.

[118] Several activities that incentivised the replacement of electrical appliances with high efficiency as appliances, or the replacement of gas heating and water heating appliances with high efficiency gas appliances were removed in mid-2023.

[119] This includes Activity 3C to replace a gas water heater with a high efficiency heat pump water heater, and Activity 6 that provides an incentive for upgrading all existing heating types, including gas ducted and room heating, to a high efficiency reverse-cycle air conditioner.

[120] Note that the inclusion of new measures in the modelling does not necessarily mean that these *will* be adopted in the VEET Regulations in future.

The key driver for the model is the VEU financial incentive received by the households – linked to the VEEC price and the number of VEECs created per upgrade - expressed as a percentage of the additional cost to implement each activity under business-as-usual (BAU)[121]. This metric is used as an input to an Uptake Rate Function, which is used to estimate the annual uptake of each activity, and therefore the total uptake and number of residential VEECs created in any year. Increasing the VEEC price increases the value of the financial incentive, and so increases total uptake and certificate creation.

The model contains a number of key input parameters, and in most cases the input assumptions used for each parameter depend on the specific VEU activity being modelled. The key input parameters used in the model are described below.

Key high level input parameters

VEEC price

The VEU certificate (or VEEC) price is the key independent input to the model. The user enters a VEEC price (in dollars) for each year, and the model estimates the total annual uptake of all residential activities in each year at this price and the total number of residential certificates created. It is assumed that the registration cost of the certificates has been deducted from the price entered into the model. The VEEC price is increased until the desired residential certificate target is reached in each year. This process is undertaken progressively from 2022 to 2027, as the certificate creation in one year is dependent to some extent on the certificate creation in the previous years.

Assumed AP margin on the VEEC price

A discount is applied to the VEEC price prior to the consumer VEU incentive (VEECs x consumer VEEC price) being calculated. For the modelling a High (20%) margin was selected for the high-cost activities and a Low (10%) margin for the low-cost activities. The margin is applied to the relevant VEU activities in each year. Increasing the AP margin reduces the consumer VEU incentive for any given VEEC price and so reduces uptake and certificate generation.

Emissions coefficients

The emissions coefficients for electricity and gas – expressed in kg CO_2-e per MJ - are used to calculate the average number of VEECs created for each of the upgrade activities, based on the average annual electricity and gas savings (in MJ per year) achieved by each upgrade. The coefficients for 2022 to 2025 are those set out in the current VEU Specification, and the emissions coefficients for 2026 and 2027 are the ones specified by DEECA. For electricity, they are based on projected 10-year average emissions coefficients in the NEM.

Learning rate cost discount for electrification upgrade costs

This allows annual cost discounts to be applied to the 'Additional cost' (see below) of the electrification activities, to account for the likely reduction in the average cost of these activities due to increasing uptake in coming years driven by both the VEU Scheme and other government policies[122]. The learning rates can be selected from a drop-down menu, are technology specific and apply to all activities that utilise this technology starting from 2025. Increasing the learning rate discount decreases the additional cost for the VEU upgrade, and so increases uptake and certificate generation.

Energy saving increase for electrification upgrades

The average annual energy savings for the electrification activities can be increased each year from 2025 by selecting an energy saving learning rate higher than 0% from a drop-down menu. The energy saving learning rates are technology specific and apply to all activities that utilise a specific technology. They are intended to account for the likely increase in efficiency of the average product installed under VEU in future years as uptake increases and APs seek to maximise the number of VEECs created by sourcing higher efficiency products[123]. Increasing the energy saving percentage increases the annual energy savings for these upgrade activities, the

[121] Note that BAU depends on the scenario being modelled. BAU for the alternative regulatory scenario is very different compared to BAU for the main regulatory scenario for the upgrade activities impacted by the MRS and the proposed amendments to the building and planning regulations.

[122] Cost reductions could be associated with the equipment, due to increased volume of sales, or due to more efficient marketing and installation processes. The largest cost reductions are expected for activities that currently have a relatively low level of uptake (e.g. ducted or multi-split RACs) or for new technologies (e.g. induction cooktops).

[123] Market intelligence from DEECA suggests that several reverse-cycle air conditioner suppliers are making changes to their products to ensure that they are eligible for inclusion in the scheme.

number of VEECs created per upgrade, and the consumer incentive at a certain VEEC price, and will increase uptake and total certificate creation. The energy saving increase rates chosen for the modelling are shown below. They are consistent with a 2 to 3% annual increase in efficiency that generally results from energy labelling schemes, which focus both consumer and supplier attention on the efficiency of the products.

The individual VEU upgrade activities included in the model are defined by several different assumptions which are described below. In some cases, the assumptions are changed for each year between 2022 to 2027.

Assumptions are input for each of the regulatory scenarios included in the model, although common assumptions are used for 2022 to 2025 for all scenarios, as these years cover the current target period. The assumptions are adjusted for 2026 and 2027 for those VEU activities impacted by either the proposed amendments to building and planning regulations or the Minimum Rental Standards under the main regulatory scenario. In this case, the relevant VEU activities[124] have been split into cohorts covering either private households or rental households so that different assumptions can be applied as required.

Market capacity - BAU

This was previously referred to as the "Pool of Opportunity". It is the estimated total number of upgrades (units) that could be undertaken under business-as-usual in any year. In some cases, the market capacity will grow under BAU from 2022 to 2027 and in some cases, it will remain stagnant or decline. This is controlled by the Capacity Growth (%) input assumption (see below). In most cases, the Market Capacity only needs to be input for the alternative regulatory scenario for 2022. For Activities 1D, 1C, 3C and 6, the Market Capacity - BAU needs to be manually entered for 2026 for both the Private and Rental cohorts. Note that in the model the total Market Capacity in any given year is reduced to account for the modelled VEU uptake in previous years. If the modelled cumulative uptake exceeds the BAU Market Capacity, then the activity will cease as the "pool of opportunity" has been used up.

For the appliance upgrade and electrification activities, the Market Capacity has generally been obtained from the most recent (2021) Residential Baseline Study prepared for the national Equipment Energy Efficiency (E3) Committee. Data from reports prepared for DEECA by BIS-Oxford Economics[125] and from the Victorian Energy Efficiency Scorecard team has also been used.

Capacity Growth (%)

This is the estimated average annual change in the Market Capacity - BAU over the period 2022 to 2027 for each activity. Generally, the same figure is used for all years from 2022 to 2027, and the values entered for the alternative regulatory scenario are copied over to the main regulatory scenario. The capacity growth rate is applied to the Market capacity (units) in the previous year to estimate the Market capacity - BAU in the current year.

For the appliance upgrade and electrification activities, the average capacity growth rates were derived from an analysis of the 2021 Residential Baseline Study data for Victoria.

Max Uptake - BAU (%)

This is the estimated Maximum Uptake Rate (e.g. maximum number of upgrades possible each year) expressed as a percentage of the Market Capacity – BAU. In the model, the Max Uptake - BAU (%) is defined to be the annual rate of uptake for a VEU incentive that is 100% of the Additional cost. It takes into account both demand side and supply side factors. For the appliance upgrades modelled it is based on the estimated natural turnover rate of the appliance stock (linked to the average life of appliances) and survey data on consumer willingness to consider certain upgrades (e.g. electrification).

