Impact Summary: Phased prohibition of refrigerant-containing products and servicing options

Section 1: General information

Purpose

The Ministry for the Environment is solely responsible for the analysis and advice set out in this Impact Summary, except as otherwise explicitly indicated. This analysis and advice has been produced for the purpose of informing stakeholders to be consulted on a government discussion document.

Key Limitations or Constraints on Analysis

Hydrofluorocarbons (HFCs) are mainly used as refrigerants for heating and cooling, from large industrial refrigeration systems to domestic heat pumps and car air conditioners. They are potent greenhouse gases, with 'global warming potential' (GWP) of hundreds or thousands of times greater than CO_2. Consequently, they contribute to climate change in an amount that is significantly greater than the metric quantities used.

The Climate Change Commission have recommended further regulation of HFCs beyond the status quo to achieve a greater reduction in their use, as part of a package of measures to achieve New Zealand's emissions targets.

There are a number of ways of doing this. The discussion document *Transitioning to a low-emissions and climate resilient future* sets out the various options for achieving this outcome and invites feedback on them all.

One approach addressed in that discussion document is the expansion of restrictions on imports. This impact summary relates only to this potential measure, and only to one specific policy response: the application of prohibitions on uses of high-GWP HFCs. The Ministry does not currently have a preferred option.

The reason for preparing an impact summary just for this one policy approach is to set out more detailed design features and expected impacts of different design choices so as to provide a richer information base to support feedback. The feedback we receive from this consultation will inform further policy development, and effective comparison between these and other options to reduce emissions from refrigerants.

Scope

In scope:

- HFCs used as refrigerants in heating and cooling applications.
- Policies that impact the availability of refrigerants on the market (import and sale).

Out of scope:

- Management of refrigerants through their lifecycle. A separate project to create refrigerant product stewardship covers this area.

- HFCs used for applications other than to power heating and cooling equipment (eg foam blowing, aerosols).
- Options other than restriction of HFCs based on global warming potential are out of scope of this impact summary. They are part of the broader suite of available options and are addressed in the accompanying discussion document.

Assumptions

This process of options analysis only focuses on the case for regulatory restrictions on import or sale of refrigerants, based on the Climate Change Commission's advice to Government on emissions reductions. We also assume that, in order to meet emissions budgets, consideration of this approach and its emissions reduction potential will be necessary. Consultation will improve our understanding of the potential costs of this approach, to consider alongside emissions reductions.

Data usage and limitations

Data on HFCs and their alternatives is mainly drawn from international policy exemplars and regular research carried out under the Montreal Protocol, which manages HFCs internationally. However, until engagement with industry, New Zealand-specific data on the cost and feasibility of transitioning to alternative refrigerants will be low quality.

A lack of industry engagement to date is the key limitation on the development of policy options discussed in this paper. Preliminary consultation is planned for September (as part of public consultation on the Emissions Reduction Plan) and will inform refined options analysis.

Responsible Manager (signature and date):
Sophie Heighway Waste and Resource Efficiency Ministry for the Environment 12 August 2021

To be completed by quality assurers:

Quality Assurance Reviewing Agency:
Ministry for the Environment
Quality Assurance Assessment:
Meets the quality assessment criteria.
Reviewer Comments and Recommendations:
The Ministry for the Environment's Regulatory Impact Analysis Panel has reviewed the Impact Summary: Phased prohibition of refrigerant-containing products and servicing options, which will accompany the discussion document upon release. The Panel confirms that the level of information provided meets the quality assessment criteria, for this stage of the process, and is likely to lead to effective consultation on the options canvassed in the Impact Summary. The consultation will provide information on options for the phase out of

the sale of goods containing high-GWP HFCs and the complementary option of phasing out the use of high-GWP HFCs when servicing existing equipment. This will inform further policy development and allow for effective comparison between the options covered in the Impact Summary and alternative options for reducing emissions from refrigerants. It will also support the later delivery of a Regulatory Impact Assessment to inform subsequent decisions.

Section 2: Problem definition and objectives

2.1 What is the policy problem or opportunity?

HFCs became the dominant refrigerant choice as ozone-depleting substances were phased out under the Montreal Protocol. In 2019, HFCs contributed to just over two per cent of New Zealand's total domestic emissions (Ministry for the Environment, 2021).

