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PUBLIC Meeting Calendar

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Regulation 1151 Review Committee

date_range *10:00 AM - 12:00 PM Tuesday September 24, 2019*

business *DNREC Division of Air Quality / Air Quality / Natural Resources and Environmental Control*

description **MEETING DESCRIPTION**

Review Committee Meetings for 7 DE Admin. Code 1151 Requirements for the Phase-Out of Hydrofluorocarbons.

Following the Governors directive and House Concurrent Resolution 60, the Department of Natural Resources and Environmental Control has been directed to begin its state-specific process to propose regulation for the use and manufacturing of Hydrofluorocarbons (HFCs) with regulation proposed by March 30, 2020. As part of our process, DNREC will establish a review committee to help craft regulatory language for Delaware. The review committee

person **CONTACT INFORMATION**

Ajo Rabemiarisoa
phone 302-739-9402
email ajo.rabemiarisoa@delaware.gov
launch Website

location_on **ADDRESS**

Department of Natural Resources & Environmental Control
100 W Water St
Dover DE 19904
Suite 6A Training Room

tv **VIRTUAL MEETING**

will be composed of manufacturers and end-users of HFCs (and equipment containing the refrigerants) of concern, industry associations, and persons with environmental interests.

Regulation Under Development Webpage

INFORMATION

None

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DOCUMENTS

Agenda

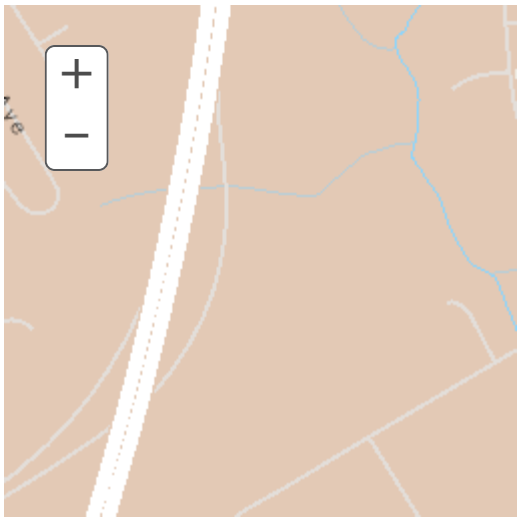
track_changes

CHANGE HISTORY

Date	Reason
09/12/2019	Topic change - Title
09/09/2019	Location change - Virtual Meeting Information, Virtual Meeting Url
09/09/2019	Location change - Virtual Meeting Information, Virtual Meeting Url
09/09/2019	Topic change - Meeting Information
09/04/2019	Document change - Agenda saved
09/04/2019	Topic change - Meeting Information
09/04/2019	New

Meeting Location

Get Directions launch



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GOVERNMENT :::

- Cities & Towns
- Delaware Courts
- Delaware State Code
- Elected Officials
- General Assembly
- Delaware Governor
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- Phone Directory
- State Employees
- State Agencies
- State Regulations
- Transparency
- Calendar API
- Make a FOIA Request

BUSINESS :::

- Economic Development
- Incorporate
- Business First Steps
- Tax Center
- Bid for State Contracts
- Export Assistance
- Start a Small Business

DRAFT

Requirements for the Phase-out of Hydrofluorocarbons
Regulation 1151 Rule Development

HFCs Review Committee
September 24, 2019
10:00 am – 12:00 pm

Agenda

- Welcome/Introductions
- Staff Presentation
    - Background information and purpose
- Regulation Development Schedule
- Model Rule
- Open Discussion

MEETING SIGN-IN SHEET

Project:	HFCs Review Committee Meeting	**Meeting Date:**	September 24, 2019
Facilitator:	Ajo Rabemiarisoa & Christian Wisniewski	**Place/Room:**	Commons Training Room

Name	Title	Company	Phone	E-Mail
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KEVIN WASHINGTON	GOVT AFFAIRS	ITW	202-261-3550	kwashington@itw.com
Sriram Gopal	Director	AHAM	202-872-5955	sgopal@aham.org
Julie Wenger	Ex Dir	DFIC	3025458305	julie.m.rowenger@gmail.com

Requirements for the Phase-out of Hydrofluorocarbons

7 DE Admin Code 1151 – Review Committee Meeting

DNREC – DAQ

September 24, 2019

Review Committee Goal

- To help the Department craft/tailor the regulation (*7 DE Admin. Code 1151 Requirements for the Phase-out of Hydrofluorocarbons*) to be representative of Delaware's economic, social and environmental considerations.

Agenda

- Welcome/Introductions
- Hydrofluorocarbon Background Information and Purpose
- Proposed Regulatory Timeline
- Proposed Model Rule
  - Purpose
  - Applicability
  - Definitions
  - List of Prohibited Substances
  - List of Exemptions
- Open Discussion

Who to Contact

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Christian Wisniewski

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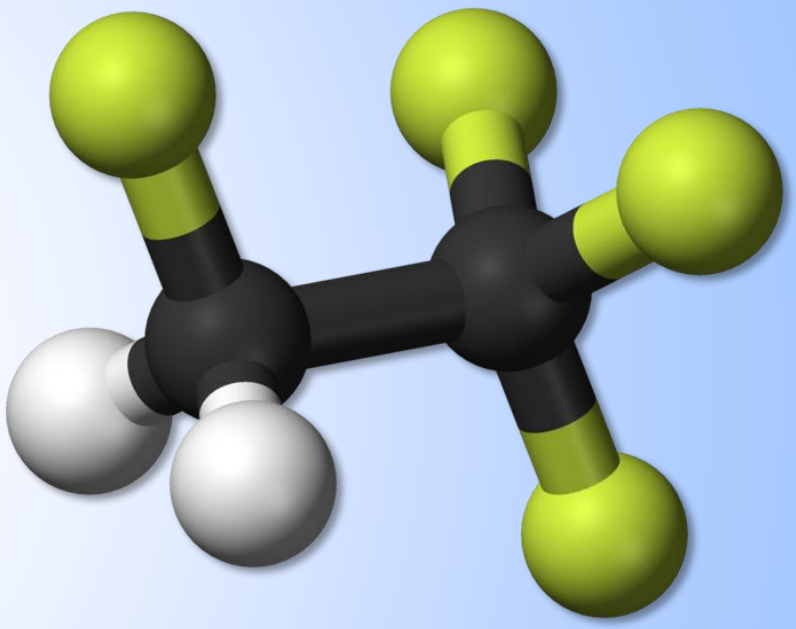
(302) 739-9402

Introduction

- Hydrofluorocarbons (HFC) are gaseous organic compounds that contain hydrogen and fluorine atoms
- HFCs are used across sectors in a variety of applications, including:
  - Air conditioning
  - Refrigeration
  - Foam-blowing
  - Solvents
  - Aerosols
- HFCs are predominantly used in cooling and refrigeration



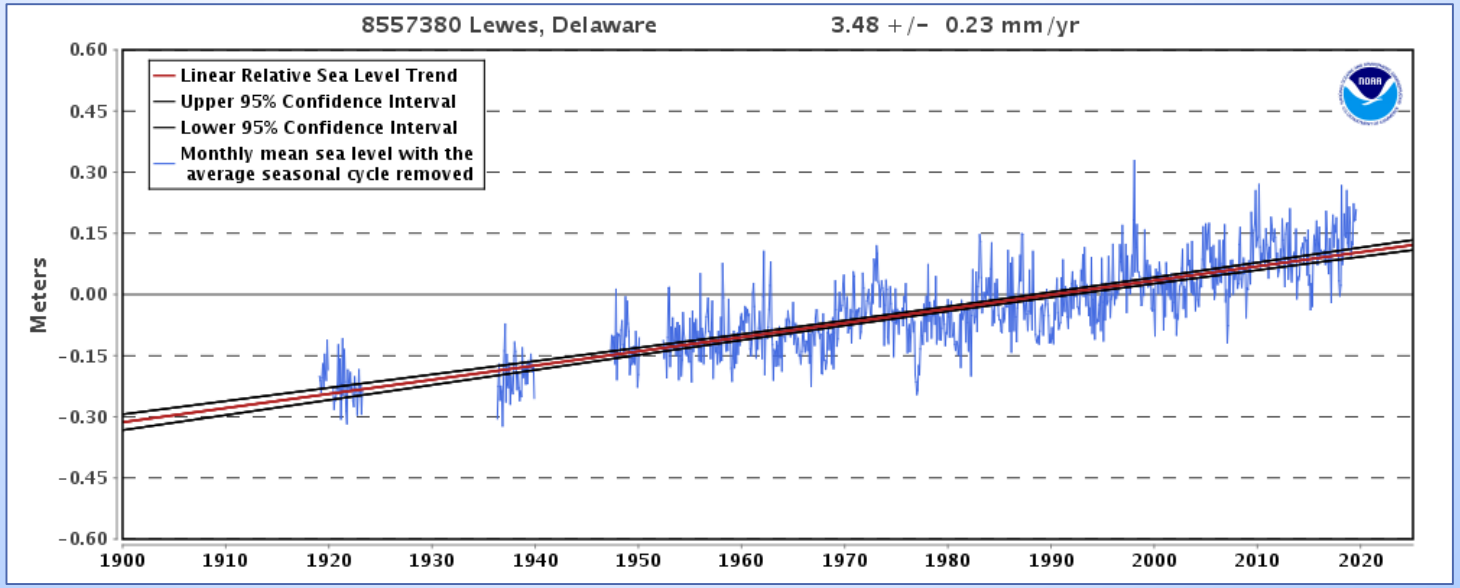
R-134a

Introduction

- The rapid and extensive use of HFCs has become a concern
- In October of 2016, global action was taken in Kigali, Rwanda to address the need to phase down consumption and production of HFCs, as they contribute significantly to climate change
- HFCs are high global warming potential (GWP) greenhouse gases (GHG), meaning emissions have a high radiative warming effect
  - HFC emissions range from hundreds to thousands times greater than that of CO_2 in terms of contributing to climate change

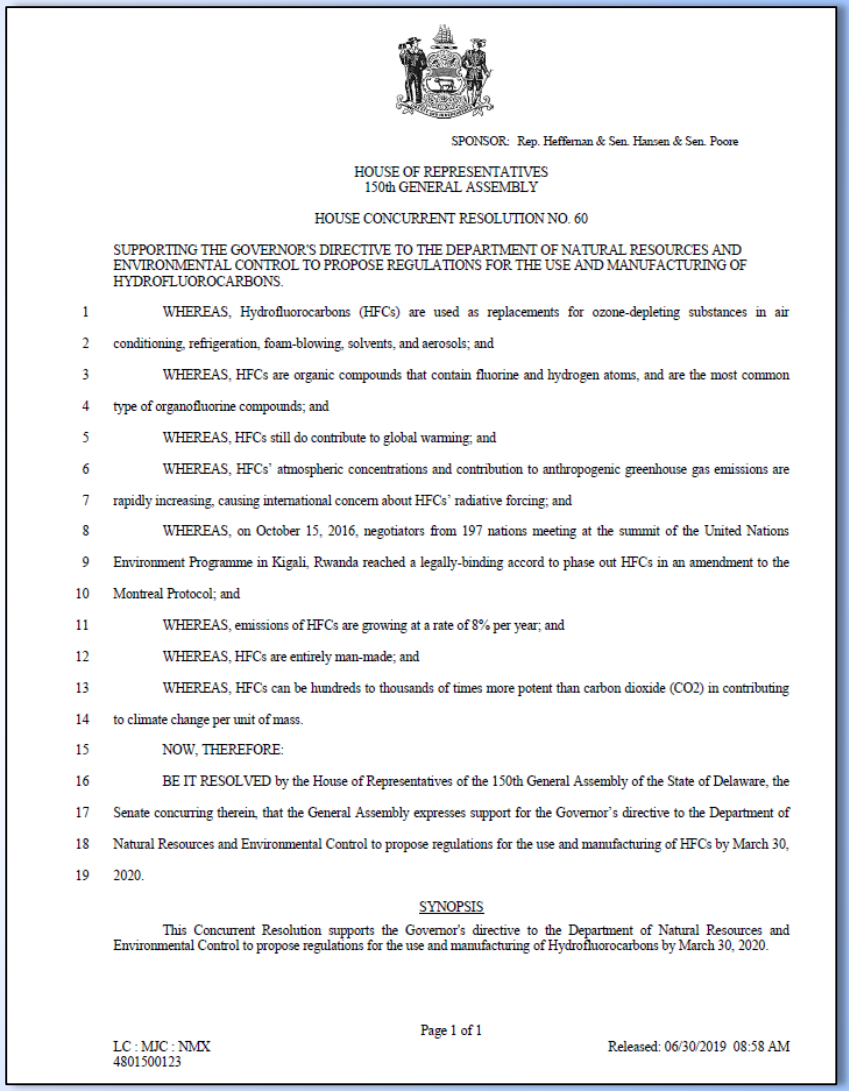
Introduction

- Delaware is already experiencing the effects of climate change
- Increased temperatures pose serious health and economic impacts to farmers, outdoor workers, and sensitive groups such as the elderly and children
- As a low-lying coastal state, Delaware and its citizens and economy are particularly susceptible to sea-level rise
  - Sea levels have already risen by more than 13 inches since 1919, as measured in Lewes, DE
  - Without significant reduction in GHGs, tidal water could inundate as much as 17,000 homes and 500 miles of roadway



Introduction

- Delaware must stay on track to reducing GHG emissions to avoid harmful impacts of climate change
  - Reducing HFC emissions is an important step
- DNREC was directed by Governor Carney with support of the General Assembly to propose regulations for the **use and manufacturing** of HFCs by March 30, 2020
- House Concurrent Resolution 60 of the 150th General Assembly



SPONSOR: Rep. Heffernan & Sen. Hansen & Sen. Poore

HOUSE OF REPRESENTATIVES
150th GENERAL ASSEMBLY

HOUSE CONCURRENT RESOLUTION NO. 60

SUPPORTING THE GOVERNOR'S DIRECTIVE TO THE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL TO PROPOSE REGULATIONS FOR THE USE AND MANUFACTURING OF HYDROFLUOROCARBONS.

WHEREAS, Hydrofluorocarbons (HFCs) are used as replacements for ozone-depleting substances in air conditioning, refrigeration, foam-blowing, solvents, and aerosols; and

WHEREAS, HFCs are organic compounds that contain fluorine and hydrogen atoms, and are the most common type of organofluorine compounds; and

WHEREAS, HFCs still do contribute to global warming; and

WHEREAS, HFCs' atmospheric concentrations and contribution to anthropogenic greenhouse gas emissions are rapidly increasing, causing international concern about HFCs' radiative forcing; and

WHEREAS, on October 15, 2016, negotiators from 197 nations meeting at the summit of the United Nations Environment Programme in Kigali, Rwanda reached a legally-binding accord to phase out HFCs in an amendment to the Montreal Protocol; and

WHEREAS, emissions of HFCs are growing at a rate of 8% per year; and

WHEREAS, HFCs are entirely man-made; and

WHEREAS, HFCs can be hundreds to thousands of times more potent than carbon dioxide (CO_2) in contributing to climate change per unit of mass.

NOW, THEREFORE:

BE IT RESOLVED by the House of Representatives of the 150th General Assembly of the State of Delaware, the Senate concurring therein, that the General Assembly expresses support for the Governor's directive to the Department of Natural Resources and Environmental Control to propose regulations for the use and manufacturing of HFCs by March 30, 2020.

SYNOPSIS

This Concurrent Resolution supports the Governor's directive to the Department of Natural Resources and Environmental Control to propose regulations for the use and manufacturing of Hydrofluorocarbons by March 30, 2020.

Page 1 of 1

LC : MJC : NMX
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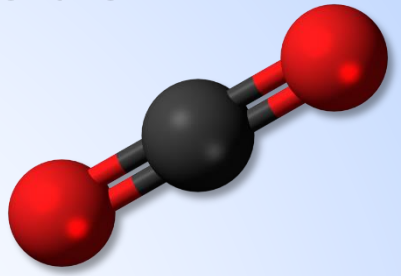
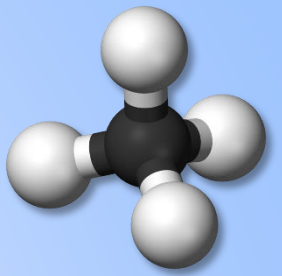
Released: 06/30/2019 08:58 AM

Background and Purpose

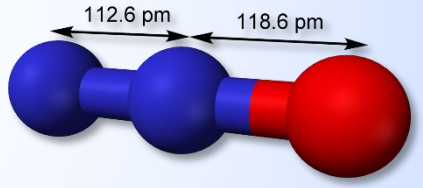
- Since phase-out of ODS, HFC use has been rapidly increasing
- Associated emissions have increased by as much as **8%** annually[1]
- HFCs were identified by the U.S. Environmental Protection Agency (EPA) in the 2009 GHG endangerment finding[2]
- HFCs are one of six GHGs in the atmosphere that "*...threaten the public health and welfare of current and future generations.*"



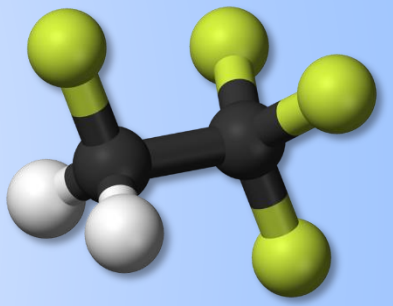
Carbon Dioxide (CO_2)



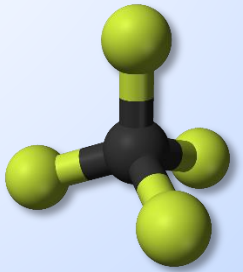
Methane (CH_4)



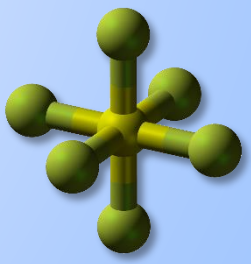
Nitrous Oxide (N_2O)



HFC ($C_2H_2F_4$)
R-134a



PFC (CF_4)
Carbon Tetrafluoride



Sulfur Hexafluoride (SF_6)

Background and Purpose

- HFC emissions are highly potent GHGs
- The GWP is a relative factor comparing the climate-based impact to CO_2
  - e.g. 1 lb of HFC-134a emitted has the same warming effect of 1,430 lbs CO_2 emitted
- GWPs of HFCs are among the highest of all GHGs
- HFCs are used as single components or as blends in a given application
  - One common refrigerant blend is R-410a; a 50/50 blend of HFC-32 and HFC-125

Gas	GWP (100-yr)
CO_2	1
CH_4	25
N_2O	298
HFC-23	**14,800**
HFC-32	**675**
HFC-125	**3,500**
HFC-134a	**1,430**
HFC-143a	**4,470**
HFC-152a	**124**
HFC-227ea	**3,220**
HFC-236fa	**9,810**
HFC-4310mee	**1,640**
PFCs	7,390-12,200
SF_6	22,800

Source: EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2017; IPCC Fourth Assessment Report (AR4)

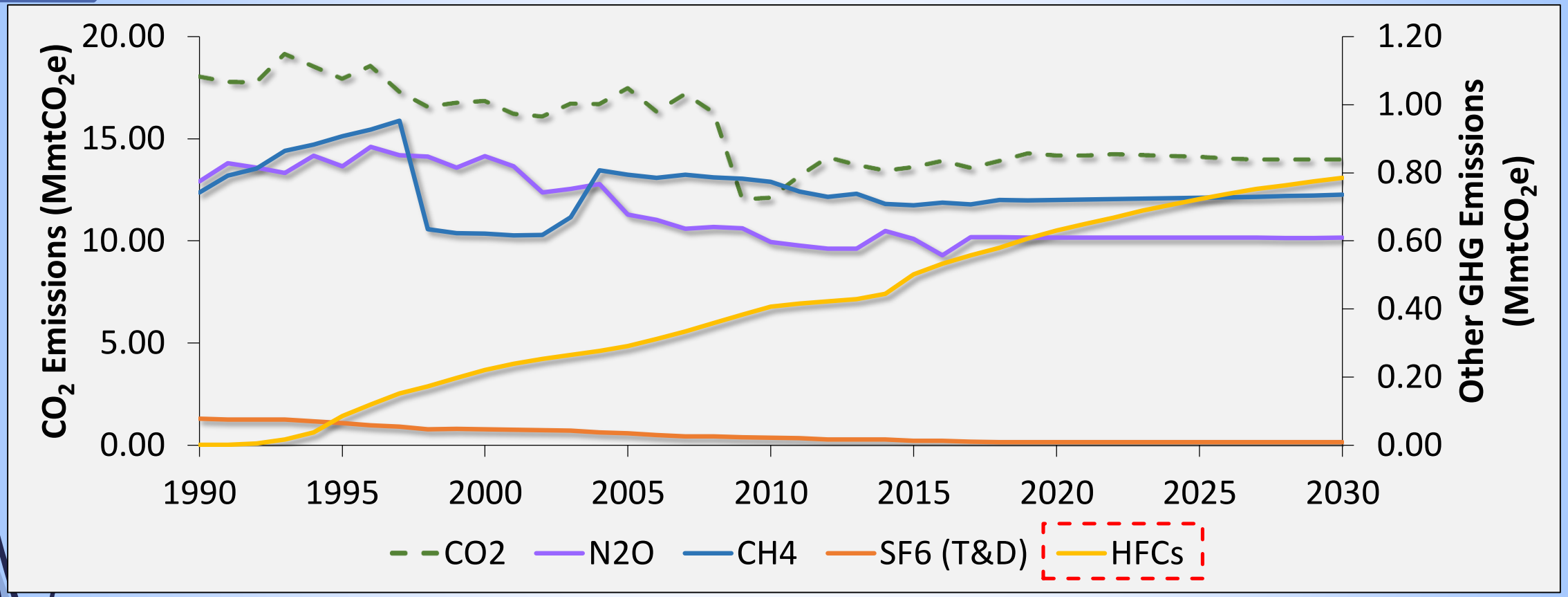
Background and Purpose

- The U.S. EPA had previously sought action to eliminate HFC emissions
- The high-GWP pollutants were listed for phase down schedule under the Significant New Alternative Policy (SNAP) program
- The SNAP program consists of a series of regulations under section 612 of the Clean Air Act
- It requires EPA to evaluate substitutes to ODS to reduce overall risk to human health and environment[1]
- EPA listed various HFCs for use as ODS substitutes in final rules added under the SNAP program in 2015 and 2016[2]

Background and Purpose

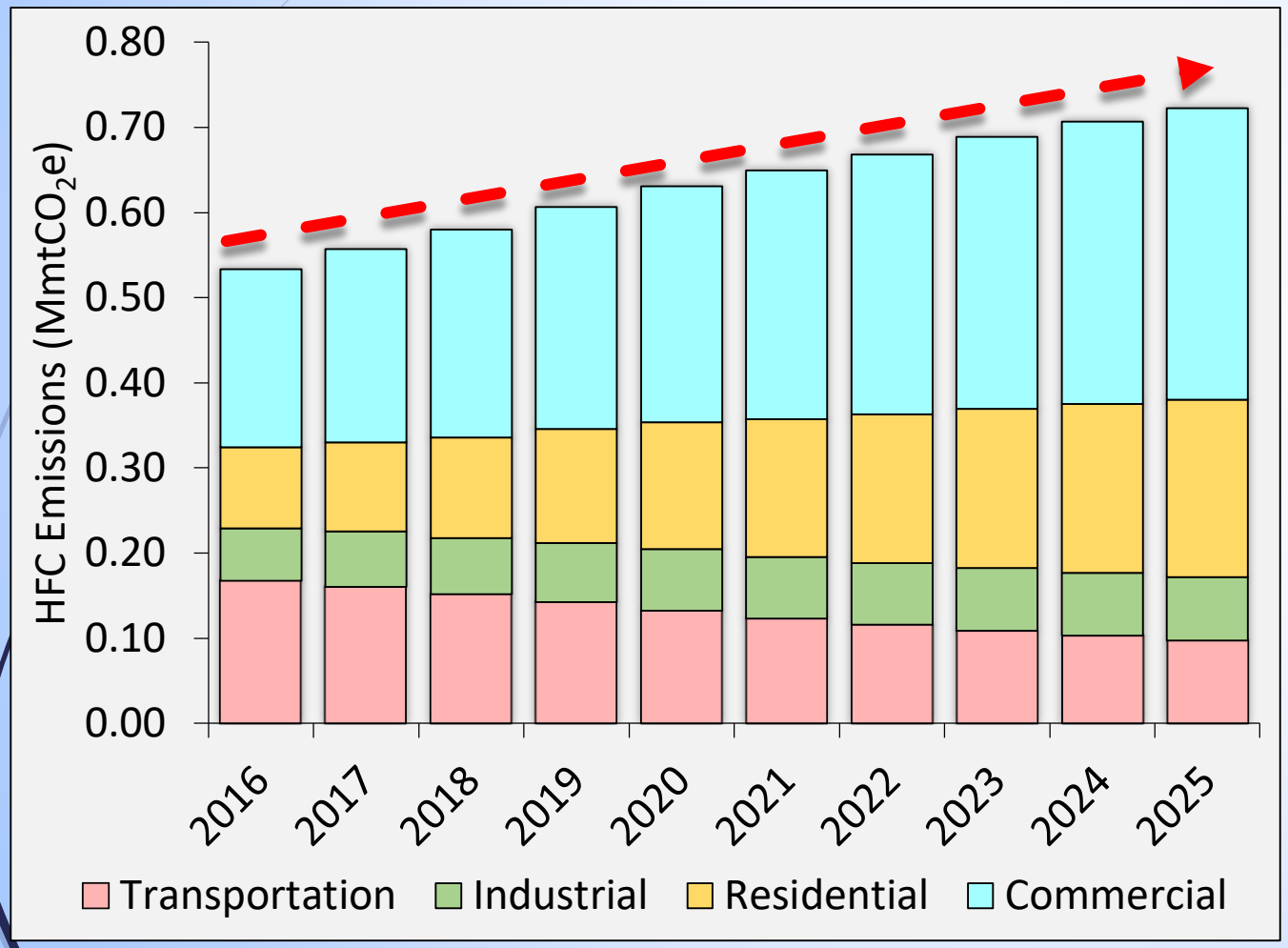
- Federal action through the SNAP program was limited by a court ruling
- Legal action to continue HFC management at the federal level is underway but has no established timeframe
- State action is necessary to limit increasing HFC emissions and he associated harmful climate-based impacts

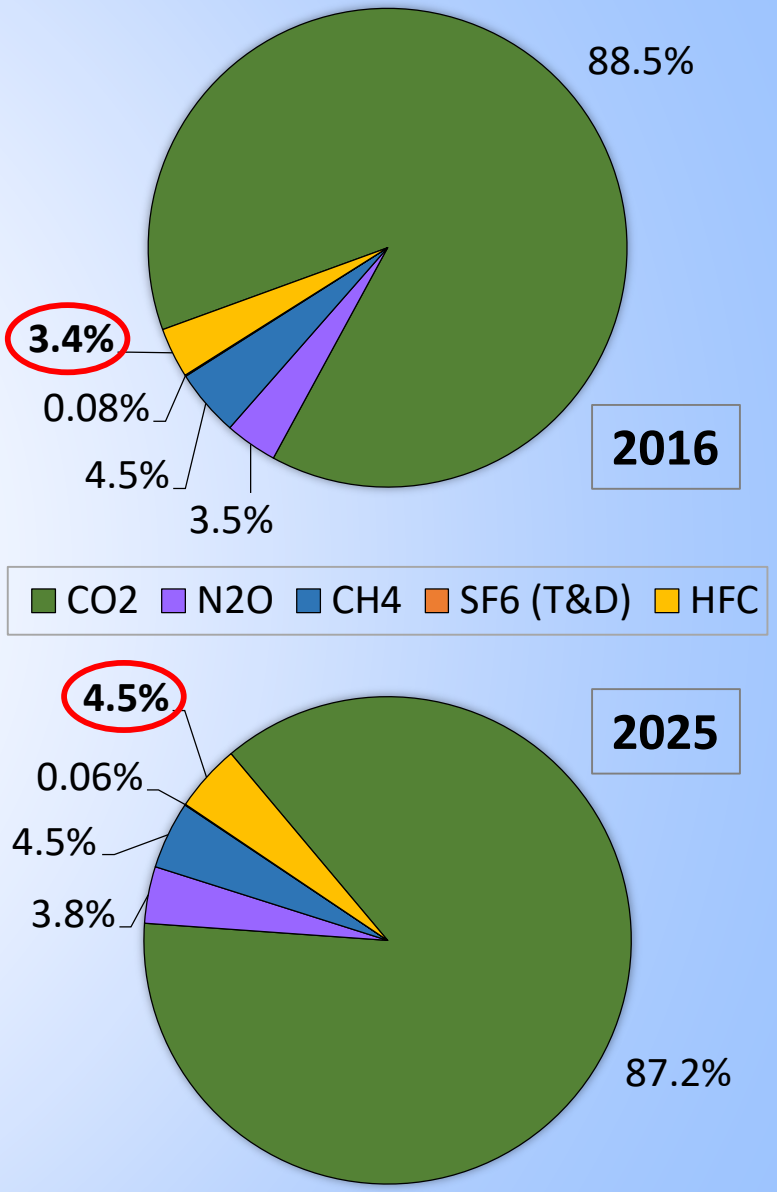
Background and Purpose



- HFCs are the fastest growing GHG in Delaware
- Emissions are projected to increase by 36% from 2016 to 2025

Background and Purpose

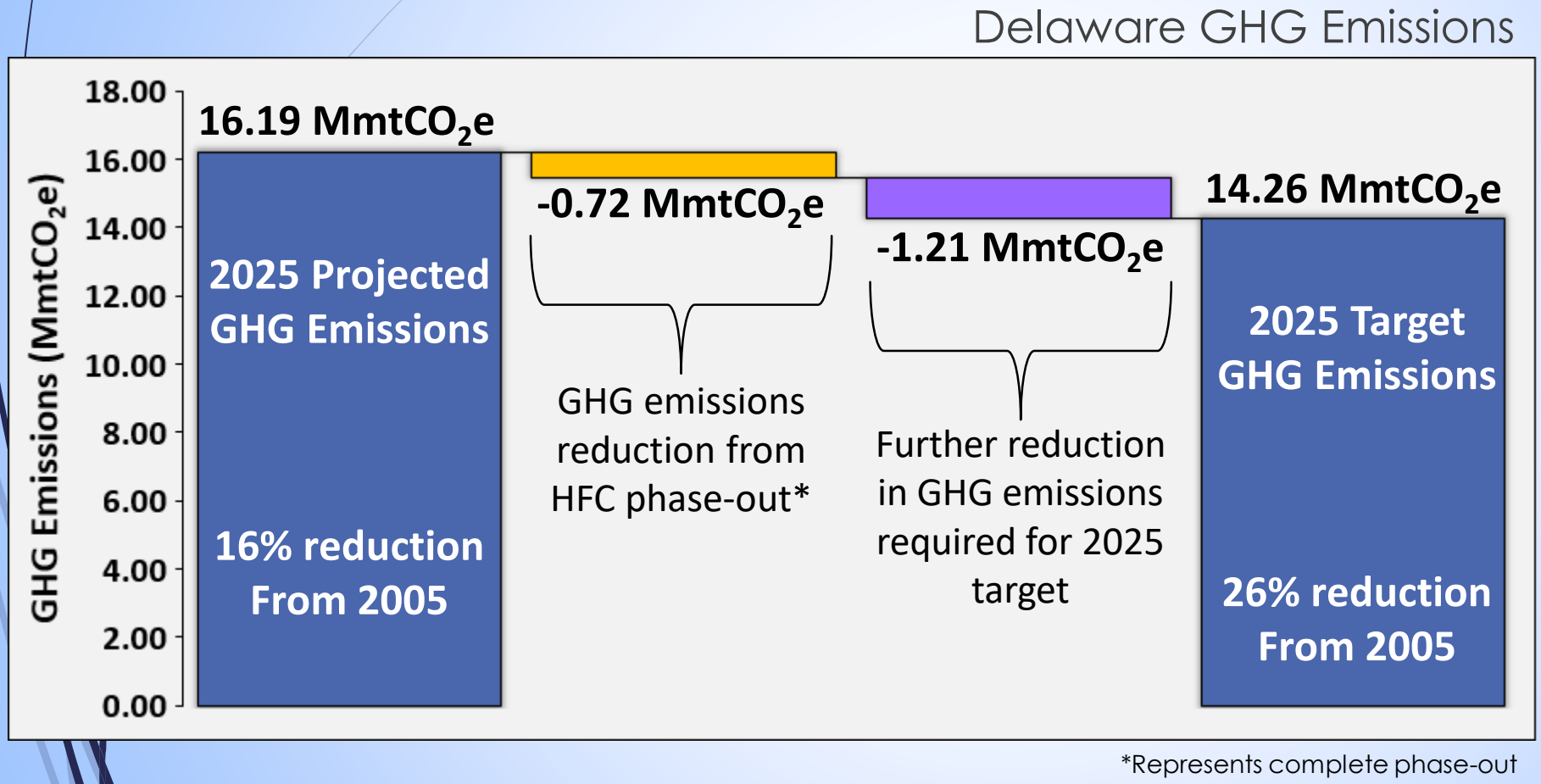




Background and Purpose

- Phase-out of high-GWP HFCs is necessary to mitigate the adverse effects of climate change
- Delaware is especially vulnerable to these impacts as a low-lying coastal state
- Reduction in HFC use will help Delaware achieve its GHG emissions target, set through commitment to the U.S. Climate Alliance
  - 26-28% reduction in GHG emissions from 2005 levels by 2025

Background and Purpose



- HFC phase-out by 2025 would result in 37% of the emissions reduction needed to reach the 2025 GHG emission reduction target

Regulatory Timeline

- Start Action Notice approved August 15, 2019
- Workgroup meetings – September 24, 2019 and October 8, 2019
  - Draft regulation reviewed and edited
  - Website updated

    https://dnrec.alpha.delaware.gov/air/permitting/under-development/
- Public Workshop(s) – TBD Late Fall 2019
- Proposed Regulation – by March 30, 2020

Proposed Model Rule

- 1.0 Purpose
- 2.0 Applicability
- 3.0 Definitions
- 5.0 List of Prohibited Substances
- 6.0 List of Exemptions

Proposed Model Rule

1.0 Purpose

- This regulation establishes the phase-out requirements for the use and manufacturing of hydrofluorocarbons in the State of Delaware by adopting specific United States Significant New Alternatives Policy (SNAP) Program prohibitions for certain substances in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses. This regulation is designed to support greenhouse gas emissions reductions in the State of Delaware.

Proposed Model Rule

2.0 Applicability

- This regulation applies to any person who sells, offers for sale, installs, uses, or enters into commerce, in the State of Delaware, any substance in end-uses listed in Section 5.0.
- Substances listed in Section 6.0 are exempt from the prohibitions covered in this regulation.
- *Severability*. Each section of this regulation shall be deemed severable, and in the event that any provision of this regulation is held to be invalid, the remainder of this regulation shall continue in full force and effect.

Proposed Model Rule

3.0 Definitions

- "**Effective Date**" or "**Effective Date of Prohibition**" means date after which the prohibitions provided in Section 5.0 go into effect.
- "**New**" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components, expanded by the addition of components to increase system capacity, or replaced or cumulatively replaced such that the capital cost of replacement exceeds 50% of the capital cost of replacing the whole system.
- "**Retrofit**" means the replacement of the refrigerant used in refrigeration equipment with a different refrigerant, and any related changes to the refrigeration equipment required to maintain its operation and reliability following refrigerant replacement.

Proposed Model Rule

3.0 Definitions (Continued)

- "**Use**" means any utilization of a compound or any substance, including but not limited to utilization in a manufacturing process or product in Delaware, consumption by the end-user in the State of Delaware, or in intermediate applications in the State of Delaware, such as formulation or packaging for other subsequent applications. For the purposes of this regulation, use excludes residential use, but it does not exclude manufacturing for the purpose of residential use.
- "**Residential use**" means use by a private individual of a substance, or a product containing the substance, in or around a permanent or temporary household, during recreation, or for any personal use or enjoyment. Use within a household for commercial or medical applications is not included in this definition, nor is use in automobiles, watercraft, or aircraft.

