



Distr.: General
30 June 2014
English only



**United Nations
Environment
Programme**

**Open-ended Working Group of the Parties to
the Montreal Protocol on Substances that
Deplete the Ozone Layer
Thirty-fourth meeting
Paris, 14–18 July 2014
Item 5 (c) of the provisional agenda***

**Issues related to alternatives to ozone-depleting
substances: information submitted by parties on their
implementation of paragraph 9 of decision XIX/6 to
promote a transition from ozone-depleting substances
that minimizes environmental impact (decision XXV/5,
paragraph 3)**

Submissions by parties on the implementation of decision XIX/6

Note by the Secretariat

1. In paragraph 3 of its decision XXV/5, the Meeting of the Parties encouraged parties to provide to the Secretariat, on a voluntary basis, information on their implementation of paragraph 9 of decision XIX/6, including information on available data, policies and initiatives pertaining to the promotion of a transition from ozone-depleting substances that minimize environmental impact wherever the required technologies are available, and requested the Secretariat to compile any submissions received for consideration by the Open-ended Working Group at its thirty-fourth meeting.
2. In response to the decision, 14 parties submitted information on the implementation of paragraph 9 of decision XIX/6 (see annex).

* UNEP/OzL.Pro.WG.1/34/1.

Annex

Compilation of submissions by parties on the implementation of decision XIX/6¹

Australia

In relation to implementation of paragraph 9 of Decision XIX/6, please find attached a short summary of Australia's legislative requirements in relation to domestic management of HFCs. This approach has facilitated the reduction in emissions of HFCs from both the refrigerant and air conditioning (RAC) and fire-suppression sectors in particular.

As always, the Australian delegation stands ready to assist the Ozone Secretariat in its work on this important subject and would be happy to assist in whatever capacity is required.

The Australian Ozone Protection and Synthetic Greenhouse Gas Management Act 1989

The Australian Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 (the Act) was enacted to protect the ozone layer and to minimise emissions of synthetic greenhouse gases (SGG). Its objectives are to give effect to Australia's obligations under the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer, as well as Australia's reporting and emission reduction requirements under the UN Framework Convention on Climate Change and its Kyoto Protocol.

The Act does this by controlling imports, exports and the manufacture of bulk ozone depleting substances (ODS) and SGGs, and controlling imports of equipment containing ODS and SGGs. The Act and its associated regulations also place controls on the end use of ODS and SGGs used as refrigerants and fire suppressants.

This integrated approach has created consistency and certainty for Australian industry with respect to the major uses of ODS and SGGs.

Import, export and the manufacture of bulk ODS and SGGs

The Act controls the manufacture, import and export of all ozone depleting substances (ODSs) and their SGG replacements, known as scheduled substances collectively.

- A controlled substances license is required to import, export or manufacture hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), hydrochlorofluorocarbons (HCFCs) and methyl bromide.
- This requirement allows the Australian Government to track all scheduled substances imported, exported or manufactured for the purpose of reporting ODS in line with Article 7 obligations under the Montreal Protocol and also for reporting emissions of SGGs in line with UNFCCC and Kyoto Protocol obligations. Emissions are calculated in line with UNFCCC reporting requirements.
- The Act sets in place a quota system for HCFCs, but quotas do not apply to SGGs. Most other license requirements are the same.

Import of equipment containing ODS and SGGs

The Act also controls imports of equipment containing a HFC or HCFC through a requirement for importers to hold an import equipment license. Importers are required to report quarterly on their imports.

These controls provide data to understand the size and structure of the bank in Australia of HCFC and HFC equipment as well as the future servicing demand. These controls complement and supplement the controls on the import of bulk ODS and SGGs as well as Act requirements not to emit ODS or SGGs.

Product Stewardship

Equipment License and Controlled Substance License holders importing refrigerant gases are required to belong to a product stewardship scheme to dispose of ODS or SGG at end of life.

Banning emissions of ODS and SGGs

¹ Issued without formal editing.

It is an offence under the Act to discharge a scheduled substance in circumstances where it is likely that the substance will enter the atmosphere and the discharge is not in accordance with subsidiary regulations.

These controls are designed to support the industry based product stewardship scheme which provides for the collection, transport and disposal of used ODS and SGGs in the refrigeration sector. In Australia, Refrigerant Reclaim Australia is the only product stewardship scheme operating disposing of used refrigerants.

End use and handling of ODS and SGGs

A Refrigerant Handling License must be held by any person who handles a fluorocarbon refrigerant including: decanting, manufacturing, installing, servicing or decommissioning refrigeration and air conditioning equipment. A Refrigerant Trading Authorisation must be held by any individual or business acquiring, possessing or disposing of fluorocarbon refrigerant.

An Extinguishing Agent Handling License must be held by any person who handles a fluorocarbon extinguishing agent including: decanting, manufacturing, installing, servicing or decommissioning fire protection equipment. An Extinguishing Agent Trading Authorisation must be held by any individual or business acquiring, possessing or disposing of fluorocarbon extinguishing agent.

The license systems set minimum skill standards for people operating in these sectors and require licensed technicians and businesses to adhere to Australian standards and codes of practice.

These controls ensure a high standard of professionalism in the RAC and fire suppression sectors, and contribute significantly to reduced emissions of ODS and SGGs from their use in Australia. The integrated approach ensures consistency for industry in their use of both ODS and SGGs.

Bangladesh

The 65th Ex.Com has approved the HPMP-Stage-I of Bangladesh. Bangladesh adopted Low GWP, Zero ODP and Energy Efficient technology in foam sector.

Bangladesh is now implementing a conversion project in the manufacturing of insulation foam for domestic refrigerators. For this conversion project, Bangladesh chose cyclopentane as a foam blowing agent as an alternative to HCFC-141b. Bangladesh has already phased-out HCFC-141b in refrigerator as a foam blowing agent. Bangladesh will include a ban on HCFC-141b use in foam sector by amending of "Ozone Depleting Substances (Control) Rules, 2004" in 2014.

Bangladesh is trying to select, especially in RAC sector, an alternative which is Low GWP, Zero ODP and Energy Efficient. Bangladesh is studying low GWP technology adopted by developed country like Japan, European countries as well as other countries of the world. NOU is under process of standardization of HC and low flammable fluorocarbon to be used in RAC sector. We shall include energy efficiency issues in the process while preparing our HPMP (Stage-II) in 2015. We shall also include an action plan relating to the energy efficiency issues.

National Ozone Unit (NOU), Bangladesh is closely working with the Energy Focal Point, Power Division, Ministry of Power, Energy & Mineral Resources, and Government of Bangladesh. Power Division of the Ministry of Power, Energy and Mineral Resources has developed an "Action Plan for Energy Efficiency and Conservation" with a vision of improving the primary and secondary energy saving level for sustainable energy security including low carbon emission in September 2013. The Action Plan has introduced a matrix depicting, description of action and responsible organization and timeline to conduct the task.

Canada

By paragraph 3 of decision XXV/5, the Meeting of the Parties encourages Parties to provide to the Ozone Secretariat, "on a voluntary basis, information on their implementation of paragraph 9 of decision XIX/6, including information on available data, policies and initiatives pertaining to the promotion of a transition from ozone-depleting substances that minimize environmental impact wherever the required technologies are available". Paragraph 9 of decision XIX/6 encourages "Parties to promote the selection of alternatives to HCFCs that minimize environmental impacts, in particular impacts on climate, as well as meeting other health, safety and economic considerations".