The Max Uptake - BAU (%) for the Rental households for VEU Activities 1C, 1D, 3C and 6 in the main regulatory scenario are calculated from the data entered for the Private household cohort, based on the "Uptake rate discount - MRS Rentals" (see below). Note that the Max Uptake - BAU (%) settings can be modified by the selections made for the "Uptake rate multiplier for amendment to building and planning regulations " and "Uplift factors" (see below).

The Max Uptake – BAU (%) is applied to the Market capacity – BAU (units) to calculate the Max Uptake (units) in each year.

[124] Water heating upgrade activities 1C, 1D and 3C. Heating upgrade Activity 6.

[125] This was particularly useful for segmenting appliance ownership into the private and residential sectors for the VEU activities impacted by the MRS.

Max Uptake Market Cap

This sets an absolute limit (units) on the number of upgrades that can be undertaken in a given year for each activity. For the appliance upgrades it is based on the estimated natural retirement rate of the appliance stock. For other VEU upgrade activities it is based on a combination of judgment and the historical uptake data.

Electricity (or gas) savings for VEECs

This is the estimated average annual electricity and gas savings (in MJ/yr) for each upgrade activity and is used to calculate the average number of VEECs created every time an upgrade is undertaken[126]. In most cases the estimated energy savings are based on an analysis of the ESC's installation data for the activities for 2022 and 2023, combined with the relevant VEEC algorithms.

The energy savings used to calculate the VEECs are the same for both regulatory scenarios.

Electricity (or gas) savings additional

This is the estimated additional average annual electricity and gas savings (in MJ/yr) achieved every time an upgrade is undertaken.

For the main regulatory scenario, the energy savings used to calculate the VEECs for residential electrification of water heating and space heating activities are significantly higher than the additional electricity savings as the additionality requirements in the VEET Act are assumed to have been modified. The energy savings used to calculate the VEECs are the same as for the alternative regulatory scenario, but the actual energy savings are the estimated average difference between the BAU product installed under either the MRS in rental properties, or the BAU product installed in private households under the amendment to the building and planning regulations, and the average VEU eligible product.

The actual additional energy savings for both regulatory scenarios are the same.

Deeming period

This is the assumed lifetime of the energy savings for each upgrade in years and is used to calculate the average lifetime emission saving and therefore the average number of VEECs created by the activity. For existing VEU activities, this is based on the deeming period set out in the VEU Specifications.

Additional cost

This is the estimated average additional cost (in dollars) faced by the households undertaking the VEU upgrade compared to BAU. For the low-cost upgrade activities (lighting, low flow shower roses, draught sealing, IHDs) it is the full cost of the upgrade in the context of the VEU market[127]. It is assumed that in most cases, the appliance upgrades will be undertaken when an existing appliance is at, or close to, its end of life. In this case, the additional cost is the estimate average cost difference between installing the more expensive VEU eligible appliance and the standard new replacement appliance.

The Additional cost does not take into account other financial incentives that are available, such as the Solar Victoria rebate for heat pump and solar-electric water heaters, or the STC financial incentives available for these same products, as these can vary over the modelling period. These other incentives are accounted for during the uptake modelling for each activity.

Small Technology Certificates (STCs)

For Activities 1 and3C, the estimated average number of STCs for the VEU eligible products in Zone 4 is entered for 2022. Note that the number of STCs are reduced each year, as the STC allocation is reducing to zero by 2031. For Scenarios 2 and 3, the STC values entered are based on the estimated difference in the number of STCs available for the VEU eligible products and the number of STCs available for the BAU products installed under the amendment to the building and planning regulations and/or MRS.

Rebate

[126] The annual electricity and gas savings are multiplied by the relevant emissions coefficient and by the deemed lifetime to estimate the lifetime emissions savings. 1 tonne CO_2-e of emissions savings is equal to 1 VEEC.

[127] In this case the product cost is generally much lower than the retail cost, due to the large-scale in which these activities are taken up, but there are installation and administration costs associated with the upgrades.

The model makes provision to input a rebate amount (in dollars) for many of the appliance and building shell upgrade activities. Currently there is only a rebate from Solar Victoria for Activities 1 and 3C if a heat pump or solar-electric water heater is installed.

Changes in the VEU activity assumptions for the different policy scenarios

The model can accommodate the two policy scenarios described in the Overview. The policy scenario chosen has implications for the assumptions used to model the different VEU activities.

The alternative regulatory scenario is simply a continuation of the VEU Scheme in its current form, with certain activities expected to reach market saturation and uptake reduced from 2026 and the possibility of some new activities being introduced from 2026. The energy savings used to calculate the VEECs are based on the average savings found now, although savings for the electrification activity could increase over time. The Additional costs are largely the same as those found now, although the cost for some technologies could reduce each year from 2025, driven by increasing uptake of the key activities.

The main regulatory scenario assumes that the proposed Minimum Rental Standards and proposed amendments to the building and planning regulations are introduced and have a significant impact on the VEU market from 2026. The MRS requires that rental providers replace all heating with a reverse-cycle air conditioner and all water heating with either a heat pump water heater (most likely option) or a solar electric water heater at end of life. In both cases there are minimum efficiencies specified for the replacement reverse-cycle air conditioner and heat pump or solar-electric water heaters. Any gas heating or gas water heating fuelled by gas would have to be electrified[128]. The proposed amendments to the building and planning regulations requires that private households replace any gas heating or water heating with an electric heater/water heater at end of life, although in this case there is no specify electric technology or minimum efficiency required.

Under these scenarios, the additional cost faced by the rental providers or private households that are required to electrify and/or upgrade the efficiency of heating and cooling equipment is generally much lower than in the alternative regulatory scenario. It is the difference in cost between the average VEU product installed and the standard product installed under the MRS or amendments to the building and planning regulations. Similarly, the *actual* energy savings in the households impacted by these policies are much lower. There are no actual gas savings from replacing gas heating or water heating, as this is required under both MRS and the proposed amendments to the building and planning regulations. The electricity savings are just the difference between the electrical heating and water heating that must be installed under BAU and the VEU eligible products. They are lower for the rental households compared to the private households, because the MRS requires heat pump water heating and reverse-cycle air conditioners with a minimum efficiency to be installed.

Note that for the main regulatory scenario it is assumed that for the water heating upgrades the private households required to electrify will opt for a combination of storage electric water heaters (lowest replacement cost) and heat pump water heaters (highest replacement cost). It has been assumed that 70% of the private households will opt for the electric storage water heater and 30% for a standard heat pump water heater[129]. In both cases, the VEU scheme could incentivise private households to upgrade to the more efficient VEU eligible heat pump water heater. For this activity (3C) for private households, the Additional cost, energy savings and VEECs are based on a weighted average of the cost for households upgrading from either an electric storage water heater or standard heat pump water heater to the average VEU heat pump water heater.

For the main regulatory scenario, the energy savings are the same as for the alternative regulatory scenario and are the average energy savings between the VEU eligible product and the product being replaced.