Proposed Model Rule

5.0 List of Prohibited Substances

- Kept the Effective dates in line with vacated SNAP rules
- Pushed back 1 year all initial January 2020 effective dates.

Table 1. End-use and Prohibited substances

End-use Category: Aerosol Propellants		
End-use	Prohibited Substances	Effective Date
Aerosol Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC 134a	January 1, 2021 (2020)
End-use Category: Air Conditioning		
End-use	Prohibited Substances	Effective Date
Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC245fa, R-125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A, R-424A, R-434A, R438A, R-507A, RS-44 (2003 composition), THR-03	January 1, 2024 (2024)
Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R438A, R-507A, RS-44 (2003 composition), SP34E, THR-03	January 1, 2024 (2024)

Proposed Model Rule

5.0 List of Prohibited Substances

End-use Category: Refrigeration		
End-use	Prohibited Substances	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023 (2023)
Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022 (2022)
Household refrigerators and freezers—compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021 (2021)
Household refrigerators and freezers—built in appliances (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2023 (2023)

End-use Category: Refrigeration		
End-use	Prohibited Substances	Effective Date
Supermarket Systems (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021 (2020)
Supermarket Systems (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021 (2020)
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021 (2020)
Remote Condensing Units (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021 (2020)
Stand-Alone Units (Retrofit)	R-404A, R-507A	January 1, 2021 (2020)
Stand-Alone Medium-Temperature Units (New)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R422D, R-424A, R-426A, R-428A, R-434A, R-437A, R438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021 (2020)
Stand-Alone Low-Temperature Units (New)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R422A, R-422B, R-422C, R-422D, R-424A, R-428A, R434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021 (2020)

Proposed Model Rule

5.0 List of Prohibited Substances

End-use Category: Refrigeration		
End-use	Prohibited Substances	Effective Date
Refrigerated food processing and dispensing equipment (New)	HFC-227ea, KDD6, R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021 (2021)
Vending Machines (Retrofit)	R-404A, R-507A	January 1, 2021 (2022)
Vending Machines (New)	FOR12A, FOR12B, HFC-134a, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407C, R-410A, R-410B, R-417A, R-421A, R-422B, R422C, R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E	January 1, 2022 (2022)
End-use Category: Foams		
End-use	Prohibited Substances	Effective Date
Rigid Polyurethane and Polyisocyanurate Laminated Boardstock	HFC 134a, HFC 245fa, HFC 365mfc, and blends thereof	January 1, 2021 (2020)
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021 (2020)
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)

End-use Category: Foams		
End-use	Prohibited Substances	Effective Date
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021 (2020)
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)
Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)
Rigid Polyurethane Commercial Refrigeration and Sandwich Panels	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021 (2020)
Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, Formacel Z-6	January 1, 2021 (2021)

Proposed Model Rule

5.0 List of Prohibited Substances

End-use Category: Foams		
End-use	Prohibited Substances	Effective Date
Rigid polyurethane (PU) high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021 (2020)
Rigid PU low-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021 (2021)
Rigid PU one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021 (2020)

Proposed Model Rule

6.0 List of Exemptions

End-use category	Prohibited Substances	Acceptable Uses
Aerosol Propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA-approved MDIs for medical purposes; wound care sprays; topical coolant sprays for pain relief; and products for removing bandage adhesives from skin.
Aerosol Propellants	HFC-227ea and blends of HFC-227ea and HFC 134a	FDA-approved MDIs for medical purposes.

End-use category	Prohibited Substances	Acceptable Uses
Air Conditioning	HFC–134a	Military marine vessels where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Air Conditioning	HFC-134a and R-404A	Human-rated spacecraft and related support equipment where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022. (2022)
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025. (2025)
Rigid polyurethane (PU) two-component spray foam	All substances	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025. (2025)

Next Review Committee
October 8 , 2019

- **Division of Coastal Climate and Energy Presentation on the *Cool Switch Program***

- **Continue Reviewing Proposed Model Rule**
  - **5.0 List of Prohibited Substances (Continued)**
  - **6.0 List of Exemptions (Continued)**
  - **4.0 Standards (Requirements)**
    - 4.1 Prohibitions
    - 4.2 Disclosure Statement
    - 4.3 Recordkeeping

Thank you!

Discussion and Questions

Next meeting scheduled for October 8, 2019

Location: 715 Grantham Ln, New Castle, DE 19720

West Conference Room

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TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR QUALITY

PROPOSED REGULATION

1151 Requirements for the Phase-out of Hydrofluorocarbons

3/1/2020

1.0 Purpose

1.1 This regulation establishes the phase-out requirements for the use and manufacturing of hydrofluorocarbons in the State of Delaware by adopting specific United States Significant New Alternatives Policy (SNAP) Program prohibitions for certain substances in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses. This regulation is designed to support greenhouse gas emissions reductions in the State of Delaware.

2.0 Applicability

2.1 This regulation applies to any person who sells, offers for sale, installs, uses, or enters into commerce, in the State of Delaware, any substance in end-uses listed in Section 5.0.

2.2 Substances listed in Section 6.0 are exempt from the prohibitions covered in this regulation.

2.3 *Severability.* Each section of this regulation shall be deemed severable, and in the event that any provision of this regulation is held to be invalid, the remainder of this regulation shall continue in full force and effect.

3.0 Definitions

The following terms, when used in this regulation, shall have the following meanings unless the context clearly indicates otherwise. Terms used but not defined herein shall have the meanings given to them in 7 DE Admin. Code 1101 of the Clean Air Act as amended in 1990, in that order of:

"**Aerosol Propellant**" means a compressed gas that serves to dispense the contents of an aerosol container when the pressure is released.

"**Air Conditioning Equipment**" means chillers, both centrifugal chillers and positive displacement chillers, intended for comfort cooling of occupied spaces.

"**Capital Cost**" means an expense incurred in the production of goods or in rendering services, including but not limited to the cost of engineering, purchase,

and installation of components or systems, and instrumentation, and contractor and construction fees.

"**Centrifugal Chiller**" means air conditioning equipment that utilizes a centrifugal compressor in a vapor-compression refrigeration cycle typically used for commercial comfort air conditioning. Centrifugal chiller in this definition is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**Cold Storage Warehouse**" means a cooled facility designed to store meat, produce, dairy products, and other products that are delivered to other locations for sale to the ultimate consumer.

"**Component**" means a part of a refrigeration system, including but not limited to condensing units, compressors, condensers, evaporators, and receivers; and all of its connections and subassemblies, without which the refrigeration system will not properly function or will be subject to failures.

"**Cumulative Replacement**" means the addition of or change in multiple components within a three-year period.

"**Effective Date**" or "**Effective Date of Prohibition**" means date after which the prohibitions provided in Section 5.0 go into effect.

''**End-use**'' means processes or classes of specific applications within industry sectors, including but not limited to those listed in Section 5.0.

"**Flexible Polyurethane**" means a non-rigid synthetic foam containing polymers of urethane radicals including, but not limited to that used in furniture, bedding, chair cushions, and shoe soles.

"**Foam**" or "**Foam Blowing Agent**" means a product or substance used to produce the product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening or phase transition, such as polymers and plastics.

"**Household Refrigerators and Freezers**" means refrigerators, refrigerator-freezers, freezers, and miscellaneous household refrigeration appliances intended for residential use. For the purposes of this regulation, "household refrigerators and freezers" does not include "household refrigerators and freezers - compact", or "household refrigerators and freezers - built-in."

"**Household Refrigerators and Freezers Compact**" means any refrigerator, refrigerator-freezer or freezer intended for residential use with a total refrigerated volume of less than 7.75 cubic feet (220 liters).

"**Household Refrigerators and Freezers - Built-in**" means any refrigerator, refrigerator-freezer or freezer intended for residential use with 7.75 cubic feet or greater total volume and 24 inches or less depth not including doors, handles, and custom front panels; with sides which are not finished and not designed to be visible after installation; and that is designed, intended, and marketed exclusively to be: installed totally encased by cabinetry or panels that are attached during installation; securely fastened to adjacent cabinetry, walls or floor; and equipped with an integral factory-finished face or accept a custom front panel.

"**Integral Skin Polyurethane**" means a synthetic self-skinning foam containing polymers of urethane radicals, including but not limited to that used in car steering wheels, dashboards, and shoe soles.

'Light duty vehicle' means passenger cars and light duty trucks as defined in [insert State vehicle regulation]

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means a device that delivers a measured amount of medication as a mist that a patient can inhale, typically used for bronchodilation to treat symptoms of asthma, chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, and other respiratory illnesses. An MDI consists of a pressurized canister of medication in a case with a mouthpiece.

"**Miscellaneous Residential Refrigeration Appliance**" means a residential refrigeration appliance smaller than a refrigerator, refrigerator-freezer, or freezer; and which includes coolers, cooler compartments, and combination cooler refrigeration or cooler freezer products.

"**New**" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components, expanded by the addition of components to increase system capacity, or replaced or cumulatively replaced such that the capital cost of replacement exceeds 50% of the capital cost of replacing the whole system.

"**Person**" means any individual, firm, association, organization, manufacturer, distributor, partnership, business trust, corporation, limited liability company, company, state, or local governmental agency or public district.

"**Phenolic Insulation Board and Bunstock**" means phenolic insulation including but not limited to that used for roofing and walls. Bunstock or bun stock is a large solid box-like structure formed during the production of polystyrene insulation.

"**Polyolefin**" means foam sheets and tubes made of polyolefin.

"**Polystyrene Extruded Boardstock and Billet (XPS)**" means a foam formed from polymers of styrene and produced on extruding machines in the form of continuous foam slabs which can be cut and shaped into panels used for roofing, walls, flooring, and pipes.

"**Polystyrene Extruded Sheet**" means polystyrene foam including that used for packaging and buoyancy or floatation. It is also made into food-service items, including hinged polystyrene containers (for "take-out" from restaurants); food trays (meat and poultry) plates, bowls, and retail egg containers.

"**Positive Displacement Chiller**" means vapor compression cycle chillers that use positive displacement compressors, typically used for commercial comfort air conditioning. Positive displacement chiller in this definition is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**Refrigerant**" or "**Refrigerant Gas**" means any substance, including blends and mixtures, which is used for heat transfer purposes.

"**Refrigerated Food Processing and Dispensing Equipment**" means retail food refrigeration equipment that is designed to process food and beverages dispensed via a nozzle that are intended for immediate or near-immediate consumption, including but not limited to chilled and frozen beverages, ice cream, and whipped cream. This end use excludes water coolers, or units designed solely to cool and dispense water.

"**Refrigeration Equipment**" means any stationary device that is designed to contain and use refrigerant gas, including but not limited to retail or commercial refrigeration equipment, household refrigeration equipment, and cold storage warehouses.

"**Remote Condensing Units**" means retail refrigeration equipment or units that have a central condensing portion and may consist of compressor(s), condenser(s), and receiver(s) assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold.

"**Residential use**" means use by a private individual of a substance, or a product containing the substance, in or around a permanent or temporary household, during recreation, or for any personal use or enjoyment. Use within a household for commercial or medical applications is not included in this definition, nor is use in automobiles, watercraft, or aircraft.

"**Retail Food Refrigeration**" or "Commercial Refrigeration" means equipment designed to store and display chilled or frozen goods for commercial sale including but not limited to stand-alone units, refrigerated food processing and dispensing equipment, remote condensing units, supermarket systems, and vending machines.

"**Retrofit**" means the replacement of the refrigerant used in refrigeration equipment with a different refrigerant, and any related changes to the refrigeration equipment required to maintain its operation and reliability following refrigerant replacement.

"**Rigid Polyurethane and Polyisocyanurate Laminated Boardstock**" means laminated board insulation made with polyurethane or polyisocyanurate foam, including that used for roofing and walls.

"**Rigid Polyurethane Appliance Foam**" means polyurethane insulation foam in domestic appliances.

"**Rigid Polyurethane Commercial Refrigeration and Sandwich Panels**" means polyurethane insulation for use in walls and doors, including that used for commercial refrigeration equipment, and used in doors, including garage doors.

"**Rigid Polyurethane High-pressure Two-component Spray Foam**" means a foam product that is pressurized 800-1600 pounds per square inch (psi) during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and is blown and applied in situ using high-pressure pumps to propel the foam components, and may use liquid blowing agents without an additional propellant.

"**Rigid Polyurethane Low-pressure Two-component Spray Foam**" means a foam product that is pressurized to less than 250 psi during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and are typically applied in situ relying upon a gaseous foam blowing agent that also serves as a propellant so pumps typically are not needed.

"**Rigid Polyurethane Marine Flotation Foam**" means buoyancy or flotation foam used in boat and ship manufacturing for both structural and flotation purposes.

"**Rigid Polyurethane One-component Foam Sealants**" means a foam packaged in aerosol cans that is applied in situ using a gaseous foam blowing agent that is also the propellant for the aerosol formulation.
"**Rigid Polyurethane Slabstock and Other**" means a rigid closed-cell foam containing polymers of urethane radicals formed into slabstock insulation for panels and pipes.
"**Stand-alone Unit**" means retail refrigerators, freezers, and reach-in coolers (either open or with doors) where all refrigeration components are integrated and, for the smallest types, the refrigeration circuit is entirely brazed or welded. These systems are fully charged with refrigerant at the factory and typically require only an electricity supply to begin operation.
"**Stand-alone Low-Temperature Unit**" means a stand-alone unit that maintains food or beverages at temperatures at or below 32°F (0 °C).
"**Stand-alone Medium-Temperature Unit**" means a stand-alone unit that maintains food or beverages at temperatures above 32°F (0 °C).
"**Substance**" means any chemical, product substitute, or alternative manufacturing process, whether new or retrofit, intended for use in the end-uses listed in Section 5.0 of.
"**Supermarket Systems**" means multiplex or centralized retail food refrigeration equipment systems designed to cool or refrigerate, which operate with racks of compressors installed in a machinery room and which includes both direct and indirect systems.
"**Use**" means any utilization of a compound or any substance, including but not limited to utilization in a manufacturing process or product in Delaware, consumption by the end-user in the State of Delaware, or in intermediate applications in the State of Delaware, such as formulation or packaging for other subsequent applications. For the purposes of this regulation, use excludes residential use, but it does not exclude manufacturing for the purpose of residential use.
"**Vending Machines**" means self-contained commercial food refrigeration equipment that dispense goods and must be kept cold or frozen.

3/1/2020

3.0 Standards (Requirements)

3.1 Prohibitions

3.1.1 No person may sell, install, use or enter into commerce, in the State of Delaware, any listed substance for use in any air conditioning, refrigeration, foam, or aerosol propellant end-use listed as prohibited in Section 5.0.

3.1.2 Except where existing equipment is retrofit, nothing in this regulation requires a person that acquired a prohibited substance or equipment containing a prohibited substance prior to an effective date of the prohibition in Section 5.0 to cease use of that product or equipment.

3.2 Disclosure Statement

3.2.1 As of the effective date of this regulation, any person who manufactures and sells or enters into commerce in the State of Delaware, products or equipment in the air conditioning, refrigeration, foam, or aerosol propellant end-uses listed as prohibited in Section 5.0, must provide written disclosure to the buyer as part of the sales transaction and invoice.

3.2.1.1 The required written disclosure must state:

3.2.1.1.1 Refrigeration and air conditioning equipment:
"This equipment is prohibited from use in the State of Delaware with any refrigerant on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.1.2 Foam:
"This foam system is prohibited from use in the State of Delaware with any foam blowing agent on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.1.3 Aerosol propellants:
"This product is prohibited from use in the State of Delaware with any aerosol propellant on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.2 The disclosure statement or label must remain with the product or equipment while it is in use in the State of Delaware

4.0 Recordkeeping

4.1 As of the effective date of this regulation, any person who manufactures any product or equipment in the end uses listed in Section 5.0 for sale or entry into commerce in the State of Delaware, must maintain for five years and make available, upon request by the Department, a copy of the following records, where applicable:

4.1.1 Name and address of the person purchasing the equipment or product at the time of purchase,

4.1.2 telephone number and email address of the person purchasing the equipment or product at the time of purchase, if provided to the manufacturer,

4.1.3 model and serial number of the equipment or product, where applicable. When the affected equipment is part of an assembly without an individual serial number, the serial number of each component must be recorded. If a component or equipment does not have an individual serial number or the serial number is inaccessible after assembly, the physical description must be recorded in enough detail for positive identification,

4.1.4 date of manufacture of the equipment or product,

4.1.5 date of sale of the equipment or product,

4.1.6 the refrigerant(s), aerosol propellant(s), or foam-blowing agent(s) that the equipment or product is designed to use,

4.1.7 the refrigerant(s), aerosol propellant(s), or foam-blowing agent(s) used in the equipment of products and the full charge capacity, where available, and

4.1.8 a copy of the disclosure statement or label issued to the buyer or recipient.

3/1/2020

5.0 List of Prohibited Substances

5.1 End-use and prohibited substances

5.1.1 The following table lists prohibited substance in specific end-uses and the effective date of prohibition, unless and exemption is provided for in Section 6.0.

Table 1. End-use and Prohibited substances		
End-use Category: Aerosol Propellants		
End-use	Prohibited Substances	Effective Date
Aerosol Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC 134a	January 1, 2020
End-use Category: Air Conditioning		
End-use	Prohibited Substances	Effective Date
Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC245fa, R-125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A,	January 1, 2024

	R-424A, R-434A, R438A, R-507A, RS-44 (2003 composition), THR-03	
Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R438A, R-507A, RS-44 (2003 composition), SP34E, THR-03	January 1, 2024
End-use Category: Refrigeration		
End-use	Prohibited Substances	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023
Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022
Household refrigerators and freezers—compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Household refrigerators and freezers—built in appliances (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2023

Supermarket Systems (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021
Supermarket Systems (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021
Remote Condensing Units (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021
Stand-Alone Units (Retrofit)	R-404A, R-507A	January 1, 2021
Stand-Alone Medium-Temperature Units (New)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R422D, R-424A, R-426A, R-428A, R-434A, R-437A, R438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Stand-Alone Low-Temperature Units (New)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R422A, R-422B, R-422C, R-422D, R-424A, R-428A, R434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Refrigerated food processing and dispensing equipment (New)	HFC-227ea, KDD6, R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Vending Machines (Retrofit)	R-404A, R-507A	January 1, 2021
Vending Machines (New)	FOR12A, FOR12B, HFC-134a, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407C, R-410A, R-410B, R-417A, R-421A, R-422B, R422C,	January 1, 2021

	R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E	
End-use Category: Foams		
End-use	Prohibited Substances	Effective Date
Rigid Polyurethane and Polyisocyanurate Laminated Boardstock	HFC 134a, HFC 245fa, HFC 365mfc, and blends thereof	January 1, 2021
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Commercial Refrigeration and Sandwich Panels	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, Formacel Z-6	January 1, 2021
Rigid polyurethane (PU) high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021
Rigid PU low-pressure two-	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least	January 1, 2021

component spray foam	4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	
Rigid PU one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021

3/1/2020

6.0 End-use and prohibited substances exemptions

6.1 The following table lists exemptions to the prohibitions in Section 5.0

End-use category	Prohibited Substances	Acceptable Uses
Aerosol Propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA-approved MDIs for medical purposes; wound care sprays; topical coolant sprays for pain relief; and products for removing bandage adhesives from skin.
Aerosol Propellants	HFC-227ea and blends of HFC-227ea and HFC 134a	FDA-approved MDIs for medical purposes.

Air Conditioning	HFC–134a	Military marine vessels where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Air Conditioning	HFC-134a and R-404A	Human-rated spacecraft and related support equipment where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.
Rigid polyurethane (PU) two-component spray foam	All substances	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.

Performance Building Solutions
1501 Joseph Dr.
Midland, MI 48642

August 8, 2019

Dayna Cobb
Director, Division of Climate, Coastal, & Energy
100 W. Water Street, Suite 5A
Dover, DE 19904
dayna.cobb@delaware.gov

Dear Director Cobb,

As Delaware contemplates regulation to reduce the use of hydrofluorocarbons (HFCs), DuPont encourages the state to ensure prohibitions are consistent with similar finalized regulations and legislation in other states. DuPont supports a harmonized regulatory framework for reducing HFCs.

A minor modification based on the 2015 and 2016 US EPA Significant New Alternatives Policy (SNAP) rules has been adopted in California, Washington and Vermont, and should be included in Delaware's regulation.

This change, impacting two niche foam types, is the result of collaboration between the Natural Resources Defense Council, blowing agent suppliers, and DuPont's Performance Building Solutions business. The modification is noted in the table below with asterisks.

End use	Substitutes Prohibition	Effective Date
Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, and Formacel Z-6. **	1-Jan-21
Rigid PU low-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TI.**	1-Jan-21
*** If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of 750 or less for foam blowing of polystyrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the Significant New Alternatives Policy Program under Section 7671(k) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the DNREC commissioner will issue a directive, guidance or policy consistent with such approval, subject to conditions deemed necessary by the commissioner.*		

The US EPA SNAP program previously approved several of the above HFC blends with global warming potentials (GWPs) at or under 750 **for other end uses**. Unfortunately, the needs of our DuPont niche foam end uses were overlooked during those previous applications, leaving us without permitted HFC blend options. As is currently written, the Delaware legislation continues this oversight and blocks our ability to innovate. We have been working with the SNAP technical career staff to include new innovative technologies for XPS and 2K-LP in the Federal approval lists as they become developed. We hope that Delaware will follow the lead of other states to include blend options as outlined above, so that we can continue to bring our energy efficient products to market.

DuPont Performance Building Solutions commercializes a variety of thermal insulation and air sealing products and technologies which improve the energy efficiency (EE) performance of buildings. We collaborate with other companies, nonprofits, and across industry to promote progressive policies and standards such as energy efficient and resilient building codes on a local, state, and national level. We believe that overly aggressive HFC phase out timing, with the very limited basket of options currently approved for foam use, fails to meet the flexibility needs of the market and jeopardizes these energy efficiency products that provide environmental benefits.

Environmental impact of foam insulation: HFCs are a limited but critical ingredient required in the manufacturing process of our foam insulation products, which include extruded polystyrene STYROFOAM™ Brand Insulation (XPS) and two component low pressure spray polyurethane foam (2K-LP SPF) insulation and sealants. Although there are limited emissions attributed to the manufacture of our XPS insulation, the use of STYROFOAM™ building insulation has a large net positive contribution to GHG emissions reduction thanks to the energy savings the insulation provides throughout its lifetime. Based on published Life Cycle information, **current STYROFOAM™ insulation produced using HFCs will prevent at least 28 times more GHG emissions relative to its own carbon footprint over 50 years.**[1] Therefore, with no change to today's XPS product, use of STYROFOAM™ Brand Insulation with HFC technology would lower Delaware's GHG emissions, helping the state move towards its GHG reduction targets.

Delaware's regulation may not result in the intended environmental outcome: DuPont understands and appreciates the intent of Delaware in regulating HFCs to reduce GHG emissions, and we are aligned in your objective of GHG emissions reduction. It is with this common goal that we highly encourage the DNREC to avoid creating its own conversion program that forces a complete phase out of HFC use in foams, due to its severe and unintended consequence for this energy efficiency industry. We urge the DNREC to instead consider a more holistic approach to GHG emissions reduction as acknowledged by other states.

[1] Life Cycle Greenhouse Gas Emissions Reduction From Rigid Thermal Insulation Use in Buildings M.H. Mazor, J.D. Mutton, D.A.M. Russell, G.A. Keoleian, J. Ind. Ecology, 15, 2, pp 284–299, April 2011.

In support of our comments, several documents are attached to this letter.

If you have further questions or would like more information, please do not hesitate to contact us.

Sincerely,

Lisa Massaro
Advocacy & Product Stewardship Manager
Performance Building Solutions
Lisa.M.Massaro@DuPont.com

LIST OF APPENDIXES

Background on the US EPA SNAP Program

The following information, links and quotes are taken directly from the US EPA SNAP website, https://www.epa.gov/snap. This information is intended to provide a glimpse into the highly technical process defined within the Clean Air Act. This process does not, and has not changed with administrations or political appointees. The program and substitute evaluations are overseen by highly technical career staff of the EPA who are not political appointees.

It should also be noted that this process clearly defines narrow end use categories within the SNAP program, so an approval has narrow use limits.

For more information, such as the purpose of the program, the guiding principles, and the criteria for evaluating alternatives, please visit the website.

> **"The SNAP program does not provide a static list of alternatives but instead, evolves the list as EPA makes decisions that are informed by its overall understanding of the environmental and human health impacts as well as its current knowledge about available substitutes. Section 612 also provides that EPA must prohibit the use of a substitute where EPA has determined that there are other available substitutes that pose less overall risk to human health and the environment."**
>
> "SNAP was established under Section 612 of the Clean Air Act to identify and evaluate substitutes for ozone-depleting substances. The program looks at overall risks to human health and the environment of existing and new substitutes, publishes lists and promotes the use of acceptable substances, and provides the public with information. Learn more about the SNAP program."
>
> https://www.epa.gov/snap/overview-snap :
>
> "Under Section 612 of the Clean Air Act (CAA), EPA's Significant New Alternatives Policy (SNAP) program reviews substitutes within a comparative risk framework in the following industrial sectors:
>
> - Adhesives, Coatings, and Inks
> - Aerosols
> - Cleaning Solvents
> - Fire Suppression and Explosion Protection
>
> - Foam Blowing Agents
> - Refrigeration and Air Conditioning
> - Sterilants
> - Tobacco Expansion"

SNAP Application

Part I: INTRODUCTION AND CBI INFORMATION

United States ENVIRONMENTAL PROTECTION AGENCY Washington, DC 20460		AGENCY USE ONLY OMB Control No.: 2060-0226
SNAP INFORMATION NOTICE		Expires: May 31, 2020
When completed send CBI and public versions of this form and attachments electronically via CD or USB drive (preferred), or print to:		Date of Receipt:
Via US Postal Service: SNAP Document Control Officer U.S. EPA Mail Code: 6205T 1200 Pennsylvania Ave, NW Washington DC 20460	Via Delivery Service: SNAP Document Control Officer U.S. EPA Stratospheric Protection Division 4th Floor, 4355FF (MC 6205T) 1201 Constitution Ave., NW Washington, DC 20004	Case Number:

Part I: INTRODUCTION AND CBI INFORMATION

Section A: Introduction

GENERAL INSTRUCTIONS

This form may be used to submit information under the Significant New Alternatives Policy (SNAP) program for the review of alternatives to Class I and Class II ozone-depleting substances (ODSs) under section 612 of the Clean Air Act. Submitters are required to provide this information on new substitutes or new end-uses of existing substitutes to assist the Agency in assessing the acceptability of chemicals or processes that are considered alternatives in sectors that previously used ODSs. A separate notice must be filed for each alternative you are submitting. You may submit a single notice for multiple uses of the same alternative. If the alternative is a new chemical substance, you must submit a Premanufacturing Notice (PMN) to EPA's New Chemicals Program and the TSCA/SNAP Addendum form to SNAP.

Please visit the SNAP website for instructions and frequently asked questions.

Select the appropriate box identifying the type of notice submitted (Select only one box):

New alternative (substance, formulation or technology) not previously listed as acceptable, acceptable subject to use conditions or unacceptable under SNAP	
New end-use or application of substitute previously listed as acceptable, acceptable subject to use conditions or unacceptable under SNAP	

Section B: Identification of Alternatives

1. Name of Alternative. *Note: Additional information about the proposed substitute must be provided in Part III, Section A*

	CBI

2. Indicate the sector and end-use for which you are submitting this SNAP Information Notice.

Sector(s)	End-Use(s)	If you chose "Other" as an end-use, please specify here.	CBI

NOTE: Please [Bracket] the information you claim as confidential

Part I: INTRODUCTION AND CBI INFORMATION

Please complete the following tabs of this submission form (click to go to each section):

Section C: Confidentiality Claims

Anyone submitting data which are to be treated as Clean Air Act Confidential Business Information (CBI), must assert and substantiate a claim of confidentiality at the time of the initial submission. All information claimed as CBI will be treated in a manner consistent with 40 CFR Part 2, Subpart B. Failure to assert and substantiate a claim of confidentiality at the time of submission may result in disclosure of information by the Agency without further notice.

To assert a claim on this form, [bracket] the information you claim as confidential and mark the confidential box in the column on the right-side of the corresponding row. If any information is claimed as confidential, you must substantiate those claims below and provide a "sanitized" version of this notice, including attachments, to EPA at the time of the initial submission.

For any portion of a submission that you claim as confidential, the following information must be included in a Statement of Data Confidentiality Claims.

- Identify specifically by page and line number(s) each portion of the document for which you claim confidentiality.
- Give the reasons why the cited passage qualifies for confidential treatment.
- If you assert that disclosure of this information would be likely to result in substantial harmful effects to you, describe those harmful effects and explain why they should be viewed as substantial.
- Indicate the length of time - until a specific date or event, or permanently - for which the information should be treated as confidential.
- Identify the measures you have taken to guard against undesired disclosure of this information.
- Describe the extent to which the information has been disclosed, and what precautions have been taken in connection with these disclosures.
- Enclose copies of any determinations of confidentiality previously made by EPA, other Federal agencies, or courts concerning this information.

Information submitted as CBI may be accessed by companies designated as Authorized Representatives of the United States Environmental Protection Agency (EPA) under an EPA contract for the purpose of assisting EPA in the development and implementation of national regulations for the protection of stratospheric ozone, including the evaluation of SNAP Information Notices. These Authorized Representatives may have access to any information received by the Stratospheric Protection Division within the EPA's Office of the Atmospheric Programs. Access to such information is necessary to ensure that these companies can complete the work required by the contract. Such Authorized Representatives of the Administrator are subject to the provisions of 42 U.S.C. 7414(c) respecting confidential business information as implemented by 40 CFR 2.301(h).

STATEMENT OF DATA CONFIDENTIALITY CLAIMS

United States
ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

Part II: CONTACT INFORMATION

Section A: Submitter Contact Information

1. Person Submitting Notice (in U.S.): Enter information for the official who signs the certification in **Part XIV Certification**.

Name of Authorized Official	Title	CBI
Company/Organization		CBI
Mailing Address	Telephone Number	CBI
Email Address		CBI

2. Agent (if applicable): Complete only if you authorize an agent to assist you in preparing this notice. The agent must also sign the certification.

Name of Authorized Official	Title	CBI
Company/Organization		CBI
Mailing Address	Telephone Number	CBI
Email Address		CBI
Is this person granted full access to Confidential Business Information?		

3. Technical Contact (in U.S.): If applicable, identify a person who can provide EPA with additional technical information on the substitute during the review period. If the authorized agent is also the technical contact, include that person's information in both locations.

Name of Authorized Official	Title	CBI
Company/Organization		CBI
Mailing Address	Telephone Number	CBI
Email Address		CBI
Is this person granted full access to Confidential Business Information?		

4. Joint Submitter (if applicable): Identify the joint submitter, if any, who is authorized by the primary submitter to provide some of the information required in the notice.

Name of Authorized Official	Title	CBI
Company/Organization		CBI
Mailing Address	Telephone Number	CBI
Email Address		CBI
Is this person granted full access to Confidential Business Information?		

CONFIDENTIALITY CLAIMS: All contacts listed on this page will be granted access to CBI, unless otherwise noted.

United States
ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

Part III: GENERAL INFORMATION

Section A - Alternative-Specific Information

1. Identify Proposed Substitute: If a blend, provide the percent composition of each constituent by weight.

(a) Chemical Name (preferably IUPAC nomenclature)	(b) Percent Composition (by weight)	(c) Chemical Abstracts Service (CAS) registry number	(d) Molecular Formula	CBI

(e) For alternative processes and technologies (e.g., Absorption Chillers, Stirling Cycle), describe the technology and provide a technical drawing and a diagram of the system as an attachment. Also provide the location and identity of any chemical constituents.	CBI

(f) If you have applied for or hold a patent on the proposed substitute, provide the following:

Patent Name	Patent Number (if available)	Topics Covered in Patent	CBI

2. Commercial/trade name(s) of alternative:

	CBI

3. Generic name: If the name of the commercial/trade name of the proposed substitute is claimed Confidential Business Information, provide a generic name. The name should reveal the chemical identity or alternative process description to the maximum extent possible.

4. Impurities: Identify any impurities that are reasonably anticipated to be present in the proposed substitute as manufactured for commercial purposes. If there are unidentified impurities, enter "unidentified" and estimate their total weight percentages. Do not include substances that are mixed with the proposed substitute after manufacture of the primary ingredients.

(a) Impurity Chemical Name	(b) Percent Composition (by weight)	(c) CAS registry number	(d) Molecular Formula	CBI

5. Byproducts and Degradation Products: Describe any byproducts or degradation products resulting from the manufacturer, processing, use or disposal of the chemical alternative or chemicals used in the new alternative. If there are unidentified byproducts/degradation products enter "unidentified." Indicate when the byproduct/degradation product is formed (e.g. during manufacturing, during use, in contact with fire, etc.) and the amount or rate at which it is formed.

(a) Byproduct/Degradation Product Chemical Name	(b) Percent Composition (by weight)	(c) CAS registry number	(d) When is product Formed?	(e) Amount (g) /Rate of Formation (g/s)	CBI

6. Test Marketing: Has a test marketing notification been sent to EPA?

	CBI

7. Physical and Chemical Properties: Attach copies of all test reports and specify the protocol used. If submitting a blend substitute, physical and chemical properties are required for the blend.

			CBI
(a) Molecular weight		g/mol	
(b) Physical state		at 20°C	
(c) Melting point		°C at 1 atm. pressure	
(d) Boiling point		°C at 1 atm. pressure	
(e) Specific gravity (*Relative to water or air, specify*)		at 20 °C	
(f) Lower Flammability Limit (LFL) (*Using ASTM E681*)		ppm or %	
(g) Upper Flammability Limit (LFL) (*Using ASTM E681*)		ppm or %	
(h) Bubble point (for blends)		°C	
(i) Flash point		°C	
(j) Other (specify)			
(k) If you are extracting this information from a public reference source (e.g., CRC Handbook of Chemistry and Physics, Merck Index), attach copies of the reference. Supporting documentation attached?	(l) If you have performed chemical analysis and testing on the substitute to derive the properties, attach copies of all test reports and specify the protocol used. Supporting documentation attached?		CBI

NOTE: Please [Bracket] the information you claim as confidential

Part III: GENERAL INFORMATION

8. Ozone-depletion potential (ODP): Provide the 100-year ODP of the proposed substitute relative to CFC-11. If the substitute is a blend, provide the ODPs of the individual constituents. Reference the source for each ODP.

Proposed Substitute *(If blend, include ODP of each constituent)*	**(a) ODP relative to CFC-11**	**Information Sources**	**CBI**

(b) Provide any additional data on the ODP of the proposed substitute (e.g. chlorine or bromine loading potentials).	**(c) Reference the source of this information and attach any supporting documentation.**	**Supporting documentation attached?**	**CBI**

9. Global Warming Characteristics: Provide the alternative's global warming potential relative to carbon dioxide over a 100-year time horizon and atmospheric lifetime, if known. Reference the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4). Alternate sources may include the 2010 World Meteorological Organization (WMO) Scientific Assessment of Ozone Depletion or the peer-reviewed literature. If the substitute is a blend, provide the GWPs of the individual constituents and an estimate of the GWP of the blend at its nominal composition.

Proposed Substitute (If blend, include GWP of each constituent)	**(a) 100-year GWP (Relative to carbon dioxide)**	**(c) Atmospheric Lifetime (ATL)**	**Information Sources**	**CBI**

(d) If the proposed substitute or any components of a blend is captured as a byproduct of another manufacturing or industrial process, indicate the source of the alternative.	Supporting Documentation Attached?	CBI

10. VOC Status Information:		**CBI**
(a) Is the substitute exempt from the definition of volatile organic compound (VOC) under CAA regulations (see 40 CFR 51.100(s)) addressing the development of State Implementation Plans (SIPs) to attain and maintain the national ambient air quality standards?		
(b) For blends, which components, if any, are exempt from the definition of VOC at 40 CFR 51.100(s)?		CBI
(c) Has a request for VOC exemption been submitted? If so, provide details below (e.g., date of submission).		CBI

(d) For compounds that are not VOC exempt, provide information on the reactivity of the compound(s) in the atmosphere, such as the maximum incremental reactivity in grams of O_3 per gram of VOC and/or the kOH value. — CBI

Proposed Substitute/Component	**MIR (g O_3/g VOC)**	**kOH value**	**Other**

11. Cost of Proposed Substitute (chemical or blend): Provide an estimated cost of the substitute in US$/kg, US$/lb, or other. — CBI

12. Environmental Regulations. — CBI

(a) Is the substitute, or a component of the substitute, a hazardous air pollutant?		
(b) Is the substitute, or a component of the substitute, a hazardous waste under RCRA regulations?		

