Victorian Energy Upgrades – New Activities Consultation

Consultation Questions Summary

About this consultation

To increase the pool of opportunity for energy efficiency upgrades and support the 2021-2025 Victorian Energy Upgrades (VEU) program targets, the Department of Environment, Land, Water and Planning (the department) is seeking to expand the range of energy efficiency upgrades (activities) that are available to households and businesses. This consultation seeks stakeholder feedback on four potential new VEU activities including:

- upgrades to the refrigeration equipment of cold rooms
- installation of Energy Management Information Systems (EMIS) in commercial buildings
- upgrades to install lagging (or insulation) on pipework heated by gas appliances
- installation of smart thermostats for residential heating and cooling systems.

Issues papers for each of the activities are available on the Engage Victoria website.

The closing date for consultation submissions is 5 February 2021.

Privacy collection notice

The department is committed to protecting personal information provided by you in accordance with the principles of the Victorian privacy laws. The information you share with us in your responses will be used only for the purpose of this consultation. Where you choose to provide personal information, the department may use it to provide you consolidated feedback on the submissions we receive or to seek clarification on your submission. We will also share your submission with the Essential Services Commission, who regulate and administer the VEU program.

Information you provide may also be published as part of reporting back on the consultation, however the department will not disclose any information without your consent. All fields on this form relating to personal information are optional.

You may access the information you have provided to the department by emailing energy.upgrades@delwp.vic.gov.au.

More information about DELWP's privacy policy is available via the link below:

https://www2.delwp.vic.gov.au/privacy

Publication of submission

We may publish information from your submission but will not do so without prior consent using the following process. Please indicate using the check-boxes below whether you would like your

submission to be made public in full, public without your name or organisation name, or not made public.

☒	Publish in full	☐	Publish but do not include name or organisation name	☐	Do not publish

Information about who is making this submission:

Your Name:	*AIRAH DA12 Energy Efficiency in Cold Rooms steering committee, and AREMA*
Organisation (if relevant):	*Refer organisations listed in submission, represents more than 95% of the market*
Email Contact:	*brendan.pejkovic@airah.org.au*
Relationship to VEU Program:	*The AIRAH and the subsequent DA12 committee were engaged in the development of the following:* *- AIRAH Walk-in cold room research project: Barriers to energy efficiency in partnership with DELWP;* *- AIRAH DA12 Energy Efficiency in Cold Rooms; and,* *- DELWP representative(s) attended the committee meetings for guidance when developing the method.*

General feedback:

Do you have any general feedback on the VEU program or the new activities consultation process?

As identified in the research project into barriers to energy efficiency sponsored by DELWP, it concluded that refrigeration technology used in this sector has remained relatively stagnant or conventional for much of the last twenty years, and new technology opportunities that can achieve savings of more than 25% have only recently emerged. Information failure, split incentive and least cost purchasing are the primary reasons for energy waste in the walk-in cold room (WIC) sector.

The AIRAH DA12 steering committee commends DELWP on developing these important regulations to provide incentives for high efficiency walk in cold rooms in Victoria. The method is practical, targeted and captures the key elements of high efficiency equipment in this sector. The challenge is to keep the administrative burden to a minimum to ensure the majority of the incentive goes to the equipment decision makers. The committee and its members fully support the proposed regulations and offer guidance on possible improvements.

The AIRAH DA12 Energy Efficiency in Cold Rooms steering committee has continued as an active committee meeting monthly throughout 2020 following the successful development

and publication of the best practice guide. The main focus of the committee in 2020 was focussing on achieving consistent industry equipment ratings and associated technical standards.

The following industry associations and companies that have reviewed, discussed, and indicate broad support for this submission include:

Peak industry associations:

- *Australian Institute of Refrigeration, Air conditioning and Heating (AIRAH)*
- *AREMA (the Air-Conditioning & Refrigeration Equipment Manufacturers Association of Australia)*

DA12 committee members:

- *Airefrig Australia*
- *Beijer Refrigeration Australia*
- *Bitzer Australia*
- *Danfoss Australia*
- *Expert Group*
- *Kirby HVACR (formerly Heatcraft)*
- *Reece - Actrol*
- *Refconsult*

These list of participants in this submission represents the two main relevant industry associations and equipment suppliers (including wholesalers) that cover more than 95% of the market.

Some of these companies may provide separate submissions where they wish to emphasise a particular point.

The AIRAH DA12 Committee would welcome the opportunity to arrange a meeting with DELWP and relevant committee members to work through the details proposed in this submission.

Feedback on new activities consultation questions:

Please ‘control+click’ on the following or scroll to go to the feedback sections for each of the new activities:

Cold Room Upgrades

A public consultation on the potential new Cold Room Upgrades activities was conducted in August 2019. Feedback from the consultation supported the consideration of new cold room activities, with draft regulations and specifications developed to support the introduction of these new activities.