Refrigerant types are classified by global warming potential (GWP). This is a measure of a gas's ability to trap heat in the atmosphere, relative to carbon dioxide. For example, a global warming potential of 750 would mean that refrigerant, if leaked to the atmosphere, would have a warming impact 750 times that of carbon dioxide.

New Zealand has already taken steps to reduce HFCs imported into New Zealand:

- *In 2018, New Zealand ratified the Kigali Amendment to the Montreal Protocol, and committed to phase down HFCs imported in bulk (ie, for insertion into equipment in New Zealand). The phasedown commenced in 2020 and is projected to reduce use of HFCs imported in bulk by 81 per cent in 2036 (from the average consumption over 2011-2015).*
- *HFCs 'pre-charged' into products overseas (like heat pumps) are not included in our Kigali Amendment phasedown. Instead, they are disincentivised by their inclusion in the synthetic greenhouse gas levy (along with perfluorocarbons and sulphur hexafluoride). The levy is linked to the price of carbon and is updated annually by the Ministry for the Environment to match ETS costs.*

Despite being on the right pathway, modelling carried out by MfE and the Climate Change Commission shows that the emissions reductions that will be achieved under these policy measures (estimated at 17 per cent below 2019 levels by 2035) will not be enough to reach net-zero emissions (other than biogenic methane) by 2050 as obligated under the Climate Change Response Act.

The Climate Change Commission, in its advice to Government on meeting New Zealand's climate targets, made proposals to reduce emissions from HFCs and other fluorinated gases even further. Those recommendations were to:

- *expand import restrictions where feasible*
- *improve industry practice to reduce leakage*
- *enable businesses and consumers to switch to low climate impact alternatives.*

This impact summary considers a policy response to the first of these recommendations. The remaining recommendations are being addressed through other Government policy initiatives, specifically Regulated Product Stewardship and WorkSafe measures to improve training and industry practice.

While the Kigali Amendment is phasing down the quantity of HFCs imported into New Zealand, there are some refrigerant applications where high-GWP HFCs could be phased out entirely, earlier than the phase down timetable.

There are substantial opportunities to reduce emissions in this sector as technology advances. The Montreal Protocol Technological and Economic Assessment Panel, a grouping of experts in their field, prepared a report on energy-efficient and low-global warming potential technologies. The report concluded that during the last five years, technology has developed rapidly, and there is now availability of equipment that uses lower

GWP refrigerants while retaining high-energy efficiency in most market sectors (Montreal Protocol Technology and Economic Assessment Panel, May 2021).

Without policy intervention at the import stage, industry may transition to alternative refrigerants rapidly, given changes in the global refrigerant market. Or, industry may transition at a slower rate, relying on existing equipment options and practices containing high-global warming potential HFCs.

Data collected on imports of goods subject to the synthetic greenhouse gas levy suggests the slower scenario is occurring in parts of the industry, and there is opportunity to speed up New Zealand's transition. In a number of levy categories, imports of goods containing high-global warming potential refrigerants continue where alternatives are already widely available (eg vehicle air-conditioning, heat-pumps, refrigerator/freezers) (Environmental Protection Authority).

2.2 Who is affected and how?

Primarily, behaviour change is sought from:

- ***Importers.*** *Shift as soon as possible to importing equipment containing lower-global warming potential refrigerants, to ensure additions to the bank of HFC refrigerants in New Zealand are minimised.*
- ***Retailers.*** *Shift as soon as possible to marketing and sale of equipment containing lower-global warming potential refrigerants, to ensure choices of equipment match emissions reductions targets.*
- ***Manufacturers.*** *Manufacturers will need to design systems and use componentry that runs on lower-global warming potential refrigerants, or which could in future.*
- ***Technicians.*** *Develop capability to service equipment designed to take refrigerants with a lower global warming potential. Technicians will need to be able to install and service equipment using more flammable refrigerants (the typical trade-off for lowered global warming potential).*

Behaviour change from these actors is anticipated to have flow-on effects to the choices and behaviour of consumers. Consumers themselves could increase uptake of lower-GWP refrigerants by demanding more environmentally-friendly options.

