



SUBMISSION ON NET ZERO
CLIMATE CHANGE AUTHORITY & DCCEEW
MAY 2024

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Who We Are & Industry Facts

Refrigerants Australia

Refrigerants Australia, formed in 1989, is the peak organisation representing the supply chain of refrigerants both in bulk and in equipment. Its members include bulk refrigerant importers representing over 95% of all refrigerants sold in Australia, AREMA (equipment importers and manufacturers), Australia Refrigerant Wholesalers Association, several contractor organisations representing people on the tools using refrigerants, and Refrigerant Reclaim Australia, Australia's award winning refrigerant recovery organisation.

Refrigerants Australia is committed to:

- Reducing the environmental footprint of all refrigerants
- Improvements in energy efficiency in refrigeration and air conditioning equipment
- Safety of all refrigerants
- Preparing industry for a low emissions future
- Encouraging government regulation that delivers environmental benefits.

Air Conditioning and Refrigeration Equipment Manufacturers Association

Established in 1967, AREMA (Air-Conditioning & Refrigeration Equipment Manufacturers Association of Australia) represents the interests of air-conditioning and refrigeration equipment manufacturers active in the Australian market. We work with government and industry on policy formulation and regulation to achieve the best outcomes for our members and the wider community.

AREMA's aims are to:

- Help reduce the environmental footprint of air conditioning, heat pumps and refrigeration in Australia.
- Encourage members to design and manufacture energy efficient equipment.
- Encourage our members to deliver real energy savings to consumers.
- Reduce ozone depleting substances (ODS) and greenhouse gases in a safe and controlled manner.
- Work closely with government to ensure the safe implementation of standards that will benefit end users and product designers.
- Work with other local and global associations to ensure we adopt world's best practice.
- Provide a unified voice for representation to government and industry on key issues.
- Represent the air conditioning and refrigeration industry on key standards committees and, where possible, assist members to interpret these standards.

Brief Industry Facts

It is easy to discount the significance of refrigerants in the Australian economy, however, the Australian economy, community and economy rely on the use of refrigerants. Key statistics include:

The cooling economy accounts for 2.2% of GDP or about \$44 billion annually. The introduction of heat pumps will see these technologies further expand.

The cooling sector provides essential services:

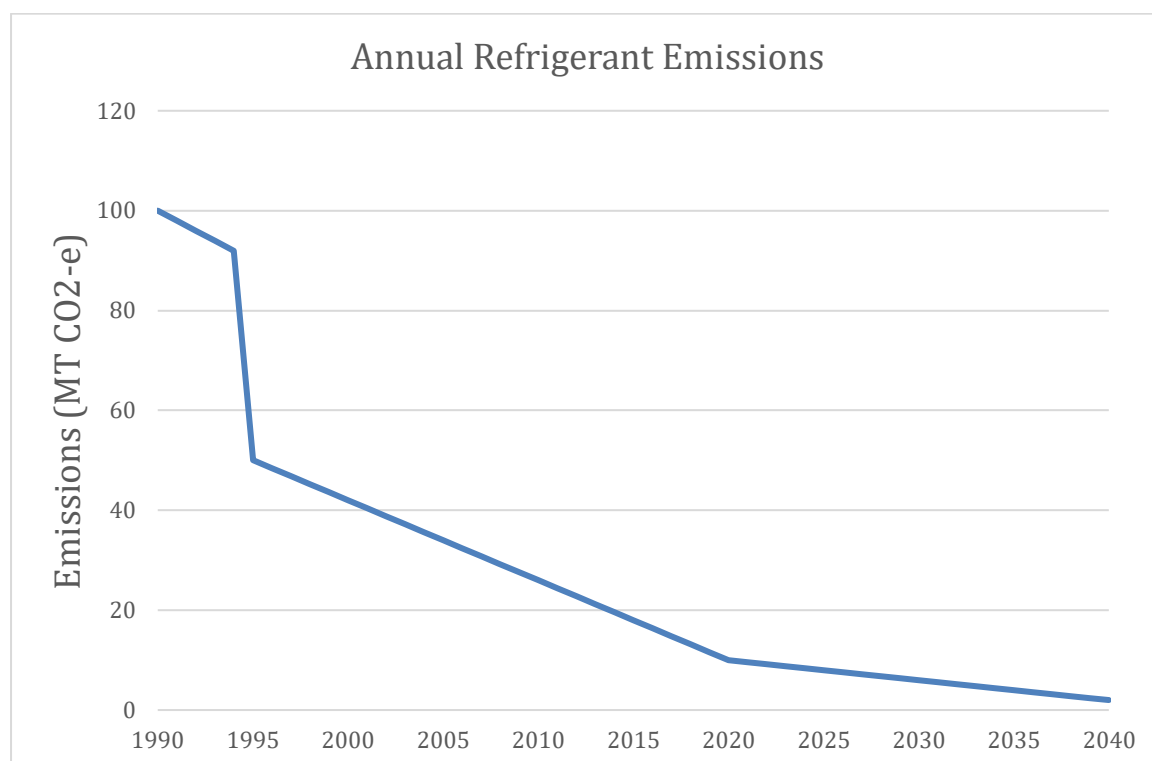
- Preservation of perishable food and medicines
- Ensuring habitable homes and businesses
- Supporting critical infrastructure and manufacturing