Calculating the activity uptake and VEEC creation

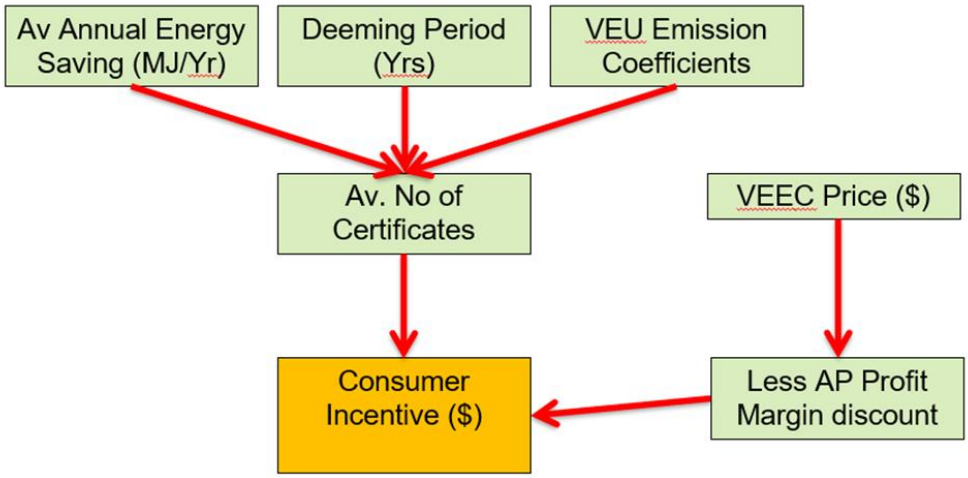
For each VEU activity, the average electricity and gas savings for VEECs are multiplied by the relevant VEU emission coefficients for each year and the Deeming period to estimate the total lifetime emissions abatement, and therefore the average number of VEECs generated in that year, for each upgrade undertaken. For activities that generate only a few VEECs the rounding rules are applied to this value. The estimated number of VEECs is then multiplied by the consumer VEEC price - the VEEC price entered in the "Control Panel"

[128] This only applies to gas appliances connected to the distributed gas networks, it does not apply to gas appliances run off bottled gas.

[129] These settings can be adjusted in the model.

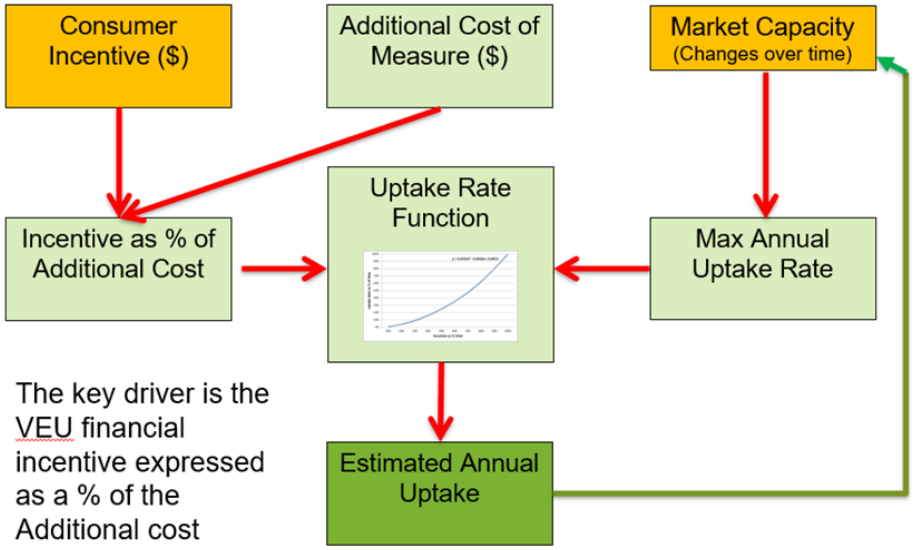
discounted by the AP profit margin - to calculate the VEU incentive ($) available to the household (see Figure 15 below). Where a rebate or STC financial incentive is available to support the upgrade, this is added to the VEU incentive to calculate the total financial incentive applicable to the upgrade activity. The STC financial incentive is calculated for relevant measures from the STC values and STC price entered for each year.

Figure 15: Calculation of the consumer financial incentive for each measure



The total consumer incentive (VEU + rebate + STC) is then divided by the Additional cost to calculate the incentive as a percentage of the Additional cost. This value is then used in the Uptake Rate Function to calculate the Annual Uptake Rate expressed as a percentage of the Maximum Uptake Rate (see Figure 16 below)[130]. By definition, the Uptake Rate will be 100% of the Maximum Uptake Rate when the total incentive is 100% of the Additional cost. The Uptake Rate Function is a non-linear function that starts low for a low value incentive and ramps up rapidly as the incentive approaches 100%. Several Uptake Rate Functions have been used in the model. For the mass-market, simple low-cost upgrades, a generic function developed for SV's 2019 model has been retained. This generates little uptake until the consumer incentive is greater than 50% of the additional cost. For the more expensive and complex appliance and building shell upgrades, Uptake Rate Functions based on the "Willingness to Pay" research commissioned by DEECA have been used.

Figure 16: Estimation of the annual uptake rate for each measure



[130] This is a key difference between the VEU residential model and the VEU business model. The key driver for the business model is the payback period from the energy savings for each upgrade activity. However, in the Department's experience, most consumers are not motivated by paybacks – in the majority of cases they simply cannot calculate them – but are motivated by the size of the incentive they will receive in relation to the total outlay required. This is reinforced by the recent "Willingness to Pay" research undertaken by DEECA.

The calculated Uptake Rate is also affected by the Profiling factor set in each year. If this is "0" then the Uptake Rate will be 0. If it is "1", the calculated Uptake Rate will be used. If the Profiling factor is between 0 and 1, the Uptake Rate will be scaled accordingly.

The Market Capacity at the start of each year is calculated in the model by subtracting the cumulative uptake of each activity from the BAU Market Capacity. The Maximum Uptake Rate (units) is calculated for each year based on the Market Capacity. In most cases, this is by multiplying the BAU Market Capacity by the Max Uptake Rate (%). However, if the market is considered to be saturated - based on cumulative uptake being greater than 40% of the BAU market capacity - the Maximum Uptake Rate (units) is calculated by multiplying the Max Uptake Rate (%) by the Market Capacity at the start of each year, a lower value. This is intended to simulate the observed market behaviour where after a few years the level of some of the key activities ramps down suddenly.

The annual uptake of each activity is combined with the average number of VEECs to calculate the total VEECs generated for each activity in each year, and this data is aggregated for all VEU activities to estimate the total number of Residential VEECs created at the VEEC prices that have been input to the model. This annual VEEC generation is combined with the VEEC price to calculate the total cost of generating the VEECs. For each VEU activity, the model also estimates the average annual energy bill savings from the upgrade, the consumer payback period with and without the VEU incentive, and the total cost of the upgrades to consumers.

Adjustment of the Max Uptake Rate assumptions

If the total consumer incentive is greater than 100% of the Additional cost, the normal upper limit of the Uptake Rate (100%) can be relaxed using the "Max Uptake Rate upper limit" setting on the Control Panel. In this case, the Max Uptake Rate value calculated value from the Uptake Rate Function (which will be > 100%) will be used, up to the limit that has been selected.

The calculated Uptake Rate (%) is then multiplied by the Maximum Uptake Rate (units) to estimate the annual uptake of each VEU activity in units in each year, with an upper limit set by the Maximum Uptake Rate Cap. The Maximum Uptake Rate Cap can be increased using the "Early retirement factor" setting on the Control Panel. In this case the Maximum Uptake Rate Cap will be increased if the total incentive is greater than 100% of the Additional cost. The Early retirement factor sets the percentage increase if the total incentive is 200% of the Additional cost, and a linear function is applied to increase the Maximum Uptake Rate Cap from a 100% incentive to a 200% incentive and beyond.

