

24 November 2021

Ministry for the Environment
PO Box 10362
WELLINGTON 6143

By email: climateconsultation2021@mfe.govt.nz

Attn: Submissions Analysis Team

RE: Submission to the discussion document “Te hau mārohi ki anamata - Transitioning to a low-emissions and climate-resilient future” F-gases

The Climate Control Companies Association of New Zealand (CCCANZ), and the Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand Inc (IRHACE) and the Refrigeration Professionals Guild of New Zealand (RPGNZ) welcome the opportunity to jointly submit to MfEs discussion document “Te hau mārohi ki anamata - Transitioning to a low-emissions and climate-resilient future” with respect to F-gases.

Who are we

Organisation	Representation
CCCANZ	HVAC&R companies throughout New Zealand.
IRHACE	Individuals within the HVAC&R industry located both in New Zealand and its overseas members.
RPGNZ	Refrigeration Engineers within New Zealand.
RLTB	Charitable Trust Training organisation established by IRHACE/CCCANZ.
RRNZ	Refrigerant Recovery NZ Ltd
RRO	Refrigerant Recovery Operating Company NZ Ltd

Whilst each organisation is a separate legal entity within the HVAC&R industry sector they work together on several key initiatives and IRHACE/CCCANZ/RLTB/RRNZ/RRO have a central governance, operations, and administration centre (HVACR Centre). The structure of these entities is illustrated in Figure 3 in Part 3 of our submission.

We also note that the Heat Pump Suppliers Association of New Zealand (HPSANZ) and we have exchanged our submissions for comment, we are very pleased to support the HPSANZ submission as it closely aligns with ours.

The CCCANZ, IRHACE and RPGNZ can rightfully claim to represent the majority of the HVAC&R industry and as such should be regarded as the primary voice for the industry with respect to engagement with the government on industry related matters including climate change policies. By working closely together, in close collaboration with HPSANZ, are able to clearly articulate an across-the-industry approach to the mitigation of f-gas refrigerant emissions.

The CCCANZ and IRHACE jointly made a detailed submission in March of this year to the Climate Change Commission's Climate action for Aotearoa Draft Advice, a copy of our submission to Climate Change Commission is attached. Rather than repeating ourselves in this submission we have summarised the key points we made in that submission, references to the section numbers in our Climate Change Commission submission are shown [CCC #].

We note that while MfE has expressed a preference that submitters limit their submissions to answering the six questions via the online form it does allow submissions to be sent by email. Because we represent the bulk of the HVAC&R industry, we are unable to make an adequate submission by simply answering the set questions, therefore we have emailed a full submission. We also note that attendees to the recent MfE F-gas webinar were invited to submit alternative solutions that had not be considered, as outlined in Part 2 an alternative solution is the basis of our submission.

The CCCANZ, IRHACE and RPEGNZ would be pleased to discuss our submission with MfE.

MfE Questions

The questions MfE asks are:

QUESTIONS

100. Do you think it would be possible to phase down the bulk import of hydrofluorocarbons (HFCs) more quickly than under the existing Kigali Amendment timetable, or not?
101. One proposal is to extend the import phase down to finished products containing high-global warming potential HFCs. What impact would this have on you or your business?
102. What are your views on restricting the import or sale of finished products that contain high-global warming potential HFCs, where alternatives are available?
103. What are your views on utilising lower global warming potential refrigerants in servicing existing equipment?
104. Do you have any thoughts on alternatives to HFC refrigerants Aotearoa should utilise (eg, hydrofluoroolefins or natural refrigerants)?
105. Can you suggest ways to reduce refrigerant emissions, in combination with other aspects of heating and cooling design, such as energy efficiency and building design?

Prior to answering these questions, it is absolutely crucial to understand there are two central strategies for the reduction of f-gas emissions:

1. Phasing out f-gas refrigerants in favour of alternative low GWP refrigerants; and
2. Managing f-gas refrigerants.

The fact that f-gas refrigerants only account for circa 3% of worldwide GHG emissions masks the fact that they are important in terms of in terms of the world's overall climate change response. The MfE discussion document notes that 0.4°C mitigation could be possible as a result of the Kigali amendment to the Montreal Protocol, other sources quote 0.5°C mitigation.

