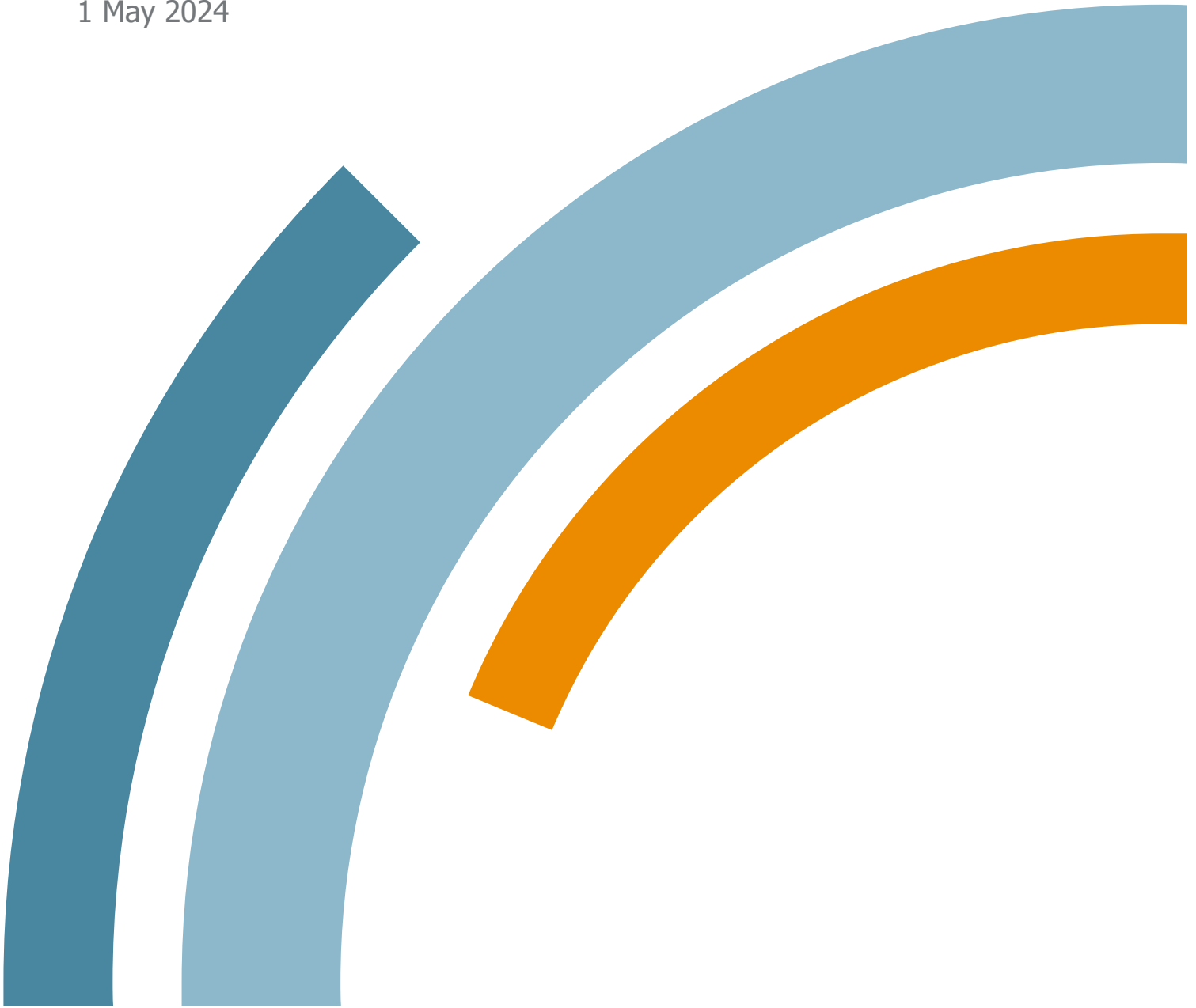


# Cold Room Activity Guide

1 May 2024



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# Guide overview

Accredited persons (APs) and their installers under the Victorian Energy Upgrades (VEU) program must comply with program requirements when undertaking cold room activities to create Victorian energy efficiency certificates (VEECs).