(c) Provide information on any environmental regulatory statute (such as those listed below) applicable to the manufacture, use, and disposal of the proposed substitute. — CBI

Statute	**Statute Citation & Explanation of Requirements**	
Titles of the Clean Air Act (CAA) other than Title VI		
Clean Water Act (CWA)		
Safe Drinking Water Act (SDWA)		
Resource Conservation and Recovery Act (RCRA)		
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)		
Toxic Substances Control Act (TSCA)		
Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)		

Part III: GENERAL INFORMATION

Emergency Planning and Community Right to Know Act (EPCRA or SARA Title III)		
State and local laws		
Other applicable environmental federal, state, and local laws not mentioned above		

13. Health and Safety Regulations: If applicable, describe how occupational, consumer, or general population exposure to the alternative is regulated under health and safety related statutory authorities.		
Statutory Authority	**(a) How does regulation apply? Provide CFR citation.**	CBI
Department of Transportation (DOT) (e.g., Vapor UN1013, Class 2.2)		
Occupational Safety and Health Administration (OSHA) (e.g., TLV-TWA, Personal Protective Equipment [29 CFR 1910.132])		
State and local laws		
Other (e.g., Food and Drug Administration Threshold of Regulation [TOR] Exemptions)		

14. Toxicity Limits. For the proposed substitute, impurities and/or byproducts, provide permissible exposure limits (PELs), occupational exposure limits (OELs), or acceptable exposure limits (AELs) set for use in the workplace, if available.

Proposed Substitute (If blend, include all constituents), Impurity, and/or Byproduct	**(a) Permissible Exposure Limits (PELs)**	**(b) Occupational Exposure Limits (OELs) (e.g., WEEL, TLV, STEL)**	**(c) Manufacturer's Acceptable Exposure Limits (AELs)**	**Sources**	CBI

(d) If available, summarize the acute and chronic toxicity of the proposed substitute and of its constituent chemicals on any organism (e.g. human and/or other mammals, fish, wildlife, and plants). Attach all complete test reports that are reasonably available to you.	**Supporting Documentation Attached?**	CBI

15. Safety Documents. Please attach a copy of any documents that will be provided to any person who is reasonably likely to be exposed, such as:

Safety Document	**Supporting Documentation Attached?**	CBI
Material Safety Data Sheet (MSDS)		
Hazard Warning Statement		
Warning Labels		
Other (provide name)		

Note: Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version of the submission must be submitted with the bracketed information redacted or removed.

United States
ENVIRONMENTAL PROTECTION AGENCY
Washington, DC 20460

Part V: FOAM BLOWING-SPECIFIC INFORMATION

Section A: Foam Blowing Use Profile

1. Specific End-Use: Identify each end-use that may be reasonably anticipated for the alternative. Identify the ODS and other alternatives used in the end-use and/or application and the quantity of proposed substitute needed to replace it for each end-use and/or application (i.e., the replacement ratio).

Note: If more than one end-use if listed, consider each end-use separately throughout application.

End-Use	(a) Mark all that apply	(b) ODS and other substances being replaced	(c) Replacement ratio (lb: lb)	CBI
Rigid Polyurethane: Appliance				
Rigid Polyurethane: Spray				
Rigid Polyurethane: Commercial Refrigeration				
Rigid Polyurethane: Sandwich Panels				
Rigid Polyurethane: Slabstock and Other				
Rigid Polyurethane & Polyisocyanurate Laminated Boardstock				
Flexible Polyurethane				
Integral Skin Polyurethane				
Polystyrene: Extruded Sheet				
Polystyrene: Extruded Boardstock & Billet				
Polyolefin				
Phenolic Insulation Board & Bunstock				
Other (specify)				

2. Additional End-Use Description: Please describe the specific uses for which you are applying. For example, what type of material will be blown? What method or type of equipment is used for foam blowing? Who will be using the foam blowing agent/equipment? Will the foam blowing agent be used by consumers or restricted to commercial use? For spray foams, how many components are used? Will the alternative be used in high or low pressure spray foam?	CBI

3. Technology Changes and Costs: Describe any new equipment technology changes and associated costs that will be necessary in order to use the proposed substitute.

End-Use	(a) Technology changes to use alternative	(b) Capital costs associated with proposed substitute, alternative process, new equipment, and/or new materials	(c) Changes in labor and energy costs	(d) Ongoing operational costs	CBI

4. Production and Market Share: Provide estimated information on production of the proposed substitute by end-use. If possible, estimate the percentage of the market held by the ODS being replaced that will be captured by this proposed substitute.

End-Use	(a) Year proposed substitute or technology will be available (or note if currently available)	(b) Anticipated first year annual production for end-use (kg)	(c) Years until maximum market penetration	(d) Maximum annual production at market penetration	(e) Anticipated market share at market penetration (%)	CBI

5. Energy Efficiency: Provide the alternative's impact on energy efficiency relative to the substance it is replacing in similar products. Attach documentation, if available.

End-Use	(a) Energy efficiency (+/- X%) relative to substance(s) being replaced	(b) Source of information	CBI

6. Application of Proposed Substitute. Please provide information on the amount of blowing agent, associated room size, and anticipated room air exchange rate for the proposed substitute in the proposed end-use(s). *Note: If personal monitoring data is provided in Section D: Exposure, you are not required to respond to questions (c) through (e) below.*

Part V: FOAM BLOWING-SPECIFIC INFORMATION

End-Use	(a) Typical amount of blowing agent (kg)	(b) Maximum amount of blowing agent (kg)	(c) Typical room size (m^3)	(d) Minimum room size (m^3)	(e) Anticipated room air exchange rate (ACH)	CBI

Section B: Foam Blowing Agent Physical and Chemical Properties

1. Physical and Chemical Properties: Provide information on the physical and chemical properties relevant to evaluating the proposed substitute in foam blowing end-uses.			CBI
(a) Vapor pressure @ 20 °C		atm	
(b) Thermal conductivity		W/m-K	

2. Manufacture and Degradation Products. Provide information on the catalyst used in the manufacture of foam blowing agent and the degradation products under different external conditions (e.g., temperature) during use to assess potential hazards of breakdown/degradation products of foam during use. Attach supporting documentation.	**Supporting Documentation Attached?**	CBI

Section C: Flammability

1. Flammability-Related Physical and Chemical Properties. Provide information on the physical and chemical properties relevant to evaluating the flammability of the proposed substitute in foam blowing end-uses.			CBI
(a) Heat of combustion		kJ/mol	
(b) Auto ignition temperature		°C	
(c) For blowing agent blends containing flammable components, indicate the concentrations at which the blend is flammable		ppm or %	

2. Flammability Assessments and Test Data.		CBI
(a) Results of ASTM E681 for Flammability Limits in Air *(Required if substitute is flammable)*		
(b) Additional Analyses (optional)		

3. Flammability Concerns and Mitigation: Provide any information on flammability concerns and mitigation measures.			CBI
(a) Detail any abatement techniques that are used to minimize the risks associated with flammable substances or mixtures:			
(b) For flammable foam blowing agents used in spray foam, provide a training program that addresses flammability concerns	**Attached?**		
(c) Additional information on flammability concerns and mitigation measures:			

Section D: Exposure

1. Exposure Media and Release Information

Scenario	Identify activities with typical and maximum potential for exposure	Provide the estimated amount of each component in foam blowing agent released to the environment (e.g., as a solid waste or wastewater effluent) at the point of, or subsequent to, each scenario below.		Identify the media(s) to which the proposed substitute is released (e.g., indoor air, outdoor air, water, land) in each scenario below.	CBI
(a) Manufacture			ppm		
(b) End-Use (e.g., in products containing and processes using the proposed substitute)			ppm		
(c) Disposal			ppm		

(d) Identify engineering controls used to reduce or prevent releases to the environment (e.g., safety valves, gas scrubbers).	(e) If the proposed substitute is to be disposed of, indicate the method and location of disposal.	CBI

(f) Indicate the physical form of chemicals at the time of handling/exposure (e.g., solid, liquid, gas).	(g) Identify the contact pathway (e.g., ingestion, inhalation, dermal).	(h) Describe any protective equipment and engineering controls used to protect workers (e.g., goggles, gloves, chemical hoods).	CBI

2. Identify and explain the activities, duration of activities, and typical and maximum exposure concentrations in which worker exposure to the proposed substitute is expected to be the highest for each scenario in (a), (b), and (c). If monitoring data is available, please provide it as an attachment.

Scenario	Identify activities with typical and maximum potential for exposure	Duration of Activity		Exposure Concentration		CBI
		Typical	Maximum	Typical	Maximum	
(a) Manufacture and charging of equipment (e.g., preparation of foam formulations, injecting foam into appliances)		hours/day	hours/day	ppm	ppm	
		day/year	day/year	%	%	
(b) Manufacture of foam product/Foam blowing		hours/day	hours/day	ppm	ppm	
		day/year	day/year	%	%	
(c) Disposal of foam blowing agent		hours/day	hours/day	ppm	ppm	
		day/year	day/year	%	%	
Is supporting documentation (e.g., personal monitoring data) attached?						

3. Application of Spray Foam (If Applicable)

(a) Is the proposed substitute is expected to be used in the spray foam end-use?	(b) If your answer to (a) is yes, please identify and explain potential worker exposure to the proposed substitute during application of the blowing agent (e.g., onsite, field).	(c) Is consumer use of the spray foam (e.g., do-it-yourself spray foam cans) expected? If yes, please answer questions (e) and (f).	CBI

Part V: FOAM BLOWING-SPECIFIC INFORMATION

(d) Please describe the application system for the consumer (e.g., size of system/container and amount of foam blowing agent in system/container).	(e) Estimate the typical and maximum concentrations of consumer exposure (ppm). If monitoring data is available, please provide it as an attachment.		CBI
	Typical	**Maximum**	
	ppm	ppm	
Is supporting documentation (e.g., personal monitoring data) attached?			

4. Training Materials

(a) Provide information on training materials related to manufacture, installation and servicing, and disposal. If the proposed substitute is flammable, describe how these guidelines differ from training for non-flammable foam blowing agents.	Are any training materials attached?	CBI
(b) Provide information on training materials related to spray foam applications. If the proposed substitute is flammable, describe how these guidelines differ from training for non-flammable foam blowing agents.	Are any training materials attached?	CBI

5. Exposure during Use

(a) Identify and explain the activity during use of blowing agent in which end-user exposure to the proposed substitute is expected to be the highest (e.g., rigid cell foams used in residential construction or insulation).				CBI
(b) Identify who is anticipated to be exposed to the substitute at the end-use (e.g., consumers, workers)?	(c) Provide (1) typical and (2) maximum exposure concentration estimates (ppm). If monitoring data is available, please provide it as an attachment.			CBI
	Typical	**Maximum**	**Supporting Documentation Attached?**	
	ppm	ppm		
(d) Identify control measures used to reduce or prevent end-user exposures.				CBI
(e) For each end-use, provide maximum annual emission rates for blowing agent leaks from foam application during the foam's lifetime (i.e., after manufacturing and before disposal) as a percentage of the original total amount of blowing agent used to produce the foam. Please also specify the anticipated number of years for which the blowing agent would be leaking from the foam (i.e., the emissive lifetime). *For reference, please refer to EPA's standard annual emission rates listed in the instructions.*				CBI
End-Use	**Annual Emission Rate**		**Emissive Lifetime of Foam (years)**	

Section E: Additional Information for Submission of Blends of Foam Blowing Agents

Blends of different foam blowing agents may also require additional information, depending on the end-use.

1. For the following end-uses, a submission is required for blends of blowing agents, including blends with blowing agents that are already listed as acceptable:

- Polyolefin
- Polystyrene: Extruded Boardstock and Billet
- Rigid Polyurethane and Polyisocyanurate Laminated Boardstock
- Rigid Polyurethane: Spray Foam*
- Phenolic Insulation Board and Bunstock

*For spray foam, if any components of the blend are flammable, then an additional submission is required for the blend.

2. For the following end-uses, it is permissible to blend blowing agents that are already listed as acceptable without an additional submission for the blend:

- Rigid Polyurethane: Appliance
- Rigid Polyurethane: Commercial Refrigeration
- Rigid Polyurethane: Sandwich Panels
- Rigid Polyurethane: Spray Foam*
- Rigid Polyurethane: Slabstock and Other
- Flexible Polyurethane
- Integral Skin Polyurethane
- Polystyrene: Extruded Sheet

*For spray foam, if all components of the blend are acceptable *and* non-flammable, then it is permissible to blend those blowing agents without an additional submission for the blend.

Note: Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version of the submission must be submitted with the bracketed information redacted or removed.

SNAP Application Instructions

U.S. ENVIRONMENTAL PROTECTION AGENCY
INSTRUCTIONS FOR THE SIGNIFICANT NEW ALTERNATIVES POLICY (SNAP)
PROGRAM INFORMATION NOTICE
August, 2014

EPA-1265-14

Office of Atmospheric Programs
Washington, DC 20460

The U.S. Environmental Protection Agency (EPA) has prepared this instruction manual to help you in submitting information on alternatives to the Significant New Alternatives Policy (SNAP) program. This manual provides instructions on submitting the SNAP Information Notice form, asserting confidentiality claims, and submitting test data and optional information. However, please note that in the event of any discrepancies between this document and the Code of Federal Regulations (CFR), the CFR requirements are legally binding and take precedence.

Part I – Introduction and CBI

Section A- Instructions

All submitters must complete all of Part I- Introduction and CBI, Part II- Contact Information, Part III- General Information, Part XII- Attachments, and Part XIII- Certification. For each sector for which the alternative is being submitted, submitters must also complete the corresponding sector-specific data requirements found in Parts IV to XI, outlined below for your submission to be accepted for review under SNAP.

- Part IV- Refrigeration and Air Conditioning
- Part V- Foam Blowing
- Part VI- Cleaning Solvents
- Part VII- Fire Suppression
- Part VIII- Aerosols
- Part IX- Sterilants
- Part X- Adhesives, Coatings and Inks
- Part XI- Tobacco Expansion

Please select the appropriate box on the Introduction and CBI tab indicating the type of notice- new alternative not previously listed under SNAP or new end-use or application of substitute currently listed under SNAP.

Section B- Identification of Alternatives

Please identify the name of the alternative, as well as the sector(s), end-use(s), and application(s) (if applicable) for which the form is being submitter in Part I, Section B. Sectors, end-uses, and applications are defined in Parts IV through XI.

Section C- Confidentiality Claims

If you submit information for which you would like to request Confidential Business Information (CBI) status, you must make a claim of confidentiality at the time of submission and substantiate that claim.

EPA will treat all claims of confidentiality consistent with 40 CFR Part 2, Subpart B. To claim information as CBI, bracket the specific information you claim as confidential and mark the confidential box in the column on the right-side of the page in the corresponding row. If information is claimed as CBI, then a public version must be submitted with the bracketed information redacted/removed.

To ensure that no confidential information is disclosed to the public, you must submit an additional copy of the notice form, including attachments, which does not contain confidential information. This version ("sanitized", "redacted") will be placed in the public file. It must contain all non-confidential information. To assert confidentiality claims for information in attachments to the form, provide a complete copy of the attachment that clearly indicates (e.g., by circling or bracketing) the information you wish to claim as confidential. Bracket only the specific information you claim as confidential.

Provide a Statement of Data Confidentiality Claims in Part I, Section C based on the instructions provided in the form. EPA requires substantiation of all CBI claims under SNAP or a submission will be considered incomplete.

Part II – Contact Information

Section A- Submitter Contact Information

All contacts listed in Part II will be granted access to CBI, unless otherwise noted and substantiated in Part I, Section C.

1. **Person Submitting Notice** - Enter information for the primary submitter of the notice. The person submitting the notice form must sign the certification in Part XIV- Certification.

2. **Agent** - Complete only if you authorize an agent to assist you in preparing this notice. The agent must also sign the certification in Part XIV- Certification.

3. **Technical Contact** - Identify a person who can provide EPA with additional technical information on the substitute during the review period, if that contact is different than the "Person Submitting Notice". The technical contact identified should be located within the U.S. and be available to be reached by telephone during normal business hours. If the authorized agent is also the technical contact, include that person's information in both locations.

4. **Joint Submitter** - Identify the joint submitter, if any, who is authorized by the primary submitter to provide some of the information required in the submission form. A submission will not be considered complete until EPA receives all information. If information from multiple parties will not be sent together, mark each set clearly with the same alternative name.

   If you authorize another person (e.g., a foreign manufacturer or supplier) to provide information directly to EPA, indicate which information will be supplied by the other person in Part XII Additional Information. Such a letter in support of your submission should be provided by the Joint Submitter on their company letterhead. An example of where this option could apply would be in situations where alternative formulation information is held confidentially by a foreign manufacturer. A submission will be considered incomplete until this information is

provided. Whenever possible, use the same name for the alternative (e.g., generic name) to link this information to your submission.

Part III – General Information

Section A – Alternative-Specific Information

EPA must receive a complete and unambiguous identification of the new substitute. If the alternative is not adequately identified, we will consider the submission incomplete. If you are an importer of an alternative and do not know the chemical identity of a substitute because it is confidential, you must contact the manufacturer or supplier and have the specific chemical identity provided directly to EPA. In this way, manufacturers can protect confidential business information. This information may be provided in a letter on company letterhead from the supplier.

1. **Identify Proposed Substitute - (a-d)** Enter the specific name of the chemical substance, the percent of the composition, the Chemical Abstracts Service (CAS) registry number, and the molecular formula of the alternative. In describing chemical substances, EPA prefers that International Union of Pure and Applied Chemistry (IUPAC) nomenclature be used for identification purposes. If the substitute is a blend of chemicals, you must provide the exact composition and/or the range of percent composition of all components of the blend. In addition to active ingredients, you must also list other chemical substances in blends, such as solvents, inhibitors, etc., that may also be present in the alternative. If your substitute is a technology or process change, rather than a chemical substitute, then provide the name of the alternative technology or process in (a) and proceed to (e).

   (e) For alternative technologies and/or processes, provide a detailed description and diagram of the technology or process and information on any chemical constituents.

   (f) If you have applied for or hold a patent on the substitute, provide the patent name, number (if available), and information on topics covered in the patent. It is not necessary to provide the patent.

2. **Commercial/Trade name(s) of alternative** – Indicate the name(s) under which the alternative is marketed.

3. **Generic name** - If the identity of a substitute and the commercial/trade name are claimed as confidential, you must provide a generic name that is only as generic as necessary to protect the confidential identity. The name should reveal the chemical identity or alternative process description to the maximum extent possible. The generic name may be published in the Federal Register document announcing EPA's acceptability determination of your alternative. If the name seems more generic than necessary, EPA will contact you and assist you in developing an adequate name.

   The generic name should provide sufficient information for the public by indicating the classes of chemicals which the alternative contains without revealing specific information about the product's composition. For example, it may be necessary to reveal that a refrigerant blend contains an HCFC in order to allow users or importers to comply with regulations issued under sections 604, 605 or 608 of the CAA.

4. **Impurities - (a-d)** Identify by name, weight percent, and CAS number (where available) each impurity that you reasonably anticipate will be present in the alternative as manufactured for commercial purposes. An impurity is any chemical substance that is unintentionally present in the alternative. List all impurities, regardless of weight percent. If the substance contains some unidentified impurities, also enter "unidentified". Do not include substances that are mixed with the new substance after manufacture of the primary ingredients. If there are no impurities, enter "None." For alternative technologies and/or processes, mark "N/A" in (a) and proceed to 6.

5. **Byproducts and Degradation Products- (a-e)** Identify any byproducts or degradation products that you reasonably anticipate will result from the manufacture, processing, use, or disposal of the alternative both at sites you control and in end-use. Identify these byproducts or degradation products by specific name or class or range of structures (e.g., HF or other acid gases formed from the combustion of halocarbon compounds), CAS Registry number (where available), when the byproduct or degradation product is formed (e.g., during manufacture, during end-use, in the event of a fire, following disposal), and the estimated amount formed (grams) or rate of formation (grams/second).

6. **Test Marketing** - Indicate if a test marketing notification was previously submitted to EPA.

7. **Physical and Chemical Properties - (a-i)** Provide the following physical and chemical properties for chemical alternatives: molecular weight, physical state, melting point, boiling point, specific gravity, lower flammability limit, upper flammability limit, bubble point, and flash point. The properties included in this section are illustrative and are not an exhaustive list of potential data. The physical characteristics requested in this section apply to all sectors; Parts IV through XI request additional sector-specific physical and chemical properties. For alternative technologies and/or processes, mark "N/A" in (a) and proceed to 11.

   (k) If you are extracting this information from a public reference source (e.g., CRC Handbook of Chemistry and Physics, Merck Index), please provide copies of the references. If references include copyrighted materials, mark as CBI.

   (l) If you have performed chemical analysis and testing on the substitute (e.g., fractionation testing, ASTM E681 for flammability limits in air) to derive the properties, attach copies of all test reports and specify the protocol used.

8. **Ozone depletion potential (ODP) - (a)** Provide information on the predicted 100-year ODP of the alternative relative to CFC-11. If the substitute is a blend, provide the ODPs of the individual constituents. You should also provide supporting documentation indicating how and by whom this value was calculated.

   For purposes of calculating ODP, EPA recommends the methodology used in the Scientific Assessment of Ozone Depletion prepared for the United Nations Environment Programme (UNEP) by the World Meteorological Organization (WMO). The ODP refers to the amount of ozone destroyed by a gas over its entire atmospheric lifetime (e.g. at a steady state) relative to that due to emissions of the same mass of CFC-11. It is defined in modeling calculations as follows:

$$ODP_x = \frac{Global\ \Delta O_3\ caused\ by\ x}{Global\ \Delta O_3\ caused\ by\ CFC\text{-}11}$$

Calculations should reflect ground level emissions. For aircraft applications, be sure to also consider emissions at the appropriate altitude.

(b-c) You should also include any other related data available to you, such as information on the substitute's chlorine or bromine loading potential. See the 2010 WMO Scientific Assessment of Ozone Depletion for additional information on calculating ODP and related information.

9. **Global Warming Characteristics - (a-c)** Provide information on the 100-year global warming potentials (GWPs) of the proposed substitute relative to CO_2, as well as atmospheric lifetime (ATL) of the proposed substitute. If the substitute is a blend, provide the GWPs of the individual constituents and an estimate of the blend at its nominal composition.

Provide GWPs as listed in the 2007 Intergovernmental Panel for Climate Change Fourth Assessment Report (IPCC AR4). Alternate sources may include the 2010 WMO Scientific Assessment of Ozone Depletion or the peer-reviewed literature. IPCC defines GWP of the emissions of a greenhouse gas as the time integrated commitment to climate forcing from the instantaneous release of 1kg of a trace gas expresses relative to that from 1 kg of CO_2.

$$GWP = \frac{\int_0^n a_i c_i dt}{\int_0^n a_{CO_2} c_{CO_2} dt}$$

where-
a_i = the instantaneous radiative forcing due to a unit increase in the concentration of trace gas, i
c_i = the concentration of trace gas, i, remaining at time, t, after its release, and
n = the number of years over which the calculation is performed.

Corresponding values for CO_2 are in the denominator.

For GWP values that do not come from IPCC AR4 or WMO 2010, you should also include the data used to calculate these potentials such as atmospheric lifetime, infrared adsorption spectrum, and infrared absorption capacity. Provide all supporting documentation.

(d) If the alternative is captured as a byproduct of another manufacturing or industrial process, indicate the source of the alternative. This information is important in assessing the effects of the new use of the substitute versus those effects occurring strictly because of the release of a byproduct.

10. **VOC Status Information – (a-d)** Indicate whether the alternative is considered to be a volatile organic compound (VOC) and is subject to emission restrictions under Title I of the CAA (40 CFR 51.100(s)) or exempt as a VOC. If a request for VOC exemption has been submitted to EPA under Title I, please provide information on that submission and the current status of that request, and

provide the information on reactivity below in (d). For compounds that are not VOC exempt, provide information on the reactivity of the compound in the atmosphere, such as the maximum incremental reactivity in grams of O_3 (ozone) per gram of VOC and/or the kOH value.

11. **Cost of Proposed Substitute** - Estimate the cost of the chemical substitute. Information on costs of the alternative for a specific use is requested in Parts IV through XI. Specify the units used.

12. **Environmental Regulations** - List any environmental statute (such as those included in the form) applicable to the manufacture, use, and disposal of the proposed substitute. Provide citations for implementing regulations and a brief explanation of the nature of the regulatory requirement (for example, 40 CFR part 63 subpart T, National Emission Standards for Hazardous Air Pollutants for Halogenated Solvent Cleaning).

13. **Health and Safety Regulations** – Describe whether and how occupational, consumer, or general population exposure to the proposed substitute is regulated under health and safety related statutory authorities, such as those listed in the form. Provide regulatory citations where available, e.g., 29 CFR 1910.132.

14. **Toxicity Limits – (a-c)** Provide all concentration-based exposure limits that have been set for the substitute, such as Permissible Exposure Limits (PELs), occupational exposure limits including Short-Term Exposure Limits (STELs), Threshold Limit Values (TLVs), Recommended Exposure Limits (RELs), or Workplace Environmental Exposure Limits (WEELs), or acceptable exposure limits (AELs) set by the manufacturer. Submit any supporting documentation, including public literature and information previously submitted to the SNAP program for a different submission.

    (d) If available, summarize the acute and chronic toxicity of the proposed substitute and of its constituent chemicals on any organism (e.g. human and/or other mammals, fish, wildlife, and plants). Attach all complete test reports that are reasonably available to you.

15. **Safety Documents** - Please attach a copy of any hazard warning statement, label, material safety data sheet (MSDS), or other information which will be provided to any person who is reasonably likely to be exposed.

Parts IV to XI: Sector-Specific Information

Due to the unique uses and exposures of alternatives for each of the SNAP industrial sectors, the submission form includes individual tabs for each sector. You are only required to complete those sections for which you are submitting to SNAP. Below are instructions for Parts IV-X. Instruction are organized by Section, beginning with instructions for the common elements. Instructions for questions that are unique to a specific sector, are noted below the common elements or within the instructions for each Section.

If you are submitting the substitute for several end-uses or applications, you must provide the requested information for each. Part XI: Tobacco Expansion does not require the submission of any additional data; therefore, no instructions are provided.

Information claimed as confidential should be placed in [brackets] and marked as CBI. If information is claimed as CBI, then a public version must be submitted with the bracketed information redacted or removed.

Section A: Use Profile

- **Specific End-use** - Identify the specific end-uses and applications (if applicable) within the sector in which the alternative is to be used. Specify the ozone-depleting substance (ODS) and other substances being replaced, and include an estimate of the quantity of alternative (lb) needed to replace the ODS or other substance for each end-use. This is known as the replacement ratio. For example, if 100 lb of a new refrigerant will replace 150 lb of CFC-12, the replacement ratio is 1:1.5.

- **Additional End-Use Description** – Provide a written description of the specific uses for which you are submitting.

- **Technology Changes and Cost**- Describe any new equipment technology changes and associated costs that will be necessary in order to use the proposed substitute.

- **Production** - Provide estimated information on production of the proposed substitute or equipment using the proposed substitute. Indicate when you anticipate the substitute or new equipment using the substitute will enter the marketplace. Include the value for total production anticipated during the first year of production in kg.

- **Market Share** - Provide information on the levels of market penetration that you expect for the substitute or new use of an existing substitute. Include estimates for the number of years you anticipate until the substitute reaches its maximum market penetration for those uses included in submission, and the total production level that you anticipate for the substitute when it reaches the point of market saturation. Finally, if possible, estimate the percentage of the market held by the substance(s) being replaced that will be captured by this substitute.

- **Application of Proposed Substitute** – Provide information requested in each sector-specific section on the specific application of the substitute. These questions are related to both manufacturing and use.

- **Consumer Use** – Where requested, indicate whether the proposed substitute will be used for consumer use. If consumer use is expected, please describe the anticipated consumer applications.

- **End-Use Specific Standards** - List any standard-setting organizations that will evaluate the proposed substitute or will set requirements or guidelines for the substitute from a health and safety perspective in the proposed end-use(s). Examples include Underwriters Laboratories (UL), the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), the Society of Automotive Engineers (SAE), the National Fire Protection Association (NFPA), or the International Organization for Standardization (ISO).

Refrigeration and Air Conditioning

- **Energy Efficiency - (a-b)** Provide the alternative's impact on energy efficiency relative to the substance it is replacing for each end-use. Attach and describe the results of any energy efficiency testing or modeling performed. Laboratory testing of equipment should evaluate the

proposed substitute vs. the substance(s) being replaced. Values should be given in kWh/day or a similar measure. Also address refrigerant/oil solubility. Computer models should account for compressor efficiency, refrigerant transport properties, and mass flow rates for given tubing geometry, capillary tube/suction line heat transfer, and liquid and vapor specific heats.

- **Compressor Oil** - Provide information on the chemical class of refrigerant oil you anticipate will be used (e.g., polyalkylene glycol, polyolester, mineral oil) and information on the refrigerant/oil solubility.

Foam Blowing

- **Energy Efficiency - (a-b)** Provide the alternative's impact on energy efficiency relative to the substance(s) it is replacing for each end-use. Attach and describe the results of any energy efficiency testing or modeling performed. Laboratory testing of equipment should evaluate the proposed substitute vs. the substance(s) being replaced. Values should be given in kWh/day or a similar measure.

Cleaning Solvents

- **Compatibility** – Provide information on the compatibility of the solvent with metals and plastics with regards to its use as a cleaning solvent (e.g., is the solvent corrosive to some materials).

Fire Suppression

- **Weight and volume equivalence replacement ration:** To respond to Section A, question 1(c), use the following formula for determining weight and volume equivalence:

  Weight and volume equivalents are calculated using a single, fuel-specific design concentration (heptane); therefore, they do not represent the exact weight or volume of the agent needed to protect any specific space against any specific hazard. The information used to calculate the equivalents is provided from agent manufacturers and NFPA 2001, "Standard for Clean Agent Fire Extinguishing Systems." Equivalents are included in SNAP rulemakings for general comparison and informational purposes only.

  EPA understands that fire suppression agents must be evaluated in the context of the fire extinguishing system equipment with which they are used. Design concentration, and weight and volume equivalents are only meaningful when evaluated in specific system hardware configurations. This is especially important when comparing storage volume where storage container fill density varies with the equipment used. Agent fire suppression performance will vary with the system used and the detailed design of the system. Therefore, fire suppression agent manufacturers do not generally recommend design concentrations as these are also a function of the system hardware in which they are used. Hence, these data are provided for general guidance only and do not reflect a recommendation for system design or a basis for rigorous quantitative comparison.

  (1) Weight and volume equivalent data should be presented relative to Halon 1301 at 120 per cent of cup burner as well as at 5 per cent, a typical use concentration;

  (2) Weight and volume equivalents should be based on agent concentrations at standard temperature and pressure;

(3) Weight and volume equivalents should be done at both the manufacturer's recommended design concentration and at 120 per cent of the cup burner value where the values are not the same;

(4) Volume equivalents will be based on agent volume only (exclusive of container volume, fill density, etc.) at 70 degrees Fahrenheit and the storage pressure specified by the manufacturer since this varies widely and the required agent mass determined in item (5) below; and

(5) The required agent weight equivalents should be determined by the following equation:

$W = V/S(C/100-C)$

where C = design concentration (% volume)

V = one cubic foot

S = agent specific vapor volume at 70 degrees F (ft^3/lb).

(6) Appropriate references to the technical literature on which the data are based should be provided.

(d) Indicate the type (i.e., occupied or unoccupied) and purpose (e.g., engine room, machinery space, cargo room) of space in which the extinguisher will be used.

Section B: Physical and Chemical Properties

- **Physical and Chemical Properties** - Include data on the physical or chemical properties of the alternative that are relevant to evaluating the proposed substitute in a specific sector. The properties included in each section are illustrative and are not an exhaustive list of potential data.

Refrigeration and Air Conditioning

- **ASHRAE Designation** – Please identify whether the proposed substitute has been submitted to and/or published by the ASHRAE Standing Standard Project Committee 34 (SSPC 34). If it has been published, specify the ASHRAE designation and classification.

Foam Blowing

- **Manufacture and Degradation Products** – Provide a study on the catalyst used in the manufacture of the foam blowing agent and the degradation products under different external conditions (e.g., temperature) during use to assess potential hazards of breakdown/degradation products of foam during use.

Fire Suppression

- **Degradation Products** – Provide information on the degradation products of the alternative following discharge in a fire situation. Explain the conditions used in determining these products (e.g., flame temperature, time required to extinguish the fire, amount of O_2 present, combustible material).

Section C: Flammability (Required for Refrigeration and Air Conditioning, Foam Blowing, Cleaning Solvent, Aerosols, Sterilant, and Adhesives, Coatings, and Inks)

- **Flammability-Related Physical and Chemical Properties** - Provide information on the physical and chemical properties relevant to evaluating the flammability of the proposed substitute.

  Flammability Assessments and Test Data – For flammable substitutes, please include as an attachment the results of ASTM E681 Flammability Limits in Air. The numerical values for the upper and lower flammability limits are requested in Part III. For flammable refrigerants, please provide information on the maximum pressure of combustion, the maximum rate of pressure increase during combustion, and the minimum ignition energy. If you have conducted any analyses on flammability, please provide them.

  For refrigeration and air conditioning, if an alternative is flammable (this applies to both blends and neat chemicals), you must analyze the risk of fire resulting from the use of the substitute in each proposed end-use/application through a risk assessment. For refrigeration and air conditioning, a Fault Tree Analysis (FTA) or Failure Mode and Effects Analysis (FMEA) is also required. An FTA should include, but not be limited to, a description of typical scenarios in which the substitute is used, potential leak scenarios, sources of ignition, and quantified probabilities of ignition. It should also assess the likelihood of injury within each scenario. An FMEA should describe identified failures that could result in a spark, flame, explosion, or other fire risk and mitigation measure for each failure mode. Significant differences exist both in the design and in the ambient conditions for various end-uses. Thus, risk assessments are extremely sensitive to end-use. Low risk in one end-use does not, in general, imply low risk in another end-use.

  For refrigerant blends that contain one or more flammable components, provide information on fractionation during leakage, including flammability test results on the worst-case formulation and the worst-case fractionation formulation for the blend.

- **Flammability Concerns and Mitigation** - Provide all test data regarding flammability of the substitute, including the procedures used for determining flammability and any other information on flammability concerns. If a substitute is flammable under the conditions expected in the proposed end-use/application, describe any abatement techniques being used to minimize the risks associated with use of a flammable substance (e.g., equipment design modifications or alternate labeling).

  For flammable foam blowing agents used in spray foam, provide a training program that address flammability concerns specific to the substitute. For foam blowing agent blends that contain one or more flammable components, provide information on the range of composition that would render the blend nonflammable (for example, using at least 5% of the nonflammable component in the blend is expected to make the blend nonflammable).

Section C: Fire Suppression Agent Toxicity and Hazard Information (Required for Fire Suppression Only)

- **Inhalation Toxicity Studies** – Provide an inhalation toxicity study if workers are exposed to the chemicals during manufacture or long-term exposure levels have not been determined by

Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Heath (NIOSH), American Conference of Industrial Hygienists (ACGIH), or American Industrial Hygiene Association (AIHA).

- **Genotoxicity Studies** - Provide genotoxicity studies (e.g., Ames assays, forward mutation assays, cytogenetic assays) to determine the potential for the agent to induce DNA damage.

- **In-kind Halon Alternatives (Halocarbons)** - Provide the a cardiac sensitization study and acute, sub-acute, and subchronic toxicity inhalation studies with rats for halocarbon steaming agents or flooding agents used in occupied spaces.

- **Not-in-kind Halon Alternatives (Powdered Aerosols or Foam)** – For foam streaming agents, provide an acute toxicity inhalation study and an ocular irritation study (Draize test). For powdered aerosol flooding agents proposed for use in occupied spaces, provide a static acute toxicity inhalation study with rats at the design application density. For any powdered aerosol fire suppression agent used in occupied spaces, provide a dermal irritation study.