The heating and cooling industry is aware of and, on the whole, supportive of the need to transition to lower global warming potential refrigerant choices. For example, many heat pumps sold in 2021 have been produced by manufacturers who have transitioned to using a refrigerant with half the global warming potential of the previous. Large businesses, like supermarket chains, increasingly design and use natural refrigerants (like carbon dioxide and ammonia) to run refrigeration systems.

On the other hand, there is some concern that under current regulatory settings, New Zealand could be subject to continued imports of equipment containing high-GWP HFCs that is restricted in other countries.

In the European Union, implementation of similar regulation is expected to reduce emissions to a third of 2014 levels by 2030 (as part of a package of measures). However, the European market is dealing with a rise in illegal refrigerant import and sales, as a consequence of legal market prohibitions. Mitigating a 'black market' for refrigerants will need to be examined carefully if Government considers imposing further restrictions here.

2.3 What are the objectives sought in relation to the identified problem?

- *Reduce emissions from refrigerants to net-zero by 2050, while:*
  - Keeping electrification of heating as a priority, without reducing access to heating and cooling appliances for low-income New Zealanders
  - Maintaining health and safety standards across cold chain, medical usage, and domestic and commercial refrigeration.
- *Respond to the recommendations of the Climate Change Commission on HFCs:*
  - Extending HFC import restrictions, where feasible, to include finished products and recycled bulk HFCs by 2025.

Section 3: Options identification

3.1 What options have been considered?

Options Analysis Stage 1: review of high-level options and international examples

For the purposes of this impact summary, we have considered two primary options; the status quo, and, in cases where alternatives are available; phasing out import or sale of goods containing high-GWP refrigerants. An independent consultant with expertise in refrigerants was engaged to study the feasibility of applying prohibitions as used in overseas jurisdictions (European Union, Japan, Canada, California). This analysis indicated that it would be feasible for New Zealand to consider applying similar prohibitions.

As part of the analysis process, a third option was identified – the phase out of high-GWP refrigerants used for servicing of existing equipment. This option would be intended to complement existing policies and as an add-on to option two.

Other policy options to reduce emissions from refrigerants are being considered as part of the discussion document *Transitioning to a low emissions and climate resilient New Zealand*. Another key option included for consultation is the possibility of extending the Kigali Amendment phase down to include products containing HFCs and recycled refrigerants.

Option 1 – Status quo: under this option, there would be no prohibitions on the types of refrigerant-containing goods that could be imported into or sold in New Zealand. Producers and suppliers could continue to sell and market products containing high-global warming refrigerants in New Zealand, although the majority would move to low-GWP options as they became common-place in the global market. There is risk that as other countries prohibit sale of these goods, New Zealand could become a 'dumping ground' for products that cannot be sold elsewhere.

Option 2 – Phase out sale of goods containing high-GWP HFCs: prohibitions would be made on the import or sale of goods based on the global warming potential of the refrigerants they contain. Prohibition dates would be made based on technological development and may vary between product types. We know other like-minded countries have taken measures additional to their Kigali Amendment obligations to accelerate the transition to lower-GWP refrigerants, and to provide greater certainty of the types of refrigerants in use in future.

MfE has undertaken preliminary policy analysis to assess the application of these overseas policies in New Zealand. Analysis suggests that a range of products could be subject to prohibitions (some as early as 2022), with little impact on importers, retailers, or consumers, because the majority of the industry is already transitioning to lower-global warming potential options. This would act as a 'back stop' to ensure that parts of New Zealand's industry do not lag the transition to lower-GWP refrigerants. It would also limit the risk of dumping — products sold in New Zealand would have to meet requirements similar to other jurisdictions.

Option 3 – Phase out of high-GWP refrigerants used for servicing existing equipment: Sometimes, refrigerants leak from equipment, and require replacement as part of servicing, to ensure the full functioning of the appliance. This option would require replacement refrigerants used in servicing of existing equipment to be lower-GWP in those instances where this is technically feasible. We have considered this approach as a complementary option to option 2 and the phase down of bulk HFCs already taking place. While the Kigali Amendment (which created decreasing annual quotas for bulk HFC imports) is already reducing the quantities of HFCs available for servicing purposes, option 3 could ensure New Zealand is using more environmentally-friendly refrigerants as soon as possible.

This is not an approach currently taken in other jurisdictions examined by MfE, and so there is limited evidence to support it. However, in the context of market restrictions, we consider it is worthwhile to consider — there is environmental benefit to utilising lower GWP refrigerants whenever available.