## About this guide

Use this guide for assistance in meeting the specific requirements (products, installation, decommissioning, recommissioning, training, safety and evidentiary) for cold room activity upgrades. We have split the guide into five key sections:

- Section 1: Introduction to cold room activity
- Section 2: Calculating Victorian energy efficiency certificates
- Section 3: Requirements for personnel undertaking cold room activity
- Section 4: Record keeping and evidence requirements
- Section 5: Minimum record-keeping requirements

You should read this guide in conjunction with our Obligations and Program Guide for Accredited Persons for:

- overarching information about the Victorian Energy Upgrades program
- your obligations under the program
- guidance on how to create VEECs under the program.

Access this document at [www.esc.vic.gov.au/veu-accredited-persons](http://www.esc.vic.gov.au/veu-accredited-persons)

## Who should use this guide

You should use this guide if you are:

- seeking accreditation to undertake cold room activities under the program
- accredited to undertake cold room activities under the program
- an installer seeking to undertake installations for this activity under the program.

This guide will help you to understand the activity, your responsibilities, and evidentiary requirements you must meet to create and register VEECs.

To apply for accreditation for this activity, access the required documents at [www.esc.vic.gov.au/become-veu-accredited](http://www.esc.vic.gov.au/become-veu-accredited)

## Seeking assistance

If you are unsure about any aspects of undertaking this activity and cannot find the answer in this guide or the documents listed above, contact VEU support on (03) 9032 1310 or [veu@esc.vic.gov.au](mailto:veu@esc.vic.gov.au).

## Legal context for this guide

We have prepared this guide as a general summary of relevant parts of:

- Victorian Energy Efficiency Target Act 2007 (the VEET Act)
- Victorian Energy Efficiency Target Regulations 2018 (the VEET Regulations)
- Victorian Energy Upgrades Specifications 2018 (the VEU specifications)
- Victorian Energy Efficiency Target Guidelines (the VEET guidelines)

View these documents at [www.esc.vic.gov.au/veu-legislation](http://www.esc.vic.gov.au/veu-legislation)

This guide should not be relied upon as substitute for legal advice and should be read in conjunction with the above source documents. In the event of inconsistency between this guide and the source documents, the content in the source documents apply.

## Feedback on this guide

We are committed to implementing a risk-based regulatory framework for this activity. To achieve this objective, we would like to hear from you if you have any feedback on the requirements set out in this guide.

To provide feedback, please contact VEU Support on [veu@esc.vic.gov.au](mailto:veu@esc.vic.gov.au) or (03) 9032 1310.

# 1. Introduction to cold room activity

In August 2021, the Department of Environment, Land, Water and Planning introduced the cold room activity to the VEU program under Part 43 of the VEET Regulations. The new cold room activity (activity 43) provides for three activity upgrade scenarios that are tailored towards simple retrofit upgrades and installation of new cold rooms.

A summary of the new cold room activity upgrade scenarios is described in [Table 1](#).

These activities are based on a deemed method for calculating Victorian energy efficiency certificates (VEECs) under the Victorian Energy Upgrades (VEU) program. If your cold room activity is complex or linked to another upgrade, we recommend you consider the suitability of the measurement and verification method for project-based activities in accessing certificates under the program.

Find out how to participate in project-based activities at [www.esc.vic.gov.au/project-based-activities](http://www.esc.vic.gov.au/project-based-activities)

Table 1 Summary of eligible cold room activity scenarios

Activity scenario	Summary description
43A	Installing an electronic expansion valve and compatible superheat controller in a refrigeration system
43B(i)	Installing a refrigeration system that includes at least three of the parts as set out in Table 2 below.
43B(ii)	Installing a refrigeration system that includes all of the five parts as set out in Table 2 below.

## 1.1. Which cold room upgrades are eligible

For the cold room upgrade to be eligible under the VEU program:

- the upgrade must take place in an eligible site
- the product installed must be eligible
- you must be accredited to undertake the cold room activity
- the upgrade must be undertaken in accordance with the activity requirements (see sections 4 and 5 of this document)

### 1.1.1. Eligible sites

To be eligible, the upgrade must be undertaken in a business/non-residential premises. The upgrade must be for a room or structure where goods are stored at temperatures below 7 degrees Celsius. It must not be for a room or structure which is:

- a refrigerated cabinet
- equipment or a product used exclusively for medical, scientific, or research purposes; or
- a portable or mobile cold room or refrigerated container.

### 1.1.2. Eligible products

Products are not required to be listed in our register of products or any other product registers.

The installation and commissioning of all upgrade product(s) and parts must meet the product criteria listed in [Table 2](#).

