



1. Introducing the New Zealand Heat Pump Suppliers Association

Background

Back in 2017 moves were made to re-establish the HPSA in NZ in an effort to create some unity within the heat pump industry and ensure a supplier voice to impact policy change.

Represented brands got together and agreed that to have a better impact in our industry we needed to have stronger communication and an association was the right format to ensure this could happen.

Mission Statement

The mission of the Association is to promote and support the installation and use of Heat Pumps in New Zealand through advocacy and education.

Members of the HPSA

Company	Marketed Heat Pump Brand
BDT Ltd	Mitsubishi Electric
Panasonic NZ	Panasonic
Daikin NZ	Daikin
Realcold NZ	Gree
Fujitsu General NZ	Fujitsu
AHI Carrier	Carrier/Toshiba

Key association positions have been appointed as listed below (as at June 2021):

Chairperson:	Darryl Rochester – BDT
Secretary:	Richard Creagh – Daikin NZ
Treasurer:	Anthony Whiteman – Panasonic NZ

Objectives

The objectives of the Association are to act as a non-government industry organisation and achieve its mission by means of identifying and overcoming issues through:

1. Policy advocacy with local and central government officials and elected representatives, regulatory bodies, industry groups, and other interested organisations to raise the awareness of, and promote the installation of heat pump systems in New Zealand;



2. Organising seminars, conferences and other promotional and educational events to distribute information, relating to heat pump systems in New Zealand;
3. Providing a forum for networking, discussion and co-operation amongst persons with an interest in heat pumps in New Zealand.
4. Promoting the economic, environmental, social significance and other benefits of heat pump systems in New Zealand, the Pacific Islands and elsewhere.
5. Promoting research and development of heat pump technology in New Zealand.
6. Promoting the development and growth of the heat pump industry in New Zealand.
7. Developing and monitoring compliance of a Code of Conduct for members to maintain a credible industry image.
8. Undertaking other activities such as the wide dissemination of information about heat pump technologies, educating the public and growing the Industry in New Zealand.

2. Overview

The NZHPSA supports robust, effective action to reduce greenhouse gas emissions to mitigate the impacts of climate change as much as possible. We believe policy and programs can only deliver this outcome if they are focused on approaches which are technically feasible and provides businesses with the certainty needed for ongoing investment. We do note that there are opportunities for further abatement that become possible when action to reduce F-Gas emissions are coupled with activities designed to reduce energy emissions. We encourage the New Zealand Government to consider these opportunities, which are outlined in our submission. These are crucial as they ensure equity and effectiveness in approach and help deliver lowest possible cost abatement to New Zealand.

In relation specifically to HFCs, we note that effective HFC management requires a robust three-pronged approach including import controls, end-use controls, and end-of-life provisions. We note that the current proposal is weighted heavily towards import controls. The problem with this approach is it that in carbon terms, the New Zealand refrigerant bank is as large as it is ever likely to be and will be declining from here. Ignoring those activities that improve management of that bank will result in New Zealand failing to address the largest source of HFC emissions.

Lastly, we would also observe that as the refrigerant transition continues, New Zealand will see the introduction of flammable refrigerants. We are aware of the effort to license tradespeople to ensure safety standards are maintained, but call on any approach developed for managing HFC refrigerants to also include their flammable replacements. While safety is not an MfE responsibility, from a policy and business perspective the benefits of dealing with both safety and environment issues in a consistent way are significant. Additionally, there are necessary safety limits on flammable refrigerants, including in the Building Act, codes, and standards. It is essential that careful consideration of what refrigerants can be used, how and with what safety measures. The current proposal does run the real risk of putting both the public and workers at increased risk of injury or death if these issues are not carefully managed.

3. Response to MFE Questions

The NZHPSA strongly encourages MfE and others to read the entirety of our submission. We believe that if MfE simply focuses on the questions it has asked, and the specific answers to those questions, it will not deliver cost effective and sizeable abatement for New Zealand. That said, this submission does provide an answer to all the questions asked.