In Canada's understanding, the term "minimize environmental impact", in the context of decisions XIX/6 and XXV/5, is meant to refer principally to the avoidance of high-global warming potential (GWP) substances and technologies when transitioning from ozone-depleting substances (ODS). In that regard, it should first be clarified that in Canada, the transition from ODS is almost completed.

ODS consumption and production has essentially been phased out, except for HCFCs consumed in the refrigeration servicing sector and minor critical uses of methyl bromide. The manufacture of equipment containing HCFCs has been banned since January 1, 2010, and current HCFC consumption is now about 5% of Canada's baseline in ODP tonnes. Consequently, future transitions will concern mainly the existing bank of HCFC-based equipment (which is still significant) and the use of high-GWP alternatives that have replaced and are continuing to replace ODS, mainly HFCs. Therefore, the information below pertains mainly to policies and initiatives that address HFC use and emissions.

Measures that address HFC emissions

In CO₂ equivalent terms, about 65% of HFCs imported in Canada are used in refrigeration and air conditioning (RAC). Approximately 30% are used in insulating foams, and 5% or less in aerosols, solvents and fire suppression. Canada does not produce HFCs and does not have any HFC-23 by-product emissions since it does not produce HCFC-22. As insulating foams are largely low-emissive uses, the main source of HFC emissions are from the RAC sector.

In order to mitigate HFC emissions from the RAC sector, federal and provincial regulations prohibit the release of HFCs (as well as ODS) from refrigeration and air conditioning equipment. Additionally, these regulations prohibit the release of these substances from containers and equipment used in the reuse, recycling, reclaiming or storage of ODS and HFCs. Federal and provincial regulations also mandate the recovery of ODS and HFCs from closed systems, such as refrigeration, air conditioning and fire extinguishing systems.

Complementing these regulations, Canada has published the *Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems*, which outlines best practices to minimize emissions of all ODS and HFC refrigerants when operating and servicing equipment. The *Code of Practice* is currently being revised to incorporate new technologies and best practices to reduce emissions.

Environment Canada is also considering further reducing HFC emissions by requiring industry to implement a stewardship program for HFCs that are used in stationary refrigeration and air conditioning equipment. This proposed plan would ensure the environmentally-sound management and disposal of unwanted refrigerants. Building on the existing framework for CFCs and HCFCs, this approach essentially means that importers and reclaimers of HFC refrigerants would be required to prepare stewardship plans to ensure that recovered halocarbon refrigerants, including HFCs, are either re-used (after undergoing recycling or reclamation processes) or disposed of using technologies approved by the Parties to the Montreal Protocol. The disposal aspects of this management framework will be coordinated by industry which is already coordinating the disposal of CFCs and HCFCs across the country. Consultations are presently underway with Canadian stakeholders on this initiative, which is anticipated to be implemented in 2015.

While domestic appliances would be excluded from the proposed requirements to prepare a pollution prevention plan, municipal and regional programs are in place across Canada that aim to ensure the recovery and sound management of such appliances at end-of-life, including the refrigerant contained within.

Measures that address HFC consumption and/or use

HFCs in mobile air conditioning

Presently, Canada does not have any direct restrictions on imports or uses of HFCs. However, the *Passenger Automobile and Light Truck Greenhouse Gas Emissions Regulations* provide a strong incentive for light-duty vehicle manufacturers to replace HFC-134a used in mobile air conditioning (MAC) with alternatives and/or to improve the design of MAC systems to maximize energy efficiency and minimize refrigerant leakage. The objective of the regulations is to reduce GHG emissions by requiring that vehicle manufacturers and importers meet fleet average GHG emission standards for their passenger automobiles and light trucks for 2011 and later model years. The regulations also include provisions allowing companies to reduce their CO₂ equivalent emission values by subtracting certain optional allowances (in grams per mile) from their carbon related exhaust emissions. These allowances promote air conditioning improvements, including refrigerant leakage reduction and system efficiency improvements, along with other innovative technologies whose GHG-reducing impacts are not captured during conventional city/highway emissions testing.

Specifically, the allowance for reducing air conditioning refrigerant leakage rewards companies who implement air conditioning technologies that reduce leakage, and thus incentivizes the use of refrigerants with a lower GWP than the current standard refrigerant, HFC-134a. As a result, some Canadian-based manufacturers are already using low-GWP HFO-1234yf in new vehicle models.

Permitting and reporting system for imports of HFCs

Implementation of a mandatory permitting and reporting system for the import, manufacture and export of HFCs is proposed for 2015 as part of the revisions to Canada's Ozone-depleting Substances Regulations, 1998.

New uses of HFCs

A provision prohibiting the import, manufacture and use of HFCs for uses for which ODS have never been used in Canada is also proposed to be implemented in 2015 as part of revisions to Canada's *Ozone-depleting Substances Regulations, 1998*.

Other initiatives

The Canadian federal government's CanmetEnergy, a division of Natural Resources Canada, has collaborated with stakeholders in the refrigeration industry and other levels of government to facilitate the adoption of energy-efficient, low-GWP technologies. In particular, Canmet has played a key role in the introduction of CO₂ as a refrigerant and as a heat transfer fluid in secondary loop refrigeration systems. This included contributing to modifying the relevant Canadian standard to allow the use of CO₂ in commercial refrigeration and providing technical support for the first demonstration project validating the use of CO₂ in a supermarket refrigeration system (operated by Loblaws).

In addition, CanmetEnergy has developed and promoted the CoolSolution® approach to optimise energy management and reduce GHG emissions of buildings requiring considerable refrigeration. This integrated approach combines advanced practices and technologies in the design and operation of refrigeration systems. It has been used in demonstration projects, which show that it is possible to reduce energy consumption by almost 50% in arenas and curling rinks and by 25% in supermarkets, as well as reduce synthetic refrigerant leaks by 75%.

CanmetEnergy's collaboration with the Ministry of Natural Resources of the province of Quebec is particularly worth mentioning. Canmet provided technical and scientific expertise for the development, implementation and evaluation of the Quebec Refrigeration Optimisation Program (OPTER). Between 2008 and 2013, this program supported the adoption of measures to improve energy efficiency, together with the conversion/replacement of refrigeration equipment to low-GWP technologies, in over 130 installations (mainly in supermarkets, warehouses, arenas and the food industry). It is estimated that the program led to the annual elimination of over 64,000 tonnes of CO₂-equivalent in total emissions from refrigeration equipment. Direct reductions of refrigerant emissions result mainly from the adoption of CO₂ and ammonia refrigerants, as well as the use of secondary loop and cascade technologies.

These efforts have led to the development and adoption of CO₂-based refrigeration technology in a number of supermarkets and increased the use of ammonia in ice rinks, two sub-sectors that are responsible for a significant proportion of HCFC and HFC consumption in Canada.

Among supermarkets that have converted to low-GWP refrigerants in recent years, the Sobeys supermarket chain has made a commitment to alternative CO₂ refrigeration technology and is reportedly very pleased with the results. The installation of transcritical CO₂ refrigerant systems at Sobeys grocery stores in Canada with heat reclamation not only improves environmental performance but yields economic benefits as well. Compared to a traditional HCFC refrigerant system at Sobeys, it is estimated that transcritical CO₂ systems reduce overall CO₂ emissions by 62 per cent, or 862 tonnes of CO₂-equivalent per year, per store, and reduce energy consumption by 15-18 %.