- **Powdered Aerosol Flooding Agents Used in Occupied Spaces – (a-g)** The use of powdered aerosol flooding agents in occupied spaces requires special considerations of the physical properties and toxicity of the agent and visibility in the protected space. Identify the likelihood that the fire extinguisher will accidentally discharge (reported as the number of accidental discharges in 1 million); the number of extinguishing devices (i.e., generators) installed in a room and the location of these devices within the space; the discharge rate (g/s) of the fire extinguishing device; the length of time it takes for the particles to become distributed throughout the space and the particle size distribution over time; the settling rate of the particles; the mass median aerodynamic diameter (MMAD) (µm) and concentration (mg/m^3) of the effluent released from the nozzle; the composition of effluent (amounts of other gases generated) by weight percent; and the maximum egress time for personnel from the space and several approaches to facilitate safe egress (e.g., training, installation guidelines).

Section D: Exposure

Provide the information requested within the Information Notice form related to potential exposure scenarios. This section requires information on typical and maximum potential exposure scenarios during manufacturing, use and disposal. If the substitute and equipment using the substitute are manufactured outside of the United States, information on exposure during manufacturing is not required. However, if the information is readily available, please submit it.

Examples of the type of information required to be submitted are provided within the form.

- **Exposure Media and Release Information:** Provide the requested information.

- **Potential Exposure Activities:** Identify the activities during manufacture, use, servicing and disposal during which the potential for exposure is highest. Provide information on typical and maximum potential exposure concentrations during these activities.

- **Training Materials:** Provide information on training materials related to manufacture, installation and servicing, and disposal. If the proposed substitute is flammable, describe how these guidelines differ from training for non-flammable substances.

Refrigeration and Air Conditioning

- **Information on Recovery Practices:** Section 608 of the Clean Air Act prohibits the intentional release (venting) of ozone-depleting refrigerants and their substitutes while maintaining, servicing, repairing, or disposing of air conditioning or refrigeration equipment. Please provide information on how the substitute will be recovered.

Foam Blowing

- **Maximum Annual Emissions Rate:** For each end-use, provide maximum annual emission rates for blowing agent leaks from foam application during the foam's lifetime (i.e., after manufacturing and before disposal) as a percentage of the original total amount of blowing agent used to produce the foam. Please also specify the anticipated number of years for which the blowing agent would be leaking from the foam (i.e., the emissive lifetime). For reference, the following are annual emission rates that EPA uses as defaults.

    - Polyurethane (PU) and Polyisocyanurate Rigid Boardstock: 1%
    - PU Rigid Appliance Foam: 0.25%
    - Rigid PU Spray Foam: 1.5%
    - Commercial Refrigeration Foam: 0.25%
    - PU Rigid Slabstock: 0.75%
    - PU Integral Skin Foam: 2.5%
    - PU Rigid: Sandwich Panels: Continuous and Discontinuous: 0.5%
    - XPS: Sheet Foam: 2%
    - XPS Boardstock Foam: 0.8%
    - Polyolefin Foam: 2.5%
    - Phenolic Foam: 0.875%

Section I: Additional Information for Submission of Requirements for Blends of Foam Blowing Agents (Foam Blowing Only)

For the following end-uses, a submission is required for blends of blowing agents, including blends with blowing agents that are already listed as acceptable:

- Polyolefin
- Polystyrene: Extruded Boardstock and Billet
- Rigid Polyurethane and Polyisocyanurate Laminated Boardstock
- Rigid Polyurethane: Spray Foam*
- Phenolic Insulation Board and Bunstock

  *For spray foam, if any components of the blend are flammable, then an additional submission is required for the blend.

For the following end-uses, it is permissible to blend blowing agents that are already listed as acceptable without an additional submission for the blend:

- Rigid Polyurethane: Appliance

- Rigid Polyurethane: Commercial Refrigeration
- Rigid Polyurethane: Sandwich Panels
- Rigid Polyurethane: Spray Foam*
- Rigid Polyurethane: Slabstock and Other
- Flexible Polyurethane
- Integral Skin Polyurethane
- Polystyrene: Extruded Sheet
  *For spray foam, if all components of the blend are acceptable and non-flammable, then it is permissible to blend those blowing agents without an additional submission for the blend.

Part XII: Additional Information

Provide any additional information that may assist EPA's review. Submitters are not required to include information in this section.

Part XIII - Attachments

Clearly identify all attachments being provided in support of the submission.

Mark (X) in the CBI box next to any attachment that you claim as confidential. The public version of the submission form must include the attachment name/citation at a minimum. All claims of confidentiality must be substantiated in Part I.

Part XIV- Certification

The individual identified in Part I of the form as the person submitting the Information Notice must sign the certification in Part XIV of the form. This official is responsible for the truth and accuracy of each statement in the certification. If an agent assists you in preparing the submission, the agent must also sign the certification.

A printed copy of the certification page, with original signature, must be submitted with electronic or paper submissions. If the submission is not signed, EPA will consider the submission incomplete and will not review the substitute.

DowDuPont Comments to NYS DEC March 14, 2019

The Dow Chemical Company

March 14, 2019

Commissioner Basil Seggos
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12207
Via email climatechange@dec.ny.gov

RE: HFC SNAP Stakeholder Comments from DowDuPont

Dear Commissioner Seggos,

On behalf of DowDuPont Performance Building Solutions (PBS) we would like to express support for minor modifications as noted below to the New York State Department of Environmental Conservation's (NYS DEC) pre-proposal outline of a draft regulation to adopt the 2015 and 2016 US EPA Significant New Alternatives Policy (SNAP) rules concerning the use of high global warming potential (high-GWP) hydrofluorocarbons (HFCs).

We understand the Office of Climate Change's intent to regulate HFCs in order to reduce GHG emissions, and we are aligned in this objective. We highly encourage the DEC to take a more nuanced approach to protect building insulation foams as they are energy efficient products critical to meeting state and local GHG reduction targets. We provide additional information on our position including context and environmental impact of building foam insulation.

We ask that New York include an exception for XPS Boardstock and 2K-LP SPF foams that was included in the adopted California legislation SB-1013 last year and more recently amended in the draft Washington State legislation HB-1112. The Washington State exception, developed across industry, government and non-governmental organizations, was inadvertently overlooked in a letter recently submitted to you in

which AHRI, Honeywell, NRDC and Chemours were signatories. Therefore, we write this letter to provide clarity on this issue.

The correction we suggest to the letter submitted on January 29, 2019 is:

End use	Substitutes Prohibition	Effective Date
Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof** ; Formacel TI, Formacel B, and Formacel Z-6	1-Jan-21
Rigid PU low-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof**; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TI	1-Jan-21

*** If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of 750 or less for foam blowing of polystyrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the Significant New Alternatives Policy Program under Section 7671(k) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the department shall expeditiously **initiate a rulemaking** to conform the requirements established under this section with that federal action.*

The allowance of HFC-blends for these products reflects the changes set out in California Senate Bill 1013 & Washington State House Bill 1112. DowDuPont agrees with others in industry, government, and non-government organizations that this regulatory change is productive and that it clearly states narrow changes that are necessary for reasons outlined below.

We believe that overly aggressive HFC phase-out timing as NYS DEC is signaling in building insulation foams, with the very limited basket of alternative options currently approved for foam use, fails to meet the flexibility needs of the market, and jeopardizes these niche energy efficiency products.

The changes we outline above will allow federally approved HFC-blends in XPS and 2K-LP SPF to ensure highest positive impact towards New York GHG emissions reduction goals and lowest negative impact on energy efficiency building products, so that we can continue to support our aligned objectives of GHG emissions reduction, while we continue to work towards innovating future solutions.

Additional detailed product, environmental, and other lifecycle information is provided in the attached Appendix.

Thank you for your thoughtful consideration to enable more flexibility and promote reasonable regulation while accomplishing your state's GHG reduction goals.

Sincerely,

Lisa Massaro
Advocacy & Product Stewardship Manager
DowDuPont Specialty Products Division, DuPont Performance Building Solutions (PBS)

CC: Suzanne Hagell & Jared Snyder at NYS DEC – Office of Climate Change

APPENDIX

HFCs are a limited but critical ingredient required in the manufacturing process of foam building insulation products, which include DowDuPont's extruded polystyrene STYROFOAM™ brand boardstock insulation (XPS) and two component low pressure spray polyurethane foam (2K-LP SPF) FROTH-PAK™ Insulation and Sealant.

Over the last year, we have worked closely with the California Air Resources Board and Washington State legislature to educate them on the impact of their proposed regulations and legislation, and on the unique technical challenges of the transition from HFCs in the building insulation foam industry. As was the case in California and Washington, this particular regulation under contemplation in New York offers very few substitute options to the XPS and 2K-LP SPF foam industry, which will require independent action by state agencies like NYS DEC to promulgate future technology approvals and changes to conversion timelines.

Ongoing Federal SNAP approvals

The existing Federal program is a highly detailed, well-defined application process that should continue to be used. Evaluation of alternative blowing agents would be extremely labor intensive for New York, and could lead to complicated patchwork regulation and subsequent American inefficiency. Therefore, New York State should avoid creating their own individual list.

Referencing the Code of Federal Regulations (CFR) at a point in time would result in the exclusion of new non-flammable HFC blend options from being used in New York State insulation foams even though those alternatives would offer superior performance, safety, and non-flammability. It is critical that the industry have multiple, non-flammable, low Global Warming Potential (GWP) solutions to ensure that product safety and energy efficiency is not compromised.

DEC draft regulation limits flexibility and locks in a very limited basket of energy efficient foam technology options that currently help GHG emissions reduction in NY: As written, DEC regulation would incorporate specific sections of the Code of Federal Regulations (CFR) as of January 3, 2017 into the New York statutes, thereby banning the use of class I and class II replacement substances which are currently undergoing the extensive and ongoing SNAP blowing agent application process. New non-flammable HFC blends previously delisted by SNAP ("and blends thereof") are being considered by the EPA for niche foam applications, where special technological considerations have been discovered. Non-flammable options, a key requirement for building foams, do not exist in the CFR as of January 3, 2017 as has been acknowledged by the SNAP regulators. These active applications are being processed by the EPA and are expected to be approved in the near future, resulting in new, lower GWP alternatives that can be used in the market.

As noted by the EPA, the SNAP list is not static: "EPA's Significant New Alternatives Policy (SNAP) program, which implements section 612, does not provide a static list of alternatives but instead evolves the list as the EPA makes decisions informed by our overall understanding of the environmental and human health impacts as well as our current knowledge about available substitutes. In the more than twenty years since the initial SNAP rule was promulgated, EPA has modified the SNAP lists many times, most often by expanding the list of acceptable substitutes, but in some cases by prohibiting the use of substitutes previously listed as acceptable."[1]

As recent as October 4, 2018, the EPA SNAP program published Determination 34 in the CFR which added additional substitutes for use in several sectors. This includes new non-flammable HFC-HFO blends with GWPs of 750 or less for sectors excluding foam blowing. As previously expressed, some of our technical concerns could be alleviated by utilizing non-flammable blends. However, under the SNAP application process there has always been a disconnection between the compound manufacturer who files for approval and the vast number of end-users who aren't aware of new

[1] https://www.epa.gov/snap/final-rule-protection-stratospheric-ozone-change-listing-status-certain-substitutes-under & https://www.epa.gov/snap/fact-sheet-final-rule-21-protection-stratospheric-ozone-significant-new-alternatives-policy

materials until they publish in the CFR. The same non-flammable solution should have been extended to foams and has since been requested. Thus we point to the complexity and arbitrary decision making that a SNAP-point-in-time HFC phasedown approach generates at the state level, since it does not capture new non-flammable solutions that are EPA approved in the future. **We urge that these HFC-blend compounds should be available in NY for our foam blowing insulation end uses if EPA approved.**

It is important to recognize that we intimately understand foam technologies and are responsible for the performance and safety of the products during manufacture and in the markets we serve. **Due to the complexities of our foam technologies, we require more flexibility than offered in SNAP 20 & 21 to solve conversion issues.** Furthermore, these formulations are complex and substitutes are becoming increasingly more difficult to invent. As UN TEAP notes, there are no longer 'drop in solutions' for insulation products:

> *"Although it is assumed that initial screening of alternatives will determine their suitability for the applications previously served by ODS, it is not always the case. The recent experience with the stability of unsaturated gaseous HFCs/HCFCs in certain low-pressure PU formulations in the United States of America, serves as a timely reminder that* ***alternatives are unlikely to be absolute 'drop-in' replacements and, even with reformulation, are not guaranteed to meet the requirements of the application. In addition to the specific capabilities of an alternative, it is increasingly the case that the range of applications served by a single alternative is reducing.*** *This is partly because of the undeniable versatility of earlier technology options (e.g. CFCs), but the trend also reflects the fact that technological developments over the past 20 years have made the users of alternatives more discerning.* ***There are now many more solutions available to choose from, but a need to apply greater scrutiny in decision-making to ensure continuing competitiveness in an increasingly globalised market."*** [2]

[2] UNEP "Report of the Technology and Economic Assessment Panel" May 2014 Volume 4 Decision XXV/5 Task Force Report. Page 19 & 23.

DowDuPont History with US EPA SNAP Program

DowDuPont has had a long-term constructive working relationship with the EPA that preceded the U.S. EPA's Significant New Alternatives Policy (SNAP) program adoption of Rule 20 and Rule 21 in 2015 and 2016 and the subsequent D.C. Circuit's decision to vacate SNAP Rule 20. DowDuPont continues to work with EPA staff to evaluate ongoing technical, environmental and economic challenges to safely replace HFCs in foam technologies, ensuring that alternatives are commercially available, have an improved environmental profile, and do not compromise performance, non-flammability and cost-effectiveness of various foam insulations (XPS and 2K-LP SPF).

It is not appropriate to only reference this federal rule at a specific point in time when the U.S. federal Clean Air Act is intended to continue to change over time. The SNAP program continues to publish new rules which must be recognized by individual states to ensure innovative technologies can go to market across the country.

Putting building foam HFCs into perspective in NY

DowDuPont Building Insulation foams have a miniscule HFC contribution:

DowDuPont is a major producer of thermal insulation and air sealing products and technologies that are used extensively in the residential and commercial construction markets, in applications such as roof and wall insulation as well as insulated garage and entry doors. These products improve building energy efficiency, and they are necessary to meet New York's energy efficiency and GHG emission reduction goals. Today DowDuPont foam insulation products include extruded polystyrene boardstock foam insulation (XPS), and two component low pressure spray polyurethane foam (2K-LP SPF) insulation and sealants. These products, as described throughout this letter, would be negatively impacted under the current draft.

Small market size: HFCs are a necessary insulating ingredient in these niche foam insulation products. However, the amount of blowing agents (HFCs) required in the manufacturing process is limited. In fact, the GHG contribution for the two foam technologies (XPS boardstock and 2K-LP SPF) we are concerned with only contribute to a

small portion of a total foam contribution of New York's potential GHG emission. The percentage of foam represented in industry includes the largest markets in appliance PU insulation foam, high pressure SPF, and alternative XPS uses, not just the two niche products under discussion here.

Putting foam insulation impact into perspective: according to the NY 2015 inventory report, the state's total GHG emissions are 218.14MMT, of which all ODS substitutes (HFC) are 10.4MMT or 4.8%. Given that HVAC and other industries are the highest users of HFC (making up approx. 90% of market), then **XPS and 2K-LP SPF insulation foams must comprise significantly less than 10.4MMT.** Based on North American HFC consumption data from IHS Chemical, the foams contribution would be less than 1.7MMT, or less than 1% of New York State's total GHG emissions.[3]

The DEC draft regulation would result in significant cost increases and performance reductions of GHG reducing insulation foams, negatively impacting NY's buildings and their residents:

Given New York's goal of being a leader in environmental policy, it seems counterproductive that the state would pass regulation that would ban HFC in our foam products used in NY. Limiting blends containing HFCs will result in higher cost for a significant number of essential energy efficiency insulation and air sealing products, while an outright ban would have even more extreme unintended consequences. Prohibiting building insulation foams that are some of the most cost effective and best performing building energy efficiency products would not only be costly for a variety of construction industry stakeholders, but could also delay successful implementation of NY's energy and climate goals and alignment with green building standards.

[3] New York State Greenhouse Gas Inventory: 1990–2015, NYSERDA, State of New York, revised September 2018. http://www.dec.ny.gov/docs/administration_pdf/nyserdaghg2015.pdf And *Fluorcarbons*, Chemical Economics Handbook, IHS Chemical, www.ihs.com/chemical A. Jebens, T. Kälin, Y. Yamaguchi, Y. Zhang, Feb 2014.

Foam Technology Positive Contribution towards NY's Environmental Goals

As stated previously, not only are foam HFCs a small fraction of GHG emissions in NYS, insulation foams have a large net positive contribution to GHG emissions reduction. With no change to today's XPS product, use of HFC technology lowers New York's GHG emissions, helping the state achieve its goals of 40% reduction in greenhouse gas emissions and 23% reduction in building energy consumption by 2030, and other energy efficient buildings goals. We believe that overly aggressive SNAP timing, with a limited basket of options currently approved for foam use, fails to meet the flexibility needs for NY to regulate effectively, and puts the use of these GHG reducing foams in jeopardy.

Energy Efficiency: In light of New York's energy and environmental goals to decrease building energy consumption and GHG emissions, including *RetrofitNY* and *BuildSmart NY*, high performing insulation must not be ignored. According to a McKinsey report on energy efficiency, insulation is a key lever for improving efficiency.[4] Heating accounts for 80% of buildings' sector energy consumption, demonstrating that energy efficiency could provide significant energy savings globally and within New York.[5] Furthermore, it is reported in the recent C-40 & McKinsey report titled *Focused Acceleration: A strategic approach to climate action in cities to 2030* that "optimizing energy efficiency in buildings could yield 3X the reduction potential from current trends in meeting their Paris Agreement targets."[6] Several other independent reports point to similar findings citing that the use of high performing building insulation and air sealing products can

[4] Energy Efficiency: A Compelling Global Resource. McKinsey Sustainability & Resource Productivity. McKinsey & Company, 2010. Page 21. Last viewed on June 6, 2018. Downloadable online at https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/Sustainability/PDFs/A_Compelling_Global_Resource.ashx

[5] Energy Efficiency: A Compelling Global Resource. McKinsey Sustainability & Resource Productivity. Page 23.

[6] Focused Acceleration: A strategic Approach to Climate Action in Cities to 2030. Joint Report by McKinsey Center for Business & Environment & C40. November 2017. Last viewed on June 6, 2018. Downloadable online at https://www.mckinsey.com/business-functions/sustainability-and-resource-productivity/our-insights/a-strategic-approach-to-climate-action-in-cities-focused-acceleration

help to reliably meet energy demand and supports regional and international environmental goals.[7] [8] [9]

Therefore, given the high thermal values of our building insulation products, the use of XPS boardstock and 2K-LP SPF will be a key component in meeting New York's energy goals and should not be negatively impacted by regulatory misalignment with New York's overarching environmental goals.

Lifecycle view: The environmental impact of insulation must be considered from cradle to grave rather than focusing solely on the manufacturing process. This lifecycle view demonstrates how insulation products help New York move towards its energy goals, as high performing insulation reduces a building's total energy consumption and total GHG emissions, and hence has a large net positive contribution to GHG emissions reduction.

- Based on published Life Cycle information, current XPS boardstock insulation produced using HFCs will prevent at least 28 times more GHG emissions relative to its own carbon footprint over its 50 years lifespan.[10] Therefore, with no regulated change to today's XPS product, our XPS boardstock foam significantly lowers New York's GHG emissions, helping the state move towards its 40% reduction target.
- As stated in a 2009 McKinsey-ICCA joint report, 2K-LP building insulation and sealants save energy and reduce GHG emissions both in the near and long term. The CO2eq emissions avoided over the estimated lifetime of foam insulation can be expected to be orders of magnitude greater than the CO2eq emitted during production and use.[11]

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[7] "Insulation" Webpage, Energy Saver, Office of Energy Efficiency & Renewable Energy, Department of Energy. Last viewed on June 6, 2018. https://www.energy.gov/energysaver/weatherize/insulation

[8] Life Cycle Greenhouse Gas Emissions Reduction From Rigid Thermal Insulation Use in Buildings M.H. Mazor, J.D. Mutton, D.A.M. Russell, G.A. Keoleian, J. Ind. Ecology, 15, 2, pp 284–299, April 2011.

[9] Building green with energy-efficient materials: Insulation. United States Green Building Council. Sep. 7, 2016. Last viewed on June 6, 2018. https://www.usgbc.org/articles/building-green-energyefficient-materials-insulation

[10] Life Cycle Greenhouse Gas Emissions Reduction From Rigid Thermal Insulation Use in Buildings. M.H. Mazor, April 2011.

[11] International Council of Chemical Associations, "Innovations for Greenhouse Gas Reductions: A Life-Cycle Quantification of Carbon Abatement Solutions Enabled by the Chemical Industry," 30-31 (July, 2009) (A study by McKinsey demonstrating that the greatest greenhouse gas emissions savings among more than 15 technologies resulted from insulation). http://www.icca-chem.org/ICCADocs/ICCA_A4_LR.pdf.

- According to the 2017 joint report published by C40 and McKinsey, new buildings with better insulation and older buildings with improved insulation "reduce building heating and cooling demand by about 40%". This also enables the installment of fewer and smaller HVAC systems that "could also significantly reduce the emission of HFCs from cooling systems." [12]

Extruded Polystyrene Insulation Boards (XPS)

With the exception of CO2, all current blowing agent options for XPS boardstock are flammable under certain processing conditions, including HFO 1234ze.[13] [14] The referenced flammability research work from Japan confirms the potential flammable behavior of HFO 1234ze. The industries' conversion cost concerns are captured in the UNEP Economic Assessment panel. [14]

In fact, within the previous Europe enterprise, we only had CO2 options for low or non-thermal performance markets and 134a for high performance insulating markets. In response to the high cost of the European Union's market of alternatives offered, we were forced leave the market in 2018.

Therefore, the current SNAP alternatives list circa 2017 without modification will make us unable to meet current market needs. Additional non-flammable options should be added that will contribute to higher probability of success for our industry and help to avoid a situation similar to that in Europe. Improving the current basket of blowing agent options offered for XPS technology will prevent total disruption of our product commercialization.

[12] Focused Acceleration: A strategic Approach to Climate Action in Cities to 2030. Joint Report by McKinsey Center for Business & Environment & C40. November 2017.
[13] Kondo, Shigeo, Kenji Takizawa, and Kazuaki Tokuhashi. "Effects of temperature and humidity on the flammability limits of several 2L refrigerants." Journal of Fluorine Chemistry 144 (2012): 130-136.
[14] Yang, Zhao, Xi Wu, and Tian Tian. "Flammability of Trans-1, 3, 3, 3-tetrafluoroprop-1-ene and its binary blends." Energy 91 (2015): 386-392.
[14] UNEP "Report of the Technology and Economic Assessment Panel" "6.2.3 Economic Impact, 3.2.4 PU Spray Foam, 3.2.7 Polystyrene (XPS)" Volume 4 (May 2014)

While some have stated that volatile and flammable options like HFC-152a, butane, or CO2 can be used:

- These in no way represent the required high thermal values in the building insulation boardstock industry,
- A shift from 134a blends to CO2 and 152a singular options lowers insulating performance by 12-15%, suggesting a performance reduction of in-service XPS boardstock over its lifetime that would far outweigh the production footprint of GHG savings that New York expects to capture in the manufacturing or use phase in buildings,
- It is critical not to confuse XPS boardstock blowing agent options with XPS billet options as they have vastly different end uses, product requirements, and manufacturing processes. Building insulation must also meet constantly changing building codes in energy efficiency, fire safety, and other properties.

Various types of XPS foams use different chemistries to meet diverse customer requirements:

Billet		Residential and Commercial Building Insulation Boardstock			
Pipe billet & flotation	Floral & Craft	Walls	Roofing	Cold Storage / Transport	Geotech / Infrastructure
Flammable BA can be used	Flammable BA can be used	Must be Non-flammable BA	Must be Non-flammable BA	Must be Non-flammable BA	Must be Non-flammable BA

We urge NYS DEC to consider accessing active proposals within the approval process currently underway with the U.S. EPA Office of Air & Radiation that would both include nonflammable blends and operate at a GWP level of 750 or less. This approval would allow HFO/HFC nonflammable blends to be considered and is similar to the requests submitted on behalf of other companies in other markets. **If approved, this solution would serve to lower the XPS boardstock emission GWP profile by 50%.**

Two Component Low Pressure (2K-LP) Spray Polyurethane Foam (SPF)

The two component low pressure (2K-LP) spray polyurethane foam (SPF) technologies are reliant upon the use of blowing agents, to provide multiple functions such as insulation capability, fill depth and most importantly serve as the system propellant for foaming. These retail products must have a shelf life that retains safe and reliable use up to 12 months after manufacture. Unlike High Pressure SPF, the most widely used building insulation, which only requires a liquid (lq) blowing agent, 2K-LP SPF requires both liquid (lq) and gaseous (g) BAs.

We agree with the UN TEAP and do not consider any flammable blowing agents to be safe, viable alternatives, as these retail products are used by consumers and mixed on a jobsite.[15] We have also shown that liquid blowing agents alone would not result in the system operating as designed without blended blowing agent alternatives that include a gaseous BA. Research efforts completed in collaboration with blowing agent suppliers and individually by DowDuPont have so far failed to find a viable solution for a pure HFO substitute to todays' blend of 134a(g) / 245fa(lq) across the 2K-LP product spectrum.

Therefore, we would like to modify and expand upon general comments that this industry has developed and is optimizing technical solutions. To date, the catalyst industry has conducted extensive Research & Development (R&D) trials confirming severe shelf life and mechanical failures due to current singular HFO options. We have also seen similarly bleak results in our extensive R&D efforts. Furthermore, we are also actively researching toxicology profiles of the options, as we now have additional concerns about safety of these replacements for the retail consumer. Research on complementary technologies is ongoing, and we have yet to find alternatives to demonstrate the ability to overcome these challenges.

15 UNEP "REPORT OF THE TECHNOLOGY AND ECONOMIC ASSESSMENT PANEL" MAY 2014 VOLUME 4 DECISION XXV/5 TASK FORCE REPORT. Page 19 & 23.

This grouping of 2K-LP products has many chemical nuances, and includes diverse products such as spray applied adhesive, spray applied insulating foam sealants, high density sealant, pour-in-place foam, and spray applied insulation.

While some have mentioned that a 2K-LP pour foam system is commercially available, this pour foam system:

- In no way represents the entirety of the 2K-LP insulation industry,
- Does not represent the most technically challenging product of the 2K-LP group, and
- Does not represent the most widely used 2K-LP building insulation that is critical to New York's energy goals.

Various types of 2K-LP PU foams use different chemistries to meet diverse customer requirements:

Two-component low-pressure, 2K-LP, Polyurethane foams				
Spray adhesive	**Insulating foam sealant spray**	**High density sealant**	**Pour-in-place foam**	**Insulation spray**
No U.S. Commercially available products with HFO	**No U.S. Commercially available products with HFO**	**No U.S. Commercially available products with HFO**	Product announcement made	**No U.S. Commercially available products with HFO**

Based on the options given in the DEC draft regulation, no singular approved option utilizing the SNAP basket of approved for-use list (circa 2017) would be permitted for our industry, nor do the supply alternatives listed currently work based on our research efforts. This effectively positions the 2K-LP industry at a significant disadvantage and possibly at a full stop to sale in New York until a solution can be found.

We believe there are innovations under consideration for this market that would provide ideal solutions to these challenges when they become commercially available. Therefore, we propose that NYS DEC allow nonflammable, HFO/HFC blends to be approved since they are deemed to be the safest, most stable, and nonflammable

options for the foam industry. **This addition would still reduce the blowing agent GWP by approximately half.**

Conclusion & Next Steps

As noted in the analysis above, our two niche foam insulation technologies have an immediate need for broader non-flammable blowing agent options. As the subject matter experts of these foam insulation technologies, we can state without a doubt that technical issues are not resolved given the basket of options currently being forced upon us. Our proposed blend solutions ensure that product safety is a first priority, while reducing GWP by as much as 50% compared to currently used technologies.

In light of our conclusions, XPS boardstock and 2K-LP SPF foams that have not converted under Rules 20 & 21 should be exempted from the ongoing regulatory process. If NYS DEC insists on keeping these foams in the program under the SNAP Rules, we request that **these foam technologies must be permitted to use future EPA SNAP approved blowing agent alternatives that include HFC-blends and have GWPs equal to or less than 750.** New York should support our foam insulation industry in innovation and optimization so that New Yorkers can continue to use cost effective insulation technologies that help them drive towards Net Zero homes and buildings.

As the contribution to GHG emission reductions is so large and the GHG emissions due to HFCs in foam insulation is so small, it is impossible to justify New York effectively pushing our insulation industry out of the state. We believe this is a grave oversight that will result in the State of New York expending lots of resources with little results towards goals while effectively repressing the commercialization of products that contribute to energy efficiency, as the SNAP Rule 20 and 21 timing and basket of blowing agent options simply does not work for insulation foams.

Our technical viability concerns have been previously shared with Staff at both the Office of Air & Radiation, SNAP, at U.S. EPA and at Environment & Climate Change Canada (ECCC). Both agencies have acknowledged our technical concerns and have partnered with us to identify potential pathways to consider both alternative timing

strategies and approval of additional HFC-blend blowing agent (BA) technologies. **DowDuPont would be willing to share further confidential technical details with NYS DEC if there are questions and common interest in finding a workable solution.**

Coalition Letter to Vermont Authorities from NRDC, Chemours, Honeywell & AHRI

May 7, 2019

The Honorable Julie Moore
Secretary
Vermont Agency of Natural Resources
1 National Life Drive
Davis 2
Montpelier, VT 05620

Dear Secretary Moore,

In response to Senate passage of Senate Bill 30, and as the state considers specific measures to reduce the use of hydrofluorocarbons (HFCs), the undersigned organizations and companies write to encourage Vermont, whether by regulation or legislation, to prohibit uses of HFCs consistently with similar regulations in California and Washington and in progress in New York, Connecticut, and Maryland. The undersigned entities represent manufacturers, chemical producers and environmental organizations, and we support a harmonized regulatory framework for reducing hydrofluorocarbon use in states such as Vermont.

With minor modifications as shown in the attached appendix, the transitions adopted in California and under consideration elsewhere are based on the 2015 and 2016 US EPA Significant New Alternatives Policy (SNAP) rules concerning the use of high global warming potential (high-GWP) HFCs.[1] Prohibitions on HFCs consistent with California and other states will give industry the certainty it needs as it continues to invest, plan, and act to transition away from high-GWP HFCs. We look forward to working with Vermont as it considers these measures.

In March 2018, the California Air Resources Board adopted an agency regulation for new refrigeration equipment that implemented the majority of the HFC prohibitions in SNAP Rules 20 and 21. By 2030, this regulation will help realize 80 percent of California's anticipated emissions reductions under SNAP Rules 20 and 21.[2] Subsequently, Governor Brown signed California's Senate Bill 1013, passed by supermajority, which will phase out several other major HFC uses in EPA's SNAP Rules 20 and 21 following similar transition dates but with minor modifications. In April 2019, the Washington state legislature enacted a bill adopting SNAP-like regulations, including most of those in the attached appendix.

This coalition supports the above transition approach. There should be no new labeling, reporting, or recordkeeping requirements for products mandated by law or relevant mandatory

[1] 80 Fed. Reg. 42,870 (July 20, 2015) ("SNAP Rule 20"); 81 Fed. Reg. 86778-86895 (Dec. 1, 2016) ("SNAP Rule 21")
[2] Public Hearing to Consider the Proposed Regulation for Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses, Staff Report: Initial Statement of Reasons pg. 35, California Air Resources Board, January 30, 2018.

safety standards to label the propellant, refrigerant and/or foam blowing agent used in the manufacture of the product.

We support efforts in Vermont to adopt prohibitions on HFCs in ALL end-uses and dates as established by US SNAP Rules 20 and 21, with the minor modifications shown in the attached appendix.

The states should adopt prohibitions consistent with those defined in Appendix B, Appendix U and Appendix V of Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, with the modifications in the attached appendix, which would adjust the transition dates for household refrigerators and freezers to be consistent with dates adopted by California and Washington. Vermont should prohibit sale, lease, rent or entry into market of any equipment or product leading to the use of any prohibited substance based on the date of manufacture.

Regulations that provide certainty for the transition to low-GWP HFC alternatives will help benefit the environment. This framework will help ensure a reasonable manufacturing transition for the undersigned companies and help consumers realize the benefits of next generation products.

Sincerely,

Association of Home Appliance Manufacturers (AHAM)
The Natural Resources Defense Council (NRDC)
Chemours Company
Honeywell International Inc.

APPENDIX: Prohibitions on the Use of Certain HFCs

	End use	Substitutes	Prohibition Effective Date
	Aerosol Products		
	Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC-134a.	1-Jan-20
	Foam Blowing Agents		
Rigid polyurethane applications and spray foam	Rigid Polyurethane (PU) and Polyisocyanurate Laminated Boardstock	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof.	1-Jan-20
	Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, and Formacel Z-6.	1-Jan-20
	Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, and Formacel Z-6.	1-Jan-20
	Rigid Polyurethane Commercial Refrigeration and Sandwich Panels	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, and Formacel Z-6.	1-Jan-20
	Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, and Formacel Z-6.	1-Jan-20
	Rigid PU high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TIa.	1-Jan-20
	Rigid PU one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TIc.	1-Jan-20
	Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	1-Jan-20
	Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, and Formacel Z-6.	1-Jan-20
	Flexible PU foam	Methylene chloride	1-Jan-20
Polystyrene application	Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, and Formacel Z-6.	1-Jan-20
	Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, and Formacel Z-6.*	1-Jan-21
	Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6.	1-Jan-20
	Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof.	1-Jan-20
	Rigid PU low-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC-365mfc with at least four percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; and Formacel TI.*	1-Jan-21
	Food Refrigeration Equipment		
Stand-alone unit	Supermarket Systems (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	1-Jan-20
	Supermarket Systems (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	1-Jan-20
	Remote Condensing Units (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	1-Jan-20
	Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	1-Jan-20
	Stand-Alone Units (Retrofit)	R-404A, R-507A	1-Jan-20
	Stand-Alone Medium-Temperature Units with a compressor capacity below 2,200 Btu/hour and not containing a flooded evaporator (New)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	1-Jan-20
	Stand-Alone Medium-Temperature Units with a compressor capacity equal to or greater than 2,200 Btu/hour and Stand-Alone Medium-Temperature Units containing a flooded evaporator (New)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	1-Jan-20
	Stand-Alone Low-Temperature Units (New)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	1-Jan-20
	Vending Machines (New)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E	1-Jan-20
	Vending Machines (Retrofit)	R-404A, R-507A	1-Jan-20
	Retail food refrigeration – refrigerated food processing and dispensing equipment (new)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation	1-Jan-21
	Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, and THR-03	1/1/2021 for consumer compact refrigerators, refrigerator-freezers and freezers 1/1/2022 for consumer refrigerators, refrigerator-freezers, freezers and miscellaneous refrigeration products** 1/1/2023 for consumer built-in refrigerators, refrigerator-freezers and freezers **
	Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R-428A, R-434A, R-438A, R-507A, and RS-44 (2003 composition)	1-Jan-23
	Stationary Air Conditioning Equipment		
	Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC-245fa, R-125/134a/600a (28.1/70/1.9), R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A, R-424A, R-434A, R-438A, R-507A, RS-44 (2003 composition), and THR-03	1-Jan-24
	Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R-125/134a/600a (28.1/70/1.9), R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 composition), SP34E, and THR-03	1-Jan-24
	Motor Vehicle Air Conditioning Equipment		
	New Light-Duty Systems	HFC-134a, R-406A, R-414A (HCFC Blend Xi, GHG-X4), R-414B (HCFC Blend Omicron), HCFC Blend Delta (Free Zone), Freeze 12, GHG-X5, HCFC Blend Lambda (GHG-HP), R-416A (FRIGC FR-12, HCFC Blend Beta), SP34E, R-426A (RS-24, new formulation)	Model Year 2021

*If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of 750 or less for foam blowing of polystyrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the Significant New Alternatives Policy Program under Section 7671(k) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the department/agency shall expeditiously initiate a rulemaking to conform the requirements established under this section with that federal action.