Table 2: Product criteria for cold room activity scenarios

Activity	Product criteria
43A	An electronic expansion valve and compatible superheat controller that: <ul style="list-style-type: none"><li>• are designed to be installed together in the refrigeration system of a cold room; and</li><li>• when installed together into a refrigeration system can and will automatically control the superheat of the refrigeration system.</li></ul>
43B(i)	A refrigeration system that includes at least three of the parts set out in this Table for Activity 43B(ii), provided that at least one of the three parts must be: <ul style="list-style-type: none"><li>• technology capable of varying condensing temperature with ambient temperature to improve system performance; or</li><li>• compressors with variable capacity modulation such as variable speed capacity control, other than<ul style="list-style-type: none"><li>– on/off capacity control on single compressor systems</li><li>– hot gas bypass</li><li>– fixed stage cylinder unloading</li></ul></li></ul>
43B(ii)	A refrigeration system that includes all of the following parts: <ul style="list-style-type: none"><li>• technology capable of varying condensing temperature with ambient temperature to improve system performance</li></ul>

- compressors with variable capacity modulation such as variable speed capacity control, other than
  - on/off capacity control on single compressor systems
  - hot gas bypass
  - fixed stage cylinder unloading
- electronic expansion valve and compatible superheat controller that meet the requirements of Activity 43A
- speed controlled condensing fans, that
  - are electronically commutated (EC) fans, or
  - are variable speed drive (VSD) driven fans
- evaporator fans, that are electronically commutated (EC) fans.

### 1.1.3. Appropriate accreditation and approvals

You must be accredited by us and approved for the cold room activity to create VEECs for this activity.

Find out how to become accredited at <https://www.esc.vic.gov.au/become-veu-accredited>.

## 1.2. Common activity requirements

Accredited persons and scheme participants must ensure that they undertake activities in accordance with the program rules as listed in the VEET Act, VEET Regulations (including the code of conduct provisions), VEU Specifications and VEET Guidelines.

In addition, all activities under the VEU program must be undertaken in accordance with the provisions of the Australian Consumer Law (Victoria), the Electricity Safety Act 1998, the Gas Safety Act 1997, the Occupational Health and Safety Act 2004 or the Building Act 1993 or the regulations under any of those Acts.

### Marketing and lead generation requirements

Accredited persons and scheme participants (such as lead generators) must comply with all relevant laws when undertaking lead generation and marketing activities under the program including:

- the VEU code of conduct provisions in Schedule 6 of the [VEET Regulations](#), including the ban on 'cold-call' telemarketing and doorknocking lead generation or marketing practices under the VEU program.



- Australian Consumer Law (Victoria) when engaging in lead generation and marketing practices permitted under the program.
- [Telecommunications \(Telemarketing and Research Calls\) Industry Standard 2017](#) when engaging in telemarketing practices permitted under the program.
- [Spam Act 2003](#) and the [Spam Regulations 2021](#) when sending email or sms text messages for lead generation or marketing under the program. A [summary of obligations](#) is provided by the Australian Communications and Media Authority.

For further information on meeting your obligations under the VEU code of conduct, please review the code of conduct guideline and various supporting resources (including fact sheets and consumer resources) which are published on the [commission website](#).

## 2. Calculating Victorian energy efficiency certificates

The number of Victorian energy efficiency certificates (VEECs) you receive for a given cold room upgrade is based on the deemed abatement associated with the activity.

The deemed abatement is calculated using assumptions about an upgrade situation's key variables, such as the temperature factor and deemed improvement in the energy efficiency of the cold room.

Due to these assumptions, the deemed abatement calculated may vary from the actual abatement achieved for a particular upgrade. If you wish to claim VEECs using a more accurate abatement value, the measurement and verification method for project-based activities is an available option.

The key variables used to calculate the number of VEECs for the cold room activity are:

- energy savings
- lifetime
- electricity emissions factor
- temperature factor
- regional factor.

The VEEC calculation method is detailed further in part 43 of the Victorian Energy Upgrade specifications. Appendix A includes examples of how to calculate VEECs for this activity.

An explanation of some of the key calculation variables is provided below.

### 2.1. Calculation variables

#### 2.1.1. Energy savings

The energy savings from a high efficiency refrigeration system are achieved by using more energy efficiency components and by improving the control of components that make up the system, so it more effectively responds to changes in demand (e.g., temperature variations).

The energy savings input values provided for each activity scenario are:

- 1.7 for activity 43A
- 3.4 for activity 43B(i)
- 5.1 for activity 43B(ii)

#### 2.1.2. Lifetime

The asset lifetime provided for all upgrade scenarios for the cold room activity is 12 years.