Congo

Upon the conclusion of the training sessions in the retrofitting of refrigeration equipment originally operating on HCFCs and HFCs to hydrocarbons, and taking into consideration the data set out in the table above, the refrigeration experts are fully cognizant of the need to use hydrocarbons as substances that do not harm the ozone layer and the climate.

They are concerned, however, about the flammability or toxicity of the refrigerants used as alternatives to HCFCs and HFCs. This applies to R290, R600a, R717 (ammonia) and R744 (carbon dioxide).

Accordingly, they have prepared the following recommendations:

- UNEP and UNIDO should pool their experience relating to the following:

1. Supporting the conduct of subregional training workshops in the safe use of R717, R290, CARE 30 and carbon dioxide as alternatives to HCFCs and HFCs;
2. Supporting the organization of national training workshops in the safe use of ammonia, R290, CARE 30 and carbon dioxide as alternatives to HCFCs and HFCs.

NB: During the workshop on 11 and 12 July 2014, details of the contribution of the Congolese Ozone Office in this regard will be provided on the spot, if possible, by the National Coordinator.

El Salvador

Ministry of the Environment and Natural Resources
 Agreement No: 52
 San Salvador, 15 April 2013.

The Executive Authority for the Environment and Natural Resources,

Whereas:

- I. The stratospheric ozone layer is one of Earth's natural resources, whose primary role is to filter ultraviolet radiation.
- II. In accordance with Decree No. 395 of 26 November 1992, published in the Official Gazette No. 55, Vol. 326 of 20 March 1996 (new edition), the Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol on Substances that Deplete the Ozone Layer were duly ratified. This is an international treaty designed to protect the ozone layer through control of the production, import, export and consumption of ozone-depleting substances, and El Salvador has adopted the maximum limit for the import of ozone-depleting substances stipulated in articles 5 and 6 and has committed itself to domestic measures for the gradual phase-out of the use of ozone-depleting substances.
- III. The Montreal Protocol has undergone five amendments and the five amendments have been ratified by El Salvador, on the following dates: 2 October 1992: Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer; 8 December 2000: London, Copenhagen and Montreal Amendments; 13 November 2007: Beijing Amendment.
- IV. In 1999, El Salvador pledged to reduce the ozone-depleting substances known as chlorofluorocarbons, covered by Annex A, group 1, in the Montreal Protocol, with baselines determined on the basis of the average import and consumption levels for 1995, 1996 and 1997. This baseline is calculated at 309 metric tons, and in 2010 El Salvador met the target of reducing to zero the imports of the controlled substances in Annex A, group 1, of the Montreal Protocol.
- V. The Environment Act was promulgated on 2 March 1998, through Decree No. 233, published in the Official Gazette No. 73, Vol. 347 of 12 April 1998.
- VI. The Special Regulations on the Control of Ozone-Depleting Substances were published on 1 June 2000, in the Official Gazette No. 101, Vol. 247, which set out specific rules for the reduction and elimination of the first group of substances, chlorofluorocarbons (CFCs), establishing annual import quotas for the period 1999–2010, the date set for compliance with the CFCs final phase-out management plan.
- VII. Through Agreement No. 40 setting out the list of controlled substances, published in the Official Gazette No. 83, Vol. 375, on 9 March 2007, the Minister of the Environment and Natural Resources listed the hazardous substances subject to the completion of formalities with the authorities responsible for import and transport, with the inclusion therein of ozone-depleting substances.
- VIII. El Salvador has set the following timetable in its phase-out plan leading to the eventual banning of the imports of ozone-depleting substances: (a) chlorofluorocarbons (CFCs): start date 1999, end date 2010; (b) methyl bromide: start date 1999, end date 2015, for import, consumption and export, except for quarantine and pre-shipment uses (QPS); (c) hydrochlorofluorocarbons (HCFCs) start date 2013, end date 2030.

- IX. At its sixty-fifth meeting, the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, held in Bali, Indonesia, from 13 to 17 November 2011, approved the HCFC phase-out management plan (phase 1, stage 1) for El Salvador, to reduce its consumption of HCFC by 35 per cent over the period from 2011 to 2020, putting into effect compliance measures for the reduction of HCFC imports, retrofitting of equipment with HCFC-free alternatives, and capacity-building in best practices, in phase 1, stage 1, over the period from 2013 to 2015.
- X. The Government of El Salvador has agreed, through its HCFC phase-out management plan (phase 1, stage 1), to set 11.68 ODP tons as its estimated baseline for the gradual and sustained reduction of HCFC consumption, calculated on the basis of the actual levels of 11.86 and 11.50 ODP tons reported in 2009 and 2001 respectively, in accordance with article 7 of the Montreal Protocol, plus the 4.94 ODP tons of HCFC-141b found in imported pre-blended polyol systems, giving a total consumption of 16.62 ODP tons.

In accordance with the provisions of article 45-A No. 1 of the rules of procedure of the Executive Branch and the preambular recitals above,

Does therefore agree:

To set an upper limit for the import of ozone-depleting substances of the category hydrochlorofluorocarbons (HCFCs) used in the refrigeration, air-conditioning, and foam sectors.

Article 1. An upper limit is hereby set for the import of ozone-depleting substances classified as hydrochlorofluorocarbons (HCFCs) used in the refrigeration, air-conditioning, and foam sectors, both their pure state and when found in mixtures of polyols or other commercial products, for the protection of the stratospheric ozone layer and in compliance with the obligations entered into by El Salvador under the international instruments which it has ratified in this area, and in accordance with an annual phase-out plan, as set forth below:

(a) Maximum allowable import of HCFCs for consumption as a refrigerant in the air-conditioning and refrigeration sectors

<i>Year</i>	<i>HCFC-22 metric tons</i>	<i>HCFC-141b metric tons</i>	<i>HCFC-124 metric tons</i>	<i>HCFC-142b metric tons</i>	<i>HCFC-123 metric tons</i>	<i>Total HCFC metric tons</i>
2013	148.10	30.39	4.89	0.47	2.65	186.50
2014	148.10	30.39	4.89	0.47	2.65	186.50
2015	133.29	0.00	4.40	0.42	2.38	140.49
2016	133.29	0.00	4.40	0.42	2.38	140.49
2017	133.29	0.00	4.40	0.42	2.38	140.49
2018	133.29	0.00	4.40	0.42	2.38	140.49
2019	133.29	0.00	4.40	0.42	2.38	140.49
2020	96.26	0.00	3.17	0.30	1.72	101.45
2021	96.26	0.00	3.17	0.30	1.72	101.45
2022	96.26	0.00	3.17	0.30	1.72	101.45
2023	96.26	0.00	3.17	0.30	1.72	101.45
2024	96.26	0.00	3.17	0.30	1.72	101.45
2025	48.13	0.00	1.58	0.15	0.86	50.72
2026	48.13	0.00	1.58	0.15	0.86	50.72
2027	48.13	0.00	1.58	0.15	0.86	50.72
2028	48.13	0.00	1.58	0.15	0.86	50.72
2029	48.13	0.00	1.58	0.15	0.86	50.72
2030	0.00	0.00	0.00	0.00	0.00	0.00

(b) **Maximum allowable import of HCFC-141b for consumption as used in pre-blended polyols or for any other use**

<i>Year</i>	<i>HCFC-141b ODP tons*</i>
2013	4.94
2014	4.94
2015	0.00

*ODP = ozone-depleting potential

Article 2. In compliance with the reduction target agreed on by the parties to the Montreal Protocol at the sixty-fifth meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, the import of HCFC-141b is prohibited, together with any other HCFC substance in pure or mixture form not referred to in this executive agreement, with effect from 1 January 2015.