Question Number	Question	Where answer can be found
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?	6 (a)
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?	6 (c)
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?	6 (b)
103	What are your views on utilising lower global warming potential refrigerants in servicing existing equipment?	6 (b) iii and 6 (d)
104	Do you have any thoughts on alternatives to HFC refrigerants Aotearoa should utilise (eg, hydrofluoroolefins or natural refrigerants)?	6 (d)
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?	Yes, please consider the remainder of the submission



4. Historical context

The NZHPSA encourages the MfE to remember that future policy and programs focused on refrigeration and air conditioning equipment comes on top of thirty years of environmental success. Today's refrigerants are – in carbon equivalent terms – an order of magnitude better than those that were used 25 years ago. While HFCs do have a high global warming potential, their GWPs are far lower than the CFCs and HCFCs they replaced (and they do not lead to ozone depletion). Additionally, today's equipment is far less leaky than we saw previously. Refrigerant emissions have been slashed.

So has energy use. According to Australia's Department of Industry, the average efficiency of heat pumps has improved by 60% over the last 20 years, with two-thirds of that improvement coming in the last decade. Industry has invested heavily in technological improvements and this has paid genuine dividends to the community.

There are two linked observations that arise from this: the first is that the learning curve to drive further technological change is getting more difficult. Governments, and the MfE, need to be conscious of comparative effort and investment between industrial sectors and realise that further changes in technology for this sector are likely more difficult (flammable refrigerants for example) and expensive than previously and then other sectors. The second point is that significant abatement because of changes at point of sale are going to deliver reduced benefits and shift its gaze to the existing bank of older equipment and gases.

5. Trans-Tasman issues

The NZHPSA notes that the Australian and New Zealand market are tied directly together, not only commercially but also in relation to regulations on energy efficiency and standards. Synergy with Australian policy approaches would deliver significant implementation benefits and is further justified as many companies treat Australia and New Zealand as an Australasian market. It makes good sense to align with Australia, particularly as our markets are too small to sustain and drive any international change.

6. Import and Controls

This section discusses possible initiatives that include managing HFCs through import controls.

a. Accelerating phase down

The NZHPSA notes the aim of increasing the rate of phase down of HFCs from what was agreed under the Kigali Amendment to the Montreal Protocol. We concur with the ambition but note that the phase down has just been enacted in 2020 and that the last two years have been significantly disrupted because of COVID. Accordingly, we do not think there is an information base available to appropriately assess what ambition level would be achievable.

Instead, we recommend that MfE agree a process of regular review of the phase down of HFCs and GWP limits on equipment types (see below) every three years commencing in 2023. This approach will allow updated information to be gathered and analysed, such as the analysis, *Hydrofluorocarbon Consumption in New Zealand 2018*. Changing the step-down levels has a significant impact on industry and should be approached with care.

b. GWP Limits

The NZHPSA notes that there are, in essence, three types of GWP limits that can be used to manage HFC use in new equipment. Each of these has its merits and issues and will be considered in more detail further below. These are:

- Putting a GWP limit on new equipment where most of the sector has already transitioned. An example of this would be putting a GWP limit of 750 for smaller heat pumps.
 - Putting a GWP limit on new equipment where the sector has not transitioned, but there is readily available technology overseas. An example of this is motor vehicle air conditioning.
 - Putting a GWP limit on servicing existing equipment already in use. The European Union has taken this approach with R404a in refrigeration equipment.
- i. The NZHPSA has no problem in principle with either the first or second sort of GWP limits sensibly applied. Indeed, we would recommend the application of a GWP limit on heat pumps with a charge size of 2.6 kg or less, noting that some sub equipment types might require a longer transition time than others.¹ More significantly, for New Zealand's emissions

¹ Discussions with Australia's Ozone Team might be useful as they are undertaking a review of this possible approach and have consulted widely with industry. It is also worth noting that some sectors, such as domestic refrigerators, probably do not require regulation as they have already transitioned away from HFCs.



profile, we would also support the rapid introduction of a GWP limit on car air conditioners of 150. This technology is available world-wide and has not been introduced into New Zealand because of additional cost of approximately \$NZ 40 per car.

- ii. We note that MfE has suggested the use of GWP limits across many product types to drive technological innovation following the approach taken by the European Union. We note, however, that at 0.1% of the global market and with no significant manufacture in most product types, New Zealand will not drive transformation of alternatives. Even if alternatives arise in Europe, locking New Zealand into these new technologies incurs a risk that it may be unavailable in New Zealand, cost prohibitive or fail to meet New Zealand health or safety regulations. Quite simply, the risk of trying to project what alternatives will be able to be used in New Zealand is simply too high. We recommend that MfE consult with industry on a three-year cycle, as described for quotas above, and look to be an early adopter of new equipment as it arises, and confidence can be maintained about its cost-effective and safe applicability in New Zealand.
- iii. In general, the NZHPSA is opposed to service bans as a policy tool. Building owners made investments in equipment with the inherent assumption that they would be able to get the manufacturers prescribed spare parts over its operating life. This includes refrigerants. A service ban runs the risk that tradespeople will use refrigerant of a different safety class that the equipment was not designed for. This is unacceptable. Rather we would propose that MfE work with industry to highlight where replacement gases are available and can be safely used. A clear example of this is the use of R448a and R449a as a replacement for R404a. Given the emissions trading charge and the impact of a declining quota there should be an increasing financial incentive to use lower GWP alternatives.