The Project Drawdown Review 2000¹ ranks “refrigerant management” as the No 4 opportunity and “alternative refrigerants” as the No 7 opportunity to mitigate global warming, the initial Drawdown Review published in 2017 aggregated them as the No 1 opportunity to mitigate global warming.

The Drawdown Review 2020 assesses the opportunity to sequester carbon to 57.7 Gt for refrigerant management and 43.5 Gt for alternative refrigerants. That is to say Project Drawdown ranks refrigerant management to be a greater climate change mitigation opportunity than is the phasing out the f-gases in favour of low GWP alternatives.

The reality is New Zealand is largely an importer of HVAC&R equipment, we will have little or no direct influence over the refrigerants overseas manufacturers use in their equipment and therefore the phase-down of the HFCs, the only realistic way we can influence the process through political engagement.

Where we have the same issues as the rest of the world and can contribute most to mitigating f-gas emissions is the area of refrigerant management, this must be our No 1 focus.

The first five MfE questions relate to the f-gas refrigerant phase-down by way of border controls (Qs 100-102) or prohibitions on the use of refrigerants (Qs 103-104), The sixth question (105) is about minimising refrigerant use through improved system and building design.

The opportunity to reduce high GWP refrigerant emissions through better refrigerant management isn’t explicitly mentioned, although it might be assumed to fit within:

- Question 100 where enhanced refrigerant management can be a strategy to phase down the bulk import of hydrofluorocarbons (HFCs) more quickly than under the existing Kigali Amendment timetable; and
- Question 105 where refrigerant management is an adjunct to the design and operation of building services.

The apparent lack of focus on better refrigerant management can arguably be traced back to the synthetic refrigerant PSS/PSO industry working group which, while addressing a wide range of refrigerant management issues, failed to recommend refrigerant management strategies in its final report.

The final report Milestone 4: **Guiding principles for preferred industry stewardship solution** was published on 20 March 2020. The report recommended a continuation of the existing Recovery Trust scheme [4]:

2.8. Focus of the scheme - *The PS scheme will only destroy collected synthetic refrigerants*

and in response to

4.10. Market development - Government’s expectation

a) The scheme will have a research and development budget to develop new recycled products, encourage transition to circular product and recycled product materials design, and cooperate with other stakeholders to enhance onshore infrastructure.

Working Group’s response

*a) Given the significant GWP of these SR and the current phasedown to lower GWP SR **the sole focus of the PSO and scheme at the current time will be the destruction of the unwanted gases.** This will be reviewed in the future when it can be shown that the refrigerant bank comprises predominantly low GWP SR.*

Accordingly, we have structured our submission in two parts, firstly phasing out the f-gas refrigerants and secondly managing refrigerants. We have answered MfEs questions in both parts as they relate.

¹ <https://drawdown.org/drawdown-review>

Part 1 - Phasing out f-gas refrigerants in favour of alternative low GWP refrigerants

The HVAC&R industry is confident that when mitigating f-gas emissions it can repeat its past success in reducing the ozone depleting substances (ODS) emissions.

As is shown in the chart below based on New Zealand's greenhouse gas inventory Under the Kyoto Protocol New Zealand's GHG inventory² accounting commenced in 1990, prior to the HFCs being introduced, HFCs first appearing in the inventory during the early 1990s. It would be more insightful for understanding the overall f-gas emissions reduction trend to include the phase-out of ODSs with high GWP factors which being covered in the Montreal Protocol are not accounted under the Kyoto Protocol and the NZETS, for example the CFCs R-11 and R-12 have AR4 100-year GWPs³ of 4,750 and 10,900 respectively.