The Cold Room Upgrade issues paper is focused on these draft regulations and specifications.

- Cold Room Upgrade Issues Paper: Regulations and Specifications

Please answer the following consultation questions about the proposed Cold Room Upgrades Regulations and Specifications.

The closing date for consultation submissions is 5 February 2021.

Questions for Stakeholder Feedback:	Comments
1. Do you have any comments on the draft Regulations and Specifications for Part 43 – Cold room upgrades?	*See below*

The draft Regulations and Specifications is very good, the committee offers guidance on the following potential improvements:

Section: Definitions, page 9

1 Delete:

~~evaporator means a heat exchanger over which liquid refrigerant is dripped or sprayed and evaporated;~~

1 Substitute:

Evaporator is a heat exchanger in which liquid refrigerant is vaporised by absorbing heat from the substance to be cooled;

The substitute evaporator definition is from AS/NZS5149.1.

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2 Edits

saturation temperature means the temperature at which a refrigerant changes from a liquid state to a vapour (or from vapour to liquid);

Section: Definitions, page 11

Questions for Stakeholder Feedback:	Comments

3 Delete:

~~floating head pressure in relation to a refrigeration system, means a type of control that allows the pressure at which the refrigerant is condensed to decrease when ambient air temperatures are lower, to lower the temperature at which the refrigerant is condensed at and improve the efficiency of the compressor.~~

3 Substitute

floating head pressure is a type of control technology capable of varying condensing temperature with ambient temperature to improve refrigeration system performance.

Table 43.1 – Eligible Cold Room Upgrade scenarios, Product category 43C, item (b), page 11 and 12.

4 Delete:

~~technology capable of floating head pressure to vary with ambient temperature without exceeding the ambient temperature by more than the design temperature difference of the condenser.~~

4 Substitute

technology capable of varying condensing temperature with ambient temperature to improve system performance.

Table 43.1 – Eligible Cold Room Upgrade scenarios, Product category 43C, item (d), page 12.

5 Edits

(d) compressors with variable capacity modulation such as variable ~~speed~~ capacity control, other than

(i) on/off capacity control on single compressor systems

(ii) hot gas bypass

(iii) fixed stage cylinder unloading

~~(iv) digital scroll~~

These changes have been suggested to provide more accurate wording of the intent of the regulations and to safeguard against excluding emerging energy saving technologies.

Digital scroll compressors should not be omitted as they can control and vary capacity by up to 90% (i.e. 10% to 100%), resulting in significant energy savings. Please see Appendix A - Emerson Technical Bulletin - Digital Capacity Control for testimony the range of capacity control.

Traditional cylinder unloading typically on semi-hermetic compressors is limited to fixed stages depending on the number of cylinders. Whereas emerging cylinder modulating unloading

Questions for Stakeholder Feedback:	Comments
technology can control and vary capacity by up to 90%, resulting in significant energy savings. Please see Appendix B - Bitzer Technical Bulletin kp-130-10-en Ecoline Varispeed for the range of capacity control. --- Table 43.1 – Eligible Cold Room Upgrade scenarios, Product category 43B, page 11. A refrigeration system that includes at least three of the components set out in this Table for Activity 43C. 6 Include At least one of the three must be: (b) technology capable of varying condensing temperature with ambient temperature to improve system performance. (d) compressors with variable capacity modulation such as variable capacity control, other than……. These changes have been suggested as variable capacity compressor(s) and varying condenser temperature (i.e. floating head control systems) are the largest contributors to the savings of the group of five. Studies suggest either of these technologies can potentially achieve around 20% each in isolation.	
2. Do you have any comments on assuming one size of cold room for estimating energy savings and VEECs?	*See below*
This is an excellent concept to eliminate administrative burden. The downside of the one size fits all approach is some larger cold rooms may not be incentivised sufficiently relative to the abatement they deliver or relative to the capital cost of selecting high efficiency equipment. Particularly those application that are not large enough to justify the VEU Project Based Activity method to claim incentives. An alternative may be to have one size of cold room as a default, and then add another factor that doubles the abatement for large cold room greater than 36 m^2. *GHG Eq Reduction = Energy Savings x Lifetime x GHG Emissions Factor x Temperature Factor x Cold room size factor x Regional Factor* Where the Cold room size factor could be 1.0 for the default and 2.0 or a larger multiplier for a large cold room. As one medium temperature condensing unit can be piped up to multiple cold rooms, or one low temperature condensing unit can be piped up to multiple freezers. The threshold that defines a large cold room should be an aggregate value (i.e. the sum of the cold rooms). This would still mean that no validation would be required for the default size.	