### 2.1.3. Electricity emissions factor

The electricity emissions factor (EEF) represents energy intensity and is the factor to be used in greenhouse gas equivalent emissions reduction. The electricity emissions factor is as follows:

- From 1 August 2021 to 31 January 2022, the EEF is 0.9546
- From 1 February 2022 to 31 January 2023, the EEF is 0.8142
- From 1 February 2023 to 31 January 2024, the EEF is 0.6738
- From 1 February 2024 to 31 January 2025, the EEF is 0.5334
- From 1 February 2025, the EEF is 0.393

### 2.1.4. Temperature factor

The energy use of a cold room can vary if the premises operates as a cool room or freezer. To reflect this variation, a temperature factor is used to determine the relative energy use of a cold room. The temperature factors are as follows:

- For cold rooms operating at or above 0°C, the temperature factor is 1.0
- For cold rooms operating below 0°C (freezers), the temperature factor is 1.4

### 2.1.5. Regional factor

Regional factor is the input value used to account for fluctuations in average energy usage due to distribution losses. The regional factors are as follows:

- For upgrades in metropolitan Victoria the regional factor is 0.98
- For upgrades in regional Victoria the regional factor is 1.04.

## 2.2. Certificate claim for multiple cold rooms upgraded with a shared condenser and/or compressor

We have clarified our position that an upgrade involving multiple cold rooms using a shared compressor(s) and/or condenser(s) – or a shared combined compressor and condenser in a single refrigeration system – can be claimed based on the number of cold room upgrades. This is provided that other upgrade components have been installed in each cold room, and the upgrade meets all requirements for the relevant activity scenario as detailed in Part 43 of the Victorian Energy Upgrades Specifications.

For example, an accredited person will be able to claim certificates for three activities for an upgrade at a single site under activity 43B(i) involving:

- the upgrade of a single condenser and compressor serving three cold rooms in a single refrigeration system

- the installation of new electronically commutated evaporator fans in each of the three cold rooms.

## 3. Requirements for personnel undertaking cold room activity

### 3.1. Required installer training and qualifications

All cold room upgrades must comply with legal requirements and be undertaken by personnel holding the following licenses:

- An RAC01 refrigerant handling licence (where handling of refrigerants is required)
- An electrician licence registered with Energy Safe Victoria (where wiring work is undertaken)
- A plumber licence registered with the Victorian Building Authority (where plumbing work is undertaken).

#### 3.1.1. Installer training and qualification record keeping requirements

Accredited persons must maintain a register of installers' qualifications (electrical licence, and plumbing licence and/or refrigerant handling licence if required) to confirm all installers have the relevant qualifications needed to undertake the upgrade.

### 3.2. Role of the upgrade manager

For each upgrade, you must nominate a single person (referred to as the upgrade manager) to legally represent your business to verify the documentation for the upgrade, including but not limited to the VEEC assignment form and documentation outlined in the evidence requirements.

This should be the person who is responsible for overseeing the installation and commissioning of the cold room upgrade.

## 4. Record keeping and evidence requirements

You must collect evidence to demonstrate that each upgrade has been undertaken in accordance with the Victorian Energy Efficiency Target Regulations and Victorian Energy Upgrade Specifications. You are also required to maintain documentation for each cold room upgrade and provide it to us upon request.

### 4.1. Record keeping obligations

You must keep appropriate records to verify all details of the upgrade which relate to the calculation of greenhouse gas abatement and the creation of VEECs.

We may ask to review these records prior to VEECs being registered, or up to six years after they are registered, as evidence that your upgrade complies with the legislation.

Your records must be an auditable record of the work undertaken. If your documentation fails to provide an auditable record of the work undertaken, you may be required to surrender VEECs equivalent to those which we cannot verify or be subject to other compliance and enforcement actions.

### 4.2. Geo-tagged photograph obligations

You are required to take geo-tagged photographs to verify that the installation of all parts has been performed in accordance with the Victorian Energy Efficiency Target Regulations. Geo-tagged photographs must:

- be clear and in focus
- include any relevant markings
- include a date stamp showing the date the photographs were taken
- include the GPS derived latitude and longitude coordinates. This should be stored in the metadata and generated automatically by the device used to take the geo-tagged photographs.