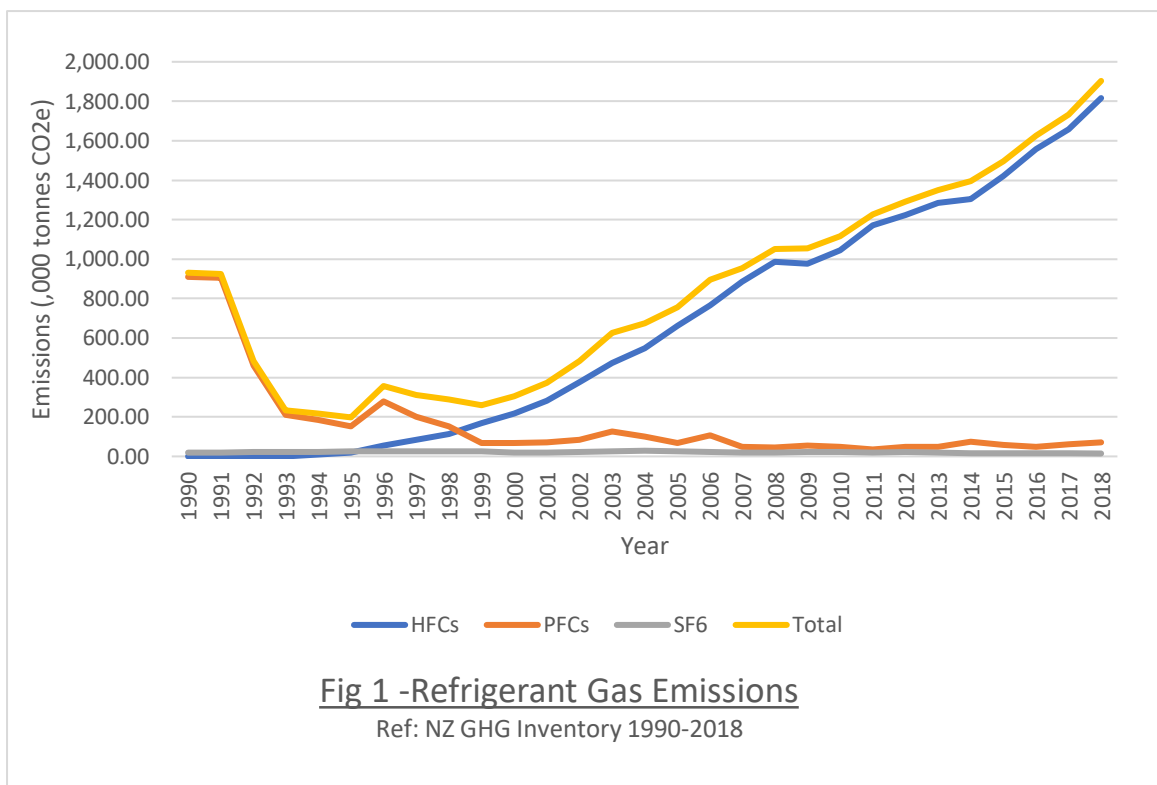


Figure 1: Refrigerant Gas Emissions

Because under the Montreal Protocol ODS are accounted for on a consumption basis we have not been able to estimate the emissions reductions resulting from their being phased out. Refrigerants Australia estimates that Australia's total CO₂-e emissions from air conditioning and refrigeration units fell from 80 million tonnes in 1990 to 6 million tonnes by 2021⁴, we assume this is for bulk refrigerants given under the Montreal Protocol pre-charged ODS refrigerants are accounted for in the country of manufacture.

² <https://www.mfe.govt.nz/publications/climate-change/new-zealands-greenhouse-gas-inventory-1990-2018>

³ https://archive.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

⁴ <https://www.refrigerantsaustralia.org/>

Based on the March 2021 quarterly update of Australia's GHG inventory⁵ their total annual emission of f-gases would appear to be circa 10 million tonnes CO₂-e. Using Australia as a proxy might suggest the phase-out of ODSs has reduced New Zealand's annual emissions by as much as 10 million tonnes CO₂-e since 1990.

The reality is the replacement of the HFCs and other high GWP refrigerants will be driven by overseas manufacturers responding to a combination of governmental regulation and economics pivoting on the increasing carbon cost of the f-gases. This is already happening, as a result in New Zealand we are already seeing R-410A AC split units being superseded by R-32 units, the reduction in GWP being greater than deduction in AR4 100-year GWP⁶ (2088 for R-410A and 675 for R-32) because a lesser volume of refrigerant is used in a R-32 unit. The cost of the R-32 unit is comparable to a R-410A unit, the consumer also gains an energy efficiency benefit meaning lower running costs and there are lower emissions at the power station.

New Zealand is a technology importer, due to our very small market we have little if any ability to influence decisions global manufacturers make regarding technological improvements including the use of new refrigerants.

Question 100 – Do you think it would be possible to phase down the bulk import of hydrofluorocarbons (HFCs) more quickly than under the existing Kigali Amendment timetable, or not?