These adjustments to the Maximum Uptake Rate assumptions are most likely to occur when modelling the main regulatory scenario. In this case, the number of VEECs allocate for each activity are the same as in the alternative regulatory scenario but the Additional cost is much lower. This means that for the activities impacted by the MRS and the proposed amendments to the building and planning regulations, the VEU incentive reaches 100% of the additional cost at a fairly low VEEC price (e.g. less than $50). This creates the possibility that the APs could offer the more efficient VEU eligible products at a lower price than the standard products that would otherwise be installed.

Calculating the total energy savings

The calculated uptake of each VEU activity in each year is combined with the actual average annual electricity and gas savings to estimate the total electricity and gas savings in each year for the deemed lifetime of the saving. The electricity and gas savings for each annual cohort of VEU activities is then summed to produce the total annual energy savings for the 2022 to 2025 (current) target years and the 2026 to 2027 (new) target years. The total annual energy savings are also combined with DCCEEW's projected end use emission coefficients for electricity and gas as one approach to estimating the annual emissions reductions achieved from the VEU scheme.

In addition to calculating the total annual electricity and gas savings over the period 2022 to 2050, the model calculates both the monthly profile[131] of electricity and gas savings in each year, and the average daily energy savings profile[132] in each year – the average daily profile is calculated for each month, each season and for the year. Currently, the monthly and daily energy savings profiles are only calculated for the 2026 to 2027 target years.

[131] This is the total energy saving that occurs in each month of the year.

[132] This is the energy saving in each hour of the day.

To calculate the monthly and daily profiles, the energy savings from each of the VEU activities are first aggregated by the main energy service[133] targeted, as each of these has a characteristic monthly and daily profile of energy use and, therefore, savings. In general, VEU algorithms have been used to segment the energy savings from building shell upgrades and reverse-cycle air conditioner upgrades into their heating and cooling components. Heating Degree Day and Cooling Degree Day data from Melbourne Airport has been used to calculate the monthly profiles associated with heating and cooling energy savings. For the other end-uses, the monthly profiling factors from the NatHERS whole of home rating tools have been used.

Most of the daily profiling factors used are drawn from the NatHERS whole of home rating tools, although the factors used for simple water heating savings and for heating are based on end-use metering studies undertaken by Sustainability Victoria. For the more complex water heating upgrades[134] SV's FirstRate5 whole of home tool spreadsheet has been used to model typical BAU and upgrade scenarios, to derive the daily energy savings profiles.

The data on the annual and monthly energy savings, and on the daily energy savings profiles is used to support the energy sector modelling.

Integrating the residential model with the other models

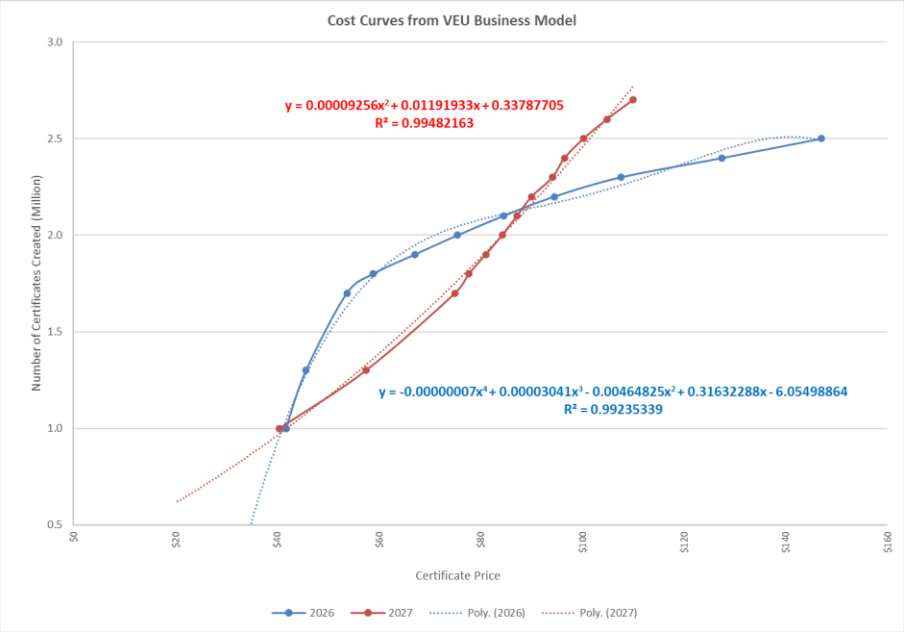
The VEU residential certificate market model is one of two models which have been developed to assist with modelling the impact of possible future VEU targets. DEECA engaged an external consultancy to develop a model for the business component of the scheme. The VEU scheme comprises activities that cover both the residential sector and the business sector, and any annual certificate target can be met by VEECs generated in both sectors. To model any annual VEU target requires that the VEEC price at which that target can be met, based on total certificate creation in the residential and business sectors, is calculated.

The residential model estimates the total residential certificate creation at a certain VEEC price in each year. In contrast, the business component model estimates the VEEC price required to create a certain number of certificates from the VEU business activities in each year. Cost curves are used to combine the output of both models so that the VEEC price required to meet a certain total annual certificate creation target can be identified. The cost curves plot the estimated annual VEEC creation against the certificate price required to achieve the target. A range of annual business certificate targets were modelled using the business model to estimate the required VEEC price. The VEEC prices and the annual VEEC creation were plotted on a scatter diagram, and lines of best fit used to develop cost curve functions for 2026 and 2027 (see Figure 17 below). These functions were used to estimate the business certificates created at a certain VEEC price. This was added to the estimated residential VEEC creation at this price using the residential model to estimate the total VEEC creation. The VEEC price was then increased until the required annual scheme target was achieved.

[133] This includes heating, cooling, water heating, lighting, cooking, etc.

[134] This includes replacing an off-peak electric storage water heater with a heat pump or solar electric water heater. In the case of the heat pump water heater, this could be operated on a general electricity tariff (when it will re-heat water as hot water is used) or could controlled by timer and restricted to re-heating the water from (say) 10am to 4 pm.

Figure 17: Example of cost curve for business VEEC creation



Carbon values

Carbon valuation is a complex and continually developing area of research. There are various competing ideas and approaches to valuing carbon for economic appraisals globally[135] and estimates of the 'carbon values' on wider society vary among literature. Infrastructure Victoria's advice to the Victorian Government recommends adopting an initial carbon value of at least $123 per tonne, updated to reflect the values required to achieve Victorian emissions reduction targets.[136]

The analysis in this RIS uses a trajectory of 'carbon values' (Table 32) which is based on the central value scenario in the Intergovernmental Panel on Climate Change's Sixth Assessment Report (2023; 2022) and is consistent with the Paris Agreement goal of holding global average temperature increase to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C. The series is also consistent with the estimated costs of meeting Victoria's climate goals, as modelled by DEECA for analysis supporting Victoria's 2035 emissions reduction target.