Options analysis and comparison

Key: ++ much better than the status quo; + better than the status quo; 0 about the same/status quo; - worse than the status quo; - - much worse than the status quo

Criteria	Option 1: Status Quo	Option 2: Phase out sale of goods containing high-GWP HFCs	Option 3: Phase out usage of high-GWP refrigerants for servicing existing equipment (additional to option 2)[1]
Emissions reductions *What emissions reductions are projected under the option?*	0 A transition to lower-GWP refrigerants is being made by industry, but speed is uncertain, and some sectors are lagging international trends.	++ Phasing out sale of high-GWP HFCs would limit new emissions from refrigerants and provide certainty of expected emissions reductions.	+ Including refrigerants used for servicing in phase out of high-GWP HFCs would ensure lower-GWP options are used wherever feasible.
Energy efficiency of equipment *Will the option increase or decrease the energy efficiency of heating and cooling systems?*	0 Heating and cooling equipment sold in New Zealand must meet Minimum Energy Performance Standards, regardless of refrigerant choice.	+ Heating and cooling equipment sold in New Zealand must meet Minimum Energy Performance Standards, regardless of refrigerant choice. Additionally, research has shown that equipment containing lower-GWP refrigerants meets or can exceed the efficiency of high-GWP options.	0 Replacement refrigerants expected to be comparable in terms of performance with those they replaced.
Achievability *Are there commercially feasible, sustainable alternatives? Is the option*	0 No change for importers and retailers required.	- Some sectors may find the pace of transition to lower-GWP refrigerant technologies requires earlier replacement of existing	- We have limited evidence of the achievability of this option, which is not used in overseas jurisdictions. However, analysis suggests commercially feasible options are available.

[1] Analysis of option 3 is based on the marginal impact of this policy approach, as an add on to option 2.

achievable for industry and consumers?		equipment, and additional training and certification in use of more flammable refrigerants.	Further industry engagement necessary to understand feasibility of alternatives.
Risk of unintended consequences *Could negative or positive externalities arise if this option was pursued? This includes economic, social, environmental impacts*	0 Risk that transition to lower-GWP refrigerant options is slower than global market, and New Zealand sees 'dumping' of high-GWP equipment.	0 Phase out could lead to stockpiling, increased costs. Risk expected to be low/comparable to transition under status quo. However, this approach would also mitigate the risk of New Zealand becoming a 'dumping ground' for high GWP products restricted from other countries. Other countries have seen 'black market' trading of HFCs upon prohibition, and this will require monitoring and potentially enforcement resource.	- We have limited understanding of the implications of this policy, which intersects with industry practice and training, a range of equipment types and ages, and variable refrigerant conditions. Engagement with industry necessary to understand and measure risks.
Strategic alignment *Does the phase out align with Government priorities, international obligations, and environmental strategy?*	0 Reliance on industry and ETS pricing[2] to transition to goods containing lower-GWP refrigerants to meet Government emissions budgets.	+ The Government is planning a transition to a low emissions New Zealand. Phasing out goods containing high-GWP refrigerants provides industry with clarity about what this means for imports over the coming decade.	+ The Government is planning a transition to a low emissions New Zealand. Phasing out usage of high-GWP refrigerants for servicing provides industry with clarity about training and business obligations.
Overall assessment	0 New Zealand's market would move towards lower-GWP refrigerants, the speed of transition and expected	+ Phasing out goods containing high-GWP HFCs is expected to hasten market trends already underway and provide certainty of emissions reductions from this sector.	+ Phasing out usage of high-GWP HFCs for servicing is expected to hasten market trends already underway and provide certainty of emissions reductions from this sector.

[2] Through the Synthetic Greenhouse Gas Levy.

	emissions reductions would remain uncertain.		

3.2 Which of these options is the proposed approach?

The Ministry does not have a preferred option for the best way to meet the Climate Commission's recommendations. However, within the set of options that are within scope of this Impact Analysis Summery, our view, subject to feedback via consultation, is that there is environmental merit in options 2 and 3 that exceed what could be achieved under the status quo. We are progressing both of these options for detailed consultation, in order to gather information that will enable us to more fully assess their feasibility. One or both options could then be progressed by Ministers for policy development.

