Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses

7 DE Admin Code 1151 – Public Workshop

DNREC – DAQ

Public Workshops

- Division of Waste and Hazardous Substances
  Lukens Drive Office
  391 Lukens Drive, New Caste, DE, 19720
  Conference Room B
  December 9, 2019 at 6:00 pm
- Delaware Technical Community College Owens Campus
  Carter Partnership Center
  21179 College Drive, Georgetown, DE 19947
  Rooms 540 G & H
  December 10, 2019 at 6:00 pm
- Division of Air Quality
  State Street Commons, Suite 6A
  100 W, Water Street, Dover, DE 19904
  Training Room
  December 18, 2019 at 10:00 am

Public Workshop Goals

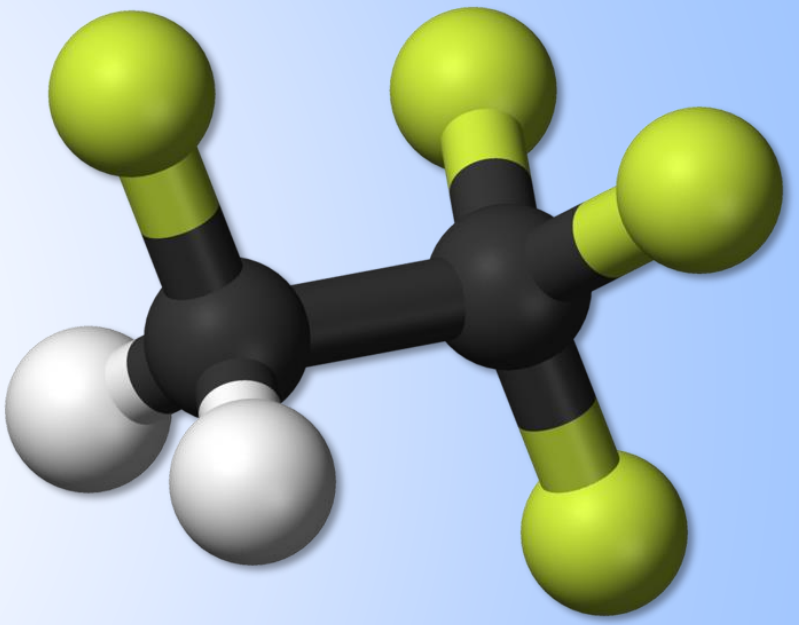
- Inform the public on the background leading to this initiative
- Inform Delaware stakeholders of the content of the proposal *7 DE Admin. Code 1151*
- *Gather additional public comments on specific questions concerning the proposed language.*

Agenda

- Staff Presentation of the background information leading to this effort
- Staff Presentation of the prohibitions and proposal requirements
- *Questions and answers*

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

Background and Purpose

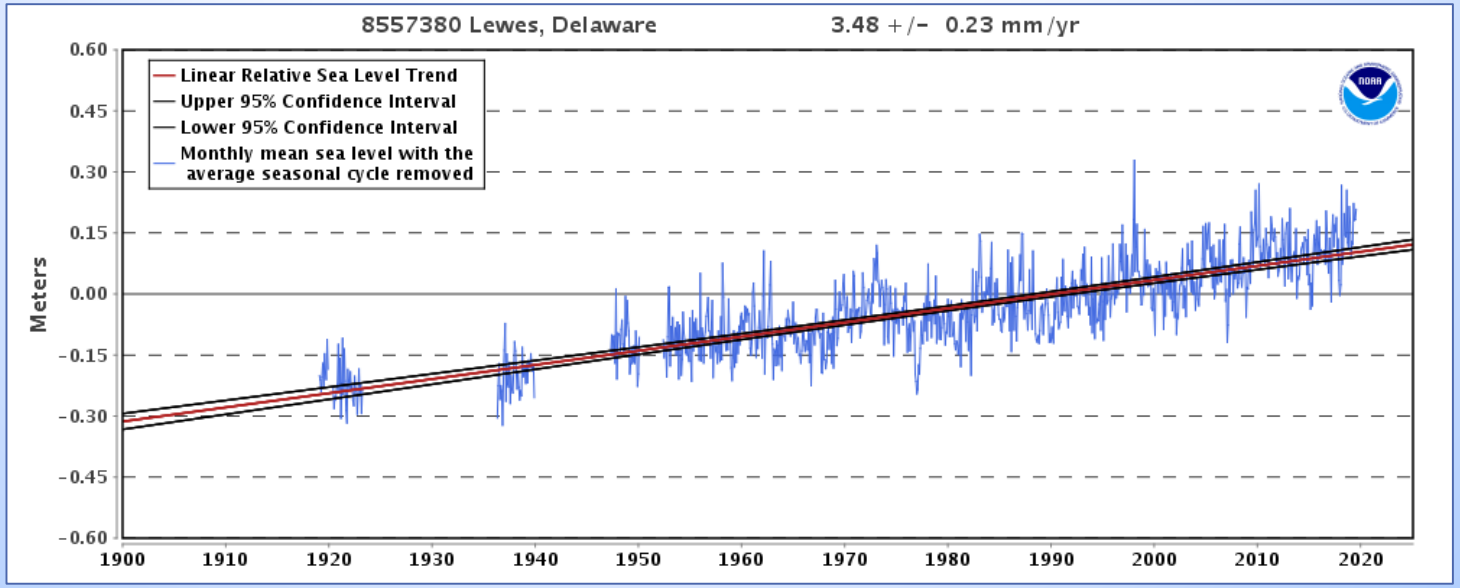
- The rapid and extensive use of HFCs has become a concern
- HFC emissions are highly potent GHGs
- The GWP is a relative factor comparing the climate-based impact to CO_2
  - e.g. 1 lb of HFC-134a emitted has the same warming effect of 1,430 lbs CO_2 emitted
- HFCs are used as single components or as 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)