Table 32: Indicative carbon values for financial years 2024 to 2040 in AUD

FY2023 AUD/ tCO_2-e per year	Lower sensitivity (25th percentile)	Central Value	Upper sensitivity (75th percentile)
2024	$73	$106	$155
2025	$77	$112	$168
2026	$80	$118	$181
2027	$84	$124	$195
2028	$88	$130	$208
2029	$92	$135	$221
2030	$95	$141	$235

[135] Infrastructure Victoria, Opportunities to decarbonise Victorian Government infrastructure, see: https://assets.infrastructurevictoria.com.au/assets/WSP-Decarbonising-Vic-Gov-Infrastructure-Final-Report-24-August-2023-no-AMAF.pdf

[136] Infrastructure Victoria, Opportunities to decarbonise Victorian Government infrastructure, see: https://www.infrastructurevictoria.com.au/resources/opportunities-to-reduce-greenhouse-gas-emissions-of-infrastructure-2

2031	$106	$154	$253
2032	$116	$167	$272
2033	$127	$180	$290
2034	$137	$192	$309
2035	$148	$205	$328
2036	$158	$218	$346
2037	$169	$231	$365
2038	$179	$243	$383
2039	$190	$256	$402
2040	$200	$269	$420

This IPCC trajectory assumes global action is taken to keep global temperature rise to well below 2°C and is maintained out to 2100. It is derived from the median of costs of abatement that has been assessed by the IPCC as necessary to provide a 50% chance of returning global temperature increases to 1.5 degrees Celsius by 2100, after 'overshooting' – Scenario C2 in Figure 3.32, Working Group III Full Report. (This means it is a 'targets-based' or 'targets-consistent' valuation, not a 'social cost of carbon'.)

As the IPCC's 6th Assessment report did not include abatement cost estimates for 2020, estimates from the closest scenario in the IPCC's 5th Assessment report were used instead (430-480 ppm scenario, Figure 6.21, Working Group III Full Report). The 25th percentile and 75th percentile estimates are also derived from the IPCC's reports.

The carbon values were converted into Australian dollars for the relevant year using an annual average of daily exchange rates[137] and then escalated to current values using the historical consumer price index (CPI) series[138], both sourced from the Reserve Bank of Australia.

A straight line was used to connect each data point and calculate a value for each year.

[137] https://www.rba.gov.au/statistics/historical-data.html

[138] https://www.rba.gov.au/statistics/tables/#inflation-expectations

Appendix E: Business economic model detail

This appendix provides a high-level overview of the business economic model which was developed to predict future behaviour of business-type activities under the VEU program over the years 2022 to 2027.

An independent consultant developed a spreadsheet model to predict the future behaviour of the Victorian Energy Upgrades (VEU) Scheme certificate market for business-type activities over the years 2022 to 2027 under a range of scenarios and certificate price settings. The model integrated several sub-sector models across business types and upgrade types from the 2019 targets modelling, into one integrated model. The model differs in several ways from the residential economic model, but is based on the same underlying principle of predicting how consumers will respond to VEU rebates when choosing to upgrade energy appliances.

The model simulates the performance of the VEU business certificate market by estimating the annual uptake of all residential activities and annual certificate average price for a specified VEU certificate (VEEC) business sector target in each calendar year. Note how this is the inverse of the residential model (which outputs certificate volumes and takes certificate price as an input), but both models output a relationship between VEEC price and available number of certificates.

It has also been tuned using the historical VEU certificate creation data for the 2022 and 2023 calendar years, and the projected certificate creation in 2024, based on VEU activities undertaken in these years, to help ensure that it is as accurate as possible in the short to medium term.

Given that the proposed regulations relating to minimum rental standards and the proposed amendments to the building and planning regulations will impact the residential market but do not impact the business sector, this model focused only on the business-as-usual uptake of activities available in the program.

The model performs a ranking of various activities by their bill savings and returns on investment for consumers, and then distributes the total target to activities based on how that ranking.

The model's calculation steps are as follows:

At activity level:

1. Determine activity costs.

2. Determine seasonal demand and demand reduction profiles.

3. Determine energy savings and peak demand reductions and corresponding energy bill

savings.

4. Calculate the number of certificates per activity based on energy savings.

5. Determine other potential private benefits.

6. Determine net private benefit and marginal cost of participation in both schemes.

At market level:

7. Determine market uptake across all activities.

8. Determine aggregated energy savings and demand reduction at peak and at other

times.

9. Estimate short run and long run avoided costs.

10. Determine public costs and benefits.

Control panel input assumptions:

The model control panel serves as the main control element for changing the model's variables, timelines, or definitions. Toggles or input cells are available for most sensitive variables. Meaning, that most users can access the model's full functionality without any further investigation of the model's internals.

Input assumptions that can be modified from the control panel include:

- AEMO demand trace scenario - Step Change used for all targets options
- Economic discount rate - 4% used
- Assumed retailer market up for product prices – 40%
- Assumed installer margins – 10%
- Additional incentive schemes that interact with the VEU program, and how much uptake these receive. These include:
    - Wholesale demand response mechanism
    - Small scale technology certificate scheme (STC)
- Administration costs by method ($/VEEC):
    - Project Based Activity - $6.50
    - Deemed activity - $4.65
- Activity and sector uptake assumptions:
    - Cost effectiveness threshold – an underlying assumption is that a participant in the program will only perform an upgrade if the new equipment is cost effective. Using these values, the user can change the threshold at which someone will replace equipment. For example, for several commercial upgrades, the model assumes that the total benefit over the lifetime of the appliance must be greater than twice the upfront cost of the upgrade.
    - Market uptake – the model assumed that the rate of market adoption will be different depending on the activity's sector. Activities in more conservative and capital-intensive sectors may have a longer lifespan, leader to a slower ramp up of adoption.
    - Transaction costs – the model allows the user to change transaction costs for activities in different sectors.
    - Market capacity factors – using these values the user can increase or decrease the available market capacity of relevant activities.

Other input assumptions:

Beyond the main control panel input assumptions, there are also detailed assumptions for each activity and sector. These assumptions include:

- Total installation costs
- Energy demand profile changes due to the upgrade, for each season
- Pools of opportunity of available upgrades
- The growth rate of industry learning for the activity, which decreases the upgrade costs per year
- Fuel requirements
- VEECs per activity
- Deeming periods (assumed appliance lifetimes)

Model results:

The model can then output results in the form of:

- activity uptake
- average certificate price per year
- total participant upfront costs
- statewide energy demand profile changes
- participant energy demand changes

These results are combined with the residential economic modelling, to be fed into the energy market model.

Appendix F: ESC Fees

Background on current fees

In 2023, the *Victorian Energy Efficiency Target Act 2007* was amended to expand the range of tools available to the Essential Services Commission (ESC) to effectively administer the scheme, monitor compliance of companies working in the program, and pursue enforcement where necessary to protect Victorian consumers and ensure the program meets its goals. This increase in functions resulted in an increase in cost to deliver the ESC's role in the VEU program.

In 2023, DEECA and the ESC undertook a RIS process to propose a set of new fees for the VEU program, to replace the old fees which were set to expire by 19 October 2023. The fees were set to adopt a full cost recovery fee structure in accordance with the Victorian Government's approach as set out in the *Pricing for Value Guide*[139]. The services provided by the ESC in accrediting providers and validating and registering VEECs allows those providers to trade those VEECs and create profit. Similarly, other stakeholders benefit from their participation in the VEU program, including product manufacturers who can access discounts for products that the ESC adds to a VEU product register or businesses who trade in VEECs. It is consistent with the pricing principles that these businesses should pay for the services that benefit them.