Article 3. Through the consolidated import and export facility, the Ministry of the Environment and Natural Resources shall issue authorizations for the import of HCFCs for use in the air-conditioning and refrigeration sectors in accordance with the maximum quantity of 186.50 metric tons authorized for El Salvador, which shall include a reserve of 10 per cent for critical uses designated by the Montreal Protocol; 3.62 per cent for unforeseen imports; and the remaining 86.38 per cent for the importers active in 2012. The maximum import allocations of HCFCs for each active importer, which are based on the average amounts authorized by the Ministry of the Environment and Natural Resources over the last four years, shall be allocated in accordance with the table below, which covers imports to be authorized in 2013 and 2014:

<i>Substance</i>	<i>Active importers in 2012</i>				
	<i>Distributor: Granada SA de CV (MT)*</i>	<i>Friolair SA de CV (MT)*</i>	<i>Universal de Refrigeración SA de CV (MT)*</i>	<i>Vidri Warehouses SA de CV (MT)*</i>	<i>Urraca SA de CV (MT)*</i>
HCFC-22	48.70	44.01	22.48	4.22	10.23
HCFC-141b	10.92	6.09	5.72	1.19	1.45
HCFC-142b	0.00	0.37	0.00	0.04	0.00
HCFC-123	0.29	0.73	0.29	0.29	0.29
HCFC-124	1.14	1.02	0.91	0.36	0.36

*MT = metric tons

Article 4. The maximum quantities of HCFCs to be imported by each importer for use in the air-conditioning and refrigeration sectors, from the year 2015 onwards, shall be set according to the following phase-out plan:

<i>Year</i>	<i>Reduction in HCFC imports</i>
2015	10% reduction of the maximum imports authorized for 2014
2020	35% reduction of the maximum imports authorized for 2014
2025	67.5% reduction of the maximum imports authorized for 2014
2030	100% reduction of the maximum imports authorized for 2014

Pursuant to the provisions of article 2 of the present agreement, no imports of pure HCFC-141b or any kind of mixture shall be authorized under the phase-out quotas that have been set.

Japan

See attached file. Additional information will be provided when it is ready.

Information on the implementation of paragraph 9 of decision XIX/6 submitted by Japan

Funding Policy

The Ministry of the Environment of Japan provides a subsidy to private companies in Japan to cover a part of the cost when they purchase commercial and industrial refrigeration equipment that is highly energy efficient and based on natural refrigerants.

Background

- Refrigerants used for refrigerators and air-conditioners are mainly HFCs and the emission is increasing.
- To promote natural refrigerant and to make refrigerating equipment and A/C more high efficient, MOEJ established the subsidy.

Outline

- To provide subsidies for introducing energy-saving equipment with natural refrigerators.(5,000 million JPY)
- To raise recognition of natural refrigerant technology.(50 million JPY)

Table: Subsidies for introducing energy-saving equipment with natural refrigerators

Objective	Subside
Refrigerated Warehouses	1/2 of introduction cost
Retail Store Showcases	1/3 of introduction cost
The Others	1/3 of the difference to equipment with fluorocarbon

Mexico

Alternative selection in the phase out of HCFC Management Plan.- second stage in México

In line with the Decision XIX/6 of the and with regard to decisions related with the Executive Committee during the project design reduction of the release of greenhouse gases served as one of the most important criteria of technology selection. The planned investment activities' climate impact is very favorable.

Almost all HCFCs have high global warming potential. For the subprojects of the HPMP Stage I and II zero or low GWP alternatives substances were selected, wherever it was viable. These substances with low/zero GWP substances are Hydrocarbons, Perchloroethylene, Methylformate, Methylal, Nitrogen, water and management activities.

As a new initiative HFO blowing agent will be introduced in large amount in several domestic refrigerator factories.

Better refrigeration service practices and various non-investment projects will lead to the phase-out of 1,367 MT of HCFC-22 without phasing in any greenhouse gases.

HFCs will be applied only for certain critical applications (flammable aerosols). However, the phase out of HCFCs in aerosols 375 MT is HFC-152a, which has a relatively low GWP (124 calculated for 100 years), and has a positive impact in the pollutants release, particularly with the tropospheric ozone precursors that is an important matter in the air quality management in México.

During Stage I and II 6,531 MT HCFC-141b and 2,303 MT of HCFC-22 will be replaced by the various alternatives as shown in Table below.

HCFCs SUBSTITUTED AND ALTERNATIVES SELECTED

[MT]

HCFCs replaced		
	First Stage	Second Stage
HCFC-141b	3,549	2,982
HCFC-22	393	1,910
Total	3,942	4,892
Substitutes selected		
Perchloroethylene	9.1	94.6
HFC-134a	9.1	94.6
HFC-152a	86.4	289.5
Hydrocarbons	489.7	1,219.7
HFC-245fa/ 365mfc	3	206.6
HFO	--	1,520.0
Recovery/Recycling	--	1,059.0
N ₂ , H ₂ O	218	308.0
Methylformate	1,590.2	--
Non investment		39.4
Total	2,405.5	4,831.4

The subprojects will generate a saving of 8.42 Mega ton. of CO₂ equivalent climate change impact in both stages of the HPMP in México as it is shown in the tables below.

CLIMATE CHANGE IMPACT CALCULATION STAGE I

Project/action	Phase-out substance	MT	GWP	Phase-out [GT CO ₂ eq.]	Phase-in substance	MT	GWP	Phase-in [GT CO ₂ eq.]	Climate Impact [MT CO ₂ eq.]
Domestic refrigeration	HCFC-141b	354	725	0.257	HC	206.3	20	0.004	(0.25)
	HCFC-22	305	1,810	0.552	HC	152.7	20	0.003	(0.55)
Aerosol Sector				–	HC	8.8	20	0.000	0.00
				–	HFC-365/ HFC-227	3	2,200	0.007	0.01
	HCFC-141b	60	725	0.044	HFC-152a	86.4	122	0.011	(0.03)
	HCFC-22	70	1,810	0.127	HFC-134a	9.1	1,320	0.012	(0.11)
Commercial refrigeration	HCFC-141b	209	725	0.152	HC	121.9	20	0.002	(0.15)
Foam Enterprises: first tranche	HCFC-141b	1,532	725	1.111	MetFormate	893.6	20	0.018	(1.09)
Foam Enterprises - 2nd Tranche	HCFC-141b	1,194	725	0.866	MetFormate	696.6	20	0.014	(0.85)
Flushing sector - 1st Tranche	HCFC-141b	53	725	0.038	N ₂ , H ₂ O	0	20	–	(0.04)
	HCFC-22	5	1810	0.009	N ₂ , H ₂ O	0	20	–	(0.01)
Flushing Sector- 2nd Tranche	HCFC-141b	147	725	0.107	N ₂ , H ₂ O	0	20	–	(0.11)
	HCFC-22	13	1810	0.024	N ₂ , H ₂ O	0	20	–	(0.02)
TOTAL									(3.2)

