

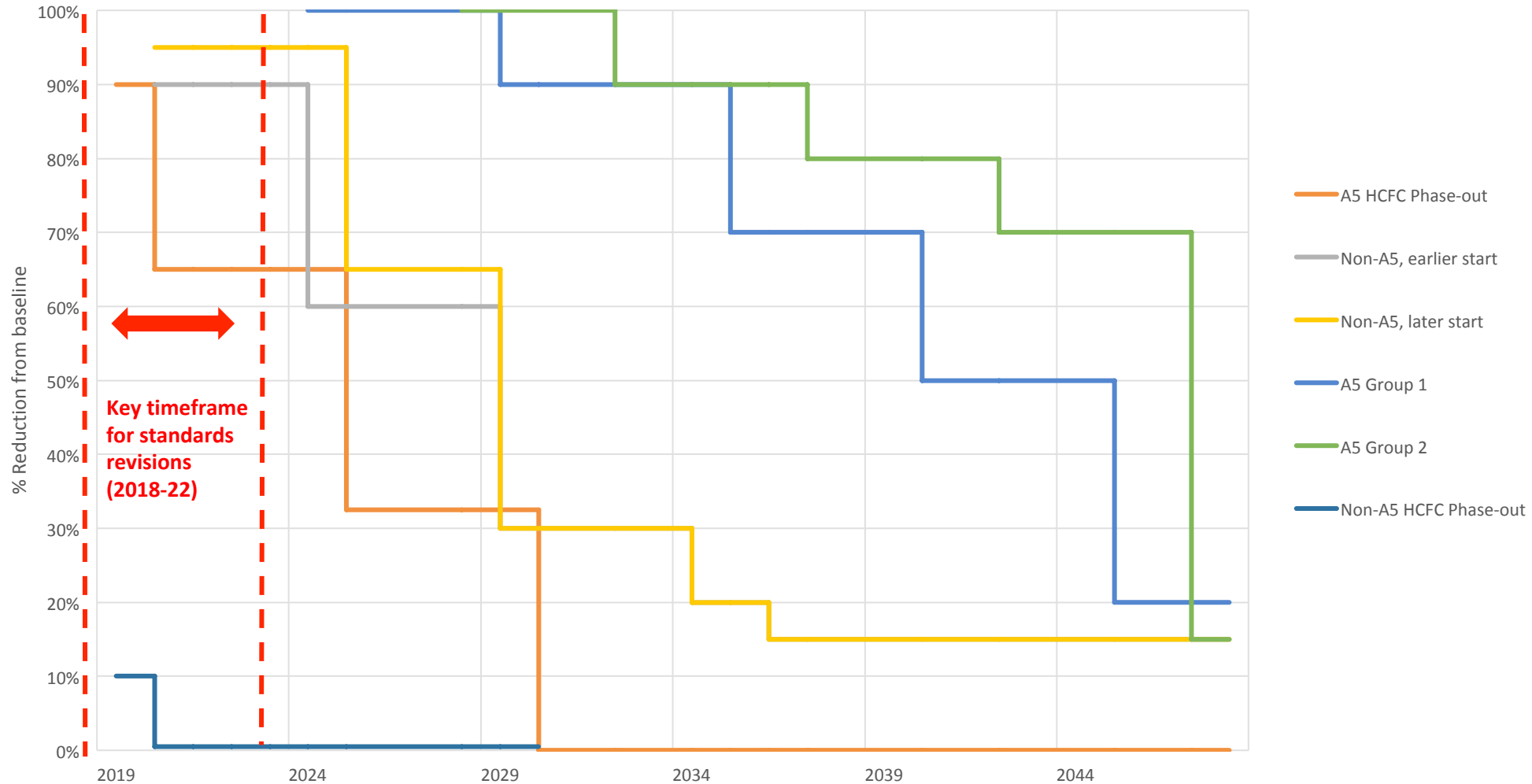
Smarter Standards: Vital for Kigali Amendment Success

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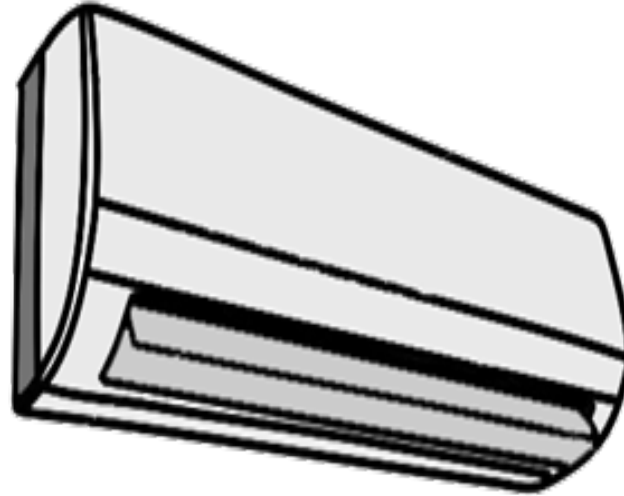
Environmental Investigation Agency

21st November 2017, Montreal

Standards and Montreal Protocol Commitments



Types of Standards and Codes



Refrigerants Standards

- ASHRAE 34 & ISO 817: Classifying flammability and toxicity

Equipment Standards









- IEC 60335-2-40 - AC appliances for air-conditioning for household and similar purposes

Building Codes and Standards

- National Building Code of India (NBC)

*These are the key types pertinent to this presentation. Additional standards and codes exist in production, manufacturing, transport, storage that are outside of the scope.