The 2023 fees RIS proposed three fee options based on activity-based costing analysis conducted by the ESC. All options aimed to fully recover the costs of service provision by the ESC, based on the target being met, and set fees for a three-year period from 1 July 2023 to 30 June 2026. The preferred option, which was implemented, was based on a discounted fixed fees approach, where the upfront fees such as accreditation fees and product registration fees were lowered and capped, and higher certificate fees to achieve full cost recovery. This option was preferred as it lowers the barrier to participation for smaller APs, which in turn supports industry development, competition and innovation. This fee structure results in some cross-subsidising of smaller APs by larger APs, who would pay more on the high number of VEECs they generate.

The 2023 fees were implemented in two tranches, with the first tranche taking effect on 1 July 2023 and the second on 1 November 2023, as set out in Table 33.

Table 33: Current fees and approach to fees setting

Fee type	Current fees	Approach for 2026-27 target period
Certificate fee - creation	$2.33	Varying based on target level and resource requirement
Annual fee	$1,000.00	Unchanged
Application of accreditation fee	$3,000.00	Unchanged
Extended accreditation fee	$1,500.00	Unchanged
Project-based activity fee	$500.00	Unchanged
Product application fee	$500.00	Unchanged
Lodging an energy acquisition statement fee	$3,122.00	Varying based on target level and resource requirement
Opening a VEET registry account fee	$2,000.00	Unchanged
Review of reviewable decision fee	$750.00	Unchanged
Late lodgement of accreditation renewal fee	$13,814.00	$7,360.00

[139] Department of Treasury and Finance. See: https://www.dtf.vic.gov.au/financial-management-government/pricing-value

In the 2023 fee RIS, DEECA committed to working with the ESC in 2024 to evaluate the fees as part of a broad review of the VEU program to inform setting targets for 2026 through to 2030.

Approach to setting fees as part of the 2026-27 target setting project

Current fees structure to remain

As committed, DEECA and the ESC have been working collaboratively to revise the appropriate fees for the VEU program as part of setting future targets. It is proposed that the current fee structure with discounted fixed fees would remain, due to the following reasons:

- The activity-based costing analysis to inform current fees was only implemented by the ESC a year ago. The findings and recommendations from this analysis, as well as the multi-criteria analysis to assess different fees options in the 2023 fees RIS, are still relevant and applicable by the time of writing this VEU target RIS.
- The new fees have been in place for less than a year, so this decision was made to minimise disruptions to the industry, especially in the context of the two-year strategic review currently underway.
- Target is only set for the two-year period 2026-27 to allow VEU targets from 2028 onwards to incorporate findings from the strategic review. As such, it is more useful and appropriate to undertake a full review of the fees structure in 2027 as part of setting targets for 2028 onwards instead of now, to allow findings from the strategic review to be implemented.

Consequently, the same types of fees will be charged by the ESC to the APs, and several upfront fees will remain unchanged to lower barriers to participation for smaller APs and maintain a degree of cross-subsidising of smaller APs by larger APs, as outlined in Table 33.

As all target options for 2026-27 propose a lower target than current level in 2024 and 2025, by keeping the fee structure with fixed upfront fees, certificate fees will have to increase to achieve full cost recovery. This means that the degree of cross-subsidising of smaller APs by larger APs will increase.

Increase in ESC's costs

The ESC has commissioned technical consultants to develop a model to estimate operating costs and program fees under the different target options for 2026 and 2027, based on different activities and responsibilities being carried out by the ESC in administering the VEU program.

The ESC has identified efficiency gains in the delivery of its functions, including maturation of new processes as they are repeated over multiple annual cycles following their introduction as part of the 2023 reforms and efficiencies from a new IT system currently being developed. However, overall costs are expected to increase for a number of reasons, as explained below.

Increased complexity within the program and high level of change

Electrification activities account for a significant portion of upgrades in most target options. These activities are more complex and require more operational effort in processes such as product approvals and the registering of certificates when compared to low-complexity activities (such as shower roses and weather sealing). Further, Project Based Activities (PBA) have also increased over the years.

In addition, introducing new activities to the program increases the commission workload and requires a degree of resourcing effort to adapt processes accordingly. For example, new activities involve supporting policy development, developing activity guides, updating the IT system, adapting internal processes and dealing with queries and complaints.

An increased number of assumed APs participating in the program directly impacts workload for the ESC as accreditation applications increase (new applications and annual renewals), the number of biannual assurance audits increase (each AP is required to have an audit at least every two years) and engagement, compliance and enforcement activities increase.

Increase in ESC's costs

To maintain the current level of services and regulatory oversight for the program, the ESC's costs will rise. Although staffing levels are not anticipated to increase under most target options (except Option 3), salary and other payroll expenses will increase by approximately 3 percent per annum in accordance with commitments in the Victorian Government Enterprise Agreement. Maintenance of staffing costs at current levels or reduction of staffing costs would necessitate removing program functions from the ESC's remit or material reduction in scope of services. Additionally, other corporate costs, including IT and building expenses, are forecasted to increase. A portion of these costs is funded by VEU fees and would increase VEU program costs by approximately 5.6 percent.

Increase in certificate fee

Under the draft targets for 2026 and 2027, there are expected to be fewer VEECs under all options (particularly in Option 1 and Option Alt. 1). A decrease in the number of VEECs results in fewer VEECs over which to spread costs. A lower target can allow for some scaling back of resourcing, but this is not a linear relationship.

VEEC volumes are not the key driver of workload for all functions, with some functions having no relationship between VEECs volumes and projected workload. For example, teams responsible for the IT system, implementation of regulatory changes, reporting and planning cycle, and other functions have an indirect relationship between VEECs volumes and workload. Only the registration of certificates is a function directly related to VEECs volumes, noting that this is not completely elastic.

As such, certificate fee is proposed to increase in all target options for 2026-27, to reflect the lower target level and expected increase in costs for the ESC.

Responding to stakeholder feedback to last fee setting

Improved service delivery

During the 2022-23 consultation on fees, stakeholders were broadly supportive of the proposed approach to fee setting and with the fees increasing. A key theme of consultation feedback was that stakeholders expected that the proposed fee increases would lead to an improvement in service delivery at the ESC in the form of improved response times. The ESC has made improvements in some key areas. For instance, response times to queries and complaints have improved significantly since the last review. Average response times to queries are currently between 1.5 and 2.5 business days.

The ESC is implementing processes to improve service delivery in response to the legislative amendments that came into effect in 2023, including accreditation and renewal processes. Work is underway to clear applications backlogs, streamline processes and reduce processing times by reviewing and simplifying application forms, and increasing temporary resourcing and streamlining internal approval processes. The ESC expects further improvements as new processes that are being implemented mature over time and are operationalised.

Product application fee and process

A second theme that was raised during the 2022-23 consultation on fees related to product application processes. Some stakeholders noted that the proposed product fee may become a 'barrier' to product manufacturers seeking approval for a wide range of products on the ESC Register of Products, which could lead to a narrow range of products available under VEU and reduce participation in the VEU program. However, since the implementation of product application fee, the volume of applications received by the ESC does not suggest any material impacts on participation as the result of the fees.