** The effective dates for these products reflect the dates set out in CA Senate Bill 1013.

What is STYROFOAM™ XPS?

YES!

VS.

NO!

A quick google search on STYROFOAM...

Styrofoam products to be banned come ...
looptt.com

Polystyrene/Styrofoam Guide | Georgia ...
georgiarecycles.org

...but they are *NOT!!*

I have seen similar waste bins in a plastic conference...

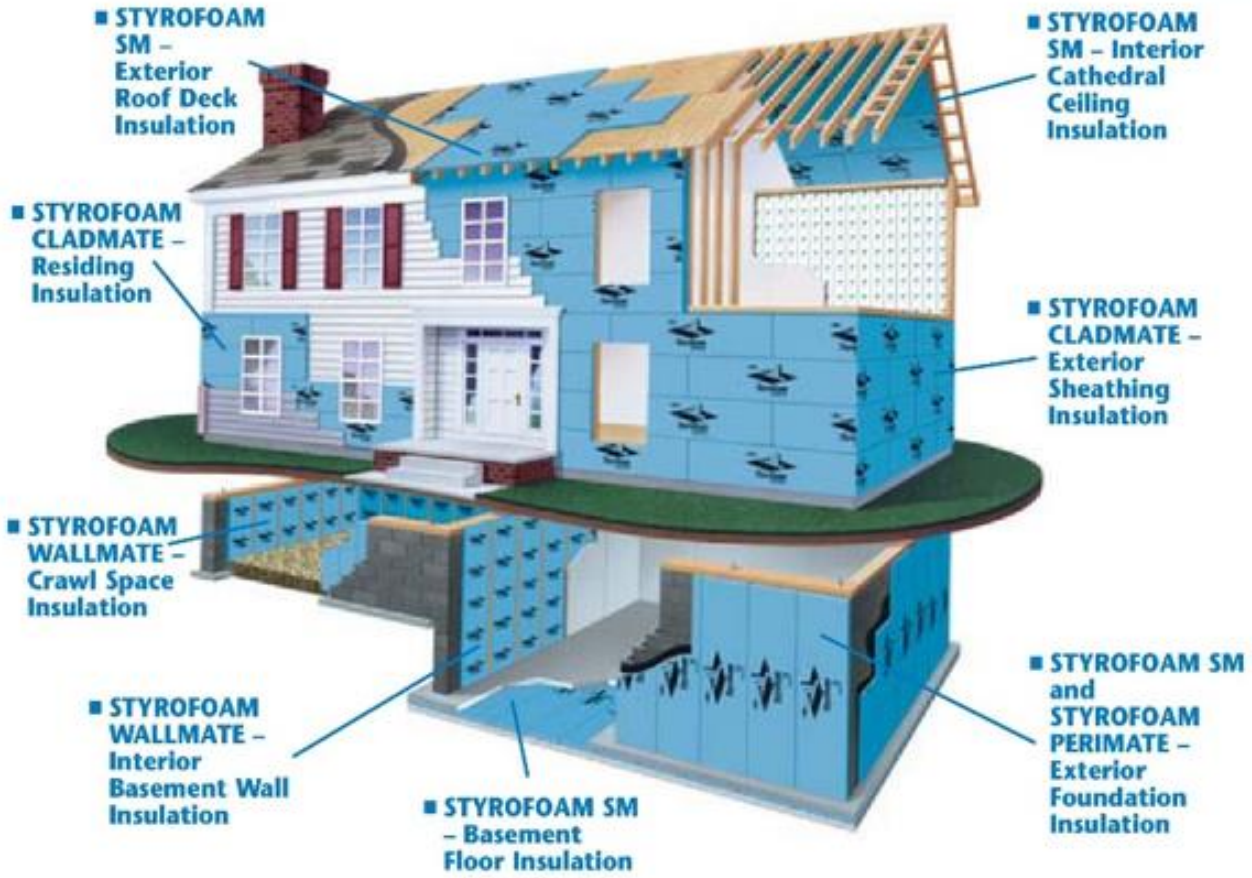
STYROFOAM™

- Brand extruded polystyrene (XPS) products are rigid foam boards for building insulation applications

- STYROFOAM™ Brand XPS Insulation products reduce heating and cooling contributing to the reduction of greenhouse gases and improve thermal comfort for building inhabitants.

End uses: Residential applications

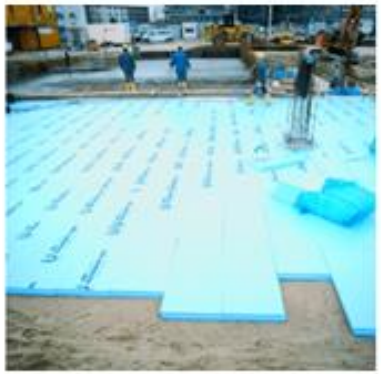
Building the foundation for comfortable, durable, energy-efficient homes



End uses: Commercial buildings

Raising the standards for designing and constructing comfortable, long-lasting buildings including increased moisture resistance, long term thermal performance, reduction of thermal bridging, and increased roof longevity.

- Walls
- Roofing
- Foundations



End uses: Infrastructure

- **Helping protect against cold and frost damage in Canadian infrastructure including:**
  - Airport runways, taxiways & embankments
  - Highways, tunnels and highway embankments
  - Railroads: under track, grade crossing, switching rail yards and other facilities
  - Transmission line towers
  - Utility Lines
  - Culverts
  - Retaining Walls
  - Foundations

https://www.dupont.com/building/infrastructure.html

End uses: Transportation

- Refrigerated trucks, containers, motorhomes & caravans:
When it comes to improving a vehicle's efficiency, there's more to consider than just fuel consumption. STYROFOAM™ Brand XPS serves the transportation industry with high-performance insulations that enhance energy efficiency, durability and comfort for a range of vehicle types.

End uses: Cold Storage

In a low-temperature building, designing for thermal and moisture control is crucial to long-term performance and energy savings.

Dow rigid-foam insulations are designed for low-temperature applications and increases the energy efficiency of cold storage buildings.

Governor Approved Washington State Legislation: HB-1112

CERTIFICATION OF ENROLLMENT

ENGROSSED SECOND SUBSTITUTE HOUSE BILL 1112

Chapter 284, Laws of 2019

66th Legislature
2019 Regular Session

HYDROFLUOROCARBON GREENHOUSE GAS EMISSIONS

EFFECTIVE DATE: July 28, 2019

Passed by the House March 1, 2019
Yeas 55 Nays 39

FRANK CHOPP
Speaker of the House of Representatives

Passed by the Senate April 22, 2019
Yeas 30 Nays 19

CYRUS HABIB
President of the Senate

Approved May 7, 2019 3:23 PM

JAY INSLEE
Governor of the State of Washington

CERTIFICATE

I, Bernard Dean, Chief Clerk of the House of Representatives of the State of Washington, do hereby certify that the attached is **ENGROSSED SECOND SUBSTITUTE HOUSE BILL 1112** as passed by the House of Representatives and the Senate on the dates hereon set forth.

BERNARD DEAN
Chief Clerk

FILED

May 13, 2019

Secretary of State
State of Washington

ENGROSSED SECOND SUBSTITUTE HOUSE BILL 1112

Passed Legislature - 2019 Regular Session

State of Washington 66th Legislature 2019 Regular Session

By House Appropriations (originally sponsored by Representatives Fitzgibbon, Kloba, Peterson, Tharinger, Jinkins, Macri, Goodman, Bergquist, Doglio, Robinson, Pollet, Stanford, and Frame)

READ FIRST TIME 02/22/19.

AN ACT Relating to reducing greenhouse gas emissions from hydrofluorocarbons; amending RCW 70.235.010, 70.94.430, 70.94.431, and 70.94.015; adding a new section to chapter 70.235 RCW; adding a new section to chapter 19.27 RCW; adding a new section to chapter 39.26 RCW; creating new sections; and prescribing penalties.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec. 1.** (1) The legislature finds that hydrofluorocarbons are air pollutants that pose significant threats to our environment and that safer alternatives for the most damaging hydrofluorocarbons are readily available and cost-effective.

(2) Hydrofluorocarbons came into widespread commercial use as United States environmental protection agency-approved replacements for ozone-depleting substances that were being phased out under an international agreement. However, under a 2017 federal appeals court ruling, while the environmental protection agency had been given the power to originally designate hydrofluorocarbons as suitable replacements for the ozone-depleting substances, the environmental protection agency did not have clear authority to require the replacement of hydrofluorocarbons once the replacement of the original ozone-depleting substances had already occurred.

(3) Because the impacts of climate change will not wait until congress acts to clarify the scope of the environmental protection agency's authority, it falls to the states to provide leadership on addressing hydrofluorocarbons. Doing so will not only help the climate, but will help American businesses retain their positions as global leaders in air conditioning and refrigerant technologies. Although hydrofluorocarbons currently represent a small proportion of the state's greenhouse gas emissions, emissions of hydrofluorocarbons have been rapidly increasing in the United States and worldwide, and they are thousands of times more potent than carbon dioxide. However, hydrofluorocarbons are also a segment of the state's emissions that will be comparatively easy to reduce and eliminate without widespread implications for the way that power is produced, heavy industries operate, or people transport themselves. Substituting or reducing the use of hydrofluorocarbons with the highest global warming potential will provide a significant boost to the state's efforts to reduce its greenhouse gas emissions to the limits established in RCW 70.235.020.

(4) Therefore, it is the intent of the legislature to transition to the use of less damaging hydrofluorocarbons or suitable substitutes in various applications in Washington, in a manner similar to the regulations that were adopted by the environmental protection agency, and that have been subsequently adopted or will be adopted in several other states around the country.

Sec. 2. RCW 70.235.010 and 2010 c 146 s 1 are each amended to read as follows:

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "Carbon dioxide equivalents" means a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

(2) "Climate advisory team" means the stakeholder group formed in response to executive order 07-02.

(3) "Climate impacts group" means the University of Washington's climate impacts group.

(4) "Department" means the department of ecology.

(5) "Director" means the director of the department.

(6) "Greenhouse gas" and "greenhouse gases" includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons,

perfluorocarbons, sulfur hexafluoride, and any other gas or gases designated by the department by rule.

(7) "Person" means an individual, partnership, franchise holder, association, corporation, a state, a city, a county, or any subdivision or instrumentality of the state.

(8) "Program" means the department's climate change program.

(9) "Western climate initiative" means the collaboration of states, Canadian provinces, Mexican states, and tribes to design a multisector market-based mechanism as directed under the western regional climate action initiative signed by the governor on February 22, 2007.

(10) "Class I substance" and "class II substance" means those substances listed in 42 U.S.C. Sec. 7671a, as it read on November 15, 1990, or those substances listed in Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

(11) "Hydrofluorocarbons" means a class of greenhouse gases that are saturated organic compounds containing hydrogen, fluorine, and carbon.

(12) "Manufacturer" includes any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.

(13) "Residential consumer refrigeration products" has the same meaning as defined in section 430.2 of Subpart A of 10 C.F.R. Part 430 (2017).

(14) "Retrofit" has the same meaning as defined in section 152 of Subpart F of 40 C.F.R. Part 82, as that section existed as of January 3, 2017.

(15) "Substitute" means a chemical, product substitute, or alternative manufacturing process, whether existing or new, that is used to perform a function previously performed by a class I substance or class II substance and any substitute subsequently adopted to perform that function, including, but not limited to, hydrofluorocarbons. "Substitute" does not include 2-BTP or any compound as applied to its use in aerospace fire extinguishing systems.

NEW SECTION. **Sec. 3.** A new section is added to chapter 70.235 RCW to read as follows:

(1) A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Washington if that equipment or product consists of, uses, or will use a substitute, as set forth in appendix U and V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, for the applications or end uses restricted by appendix U or V of the federal regulation, as those read on January 3, 2017, consistent with the deadlines established in subsection (2) of this section. Except where existing equipment is retrofit, nothing in this subsection requires a person that acquired a restricted product or equipment prior to the effective date of the restrictions in subsection (2) of this section to cease use of that product or equipment. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in subsection (2) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date.

(2) The restrictions under subsection (1) of this section for the following products and equipment identified in appendix U and V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, take effect beginning:

(a) January 1, 2020, for:

(i) Propellants;

(ii) Rigid polyurethane applications and spray foam, flexible polyurethane, integral skin polyurethane, flexible polyurethane foam, polystyrene extruded sheet, polyolefin, phenolic insulation board, and bunstock;

(iii) Supermarket systems, remote condensing units, stand-alone units, and vending machines;

(b) January 1, 2021, for:

(i) Refrigerated food processing and dispensing equipment;

(ii) Compact residential consumer refrigeration products;

(iii) Polystyrene extruded boardstock and billet, and rigid polyurethane low-pressure two component spray foam;

(c) January 1, 2022, for residential consumer refrigeration products other than compact and built-in residential consumer refrigeration products;

(d) January 1, 2023, for cold storage warehouses;

(e) January 1, 2023, for built-in residential consumer refrigeration products;

(f) January 1, 2024, for centrifugal chillers and positive displacement chillers; and

(g) On either January 1, 2020, or the effective date of the restrictions identified in appendix U and V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, whichever comes later, for all other applications and end uses for substitutes not covered by the categories listed in (a) through (f) of this subsection.

(3) The department may by rule:

(a) Modify the effective date of a prohibition established in subsection (2) of this section if the department determines that the rule reduces the overall risk to human health or the environment and reflects the earliest date that a substitute is currently or potentially available;

(b) Prohibit the use of a substitute if the department determines that the prohibition reduces the overall risk to human health or the environment and that a lower risk substitute is currently or potentially available;

(c)(i) Adopt a list of approved substitutes, use conditions, or use limits, if any; and

(ii) Add or remove substitutes, use conditions, or use limits to or from the list of approved substitutes if the department determines those substitutes reduce the overall risk to human health and the environment; and

(d) Designate acceptable uses of hydrofluorocarbons for medical uses that are exempt from the requirements of subsection (2) of this section.

(4)(a) Within twelve months of another state's enactment or adoption of restrictions on substitutes applicable to new light duty vehicles, the department may adopt restrictions applicable to the sale, lease, rental, or other introduction into commerce by a manufacturer of new light duty vehicles consistent with the restrictions identified in appendix B, Subpart G of 40 C.F.R. Part 82, as it read on January 3, 2017. The department may not adopt restrictions that take effect prior to the effective date of restrictions adopted or enacted in at least one other state.

(b) If the United States environmental protection agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of seven hundred fifty or less for foam blowing of polystyrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the significant new

alternatives policy program under section 7671(k) of the federal clean air act (42 U.S.C. Sec. 7401 et seq.), the department must expeditiously propose a rule consistent with RCW 34.05.320 to conform the requirements established under this section with that federal action.

(5) A manufacturer must disclose the substitutes used in its products or equipment. That disclosure must take the form of:

(a) A label on the equipment or product. The label must meet requirements designated by the department by rule. To the extent feasible, the department must recognize existing labeling that provides sufficient disclosure of the use of substitutes in the product or equipment.

(i) The department must consider labels required by state building codes and other safety standards in its rule making; and

(ii) The department may not require labeling of aircraft and aircraft components subject to certification requirements of the federal aviation administration.

(b) Submitting information about the use of substitutes to the department, upon request.

(i) By December 31, 2019, all manufacturers must notify the department of the status of each product class utilizing hydrofluorocarbons or other substitutes restricted under subsection (1) of this section that the manufacturer sells, offers for sale, leases, installs, or rents in Washington state. This status notification must identify the substitutes used by products or equipment in each product or equipment class in a manner determined by rule by the department.

(ii) Within one hundred twenty days after the date of a restriction put in place under this section, any manufacturer affected by the restriction must provide an updated status notification. This notification must indicate whether the manufacturer has ceased the use of hydrofluorocarbons or substitutes restricted under this section within each product class and, if not, what hydrofluorocarbons or other restricted substitutes remain in use.

(iii) After the effective date of a restriction put in place under this section, any manufacturer must provide an updated status notification when the manufacturer introduces a new or modified product or piece of equipment that uses hydrofluorocarbons or changes the type of hydrofluorocarbons utilized within a product class

affected by a restriction. Such a notification must occur within one hundred twenty days of the introduction into commerce in Washington of the product or equipment triggering this notification requirement.

(6) The department may adopt rules to administer, implement, and enforce this section. If the department elects to adopt rules, the department must seek, where feasible and appropriate, to adopt rules, including rules under subsection (4) of this section, that are the same or consistent with the regulatory standards, exemptions, reporting obligations, disclosure requirements, and other compliance requirements of other states or the federal government that have adopted restrictions on the use of hydrofluorocarbons and other substitutes. Prior to the adoption or update of a rule under this section, the department must identify the sources of information it relied upon, including peer-reviewed science.

(7) For the purposes of implementing the restrictions specified in appendix U of Subpart G of 40 C.F.R. Part 82, as it read on January 3, 2017, consistent with this section, the department must interpret the term "aircraft maintenance" to mean activities to support the production, fabrication, manufacture, rework, inspection, maintenance, overhaul, or repair of commercial, civil, or military aircraft, aircraft parts, aerospace vehicles, or aerospace components.

(8) The authority granted by this section to the department for restricting the use of substitutes is supplementary to the department's authority to control air pollution pursuant to chapter 70.94 RCW. Nothing in this section limits the authority of the department under chapter 70.94 RCW.

(9) Except where existing equipment is retrofit, the restrictions of this section do not apply to or limit any use of commercial refrigeration equipment that was installed or in use prior to the effective date of the restrictions established in this section.

Sec. 4. RCW 70.94.430 and 2011 c 96 s 49 are each amended to read as follows:

(1) Any person who knowingly violates any of the provisions of chapter 70.94 or 70.120 RCW, section 3 of this act, or any ordinance, resolution, or regulation in force pursuant thereto is guilty of a gross misdemeanor and upon conviction thereof shall be punished by a fine of not more than ten thousand dollars, or by imprisonment in the

county jail for up to three hundred sixty-four days, or by both for each separate violation.

(2) Any person who negligently releases into the ambient air any substance listed by the department of ecology as a hazardous air pollutant, other than in compliance with the terms of an applicable permit or emission limit, and who at the time negligently places another person in imminent danger of death or substantial bodily harm is guilty of a gross misdemeanor and shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for up to three hundred sixty-four days, or both.

(3) Any person who knowingly releases into the ambient air any substance listed by the department of ecology as a hazardous air pollutant, other than in compliance with the terms of an applicable permit or emission limit, and who knows at the time that he or she thereby places another person in imminent danger of death or substantial bodily harm, is guilty of a class C felony and shall, upon conviction, be punished by a fine of not less than fifty thousand dollars, or by imprisonment for not more than five years, or both.

(4) Any person who knowingly fails to disclose a potential conflict of interest under RCW 70.94.100 is guilty of a gross misdemeanor, and upon conviction thereof shall be punished by a fine of not more than five thousand dollars.

Sec. 5. RCW 70.94.431 and 2013 c 51 s 6 are each amended to read as follows:

(1)(a) Except as provided in RCW 43.05.060 through 43.05.080 and 43.05.150, and in addition to or as an alternate to any other penalty provided by law, any person who violates any of the provisions of this chapter, chapter 70.120 ((~~RCW, chapter~~)) or 70.310 RCW, section 3 of this act, or any of the rules in force under such chapters or section may incur a civil penalty in an amount not to exceed ten thousand dollars per day for each violation. Each such violation shall be a separate and distinct offense, and in case of a continuing violation, each day's continuance shall be a separate and distinct violation.

(b) Any person who fails to take action as specified by an order issued pursuant to this chapter shall be liable for a civil penalty of not more than ten thousand dollars for each day of continued noncompliance.

(2)(a) Penalties incurred but not paid shall accrue interest, beginning on the ninety-first day following the date that the penalty becomes due and payable, at the highest rate allowed by RCW 19.52.020 on the date that the penalty becomes due and payable. If violations or penalties are appealed, interest shall not begin to accrue until the thirty-first day following final resolution of the appeal.

(b) The maximum penalty amounts established in this section may be increased annually to account for inflation as determined by the state office of the economic and revenue forecast council.

(3) Each act of commission or omission which procures, aids or abets in the violation shall be considered a violation under the provisions of this section and subject to the same penalty. The penalties provided in this section shall be imposed pursuant to RCW 43.21B.300.

(4) All penalties recovered under this section by the department shall be paid into the state treasury and credited to the air pollution control account established in RCW 70.94.015 or, if recovered by the authority, shall be paid into the treasury of the authority and credited to its funds. If a prior penalty for the same violation has been paid to a local authority, the penalty imposed by the department under subsection (1) of this section shall be reduced by the amount of the payment.

(5) To secure the penalty incurred under this section, the state or the authority shall have a lien on any vessel used or operated in violation of this chapter which shall be enforced as provided in RCW 60.36.050.

(6) Public or private entities that are recipients or potential recipients of department grants, whether for air quality related activities or not, may have such grants rescinded or withheld by the department for failure to comply with provisions of this chapter.

(7) In addition to other penalties provided by this chapter, persons knowingly under-reporting emissions or other information used to set fees, or persons required to pay emission or permit fees who are more than ninety days late with such payments may be subject to a penalty equal to three times the amount of the original fee owed.

(8) ((~~By January 1, 1992,~~)) The department shall develop rules for excusing excess emissions from enforcement action if such excess emissions are unavoidable. The rules shall specify the criteria and procedures for the department and local air authorities to determine

whether a period of excess emissions is excusable in accordance with the state implementation plan.

Sec. 6. RCW 70.94.015 and 1998 c 321 s 33 are each amended to read as follows:

(1) The air pollution control account is established in the state treasury. All receipts collected by or on behalf of the department from RCW 70.94.151(2), and receipts from nonpermit program sources under RCW 70.94.152(1) and 70.94.154(7), and all receipts from RCW ((~~70.94.650, 70.94.660, 82.44.020(2), and 82.50.405~~)) 70.94.6528 and 70.94.6534 shall be deposited into the account. Moneys in the account may be spent only after appropriation. Expenditures from the account may be used only to develop and implement the provisions of chapters 70.94 and 70.120 RCW and section 3 of this act.

(2) The amounts collected and allocated in accordance with this section shall be expended upon appropriation except as otherwise provided in this section and in accordance with the following limitations:

Portions of moneys received by the department of ecology from the air pollution control account shall be distributed by the department to local authorities based on:

(a) The level and extent of air quality problems within such authority's jurisdiction;

(b) The costs associated with implementing air pollution regulatory programs by such authority; and

(c) The amount of funding available to such authority from other sources, whether state, federal, or local, that could be used to implement such programs.

(3) The air operating permit account is created in the custody of the state treasurer. All receipts collected by or on behalf of the department from permit program sources under RCW 70.94.152(1), 70.94.161, 70.94.162, and 70.94.154(7) shall be deposited into the account. Expenditures from the account may be used only for the activities described in RCW 70.94.152(1), 70.94.161, 70.94.162, and 70.94.154(7). Moneys in the account may be spent only after appropriation.

NEW SECTION. **Sec. 7.** A new section is added to chapter 19.27 RCW to read as follows:

The building code council shall adopt rules that permit the use of substitutes approved under section 3 of this act and that do not require the use of substitutes that are restricted under section 3 of this act.

NEW SECTION. **Sec. 8.** The department of ecology, in consultation with the department of commerce and the utilities and transportation commission, must complete a report addressing how to increase the use of refrigerants with a low global warming potential in mobile sources, utility equipment, and consumer appliances, and how to reduce other uses of hydrofluorocarbons in Washington. The report must be submitted to the legislature consistent with RCW 43.01.036 by December 1, 2020, and must include recommendations for how to fund, structure, and prioritize a state program that incentivizes or provides grants to support the elimination of legacy uses of hydrofluorocarbons regulated under section 3 of this act or uses of hydrofluorocarbons not covered by section 3 of this act.

NEW SECTION. **Sec. 9.** A new section is added to chapter 39.26 RCW to read as follows:

(1) The department shall establish purchasing and procurement policies that provide a preference for products that:

(a) Are not restricted under section 3 of this act;

(b) Do not contain hydrofluorocarbons or contain hydrofluorocarbons with a comparatively low global warming potential;

(c) Are not designed to function only in conjunction with hydrofluorocarbons characterized by a comparatively high global warming potential; and

(d) Were not manufactured using hydrofluorocarbons or were manufactured using hydrofluorocarbons with a low global warming potential.

(2) No agency may knowingly purchase products that are not accorded a preference in the purchasing and procurement policies established by the department pursuant to subsection (1) of this section, unless there is no cost-effective and technologically feasible option that is accorded a preference.

(3) Nothing in this section requires the department or any other state agency to breach an existing contract or dispose of stock that has been ordered or is in the possession of the department or other state agency as of the effective date of this section.

(4) By December 1, 2020, and each December 1st of even numbered years thereafter, the department must submit a status report to the appropriate committees of the house of representatives and senate regarding the implementation and compliance of the department and state agencies with this section.

NEW SECTION. **Sec. 10.** If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected.

--- **END** ---

Governor Approved California State Legislation: SB-1013

Senate Bill No. 1013

CHAPTER 375

An act to add Section 39734 to the Health and Safety Code, and to add Division 45 (commencing with Section 76000) to the Public Resources Code, relating to greenhouse gases.

[Approved by Governor September 13, 2018. Filed with Secretary of State September 13, 2018.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1013, Lara. Fluorinated refrigerants.

(1) Existing law prohibits the manufacture and sale of specified chlorofluorocarbons (CFCs) as aerosol propellants, limits the percentage of new motor vehicles equipped with air-conditioners that utilize CFC-based products, requires the State Air Resources Board to adopt regulations to provide for the enforcement of those provisions, and imposes a civil penalty on persons violating those provisions.

This bill would apply all prohibitions on the use of class I substances, as defined, class II substances, as defined, and substitutes, as defined, under the federal Clean Air Act, as it read on specified dates, except as specified. The bill would authorize the state board to include in a specified regulation the modification of the deadlines of those prohibitions, a prohibition on the use of any substitute, and the creation and update of a list of approved substitutes, use conditions, or use limits if the state board makes certain findings for each. The bill would allow a violation of these provisions to be enjoined and would subject persons who violate these provisions to specified penalties. The bill would require all civil penalty money collected by the state board to be deposited in the Air Pollution Control Fund rather than the General Fund. Because a violation of these requirements would also be a crime, this bill would impose a state-mandated local program.

This bill would establish the Fluorinated Gases Emission Reduction Incentive Program, to be administered by the state board, to promote the adoption of new refrigerant technologies to achieve short- and long-term climate benefits, energy efficiency, and other cobenefits, as specified. The bill would authorize moneys from the Greenhouse Gas Reduction Fund to be allocated for incentives offered as part of the program.

This bill would require the Public Utilities Commission to consider developing a strategy for including low-global-warming-potential refrigerants in equipment funded by the energy efficiency programs overseen by the Public Utilities Commission.

This bill would require the State Energy Resources Conservation and Development Commission to identify opportunities to assess the energy

efficiency performance for low-global-warming-potential alternatives to current fluorinated-gas-based appliances and equipment.

This bill would require the Department of Community Services and Development to consider integrating low global warming potential as part of its ongoing administration of energy efficiency programs for household appliances.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Section 39734 is added to the Health and Safety Code, to read:

39734. (a) The Legislature finds and declares that certain fluorinated gases are potent causes of global warming, and it is in the public interest that restrictions or prohibitions on the use of these gases be maintained and enhanced as appropriate in the state.

(b) For purposes of this section, the following definitions apply:

(1) "Class I substances" and "class II substances" mean those substances listed in 42 U.S.C. Sec. 7671a, as it read on November 15, 1990, or those substances listed in Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

(2) "Hydrofluorocarbons" mean fluorinated gases used primarily as refrigerants in refrigeration, air-conditioning equipment, foam expansion agents, aerosol propellants, solvents, and fire suppressants.

(3) "Residential consumer refrigeration products" has the same meaning as defined in Section 430.2 of Subpart A of 10 C.F.R. Part 430.

(4) "Substitute" means a chemical, product substitute, or alternative manufacturing process, whether existing or new, that is used to perform a function previously performed by a class I substance or class II substance and any substitute subsequently adopted to perform that function, including, but not limited to, hydrofluorocarbons.

(c) (1) All prohibitions on the use of class I substances and class II substances as set forth in 42 U.S.C. Secs. 7671a and 7671k, as those read on November 15, 1990, or any substitute as set forth in Appendix U and Appendix V of Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, shall apply, except as otherwise provided by in paragraph (3), state statute, or state regulation.

(2) If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend for foam blowing pursuant to the Significant New Alternatives Policy Program, adopted pursuant to Section 7671k of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the state board shall expeditiously initiate a rulemaking pursuant to this

section or other existing legal authority to conform its regulations with that federal action.

(3) (A) Prohibitions on residential consumer refrigeration products, except compact and built-in residential consumer refrigeration products, shall take effect January 1, 2022.

(B) Prohibitions on built-in residential consumer refrigeration products shall take effect on January 1, 2023.

(d) The state board may adopt a regulation that includes any of the following:

(1) The modification of the deadlines of a prohibition established pursuant to subdivision (c) if the state board determines that the modified deadline meets both of the following:

(A) Reduces the overall risk to human health or the environment.

(B) Reflects the earliest date that a substitute is currently or potentially available.

(2) The prohibition on the use of any substitute if the state board determines that the prohibition meets both of the following criteria:

(A) Reduces the overall risk to human health or the environment.

(B) A lower-risk substitute is currently or potentially available.

(3) The creation of a list of approved substitutes, use conditions, or use limits, if any, and the addition or removal of substitutes, use conditions, or use limits to or from the list of approved substitutes if the state board determines those substitutes reduce the overall risk to human health and the environment.

(e) A person shall not offer any equipment or product for sale, lease, rent, or otherwise cause any equipment or product to enter into commerce in California if that equipment or product uses or will use a substitute in a manner inconsistent with any of the following:

(1) Any prohibitions in subdivision (c).

(2) Any prohibitions, use conditions, or use limits in subdivision (d) or a state regulation.

(3) Any other applicable laws, including, but not limited to, the California Building Standards Code (Title 24 of the California Code of Regulations).

(f) (1) The state board may enforce this section. A violation of the requirements of this section may be enjoined pursuant to Section 41513 and is subject to the penalties set forth in Article 3 (commencing with Section 42400) of Chapter 4 of Part 4.

(2) Notwithstanding subdivisions (i) and (j) of Section 42410, the state board may impose an administrative penalty pursuant to Section 42410.

(3) Penalties collected pursuant to this section shall be deposited in the Air Pollution Control Fund.

(g) The provisions of this section are severable. If any provision of this section or its application is held invalid, that invalidity shall not affect other provisions or applications that can be given effect without the invalid provision or application.

SEC. 2. Division 45 (commencing with Section 76000) is added to the Public Resources Code, to read:

DIVISION 45. FLUORINATED REFRIGERANTS

76000. For purposes of this division, "GWP" means global warming potential.

76002. The Public Utilities Commission shall consider developing a strategy for including low-GWP refrigerants in equipment funded by the energy efficiency programs overseen by the Public Utilities Commission.

76004. The State Energy Resources Conservation and Development Commission shall identify opportunities to assess the energy efficiency performance for low-GWP alternatives for current fluorinated-gas-based appliances and equipment.

76006. The Department of Community Services and Development shall consider integrating low GWP as part of its ongoing administration of energy efficiency programs for household appliances, including, but not limited to, the Energy Efficiency Low-Income Weatherization Program.

76008. (a) (1) The Fluorinated Gases Emission Reduction Incentive Program is hereby established to be administered by the State Air Resources Board to promote the adoption of refrigerant technologies to achieve short- and long-term climate benefits, energy efficiency, and other cobenefits.

(2) Moneys for the program shall be available to the State Air Resources Board, upon appropriation by the Legislature, including, but not limited to, moneys from the Greenhouse Gas Reduction Fund, created pursuant to Section 16428.8 of the Government Code.

(b) The state board may contract with a third party to administer this section.

(c) Eligible applicants shall be users of systems of refrigerant technologies.

(d) When awarding incentives, the State Air Resources Board shall prioritize both of the following:

(1) Low-GWP alternatives that maximize emissions reductions and focus on key cooling sectors where technology is commercially available.

(2) The use of low-GWP alternatives in new technologies for which higher upfront costs, compared with hydrofluorocarbon systems, have been identified by the State Air Resources Board as a market impediment.

(e) The program shall include all of the following:

(1) Allow a retailer to apply for funding for multiple stores or units.

(2) Identify opportunities for outreach efforts to demonstrate and provide information about low-GWP alternatives in refrigeration and air-conditioning.

(3) Require the professional installation and maintenance of alternative refrigeration and air-conditioning equipment in order to maximize energy efficiency and minimize emissions.

(4) Identify opportunities to increase the recovery, reclamation, or destruction of existing high-GWP refrigerants.

(5) Identify opportunities to offer matching funds to local publicly owned electric and gas utilities that offer their own low-GWP incentive programs.

(6) Comply with federal and state laws regarding the disposal and capture of fluorinated gases.

(7) Determine the most environmentally beneficial outcome for the replaced equipment.

SEC. 3. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

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October 1, 2019

Via E-Mail

Ajo Rabemiarisoa
DNREC
Division of Air Quality

ajo.rabemiarisoa@delaware.gov

Re: Delaware Draft Regulations on the Use and Manufacture of HFCs

Ms. Rabemiarisoa:

On behalf of the Association of Home Appliance Manufacturers (AHAM), I would like to provide our comments based on Delaware's First Review Committee Meeting concerning the upcoming proposal to regulate the use and manufacturing of hydrofluorocarbons (HFCs).

AHAM represents manufacturers of major, portable and floor care home appliances, and suppliers to the industry. AHAM's membership includes over 150 companies throughout the world. In the U.S., AHAM members employ tens of thousands of people and produce more than 95% of the household appliances shipped for sale. The factory shipment value of these products is more than $30 billion annually. The home appliance industry, through its products and innovation, is essential to U.S. consumer lifestyle, health, safety and convenience. Through its technology, employees and productivity, the industry contributes significantly to U.S. jobs and economic security. Home appliances also are a success story in terms of energy efficiency and environmental protection. New appliances often represent the most effective choice a consumer can make to reduce home energy use and costs.

As the state considers specific measures to reduce the use of HFCs, AHAM appreciates Delaware's desire to maintain consistency with similar requirements in California. The dates in Delaware's current draft regulation are consistent with California's dates, and therefore, AHAM supports the existing timeframe.

AHAM opposes any additional disclosure and recordkeeping requirements for two reasons. First, the draft regulations for HFCs in household refrigeration appliances only apply to new product, and therefore, we do not have the issues surrounding retrofitting and repair that other industries might have. Recordkeeping requirements have no utility where the regulations apply only to new product, so household refrigeration appliances should be exempt from any recordkeeping requirements.

Second, AHAM is already required to disclose and label its household refrigeration appliances with the refrigerants they contain in order to comply with UL safety standards. Section 7 of UL 60335-2-24, the applicable standard for household refrigeration appliances, requires that appliances be marked with an identifier of the refrigerant (chemical name, formula, or refrigerant number), as well as the total mass of the refrigerant. Given that household appliances must comply with UL safety standards, the disclosure requirement in the draft regulation is redundant for household refrigeration appliances.

AHAM looks forward to its continued participation in Delaware's regulatory process, and I would be happy to discuss any of these comments at the October 8 committee meeting.

Best regards,

Sriram Gopal
Director, Technology & Environmental Policy

Please find below some informal comments in response to the Delaware draft regulation governing HFC use in products to be sold / used in the state. As the world's third largest manufacturer of commercial foodservice equipment – a significant portion of the commercial refrigeration equipment segment, we are glad to have the opportunity to provide comments and look forward to working together to help Delaware strengthen its draft regulation.

Please do not hesitate to contact me if there is anything more that we can provide.

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- Section 3.2 Disclosure Statement
    - ITW appreciates Delaware's intention to reduce HFC use and presence in products sold into the state. However, while ensuring consumer awareness and safeguarding users and servicers after a product is installed, we would suggest Delaware consider alternatives to the proposed disclosure provisions.

    - Ideally, as part of the US Climate Alliance, we would strongly encourage that the Alliance consider unifying disclosure requirements out of consideration for manufacturers' products that are made and distributed (1) nationwide and (2) at least for commercial foodservice refrigeration equipment (CRE), through third-party distribution channels, dealers and contractors rather than direct-to-consumer sales.