The sector employs 300,000+ people and 20,000+ businesses.

There are over 60 million devices reliant on refrigerants in Australia.

Overview – Emissions Profile

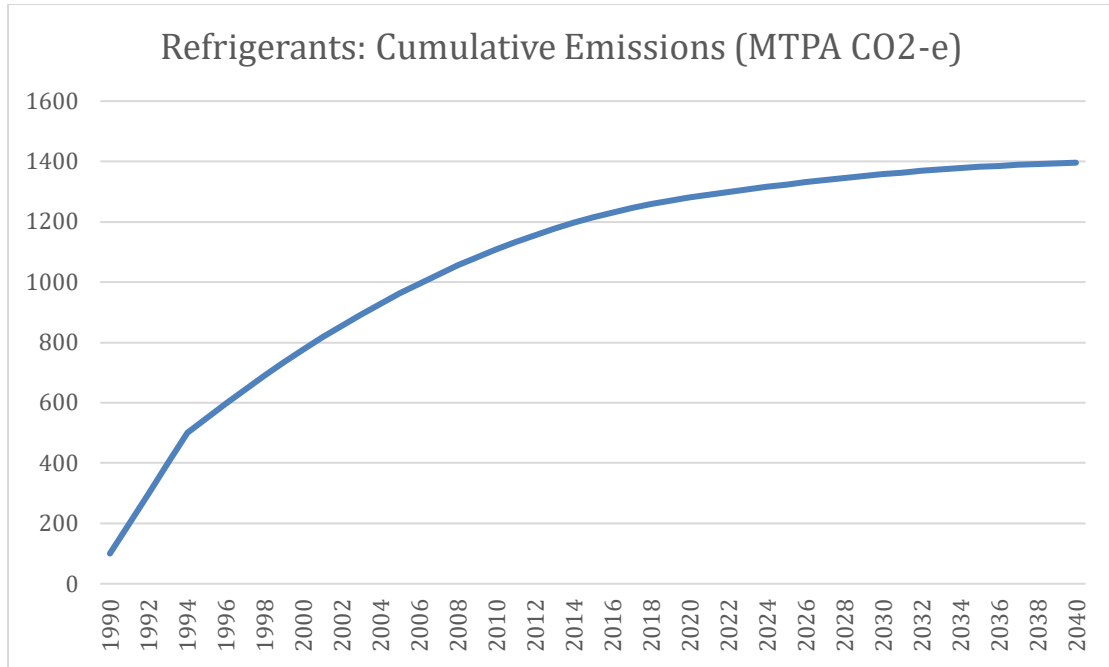
The refrigerants industry has significantly reduced its emissions over the past 30 years and is legislated to further reduce emissions markedly over the next 20+ years. The *Ozone Protection and Synthetic Greenhouse Gas Management Act* – consistent with but more aggressive than the Kigali Amendment to the Montreal Protocol – reduces consumption of HFCs in CO₂-e terms by over 80% from 2010 levels through 2036.¹ As a result of this and earlier steps to reduce the consumption of ozone depleting substances, emissions have already been significantly cut and are projected to continue to improve over the coming decades. In fact, BAU emissions in 2050 will be 98% reduced from a 1990 baseline and between 1 and 2 MT CO₂-e on current policy settings.