Stakeholders also mentioned that product registration assessments for products already on the Greenhouse and Energy Minimum Standards (GEMS) register might not represent efficient administration of the VEU program. However, under section 16(2) of the VEET Regulations, a number of products registered under the GEMS register are exempted from registration in the ESC Register of Products. Regarding products on the GEMS register that are not exempt from registration in the ESC Register of Products, the ESC has considered potential efficiencies between both product registration processes. The GEMS register assesses a minimum level of performance, whereas for the VEU program, a more complex assessment is required in order to understand the precise performance of a product, which is always higher than the minimum performance required from GEMS. This process is important as it will determine the number of VEECs that an upgrade will create. The ESC has been working closely with the GEMS regulator and other regulators, such as the

Independent Pricing and Regulatory Tribunal (IPART), to improve the sharing of technical knowledge and information, including in relation to product testing. While this does not reduce the number of assessments of GEMS products within the VEU program, it does have a wider benefit to energy efficiency technology, improves efficiency when assessing products and provides greater outcomes in Victoria.

Late lodgment of accreditation renewal fee

A third matter raised as part of the 2022-23 consultation on fees was in relation to the introduction of a fee for late lodgment of an application for renewal of accreditation. Most stakeholders supported the concept of charging a higher, cost reflective fee for renewals received late. However, some respondents questioned whether the proposed late fee reflected the cost of a late application. The ESC has reviewed the late fee and maintain that it is important to charge a cost reflective fee in order to encourage participants to submit on time, noting the additional costs involved with late lodgments of application for renewal of accreditations. The current fee has effectively served this purpose, noting that the number of late applications has been relatively low (<5% of APs). The ESC has reviewed and recalculated the cost associated with a late application and has found this to be $7,376 (a 47% reduction on the current model). The ESC also maintains the right to waive the fee if extenuating circumstances exist.

Appendix G: Energy market modelling report

Scope of Work

DEECA undertook energy market modelling for the VEU 2026-2027 target-setting process. The modelling included a representative reference case and five VEU target scenarios with their respective changes to demand applied to the reference case hourly demand traces over the period 2026 to 2040. The focus for modelling results is on the difference in wholesale prices and emissions between the reference case and each VEU target scenario. DEECA undertook the following modelling runs detailed in Table 34 Table 34anchored to AEMO's ISP Step Change model under a policy landscape including all states achieving their policies.

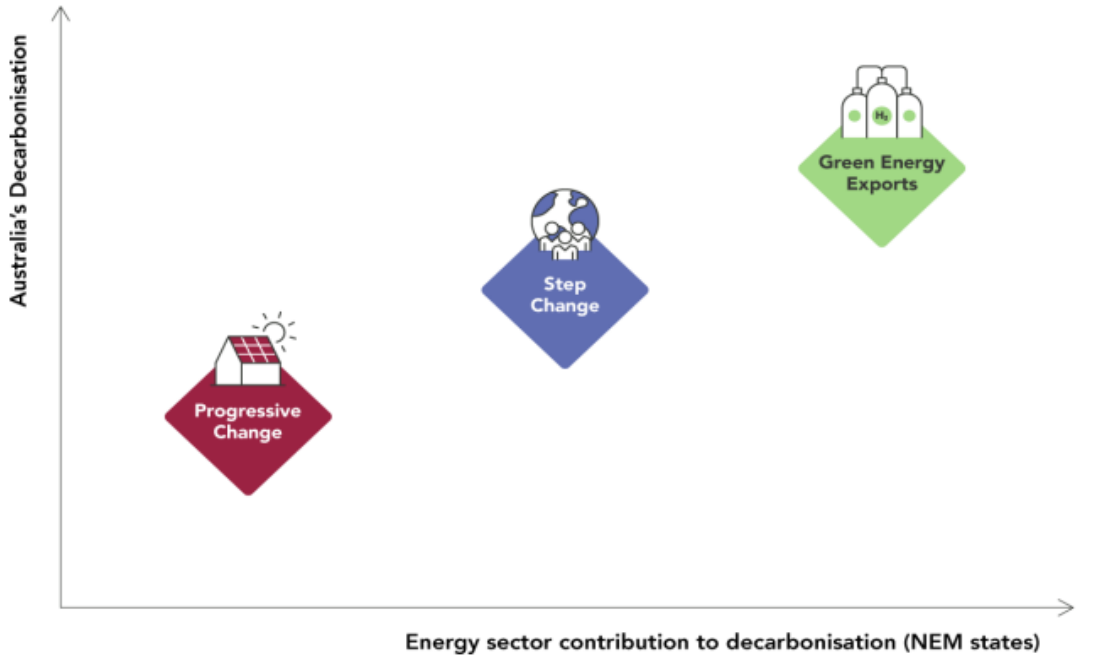
Table 34: Reference case and VEU target options modelled

Target Option	2026 target (VEECs)	2027 target (VEECs)	Regulatory assumptions
Reference Case	0	0	**All states achieve their energy policies**
VEU 1	4 million	4 million	**Main regulatory scenario** All relevant act amendments pass: • Proposed regulation amendments in the Buildings Electrification RIS • Proposed regulation amendments in the Minimum Rental Standards RIS • VEU additionality amendment
VEU 2	5 million	6 million	
VEU 3	6 million	7.3 million	
VEU Alt. 1	4 million	4.5 million	**Alternative sensitivity regulatory scenario** No relevant act amendments pass: • Business-as-usual policy context continues
VEU Alt. 2	4.5 million	5 million	

DEECA model background

DEECA's energy market modelling approach leverages AEMO's 2024 Draft Integrated System Plan (ISP) Step Change scenario and corresponding model released by AEMO. The Step Change scenario is one of three scenarios used in AEMO's 2024 ISP, as is indicated in Figure 18.

Figure 18: AEMO's 2024 ISP scenarios

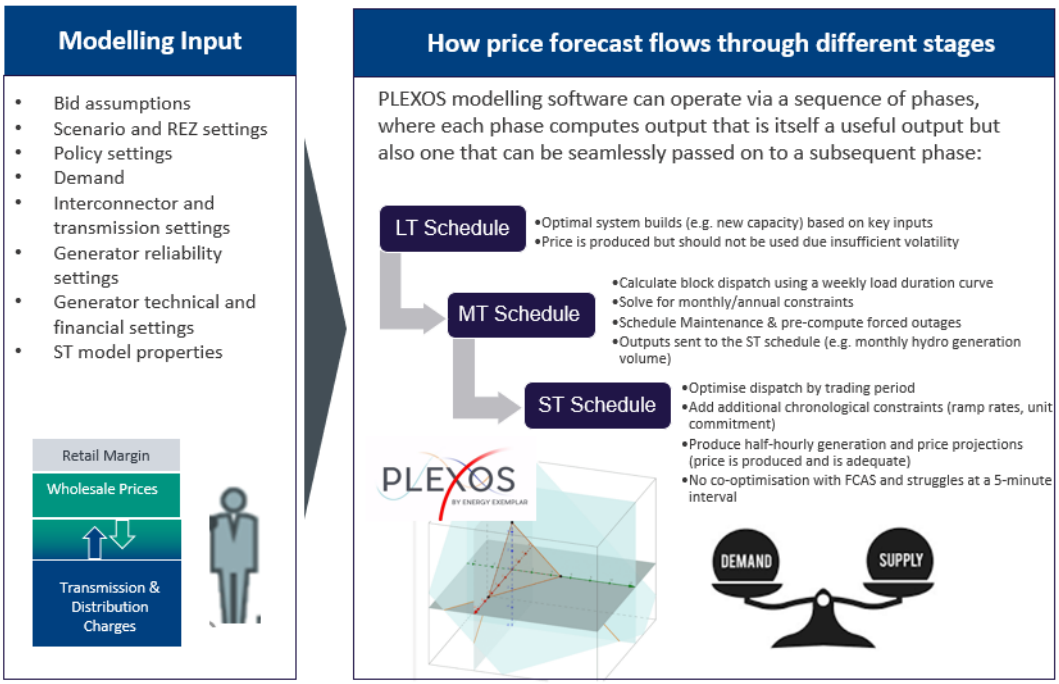


AEMO's Step Change scenario is characterised by:

- Strong emission reductions across the national electricity market (NEM) in line with keeping global temperature rises to below 2°C
- Rapid uptake up consumer energy resources (CER) which become highly orchestrated
- Strong transport electrification
- Development of hydrogen opportunities over the long-term

Figure 19 describes the standard model configuration process for energy market modelling in PLEXOS and the modelling phases that sit within PLEXOS. The long term (LT) schedule is the first modelling phase which determines the capacity build-out. This capacity build-out is then fed into the medium term/short term (MT/ST) schedules to determine generation, price, and emissions outputs.