      Following a model instructive for this purpose, the US Department of Energy (DOE) requires various data for its lawful scope of covered products for minimum efficiency standards to be submitted through a central DOE database. We would suggest that Delaware and other Alliance states to consider employing a similar database or, alternatively, considering how the DOE's Compliance Certification Management System (CCMS) database may fulfill this requirement of manufacturers. To ensure manufacturers remain compliant with product data submission requirements, federal law further empowers DOE with enforcement authority for noncompliance, both through monitoring the CCMS database to ensure products have been properly and timely submitted there, the right to randomly test products out on the market to verify a product's CCMS-submitted information, and the right to employ monetary punishment in the event of noncompliance.

    - More specifically for CRE products, we further raise concerns about new, state-required disclosure statements proposed in Section 3.2.1.1 because they exceed requirements under the UL certification program. Under UL standards, CRE is required to be certified as meeting a range of requirements, including refrigeration content. To that end, CRE products all must carry a data plate directly on the product which provides various information such as model and serial numbers, and also refrigeration content and quantity. To the extent Delaware seeks to ensure that consumers have a way to know which refrigerant a product contains, and do so as closely tied to the product's installation and use locations, this data plate fulfills that need. Thus, we suggest that Section 3.2.1.1.1 specifically purposed for refrigerant disclosure and awareness is superfluous.

- Further, Section 3.2.1.1.2 is also unnecessary because of the nature of how foam functions for a CRE unit during a product's useful life. Specifically, CRE foam – installed for insulation purposes – is not serviceable nor replaceable during a product's useful life. So if products carry a data plate disclosure to denote the product's refrigerant content, then the manufacturer burden for disclosure is met, vitiating the purpose a foam disclosure statement. Coupled with the UL standard certification and federal database requirements outlined above, current industry mandates are enough to ensure compliant foam usage without imposing a further burden on manufacturers using a foam-distinct disclosure.

- The Agency has also explained the need for refrigerant and foam disclosure to purportedly keep service technicians informed of th proper refrigerant to use.
    - However, ITW would remind Delaware that, under federal EPA requirements, all refrigeration service technicians are required to be EPA trained, certified and licensed, which would include education and training on refrigerant requirements for CRE products.
    - In addition, there is a wide network and availability of such federally trained technical staff in the US, both as independent companies and, in the case of ITW, a wholly-owned business unit. For ITW, this business unit, Hobart Service, is solely dedicated to service propriety. In fact, under Section 608 of the federal Clean Air Act Amendments (1994), this technical training closely aligns with Hobart Service's internal training protocols and requirements. Moreover, commercial equipment is significantly more complex than is consumer refrigeration used and accessed by non-trained consumers, which is to say that CRE is not equipment that an untrained product owner could attempt to perform work on by themselves.
    - If the disclosure is there for proper refrigerant use by servicers, then there's no reason for a foam disclosure statement. Foam is not serviceable or replaceable.
- At bottom, we feel that this section's provisions are unnecessary for CRE and would actually compound costs and regulatory burden for manufacturers because of (1) ways that CRE products already fulfill the proposed requirements under federal law and uniform US standards certification, and (2) the nationwide and arms-length nature of CRE products' distribution that prevents manufacturers from foreknowledge of specific markets (states) in which their products will be installed.

- Section 4.0 Recordkeeping
    - For ITW, we would reiterate the arguments above regarding the draft regulation's Disclosure Statement provisions as applicable to argue that Section 4.0's recordkeeping requirements would be unnecessarily burdensome for CRE.

Thank you,

Kevin Washington

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October 4, 2019

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Re: AHRI Comments to Delaware Draft Regulation 1151 – Requirements for the Phase-out of Hydrofluorocarbons Working Development Review Committee Meeting, September 24, 2019

Dear Ms. Rabemiarisoa,

This letter is submitted in response to the Delaware Department of Natural Resources and Environmental Control (DNREC), Division of Air Quality Draft Regulation 1151 – Requirements for the Phase-out of Hydrofluorocarbons working development review committee meeting held on September 24, 2019.

AHRI represents over 315 air-conditioning, heating, and refrigeration equipment manufacturers. In North America, the annual output of the HVACR and water heating industry is worth more than $44 billion. In the United States, the industry supports 1.3 million jobs and $256 billion in economic activity annually.

AHRI has been working for more than a decade to support regulations to reduce the consumption and production of HFCs. Our members strongly supported the agreement to amend the Montreal Protocol on Substances that Deplete the Ozone Layer to phase down HFC production and consumption as a proven, predictable, and practical approach. We demonstrated that support in our work with state regulators, environmental non-governmental organizations (E-NGOs). Our industry has worked closely with local governments both foreign and domestic to prepare and successfully execute the safe and orderly transition to low-GWP refrigerants. We look forward to collaborating with the Delaware Department of Natural Resources and Environmental Control; we hope that our comments will be helpful and encourage you to contact us with any question, concerns or requests.

We are currently working together with our E-NGO partners and with the eight Climate Alliance states that have announced an intent to regulate HFCs in the United States. It is our goal to help states and provinces adopt and implement laws and regulations consistently across jurisdictions. We recognize that regulations must meet greenhouse gas reduction objectives while still providing critical benefits—preserving food and medicine and, in some cases, life-saving facility cooling. As a matter of general policy, AHRI would prefer a federal initiative to address low-GWP refrigerants to avoid a patchwork of regulations. We recognize Delaware's

efforts to address this important issue and appreciate the opportunity to comment on the regulation.

Our comments focus on recommendations designed to harmonize aspects of the regulation with existing regulations, to align with the intent of the original EPA SNAP rules, and to achieve a workable, enforceable framework to provide certainty, consistency and fairness for industry.

Definitions

The DNREC regulation includes relevant definitions which are largely consistent with the EPA's SNAP 20 & 21 regulations. AHRI's experience with these regulations suggests that ther terms "new equipment" "nominal compressor capacity" and "reclaim" have multiple interpretations. AHRI members raised concern with the proposed definition for "New Equipment" at the September 24th meeting, but we are still working to finalize exact language for "New Refrigeration Equipment" to resolve potential ambiguities. At this time, AHRI proposes adding the following:

> "Reclaim" means to reprocess recovered refrigerant to all of the specifications in appendix A of this subpart (based on AHRI Standard 700-2016 or the most recent subsequent version), Specifications for Refrigerants) that are applicable to that refrigerant and to verify that the refrigerant meets these specifications using the analytical methodology prescribed in that standard.

Industry is in the process of carefully reviewing the definitions section and we anticipate submitting additional comments on this section after the October 8th stakeholder meeting.

Formal Exemption Process

AHRI requests the inclusion of a process to allow for potentially necessary exceptions that may come to light in the future. A good model for this framework is Canada's "essential purpose" permit option included in the Ozone-depleting Substances and Halocarbons Alternatives Regulations (ODSHAR). Low-GWP alternatives and the products that use them are complex. Manufacturers are innovating and developing new products and technologies for a variety of vital applications like commercial refrigeration. As new uses and technologies come onto the market and as innovation continues, there may be a need to exempt certain products for certain applications. In the ODSHAR, the exception permit clause is intended to allow a person to import, manufacture, use, or sell a substance or product designed to contain a substance if "it will be used for an essential purpose" and a permit is specifically issued. Environment and Climate Change Canada (ECCC) defines "essential purpose" as a purpose requiring the use of a substance or a product containing or designed to contain a substance, when that use is necessary for the health and safety or the good functioning of society, encompassing its cultural and intellectual aspects, and when there are no technically or economically feasible alternatives to that use that are acceptable from the standpoint of the environment and of health.

The ODSHAR essential purpose exemption and definition clause can be reviewed at Part 5 – s.66 (1) and (2). The permitting process is still being finalized by ECCC. We encourage Delaware to work with ECCC directly to learn more about the "essential purpose" permitting avenue.[1]

Disclosures

At the September 24th meeting, many stakeholders expressed concern with the proposed requirement for a written disclosure statement. AHRI recommends including a provision in the regulation that expressly permits the use of internet disclosures in lieu of physical labels. Industry experience demonstrates that physical labels are not an effective means of communicating compliance with consumers or regulators because this kind of equipment is never on display. Rather, it is stored in a warehouse until after it contracted for, sold, and installed. Internet disclosures are more cost effective and practical means of communicating important compliance, installation, and consumer information about installed equipment such as commercial refrigeration. Importantly, the AHRI Directory offers an existing accessible database of readily available information on a vast array of regulated equipment. As discussed at the September 27th meeting, the AHRI Directory may be of use to regulators as states promulgate HFC rulemakings, particularly as a means of easily accessing information on millions of models on the market. Currently, centralized database provides contractors, regulators, and consumers with product information, including model-specific certificates and EnergyGuide labels.

We hope that the September 27th webinar was helpful to introduce DNREC staff to the AHRI Directory and showcase the capabilities that could be adapted to help manufactures comply with internet disclosures. AHRI staff is available to host additional meetings to review the Directory. The AHRI Directory website is, https://www.ahridirectory.org.

One additional concern about the disclosure requirement in the proposed draft regulations is its length and unique language. As the DNREC is aware, an important policy consideration in implementing state regulation is the additional burdens that state-by-state patchwork of regulations impost on a line of products that are marketed and sold nationally. A practical regulation would align as much as possible with other states' requirements to reduce added costs to Delaware consumers for Delaware-specific products. As such, we encourage the DNREC to adopt alternate, more generic language for the label:

> "This equipment may not be installed in states that have prohibited the use of high GWP refrigerants for specific end-uses"

It is imperative that states enacting SNAP Rules 20 and 21 permit for the use of a generic label in order to maintain market certainty and allow for distributors to easily sell products throughout the country.

[1] ECCC's Halocarbons Management Team at ec.gestionhalocarbures-halocarbonsmanagement.ec@canada.ca.

Recordkeeping

AHRI request that the DNREC reconsider the proposed recordkeeping requirements. Due to the complexities of state-by-state regulation and the distribution chain for commercial refrigeration and stationary AC equipment, the proposed requirements for recordkeeping are overly burdensome on manufacturers.

AHRI members operate within a global supply chain. The equipment is often not shipped to the direct end-user. Distribution centers and contractors play the central role in delivering the good to the end user. Most AHRI members do not keep the statements and records that this regulation will now require, such as the name and address of the purchaser or the date of sale because the manufacturer never executes a sale to the end-user. In most cases, the manufacturer sells to a local distributor, who sells the equipment to a contractor, who sells the equipment to the end user and then installs the equipment. Many of the products that are manufactured by our members do not reach Delaware through the initial sale because distributors operate in multi-state geographic regions, as to many contractors. Reporting is further complicated by the system-structure of the equipment. Frequently, a sale of part or some of a system includes components, and those components may not individually contain all refrigerant and charge information. AHRI encourages the department to reconsider recordkeeping requirements to reduce unnecessary burden that drives little benefit.

Also relevant is the competitive impact of sales disclosures. Sales records including customer lists, market shares, and product selections that manufacturers are important proprietary business data. For example, the U.S. Department of Justice discourages the disclosure of any market data or sales information that is not an aggregation of more than five market players. With sales-specific recordkeeping comes a risk of public disclosure that could result in anticompetitive impacts, contrary to the policies of the Department of Justice.

AHRI recommends Delaware remove all recordkeeping requirements.

Codes and Standards

In order for manufacturers to adopt some low-GWP alternative refrigerants, the safety standards and building codes must be updated for the use mildly flammable refrigerants. While we anticipate that this is a minor concern with the current proposal, it is important to note that some products' installation may be inhibited by existing code limitations. For example, there are no refrigerants listed pursuant to the EPA's Significant New Alternatives Program as acceptable alternatives for chillers designed to use high pressure "410A"-like refrigerants. The ASHRAE-listed alternatives are mildly flammable. The model building code to enable the use of mildly flammable refrigerants is not yet available. If ASHRAE Standard 15 and UL60335-2-40 are adopted into Delaware building codes, chillers manufacturers could comply with 2024 transition date. AHRI would like to suggest DNREC work with the county Divisions of Codes and Standards to adopt rules permitting the use of substitutes not prohibited by this regulation.

AHRI also suggests that Delaware convene a meeting of interested stakeholders including local fire service, state fire marshal, building code officials and others for an educational session regarding the safe transition to low GWP refrigerants.

Reclaim

To support the important goals of emissions reductions, AHRI strongly suggests that DNREC encourage the use of reclaimed refrigerants through its HFC regulations. Allowing the use of and creating demand for reclaimed refrigerant encourages the proper collection of refrigerant during maintenance and at the end-of-life of equipment. Any ban that does not exempt reclaimed product will leave stranded all existing equipment that relies on a prohibited refrigerant. We believe that Delaware's strategy should not only exempt reclaimed refrigerant but should start with a heavy emphasis on the value of refrigerant reclamation as a means to reduce emissions and we strongly recommend that DNREC not just exempt it from for servicing equipment installed prior to the SNAP prohibition dates, but that it take affirmative steps to promote reclamation by requiring the use of reclaimed refrigerant in state procurement processes. A strategy that promotes the recovery, reclamation and re-use of refrigerants directly achieves DNREC's goal of reducing HFC emissions by eliminating, or at least significantly reducing, the need to service existing systems with newly manufactured product.

Technician Training

Training and servicing requirements for technicians will be important considerations for future regulations. AHRI suggests that DNREC consider including a requirement that technicians have refresher training on some frequency as the transition to lower global warming potential refrigerants will require new uses of different American Society of Heating and Refrigeration Engineers (ASHRAE) safety classification of refrigerants than has been historically used.

Thank you for providing stakeholders the opportunity to give feedback between stakeholder meetings and for taking comments back to the Climate Alliance to ensure state-to-state harmonization of rules. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,

Laura Petrillo-Groh, PE
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October 4, 2019

Ajo Rabemiarisoa,
Environmental Engineer
DNREC - Division of Air Quality
(Submitted via email to ajo.rabemiarisoa@delaware.gov)

Comments to Delaware Draft Regulation 1151 – Requirements for the Phase-out of Hydrofluorocarbons Working Development Review Committee Meeting, September 24, 2019

Dear Ms. Rabemiarisoa,

The following comments from Daikin US Corporation (Daikin US) are in response to the Delaware Department of Natural Resources and Environmental Control, Division of Air Quality Draft Regulation 1151 – Requirements for the Phase-out of Hydrofluorocarbons.

Daikin US offers these comments on behalf of the Daikin Industries, Ltd. (DIL) businesses operating in the United States: Goodman Global Group, Inc.; Daikin North America LLC; Daikin Applied Americas Inc.; and Daikin America, Inc. DIL is a world leader in advancing air quality in our work, home and shared spaces and continues to pioneer HVAC technologies that promote higher standards for American industry, environment, and quality of life. DIL and its subsidiaries are focused on reducing greenhouse gas emissions and climate impacts. On September 26, 2019, Daikin announced its intent to develop ducted and ductless residential, light-commercial, and applied products utilizing R-32 refrigerant for the North American market. Daikin selected R-32 due to the drastically lower GWP profile when compared to the currently commonly used R-410A, its energy efficiency benefits, and the ease to reuse, reclaim, and recycle the refrigerant.

We believe that the title of the draft regulation should use the term "phase-down" and not a "phase-out". The Kigali Agreement to the Montreal Protocol and other similar regulations are a gradual "phase-down" and not a "phase-out". Furthermore, there are alternative technologies which are often times referred to as Hydrofluoroolefin (HFO) blends, however in most cases, these are HFC blends and therefore a phase-out would be misleading.

We also contend that federal regulations are the most desirable way to regulate the phase-down of hydrofluorocarbons. However, as states move to do so themselves, our goal is to assist states and territories to adopt and implement consistent laws and

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regulations, and to avoid a patchwork of regulations. Meeting state greenhouse gas reduction objectives and meeting the desire for comfort cooling is a fundamental part of crafting these regulations.

Daikin US's comments will focus on suggestions on aligning regulations across states and with the EPA's SNAP 20 and 21 rules to create a harmonized framework of HFC regulations across the country.

Definitions

These comments are intended to support the comments of AHRI, the national trade association for HVAC equipment manufacturers. We recommend the following definition:

> "Reclaim" means to reprocess recovered refrigerant to all of the specifications in appendix A of this subpart (based on AHRI Standard 700-2016, Specifications for Refrigerants) that are applicable to that refrigerant and to verify that the refrigerant meets these specifications using the analytical methodology prescribed in section 5 of appendix A of this subpart.
>
> We also recommend the state suggest that reclamation should also be done in conjunction with mandatory leak repair per existing US EPA requirements.

We are working with AHRI on suggested definitions for the terms "new equipment" and "nominal compressor capacity" and intend to provide further comments after the October 8, 2019, stakeholder meeting.

Formal Exemption Process

Again, here we support the comments of AHRI by requesting a process to allow for potentially necessary exceptions that may come to light in the future. AHRI requests that DNREC consider including a clause within this regulation to account for necessary exceptions similar to Canada's essential purpose permit option in their Ozone-depleting Substances and Halocarbons Alternatives Regulations (ODSHAR). To prepare for the transition to low-GWP alternatives with such complex products as commercial refrigeration equipment, the clause is intended to allow a person to import, manufacture, use, or sell a substance or product designed to contain a substance if it will be used for an essential purpose and a permit is specifically issued. Environment and Climate Change Canada (ECCC) defines 'essential purpose' as a purpose requiring the use of a substance or a product containing or designed to contain a substance, when that use is necessary for the health and safety or the good functioning of society, encompassing its cultural and intellectual aspects, and when there are no technically or economically feasible alternatives to that use that are acceptable from the standpoint of the environment and of health.

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The ODSHAR essential purpose exemption and definition clause can be reviewed at Part 5 – s.66 (1) and (2). The process is still being finalized by ECCC, but any specific questions can be sent to ECCC's Halocarbons Management Team at ec.gestionhalocarbures-halocarbonsmanagement.ec@canada.ca.

Disclosures

The proposed requirement for a written disclosure statement is of serious concern. We recommend removing the requirement for a "written" statement and instead supports allowing the use of internet disclosures. We support AHRI's comment on the disclosure requirement. We agree that it is an unwarranted and unnecessary burden, and that it is impossible to execute given the complexity of sales channels across all the different states.

As proposed by AHRI a more generic label used across states would be preferable. The language below as suggested by AHRI is acceptable.

> "This equipment may not be installed in states that have prohibited the use of high GWP refrigerants for specific end-uses"

Ensuring that states enacting SNAP Rules 20 and 21 maintain a generic label requirement will allow for market certainty and for sale of products throughout the United States

Recordkeeping

Likewise, Daikin US finds the requirements for recordkeeping burdensome on manufacturers. We recommend that Delaware delete all recordkeeping requirements. We agree with AHRI's position that additional recordkeeping by states can be impossible across supply chains, especially when equipment usually does not ship from the manufacturer to the final end-user. Likewise, we agree that products enter into market and often distribute geographically. Delaware's proposed requirements do not account for the many different ways components of a full system may travel. Also, we agree that these requirements will not assist in enforcement of the regulations.

Finally, we agree with AHRI that for any information submitted by a manufacturer, confidential business information may be implicated and manufacturers should not be required to disclose such information. Any confidential business information should be excluded from recordkeeping, or other, requirements should Delaware choose to maintain some recordkeeping requirements.

Codes and Standards

Daikin US agrees with AHRI that in order for Delaware and other states to meet their HFC emissions reductions goals, the model building code must enable the use of

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mildly flammable refrigerants. As this is not yet the case, we also encourage Delaware to add language to the draft regulation directing the Division of Codes and Standards to adopt rules permitting the use of substitutes not prohibited by this regulation. Specifically, we request the regulation direct the Division of Codes and Standards to adopt ASHRAE 15-2019 and UL 60335-2-40 3rd edition, or equivalent (e.g. model codes that include those standards).

Reclaim

Daikin US recommends Delaware consider adding provisions to promote refrigerant reclamation in order to promote best practices. As the only HVACR equipment manufacturer that is also a producer of refrigerants, we suggest that an essential part of Delaware's strategy to reduce HFC emissions should be to address refrigerant management. Any ban that does not exempt reclaimed product will leave stranded all existing equipment that relies on a banned refrigerant. We believe that Delaware's strategy should not only exempt reclaimed refrigerant but should start with a heavy emphasis on the value of refrigerant reclamation as a means to reduce emissions and we strongly recommend that DNREC not only exempt it from future sales bans, but also take affirmative steps to promote reclamation. A strategy that promotes the recovery, reclamation and re-use of refrigerants directly achieves DNREC's goal of reducing HFC emissions by eliminating, or at least reducing, the need to service existing systems with newly manufactured product.

Technician Training

Training and servicing requirements for technicians will be important considerations for future regulations. The industry intends to develop a standardized training program for technicians, contractors, wholesalers, and trainers. As with past refrigerants transitions, training will be important so that installation, repairs, and maintenance will result in optimized performance and minimized refrigerant losses. Addressing the safety concerns with A2L refrigerants is paramount. On this topic Daikin is willing to work with the Department of Resources and Natural Control and other stakeholders to provide guidance on training materials and curriculum.

Thank you for the opportunity to provide these comments.

Sincerely,

Charlie McCrudden
Director, Government Affairs

Dear DE team,

Thank you for the opportunity to provide feedback on the draft HFC regulation. We fully support DE's effort, particularly the proposed transition dates, as the new regulation will provide industry the certainty it needs to continue the transition away from high-global-warming-potential (GWP) compounds in favor of US-made low-GWP substitutes. We have just a few short comments and have suggested some changes in redline (attached) that will improve the technical accuracy of the regulation, and make it more consistent with other state programs.

Additional Exemptions Inconsistent with Other State Programs are Unnecessary

1. We note that, in response to an AHRI comment during the first meeting, that there is absolutely no need, with one exception (for certain foam blends, noted in (2), below), for a new process to allow exemptions to the SNAP transition dates. When EPA first promulgated the SNAP rules in 2015 and 2016, the agency conducted an extensive stakeholder process and determined that there were several low-GWP alternatives available in all of the end-uses covered by the SNAP rules. When asked during the DE stakeholder meeting for what uses AHRI needed an exemption, AHRI responded that there is no particular use that currently requires one. We urge DE not to establish an exemption process as it is unnecessary, would create an additional burden of workload on the agency, and would create additional uncertainty and inconsistency with state programs already in place in CA, WA, and VT.

2. In the development of other states programs, we agreed with NRDC, Chemours, and duPont to not oppose an exception that would allow previously prohibited blowing agents to be used in state programs in two uses: blends for low-pressure spray and blends for extruded polystyrene (XPS) **if**, (1) the GWP is less than 750, and (2) EPA approves such blowing agent blends for use in those particular applications. The newly enacted legislation in Washington and Vermont allows for this potential future exception if the two conditions are met.

Attached is a redline, developed in coordination with NRDC and Chemours, showing requested changes for technical accuracy, consistency with other state programs, and to improve the effectiveness of the regulations:

- Edits to the definitions: most are technical edits, but we also strongly recommend deleting the definition of "use" to help solve the loophole issue described below.

- In section 3.1, we suggest a change to make the prohibition language more closely aligned with WA and VT.
- As drafted, 3.1.2 would allow manufacturers that "used" later-prohibited substances prior to the transition date to continue "using" them, which includes in a manufacturing process as currently defined, after the phase out date. Obviously, this would potentially inadvertently neuter the entire program. The revised language would eliminate the loophole.
- We also suggest clarifying the sell-through provision of 3.1.2 to clearly state that the sale of spray foam systems manufactured prior to the phase out date can be sold and used after such date, consistent with EPA SNAP.

We would be happy to have a call to discuss these comments further if it would be helpful. Thank you again for Delaware's leadership on this important issue.

Best,

Amy

DRAFT – For deliberative purposes only – Not for distribution

TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF AIR QUALITY

PROPOSED REGULATION

1151 Requirements for the Prohibition ~~Phase-out~~ of Certain Hydrofluorocarbon Uses

3/1/2020

1.0 Purpose

1.1 This regulation is designed to support greenhouse gas emissions reductions in the State of Delaware. This regulation establishes ~~the phase-out~~ requirements ~~for the phase-out of certain uses and manufacturing of hydrofluorocarbons~~ in the State of Delaware by adopting specific United States Significant New Alternatives Policy (SNAP) Program prohibitions for certain substances in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses. ~~This regulation is designed to support greenhouse gas emissions reductions in the State of Delaware.~~

2.0 Applicability

2.1 This regulation applies to any person who sells, offers for sale, installs, uses, or enters into commerce, in the State of Delaware, any substance in end-uses listed in Section 5.0.

2.2 Substances listed in Section 6.0 are exempt from the prohibitions covered in this regulation.

2.3 *Severability.* Each section of this regulation shall be deemed severable, and in the event that any provision of this regulation is held to be invalid, the remainder of this regulation shall continue in full force and effect.

3.0 Definitions

The following terms, when used in this regulation, shall have the following meanings unless the context clearly indicates otherwise. Terms used but not defined herein shall have the meanings given to them in 7 DE Admin. Code 1101 of the Clean Air Act as amended in 1990, in that order of:

"**Aerosol Propellant**" means a compressed gas that serves to dispense the contents of an aerosol container when the pressure is released.
"**Air Conditioning Equipment**" means chillers, both centrifugal chillers and positive displacement chillers, intended for comfort cooling of occupied spaces.
"**Capital Cost**" means an expense incurred in the purchase of components, including but not limited to the cost of engineering, purchase and installation of components or systems, or in rendering services. ~~production of goods or in rendering services, including but not limited to the cost of engineering, purchase,~~

Commented [A1]: Narrowed to more accurately cover the costs related to repairs or replacement of supermarket systems and components.

~~and installation of components or systems, and instrumentation, and contractor and construction fees~~.

"**Centrifugal Chiller**" means air conditioning equipment that utilizes a centrifugal compressor in a vapor-compression refrigeration cycle typically used for commercial comfort air conditioning. Centrifugal chiller in this definition is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**Cold Storage Warehouse**" means a cooled facility designed to store meat, produce, dairy products, and other products that are delivered to other locations for sale to the ultimate consumer.

"**Component**" means a part of a refrigeration system, including but not limited to condensing units, compressors, condensers, evaporators, and receivers; and all of its connections and subassemblies, without which the refrigeration system will not properly function or will be subject to failures.

"**Cumulative Replacement**" means the addition of or change in multiple components within a three-year period.

"**Effective Date**" or "**Effective Date of Prohibition**" means date after which the prohibitions provided in Section 5.0 go into effect.

''**End-use**'' means processes or classes of specific applications within industry sectors, including but not limited to those listed in Section 5.0.

"**Flexible Polyurethane**" means a non-rigid synthetic foam containing polymers created by the reaction of isocyanate and polyol, including, ~~polymers of urethane radicals including,~~ but not limited to, that used in furniture, bedding, chair cushions, and shoe soles.

Commented [A2]: Technical correction required for accuracy

~~"**Foam**" or~~ "**Foam Blowing Agent**" means a substance used to produce a product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening via a chemical reaction or phase transition, such as polymers. ~~means a product or substance used to produce the a product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening or phase transition, such as polymers and plastics.~~

"**Household Refrigerators and Freezers**" means refrigerators, refrigerator-freezers, freezers, and miscellaneous household refrigeration appliances intended for residential use. For the purposes of this regulation, "household refrigerators and freezers" does not include "household refrigerators and freezers - compact", or "household refrigerators and freezers - built-in."

"**Household Refrigerators and Freezers Compact**" means any refrigerator, refrigerator-freezer or freezer intended for residential use with a total refrigerated volume of less than 7.75 cubic feet (220 liters).

"**Household Refrigerators and Freezers - Built-in**" means any refrigerator, refrigerator-freezer or freezer intended for residential use with 7.75 cubic feet or greater total volume and 24 inches or less depth not including doors, handles, and custom front panels; with sides which are not finished and not designed to be visible after installation; and that is designed, intended, and marketed exclusively to be: installed totally encased by cabinetry or panels that are attached during installation; securely fastened to adjacent cabinetry, walls or floor; and equipped with an integral factory-finished face or accept a custom front panel.

"**Integral Skin Polyurethane**" means a synthetic self-skinning foam containing polyurethane polymers formed by the reaction of an isocyanate and a polyol, ~~polymers of urethane radicals,~~ including but not limited to that used in car steering wheels, dashboards, and shoe soles.

Commented [A3]: Technical correction for accuracy

'Light duty vehicle' means passenger cars and light duty trucks as defined in [insert State vehicle regulation]

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means a device that delivers a measured amount of medication as a mist that a patient can inhale, typically used for bronchodilation to treat symptoms of asthma, chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, and other respiratory illnesses. An MDI consists of a pressurized canister of medication in a case with a mouthpiece.

"**Miscellaneous Residential Refrigeration Appliance**" means a residential refrigeration appliance smaller than a refrigerator, refrigerator-freezer, or freezer; and which includes coolers, cooler compartments, and combination cooler refrigeration or cooler freezer products.

"**New**" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components, expanded by the addition of components to increase system capacity~~,~~ or replaced or cumulatively replaced such that the capital cost of replacement exceeds 50% of the capital cost of replacing the whole system.

"**Person**" means any individual, firm, association, organization, manufacturer, distributor, partnership, business trust, corporation, limited liability company, company, state, or local governmental agency or public district.

"**Phenolic Insulation Board ~~and Bunstock~~**" means phenolic insulation including but not limited to that used for roofing and wall insulation~~s~~.

"**Bunstock or bun stock**" is a large solid block~~ox~~-like structure formed during the production of polyurethane, polyisocyanurate, phenolic, or polystyrene insulation.

"**Polyolefin**" means foam sheets and tubes made of polyolefin.

"**Polystyrene Extruded Boardstock and Billet (XPS)**" means a foam formed from predominantly styrene monomer ~~from polymers of styrene~~ and produced on extruding machines in the form of continuous foam slabs which can be cut and shaped into panels used for roofing, walls, and flooring~~, and pipes~~.

"**Polystyrene Extruded Sheet**" means polystyrene foam including that used for packaging ~~and buoyancy or floatation~~. It is also made into food-service items, including hinged polystyrene containers (for "take-out" from restaurants); food trays (meat and poultry) plates, bowls, and retail egg containers.

"**Positive Displacement Chiller**" means vapor compression cycle chillers that use positive displacement compressors, typically used for commercial comfort air conditioning. Positive displacement chiller in this definition is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**Refrigerant**" or "**Refrigerant Gas**" means any substance, including blends and mixtures, which is used for heat transfer purposes.

"**Refrigerated Food Processing and Dispensing Equipment**" means retail food refrigeration equipment that is designed to process food and beverages dispensed via a nozzle that are intended for immediate or near-immediate consumption, including but not limited to chilled and frozen beverages, ice cream, and whipped cream. This end use excludes water coolers, or units designed solely to cool and dispense water.

Commented [A4]: The comma before "or replaced" suggests that "equipment first installed" is unconditionally defined as "new" whereas the intended purpose of this sentence is aligned with that in SNAP 20 which attaches the condition that equipment expanded to increase capacity is considered "new".

Commented [A5]: Should be two separate definitions and modified as indicated for technical accuracy

Commented [A6]: Technical correction-buoyancy and floatation foams are sold in billets not sheets

"**Refrigeration Equipment**" means any stationary device that is designed to contain and use refrigerant gas, including but not limited to retail or commercial refrigeration equipment, household refrigeration equipment, and cold storage warehouses.

"**Remote Condensing Units**" means retail refrigeration equipment or units that have a central condensing portion and may consist of compressor(s), condenser(s), and receiver(s) assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold.

~~"**Residential use**" means use by a private individual of a substance, or a product containing the substance, in or around a permanent or temporary household, during recreation, or for any personal use or enjoyment. Use within a household for commercial or medical applications is not included in this definition, nor is use in automobiles, watercraft, or aircraft.~~

"**Retail Food Refrigeration**" or "Commercial Refrigeration" means equipment designed to store and display chilled or frozen goods for commercial sale including but not limited to stand-alone units, refrigerated food processing and dispensing equipment, remote condensing units, supermarket systems, and vending machines.

"**Retrofit**" means to convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components. ~~means the replacement of the refrigerant used in refrigeration equipment with a different refrigerant, and any related changes to the refrigeration equipment required to maintain its operation and reliability following refrigerant replacement~~.

"**Rigid Polyurethane and Polyisocyanurate Laminated Boardstock**" means laminated board insulation made with polyurethane or polyisocyanurate foam, including that used for roofing and wall insulation~~s~~.

"**Rigid Polyurethane Appliance Foam**" means polyurethane insulation foam in domestic appliances.

"**Rigid Polyurethane Commercial Refrigeration and Sandwich Panels**" means polyurethane insulation for use in walls and doors, including that used for commercial refrigeration equipment, and used in doors, including garage doors.

"**Rigid Polyurethane High-pressure Two-component Spray Foam**" means a foam product that is pressurized 800-1600 pounds per square inch (psi) during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and is blown and applied in situ using high-pressure pumps to propel the foam components, and may use liquid blowing agents without an additional propellant.

"**Rigid Polyurethane Low-pressure Two-component Spray Foam**" means a foam product that is pressurized to less than 250 psi during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and are typically applied in situ relying upon a gaseous foam blowing agent that also serves as a propellant so pumps typically are not needed.

"**Rigid Polyurethane Marine Flotation Foam**" means buoyancy or flotation foam used in boat and ship manufacturing for both structural and flotation purposes.

Commented [A7]: Suggest deleting since covered by the sell-through provisions, below.

Commented [A8]: Suggest using the EPA definition to avoid any confusion.

"**Rigid Polyurethane One-component Foam Sealants**" means a foam packaged in aerosol cans that is applied in situ using a gaseous foam blowing agent that is also the propellant for the aerosol formulation.

"**Rigid Polyurethane Slabstock and Other**" means a rigid closed-cell foam containing urethane polymers produced by the reaction of an isocyanate and a polyol and ~~polymers of urethane radicals~~ formed into slabstock insulation for panels and pipes.

"**Stand-alone Unit**" means retail refrigerators, freezers, and reach-in coolers (either open or with doors) where all refrigeration components are integrated and, for the smallest types, the refrigeration circuit is entirely brazed or welded. These systems are fully charged with refrigerant at the factory and typically require only an electricity supply to begin operation.

"**Stand-alone Low-Temperature Unit**" means a stand-alone unit that maintains food or beverages at temperatures at or below 32°F (0 °C).

"**Stand-alone Medium-Temperature Unit**" means a stand-alone unit that maintains food or beverages at temperatures above 32°F (0 °C).

"**Substance**" means any chemical~~, product substitute, or alternative manufacturing process, whether new or retrofit~~, intended for use in the end-uses listed in Section 5.0 ~~of~~.

"**Supermarket Systems**" means multiplex or centralized retail food refrigeration equipment systems designed to cool or refrigerate, which typically operate with racks of compressors installed in a machinery room and which includes both direct and indirect systems.

~~"**Use**" means any utilization of a compound or any substance or blend of substances, including but not limited to utilization in a manufacturing process or product in Delaware, consumption by the end-user in the State of Delaware, or in intermediate applications in the State of Delaware, such as formulation or packaging for other subsequent applications. For the purposes of this regulation, use excludes residential use, but it does not exclude manufacturing for the purpose of residential use.~~

"**Vending Machines**" means self-contained commercial food refrigeration equipment that dispense goods that~~and~~ must be kept hot, cold or frozen.

3/1/2020

3.0 Standards (Requirements)

3.1 Prohibitions

3.1.1 A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Delaware if that equipment or product consists of, uses, or will use a substitute in the end uses prohibited by Section 5.0 and not exempt by Section 6.0. ~~No person may sell, install, use or enter into commerce, in the State of Delaware, any listed substance for use in any air conditioning, refrigeration, foam, or aerosol propellant end-use listed as prohibited in Section 5.0.~~

3.1.2 Except where existing equipment is retrofit, nothing in this regulation requires a person that acquired a ~~prohibited substance~~product or equipment containing a prohibited substance prior to an effective date of the prohibition in Section 5.0 to cease use of that product or equipment. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Section 5.0 (including spray

Commented [A9]: Technical correction necessary for accuracy

Commented [A10]: This appears to come from EPA's definition of "substitute or alternative" in 40 CFR 82.172, but it doesn't translate well if the defined term is changed to "substance" instead of "substitute". Hence the need for changes.