It is worth pointing out that even when a refrigerant is of the same safety class there may still be issues with it being used. A clear example of this is R466 which is proposed as a replacement for R410a. Industry intelligence suggests R466 is corrosive, and no significant equipment manufacturer is selling equipment with this refrigerant nor certifying it as an acceptable replacement. This does not mean that R466 will

not be used in the future, but rather that the issue of refrigerant choice is multifaceted and includes: GWP, safety, efficiency, ease of use, how it breaks down, cost and other factors and is not something that Governments typically can nor should assess.

c. Adding pre-charged equipment to quota system

The paper suggests that, like the European Union, should pre-charged equipment imports be included in the quota system. The NZHPSA is strongly opposed to this for two reasons:

- The Montreal Protocol – and the Kigali Amendment – clearly places responsibility for refrigerant in equipment in the country where the equipment is manufactured. The international community rightly assumes action will happen there to change refrigerant type because of the Kigali Amendment.
- Pre-charged equipment represented 9% of the European Union's imports over the base year. In 2016, they represented 45% of New Zealand's imports.

This proposal would lead to significant industry disruption and, among other things, imperil both the agriculture industry that relies on refrigeration and the further introduction of high efficiency heat pumps.

d. Choosing winners

The discussion paper asks two questions - What are your views on utilising lower global warming potential refrigerants in servicing existing equipment? Do you have any thoughts on alternatives to HFC refrigerants Aotearoa should utilise (e.g., hydrofluoroolefins or natural refrigerants)?

The NZHPSA calls on MfE and the New Zealand Government to hold its nerve. The genius of the Montreal Protocol and the policy previously enacted by the New Zealand Government is it set out expectations and requirements for industry to shift away from those substances with a high environmental impact. It did not say how this should happen, but rather relied on economic forces that came with decreasing amounts of refrigerants available.

This process has been wildly successful. CFCs are gone and HCFCs are all but finished in the marketplace. This approach will work for HFCs as well. Indeed, if one considers the GWP of CFCs and HCFCs, the refrigeration and air conditioning industries have reduced emissions

by an order of magnitude over the last 25 years and are well situated to reduce it by another order of magnitude over the next 20 years. The New Zealand Government should not attempt to steer the technological choices industry will make as it phases down HFCs but leave that to manufacturers and equipment designers to manage.

e. Recycled refrigerants

There is an active debate among the industry and regulators about how recycled refrigerants should be treated. These are refrigerants that are recovered from machines at the end of their life and returned to specification. In California, these gases are considered to have GWP of 0, on the basis that they are replacing a new molecule of refrigerant that would have been produced. In this way the potential emissions to atmosphere are halved. Other approaches argue against any recycling on the basis that the likelihood is that the refrigerant may leak in the future. It is not an easy debate, and the NZHPSA does not wish to present a view currently on this issue. It does encourage MfE to consider this topic and consult on its views further in the future.

7. End-Use Controls

This part of the submission covers the sale and use of refrigerants in systems in New Zealand.² These are powerful abatement measures. In Australia, these measures were projected to reduce emissions associated with HFC refrigerants by 59.3 Mt between 2014 and 2030.³ Given the current approach in New Zealand includes disposable cylinders, which were banned in Australia in 2001, it is likely that a proportional amount is likely to be abated in New Zealand, equivalent to about three quarters of a million tonnes of CO₂ per annum over the next decade.

It is essential, however that should this approach be endorsed and implemented that compliance activities are robust and enforced. International experience shows that these types of initiatives have strong industry endorsement, but that this is dissipated if those companies and individuals who use good practice witness serial and significant noncompliance.

a. Service Bans

Please refer to section 3.b.iii for the NZHPSA's views on this approach.

² NZHPSA wants to point out that what is proposed in this section is similar to what is in place in Australia, with some environmental enhancements, and what is proposed by the US EPA as they look to enact the AIM Act which manages their HFC phasedown.