CLIMATE CHANGE IMPACT CALCULATION STAGE II

[Megatonne CO ₂ eq.]									
Project/action	Phase-out substance	MT	GWP	Phase-out impact	Phase-in substance	MT	GWP	Phase-in impact	Climate Impact
Aerosol sector	HCFC-141b	384	725	0.28	Perchloroethylene	94.6	–	–	
	HCFC-22	384.3	1,810	0.70	HFC-134a	94.6	1,430	0.14	
					HFC-152a	289.5	124	0.04	
					HC	22.7	7	0.00	
					HFC-245fa	206.6	1,030	0.21	
	Subtotal			0.97	Subtotal			0.38	(0.59)
Service flushing Phase 2	HCFC-141b	278	725	0.20	N2/ H2O	–	20	–	(0.20)
	HCFC-22	30	1,810	0.05	N2/ H2O	–	20	–	(0.05)
HCFC refrigerant management	HCFC-22	1,000	1,810	1.81	Recovery techniques	–	–	–	(1.81)
Recovery and Reclaim activities	HCFC-22	59	1,810	0.11	Recovery techniques	–	–	–	(0.11)
HC standard development	HCFC-22	145	1,810	0.26	HC	145	7	0.00	(0.26)
Updating quota system	HCFC-22	8	1,810	0.02	None	–	–	–	(0.02)
Customs training	HCFC-22	17.8	1,810	0.03	None	–	–	–	(0.03)
Public awareness	HCFC-22	13.3	1,810	0.02	None	–	–	–	(0.02)
Domestic refrigeration	HCFC-141b	1,000	725	0.73	HFO	1,000	4	0.00	(0.72)
Domestic refrigeration (second step)	HCFC-141b	800	725	0.58	HC	800	7	0.01	(0.57)
	HCFC-141b	520	725	0.38	HFO	520	4	0.00	(0.37)
	HCFC-22	252.3	1,810	0.46	HC	252	7	0.00	(0.45)
TOTAL CLIMATE IMPACT, [Megatonne CO₂ eq.]									(5.22)

Republic of Moldova

Republic of Moldova is categorized as a Low Volume Country (LVC). The Government of Moldova, through the efforts of the NOU, has already made headway by putting in place legislative measures to control the import of ODS and equipment that contain them.

The Regulation on trade regime and regulating the use of halogenated hydrocarbons that are depleting the ozone layer (Law nr. 852-XV dated 14.02.2002) is in place and is the fundamental legislative document concerning implementation of the Montreal Protocol in Moldova.

According to this Law, any import, export and re-export of each lot of ODSs, including HCFCs made with corresponding permit. Permits for import, export and re-export of ODSs, equipment and products are issued by Ministry of Environment. Such authorizations are issued to economic agents (entrepreneurs and legal entities) during 10 working days from a request's receipt. They are issued free of charge and are valid for 90 days.

During the HPMP Stage I (2011-2015), the following legislative improvements have been achieved:

- The HCFC Phase-out Strategy for period 2013-2040 has been drafted in terms of a Governmental Decree and Ministry of Environment presented it to the Government for approval.
- Annual HCFC import quotas, according to HPMP, have been drafted in legislation and will be established every year;

- Ministry of Environment assisted by the National Ozone Unit and with the assistance of the Public Association of the Refrigeration Technicians from the Republic of Moldova has developed a first set of documentation (harmonized with EU legislation, F-Gas Regulation) for a new certification system for refrigeration technicians, as well reporting system for the servicing sector. A national workshop to discuss elaborated documents for Certification System (draft) was organized.
- Logbooks for the equipment containing 3 kg or more of refrigerants were elaborated for introduction.

As alternatives to HCFCs in the RAC sector of Moldova, four groups of refrigerants exist today, HFCs, hydrocarbons, ammonia and carbon dioxide, the three latter often called “natural refrigerants” as they are naturally occurring and have low GWP. The low GWP alternatives are all associated with safety, toxicity and/or technical challenges that must be overcome for a wide introduction on the market.

The use of HFCs as an alternative is the route taken by most of the global RAC industry as well as in Moldova. However, it is well known that HFCs are under pressure due to the significant GWP and their use is now regulated in industrialized countries to reduce their consumption.

With increasing focus on climate change low GWP refrigerants should be the preferred choice whenever possible; however, this will require extensive education of the industry and adaptation of national legislation.

Consistent with the direction provided in Decision XIX/6 and in order to reduce the failure rates and energy consumption as well as to gradually harmonize regulations with European Union, it is of interest to bring the RAC industry of Moldova to the EU level standards. There is a need to ensure that the phase-out of HCFCs is taken as an opportunity to introduce environmentally friendly, energy-efficient solutions.

However, as previously indicated, the presence of natural refrigerants such as hydrocarbons, CO₂ and ammonia in the R&AC sector, at a moment is at a low level, while possibilities for their implementation are significant. Despite often somewhat higher initial and maintenance costs, the main obstacles are a limited number of qualified and competent service staff and companies and, the lack of awareness among end-users. This issue should be treated under education/training scheme and measures for raising awareness (HPMP Stage II).

The following summarizes a number of specific aspects that potentially could be incorporated into the HPMP (Stage II) and which will link to climate change:

- Involvement of authorities responsible for climate change policy as key institutional stakeholders
- Continue adoption of EU standards for the certification of technicians
- Introduction of refrigerant management regulations that would in future extend to HFCs.

In order to show advantages & disadvantages of alternatives to HCFCs it is necessary to implement new DemoProjects (at the regional and is it very important at the nation level).

Mozambique

Regarding to the point 2, the Ministry for the Coordination of Environmental Affairs has been giving the awareness to the importers, users of refrigerants in the refrigeration and acclimatization sector, around the country.

Today the National Ozone Unit is giving the list of alternatives which are not causing the negatives impacts to ozone layer and on climate, as well as meeting regarding the impacts to the health, safety and economic caused by ODs and some false alternatives.

All the custom officers, refrigeration technicians, importers have the information that the HCFC as refrigerants are not only the ozone depleting substances, they are part of green houses gases causing impacts on climate, is very urgent to reduce our consumption and to choose as options the available alternatives, since Mozambique is victim of flood and drought every year, we must give all the efforts to mobilize all the people on reduction of HFC consumption.

The Mozambican ODs Regulation has incentives for importers which consist the exemption of tax for all the alternatives substances and for the ODs refrigerants, the price are double to encourage the

importers to import more alternatives than HCFCs as well as to invite them to import more the Hydrocarbon (HC), NH₃, etc., as better alternatives to the refrigeration and acclimatization sector.

During the capacity building, awareness campaign, TT programmes we pass the information regarding the alternatives substances Hydrofluorocarbon (HFC), which most of them are pirate chemical substances causing serious damages to the compressors of equipments.

Therefore, there is a need of all the exporters and importers countries to implement the obligatory measures to control the chemical substances starting with their movements as around the country and to other country. This is a big challenge for all the Montreal Protocol Parties in particular the producers countries.

View point of Mozambique , we would like to propose that the annual report to be addressed to the Ozone Secretariat about the quantity of produced and parties of destination about the exported refrigerants should be an obligatory and not voluntary action by exporter party, that is the reason of discrepancy of the real consumption of refrigerant in some developing parties like Mozambique with the available data in the ozone Secretariat every year, because some of the parties are not declaring their exportations.

We will be looking for your forward response on these two matters as Mozambique position. If there is an answer to be addressed to Mozambique before the Opening Ended Meeting we will be grateful for your generosity.