Questions for Stakeholder Feedback:	Comments
There are several ways to verify larger cold room, they include: ▪ Measuring the size of the rooms and providing photographic evidence and a plan. ▪ A less onerous way would be to set an aggregate threshold of evaporator capacity (i.e. one for cool rooms and one for freezers). Geo-tagged photographs of evaporator rating plate(s) that includes a model number that can be verified against a product specification to determine the aggregate capacity. The committee can assist with selecting these thresholds if this option is perused. The condensing unit capacity cannot be used as they may be servicing other applications. For example, it is common for a medium temperature refrigeration system in a food retail application to service multiple cold rooms (i.e. produce, meat, liquor, etc.), as well as refrigeration display cases on the trading floor. Similarly, in a factory, a system may be servicing a cold room as well as a process.	
3. Do you have any suggestions concerning what verification information should be used to confirm the equipment type (i.e. cool room or freezer)?	*See below*
If cool rooms are assumed to be the default, then evidence is only required to verify the system is a freezer in order to provide an additional incentive, which may represent 20% to 30% of applications. There are several items that could be used to verify the application was a freezer such as a geo-tagged photo of the: ▪ thermostat/controller reading showing the operating temperature operating below 0oC; or ▪ evaporator rating plate that includes a model number that can be verified against a product specification; or ▪ condensing unit rating plate that includes a model number that can be verified against a product specification. This suggestion eliminates administrative burden for more than 70% of applications.	
Do you have any other comments on the proposed cold room activity?	
As previously mentioned, many refrigeration systems or condensing units are used to service multiple applications, and the method should not be restricted to “one on one” applications. That is one condensing unit piped to one cold room. For example, it is common for a medium temperature refrigeration system in a food retail application to service multiple cold rooms (i.e. produce, liquor, meat, etc.), as well as refrigeration display cases on the trading floor. Similarly, in a factory, a system may be servicing a cold room as well as a process. Similarly, with low temperature systems servicing multiple freezers.	

Questions for Stakeholder Feedback:	Comments
Whilst not specified the activities should apply to both existing and new cold room applications, we assume this is the intent as there are significant energy saving opportunities with either. Defining the activities on page 6, should read Install EEV and superheat ~~compressor~~ controller. Finally, whilst it is implied it may be appropriate to spell out that walk-in cold rooms also include: ▪ Retail applications and liquor outlets where the consumer can reach into the cold room via a glass door (e.g., convenience stores) or walk into the cold room (e.g. liquor outlets) to select beverages and foodstuffs. These types of walk-in cold rooms typically have transparent doors (i.e. glass) and windows. ▪ Preparation rooms where the temperatures may be 12°C to 18°C to facilitate the preparation of sandwiches, salads, meat, wine and other foodstuffs are within the scope of DA12. Preparation rooms may require lower noise levels for operators, have mechanical ventilation and be humidity controlled. These definitions can be found in DA12.	

Building Energy Management Information Systems (EMIS)

The proposed Building EMIS activities are focused on improving the efficiency of energy using systems in commercial buildings by installing a building EMIS. Building EMIS consist of systems and platforms that monitor and manage energy using systems throughout buildings and facilities, as well as to manage specific systems (e.g. HVAC equipment). There are approximately 1,500 large commercial buildings in Victoria where this activity could be appropriate.

The Building EMIS Issues Paper describes what building EMIS are, the potential market for them and the potential energy savings.

- Building EMIS Issues Paper

Please answer the following consultation questions about the proposed Building EMIS activity.

The closing date for consultation submissions is 5 February 2021.

Questions for Stakeholder Feedback	Comments
1A. Is there a potential market for commercial building Energy Management Information Systems (EMIS) products and services in Victoria? *Yes / No* **1B.** Please explain your response	
2A. Do you agree with the EMIS classifications (type of system) used? *Yes / No* **2B.** If not, please suggest an alternative classification (type of system).	
3A. Do you support the use of a hybrid deemed/measurement approach to creating VEECs for EMIS activities? *Yes / No* **3B.** If yes, how should this approach work? **3C.** If no, can you provide an alternative approach?	
4A. Do you agree that there should be a review of energy savings after one year, prior to awarding VEECs for the rest of the service contract? *Yes / No* **4B.** If yes, how should this approach work?	