It is worth understanding that emissions are a lagging indicator, whereas consumption of refrigerants are a leading indicator. This is because refrigerant that is imported either in bulk (for new manufacture or service) or in pre-charged equipment operates typically for years before it is recovered or emitted. Australia still has equipment using CFCs, even though these were banned for import decades ago.

Nonetheless, as the figure below showing cumulative emissions demonstrates, most refrigerant emissions has already occurred, or are already in Australia's equipment bank.

¹ This includes GHG emissions from CFCs and HCFCs, which while not included in the UNFCCC accounts, are extremely potent greenhouse gases.



The significance of this analysis is that the HFC phasedown is working as intended and will place Australia largely in place to meet net zero obligations in 2050. It would not be appropriate to alter the HFC phasedown until closer to 2036 when any issues impacting on technology transition have been identified and rectified. In fact, as discussed below, the most impactful policy measures that could be enacted focus on controlling refrigerants already in and leaving service in Australia.

GWP Limits on Equipment

Many countries have implemented GWP limits for refrigerants used for particular technologies. While the *Ozone Protection and Synthetic Greenhouse Gas Management Act* allows GWP limits like these to be set, the Australian Government has not tended to implement these types of measures.²

The use of these types of measures accelerates the HFC phasedown and ensures there is sufficient refrigerant for those technologies which will be slower to transition. It will also drive reduction in the installed bank of HFCs (in carbon dioxide equivalent terms) and reduce the near-term emissions.

That said, GWP limits should not be applied without careful consideration given their market disruption potential, as well as other perverse outcomes that can occur. Refrigerants Australia has already established its broad criteria for assessing and proposing approach on refrigerant policy. These broad principles – which are equally important – include:

- Moving Australia towards the lowest emissions future possible.
- Maintain technology neutrality with policy not directing which refrigerants should be used, but allowing manufacturers to make decisions that suit their needs.
- Avoid prematurely stranded assets and industry disruption because of unreasonable, overly rapid and/or unexpected policy/regulatory change.
- Provide certainty to allow companies to continue to invest into the future with confidence.

Refrigerants Australia and AREMA strongly believe that there are two technology types where GWP limits on refrigerants in new equipment meet these requirements and should be implemented as a matter of priority: commercial refrigeration and vehicle air conditioning. These sectors represent around 60% of Australia's refrigerant use and they could comparatively easily be transitioned to technology types already used for years elsewhere in the world with GWPs less than 95% than currently used.

Refrigerants Australia does want to warn about the overly restrictive and inconstant approach taken in other jurisdictions, including the European Union. Quite simply, Governments should evaluate the market and set GWP limits without dictating what refrigerants manufacturers should use.

² An exception to this is a GWP limit of 750 placed on split system air conditioners (air to air heat pumps) which will be implemented from July 2024 for equipment with charge sizes up to 2.6kg.

Bans on Virgin and Reclaimed Refrigerants

There are two basic types of refrigerant limits possible under the current legislation. These include:

- A ban on the import of a specific virgin refrigerant. The focus of this approach is to cause the refrigerant used in existing equipment to be retrofitted with one with a markedly lower GWP. Refrigerants Australia would only support this measure where the replacement refrigerant(s) were supported by manufacturers, where they had same safety classification and were both commercially available and cost competitive **or** after an appropriate period of time where government could be confident that equipment using a particular refrigerant had reached the end of its economic life. (eg CFCs today)
- A ban on the use of a specific refrigerant for service. This type of ban would naturally follow an import ban and would be expected to be announced at the same time an import ban was proclaimed. The date of effect of this ban would naturally also mean that refrigerant reclamation and recycling of the named refrigerant would also be banned at the same time.