In Part 2 below we make the case that better management of the HFC refrigerant bank will result in less need to recharge equipment and thereby reduce the need to bulk import HFCs, while at the same time reducing emissions.

We see no strategic advantage in accelerating the phase-down of the bulk import of HFCs. Most of the bulk HFC imports are used for servicing existing equipment, accordingly, accelerating the phase-down would need to be done in tandem with mandating the early retirement of HFC equipment. This would come at an unacceptable economic cost with the likely unintended consequence that equipment would not be properly serviced, and overall emissions might increase.

While the latest assessment of the New Zealand HFC bank of circa 7,000 tonnes dates back to 2016 it is our view that the size of the HFC bank has already or will soon peak before declining over the next decade.

The one class of importation that consideration might be given to banning is the 100g DIY cylinders for topping up air conditioning systems in vehicles. The availability of these cans is a factor in New Zealand's low level of maintenance of vehicle air conditioning systems, it's easier to keep topping up the unit than to get the leak fixed.

The HPSANZ in their submission point out that Australia banned the importation of smaller disposable refrigerant cylinders in 2001, the Australian practice is to import refrigerants in bulk containers and decant the refrigerants into reusable cylinders for the trade. The common industry practice here is to import disposable cylinders for the trade, recover any residual refrigerant from a disposable cylinder into a recovery cylinder and send the disposable cylinder to recycling. Given the smaller size of the New Zealand market the cost of setting up to import in bulk and decant refrigerants into smaller cylinders would make refrigerant importation uneconomic for all but the largest importers thereby reducing competition.

Question 101 - One proposal is to extend the import phase down to finished products containing high-global warming potential HFCs. What impact would this have on you or your business?

In principle we have no particular issue with this proposal, provided exceptions are made for products where there is no viable economic or technical option for alternative low GWP refrigerants, a blanket prohibition will not work.

⁵ <https://www.industry.gov.au/data-and-publications/national-greenhouse-gas-inventory-quarterly-update-march-2021>

⁶ <https://www.awe.gov.au/environment/protection/ozone/rac/global-warming-potential-values-hfc-refrigerants>

We would support the banning of small split units containing refrigerants with a GWP above 750 as proposed by the EU, this is premised on the phasing out of R-410a in favour of R-32, a process which as we pointed out above is already well underway in New Zealand. We note that the HPSANZ in their submission also supports the application of a GWP limit of 750 on heat pumps with a charge size of 2.6 kg or less. We have discussed the opportunity to with the HPSANZ with the following outcomes:

- Their suggested 2.6 kg threshold is appropriate;
- An appropriate timeframe to implement the policy would be in 18 months; and
- We as an industry do not want New Zealand to end up being a dumping ground for small R-410a split AC units when affordable alternative lower GWP systems are available.

Consideration will need to be made for the continued importation of refrigerant and spare parts for prohibited systems, otherwise there will be the risk of unintended consequence of increased emissions because of declining maintenance standards.

Question 102 - What are your views on restricting the import or sale of finished products that contain high-global warming potential HFCs, where alternatives are available?

This is a question best answered by equipment suppliers. However, our position is generally as set out in Question 101 in that there would need to be an adequate lead-in time as well as the continued importation of refrigerant and spare parts.

Question 103 - What are your views on utilising lower global warming potential refrigerants in servicing existing equipment?

We support the use of replacement low GWP refrigerants where practicable and provided:

- The equipment manufacturer recommends the use of the replacement refrigerant.
- There are no secondary factors such as workplace safety, noting the misuse of flammable refrigerants has caused injuries and deaths overseas.

We also note the HPSANZ position in their submission is the use of alternative refrigerants is a technical issue and not something governments typically can or should assess.

However, the government should urgently implement coverage of flammable refrigerants in the New Zealand Building Code, we are almost unique amongst developed nations in not doing so despite having the 2008 Tamahere coolstore experience.

Question 104 - Do you have any thoughts on alternatives to HFC refrigerants Aotearoa should utilise (eg, hydrofluoroolefins or natural refrigerants)?

The reality is New Zealand has virtually no influence on the type of refrigerants manufacturers employ in their equipment. We (commercial and industrial sectors) have the ability to select low and NIL GWP refrigerants at the design stage but at the end of the consumers will choose on capital cost vs long term benefit.

Question 105 - Can you suggest ways to reduce refrigerant emissions, in combination with other aspects of heating and cooling design, such as energy efficiency and building design?