4C. If no, can you provide an alternative approach?	
5A. Should there be a cap on the amount of financial incentive created from this method? *Yes / No* **5B.** If yes, at what level should this incentive be capped? **5C.** If no, please explain your response	
6. What do you think are the potential barriers to implementing an EMIS activity into the VEU program?	
7A. Are there upgrade activities that have not been identified that should be included in an EMIS activity? *Yes / No* **7B.** If so, what are they?	
8. What energy saving features should a System EMIS include?	
9. What energy saving features should an Automated System Optimisation (ASO) include?	
10. Are there publicly available equipment standards or definitions which can be referred to in the definition of the System EMIS or Automated System Optimisation activities?	
11. Do you think developing a register of approved products is an appropriate approach for the EMIS activities?	
12A. Are there any skills or training considerations for the proposed activity? *Yes / No* **12B.** If yes, please provide further information	

Do you have any other comments on the proposed Building EMIS activity?
[Response]

Hot Pipe Lagging

The proposed pipe lagging activity is focused on improving the energy efficiency of systems of heated pipework in commercial and industrial facilities by installing insulation (also called lagging) to reduce heat loss. Without lagging hot pipes act as uncontrolled radiant heating to the surrounding environment. This often accounts for 10-12 per cent of the system's fuel consumption without providing benefit to the facility.

The Hot Pipe Lagging issues paper describes hot pipe lagging and its role in energy efficiency and discusses ways to define the activity and important variables involved in the estimation of emissions savings.

- Hot Pipe Lagging Issues Paper

Please answer the following consultation questions about the proposed hot pipe lagging activity.

The closing date for consultation submissions is 5 February 2021.

Questions for Stakeholder Feedback	Comments
1A. Do you think our description of pipe lagging installation and replacement practices at **commercial facilities** is accurate? *Yes / No* **1B.** Please explain your understanding of pipe lagging installation and replacement practices at **commercial facilities**	
2A. Do you think our description of pipe lagging installation and replacement practices at **industrial facilities** is accurate? *Yes / No* **2B.** Please explain your understanding of pipe lagging installation and replacement practices at **industrial facilities**	
3A. Do you think insulating hot pipes has merit as a potential VEU activity? *Yes / No* **3B.** Please explain your response	
4A. Do you think that AS 4426 provides a strong enough set of guidelines to ensure that only high quality, fit-for-purpose lagging installations are incentivised? *Yes / No* **4B.** If not, which other standards would you recommend and why?	

5. What do you think is a reasonable warranty period (installation and product) that could be put in place for high quality lagging installations without creating a barrier to the activity?	
6. Are there other features that should be required as a minimum for the activity? (e.g. required cladding, or a maximum limit on thermal conductivity to ensure pipe diameter and hence heat loss area is not unnecessarily increased)	
7. What are the most important factors in determining emissions savings from lagging hot pipework?	
8. Would a lagging product register be more appropriate than submitting technical product details for each installation?	
9A. Are there any skills or training that may be required for the proposed activity? *Yes / No* **9B.** If yes, please provide further information.	

Do you have any other comments on the proposed hot pipe lagging activity?
[Response]

Smart Thermostats

The proposed Smart Thermostats activity is focused on improving energy efficiency of home heating and cooling systems by installing smart thermostats. Smart thermostats are a development in smart home technology which can improve the efficiency of heating and cooling for consumers and provide them with additional service benefits such as increased convenience, comfort and control. In addition, as smart thermostats have communications capability (typically via Wi-Fi), this provides a pathway to alleviate peak demand where consumers participate in demand response programs. Recently new products have entered the Australian market which are potentially suitable for installing with common heating and cooling systems in Australia.

The Smart Thermostats issues paper describes what smart thermostats are, the potential market for them and the potential energy savings.

- Smart Thermostats Issues Paper

Please answer the following consultation questions about the proposed Smart Thermostat activity.

The closing date for consultation submissions is 5 February 2021.

Questions for Stakeholder Feedback	Comments
1A. Do you think there is a potential market for smart thermostat activities in Victorian homes? *Yes / No* **1B.** Please explain your response	
2A. Should the activity be available to residential premises only? *Yes / No* **2B.** Please specify other sectors or types of premises that you think would benefit from this activity.	
3A. Are there VEU smart thermostat eligibility criteria that should be modified, removed or added? *Yes / No* **3B.** Please explain your response **3C.** Do you have any other feedback on the proposed VEU smart thermostat eligibility criteria? *Yes / No* **3D.** If yes, what is your feedback?	

4A. Should products that wish to be registered under the program provide a demand response capability statement? *Yes / No* **4B.** Please explain your response **4C.** What other additional information should be provided?	
5A. Are there any other technical demand response requirements the department should consider for smart thermostats? *Yes / No* **5B.** Please explain your response	
6A. Is there any data available on the energy savings from smart thermostats in Victoria or Australia that you know of and can share with the department? *Yes / No* **6B.** What is that data?	
7. What are other considerations the department should make in the deeming method for smart thermostats?	
8A. Are there technical installation requirements that you think are necessary? *Yes / No* **8B.** Please explain your response **8C.** What do you think the technical challenges are that might prevent uptake of the activity?	
9A. Are there any skills or training considerations for the proposed activity? *Yes / No* **9B.** If yes, please provide further information	

Do you have any other comments on the proposed smart thermostat activity?
[Response]