Specific Recommendations on GWP Limits and Refrigerant Bans

Refrigerant	GWP Limits by equipment type	Virgin import ban	Service and reclamation ban
CFCs	No new equipment with CFCs can be imported or manufactured (already implemented)	CFC import ban in place (already implemented)	Proposed to be implemented ASAP
R22 (HCFC)	No new equipment with R22 can be imported or manufactured (already implemented)	HCFC import ban from 2030. Proposed to bring forward ban from 2024.	Proposed to be implemented from 2030
R123 (HCFC)	No new equipment with R123 can be imported or manufactured	HCFC import ban from 2030. Proposed to bring forward ban from 2024	No proposed service or reclamation ban given the very low environmental impact of this refrigerant (GWP of 77)
R404A/507C	Proposed to be implemented on (date to be agreed June 2024)	Proposed to be implemented on (date to be agreed June 2024)	Proposed to be implemented on (date to be agreed June 2024)
R410A	Implemented in increasingly large equipment as alternatives come online	Given lack of retrofit options currently no ban proposed.	Given lack of retrofit options currently no ban proposed.
R134a	Proposed ban on car AC from 1 July 2024. Ban on refrigeration equipment and chillers from 1 July 2025.	Given lack of retrofit options currently no ban proposed.	Given lack of retrofit options currently no ban proposed.
Refrigerants with GWP less than 1,000	No bans proposed	No bans proposed	No bans proposed

A Note on Refrigerant Reclamation

Refrigerant reclamation is, and will continue to be, a vital part of the life cycle of refrigerant use in Australia. Given the option of using resources to manufacture a new kilo of refrigerant, refrigerant recovery, reclamation to AHRI specification and re-sale into the Australian market is a positive environmental outcome and supports a circular economy approach. In an environment where the amount of virgin refrigerant entering the market is capped and there are both regulatory and technical signals to transition the market towards refrigerants with lower GWP, reclamation of these refrigerants for a transitional period fulfils the overarching principles of avoiding industry disruption and prematurely stranding assets.

However, in an environment where the amount of refrigerant entering the market is capped and there are both regulatory and technical signals to transition the market towards refrigerants with lower GWP, reclamation of these refrigerants would act to extend their lifespan in the market and result in higher emissions. It is essential to consider refrigerant reclamation as an integral part of a regulatory approach to putting limits on refrigerants.

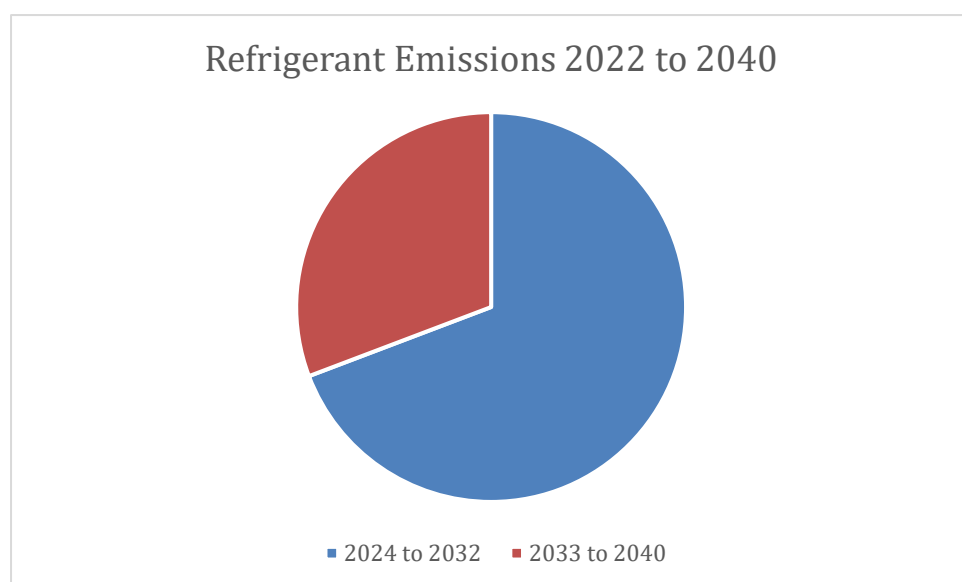
Use Controls and End-of-Life

Since 2004, Australia has had a national comprehensive approach to managing downstream emissions. As was demonstrated in the release of papers as part of the review of the Ozone Protection and Synthetic Greenhouse Gas Management Act (2004), these measures have delivered substantial emissions savings in a manner that derives benefits for the community and industry. The review of this legislation offers sensible opportunities to extend downstream measures.