Norway

Initiatives under the Nordic Council of Ministers

From January 2015, it is no longer allowed to refill HCFC refrigeration systems in the Nordic countries and the EU. This might cause problems for some owners and users of old HCFC refrigeration systems if they are not aware of this situation and if they have not been planning to install an alternative refrigeration system.

A report has therefor been prepared by Danish Technological Institute (DTI) in cooperation with Hans Haukås, Norway, for the Nordic Ozone Group under the Nordic Council of Ministers in an effort to ease the final transformation from the use of HCFC to alternative refrigerants and to encourage the use of alternatives that do not harm the environment. The aim of this report is to develop information material which is to be used to guide the refrigeration industry and the owners and users of HCFC-refrigeration systems. The information material is also to provide examples of how to change to more environmental friendly refrigeration systems with natural refrigerants. Please download the said report (in English) from the Nordic Council of Minister's website:
<http://www.norden.org/en/publications/publikationer/2014-909>

The Nordic Ozone Group under the Nordic Council of Ministers has also financed the production of information sheets on "natural refrigerants". The objective of these information sheets is to provide information about the possibilities and limitations related to natural refrigerants, and to make technical knowhow and practical experience available for system designers and installers, in order to promote more use of natural refrigerants.

This set of information sheets is an updated version of "Information sheets on natural refrigerants" published by the Nordic Chemicals Group in 2008. It consists of 31 information sheets on natural refrigerants, covering a broad field of technical information. The information sheets (in English) can be downloaded from the Nordic Council of Minister's website:
<http://www.norden.org/en/publications/publikationer/2014-908/>

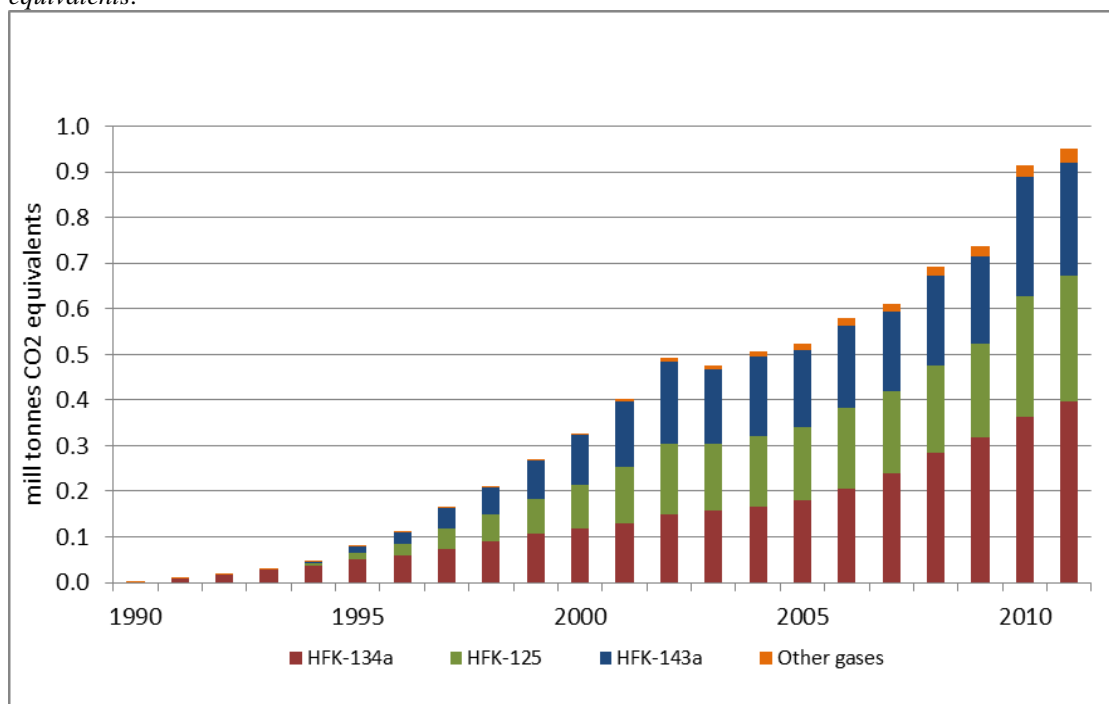
Policy instruments in Norway

Emissions of HFCs

Emissions of HFCs in Norway were 0.95 Mtonnes CO₂ equivalents in 2011, amounting to about 1.8 per cent of total emissions of greenhouse gases in Norway. The emissions in 1990 were insignificant.

These emissions gained significance in the mid-1990s, when HFCs were introduced as substitutes for ozone-depleting substances. The application category refrigeration and air conditioning contribute by far to the largest part of the HFCs emissions. A trend of exponential growth was slowed after a tax on import and production of HFCs and PFCs was introduced in 2003. HFC-134a, HFC-125 and HFC-143a are the most important gases, see Figure below.

Actual emissions of HFCs in Norway 1990-2011. The emissions are given in Mtonnes CO₂ equivalents.



Source: Statistics Norway/ Norwegian Environment Agency

Tax and reimbursement scheme of HFC

The growth trend in HFC and PFC emissions from products in Norway changed from exponential to linear after a tax on import and production of HFCs and PFCs was introduced in 2003. The tax is NOK 229 (approximately EUR29) per tonne CO₂ equivalents of gas imported or produced. This approximately equals the CO₂ tax rate on mineral oil. In 2004, this tax was supplemented with a refund scheme, which prescribes a similar refund when gas is destroyed. Combined and over time, these two schemes amount to a proxy tax on emissions of HFC.

The tax and reimbursement scheme has resulted in better maintenance and improved routines during discharge of old equipment. It also gives a strong incentive for choosing HFCs with the lowest GWP possible and has resulted in increased use of natural cooling agents and alternative processes (for example indirect systems) in new installations.

The tax has significantly reduced growth in emissions compared to pre-tax scenarios, which forecast very strong growth due to substitution of CFCs and HCFCs by HFCs. However, an annual growth in HFC emissions is still observed. Estimates show that the tax has reduced the emissions in 2005, 2010 and 2011 by 0.3, 0.6 and 0.7 million tonnes CO₂-equivalents, respectively. The tax was increased of about NOK 100 to NOK 330 from 1 January 2014.

F-gas regulation

Norway has implemented EU Regulation No. 842/2006 on certain fluorinated greenhouse gases. Measures following the regulation comprise containment of gases and proper recovery of equipment; training and certification of personnel and of companies; labeling of equipment; reporting on imports, exports and production of F-gases; restrictions on the marketing and use of certain products and equipment containing F-gases.

Due to delays in the establishment of the certification scheme, full enforcement of this regulation was delayed till 2013. Since the tax and reimbursement scheme for HFC has been in effect for 10 years and lead to considerable measures and restructuring, the additional effect of the F-gas regulation is uncertain and has not been estimated for 2020 and 2030.

Norway also plans to implement the newly adopted EU regulation No. 517/2014.

Swaziland

The Government of Swaziland is making efforts to use alternatives that do not have known climate impacts, for example;

1. Through Multilateral Fund's assistance Swaziland has succeeded in the replacement of the use of HCFC 22 as refrigerant in the fridge manufacturing sector. Hydrocarbons 290 and 600a are currently being used for this purpose.

However, HCFC 22 is still being used in the servicing sector.

2. In addition to that, funding has also been made available to replace HCFC 141b pre-polyol with cyclopentane in the foam production sector. This project will drastically reduce the imports of HCFCs.