Option 2 is expected to speed up market trends already underway and provide certainty of emissions reductions from this sector. The market is already making a transition to lower-GWP technologies, particularly in imports of new goods. We currently believe that this means this option would not impact the majority of importers, retailers, and manufacturers of refrigerant-containing equipment. Consequently, we expect the cost of transition to be low, as technology is anticipated to already be widely available. Those that would be affected would be importing or selling goods that fall below environmental requirements in other jurisdictions. Option 2 also minimises the risk to New Zealand of 'dumping' in our market.

In situations where it is possible to service existing equipment using lower-GWP refrigerants, additional climate benefits could be found. For this reason, we have also progressed Option 3 for consultation, despite significant uncertainty about achievability and consequences.

By removing refrigerants from the market where possible, we would ensure that all emissions reductions opportunities are taken in this sector. International action under the Montreal Protocol means refrigerant technology is developing rapidly, and there are opportunities to make small but cumulative emissions reductions.

Options Analysis Stage 2: review of dates for phased prohibitions on refrigerants and refrigerant-containing products

Following examination of overseas policy approaches, MfE prepared a methodology for analysis of alternative refrigerants that could be used to replace high-global warming potential HFCs in different types of refrigerant-containing heating and cooling equipment used in New Zealand. A summary of this process is available in Appendix A.

This analysis concluded with preparation of a schedule of phase out dates for the uses of refrigerants described in options 2 and 3. These phase-out proposals can be seen in context of other policy proposals to reduce emissions from F-gases in the discussion document *Transitioning to a low emissions and climate resilient future.*

We consider that including this level of design detail at the policy proposal stage is useful because it provides industry with a 'benchmark' against which to comment on the suitability of prohibitions for different goods and uses of refrigerants. If Ministers choose to proceed with policies to restrict refrigerants contained in new goods, or to service existing goods, then further consultation would take place.

We foresee that there may be difficulty in meeting specific refrigerant requirements for servicing of equipment. For this reason, we are engaging early with industry on the dates by which they consider transitioning to lower GWP refrigerants would be feasible.

Section 4: Impact Analysis

4.1 Summary table of costs and benefits

We have progressed options 2 and 3 for inclusion as possible emissions reductions policies in the discussion document T*ransitioning to a low-emissions and climate resilient future,* alongside other proposals to reduce emissions from different sectors like transport and waste. A high-level cost-benefit analysis is included below for both options. We consider that option 3 would be progressed as an extension of option 2, so the costs and benefits described are those additional to option 2.

Impact Analysis: Option 2

Affected parties *(identify)*	**Comment**: nature of cost or benefit (eg, ongoing, one-off), evidence and assumption (eg, compliance rates), risks	**Impact** *$m present value where appropriate, for monetised impacts; high, medium or low for non-monetised impacts*
Additional costs of proposed approach, compared to taking no action		
Regulated parties	Ongoing: Will be required to transition to importing, installing, and managing lower-global warming potential HFCs or alternative refrigerants sooner than anticipated. Expect further information on the extent of these costs to come from consultation with industry. Ongoing: Users could face increased costs as result of requirement to use newer technology. Ongoing: training and health and safety requirements associated with usage of more flammable refrigerants.	*Low-Medium*
Regulators	One-off: resourcing to implement changes to regulatory system. Ongoing: possible support to training and business needs associated with transition to lower-GWP refrigerants.	*Low*
Wider government	One-off: adapting existing compliance, monitoring, and enforcement activities for HFCs to reflect changed policy approach.	*Low*
Other parties	Ongoing: Exporters to the New Zealand market may need to move to products containing lower-global warming potential refrigerants faster than without regulation.	*Low*
Total Monetised Cost	Not yet monetised.	Not yet monetised
Non-monetised costs	Low	*(High, medium or low)*

Expected benefits of proposed approach, compared to taking no action		
Regulated parties	Ongoing: certainty of refrigerant requirements for purposes of training and investment.	*Low*
Wider government	One-off (in each emissions budget period): contributes to New Zealand's emissions budget targets.	*Medium*
Total Monetised Benefit	Not yet monetised.	Not yet monetised
Non-monetised benefits	*Medium*	*(High, medium or low)*