In Part 2 below we discuss the fact that better management of the HFC refrigerant bank will result in less demand for recharging equipment and thereby reducing the need to bulk import HFCs while at the same time reducing emissions.

Part 2 - Managing f-gas refrigerants

Simply waiting for the f-gas refrigerants to be phased out ignores the fact that the single largest cause of f-gas emissions in New Zealand is leakage resulting from substandard installation practices, poor maintenance coupled with illegal emissions, this is evidenced by the currently low end-of-life recovery rate.

It has been estimated that internationally that direct emissions from refrigerant leakage, equipment manufacture, and disposal comprise 30% of total f-gas emissions⁷, the majority of emissions occurring at the power station. In New Zealand's case the bulk of f-gas refrigerant emissions are direct given our high level of renewable electricity. This is the today problem that if allowed to continue will result in the bulk of the existing high GWP refrigerant bank eventually being emitted.

This leads to the issue that the existing HFC refrigerant bank is an avoidable contingent liability to the New Zealand taxpayer, based on the 2016 estimate of the size of the bank and the current price of NZUs [CCC 10] the liability is nearly \$1 billion. On one hand, as long as high GWP refrigerants are not leaked and there is effective recovery and destruction, the increase in the NZU price will help fund improved refrigerant management. On the other hand, the phase-in of low GWP refrigerants will incrementally reduce the levies received on the importation of refrigerants. Based on reported 2016 imports of 530 tonnes and the proposed levy rate of \$1/kg recommended by the industry working group the revenue generated would be circa \$0.5m per annum, diminishing as imports of high GWP refrigerants are phased out [CCC 10], in the absence of a high NZU price far short of the investment required to properly manage the refrigerant bank.

Question 100 – Do you think it would be possible to phase down the bulk import of hydrofluorocarbons (HFCs) more quickly than under the existing Kigali Amendment timetable, or not?

Question 105 - Can you suggest ways to reduce refrigerant emissions, in combination with other aspects of heating and cooling design, such as energy efficiency and building design?

The CCCA, IRHACE and RPGNZ, supported by the HPSANZ, are strongly of the opinion that our primary emissions reduction focus should be on better refrigerant management. Refrigerant management is a common issue internationally, it is the one area of f-gas emissions reduction that New Zealand can influence internationally through the development and implementation of best international practices.

While over time the phase-down of the high GWP f-gases will reduce the average GWP of the refrigerant bank the emissions the problem will not have disappeared. There will still be an ongoing need for improved refrigerant management, principally to minimise leakage and illegal discharges, as well as to maximise refrigerant recovery at end-of-life, once the f-gases will be a smaller but still a value prize in terms of emissions reduction opportunities.

What is required is a holistic end-to-end solution that engages that is supported by the whole industry.

The key refrigerant management strategies are:

- Significantly improving the visibility of refrigerants throughout the supply chain;

⁷ University of Birmingham - A Cool World Defining the Energy Conundrum of Cooling for All

- Standardisation of installation and maintenance practices leading to reduced refrigerant leakage and the resulting emissions, by default this will reduce the need for the importation of bulk refrigerants;
- A vastly improved end-of-life recovery system;
- Industry training, regulation and licensing are central to all the above strategies,
- A holistic solution that manages ALL refrigerants, not just the f-gas refrigerants;
- Research and development; and
- International collaboration.

Improving the visibility of refrigerants throughout the supply chain

It will be impossible to significantly mitigate f-gas refrigerant emissions with the current lack of visibility through the supply chain. The fundamental reason why the recovery rate is so low is because once refrigerants cross the border there is virtually no visibility within the supply chain until a small percentage is recovered and destroyed [CCC 7]. This fact is demonstrated by New Zealand's Greenhouse Gas Inventory 1990–2018 Volume 1 quoting a 32% activity data uncertainty for refrigeration and air conditioning [CCC 7].

The CCCANZ and IRHACE proposed in our submission to the Climate Change Committee [CCC 18, 19] that the need is for a far more holistic end-to-end Synthetic Refrigerant Product Stewardship Scheme (SRPSS) than what we understand is currently being proposed, noting any current work on the SRPSS is being done without due consultation with the wider HVAC&R industry.