Togo

Togo has established a national strategy for the implementation of the Montreal Protocol on ozone-depleting substances and the Kyoto Protocol on climate change, incorporating these instruments into its sectoral development plans and policies.

Notwithstanding these efforts, however, Togo has not been spared the adverse effects of climate change, evident in the rise in temperature and disruption of the rainfall patterns, which in our country have caused pockets of drought and flooding and, over the past five years, have led to the loss of human life and the destruction of a number of the country's major social and economic facilities.

Accordingly, the Togolese Government shares the concerns expressed in your letter and accompanying documents, namely: funding scientific research to promote viable HFC alternatives, minimizing climate impacts, improving energy efficiency to help reduce greenhouse gas emissions, wide-scale promotion of the use of HCs and ammonia, increasing funding for activities to eliminate HCFCs to include other financial mechanisms such as the Global Environment Facility (GEF), capacity-building for stakeholders in the field, improving the performance and efficiency of refrigeration equipment, and so forth.

United States of America

The following documents have been submitted on its actions to promote low-GWP alternatives:

- SNAP/Climate Action Plan HFC Component, Stakeholder Meeting February 4, 2014, Concept Note (see below)
- SNAP meeting presentation, February 4, 2014 (see below)
- HFC Policy Analysis Report: A Review of Country and Regional Policy Mechanisms and other Initiatives Targeting HFC Consumption and Emissions (UNEP/OzL.Pro.WG.1/34/INF4/Add.1)
- Compendium of Policies Governing Hydrofluorocarbons (HFCs) - (UNEP/OzL.Pro.WG.1/34/INF4/Add.2)

SNAP/Climate Action Plan HFC Component**Stakeholder Meeting February 4, 2014****Concept Note**

Last June, President Obama announced the Climate Action Plan (CAP), and a broad set of initial steps designed to slow the effects of climate change. Among the many actions called for, the CAP outlined a set of measures to address hydrofluorocarbons (HFCs). In the United States, emissions of HFCs are expected to double from current levels of 1.5 percent of greenhouse gas emissions to 3 percent by 2020 and nearly triple by 2030.¹ HFCs are rapidly accumulating in the atmosphere. For example, the atmospheric concentration of HFC-134a, the most abundant HFC, has increased by about 10% per year from 2006 to 2012, and the concentrations of HFC-143a and HFC-125 have risen over 13% and 16% per year from 2007-2011, respectively.^{2 3}

In order to address HFCs, the President directed the United States to lead through both international diplomacy and domestic action. In particular, he directed the EPA to use its authority through the Significant New Alternatives Policy (SNAP) Program to encourage private sector investment in low-emissions technology by identifying and approving climate-friendly chemicals while prohibiting certain uses of the most harmful chemical alternatives. In addition, the President directed his Administration to purchase cleaner alternatives to HFCs whenever feasible and to transition over time to equipment that uses safer and more sustainable alternatives.

In August of last year, EPA held a broad stakeholder meeting to discuss the CAP provisions related to HFCs, and our initial thinking on how the longstanding SNAP program could be used to meet the President's goals. We also invited our stakeholders to share with us their ideas. EPA has held six sector specific workshops and a large number of individual meetings where stakeholders provided us with valuable input. Through those meetings, we have learned a great deal that will guide both our initial actions, and the longer term measures that we will consider in encouraging development, availability and widespread market acceptance of safer alternatives.

EPA would now like to share with our stakeholders what we have learned to date, and what we are considering by way of next steps. It is our hope that sharing this information at this time will provide a more specific roadmap to facilitate and focus the further input of our individual stakeholders, and that by laying out more detailed near-term plans, we can continue to gather and exchange information with you that can assist us in this process.

Specifically, at this point, we are planning two separate proposed rules – a rule expanding the list of low-GWP alternatives, which we expect will be proposed this spring, and a SNAP alternatives status change rule, which we expect will be proposed this summer. We expect that these rules will go through the full notice and comment rulemaking process, thereby enabling the Agency and other interested parties to benefit from your formal comments.

The new alternatives listing rule would address a group of key refrigeration and air-conditioning alternatives that we have been hearing about in our sector and individual meetings, and that have been submitted and reviewed under SNAP. This rule, if finalized, would enhance the SNAP menu of acceptable alternatives for a number of related end uses by proposing to add several alternatives as acceptable subject to use conditions. In keeping with our traditional review of the specific situation prevailing in each end use, this new listing proposal is likely to include a range of options, and could include lower GWP fluorocarbons, where such listings would decrease overall risk to human health and the environment. We expect that market acceptance of the newly listed alternatives will facilitate reductions in the use of high GWP HFCs and thus, advance the Climate Action Plan's goal of delivering significant climate benefits. Since SNAP lists are routinely relied upon not just domestically, but worldwide as a resource for transition, we further anticipate that this expansion will advance safer alternatives more broadly as well.

¹ <http://www.whitehouse.gov/share/climate-action-plan>

² Montzka, S.A.: HFCs in the Atmosphere: Concentrations, Emissions and Impacts, ASHRAE/NIST Conference 2012

³ NOAA data at <ftp://ftp.cmdl.noaa.gov/hats/hfcs/>

The second rulemaking, the SNAP alternatives status change rule, would respond to the President's direction for SNAP to prohibit certain uses of the most harmful chemical alternatives. We expect this status change proposal to prioritize opportunities with a view to enabling significant climate benefits.

We expect this rule to maintain SNAP's traditional pragmatic approach. Accordingly, stakeholders should not anticipate a broad review of all listings in this proposal; on the contrary, we intend to limit this proposal to what we believe are clear opportunities for reducing overall risk and securing climate benefits. Further, and as has historically been the case, our reviews will be done in a manner that is end-use specific, and, that does not rely on some preconceived 'bright line'. In that regard, we are aware that technological progress and market advances are profoundly case-specific. Hence, an alternative that is a comparatively high GWP HFC for one end use, may be very much in the middle of the pack for another end use. In developing this proposal, and consistent with our statutory requirements, we will also carefully consider the availability of alternatives, and, as in the past, we expect to make sure that we have a good understanding of the amount of time it might take to effectuate the conversion to available or potentially available alternatives. Finally, stakeholders may also anticipate that while we are responsive to the direction given us in the CAP, we will continue to consider not only effects on climate related to an alternative, but the full set of SNAP criteria as they pertain to a specific end use in making our decision for any substitute for that end use.

We are also aware of the various factors that individual stakeholders have raised for us to consider in prioritizing potential actions, such as the number and market penetration of available alternatives, diversity in the classes of alternatives available, the fact that different end uses may need different time periods to convert to new alternatives, and, their desire for EPA to consider allowing for the continued servicing of existing equipment in appropriate cases. Finally, we share the desire of stakeholders to find ways to enhance certainty for investments in low GWP technologies, and to increase the efficiency of EPA's review process.