Impact Analysis: Option 3

Affected parties *(identify)*	**Comment**: nature of cost or benefit (eg, ongoing, one-off), evidence and assumption (eg, compliance rates), risks	**Impact** *$m present value where appropriate, for monetised impacts; high, medium or low for non-monetised impacts*
Additional costs of proposed approach, compared to taking no action		
Regulated parties	Ongoing: Users could face increased costs as result of requirement to use newer technology or cost of replacement refrigerants. Ongoing: training and health and safety requirements associated with usage of more flammable refrigerants.	*Low-Medium*
Regulators	One-off: resourcing to implement changes to regulatory system. Ongoing: possible support to training and business needs associated with transition to lower-GWP refrigerants. Expect further information on the extent of these costs to come from consultation with industry.	*Low*
Wider government	One-off: adapting existing compliance, monitoring, and enforcement activities for HFCs to reflect changed policy approach.	*Low*
Other parties	Ongoing: Exporters to the New Zealand market may need to move to products containing lower-global warming potential refrigerants faster than without regulation.	*Low*
Total Monetised Cost	Not yet monetised.	Not yet monetised
Non-monetised costs	Low	*(High, medium or low)*

4.2 What other impacts is this approach likely to have?

Including detail in the proposals at this stage makes transparent what the government is considering and provides a framework for industry to respond to (eg, whether or not they consider alternative technology will be available by the threshold dates). If Ministers choose to proceed with this policy approach, MfE will undertake further cost-benefit and trade analysis on the proposals. Preliminary engagement with industry as part of the Emissions Reduction Plan will inform the development of a range of detailed options. These options would be subject to cost-benefit analysis, and the outcome of this process will enable MfE to consult with iwi/hapū about specific impacts of proposals.

Section 5: Stakeholder views

5.1 What do stakeholders think about the problem and the proposed solution?

In 2018, MfE carried out public consultation on regulations to implement the Kigali Amendment to the Montreal Protocol in New Zealand. Industry is generally supportive of the Kigali Amendment, recognising that the phase out of HFCs is occurring globally.

Safety and efficacy were major concerns in the 2018 consultation.[3] Reporting by the Montreal Protocol Technological and Economic Panel in 2021 notes that these concerns are being addressed by manufacturers. Global safety standards are shifting to accommodate technology containing lower-global warming potential refrigerants, and there is a distinct correlation between energy efficiency and lower-global warming potential refrigerants in the development of new technologies.[4] In options analysis of prohibiting uses of high global warming potential HFCs, safety and efficacy were taken into account in assessing all alternative refrigerant options.

Engagement on this specific policy proposal has to date been with other public sector agencies.[5] Feedback from agencies has been supportive of the development of proposals to engage with industry, given the need to make substantial emissions reductions across the economy.

There has been no public engagement on the proposals discussed in this paper as yet, though this is expected to commence soon, in three stages:

- ***Early engagement with industry to ensure that content of the Emissions Reduction Plan is understood*** *– this engagement is to both inform industry early of our current thinking and seek initial views as the pathway planned. The Emissions Reduction Plan consultation documents are near completion. This will be largely an information sharing engagement and to gather feedback for the later stages (post-Emissions Reduction Plan) of policy development.*
- ***Emissions Reduction Plan consultation (lead by Climate Change division)*** *– this engagement would be preliminary in nature, to seek views on the high-level proposal. Public consultation to be undertaken 24 August – 3 October 2021.*

[3] https://www.parliament.nz/resource/en-NZ/PAP_79034/e31cc17a96077dc01f6f437b48f9a5bc286b45b1, pg. 23.

[4] https://ozone.unep.org/system/files/documents/TEAP-EETF-report-may2021.pdf , pg. 4.

[5] Ministry of Foreign Affairs and Trade, Ministry of Transport, Ministry of Business, Innovation, and Employment, Energy Efficiency and Conservation Authority, Environmental Protection Agency.