The CCCANZ, as part of an R&D MoU with Auckland based software developers SmartTrade Ltd, has since late 2019 been investigating the potential for a blockchain based SRPSS solution which we consider would be a far greater visibility of the refrigerant supply chain as part of an end-to-end SRPSS solution than what is we understand is currently proposed. The work on the blockchain solution based on Ethereum smart contracts has reached proof-of-concept stage but is now on hold due to uncertainties over what is happening with the SRPSS.

Standardisation of installation and maintenance practices

The minimisation of f-gas emissions through improved refrigerant management demands greater standardisation of installation and maintenance practices. At the current time there's too many cowboy installers and on the maintenance side most contractors use their own home-grown check lists. The need is for all installers to use the available guidelines, the CCCANZ has been working on the standardisation of maintenance practices together with workplace safety practices. The standardisation work is outlined in the Research and Development section below.

The International Institute of Refrigeration (IOR) (IRHACE is a corporate member of IIR and works with the NZIIR) has estimated that better management of cooling equipment can reduce total cooling greenhouse emissions by 13%⁸, they state:

Better optimization, monitoring, and maintenance of cooling equipment has the potential to save 30Gt of CO₂ emissions by 2050 – contributing a further 38% of savings on top of those delivered through the planned phase down of high GWP refrigerants agreed at Kigali.

⁸ <https://k-cep.org/wp-content/uploads/2018/03/Optimization-Monitoring-Maintenance-of-Cooling-Technology-v2-subhead....pdf>

The Australian Institute of Refrigeration Air Conditioning and Heating (AIRAH) DA19 HVAC&R Maintenance Manual states [emphasis added]:

Due to the mega-trends of population growth, urbanisation, and the information technology revolution, the Australian economy depends on reliable, effective and efficient HVAC&R like never before, which means it also depends on reliable, effective and efficient HVAC&R maintenance like never before. **HVAC&R maintenance is also widely acknowledged as a fundamental step towards achieving a net-zero emissions future.**

A vastly improved end-of-life recovery system

In our submission to the Climate Change Commission, we estimated that Recovery Trust New Zealand (RTNZ) scheme has achieved a recovery rate between 3% and 7% [CCC 6] which is consistent with the PSS/PSO industry working group which quoted the recovery rate to be circa 5%⁹.

We also estimated that the RTNZ scheme is significantly less efficient than the equivalent Refrigerant Reclaim Australia (RRA) scheme [CCC 8, 9]. Accordingly, it can be concluded that currently more than 90% of f-gas refrigerants end up being emitted. The low recovery rate is also evidenced by the fact that the New Zealand Greenhouse Gas Inventory does not bother to account for refrigerant destruction.¹⁰

Simply polishing up the current poorly performing end-of-life RTNZ scheme is not a solution, which is why the SRPSS needs to be a true end-to end scheme.

Industry training, regulation and licensing

As HVAC&R contractors, building, replacing and retrofitting refrigeration and air-conditioning systems, our businesses need to ensure on behalf of our clients that we have the confidence that the downstream activities – maintenance, repair, commissioning, decommissioning – are carried out in a regulated environment. Otherwise, there is no integrity in our work.

Our highly skilled people require robust, regular assessments of their technical competency through a high standard of theoretical and skills-based training. This education plays a pivotal role in reducing refrigerant emissions - an integral component to the safe and effective management of synthetic greenhouse gases and energy optimisation.

In preparation for the phase-down; the HVAC&R industry has assembled a strategic plan involving two existing groups within the Pan-Industry framework – namely Refrigerant Licensing New Zealand (RLNZ), which acts as our governance group; reporting directly to IRHACE and CCCANZ (as 50% co-owners) and secondly, the Sector Advisory Group (SAG) which is the conduit between RLNZ and our training providers Hanga Aro Rau and Te Pukenga; delivering the operational and technical elements of the educational strategies that RLNZ develops in conjunction with industry.

RLNZ, (as our standard-setting body) and the SAG (which has representation from all sectors of the industry including but not limited to IRHACE, CCCANZ, RPGNZ and the HPSANZ) are both in direct and regular communication with WorkSafe New Zealand and together with other providers such as trainers, assessors (of which we are currently aiming to establish a network of endorsed roving assessors) and manufacturers (through their approved training

¹⁰ Milestone 3, Report 3

programmes) are expected to take a leading part in the development and rollout of the WorkSafe mandated licensing regime.