Commented [A11]: The definition should be expanded to include distributed and micro-distributed systems. These systems do not necessarily with racks of compressors.

Commented [A12]: Delete as the definition of "use" here creates a loophole in the sell-through provision (D., below) if defined as including "utilization in a manufacturing process" because the sell-through provision allows "use" after the phase out date if a substance was "used" prior to the phase out date.

A definition of "use" is not necessary, especially since "end-use" is defined and the sell-through provision makes clear that residential and other users of later-prohibited equipment can keep using it after the prohibition date if it was manufacturer prior to that date.

Other basic terms like "sell" and "install" are also not defined because they are self-explanatory, as is "use" in this context.

Commented [A13]: Adjusted to mimic WA and VT as closely as possible

foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition.

Commented [A14]: This is consistent with EPA SNAP Rule 21

Commented [A15]: Problematic if "use" is defined to include use in manufacturing—creates a big loophole.

Suggested language closes loophole by excluding "use" prior to the prohibition date from the qualifying actions that are grandfathered after the prohibition date.

3.2 Disclosure Statement

3.2.1 As of the effective date of this regulation, any person who manufactures and sells or enters into commerce in the State of Delaware, products or equipment in the air conditioning, refrigeration, foam, or aerosol propellant end-uses listed as prohibited in Section 5.0, must provide written disclosure to the buyer as part of the sales transaction and invoice.

3.2.1.1 The required written disclosure must state:

3.2.1.1.1 Refrigeration and air conditioning equipment:
"This equipment is prohibited from use in the State of Delaware with any refrigerant on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.1.2 Foam:
"This foam system is prohibited from use in the State of Delaware with any foam blowing agent on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.1.3 Aerosol propellants:
"This product is prohibited from use in the State of Delaware with any aerosol propellant on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.2 The disclosure statement or label must remain with the product or equipment while it is in use in the State of Delaware

4.0 Recordkeeping

4.1 As of the effective date of this regulation, any person who manufactures any product or equipment in the end uses listed in Section 5.0 for sale or entry into commerce in the State of Delaware, must maintain for five years and make available, upon request by the Department, a copy of the following records, where applicable:

4.1.1 Name and address of the person purchasing the equipment or product at the time of purchase,

4.1.2 telephone number and email address of the person purchasing the equipment or product at the time of purchase, if provided to the manufacturer,

4.1.3 model and serial number of the equipment or product, where applicable. When the affected equipment is part of an assembly without an individual serial number, the serial number of each component must be recorded. If a component or equipment does not have an individual serial number or the serial number is inaccessible after assembly, the physical description must be recorded in enough detail for positive identification,

4.1.4 date of manufacture of the equipment or product,

4.1.5 date of sale of the equipment or product,

4.1.6 the refrigerant(s), aerosol propellant(s), or foam-blowing agent(s) that the equipment or product is designed to use,

4.1.7 the refrigerant(s), aerosol propellant(s), or foam-blowing agent(s) used in the equipment of products and the full charge capacity, where available, and

4.1.8 a copy of the disclosure statement or label issued to the buyer or recipient.

3/1/2020

5.0 List of Prohibited Substances

5.1 End-use and prohibited substances

5.1.1 The following table lists prohibited substances in specific end-uses and the effective date of prohibition, unless and exemption is provided for in Section 6.0.

Table 1. End-use and Prohibited substances		
End-use Category: Aerosol Propellants		
End-use	Prohibited Substances	Effective Date
Aerosol Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC 134a	January 1, 2020~~2020~~2021
End-use Category: Air Conditioning		
End-use	Prohibited Substances	Effective Date
Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC245fa, R-125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A,	January 1, 2024

Commented [A16]: Since the effective date cannot be retroactive and the rule is expected to be finalized by March 2020.

	R-424A, R-434A, R438A, R-507A, RS-44 (2003 composition), THR-03	
Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R438A, R-507A, RS-44 (2003 composition), SP34E, THR-03	January 1, 2024
End-use Category: Refrigeration		
End-use	Prohibited Substances	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023
Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022
Household refrigerators and freezers—compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Household refrigerators and freezers—built in appliances (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2023

Supermarket Systems (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021
Supermarket Systems (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021
Remote Condensing Units (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021
Stand-Alone Units (Retrofit)	R-404A, R-507A	January 1, 2021
Stand-Alone Medium-Temperature Units (New)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R422D, R-424A, R-426A, R-428A, R-434A, R-437A, R438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Stand-Alone Low-Temperature Units (New)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R422A, R-422B, R-422C, R-422D, R-424A, R-428A, R434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Refrigerated food processing and dispensing equipment (New)	HFC-227ea, KDD6, R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Vending Machines (Retrofit)	R-404A, R-507A	January 1, ~~2021~~2022
Vending Machines (New)	FOR12A, FOR12B, HFC-134a, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407C, R-410A, R-410B, R-417A, R-421A, R-422B, R422C,	January 1, ~~2021~~2022

Commented [A17]: Following WA's emergency rulemaking decision.

	R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E	
End-use Category: Foams		
End-use	Prohibited Substances	Effective Date
Rigid Polyurethane and Polyisocyanurate Laminated Boardstock	HFC 134a, HFC 245fa, HFC 365mfc, and blends thereof	January 1, 2021
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Commercial Refrigeration and Sandwich Panels	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, Formacel Z-6	January 1, 2021
Rigid polyurethane (PU) high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021
Rigid PU low-pressure two-	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least	January 1, 2021

component spray foam	4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	
Rigid PU one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021

3/1/2020

6.0 End-use and prohibited substances exemptions

6.1 The following table lists exemptions to the prohibitions in Section 5.0

End-use category	Prohibited Substances	Acceptable Uses
Aerosol Propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA-approved MDIs for medical purposes; wound care sprays; topical coolant sprays for pain relief; and products for removing bandage adhesives from skin.
Aerosol Propellants	HFC-227ea and blends of HFC-227ea and HFC 134a	FDA-approved MDIs for medical purposes.

Air Conditioning	HFC–134a	Military marine vessels where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Air Conditioning	HFC-134a and R-404A	Human-rated spacecraft and related support equipment where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.
Rigid polyurethane (PU) two-component spray foam	All substances	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.

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TITLE 7 NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
DIVISION OF AIR QUALITY

PROPOSED REGULATION

1151 Requirements for the Prohibition ~~Phase-out~~ of Certain Hydrofluorocarbon Uses

3/1/2020

1.0 Purpose

1.1 This regulation is designed to support greenhouse gas emissions reductions in the State of Delaware. This regulation establishes ~~the phase-out~~ requirements ~~for the phase-out of certain uses and manufacturing of hydrofluorocarbons~~ in the State of Delaware by adopting specific United States Significant New Alternatives Policy (SNAP) Program prohibitions for certain substances in air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses. ~~This regulation is designed to support greenhouse gas emissions reductions in the State of Delaware.~~

2.0 Applicability

2.1 This regulation applies to any person who sells, offers for sale, installs, uses, or enters into commerce, in the State of Delaware, any substance in end-uses listed in Section 5.0.

2.2 Substances listed in Section 6.0 are exempt from the prohibitions covered in this regulation.

2.3 *Severability.* Each section of this regulation shall be deemed severable, and in the event that any provision of this regulation is held to be invalid, the remainder of this regulation shall continue in full force and effect.

3.0 Definitions

The following terms, when used in this regulation, shall have the following meanings unless the context clearly indicates otherwise. Terms used but not defined herein shall have the meanings given to them in 7 DE Admin. Code 1101 of the Clean Air Act as amended in 1990, in that order of:

"**Aerosol Propellant**" means a compressed gas that serves to dispense the contents of an aerosol container when the pressure is released.
"**Air Conditioning Equipment**" means chillers, both centrifugal chillers and positive displacement chillers, intended for comfort cooling of occupied spaces.
"**Capital Cost**" means an expense incurred in the purchase of components, including but not limited to the cost of engineering, purchase and installation of components or systems, or in rendering services. ~~production of goods or in rendering services, including but not limited to the cost of engineering, purchase,~~

Commented [A1]: Narrowed to more accurately cover the costs related to repairs or replacement of supermarket systems and components.

~~and installation of components or systems, and instrumentation, and contractor and construction fees~~.

"**Centrifugal Chiller**" means air conditioning equipment that utilizes a centrifugal compressor in a vapor-compression refrigeration cycle typically used for commercial comfort air conditioning. Centrifugal chiller in this definition is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**Cold Storage Warehouse**" means a cooled facility designed to store meat, produce, dairy products, and other products that are delivered to other locations for sale to the ultimate consumer.

"**Component**" means a part of a refrigeration system, including but not limited to condensing units, compressors, condensers, evaporators, and receivers; and all of its connections and subassemblies, without which the refrigeration system will not properly function or will be subject to failures.

"**Cumulative Replacement**" means the addition of or change in multiple components within a three-year period.

"**Effective Date**" or "**Effective Date of Prohibition**" means date after which the prohibitions provided in Section 5.0 go into effect.

''**End-use**'' means processes or classes of specific applications within industry sectors, including but not limited to those listed in Section 5.0.

"**Flexible Polyurethane**" means a non-rigid synthetic foam containing polymers created by the reaction of isocyanate and polyol, including, ~~polymers of urethane radicals including,~~ but not limited to, that used in furniture, bedding, chair cushions, and shoe soles.

Commented [A2]: Technical correction required for accuracy

~~"**Foam**" or~~ "**Foam Blowing Agent**" means a substance used to produce a product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening via a chemical reaction or phase transition, such as polymers. ~~means a product or substance used to produce the a product with a cellular structure formed via a foaming process in a variety of materials that undergo hardening or phase transition, such as polymers and plastics.~~

"**Household Refrigerators and Freezers**" means refrigerators, refrigerator-freezers, freezers, and miscellaneous household refrigeration appliances intended for residential use. For the purposes of this regulation, "household refrigerators and freezers" does not include "household refrigerators and freezers - compact", or "household refrigerators and freezers - built-in."

"**Household Refrigerators and Freezers Compact**" means any refrigerator, refrigerator-freezer or freezer intended for residential use with a total refrigerated volume of less than 7.75 cubic feet (220 liters).

"**Household Refrigerators and Freezers - Built-in**" means any refrigerator, refrigerator-freezer or freezer intended for residential use with 7.75 cubic feet or greater total volume and 24 inches or less depth not including doors, handles, and custom front panels; with sides which are not finished and not designed to be visible after installation; and that is designed, intended, and marketed exclusively to be: installed totally encased by cabinetry or panels that are attached during installation; securely fastened to adjacent cabinetry, walls or floor; and equipped with an integral factory-finished face or accept a custom front panel.

"**Integral Skin Polyurethane**" means a synthetic self-skinning foam containing polyurethane polymers formed by the reaction of an isocyanate and a polyol, ~~polymers of urethane radicals,~~ including but not limited to that used in car steering wheels, dashboards, and shoe soles.

Commented [A3]: Technical correction for accuracy

'Light duty vehicle' means passenger cars and light duty trucks as defined in [insert State vehicle regulation]

"**Metered Dose Inhaler**," or "**Medical Dose Inhaler**," or "**MDI**" means a device that delivers a measured amount of medication as a mist that a patient can inhale, typically used for bronchodilation to treat symptoms of asthma, chronic obstructive pulmonary disease (COPD), chronic bronchitis, emphysema, and other respiratory illnesses. An MDI consists of a pressurized canister of medication in a case with a mouthpiece.

"**Miscellaneous Residential Refrigeration Appliance**" means a residential refrigeration appliance smaller than a refrigerator, refrigerator-freezer, or freezer; and which includes coolers, cooler compartments, and combination cooler refrigeration or cooler freezer products.

"**New**" means products or equipment that are manufactured after the effective date of this regulation or equipment first installed for an intended purpose with new or used components, expanded by the addition of components to increase system capacity~~,~~ or replaced or cumulatively replaced such that the capital cost of replacement exceeds 50% of the capital cost of replacing the whole system.

"**Person**" means any individual, firm, association, organization, manufacturer, distributor, partnership, business trust, corporation, limited liability company, company, state, or local governmental agency or public district.

"**Phenolic Insulation Board ~~and Bunstock~~**" means phenolic insulation including but not limited to that used for roofing and wall insulation~~s~~.

"**Bunstock or bun stock**" is a large solid block~~ox~~-like structure formed during the production of polyurethane, polyisocyanurate, phenolic, or polystyrene insulation.

"**Polyolefin**" means foam sheets and tubes made of polyolefin.

"**Polystyrene Extruded Boardstock and Billet (XPS)**" means a foam formed from predominantly styrene monomer ~~from polymers of styrene~~ and produced on extruding machines in the form of continuous foam slabs which can be cut and shaped into panels used for roofing, walls, and flooring~~, and pipes~~.

"**Polystyrene Extruded Sheet**" means polystyrene foam including that used for packaging ~~and buoyancy or floatation~~. It is also made into food-service items, including hinged polystyrene containers (for "take-out" from restaurants); food trays (meat and poultry) plates, bowls, and retail egg containers.

"**Positive Displacement Chiller**" means vapor compression cycle chillers that use positive displacement compressors, typically used for commercial comfort air conditioning. Positive displacement chiller in this definition is a chiller intended for comfort cooling and does not include cooling for industrial process cooling and refrigeration.

"**Refrigerant**" or "**Refrigerant Gas**" means any substance, including blends and mixtures, which is used for heat transfer purposes.

"**Refrigerated Food Processing and Dispensing Equipment**" means retail food refrigeration equipment that is designed to process food and beverages dispensed via a nozzle that are intended for immediate or near-immediate consumption, including but not limited to chilled and frozen beverages, ice cream, and whipped cream. This end use excludes water coolers, or units designed solely to cool and dispense water.

Commented [A4]: The comma before "or replaced" suggests that "equipment first installed" is unconditionally defined as "new" whereas the intended purpose of this sentence is aligned with that in SNAP 20 which attaches the condition that equipment expanded to increase capacity is considered "new".

Commented [A5]: Should be two separate definitions and modified as indicated for technical accuracy

Commented [A6]: Technical correction-buoyancy and floatation foams are sold in billets not sheets

"**Refrigeration Equipment**" means any stationary device that is designed to contain and use refrigerant gas, including but not limited to retail or commercial refrigeration equipment, household refrigeration equipment, and cold storage warehouses.

"**Remote Condensing Units**" means retail refrigeration equipment or units that have a central condensing portion and may consist of compressor(s), condenser(s), and receiver(s) assembled into a single unit, which may be located external to the sales area. The condensing portion (and often other parts of the system) is located outside the space or area cooled by the evaporator. Remote condensing units are commonly installed in convenience stores, specialty shops (e.g., bakeries, butcher shops), supermarkets, restaurants, and other locations where food is stored, served, or sold.

~~"**Residential use**" means use by a private individual of a substance, or a product containing the substance, in or around a permanent or temporary household, during recreation, or for any personal use or enjoyment. Use within a household for commercial or medical applications is not included in this definition, nor is use in automobiles, watercraft, or aircraft.~~

"**Retail Food Refrigeration**" or "Commercial Refrigeration" means equipment designed to store and display chilled or frozen goods for commercial sale including but not limited to stand-alone units, refrigerated food processing and dispensing equipment, remote condensing units, supermarket systems, and vending machines.

"**Retrofit**" means to convert an appliance from one refrigerant to another refrigerant. Retrofitting includes the conversion of the appliance to achieve system compatibility with the new refrigerant and may include, but is not limited to, changes in lubricants, gaskets, filters, driers, valves, o-rings or appliance components. ~~means the replacement of the refrigerant used in refrigeration equipment with a different refrigerant, and any related changes to the refrigeration equipment required to maintain its operation and reliability following refrigerant replacement~~.

"**Rigid Polyurethane and Polyisocyanurate Laminated Boardstock**" means laminated board insulation made with polyurethane or polyisocyanurate foam, including that used for roofing and wall insulation~~s~~.

"**Rigid Polyurethane Appliance Foam**" means polyurethane insulation foam in domestic appliances.

"**Rigid Polyurethane Commercial Refrigeration and Sandwich Panels**" means polyurethane insulation for use in walls and doors, including that used for commercial refrigeration equipment, and used in doors, including garage doors.

"**Rigid Polyurethane High-pressure Two-component Spray Foam**" means a foam product that is pressurized 800-1600 pounds per square inch (psi) during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and is blown and applied in situ using high-pressure pumps to propel the foam components, and may use liquid blowing agents without an additional propellant.

"**Rigid Polyurethane Low-pressure Two-component Spray Foam**" means a foam product that is pressurized to less than 250 psi during manufacture; sold in pressurized containers as two parts (i.e., A-side and B-side); and are typically applied in situ relying upon a gaseous foam blowing agent that also serves as a propellant so pumps typically are not needed.

"**Rigid Polyurethane Marine Flotation Foam**" means buoyancy or flotation foam used in boat and ship manufacturing for both structural and flotation purposes.

Commented [A7]: Suggest deleting since covered by the sell-through provisions, below.

Commented [A8]: Suggest using the EPA definition to avoid any confusion.

"**Rigid Polyurethane One-component Foam Sealants**" means a foam packaged in aerosol cans that is applied in situ using a gaseous foam blowing agent that is also the propellant for the aerosol formulation.

"**Rigid Polyurethane Slabstock and Other**" means a rigid closed-cell foam containing urethane polymers produced by the reaction of an isocyanate and a polyol and ~~polymers of urethane radicals~~ formed into slabstock insulation for panels and pipes.

"**Stand-alone Unit**" means retail refrigerators, freezers, and reach-in coolers (either open or with doors) where all refrigeration components are integrated and, for the smallest types, the refrigeration circuit is entirely brazed or welded. These systems are fully charged with refrigerant at the factory and typically require only an electricity supply to begin operation.

"**Stand-alone Low-Temperature Unit**" means a stand-alone unit that maintains food or beverages at temperatures at or below 32°F (0 °C).

"**Stand-alone Medium-Temperature Unit**" means a stand-alone unit that maintains food or beverages at temperatures above 32°F (0 °C).

"**Substance**" means any chemical~~, product substitute, or alternative manufacturing process, whether new or retrofit~~, intended for use in the end-uses listed in Section 5.0 ~~of~~.

"**Supermarket Systems**" means multiplex or centralized retail food refrigeration equipment systems designed to cool or refrigerate, which typically operate with racks of compressors installed in a machinery room and which includes both direct and indirect systems.

~~"**Use**" means any utilization of a compound or any substance or blend of substances, including but not limited to utilization in a manufacturing process or product in Delaware, consumption by the end-user in the State of Delaware, or in intermediate applications in the State of Delaware, such as formulation or packaging for other subsequent applications. For the purposes of this regulation, use excludes residential use, but it does not exclude manufacturing for the purpose of residential use.~~

"**Vending Machines**" means self-contained commercial food refrigeration equipment that dispense goods that~~and~~ must be kept hot, cold or frozen.

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3.0 Standards (Requirements)

3.1 Prohibitions

3.1.1 A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Delaware if that equipment or product consists of, uses, or will use a substitute in the end uses prohibited by Section 5.0 and not exempt by Section 6.0. ~~No person may sell, install, use or enter into commerce, in the State of Delaware, any listed substance for use in any air conditioning, refrigeration, foam, or aerosol propellant end-use listed as prohibited in Section 5.0.~~

3.1.2 Except where existing equipment is retrofit, nothing in this regulation requires a person that acquired a ~~prohibited substance~~product or equipment containing a prohibited substance prior to an effective date of the prohibition in Section 5.0 to cease use of that product or equipment. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Section 5.0 (including spray

Commented [A9]: Technical correction necessary for accuracy

Commented [A10]: This appears to come from EPA's definition of "substitute or alternative" in 40 CFR 82.172, but it doesn't translate well if the defined term is changed to "substance" instead of "substitute". Hence the need for changes.

Commented [A11]: The definition should be expanded to include distributed and micro-distributed systems. These systems do not necessarily with racks of compressors.

Commented [A12]: Delete as the definition of "use" here creates a loophole in the sell-through provision (D., below) if defined as including "utilization in a manufacturing process" because the sell-through provision allows "use" after the phase out date if a substance was "used" prior to the phase out date.

A definition of "use" is not necessary, especially since "end-use" is defined and the sell-through provision makes clear that residential and other users of later-prohibited equipment can keep using it after the prohibition date if it was manufacturer prior to that date.

Other basic terms like "sell" and "install" are also not defined because they are self-explanatory, as is "use" in this context.

Commented [A13]: Adjusted to mimic WA and VT as closely as possible

foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition.

Commented [A14]: This is consistent with EPA SNAP Rule 21

Commented [A15]: Problematic if "use" is defined to include use in manufacturing—creates a big loophole.

Suggested language closes loophole by excluding "use" prior to the prohibition date from the qualifying actions that are grandfathered after the prohibition date.

3.2 Disclosure Statement

3.2.1 As of the effective date of this regulation, any person who manufactures and sells or enters into commerce in the State of Delaware, products or equipment in the air conditioning, refrigeration, foam, or aerosol propellant end-uses listed as prohibited in Section 5.0, must provide written disclosure to the buyer as part of the sales transaction and invoice.

3.2.1.1 The required written disclosure must state:

3.2.1.1.1 Refrigeration and air conditioning equipment:
"This equipment is prohibited from use in the State of Delaware with any refrigerant on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.1.2 Foam:
"This foam system is prohibited from use in the State of Delaware with any foam blowing agent on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.1.3 Aerosol propellants:
"This product is prohibited from use in the State of Delaware with any aerosol propellant on the List of Prohibited Substances for the specific end-use in Section 5.0 of 7 DE Admin. Code 1151. This disclosure statement has been reviewed and approved by [THE COMPANY] and [THE COMPANY] attests, under penalty of perjury, that these statements are true and accurate."

3.2.1.2 The disclosure statement or label must remain with the product or equipment while it is in use in the State of Delaware

4.0 Recordkeeping

4.1 As of the effective date of this regulation, any person who manufactures any product or equipment in the end uses listed in Section 5.0 for sale or entry into commerce in the State of Delaware, must maintain for five years and make available, upon request by the Department, a copy of the following records, where applicable:

4.1.1 Name and address of the person purchasing the equipment or product at the time of purchase,

4.1.2 telephone number and email address of the person purchasing the equipment or product at the time of purchase, if provided to the manufacturer,

4.1.3 model and serial number of the equipment or product, where applicable. When the affected equipment is part of an assembly without an individual serial number, the serial number of each component must be recorded. If a component or equipment does not have an individual serial number or the serial number is inaccessible after assembly, the physical description must be recorded in enough detail for positive identification,

4.1.4 date of manufacture of the equipment or product,

4.1.5 date of sale of the equipment or product,

4.1.6 the refrigerant(s), aerosol propellant(s), or foam-blowing agent(s) that the equipment or product is designed to use,

4.1.7 the refrigerant(s), aerosol propellant(s), or foam-blowing agent(s) used in the equipment of products and the full charge capacity, where available, and

4.1.8 a copy of the disclosure statement or label issued to the buyer or recipient.

3/1/2020

5.0 List of Prohibited Substances

5.1 End-use and prohibited substances

5.1.1 The following table lists prohibited substances in specific end-uses and the effective date of prohibition, unless and exemption is provided for in Section 6.0.

Table 1. End-use and Prohibited substances		
End-use Category: Aerosol Propellants		
End-use	Prohibited Substances	Effective Date
Aerosol Propellants	HFC-125, HFC-134a, HFC-227ea and blends of HFC-227ea and HFC 134a	January 1, 2020~~2020~~2021
End-use Category: Air Conditioning		
End-use	Prohibited Substances	Effective Date
Centrifugal chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, HFC-236fa, HFC245fa, R-125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-423A,	January 1, 2024

Commented [A16]: Since the effective date cannot be retroactive and the rule is expected to be finalized by March 2020.

	R-424A, R-434A, R438A, R-507A, RS-44 (2003 composition), THR-03	
Positive displacement chillers (new)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/ 134a/ 600a (28.1/70/1.9), R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-410A, R-410B, R-417A, R-421A, R-422B, R-422C, R-422D, R-424A, R-434A, R-437A, R438A, R-507A, RS-44 (2003 composition), SP34E, THR-03	January 1, 2024
End-use Category: Refrigeration		
End-use	Prohibited Substances	Effective Date
Cold storage warehouses (new)	HFC-227ea, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R404A, R-407A, R-407B, R-410A, R-410B, R-417A, R-421A, R421B, R-422A, R-422B, R-422C, R-422D, R-423A, R-424A, R428A, R-434A, R-438A, R-507A, RS-44 (2003 composition)	January 1, 2023
Household refrigerators and freezers (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2022
Household refrigerators and freezers—compact (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Household refrigerators and freezers—built in appliances (new)	FOR12A, FOR12B, HFC-134a, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-426A, R-428A, R-434A, R-437A, R-438A, R-507A, RS24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2023

Supermarket Systems (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021
Supermarket Systems (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021
Remote Condensing Units (Retrofit)	R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R428A, R-434A, R-507A	January 1, 2021
Remote Condensing Units (New)	HFC-227ea, R-404A, R-407B, R-421B, R-422A, R-422C, R-422D, R-428A, R-434A, R-507A	January 1, 2021
Stand-Alone Units (Retrofit)	R-404A, R-507A	January 1, 2021
Stand-Alone Medium-Temperature Units (New)	FOR12A, FOR12B, HFC-134a, HFC-227ea, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R422D, R-424A, R-426A, R-428A, R-434A, R-437A, R438A, R-507A, RS-24 (2002 formulation), RS-44 (2003 formulation), SP34E, THR-03	January 1, 2021
Stand-Alone Low-Temperature Units (New)	HFC-227ea, KDD6, R-125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R-417A, R-421A, R-421B, R422A, R-422B, R-422C, R-422D, R-424A, R-428A, R434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Refrigerated food processing and dispensing equipment (New)	HFC-227ea, KDD6, R-125/ 290/ 134a/ 600a (55.0/1.0/42.5/1.5), R-404A, R-407A, R-407B, R-407C, R-407F, R-410A, R-410B, R417A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R424A, R-428A, R-434A, R-437A, R-438A, R-507A, RS-44 (2003 formulation)	January 1, 2021
Vending Machines (Retrofit)	R-404A, R-507A	January 1, ~~2021~~2022
Vending Machines (New)	FOR12A, FOR12B, HFC-134a, KDD6, R125/290/134a/600a (55.0/1.0/42.5/1.5), R-404A, R407C, R-410A, R-410B, R-417A, R-421A, R-422B, R422C,	January 1, ~~2021~~2022

Commented [A17]: Following WA's emergency rulemaking decision.

	R-422D, R-426A, R-437A, R-438A, R-507A, RS-24 (2002 formulation), SP34E	
End-use Category: Foams		
End-use	Prohibited Substances	Effective Date
Rigid Polyurethane and Polyisocyanurate Laminated Boardstock	HFC 134a, HFC 245fa, HFC 365mfc, and blends thereof	January 1, 2021
Flexible Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021
Integral Skin Polyurethane	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polystyrene Extruded Sheet	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Phenolic Insulation Board and Bunstock	HFC-143a, HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof	January 1, 2021
Rigid Polyurethane Slabstock and Other	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Appliance Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Commercial Refrigeration and Sandwich Panels	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polyolefin	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Rigid Polyurethane Marine Flotation Foam	HFC-134a, HFC-245fa, HFC-365mfc and blends thereof; Formacel TI, Formacel Z-6	January 1, 2021
Polystyrene Extruded Boardstock and Billet (XPS)	HFC-134a, HFC-245fa, HFC-365mfc, and blends thereof; Formacel TI, Formacel B, Formacel Z-6	January 1, 2021
Rigid polyurethane (PU) high-pressure two-component spray foam	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021
Rigid PU low-pressure two-	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least	January 1, 2021

component spray foam	4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	
Rigid PU one-component foam sealants	HFC-134a, HFC-245fa, and blends thereof; blends of HFC365mfc with at least 4 percent HFC-245fa, and commercial blends of HFC-365mfc with 7 to 13 percent HFC-227ea and the remainder HFC-365mfc; Formacel TI	January 1, 2021

3/1/2020

6.0 End-use and prohibited substances exemptions

6.1 The following table lists exemptions to the prohibitions in Section 5.0

End-use category	Prohibited Substances	Acceptable Uses
Aerosol Propellants	HFC-134a	Cleaning products for removal of grease, flux and other soils from electrical equipment; refrigerant flushes; products for sensitivity testing of smoke detectors; lubricants and freeze sprays for electrical equipment or electronics; sprays for aircraft maintenance; sprays containing corrosion preventive compounds used in the maintenance of aircraft, electrical equipment or electronics, or military equipment; pesticides for use near electrical wires, in aircraft, in total release insecticide foggers, or in certified organic use pesticides for which EPA has specifically disallowed all other lower-GWP propellants; mold release agents and mold cleaners; lubricants and cleaners for spinnerettes for synthetic fabrics; duster sprays specifically for removal of dust from photographic negatives, semiconductor chips, specimens under electron microscopes, and energized electrical equipment; adhesives and sealants in large canisters; document preservation sprays; FDA-approved MDIs for medical purposes; wound care sprays; topical coolant sprays for pain relief; and products for removing bandage adhesives from skin.
Aerosol Propellants	HFC-227ea and blends of HFC-227ea and HFC 134a	FDA-approved MDIs for medical purposes.

Air Conditioning	HFC–134a	Military marine vessels where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Air Conditioning	HFC-134a and R-404A	Human-rated spacecraft and related support equipment where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Military applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2022.
Foams – Except Rigid polyurethane (PU) spray foam	All substances	Space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.
Rigid polyurethane (PU) two-component spray foam	All substances	Military or space- and aeronautics-related applications where reasonable efforts have been made to ascertain that other alternatives are not technically feasible due to performance or safety requirements until January 1, 2025.

PIMA
POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

3330 Washington Blvd. / Suite 200 / Arlington, VA 22201 / p: 703.258.0093 / www.polyiso.org

Submitted Electronically

October 7, 2019

Delaware Natural Resources and Environmental Control
Division of Air Quality
Attn: Ajo Rabemiarisoa
State Street Commons
100 W. State Street, Suite 6A
Dover, DE 19904
Ajo.Rabemiarisoa@delaware.gov

Re: Public Comments on Proposed Regulation: "1151 Requirements for the Phase-out of Hydrofluorocarbons"
Model Regulation (September 2019)

Dear Mr. Rabemiarisoa:

The Polyisocyanurate Insulation Manufacturers Association ("PIMA") appreciates the opportunity to comment on the Delaware Natural Resources and Environmental Control's ("DNREC") model regulation, Requirements for the Phase-out of Hydrofluorocarbons (dated September 2019).

PIMA represents North American manufacturers of laminated polyisocyanurate insulation board products ("polyiso insulation"). Our members include Atlas Roofing Corporation, Carlisle Construction Materials, Firestone Building Products, GAF, Johns Manville, IKO Industries, Rmax, and Soprema. These manufacturers account for the majority of polyiso insulation produced and sold in North America, including Delaware.

PIMA supports Delaware's efforts to reduce harmful emissions of greenhouse gases. PIMA has been recognized for environmental leadership and our membership aggressively advocates for policies that improve building energy efficiency and reduce emissions associated with the energy used to power our building stock.

As it relates to DNREC's proposed HFC prohibitions, PIMA does not oppose January 1, 2021 as the effective date for the "Rigid Polyurethane and Polyisocyanurate Laminated Boardstock" end-use category. This position is based on the fact that the North American polyiso

industry does not use the prohibited HFC substances as blowing agents in its product formulations.

However, we have concerns with DNREC's proposed disclosure statement (Section 3.2) and recordkeeping (Section 4.0) requirements as applicable to manufacturers of polyiso insulation. Our concerns are outlined below.

I. History of Polyiso Insulation

The polyiso industry is a recognized leader in the manufacture of energy efficient building products and environmental stewardship. The industry has been recognized by the U.S. Environmental Protection Agency ("U.S. EPA") with the Stratospheric Ozone Protection Award for leadership in the phase-out of chlorofluorocarbons and exceptional contributions to global environmental protection. Additionally, the industry was recognized with the U.S. EPA's Climate Protection Award for leadership in promoting energy efficiency and climate protection.

Over the past three decades, the polyiso insulation industry has undertaken research and development of new technology to eliminate the use of ozone depleting pollutants and reduce the global warming impact of its products. **Today, polyiso insulation is manufactured using pentane (or pentane blends) as the blowing agent in the foaming process. Pentane is a non-ozone depleting, low global warming potential substance. The industry completed this transition nearly twenty years ago.** In fact, some polyiso insulation manufacturers have never used hydrofluorocarbon ("HFC") technology.

Pentane offers an economical solution for polyiso insulation products and delivers exceptional thermal resistance that contributes to polyiso insulation's high R-value – the primary physical property for thermal insulation products. Polyiso insulation manufacturers have made significant capital investments in modifying existing facilities and constructing new plants that allow for the safe use of pentane technology in the manufacturing process. It is important to note that polyiso insulation formulations – and the process used to manufacture the product – are optimized for the use of pentane, which may not be a suitable blowing agent substitute for other foam end-uses.

Additionally, as referenced above, polyiso insulation manufacturers have made significant investments in the research and development of product formulations that utilize pentane technology to deliver industry-leading thermal and fire performance in the foam insulation market. From a manufacturing perspective, the prohibited HFC substances are not suitable (or attractive) replacements for polyiso insulation when compared to the performance and economic advantages of pentane-based formulations.

II. PIMA believes that the disclosure statement and recordkeeping requirements are unnecessary as applied to the polyiso insulation end-use and, therefore, requests polyiso insulation manufacturers be exempted from compliance with any requirements.

The proposed disclosure statement and recordkeeping requirements appear to be enforcement tools that would allow DNREC to achieve its stated goal of reducing HFC emissions. However, applying the requirements to specific end-uses that do not use or contain HFC substances will not further the State's goal as there are no emissions reductions available for these end-uses. **Therefore, we propose that DNREC exempt any end-use that categorically does not use or contain any of the prohibited HFC substances by a date certain** (e.g., June 30, 2020, which is six (6) months prior to the earliest date of prohibition listed in the model regulations for the foam end-use sectors).

As described above, the polyiso insulation industry transitioned to pentane technology several decades ago for environmental, economic, and performance reasons. Legacy HFC substances do not present viable or attractive options for polyiso insulation manufacturers now or into the future.

We understand that Delaware may look to other states for model HFC prohibitions and **we believe that Washington State provides a good example for enforcing well-scoped labeling and recordkeeping requirements**. The Washington State Department of Ecology's recent regulatory action exempts from labeling and recordkeeping requirements all end-uses that do not contain, use, or transition away from the prohibited HFC substances prior to December 31, 2019.[1] Importantly, this approach reduces the burden on the state by eliminating end-uses that do not present an opportunity for HFC emissions reductions and allows regulators to focus on managing end-uses that currently manufacture with the prohibited substances.

With respect to the California Air Resources Board's ("CARB") HFC regulations, PIMA opposed the CARB recordkeeping requirement as applied to polyiso insulation manufacturers.[2] Unfortunately, CARB incorrectly grouped the polyiso insulation industry with other manufacturing sectors where HFC substances are either currently used within a particular end-use category or represent a viable (performance or economic) blowing agent solution for the foam end-use category. The polyiso insulation industry does not fit either of these scenarios.

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[1] Information regarding Washington State's regulatory process is available at: https://ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/Reducing-greenhouse-gases/Hydrofluorocarbons.

[2] California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4. Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses. Text available at: https://www.arb.ca.gov/regact/2018/casnap/casnap.htm.

It should be noted that the CARB recordkeeping requirement applies only to a limited subset of end-sectors that are covered by the 2018 regulatory action. The California legislature passed a broader HFC emission reduction law that does not include a recordkeeping requirement for many of the SNAP end-use categories listed in the DNREC model regulation. This action speaks to the limited utility of a recordkeeping requirement and, in particular, as applied to end-uses that categorically do not use the restricted HFC substances. Finally, eliminating the recordkeeping requirement will promote consistency throughout regulations authored by members of the U.S. Climate Alliance.