- ***Consultation on policy decisions is informed by input on the prior two stages*** *– this engagement will include specific policy proposals and details and will seek feedback on the specific mechanism/s that is/are to be put into effect.*

We have identified that HFCs are a vital component of heating and cooling in houses and buildings, food and medicine storage and transport, and air conditioning in vehicles. This means that the stakeholders in this consultation could be quite diverse. As a starting point, and for early engagement, we are focusing on reaching representatives of affected industries who will be required to make changes to their approaches and potentially their products to meet any obligations introduced by regulatory proposals (for example). This will include:

- *Heating and cooling industries*
- *Transport*
- *Food storage and transport*
- *Medicine storage and transport*

At the later stages of consultation (through the Emissions Reduction Plan consultation and later, public consultation on specific F-gas-related mechanisms), we anticipate that there will be some public interest, likely focused on the impacts on consumer goods and cost. It will be important at this stage to be able to translate the work we are doing in plain and accessible language, as this is a complex and technical area of work.

Section 6: Implementation and operation

6.1 How will the new arrangements be given effect?

We are considering a range of possible legislative vehicles for the proposed approach, should Ministers decide to proceed with policy development following the response to public consultation. There are two key ways that could restrict refrigerants :

- *prohibition of higher-GWP refrigerant options; or*
- *setting standards requiring refrigerants meet low-GWP criteria.*

Both options could be enacted under a number of different acts and regulations. A summary of these legal options is included in the table below.

Note: Further information on implementation is not prepared, as this policy approach is at an early stage of development. If further cost-benefit analysis and public feedback indicate a prohibition approach would be a suitable pathway to reducing emissions from HFCs, implementation and operational arrangements would be considered in greater detail.

Legislative or regulatory change?	Legislation or regulation	Section	Rationale	Drawbacks
Regulatory	***Ozone Layer Protection Act 1996* and regulations.**	Requires change to legislation	HFCs are already being phased down in bulk under the OLPA (Ozone Layer Protection Act). Including prohibitions on sale of pre-charged equipment here would make this the 'umbrella' act for HFC phase out. It also matches other prohibitions already in the Act for ozone depleting substances. The EPA (Environmental Protection Authority) already monitors imports and exports of bulk HFCs and would be the compliance, monitoring, and enforcement agency for further prohibitions.	The purpose and name of the OLPA are outdated, and other parts may also need revision. The EPA/MfE may not have the institutional expertise to assess the broader safety and efficiency components of new technologies that emerge as replacements for HFC-based systems.
Regulatory	***Waste Minimisation Act 2008 and regulations.***	s23(1)(b)	Could include prohibitions as part of the RPS (Regulated Product Stewardship) scheme for refrigerants, keeping management of refrigerant-containing goods in one place. This approach would also enable effective use of resources and compliance, monitoring, and enforcement.	RPS is focussed on through-life management and disposal, may not necessarily be geared towards the import/sale monitoring required to enforce prohibitions.

Legislative	***Energy Efficiency (Energy-Using Products) Regulations 2002.***	Requires change to legislation	Allowing MEPS (Minimum Energy Performance Standards) and labels to include prohibitions and information regarding refrigerants such as HFCs could speed up the transition to technologies that utilise energy efficient refrigerants with lower impact on the atmosphere should they leak. This approach would also enable effective use of resources and CME. Refrigerant standards could be part of a shift to 'mainstream' GWP/environmental impact in efficiency considerations.	Phase out of certain high-GWP HFCs could lag other countries because of concerns around NZ's role as a 'taker' in the market for refrigerant-containing goods, and a focus on energy efficiency.
Legislative	***Climate Change Response Act 2002 and regulations.***	Requires a change to legislation	The CCRA (Climate Change Response Act) already deals with refrigerants in goods via the synthetic greenhouse gas levy, to support NZ's commitments to the Paris Agreement. The legislation in Part 7 could be amended to expand the scope of the levy to include prohibitions, slowly phasing out the need for the levy/ETS in this sector.	The CCRA also sets out New Zealand's overarching emissions reductions goals and planning, but at a high level. It would not be suitable to include specific policies. It would also be difficult to justify the inclusion of specific prohibitions as part of the SGG levy, as this is not the intent of the tool.
Order in Council	Imports and Exports (Restrictions) Act 1988	An order can be made under this act to prohibit the import of certain goods.	An imports and exports order is the most common vehicle for prohibition of imports. This approach has been taken for a number of other substances regulated via international conventions.	An import order would stand separate from other legislation regulating import of goods or refrigerants. This may be confusing for industry and the public and could require extra investment in education and awareness of requirements.

