



Department
of Health

Hydrofluoroolefins: Fourth- Generation Refrigerants and New York State's Climate Action

Caitlin Norton

The Climate Leadership and Community Protection Act – The Climate Act

Climate Change Regulatory Revisions

On July 18, 2019, the Climate Leadership and Community Protection Act (Climate Act) was signed into law.

Updates to 6 NYCRR Part 496

Statewide Greenhouse Gas Emission Limits

New York State is required to reduce Greenhouse Gas (GHG) emissions by:

- 40% by 2030, from 1990 levels
- 85% by 2050, from 1990 levels

Updates to 6 NYCRR Part 494

Hydrofluorocarbon (HFC) Standards and Reporting

Amending to align with the Climate Act and NY's Climate Action Council Scoping Plan Agenda

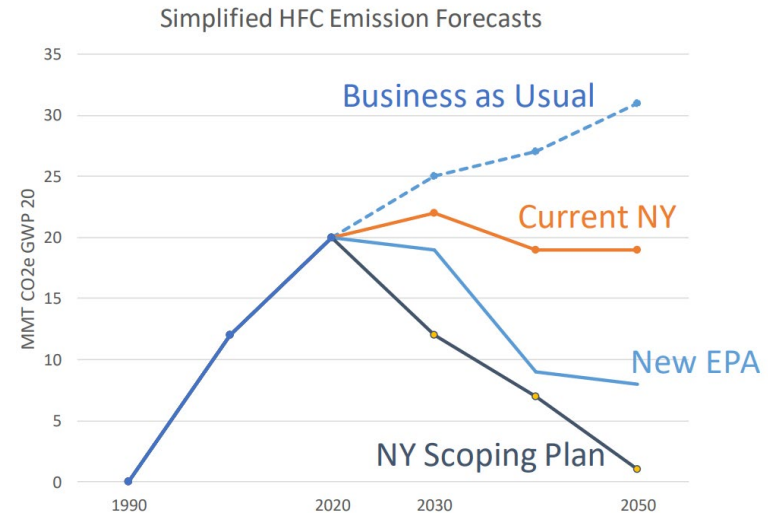
International Hydrofluorcarbon (HFC) Phasedown

HFC supplies will decline in coming years per the global Kigali Amendment to the Montreal Protocol.

What's Next? Substitutes for HFCs and ODS:

- New synthetics (Hydrofluoroolefins or HFOs)
- Natural refrigerants
- Blends of HFCs with these substitutes

EPA / CA "GWP Limit"	Potential Substances	EPA GWP Range (GWP100, 2007 IPCC)	NYS Climate Act GWP Range (GWP20, 2013 IPCC)
150	Natural Refrigerants	0-3	0-1
	Ultra-Low GWP (HFO)	1-3.7	1-5
	Low GWP Blend	140-146	376-523
300	Low-Mid GWP Blend	237-287	490-851
700 / 750	Mid GWP Blend	465-698	1675-2430
Higher	HFCs	1386-1478	2995-3710