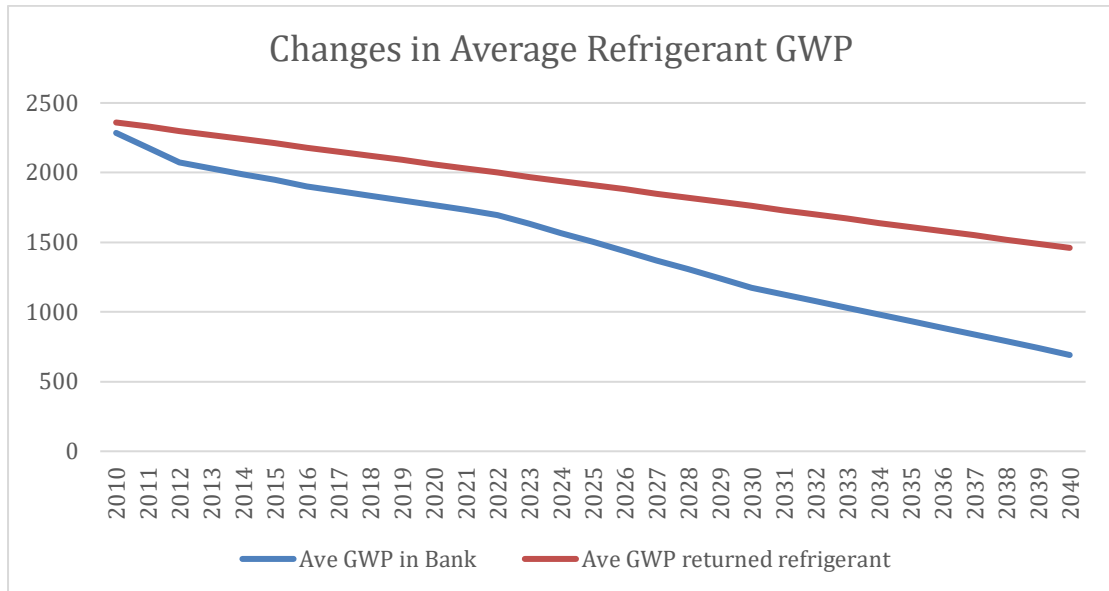
Downstream measures typically include:

1. Containment and licensing – These are measures designed to ensure high standards for servicing and maintenance. They typically cover minimum requirements for leak checking for large equipment, blanket bans on preventable emissions and minimum training and licensing requirements for service personal. In some jurisdictions, HFCs can only be bought, sold or handled by people with requisite skills and a license.
2. Product stewardship – Measures focused on product stewardship are designed to provide an impetus – whether it is an incentive or penalty avoidance – for used HFCs to be recovered at the end of their life. At this point, depending on the particulars of the refrigerant it can be either reused or destroyed.

As a result of the HFC phasedown action in this area becomes even more important. Changes to what is installed and imported in Australia is important, but it will take many years before these changes influence the emissions trajectory. As detailed above, the emissions profile is already showing marked and steady decline. Emissions in the next few years are higher and cannot be impacted by changes in technology imported and installed over the next few years. Analysis of projected emissions between 2024 and 2040 demonstrate that 70% will occur in the first 8 years, with only 30% in the following period. This trend would be even more pronounced if it was continued through 2050.



The consequences of this analysis is that Government needs to take action quickly in these two areas. Action on end-of-life is particularly valuable as it targets refrigerants that, on average, were introduced into the refrigerant bank earlier and therefore have a higher average GWP. Indeed, the figure below demonstrates that by 2040 the average refrigerant in the bank will be about 700, whereas the average GWP of refrigerant recovered will still be around 1500. This makes end-of-life activities particularly vital for the environment.