Section 7: Monitoring, evaluation and review

7.1 How will the impact of the new arrangements be monitored?

Existing data collection arrangements

Products containing HFCs are already monitored and recorded on import into New Zealand as they are subject to the Synthetic Greenhouse Gas Levy.

The Energy Efficiency and Conservation Authority (EECA) also holds information on refrigerant-containing appliances. These appliances are subject to minimum energy performance standards.

Other data on refrigerant management and leakage through life is not currently collected on a regular basis by public sector agencies. Compliance, monitoring, and enforcement mechanisms will be established as part of the regulated product stewardship for refrigerants.

We cannot identify any extra data requirements should this policy proceed. A prohibition-based approach would rely on strong compliance, monitoring, and enforcement. Should policy development proceed, determination of an appropriate legislative vehicle will be critical to further policy analysis and inform data requirements.

7.2 When and how will the new arrangements be reviewed?

A mechanism for review of regulatory arrangements has not been developed given the status of policy development.

Appendix A: Selection of draft phase out schedule

The equipment categories considered were:

- *commercial refrigeration*
- *industrial refrigeration*
- *stationary air-conditioning*
- *mobile air-conditioning (vehicles)*
- *transport refrigeration (eg, refrigerated containers)*

In each category, alternative refrigerant options that are available globally were assessed against two criteria:

- ***availability:*** *the ability of the industry to import and install products with new technologies of lower global warming potential refrigerants and higher efficiency.*

Alternative availability scale	#
R&D: Still in testing phase with promising results. It may be commercialised within five years after passing through emerging technology stage.	1
Emerging technology: Prototype available at a pilot or demonstration phase. An emerging technology may become available at a later stage or might not make it to the available stage.	2
Available: Can be obtained from at least one manufacturer.	3
Widely available: Can be obtained from more than one manufacturer, supplier, or retailer. Distribution networks are available.	4

- ***accessibility:*** *a range of factors that could influence the access to alternative refrigerant choices, including affordability, supply chains, regulations, and servicing capability.*

Alternative accessibility scale	#
Not in production	1
Not available in NZ, not expected to be	2
Not currently available in NZ, expected within 5 years	3
Available in NZ, but cost prohibits mass use	4
Available in NZ, but safety prohibits mass use	5
Available widely in NZ	6

This process created a detailed set of options (shown in this workbook). Other factors like global warming potential, technical properties, flammability, cost, and efficiency are compared as part of the assessment of availability and accessibility.

Data is not available to provide a complete picture of these factors for every refrigerant option. Most importantly, cost has been difficult to identify, given the quantity of different good manufacturers, and the difficulty of isolating the cost of the refrigerant itself. Specific cost-benefit analysis will take place in future policy development.

This assessment was carried out for two purposes:

- *to understand suitability of alternative refrigerants in new equipment*
- *to understand suitability of alternative refrigerants for use in maintaining existing equipment (that previously used a higher-global warming potential HFC).*

The criteria are based on research and modelling prepared by the Montreal Protocol Technology and Economic Assessment Panel, which you can read more detail about here.

From this process, a series of 'threshold' dates have been created in different categories of equipment. After these threshold dates, our options analysis suggests that alternative refrigerant choices will be technologically feasible and import or sale of higher-global warming potential equipment could be prohibited.

These thresholds are based on the dates by which alternative refrigerants are considered to rank as a 3 or 4 in terms of accessibility, and a 4, 5, or 6 in terms of availability. Some estimation has occurred in instances where there is limited evidence as to the applicability of lower global warming potential refrigerant options in New Zealand, but global market evidence suggests that emerging technology may develop rapidly.

For example, this analysis indicates that residential fridges and dehumidifiers could meet a global warming potential limit of <150 times CO_2 by 2022, but that refrigerant technology available for transport refrigeration (eg, refrigerated trucks) means a much slower transition (to refrigerants with a global warming potential of <750 by 2032) is more likely.

The options analysis process also revealed that lower-global warming potential refrigerants are available, or expected to be available, as an option for servicing of existing equipment. Given this, threshold dates are proposed for the type of refrigerants used in servicing equipment.

These thresholds are summarised in the table at Appendix 1. This summary will be shared as part of public consultation on the Emissions Reduction Plan.

Engagement with the public and industry on these possible limits will inform development of more detailed options and proposals for application of prohibitions on equipment containing refrigerants.