HFC Uses Today

Refrigeration

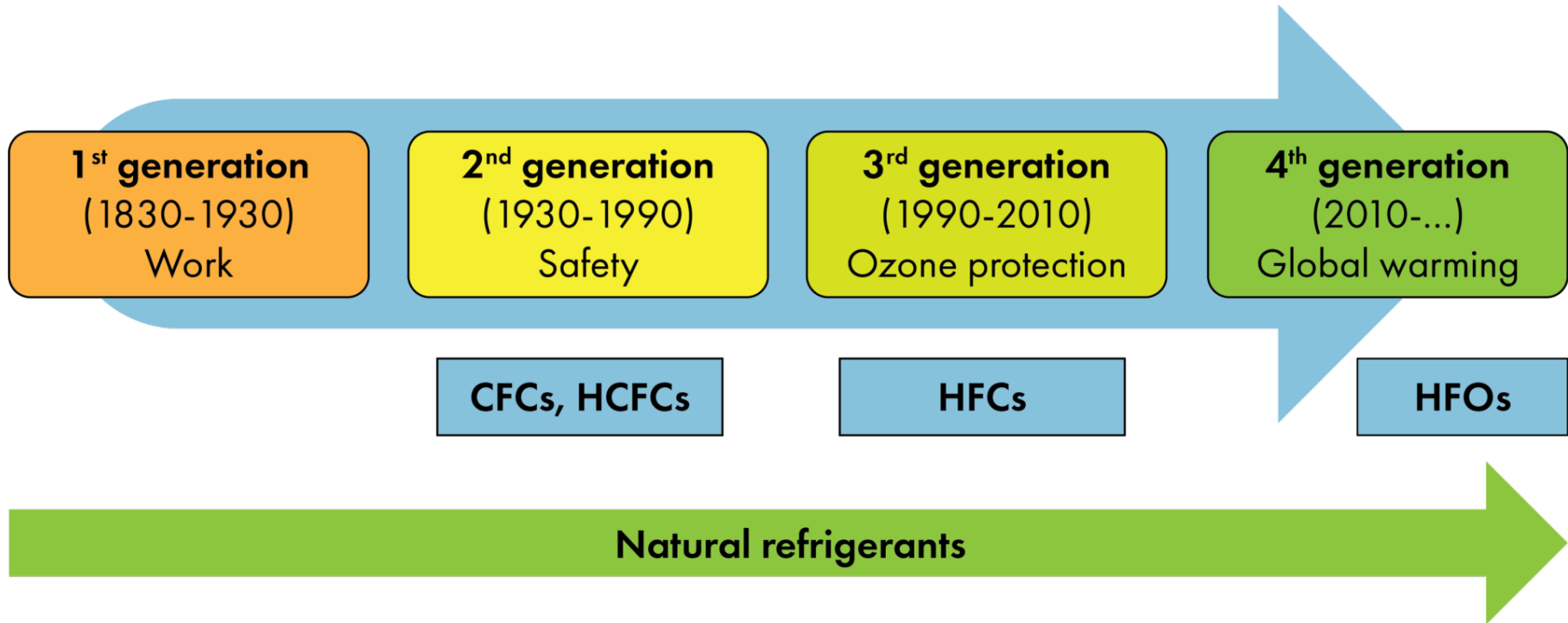


A/C and Heat Pumps



Foam, Propellants, and Solvents





Hydrofluoroolefins (HFOs)

- Unsaturated organic compounds composed of hydrogen, fluoride, and carbon
- Organofluorine compounds are of interest as refrigerants and as blowing agents
- Categorized as having zero ozone depletion potential (ODP) and low global warming potential (LGWP)
- The EPA's Significant New Alternatives Policy (SNAP) Program has listed HFOs as acceptable substitutions for uses including:
 - Refrigeration and air-conditioning
 - Motor vehicle air-conditioning
 - Spray foam blowing and insulation
 - Electronics, metals, and precision cleaning
 - Aerosol solvents and coatings sectors

NYS's 2022 State of the State Announces Plan to Achieve 2 Million Climate-Friendly Homes by 2030

- In February 2023, New York State Homes and Community Renewal and Community Preservation Corporation announced applications are now open for \$250 million climate-friendly homes fund
- These funds are intended to provide financing for existing, 5–50-unit buildings in New York State with a focus on replacing older less energy-efficient systems and building materials, including:
 - Heating system replacement with high-efficiency heat pump
 - Electrical service upgrades to support new HVAC and DHW systems
 - Energy Conservation Measures to support new systems including but not limited to attic/roof insulation and air sealing

HFO Indoor Air Quality Concerns

- Significant production increases, which are projected to continue to grow over the next ten years
- Wide-spread application in homes and other building spaces with EPA continuing to add additional uses for products
- Once installed in homes as spray foam blowing agents and insulation, they will remain present for decades
- Environmental breakdown products are starting to be studied and understood. However, breakdown and off-gassing potential indoors have not been studied
- Very limited toxicological data and what's available is industry generated

Questions?

Caitlin.Norton@health.ny.gov