Refrigerants Australia and AREMA have made numerous submissions over the past five years about how this sector can be improved. Highlights from this advice includes:

Support for improved management of equipment

- All Government policy and regulation of refrigeration and air conditioning equipment focus on efficiency and performance at point of sale: they neglect the crucial issues of appropriate sizing, quality installation and regular maintenance.
- Potential exists for significant emissions savings (both refrigerant and energy emissions) through a program of encouraging /requiring the cleaning and maintenance of their equipment. The licensing scheme for RAC technicians should also be expanded to cover these activities.

Improved capacities for enforcement of refrigerant use legislation

- Currently, enforcement activities are hamstrung because of the regulatory basis provided under the Ozone Protection legislation which do not provide for right of entry of auditors, hamstringing their capacity to gather information and set an unreasonably difficult burden for demonstrating wrong-doing and requiring rectification. Additionally, the current regulatory scheme does not include

assessment of actual performance of the trade. It should be expanded to include this requirement.

Expanded licensing for tradespeople working with RAC equipment.

- The current license regime only covers the use of ozone depleting and synthetic greenhouse gases, even though more than 80% of emissions come from energy use.
- Proposal would be to expand the license to also cover the electricity emissions associated with equipment use, regardless of the refrigerant used. DCCEEW has legal advice that this the current legislation allows this reform.
- Given the nature of newer refrigerants and increased safety risk, it would also be appropriate to ensure requirements on the safe use of all refrigerants were included in the scheme.

End-of-life

- We encourage the Authority and DCCEEW to engage with Refrigerant Reclaim Australia on the most fruitful approaches to improve reclaiming refrigerant at end-of life. At the very least, focus should be given to those sectors – residential air conditioning and motor vehicles – where rates of reclamation are estimated as particularly low.

Energy and Safety

Energy

This submission has focused on refrigerants, but it is worth realizing that, currently, over 80% of emissions from refrigeration and air conditioning equipment comes from energy use. While the grid is decarbonising, so are refrigerants and this percentage is likely to remain approximately true over the next decade and perhaps even to 2050 or later. There is a link between refrigerant selection and equipment efficiency and it is vital that government policy support manufacturers who have to balance performance, safety, energy efficiency, costs, refrigerant GWP more in to their assessments. Additionally, Refrigerants Australia and AREMA would point out the benefits of considering refrigerant emissions and energy performance in a comprehensive fashion.

Additionally, worked done by DCCEEW and Refrigerants Australia suggests that energy emissions from poorly installed and maintained refrigeration and air conditioning equipment is likely larger than the emissions associated with that equipment. A strong focus on installation and maintenance could be expected to deliver very large savings at no overall cost to the community.

Safety

The push for refrigerants to have lower GWPs has seen a transition from large stable molecules to smaller, less stable ones. While in the past almost all refrigerants were not flammable increasingly the industry is needing to use flammable and sometimes highly flammable refrigerants to meet GWP limits. Other refrigerants are toxic and operate at very high pressures. While safety is a State issue, industry believes that if the Australian Government is driving the change in technology through policy and legislation it has an obligation to ensure the safety of the trade and public as part of the existing licensing scheme.

Specific Comments – Climate Change Authority

The submission above answers the questions asked by the Authority with only a couple of exceptions:

- Reductions in emissions of refrigerants are already on track. The current trajectory is appropriate for 2035 and we would encourage no additional changes (beyond what is listed above) until a review can be conducted in the 2030s as the final Kigali targets come into view.
- Australian industry is – and with the proper policy signals – could expand the program of helping developing countries in our region capture and send to Australia high GWP refrigerant for destruction at end-of life. This could more than offset our remaining refrigerant emissions from mid-century.
- The assertion in the Authority’s paper that refrigerant leaks total about 1/3 of emissions if electricity is excluded is wrong and demonstrates a lack of understanding about refrigerants. It assumes all refrigerant emissions are associated with building conditioning and inappropriately includes emissions from the refrigeration and vehicle air conditioning sector (about 60% of emissions) into the built environment sector. Refrigerants Australia would be pleased to help in further developing policy options that reflect a better understanding of the sector and avoid these pitfalls.

Specific Comments - DCCEEW

There are no specific comments in relation to the DCCEEW paper. Please see material above.

Further Contact

Please contact us if we can be any further assistance:

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