On the issue of product disclosure statements, CARB agreed with PIMA's argument to exclude polyiso manufacturers when it eliminated a proposed labeling requirement for end-uses that categorically do not use HFC substances. **CARB concluded that labeling was unnecessary for end-uses that "have already transitioned out of using HFCs . . . [where] the risk that these end-uses revert to prohibited HFCs is low."**[3] However, again, we believe that CARB erred in its decision to maintain a burdensome recordkeeping requirement as applied to polyiso insulation and respectfully request that Delaware consider a more narrow approach to regulating foam insulation end-uses.

Finally, PIMA is unaware of polyiso insulation products sold into Delaware that are manufactured outside of the North American market. This means there is little to no risk of non-compliant imports being sold into the market. Therefore, the polyiso insulation end-use can be exempt from compliance without interfering with State's enforcement objectives.

As an alternative to a full exemption, we request that any future regulation include an opportunity for polyiso insulation manufacturers to submit a one-time certification to Delaware that their respective products do not contain the prohibited HFC substances. The certification also could be made at the request of, or at a time specified by, the State. This alternative compliance option would provide regulators with direct and immediate assurances that the polyiso insulation end-use market is in full compliance with any future HFC prohibitions.

[3] California Air Resources Board, Notice of Public Availability of Modified Text, Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses (*dated June 15, 2018*). Text available at: https://www.arb.ca.gov/regact/2018/casnap/15daynotice.pdf.

III. Conclusion

We appreciate the opportunity to comment on DNREC's model HFC regulation. Please contact me at jkoscher@pima.org or (703) 224-2289 should additional information be helpful to your deliberative regulatory process.

Respectfully submitted,

Justin Koscher
President

Performance Building Solutions
1501 Joseph Dr.
Midland, MI 48642

October 10, 2019

The DuPont Performance Building Solutions business would like to thank you for your time and attention to our request for a small change to the proposed HFC regulation.

You requested information on the sell-through allowance for foams manufactured with blowing agents that are being phased-down.

In support of our conversations we were asked to provide additional reference information. The following documents attached to this letter are intended to meet that request.

Thank you, Lisa Massaro

LIST OF APPENDIXES

The exact language from the 3 currently completed state legislations:

Vermont:

Section (b) (3) page 2:
(3) Products or equipment manufactured prior to an applicable effective date of the restrictions in subdivision (b)(4) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date.

Washington State:

Section 3 (1) page 4:
"Products or equipment manufactured prior to the applicable effective date of the restrictions specified in subsection (2) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date."

California:

Section (1) page 2:
(c) (1) All prohibitions on the use of class I substances and class II substances as set forth in 42 U.S.C. Secs. 7671a and 7671k, as those read on November 15, 1990, or any substitute as set forth in Appendix U and Appendix V of Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, shall apply, except as otherwise provided by in paragraph (3), state statute, or state regulation.

US EPA SNAP reference as pertains to California reference:

Final Rule 21, pg 86872
"EPA also disagrees with the comment regarding the inability to sell existing supply as the status changes in the rule relate to new manufacturing and do not limit the sale of existing supply"

Final Rule 20, Page 212
"Since regulations establishing the SNAP program were promulgated in 1994, we have interpreted the unacceptability determinations in this sector to apply to blowing foam with the foam blowing agent and not to products made with foam (e.g., 65 FR 42,653, 42,656; July 11, 2000)."

EPA presentation to Center for Polyurethanes Industries, slide 13:
"Unacceptability determinations for foam blowing agents apply to use of closed cell foam products and products that contain closed cell foam where the products are manufactured on or after the change of status date"

Governor Approved Washington State Legislation: HB-1112

CERTIFICATION OF ENROLLMENT

ENGROSSED SECOND SUBSTITUTE HOUSE BILL 1112

Chapter 284, Laws of 2019

66th Legislature
2019 Regular Session

HYDROFLUOROCARBON GREENHOUSE GAS EMISSIONS

EFFECTIVE DATE: July 28, 2019

Passed by the House March 1, 2019
Yeas 55 Nays 39

FRANK CHOPP

Speaker of the House of Representatives

Passed by the Senate April 22, 2019
Yeas 30 Nays 19

CYRUS HABIB

President of the Senate

Approved May 7, 2019 3:23 PM

JAY INSLEE

Governor of the State of Washington

CERTIFICATE

I, Bernard Dean, Chief Clerk of the House of Representatives of the State of Washington, do hereby certify that the attached is **ENGROSSED SECOND SUBSTITUTE HOUSE BILL 1112** as passed by the House of Representatives and the Senate on the dates hereon set forth.

BERNARD DEAN

Chief Clerk

FILED

May 13, 2019

Secretary of State
State of Washington

ENGROSSED SECOND SUBSTITUTE HOUSE BILL 1112

Passed Legislature - 2019 Regular Session

State of Washington 66th Legislature 2019 Regular Session

By House Appropriations (originally sponsored by Representatives Fitzgibbon, Kloba, Peterson, Tharinger, Jinkins, Macri, Goodman, Bergquist, Doglio, Robinson, Pollet, Stanford, and Frame)

READ FIRST TIME 02/22/19.

AN ACT Relating to reducing greenhouse gas emissions from hydrofluorocarbons; amending RCW 70.235.010, 70.94.430, 70.94.431, and 70.94.015; adding a new section to chapter 70.235 RCW; adding a new section to chapter 19.27 RCW; adding a new section to chapter 39.26 RCW; creating new sections; and prescribing penalties.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

NEW SECTION. **Sec. 1.** (1) The legislature finds that hydrofluorocarbons are air pollutants that pose significant threats to our environment and that safer alternatives for the most damaging hydrofluorocarbons are readily available and cost-effective.

(2) Hydrofluorocarbons came into widespread commercial use as United States environmental protection agency-approved replacements for ozone-depleting substances that were being phased out under an international agreement. However, under a 2017 federal appeals court ruling, while the environmental protection agency had been given the power to originally designate hydrofluorocarbons as suitable replacements for the ozone-depleting substances, the environmental protection agency did not have clear authority to require the replacement of hydrofluorocarbons once the replacement of the original ozone-depleting substances had already occurred.

(3) Because the impacts of climate change will not wait until congress acts to clarify the scope of the environmental protection agency's authority, it falls to the states to provide leadership on addressing hydrofluorocarbons. Doing so will not only help the climate, but will help American businesses retain their positions as global leaders in air conditioning and refrigerant technologies. Although hydrofluorocarbons currently represent a small proportion of the state's greenhouse gas emissions, emissions of hydrofluorocarbons have been rapidly increasing in the United States and worldwide, and they are thousands of times more potent than carbon dioxide. However, hydrofluorocarbons are also a segment of the state's emissions that will be comparatively easy to reduce and eliminate without widespread implications for the way that power is produced, heavy industries operate, or people transport themselves. Substituting or reducing the use of hydrofluorocarbons with the highest global warming potential will provide a significant boost to the state's efforts to reduce its greenhouse gas emissions to the limits established in RCW 70.235.020.

(4) Therefore, it is the intent of the legislature to transition to the use of less damaging hydrofluorocarbons or suitable substitutes in various applications in Washington, in a manner similar to the regulations that were adopted by the environmental protection agency, and that have been subsequently adopted or will be adopted in several other states around the country.

Sec. 2. RCW 70.235.010 and 2010 c 146 s 1 are each amended to read as follows:

The definitions in this section apply throughout this chapter unless the context clearly requires otherwise.

(1) "Carbon dioxide equivalents" means a metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

(2) "Climate advisory team" means the stakeholder group formed in response to executive order 07-02.

(3) "Climate impacts group" means the University of Washington's climate impacts group.

(4) "Department" means the department of ecology.

(5) "Director" means the director of the department.

(6) "Greenhouse gas" and "greenhouse gases" includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons,

perfluorocarbons, sulfur hexafluoride, and any other gas or gases designated by the department by rule.

(7) "Person" means an individual, partnership, franchise holder, association, corporation, a state, a city, a county, or any subdivision or instrumentality of the state.

(8) "Program" means the department's climate change program.

(9) "Western climate initiative" means the collaboration of states, Canadian provinces, Mexican states, and tribes to design a multisector market-based mechanism as directed under the western regional climate action initiative signed by the governor on February 22, 2007.

(10) "Class I substance" and "class II substance" means those substances listed in 42 U.S.C. Sec. 7671a, as it read on November 15, 1990, or those substances listed in Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

(11) "Hydrofluorocarbons" means a class of greenhouse gases that are saturated organic compounds containing hydrogen, fluorine, and carbon.

(12) "Manufacturer" includes any person, firm, association, partnership, corporation, governmental entity, organization, or joint venture that produces any product that contains or uses hydrofluorocarbons or is an importer or domestic distributor of such a product.

(13) "Residential consumer refrigeration products" has the same meaning as defined in section 430.2 of Subpart A of 10 C.F.R. Part 430 (2017).

(14) "Retrofit" has the same meaning as defined in section 152 of Subpart F of 40 C.F.R. Part 82, as that section existed as of January 3, 2017.

(15) "Substitute" means a chemical, product substitute, or alternative manufacturing process, whether existing or new, that is used to perform a function previously performed by a class I substance or class II substance and any substitute subsequently adopted to perform that function, including, but not limited to, hydrofluorocarbons. "Substitute" does not include 2-BTP or any compound as applied to its use in aerospace fire extinguishing systems.

NEW SECTION. **Sec. 3.** A new section is added to chapter 70.235 RCW to read as follows:

(1) A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Washington if that equipment or product consists of, uses, or will use a substitute, as set forth in appendix U and V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, for the applications or end uses restricted by appendix U or V of the federal regulation, as those read on January 3, 2017, consistent with the deadlines established in subsection (2) of this section. Except where existing equipment is retrofit, nothing in this subsection requires a person that acquired a restricted product or equipment prior to the effective date of the restrictions in subsection (2) of this section to cease use of that product or equipment. Products or equipment manufactured prior to the applicable effective date of the restrictions specified in subsection (2) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date.

(2) The restrictions under subsection (1) of this section for the following products and equipment identified in appendix U and V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, take effect beginning:

(a) January 1, 2020, for:

(i) Propellants;

(ii) Rigid polyurethane applications and spray foam, flexible polyurethane, integral skin polyurethane, flexible polyurethane foam, polystyrene extruded sheet, polyolefin, phenolic insulation board, and bunstock;

(iii) Supermarket systems, remote condensing units, stand-alone units, and vending machines;

(b) January 1, 2021, for:

(i) Refrigerated food processing and dispensing equipment;

(ii) Compact residential consumer refrigeration products;

(iii) Polystyrene extruded boardstock and billet, and rigid polyurethane low-pressure two component spray foam;

(c) January 1, 2022, for residential consumer refrigeration products other than compact and built-in residential consumer refrigeration products;

(d) January 1, 2023, for cold storage warehouses;

(e) January 1, 2023, for built-in residential consumer refrigeration products;

(f) January 1, 2024, for centrifugal chillers and positive displacement chillers; and

(g) On either January 1, 2020, or the effective date of the restrictions identified in appendix U and V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, whichever comes later, for all other applications and end uses for substitutes not covered by the categories listed in (a) through (f) of this subsection.

(3) The department may by rule:

(a) Modify the effective date of a prohibition established in subsection (2) of this section if the department determines that the rule reduces the overall risk to human health or the environment and reflects the earliest date that a substitute is currently or potentially available;

(b) Prohibit the use of a substitute if the department determines that the prohibition reduces the overall risk to human health or the environment and that a lower risk substitute is currently or potentially available;

(c)(i) Adopt a list of approved substitutes, use conditions, or use limits, if any; and

(ii) Add or remove substitutes, use conditions, or use limits to or from the list of approved substitutes if the department determines those substitutes reduce the overall risk to human health and the environment; and

(d) Designate acceptable uses of hydrofluorocarbons for medical uses that are exempt from the requirements of subsection (2) of this section.

(4)(a) Within twelve months of another state's enactment or adoption of restrictions on substitutes applicable to new light duty vehicles, the department may adopt restrictions applicable to the sale, lease, rental, or other introduction into commerce by a manufacturer of new light duty vehicles consistent with the restrictions identified in appendix B, Subpart G of 40 C.F.R. Part 82, as it read on January 3, 2017. The department may not adopt restrictions that take effect prior to the effective date of restrictions adopted or enacted in at least one other state.

(b) If the United States environmental protection agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of seven hundred fifty or less for foam blowing of polystyrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the significant new

alternatives policy program under section 7671(k) of the federal clean air act (42 U.S.C. Sec. 7401 et seq.), the department must expeditiously propose a rule consistent with RCW 34.05.320 to conform the requirements established under this section with that federal action.

(5) A manufacturer must disclose the substitutes used in its products or equipment. That disclosure must take the form of:

(a) A label on the equipment or product. The label must meet requirements designated by the department by rule. To the extent feasible, the department must recognize existing labeling that provides sufficient disclosure of the use of substitutes in the product or equipment.

(i) The department must consider labels required by state building codes and other safety standards in its rule making; and

(ii) The department may not require labeling of aircraft and aircraft components subject to certification requirements of the federal aviation administration.

(b) Submitting information about the use of substitutes to the department, upon request.

(i) By December 31, 2019, all manufacturers must notify the department of the status of each product class utilizing hydrofluorocarbons or other substitutes restricted under subsection (1) of this section that the manufacturer sells, offers for sale, leases, installs, or rents in Washington state. This status notification must identify the substitutes used by products or equipment in each product or equipment class in a manner determined by rule by the department.

(ii) Within one hundred twenty days after the date of a restriction put in place under this section, any manufacturer affected by the restriction must provide an updated status notification. This notification must indicate whether the manufacturer has ceased the use of hydrofluorocarbons or substitutes restricted under this section within each product class and, if not, what hydrofluorocarbons or other restricted substitutes remain in use.

(iii) After the effective date of a restriction put in place under this section, any manufacturer must provide an updated status notification when the manufacturer introduces a new or modified product or piece of equipment that uses hydrofluorocarbons or changes the type of hydrofluorocarbons utilized within a product class

affected by a restriction. Such a notification must occur within one hundred twenty days of the introduction into commerce in Washington of the product or equipment triggering this notification requirement.

(6) The department may adopt rules to administer, implement, and enforce this section. If the department elects to adopt rules, the department must seek, where feasible and appropriate, to adopt rules, including rules under subsection (4) of this section, that are the same or consistent with the regulatory standards, exemptions, reporting obligations, disclosure requirements, and other compliance requirements of other states or the federal government that have adopted restrictions on the use of hydrofluorocarbons and other substitutes. Prior to the adoption or update of a rule under this section, the department must identify the sources of information it relied upon, including peer-reviewed science.

(7) For the purposes of implementing the restrictions specified in appendix U of Subpart G of 40 C.F.R. Part 82, as it read on January 3, 2017, consistent with this section, the department must interpret the term "aircraft maintenance" to mean activities to support the production, fabrication, manufacture, rework, inspection, maintenance, overhaul, or repair of commercial, civil, or military aircraft, aircraft parts, aerospace vehicles, or aerospace components.

(8) The authority granted by this section to the department for restricting the use of substitutes is supplementary to the department's authority to control air pollution pursuant to chapter 70.94 RCW. Nothing in this section limits the authority of the department under chapter 70.94 RCW.

(9) Except where existing equipment is retrofit, the restrictions of this section do not apply to or limit any use of commercial refrigeration equipment that was installed or in use prior to the effective date of the restrictions established in this section.

Sec. 4. RCW 70.94.430 and 2011 c 96 s 49 are each amended to read as follows:

(1) Any person who knowingly violates any of the provisions of chapter 70.94 or 70.120 RCW, section 3 of this act, or any ordinance, resolution, or regulation in force pursuant thereto is guilty of a gross misdemeanor and upon conviction thereof shall be punished by a fine of not more than ten thousand dollars, or by imprisonment in the

county jail for up to three hundred sixty-four days, or by both for each separate violation.

(2) Any person who negligently releases into the ambient air any substance listed by the department of ecology as a hazardous air pollutant, other than in compliance with the terms of an applicable permit or emission limit, and who at the time negligently places another person in imminent danger of death or substantial bodily harm is guilty of a gross misdemeanor and shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for up to three hundred sixty-four days, or both.

(3) Any person who knowingly releases into the ambient air any substance listed by the department of ecology as a hazardous air pollutant, other than in compliance with the terms of an applicable permit or emission limit, and who knows at the time that he or she thereby places another person in imminent danger of death or substantial bodily harm, is guilty of a class C felony and shall, upon conviction, be punished by a fine of not less than fifty thousand dollars, or by imprisonment for not more than five years, or both.

(4) Any person who knowingly fails to disclose a potential conflict of interest under RCW 70.94.100 is guilty of a gross misdemeanor, and upon conviction thereof shall be punished by a fine of not more than five thousand dollars.

Sec. 5. RCW 70.94.431 and 2013 c 51 s 6 are each amended to read as follows:

(1)(a) Except as provided in RCW 43.05.060 through 43.05.080 and 43.05.150, and in addition to or as an alternate to any other penalty provided by law, any person who violates any of the provisions of this chapter, chapter 70.120 ((~~RCW, chapter~~)) or 70.310 RCW, section 3 of this act, or any of the rules in force under such chapters or section may incur a civil penalty in an amount not to exceed ten thousand dollars per day for each violation. Each such violation shall be a separate and distinct offense, and in case of a continuing violation, each day's continuance shall be a separate and distinct violation.

(b) Any person who fails to take action as specified by an order issued pursuant to this chapter shall be liable for a civil penalty of not more than ten thousand dollars for each day of continued noncompliance.

(2)(a) Penalties incurred but not paid shall accrue interest, beginning on the ninety-first day following the date that the penalty becomes due and payable, at the highest rate allowed by RCW 19.52.020 on the date that the penalty becomes due and payable. If violations or penalties are appealed, interest shall not begin to accrue until the thirty-first day following final resolution of the appeal.

(b) The maximum penalty amounts established in this section may be increased annually to account for inflation as determined by the state office of the economic and revenue forecast council.

(3) Each act of commission or omission which procures, aids or abets in the violation shall be considered a violation under the provisions of this section and subject to the same penalty. The penalties provided in this section shall be imposed pursuant to RCW 43.21B.300.

(4) All penalties recovered under this section by the department shall be paid into the state treasury and credited to the air pollution control account established in RCW 70.94.015 or, if recovered by the authority, shall be paid into the treasury of the authority and credited to its funds. If a prior penalty for the same violation has been paid to a local authority, the penalty imposed by the department under subsection (1) of this section shall be reduced by the amount of the payment.

(5) To secure the penalty incurred under this section, the state or the authority shall have a lien on any vessel used or operated in violation of this chapter which shall be enforced as provided in RCW 60.36.050.

(6) Public or private entities that are recipients or potential recipients of department grants, whether for air quality related activities or not, may have such grants rescinded or withheld by the department for failure to comply with provisions of this chapter.

(7) In addition to other penalties provided by this chapter, persons knowingly under-reporting emissions or other information used to set fees, or persons required to pay emission or permit fees who are more than ninety days late with such payments may be subject to a penalty equal to three times the amount of the original fee owed.

(8) ((~~By January 1, 1992,~~)) The department shall develop rules for excusing excess emissions from enforcement action if such excess emissions are unavoidable. The rules shall specify the criteria and procedures for the department and local air authorities to determine

whether a period of excess emissions is excusable in accordance with the state implementation plan.

Sec. 6. RCW 70.94.015 and 1998 c 321 s 33 are each amended to read as follows:

(1) The air pollution control account is established in the state treasury. All receipts collected by or on behalf of the department from RCW 70.94.151(2), and receipts from nonpermit program sources under RCW 70.94.152(1) and 70.94.154(7), and all receipts from RCW ((~~70.94.650, 70.94.660, 82.44.020(2), and 82.50.405~~)) 70.94.6528 and 70.94.6534 shall be deposited into the account. Moneys in the account may be spent only after appropriation. Expenditures from the account may be used only to develop and implement the provisions of chapters 70.94 and 70.120 RCW and section 3 of this act.

(2) The amounts collected and allocated in accordance with this section shall be expended upon appropriation except as otherwise provided in this section and in accordance with the following limitations:

Portions of moneys received by the department of ecology from the air pollution control account shall be distributed by the department to local authorities based on:

(a) The level and extent of air quality problems within such authority's jurisdiction;

(b) The costs associated with implementing air pollution regulatory programs by such authority; and

(c) The amount of funding available to such authority from other sources, whether state, federal, or local, that could be used to implement such programs.

(3) The air operating permit account is created in the custody of the state treasurer. All receipts collected by or on behalf of the department from permit program sources under RCW 70.94.152(1), 70.94.161, 70.94.162, and 70.94.154(7) shall be deposited into the account. Expenditures from the account may be used only for the activities described in RCW 70.94.152(1), 70.94.161, 70.94.162, and 70.94.154(7). Moneys in the account may be spent only after appropriation.

NEW SECTION. **Sec. 7.** A new section is added to chapter 19.27 RCW to read as follows:

The building code council shall adopt rules that permit the use of substitutes approved under section 3 of this act and that do not require the use of substitutes that are restricted under section 3 of this act.

NEW SECTION. **Sec. 8.** The department of ecology, in consultation with the department of commerce and the utilities and transportation commission, must complete a report addressing how to increase the use of refrigerants with a low global warming potential in mobile sources, utility equipment, and consumer appliances, and how to reduce other uses of hydrofluorocarbons in Washington. The report must be submitted to the legislature consistent with RCW 43.01.036 by December 1, 2020, and must include recommendations for how to fund, structure, and prioritize a state program that incentivizes or provides grants to support the elimination of legacy uses of hydrofluorocarbons regulated under section 3 of this act or uses of hydrofluorocarbons not covered by section 3 of this act.

NEW SECTION. **Sec. 9.** A new section is added to chapter 39.26 RCW to read as follows:

(1) The department shall establish purchasing and procurement policies that provide a preference for products that:

(a) Are not restricted under section 3 of this act;

(b) Do not contain hydrofluorocarbons or contain hydrofluorocarbons with a comparatively low global warming potential;

(c) Are not designed to function only in conjunction with hydrofluorocarbons characterized by a comparatively high global warming potential; and

(d) Were not manufactured using hydrofluorocarbons or were manufactured using hydrofluorocarbons with a low global warming potential.

(2) No agency may knowingly purchase products that are not accorded a preference in the purchasing and procurement policies established by the department pursuant to subsection (1) of this section, unless there is no cost-effective and technologically feasible option that is accorded a preference.

(3) Nothing in this section requires the department or any other state agency to breach an existing contract or dispose of stock that has been ordered or is in the possession of the department or other state agency as of the effective date of this section.

(4) By December 1, 2020, and each December 1st of even numbered years thereafter, the department must submit a status report to the appropriate committees of the house of representatives and senate regarding the implementation and compliance of the department and state agencies with this section.

NEW SECTION. **Sec. 10.** If any provision of this act or its application to any person or circumstance is held invalid, the remainder of the act or the application of the provision to other persons or circumstances is not affected.

--- **END** ---

Governor Approved California State Legislation: SB-1013

Senate Bill No. 1013

CHAPTER 375

An act to add Section 39734 to the Health and Safety Code, and to add Division 45 (commencing with Section 76000) to the Public Resources Code, relating to greenhouse gases.

[Approved by Governor September 13, 2018. Filed with Secretary of State September 13, 2018.]

LEGISLATIVE COUNSEL'S DIGEST

SB 1013, Lara. Fluorinated refrigerants.

(1) Existing law prohibits the manufacture and sale of specified chlorofluorocarbons (CFCs) as aerosol propellants, limits the percentage of new motor vehicles equipped with air-conditioners that utilize CFC-based products, requires the State Air Resources Board to adopt regulations to provide for the enforcement of those provisions, and imposes a civil penalty on persons violating those provisions.

This bill would apply all prohibitions on the use of class I substances, as defined, class II substances, as defined, and substitutes, as defined, under the federal Clean Air Act, as it read on specified dates, except as specified. The bill would authorize the state board to include in a specified regulation the modification of the deadlines of those prohibitions, a prohibition on the use of any substitute, and the creation and update of a list of approved substitutes, use conditions, or use limits if the state board makes certain findings for each. The bill would allow a violation of these provisions to be enjoined and would subject persons who violate these provisions to specified penalties. The bill would require all civil penalty money collected by the state board to be deposited in the Air Pollution Control Fund rather than the General Fund. Because a violation of these requirements would also be a crime, this bill would impose a state-mandated local program.

This bill would establish the Fluorinated Gases Emission Reduction Incentive Program, to be administered by the state board, to promote the adoption of new refrigerant technologies to achieve short- and long-term climate benefits, energy efficiency, and other cobenefits, as specified. The bill would authorize moneys from the Greenhouse Gas Reduction Fund to be allocated for incentives offered as part of the program.

This bill would require the Public Utilities Commission to consider developing a strategy for including low-global-warming-potential refrigerants in equipment funded by the energy efficiency programs overseen by the Public Utilities Commission.

This bill would require the State Energy Resources Conservation and Development Commission to identify opportunities to assess the energy

efficiency performance for low-global-warming-potential alternatives to current fluorinated-gas-based appliances and equipment.

This bill would require the Department of Community Services and Development to consider integrating low global warming potential as part of its ongoing administration of energy efficiency programs for household appliances.

(2) The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Section 39734 is added to the Health and Safety Code, to read:

39734. (a) The Legislature finds and declares that certain fluorinated gases are potent causes of global warming, and it is in the public interest that restrictions or prohibitions on the use of these gases be maintained and enhanced as appropriate in the state.

(b) For purposes of this section, the following definitions apply:

(1) "Class I substances" and "class II substances" mean those substances listed in 42 U.S.C. Sec. 7671a, as it read on November 15, 1990, or those substances listed in Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

(2) "Hydrofluorocarbons" mean fluorinated gases used primarily as refrigerants in refrigeration, air-conditioning equipment, foam expansion agents, aerosol propellants, solvents, and fire suppressants.

(3) "Residential consumer refrigeration products" has the same meaning as defined in Section 430.2 of Subpart A of 10 C.F.R. Part 430.

(4) "Substitute" means a chemical, product substitute, or alternative manufacturing process, whether existing or new, that is used to perform a function previously performed by a class I substance or class II substance and any substitute subsequently adopted to perform that function, including, but not limited to, hydrofluorocarbons.

(c) (1) All prohibitions on the use of class I substances and class II substances as set forth in 42 U.S.C. Secs. 7671a and 7671k, as those read on November 15, 1990, or any substitute as set forth in Appendix U and Appendix V of Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, shall apply, except as otherwise provided by in paragraph (3), state statute, or state regulation.

(2) If the United States Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend for foam blowing pursuant to the Significant New Alternatives Policy Program, adopted pursuant to Section 7671k of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the state board shall expeditiously initiate a rulemaking pursuant to this

section or other existing legal authority to conform its regulations with that federal action.

(3) (A) Prohibitions on residential consumer refrigeration products, except compact and built-in residential consumer refrigeration products, shall take effect January 1, 2022.

(B) Prohibitions on built-in residential consumer refrigeration products shall take effect on January 1, 2023.

(d) The state board may adopt a regulation that includes any of the following:

(1) The modification of the deadlines of a prohibition established pursuant to subdivision (c) if the state board determines that the modified deadline meets both of the following:

(A) Reduces the overall risk to human health or the environment.

(B) Reflects the earliest date that a substitute is currently or potentially available.

(2) The prohibition on the use of any substitute if the state board determines that the prohibition meets both of the following criteria:

(A) Reduces the overall risk to human health or the environment.

(B) A lower-risk substitute is currently or potentially available.

(3) The creation of a list of approved substitutes, use conditions, or use limits, if any, and the addition or removal of substitutes, use conditions, or use limits to or from the list of approved substitutes if the state board determines those substitutes reduce the overall risk to human health and the environment.

(e) A person shall not offer any equipment or product for sale, lease, rent, or otherwise cause any equipment or product to enter into commerce in California if that equipment or product uses or will use a substitute in a manner inconsistent with any of the following:

(1) Any prohibitions in subdivision (c).

(2) Any prohibitions, use conditions, or use limits in subdivision (d) or a state regulation.

(3) Any other applicable laws, including, but not limited to, the California Building Standards Code (Title 24 of the California Code of Regulations).

(f) (1) The state board may enforce this section. A violation of the requirements of this section may be enjoined pursuant to Section 41513 and is subject to the penalties set forth in Article 3 (commencing with Section 42400) of Chapter 4 of Part 4.

(2) Notwithstanding subdivisions (i) and (j) of Section 42410, the state board may impose an administrative penalty pursuant to Section 42410.

(3) Penalties collected pursuant to this section shall be deposited in the Air Pollution Control Fund.

(g) The provisions of this section are severable. If any provision of this section or its application is held invalid, that invalidity shall not affect other provisions or applications that can be given effect without the invalid provision or application.

SEC. 2. Division 45 (commencing with Section 76000) is added to the Public Resources Code, to read:

DIVISION 45. FLUORINATED REFRIGERANTS

76000. For purposes of this division, "GWP" means global warming potential.

76002. The Public Utilities Commission shall consider developing a strategy for including low-GWP refrigerants in equipment funded by the energy efficiency programs overseen by the Public Utilities Commission.

76004. The State Energy Resources Conservation and Development Commission shall identify opportunities to assess the energy efficiency performance for low-GWP alternatives for current fluorinated-gas-based appliances and equipment.

76006. The Department of Community Services and Development shall consider integrating low GWP as part of its ongoing administration of energy efficiency programs for household appliances, including, but not limited to, the Energy Efficiency Low-Income Weatherization Program.

76008. (a) (1) The Fluorinated Gases Emission Reduction Incentive Program is hereby established to be administered by the State Air Resources Board to promote the adoption of refrigerant technologies to achieve short- and long-term climate benefits, energy efficiency, and other cobenefits.

(2) Moneys for the program shall be available to the State Air Resources Board, upon appropriation by the Legislature, including, but not limited to, moneys from the Greenhouse Gas Reduction Fund, created pursuant to Section 16428.8 of the Government Code.

(b) The state board may contract with a third party to administer this section.

(c) Eligible applicants shall be users of systems of refrigerant technologies.

(d) When awarding incentives, the State Air Resources Board shall prioritize both of the following:

(1) Low-GWP alternatives that maximize emissions reductions and focus on key cooling sectors where technology is commercially available.

(2) The use of low-GWP alternatives in new technologies for which higher upfront costs, compared with hydrofluorocarbon systems, have been identified by the State Air Resources Board as a market impediment.

(e) The program shall include all of the following:

(1) Allow a retailer to apply for funding for multiple stores or units.

(2) Identify opportunities for outreach efforts to demonstrate and provide information about low-GWP alternatives in refrigeration and air-conditioning.

(3) Require the professional installation and maintenance of alternative refrigeration and air-conditioning equipment in order to maximize energy efficiency and minimize emissions.

(4) Identify opportunities to increase the recovery, reclamation, or destruction of existing high-GWP refrigerants.

(5) Identify opportunities to offer matching funds to local publicly owned electric and gas utilities that offer their own low-GWP incentive programs.

(6) Comply with federal and state laws regarding the disposal and capture of fluorinated gases.

(7) Determine the most environmentally beneficial outcome for the replaced equipment.

SEC. 3. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because the only costs that may be incurred by a local agency or school district will be incurred because this act creates a new crime or infraction, eliminates a crime or infraction, or changes the penalty for a crime or infraction, within the meaning of Section 17556 of the Government Code, or changes the definition of a crime within the meaning of Section 6 of Article XIII B of the California Constitution.

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Governor Approved Vermont Legislation: Senate Bill 30 (Act 65)

No. 65. An act relating to the regulation of hydrofluorocarbons.

(S.30)

It is hereby enacted by the General Assembly of the State of Vermont:

Sec. 1. 10 V.S.A. § 586 is added to read:

§ 586. REGULATION OF HYDROFLUOROCARBONS

(a) As used in this section:

(1) "Class I substance" and "class II substance" mean those substances listed in the 42 U.S.C. § 7671a, as it read on November 15, 1990 and Appendix A or B of Subpart A of 40 C.F.R. Part 82, as those read on January 3, 2017.

(2) "Hydrofluorocarbon" means a class of greenhouse gases that are saturated organic compounds containing hydrogen, fluorine, and carbon.

(3) "Residential consumer refrigeration product" has the same meaning as in Section 430.2 of Subpart A of 10 C.F.R. Part 430.

(4) "Retrofit" has the same meaning as in section 152 of Subpart F of 40 C.F.R. Part 82, as that section existed as of January 3, 2017.

(5) "Substitute" means a chemical, product, or alternative manufacturing process, whether new or retrofit, that is used to perform a function previously performed by a class I substance or class II substance and any substitute subsequently adopted to perform that function, including hydrofluorocarbons.

(b)(1) A person may not offer any product or equipment for sale, lease, or rent, or install or otherwise cause any equipment or product to enter into commerce in Vermont if that equipment or product consists of, uses, or will

use a substitute, as set forth in Appendix U or V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, for the applications or end uses restricted by Appendix U or V, as those read on January 3, 2017, and consistent with the dates established in subdivision (b)(4) of this section.

(2) Except where existing equipment is retrofit, nothing in this subsection requires a person that acquired a restricted product or equipment prior to an effective date of the restrictions in subdivision (b)(4) of this section to cease use of that product or equipment.

(3) Products or equipment manufactured prior to an applicable effective date of the restrictions in subdivision (b)(4) of this section may be sold, imported, exported, distributed, installed, and used after the specified effective date.

(4) The restrictions under subdivision (b)(1) of this section shall take effect beginning:

(A) January 1, 2021, for propellants, rigid polyurethane applications and spray foam, flexible polyurethane, integral skin polyurethane, flexible polyurethane foam, polystyrene extruded sheet, polyolefin, phenolic insulation board and bunstock, supermarket systems, remote condensing units, stand-alone units, and vending machines;

(B) January 1, 2021, for refrigerated food processing and dispensing equipment, compact residential consumer refrigeration products, and

polystyrene extruded boardstock and billet, and rigid polyurethane low-pressure two component-spray foam;

(C) January 1, 2022, for residential consumer refrigeration products other than compact and built-in residential consumer refrigeration products;

(D) January 1, 2023, for cold storage warehouses and built-in residential consumer refrigeration products;

(E) January 1, 2024, for centrifugal chillers and positive displacement chillers; and

(F) January 1, 2020, or the effective date of the restrictions identified in appendix U or V, Subpart G of 40 C.F.R. Part 82, as those read on January 3, 2017, whichever comes later, for all other applications and end uses for substitutes not covered by the categories listed in subdivisions (A) through (E) of this subsection (b).

(c) The Secretary may adopt rules that include any of the following:

(1) The modification of the date of a prohibition established pursuant to subsection (b) of this section if the Secretary determines that the modified deadline meets both of the following criteria:

(A) reduces the overall risk to human health or the environment; and

(B) reflects the earliest date that a substitute is currently or potentially available.

(2) The prohibition on the use of any substitute if the Secretary determines that the prohibition meets both of the following criteria:

(A) reduces the overall risk to human health or the environment; and

(B) a lower-risk substitute is currently or potentially available.

(3) The creation of a list of approved substitutes, use conditions, or use limits, if any, and the addition or removal of substitutes, use conditions, or use limits to or from the list of approved substitutes if the Secretary determines those substitutes reduce the overall risk to human health and the environment.

(4) The creation of a list of exemptions from this section for medical uses of hydrofluorocarbons.

(d) If the U.S. Environmental Protection Agency approves a previously prohibited hydrofluorocarbon blend with a global warming potential of 750 or less for foam blowing of polystyrene extruded boardstock and billet and rigid polyurethane low-pressure two-component spray foam pursuant to the Significant New Alternatives Policy Program under section 7671(k) of the federal Clean Air Act (42 U.S.C. Sec. 7401 et seq.), the Secretary shall expeditiously propose a rule to conform to the requirements established under this section with that federal action.

Sec. 2. ADOPTION OF RULES AND REPORTING

(a) On or before July 1, 2020, the Secretary of Natural Resources shall file with the Secretary of State proposed rules to establish a schedule to phase down the use of hydrofluorocarbons to meet the goal of a 40 percent reduction from the 2013 level of use by 2030.

(b) On or before January 15, 2020, the Secretary of Natural Resources shall submit a report to the Senate Committee on Natural Resources and Energy and the House Committee on Natural Resources, Fish, and Wildlife on progress in filing proposed rules pursuant to subsection (a) of this section and any delays in such rulemaking.

Sec. 3. EFFECTIVE DATE

This act shall take effect on July 1, 2019.

Date Governor signed bill: June 17, 2019

END OF DOCUMENT