If synthetic refrigerants are phased down without an appropriate risk evaluation, the sequential gears that drive the economy will potentially seize from a training context ultimately leading to a critical shortage of skilled people in key construction and manufacturing roles as we move into the era of licensed practitioners. Under current regulations the PCBU has a duty of care to ensure all contractors are competent in their various activities, the primary industries and manufacturing sectors are without exception.

Failure to account for the education of both internal and external stakeholders would be a massive oversight by the government. Heavily reliant on volunteers, the HVAC&R industry currently lacks the funding and allocated time to initiate and develop the essential training mechanisms necessary to cater to the pending 2036 phase-down program.

A holistic solution that manages ALL refrigerants

The industry deals with a range of refrigerant types, not just synthetic refrigerants with high GWPs, all of which have their own challenges including toxicity, flammability, and high pressure. Accordingly, the need is for a holistic refrigerant management solution that caters for the widest possible range of refrigerant types thereby avoiding having to deal with multiple management systems.

Research & Development

R&D is an essential strategy for improving refrigerant management. As mentioned above the CCCANZ has an R&D MoU with software developers SmartTrade Ltd. The primary focus of the HVAC&R R&D work is to research and develop a holistic standardised field service solution as is outlined in Figure 2 below. The key element of the solution is the use of Ethereum blockchain smart contracts [Task 1] to manage refrigerants on an end-to-end basis.

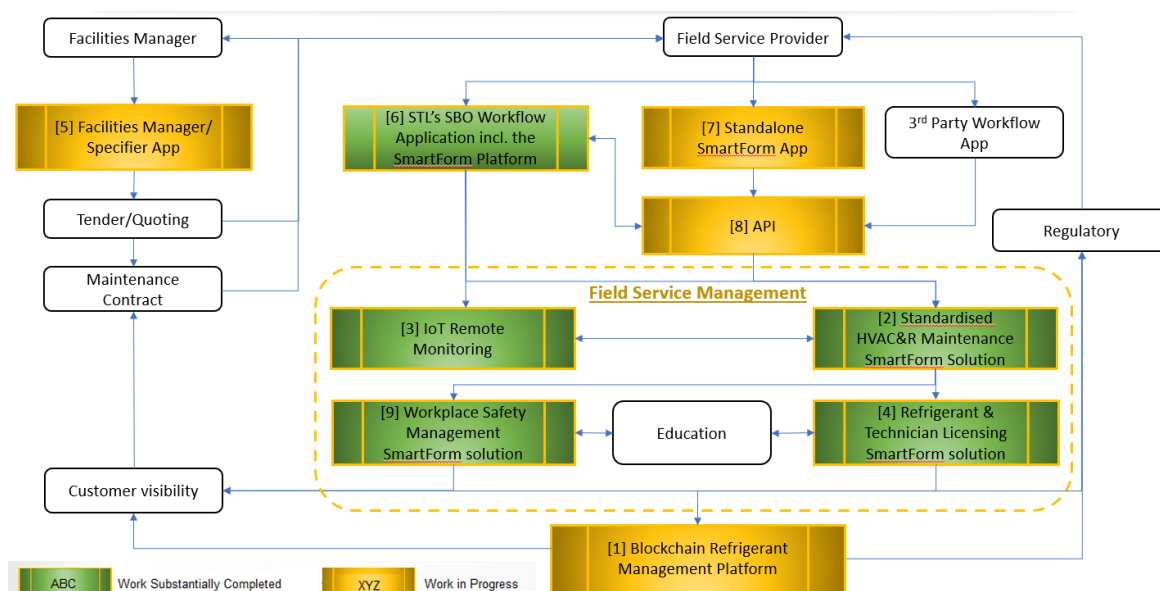


Figure 2: HVAC&R FSM Project

Blockchain is far from being the only emerging technology having potential to deliver productivity gains to the industry. Research has been undertaken into the use of IoT to remotely monitor refrigeration plant energy efficiency, the MoU

also envisages research into the application of AI/ML, AR and BIM for the industry. Another objective of the R&D MoU is to foster collaboration with similar overseas organisations.

International collaboration

Because the opportunities available to and issues faced by the New Zealand HVAC&R industry are international it makes little sense not to actively collaborate with other nation's peak industry organisations; particularly those that have significantly greater resources than we are capable of employing.