## 5. Minimum record-keeping requirements

### 5.1. Installing an electronic expansion valve and superheat controller into a refrigeration system (activity 43A)

Table 3: Record-keeping requirements for installing an electronic expansion valve and superheat controller into a refrigeration system (activity 43A)

Requirements	Documentation	Description
Assignment of rights to create VEECs	VEEC assignment form	All fields in the VEEC assignment form must be completed and correctly filled in.
Eligibility	VEEC assignment form	A declaration, signed by the AP or the installer, declaring that the installed cold room is not: <ul style="list-style-type: none"> <li>• a refrigerated cabinet</li> <li>• equipment or a product used exclusively for medical, scientific, or research purposes, or</li> <li>• a portable or mobile cold room or refrigerated container.</li> </ul>
Proof of commercial transaction and energy consumer	Tax invoice	A valid tax invoice for the work carried out must include: <ul style="list-style-type: none"> <li>• the name, address, and Australian Business Number (ABN)/Australian Company Number (ACN) of the energy consumer</li> <li>• the date of issue of the invoice</li> <li>• the installation address</li> <li>• the name, address, and ABN of the upgrade manager business</li> <li>• the itemised list of installed cold room parts including brand(s) and model(s) names.</li> </ul>
Upgrade product(s)	Technical/data sheet(s)	Technical/data sheet(s) detailing all installed parts which clearly show the brand name and model for each of the installed parts.
	Geo-tagged photographs of the installed parts	The photographs must: <ul style="list-style-type: none"> <li>• show the electronic expansion valve (EEV) and superheat controller, and</li> <li>• show all installed parts in situ, connected and as part of the refrigeration system.</li> </ul>

Requirements	Documentation	Description
Temperature factor	Geo-tagged photograph of the thermostat controlling the installed cold room system.	The photograph must clearly show the room temperature set point or actual temperature on responsive controller display.
Compliance	Certificate of electrical safety (CoES)	A CoES must be provided if one is required by law. The certificate must include the type and number of parts installed (where more than one upgrade is undertaken at a single premises).
	Victorian Building Authority (VBA) compliance certificate	VBA compliance certificate for upgrades costing \$750 or more (if applicable).



## 5.2. Installing a refrigeration system with three upgraded parts (activity 43B(i))

Table 4: Record-keeping requirements for installing a refrigeration system with three upgraded parts (activity 43B(i))

Requirements	Documentation	Description
Assignment of rights to create VEECs	VEEC assignment form	All fields in the VEEC assignment form must be completed and correctly filled in.
Eligibility	VEEC assignment form	<p>A declaration, signed by the AP or the installer, declaring that the installed cold room is not:</p> <ul style="list-style-type: none"> <li>• a refrigerated cabinet,</li> <li>• equipment or a product used exclusively for medical, scientific, or research purposes, or</li> <li>• a portable or mobile cold room or refrigerated container.</li> </ul>
Proof of commercial transaction and energy consumer	Tax invoice	<p>A valid tax invoice for the work carried out must include:</p> <ul style="list-style-type: none"> <li>• the name, address, and Australian Business Number (ABN)/Australian Company Number (ACN) of the energy consumer</li> <li>• the date of issue of the invoice</li> <li>• the installation address</li> <li>• the name, address, and ABN of the upgrade manager business</li> <li>• the itemised list of installed cold room parts including brand(s) and model(s) names.</li> </ul>
Upgrade product(s)	Technical/data sheet(s)	<p>Technical/data sheet(s) detailing all installed parts which clearly show the brand name and model for each of the installed parts</p> <p>Where multiple cold rooms are served by shared compressor(s) and/or condenser(s), a schematic diagram (e.g. a single line diagram) of the refrigeration system.</p>
	Geo-tagged photographs of the installed parts  Manufacturer document listing installed parts	<p>EITHER:</p> <ul style="list-style-type: none"> <li>• Photographs showing:               <ul style="list-style-type: none"> <li>– the nameplate of each of the installed parts</li> <li>– all installed parts in situ, connected and as part of the refrigeration system.</li> </ul> </li> </ul>

Requirements	Documentation	Description
		<p>OR</p> <ul style="list-style-type: none"> <li>• manufacturer document (e.g. bill of materials) listing installed parts</li> <li>• photograph of unit name plate</li> <li>• photograph showing all installed parts in situ, connected and as part of the refrigeration system.</li> </ul>
Temperature factor	Geo-tagged photograph of the thermostat controlling the installed cold room system.	The photograph must clearly show the room temperature set point or actual temperature on responsive controller display.
Compliance	Certificate of electrical safety (CoES)	A CoES must be provided if one is required by law. The certificate must include the type and number of components installed (where more than one upgrade is undertaken at a single premises).
	Victorian Building Authority (VBA) compliance certificate	VBA compliance certificate for upgrades costing \$750 or more (if applicable).