Based on the information that we have gathered to date from the sector specific workshops and from our interaction with users and producers from around the world, we currently believe that there are lower GWP alternatives that are available or potentially available for certain end uses in the aerosols, foam-blowing, air conditioning, and refrigeration sectors. Accordingly, we have begun to look at individual end uses in these sectors and to focus on whether some high-GWP HFCs should no longer be acceptable. In that regard, and based on what we have learned to date, we currently believe that changes for some of the highest GWP HFCs currently listed as acceptable by the SNAP program in the following end uses may merit consideration:

- Non-Medical and non-technical aerosols
- Various foam blowing end uses
 - o Rigid Polyurethane: Appliance; Commercial Refrigeration, and Sandwich Panels, Slabstock
 - o Flexible Polyurethane
 - o Polyolefin
 - o Polystyrene: Extruded Boardstock & Billet
 - o Rigid Polyurethane & Polyisocyanurate Laminated Boardstock
 - o Phenolic Insulation Board & Bunstock
- Commercial Refrigerants: Vending Machines, Stand-Alone Reach-In Coolers, and Multiplex Supermarket Systems
- Motor Vehicle Air Conditioning

Given the situation currently prevailing in each of the end uses noted above, and in the context of an initial status change action, we believe that the menu of options would likely continue to include a broad range of alternative types (eg: both fluorinated and non-fluorinated alternatives and, in appropriate cases, chemical and not-in-kind alternatives.)

We appreciate the importance of your views, and the primary purpose of this concept paper is to share with you our current thinking to enable you to provide more focused input on these near term actions. In addition, the growing number of SNAP submissions attests to the dynamic nature of the affected industries, and the likelihood that technological advancements will spur future SNAP/Climate Action Plan work. As a result, we would also appreciate the continued feedback of individual stakeholders on ways that we can optimize the operation of the SNAP program to meet the President's goal of reducing

emissions of HFCs by, among other things, encouraging private sector investment in low emission technology.

SNAP meeting presentation, February 4, 2014

SNAP Stakeholder Meeting

February 4, 2014



Welcome - Scope of Meeting

- The President's Climate Action Plan and HFC focal area
- SNAP principles and how they are being used consistent with the CAP
- Developing information on HFCs and alternatives
- Near-term roadmap and specific actions being considered
- Our questions for you – your questions for us
- Next Steps

2

What Does the President's Climate Action Plan Say about HFCs?

- Continue international diplomacy
 - Lead negotiations under the Montreal Protocol to phase down HFCs
 - Global phase down could reduce over 90 gigatons of CO₂eq by 2050, equal to roughly two years worth of current global GHG emissions
 - Work with partners in the *Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants* to promote climate-friendly alternatives to high-GWP HFCs, address standards, and reduce emissions from HFC use
- Address through domestic actions
 - Use existing Clean Air Act authority of *Significant New Alternatives Policy (SNAP) Program* to approve climate-friendly chemicals, prohibit some uses of most harmful
 - Provide federal leadership by *purchasing cleaner alternatives to HFCs* whenever feasible and by *transitioning to equipment using safe, more sustainable alternatives*



3

EPA Immediate Next Steps

- Share information to facilitate and focus individual stakeholder input
- Currently planning two separate rulemakings
- 1) New SNAP Listing Rule
 - Would propose adding new low GWP refrigerants as acceptable subject to use conditions
 - Expected timing: proposed rule this spring
- 2) SNAP Status Change Rule
 - Would propose changing the status of certain high GWP HFCs
 - Expected timing: proposed rule in the summer

4

Some Key Principles Guiding Our Thinking

- SNAP rules will continue to consider individual end uses
- No across the board GWP cut offs
- No prohibition on HFCs as a whole, or in any one sector
- New HFCs or HFC blends may be listed if risk not greater than other available substitutes
- Recognition that timing is a critical dimension and that each end use has unique considerations
- Status change actions will be issued through notice and comment rulemaking

5

Other Factors Stakeholders Have Raised

- SNAP should continue its end use by end use and chemical by chemical approach
- SNAP should allow existing equipment be to be serviced to minimize stranded capital
 - EPA should consider the useful lifetimes of equipment
- EPA should consider mechanisms to add certainty to potential status change actions
 - Consider specific time periods for review and action
 - Consider percent of market already in alternatives
 - Consider minimum listing periods to enable recoupment of investment

6

What Has EPA Been Doing?

- We continue to evaluate new alternatives, develop sector specific characterizations, draft rules & notices
- EPA has been engaging with stakeholders:
 - August 2013: EPA held stakeholder meeting to discuss CAP's HFC elements and our initial thinking
 - 2013: EPA held six sector-specific workshops to exchange additional information on climate-friendly alternatives, potential transitions and data
 - EPA has also held numerous individual meetings
- EPA sought deeper understanding of the range of alternatives, ongoing transitions and where & why options are limited and more
 - Some views have been confirmed, & we have gained new information, insight

7

Low-GWP Refrigerants Listing Rule

- EPA is developing a proposed rule that would expand the list of low-GWP, climate-friendly alternatives for air conditioning and refrigeration applications
 - Add alternatives particularly where current options are limited
 - Since these refrigerants are flammable, EPA is planning to propose appropriate use conditions that adopt safety standards

Refrigerant	GWP	End Use and Application EPA is Considering					
		Household Refrigerators	Retail refrigerator stand-alone	Vending	Very Low Temp Ref	Heat Transfer	Home AC-Self-contained
Ethane	6				✓	✓	
Iso-butane*	8		✓	✓			
Propane*	3	✓		✓			✓
R-441A* (HC blend)	<5		✓	✓			✓
HFC-32	675						✓

8

*listed 12/2011 for other refrigeration applications

Change of Status Rule

- §612 directs EPA to list unacceptable substitute substances where there are other substitutes currently or *potentially available* that reduce overall risk to human health & environment
 - *Potentially available: adequate health, safety, & environmental data exist to make determination of acceptability, and EPA reasonably believes is technically feasible, even if not all testing has yet been completed and alternative is not yet produced or sold (40 CFR 82.172)*
- EPA plans to prioritize proposing to change the status of high-GWP HFCs where alternatives are available or potentially available
 - Proposed decisions being developed within existing SNAP framework and relies on established SNAP criteria
 - Considering end uses where low-GWP alternatives are available or potentially available
 - Considering end uses where significant environmental benefits can be achieved, backsliding to high-GWP HFCs avoided

Current Thinking on Possible Status Changes

- Consumer Aerosols (non-medical & non-technical aerosols)
 - Change status for HFC-134a, HFC-227ea and HFC-125
 - Retain HFC-152a
- Various foam blowing end uses
 - Change status by foam type, generally HFC-134a and higher GWPs
- Commercial Refrigeration
 - Vending Machines and Stand-Alone Reach-In Coolers
 - Change the status for HFC-134a and HFC blends with higher GWPs
 - Multiplex Supermarket Systems
 - Change the status for R-507A, R-404A and other HFC blends with high GWPs
 - Retain R-407A, R407F, others
- Motor Vehicle Air Conditioning
 - Change the status for HFC-134a

10

Open Dialogue – Questions and Answers

11

Zimbabwe

The Government of Zimbabwe is implementing its HPMP in the manufacturing sector as well as the servicing sector. From the HPMP preparation, attention was given to alternative refrigerants with zero ODPs and zero or very low GWPs.

- (a) **Manufacturing:** In the manufacturing sector, the HPMP is phasing out HCFC-141b in pre-blended polyols in foam insulation by using HC blowing agents and water based insulation systems.
 - (b) **Servicing:** In the servicing sector, the HPMP is replacing HCFC-22 refrigerants with propane(R90) and isobutane (R-600a) which are hydrocarbons. Other natural refrigerants such as CO₂ and NH₃ are being promoted taking into consideration health and safety aspects. Dry nitrogen is being promoted as a flushing agent in place of HCFC-141b. Training programmes on safe use of HC refrigerants and conversion from HCFC to HC technology are currently underway.
-