Our current focus is on engagement with Australian peak industry organisations who are generally only too happy to collaborate. A key factor is our ability to bring IP value to the table, which we are able to do as a result of the R&D work.

Part 3 - Submitter Profiles

CCCANZ

CCCANZ is the peak industry association representing HVAC&R companies in New Zealand. The CCCANZ purpose is to:

- Promote high standards of business competence and industry conduct for companies engaged in climate-controlled environments;
- Promote the advancement of education, practice, and technology in HVAC&R;
- Promote the continuing improvement of standards in the HVAC&R industries;
- Represent and promote the interests of members;
- Provide for the adjudication and arbitration of disputes between members and the public; and
- Promote a standard of workmanship and design for members to adhere to.

IRHACE

IRHACE is the peak industry association representing individuals working in the HVAC&R industry in New Zealand and its overseas members. The IRHACE purpose is to promote the economic well-being and quality of life of its members, and of the heating, ventilation, air conditioning and refrigeration industries, and to improve the economic well-being and quality of life of every New Zealander through:

- representing and promoting the industry interests of its members;
- advancing and promoting (including the use of standards) the technology used by and activities of those in the industry;
- supporting training and education in the industry;
- promoting a high level of skill, qualifications and continuing professional development;
- promoting the development of practice guides and other industry Standards as the Council thinks is appropriate for and relevant to our industry that members shall follow;
- providing a forum for its members, associates and affiliates to discuss and share their knowledge and experience;
- providing a forum where its members, associates and affiliates and members of the public can settle their disputes;
- To develop a continuing development policy and framework for IRHACE members to support a more skilled and technically competent membership.

IRHACE is the sole shareholder of Refrigerant Recovery NZ Ltd and Refrigerant Recovery Operating Company NZ Ltd.

RPGNZ

The RPGNZ exists to promote industry engagement, unification, and visibility. Our strategy to fulfil our purpose includes:

- Public promotion of the refrigeration trade in all its applications.
- Regular and rapid communication between our governance council and members.
- Professional collective communication between all industry organisations.
- Advocating the viewpoints of our members to ensure safe, practical and sustainable regulations and legislation are imposed by the government.
- Promotion of a sustainable approach to all aspects of system design, installation and operation.
- Establish training opportunities for the furtherance of education in the practice of safe refrigerant handling.
- To publish and distribute content that supports the education and safe use of refrigerants.

RLTB

The Refrigerant License Trust Board (RLTB), operating as Refrigerant License New Zealand (RLNZ), was established by CCCANZ and IRHACE, with funding provided by the refrigerant levy scheme, to develop and provide refrigerant filler and handler training and certification for HVAC&R practitioners. RLNZ has its own board of trustees and is a Charitable Trust.

Structure

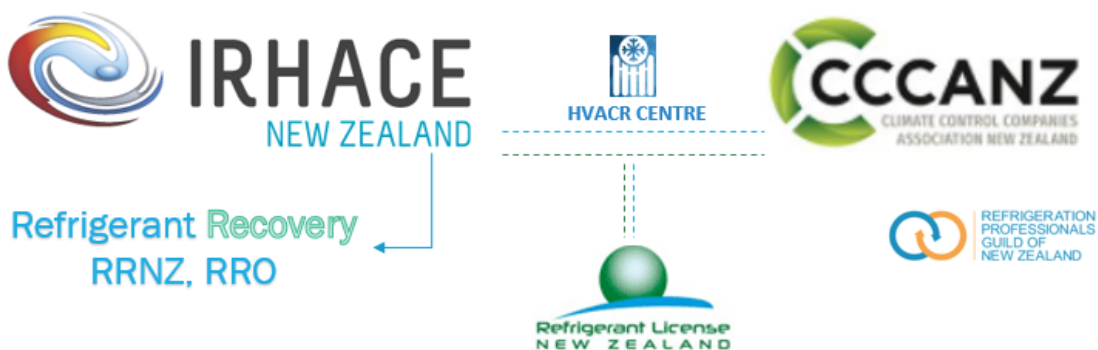


Figure 3 – HVACR Structure

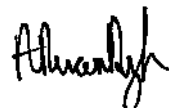
Signed on behalf of:



IRHACE New Zealand
President Mark Meyer



CCCANZ
Chairman Malcolm Miller



RPGNZ
Andre Van Dyk