### 5.3. Installing a refrigeration system with five upgraded parts (activity 43B(ii))

Table 5: Record-keeping requirements for installing a refrigeration system with five upgraded parts (activity 43B(ii))

Requirements	Documentation	Description
Assignment of rights to create VEECs	VEEC assignment form	All fields in the VEEC assignment form must be completed and correctly filled in.
Eligibility	VEEC assignment form	<p>A declaration, signed by the AP or the installer, declaring that the installed cold room is not:</p> <ul style="list-style-type: none"> <li>• a refrigerated cabinet, or</li> <li>• equipment or a product used exclusively for medical, scientific, or research purposes, or</li> <li>• a portable or mobile cold room or refrigerated container.</li> </ul>

Proof of commercial transaction and energy consumer	Tax invoice	<p>A valid tax invoice for the work carried out must include:</p> <ul style="list-style-type: none"> <li>• the name, address, and Australian Business Number (ABN)/Australian Company Number (ACN) of the energy consumer</li> <li>• the date of issue of the invoice</li> <li>• the installation address</li> <li>• the name, address, and ABN of the upgrade manager business</li> <li>• the itemised list of installed cold room parts including brand(s) and model(s) names.</li> </ul>
Upgrade product(s)	Technical/data sheet(s)	<p>Technical/data sheet(s) detailing all installed parts which clearly show the brand name and model for each of the installed parts</p> <p>Where multiple cold rooms are served by shared compressor(s) and/or condenser(s), a schematic diagram (e.g. a single line diagram) of the refrigeration system</p>
	<p>Geo-tagged photographs of the installed parts</p> <p>Manufacturer document listing installed parts</p>	<p>EITHER:</p> <ul style="list-style-type: none"> <li>• Photographs showing: <ul style="list-style-type: none"> <li>– the nameplate of each of the installed parts</li> <li>– all installed parts in situ, connected and as part of the refrigeration system.</li> </ul> </li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• manufacturer document (e.g. bill of materials) listing installed parts</li> <li>• photograph of unit name plate</li> <li>• photograph showing all installed parts in situ, connected and as part of the refrigeration system.</li> </ul>
Temperature factor	Geo-tagged photograph of the thermostat controlling the installed cold room system.	The photograph must clearly show the room temperature set point or actual temperature on responsive controller display.
Compliance	Certificate of electrical safety (CoES)	A CoES must be provided if one is required by law. The certificate must include the type and number of parts

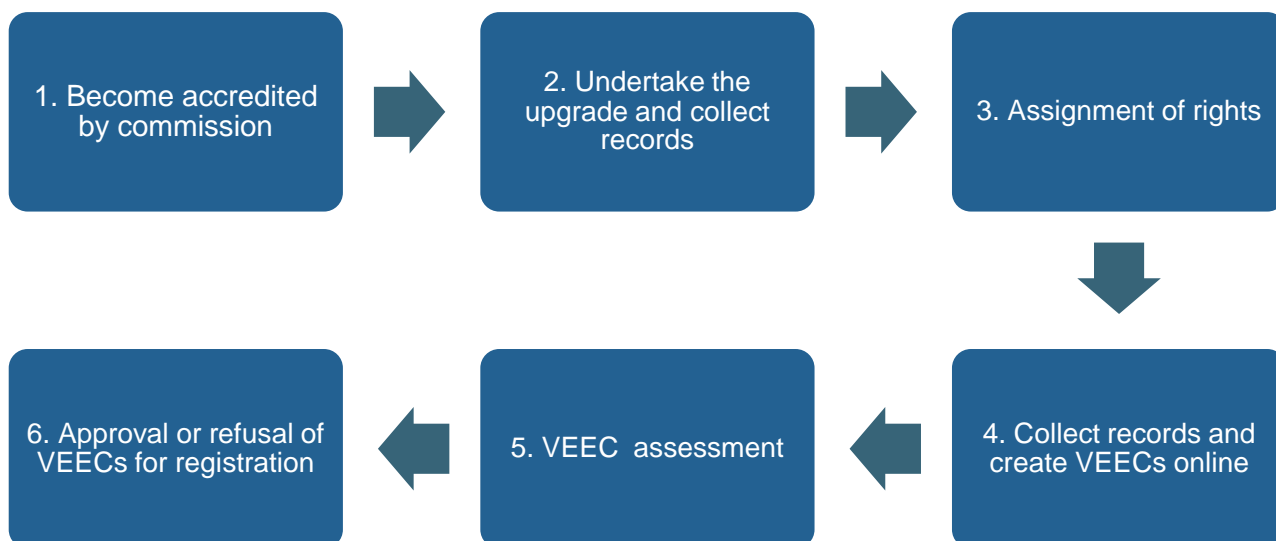
installed (where more than one upgrade is undertaken at a single premises).