Table II: Assessment of Availability of Hydrocarbon (A3) Refrigerants under Key Standards

Equipment Type	Applicable Standards	Availability Under Current Standards	Availability of Hydrocarbons Based on Proposed Standard Revisions*	
			2018	2022
Domestic refrigeration	IEC 60335-2-24	Domestic refrigerators and freezers using hydrocarbons expected to be universally available. All standards now harmonized.		
	UL 60335-2-24			
	EN 60335-2-24			
Standalone Commercial Refrigeration	IEC 60335-2-89	Current charge sizes limit use in larger standalone equipment. WG proposal for expanding charge to 500g expected approval in 2018-19.		
	UL 60335-2-89	Current charge sizes limit use to smaller standalone equipment, preventing cost effective use in larger equipment. Adoption of IEC TC61C WG4 proposal feasible, however may be delayed for U.S. market adoption.		
	EN 60335-2-89	Current charge sizes limit use to smaller standalone equipment, preventing cost effective use in larger equipment. Adoption of WG4 proposal likely given EC standards mandate.		



Equipment Type	Applicable Standards	Availability Under Current Standards	Availability of Hydrocarbons Based on Proposed Standard Revisions*	
			2018	2022
Room AC (window units and mini-split)	IEC 60335-2-40	Hydrocarbons available only for small units. More widely available under optimistic scenario if WG 16 revisions complete by 2020.		
	UL 60335-2-40	Currently not available. Adoption of IEC proposal feasible, however timeline uncertain.		
	EN 60335-2-40	EN likely to adopt IEC revision per WG16. Potentially available in 2022 if WG16 complete by 2020 and adopted by EN.		
Multi-split and Ducted AC	IEC 60335-2-40	Not available and not currently within the scope of current WG16 proposals		
	UL 60335-2-40	Currently not available and not in current scope of WG16 proposal.		
	EN 60335-2-40	Not currently within the scope of current WG16 proposals		
Chillers	IEC 60335-2-40 / ISO 5149	Feasible to install chillers outside or on rooftop, however barriers to use in buildings.		
	UL1995/UL 60335-2-40	Not allowed under UL1995. HCs limited to M1 charge under second revision of UL 60335-2-40.		
	EN 378	Feasible to install chillers outside or on rooftop, however barriers to use in buildings.		



Issues and Challenges



Challenge of ensuring standards work is timely and comprehensive:

Lack of participation by A5 countries

Insufficient resources for experts

Limited scope of work of certain standards bodies

Prioritization of certain refrigerants over others

Need for continued international cooperation and capacity building!

Example: HC Air Conditioning in India

With assistance from GIZ, Godrej introduced propane AC in mini-split units in 2013

No equipment standard in place in India. Followed standard from Europe: EN 6-335-2-40, which allowed 361 grams for 5kW split unit

R&D innovations of mini-channel heat exchangers to meet charge limit

Sold over 350,000 units in India

Further standards revisions could enable larger capacity units, and units with heating mode for export market

Revised Standards: Unlocking Energy Efficiency



- Flammable low-GWP alternatives tend to be more efficient
- Example of standards success: Domestic Refrigerators
 - There was 57 gram charge size for hydrocarbons in U.S. market under UL250
 - Overly restrictive compared to 150 grams globally under IEC 60335-2-24
 - Nearly a billion hydrocarbon refrigerators globally, hardly any in the U.S.
 - New standard (UL 60335-2-24) approved April, 2017 to harmonize with IEC
 - 6-10% efficiency gains from HCs in 10 million new refrigerators sold annually in the United States
- Need remains to allow expanded charge sizes for commercial refrigeration and air conditioning end uses

Recommendations: Montreal Protocol



- a mechanism to regularly inform countries of the ongoing status of relevant standards working groups and committees.

Continued consultation between the Ozone Secretariat and key standards bodies

- to assess need and feasibility of forming national committees to consider revisions to national standards or harmonization with international standards.

Additional resources for capacity building to allow National Ozone Units to coordinate with national standards bodies

Recommendations: National Actions

Developing a national standards request or mandate such as that under adoption by the European Commission

Identifying experts to actively participate in representing national interests at international standards bodies

Considering early adoption of a national standard containing country-level revisions adopting updated safety measures for low-GWP flammable refrigerants.

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