³ <https://www.awe.gov.au/sites/default/files/env/consultations/fe81135c-a55e-45b6-ae4b-ef02f1616ba2/files/assessment-environmental-impacts-opsggm.pdf>

b. Disposable cylinders

The NZHPSA notes that there are a number of reasons to ban disposable cylinders and proposes that this ban be included in any policy update.

These reasons include:

- Improved environmental performance. Not only will cylinders not be wasted, but the refrigerant that cannot be evacuated from a disposable cylinder will not be vented to the atmosphere. This is simple and cheap abatement.
- While there will be transition costs, over time costs will be reduced through less wastage of cylinders and better usage of refrigerant.
- Better able to ensure that refrigerant is only accessed by trained and licensed personal and is not accessed by the informal sector.

c. Licensing

HFCs are potent greenhouse gases. It simply makes no environmental sense that anyone can purchase or use these substances if they are not qualified to do so. The NZHPSA proposes that a licensing scheme based on a tradesperson's competency (not just environmental awareness) be implemented to ensure only trained personal are engaged in the industry. This will require improved training of New Zealand's refrigeration and air conditioning sector to ensure that the competencies needed can be achieved and that any license scheme is robust. The NZHPSA notes that other related industry associations have long called for improvements in training of this sector, and we understand these points will be made in their submissions. We support these efforts and work collaboratively with them should a focused approach to refrigerant management be pursued.

A mistake made in Australian policy was limiting this requirement to simply those people that access HFC and ODS refrigerant. As industry associations in Australia have pointed out, the NZHPSA would contend that all tradespeople installing, servicing, repairing and decommissioning refrigeration and air conditioning equipment need to be covered by a comprehensive scheme. The three main reasons for this approach include:

- Despite the efforts of restricting HFC refrigerants to licensed personal only, experience overseas show there is leakage to the unlicensed sector which leads to higher emissions and unsafe work practices.

- The benefits of trained technician sizing, installing, repairing, and servicing equipment include performance improvements – increase in efficiency. This is true regardless of what refrigerant is used and is worth maximising to obtain higher levels of cost-effective abatement.
- This approach would allow safety aspects to be incorporated into a scheme particularly as many of the uncovered low GWP refrigerants are flammable. In this way, a single licensing scheme would cover the entire sector saving both industry and government money.

The NZHPSA also recommends that only trained personal be empowered to obtain, sell or store refrigerant. In this way, it would become illegal for anyone to provide an HFC refrigerant to someone who is not licensed.

d. Including maintenance

It is a truism that maintenance of equipment improves operating efficiency, reduces breakdowns and the need for repair, and extends equipment longevity. There is not comprehensive data on this topic, yet. However, both the Montreal Protocol's TEAP and Australian Government and industry are conducting and tracking research that should clarify the scale of the issue. Very early findings suggest that poorly operating equipment will have a reduction in efficiency of 10% or more and, in Australia, up to 20% of all equipment are not adequately maintained. The result is there is a large discrepancy between theoretical and actual performance that could be addressed through implementing servicing requirements. The NZHPSA does not have a model to propose at this time, but recommends to MfE further consultation on this topic with the aim of developing a policy approach should research findings demonstrate the potential scale of abatement that is expected.

8. End-of-life

The NZHPSA acknowledges that there is a separate consultation process underway in relation to this issue. We would contend, however that HFC policy needs to be developed comprehensively and that issues of product stewardship and the design of any program – particularly if it has regulatory aspects – should be considered as part of a comprehensive policy review on HFCs. It needs to be considered within the context of this process.

Given that this point is not yet agreed to, the NZHPSA will hold off on more detailed discussion around product stewardship. However, we would call on the Government to consider that the F-Gas levy is part of an emissions trading



scheme. By definition, recovering and destroying gas at the end of its life prevents emissions. We contend that monies covering the externality of the emission should be returned to the industry to pay for both incentives to collect used refrigerant and destruction costs. Finally, we would observe that the New Zealand Government will need to make a decision on how it wants to treat recycled refrigerants as described in section 4(e) above.

9. Next Steps

The NZHPSA appreciates the policy challenge in front of the Government as it tries to balance the need to reduce greenhouse gas emissions, with economic and social considerations. We wish you the best.

We do observe that this area is highly technical and there is much that can be done if Government and industry work collaboratively. The NZHPSA would appreciate the opportunity to work with the Government in fine tuning its policy approach. Please feel free to contact us if we can be of any assistance.

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