Victorian Building  
Authority (VBA)  
compliance certificate

VBA compliance certificate for upgrades costing \$750 or more (if applicable).

## 6. Cold room activity process

This section provides you with the process for undertaking a cold room activity under the program.



### 6.1. Become accredited

You must be accredited/approved to undertake this activity to create VEECs for this activity. Visit [www.esc.vic.gov.au/become-veu-accredited](http://www.esc.vic.gov.au/become-veu-accredited) for information on how to become accredited.

### 6.2. Undertake the upgrade and collect records

Installer must comply with all installation requirements as detailed in the VEET Regulations and VEU Specification. In addition, certificates cannot be created unless a prescribed activity is undertaken in accordance with the provisions of the Electricity Safety Act 1998, the Gas Safety Act 1997, the Occupational Health and Safety Act 2004 or the Building Act 1993 or the regulations under any of those Acts.

The installer must collect records as listed under section 5.

### **6.3. Assignment of rights**

An important part of the certificate creation process is the valid assignment of the right to create VEECs from the consumer to an accredited person. Ensure the signatory has the legal authority to sign on behalf of the consumer entity.

Download the VEEC assignment form template for the activity from the [cold room page](#) on the commission's website.

Consumers must be provided a copy of the VEEC assignment form at the time of signing (for written forms) or within 10 business days of signing (for electronic forms). Accredited persons should consider taking steps to ensure that all personal information collected in the VEEC assignment form is held in accordance with the Information Privacy Principles under the Privacy and Data Protection Act 2014 (Vic). Details of how to comply can be found at: <https://ovic.vic.gov.au/privacy/>.

### **6.4. Collect records and create VEECs online**

Prior to creating VEECs for an activity, accredited persons must have collected the required records for the upgrade as specified in section 5. The commission may ask for these records as part of our certificate assessment process.

To create VEECs, you can upload the activity using either an upload form or the online user interface on the VEU Registry. Different activity types have different data input requirements, so it is important that you input the correct data in the relevant field.

After you press the 'create' button for your validated activities, the VEECs associated with your upgrade are created and assigned a unique identifier.

A certificate creation fee of \$2.33 per certificate is invoiced at the point of VEEC creation for all VEECS you submit. We issue invoices on Tuesdays and Thursdays each week for VEECs created before 6am on that day. If an activity you created is returned to you as an external duplicate, you may withdraw the activity in the VEU registry system before the 6 am invoicing deadline on Tuesdays and Thursdays to avoid being charged the fee. You will be able to reconcile invoices with your created activities in the VEU registry.

### **6.5. VEEC assessment**

Once you have paid your certificate creation fees, we will assess the created VEECs for eligibility for registration. This process involves checks to verify that VECCs have been created in accordance with the VEET Act and VEET Regulations. Given the complex nature of these upgrades, we may conduct an assessment of each activity submitted for VEEC creation. You must

always retain complete and accurate records for each upgrade you have undertaken. We may require you submit to us record evidence as part of our assessment process.

## **6.6. Approval or refusal of VEECs for registration**

Once your VEEC creation claims have been validated, we will register your VEECs and notify you that the VEECs are available to be traded and/or surrendered to us.