Figure 19: DEECA workflow for PLEXOS modelling



Approach to updating demand traces and running models

The VEU energy market modelling is based on the DEECA All States scenario where all states achieve their energy policies. For each target option defined by VEU, DEECA then adjusted demand and ran the LT and MT/ST models independently based on all states core scenario.

DEECA considered changes in demand profile for each target option. To adjust demand, DEECA converted the given profile into a half hourly profile to be compatible with the demand input into the PLEXOS model. The demand profile is based on a monthly / seasonal profile by year which is then converted into daily, 48 half hour intervals for the PLEXOS input file.

For each target option, DEECA ran both an LT run and an MT/ST run:

LT runs: based on the adjusted demand above, DEECA performs an LT run to get a new capacity build / expansion that is used as an input into our MT/ST model.

MT/ST runs: DEECA took the result from LT run above and use it as an input for build profile in the MT/ST run which generates price and emission projections.

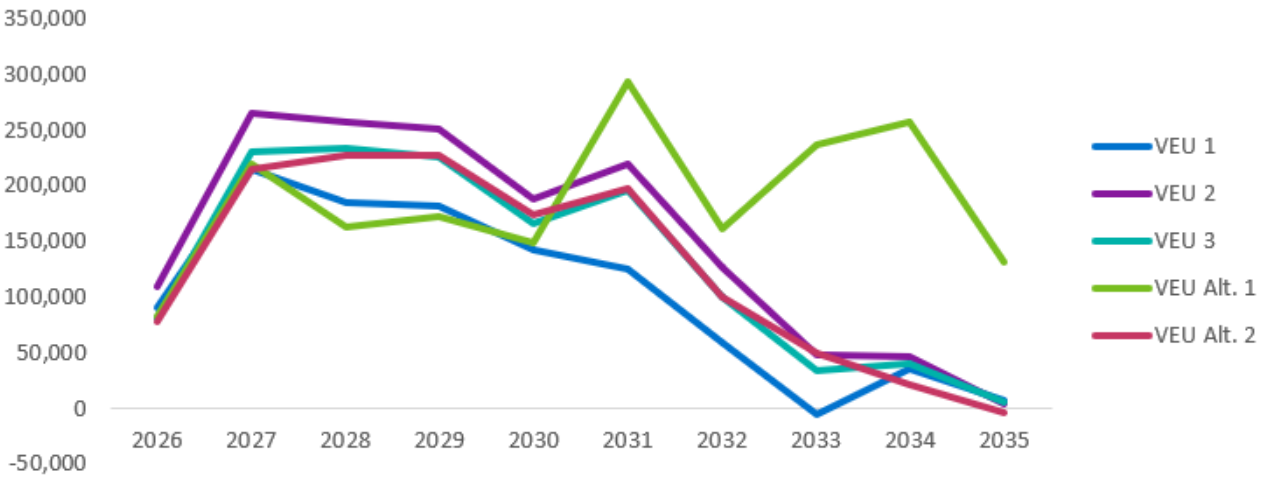
Modelling results

DEECA provided consumer benefits from wholesale price changes, and emissions changes for each of the target options against the reference case.

Average annual emissions savings in the NEM over the 10 year period from 2026-2035 range from 103,000 tonnes CO_2 for VEU 1 to 186,000 tonnes CO_2 for VEU Alt. 1 against the reference case. Figure 20 provides annual emissions savings across the NEM compared to the reference case.

Note that for all of the following graphs, VEU Alt.1 and VEU Alt.2 cannot be directly compared to the first three target options, only to each other.

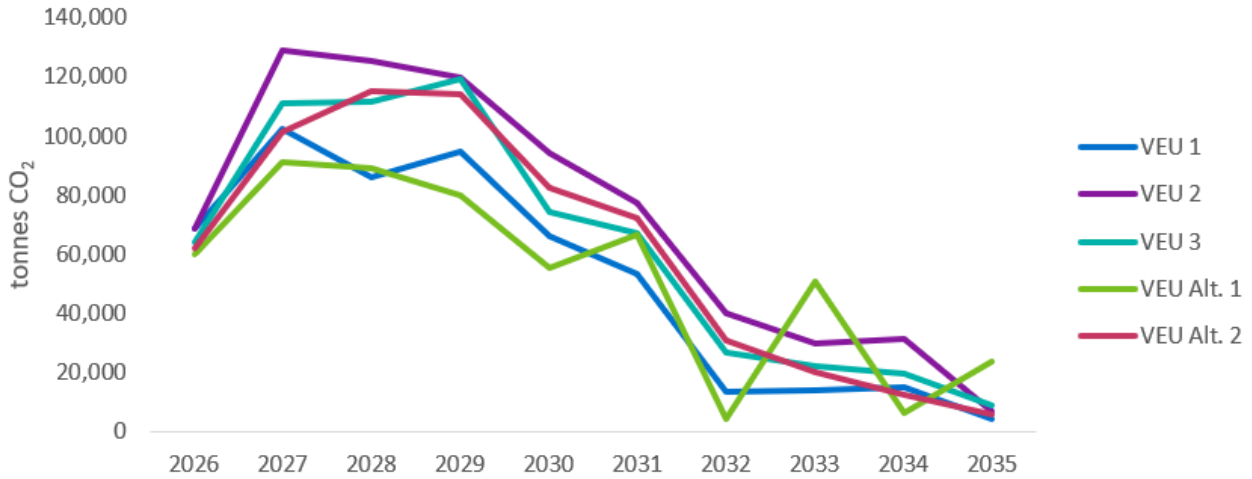
Figure 20: Annual carbon-dioxide equivalent GHG emissions savings across the NEM compared to the reference case (tonnes CO2)



Note that VEU Alt.1 has greater emissions savings than VEU Alt.2 due to the change in balance between electrification and energy efficiency activities.

Average annual emissions savings in Victoria over the 10 year period from 2026-2035 range from 52,000 tonnes CO_2 for VEU 1 to 72,000 tonnes CO_2 for VEU 2 against the reference case. Figure 21 provides annual emissions savings across Victoria compared to the reference case.

Figure 21: Annual carbon-dioxide equivalent GHG emissions savings across Victoria compared to the reference case (tonnes CO2)



Average annual Victorian consumer benefits over the 10 year period from 2026-2035 range from $31M for VEU 1 to $47M for VEU 2 against the reference case. Figure 22 shows annual consumer savings across the NEM compared to the reference case.

Figure 22: Annual Victorian consumer savings compared to the reference case ($ million)