# Glossary

Term	Definition
Cold room	<p>A refrigerated room or structure where goods are stored at temperatures below 7 degrees Celsius but does not include:</p> <ul style="list-style-type: none"><li>• a refrigerated cabinet,</li><li>• equipment or a product used exclusively for medical, scientific, or research purposes, or</li><li>• a portable or mobile cold room or refrigerated container</li></ul>
Electronic expansion valve	<p>An electrically driven device which regulates the flow of volatile refrigerant into an evaporator of a refrigeration system.</p>
Evaporator	<p>A heat exchanger in which liquid refrigerant is vaporised by absorbing heat from the substance to be cooled.</p>
Refrigeration system	<p>An assembly of parts used in the cooling of a space, substance, or system to lower and/or maintain its temperature below the ambient one (removed heat is rejected at a higher temperature).</p>
Saturation temperature	<p>The temperature at which a refrigerant changes from a liquid state to a vapour, or from a vapour to a liquid state.</p>
Superheat	<p>The difference in temperature between:</p> <ul style="list-style-type: none"><li>• the saturation temperature corresponding to the pressure measured at the outlet of an evaporator of the refrigeration system; and</li><li>• the temperature of the refrigerant vapor when leaving the outlet of an evaporator.</li></ul>
Superheat controller	<p>A device responsive to changes of pressure, temperature, or other variables for regulation of superheat in a refrigeration system in normal operation.</p>
VEEC	<p>A Victorian energy efficiency certificate created under Section 17 of the Victorian Energy Efficiency Target Act 2007.</p>



# Appendix A: Calculation for cold room activities and worked examples

VEECs for these activities are calculated using the following equation (VEECs equivalent to tonnes of CO<sub>2</sub> equivalent emissions abated):

### ***GHG Eq. Reduction***

$$= \text{Energy Savings} \times \text{Lifetime} \times \text{EEF} \times \text{Temperature Factor} \times \text{Regional Factor}$$

- GHG Eq.: greenhouse gas equivalent, in tonnes of CO<sub>2</sub> equivalents
- Energy Savings: energy saving generated (as per VEU specifications)
- Lifetime: The asset lifetime (as per VEU specifications)
- EEF: Electricity emissions factor (as per VEET Regulations at the time of installation)
- Temperature factor: variation in cold room energy use, as per VEU specifications
- Regional factor: climatic region applicable to the site, as per VEU specifications

## **Worked examples for creating VEECs**

### **Activity 43A – Electronic expansion valve and superheat controller**

- Energy savings is 1.7
- Lifetime is 12
- Electricity emissions factor is 0.9546
- Temperature factor is 1.0 for cold rooms operating at or above 0°C and 1.4 for cold rooms operating below 0°C
- Regional factor is 0.98 for upgrades in metropolitan Victoria and 1.04 for upgrades in regional Victoria

Table 6: Worked example for activity 43A: electronic expansion valve and superheat controller

Activity	Upgrade scenario	Greenhouse Gas Equivalent Reduction Equation	VEECs generated
43A	Installing an electronic expansion valve and superheat controller for a cold room operating at below 0°C (freezer) in regional Victoria	$1.7 \times 12 \times 0.9546 \times 1.4 \times 1.04$	28

### Activity 43B(i) – Refrigeration system with three upgraded parts

- Energy savings is 3.4
- Lifetime is 12
- Electricity emissions factor is 0.9546
- Temperature factor is 1.0 for cold rooms operating at or above 0°C and 1.4 for cold rooms operating below 0°C
- Regional factor is 0.98 for upgrades in metropolitan Victoria and 1.04 for upgrades in regional Victoria

Table 7: Worked examples for activity 43B(i): refrigeration system with three upgraded parts

Activity	Upgrade scenario	Greenhouse Gas Equivalent Reduction Equation	VEECs generated
43B(i)	Installing a minimum of three specified parts for a cold room operating at or above 0°C in Metropolitan Victoria.	$3.4 \times 12 \times 0.9546 \times 1 \times 0.98$	38

### Activity 43B(ii) – Refrigeration system with five upgraded parts

- Energy savings is 5.1
- Lifetime is 12
- Electricity emissions factor is 0.9546
- Temperature factor is 1.0 for cold rooms operating at or above 0°C and 1.4 for cold rooms operating below 0°C (freezer)
- Regional factor is 0.98 for upgrades in metropolitan Victoria and 1.04 for upgrades in regional Victoria

Table 8: Worked example for activity 43B(ii): refrigeration system with five upgraded parts

Activity	Upgrade scenario	Greenhouse Gas Equivalent Reduction Equation	VEECs generated
43B(ii)	Installing all specified parts for a cold room operating below 0°C (freezer) in Regional Victoria.	$5.1 \times 12 \times 0.9546 \times 1.4 \times 1.04$	85

## Document version control

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Version	Amendments made	Date published
1.0	First release	17 August 2021
1.1	Changes to some evidence requirements and clarification on eligibility of multiple cold room upgrades	22 December 2021
1.2	Updated to include information on activity process (section 6), including fee creation process	1 November 2023
1.3	Revision to reflect amendment to VEET regulations banning cold-call telemarketing and doorknocking under the program	1 May 2024