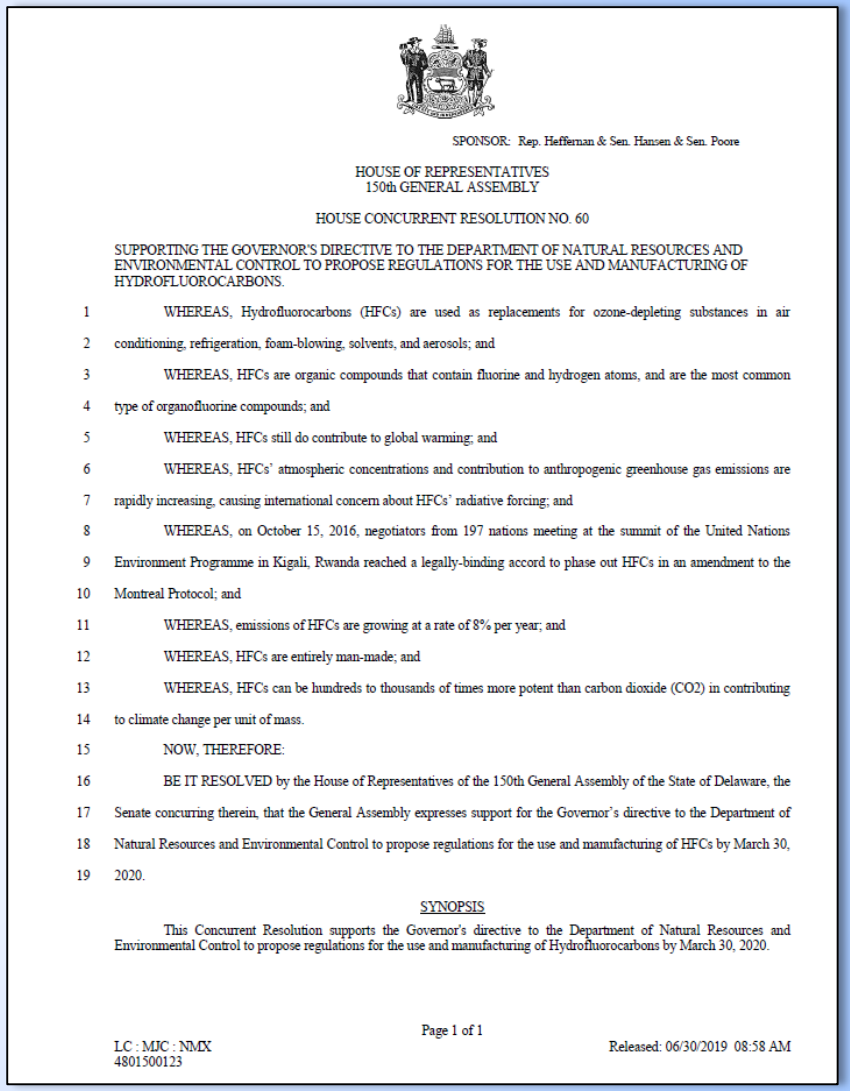
Introduction

- 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
- 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
4801500123

Released: 06/30/2019 08:58 AM

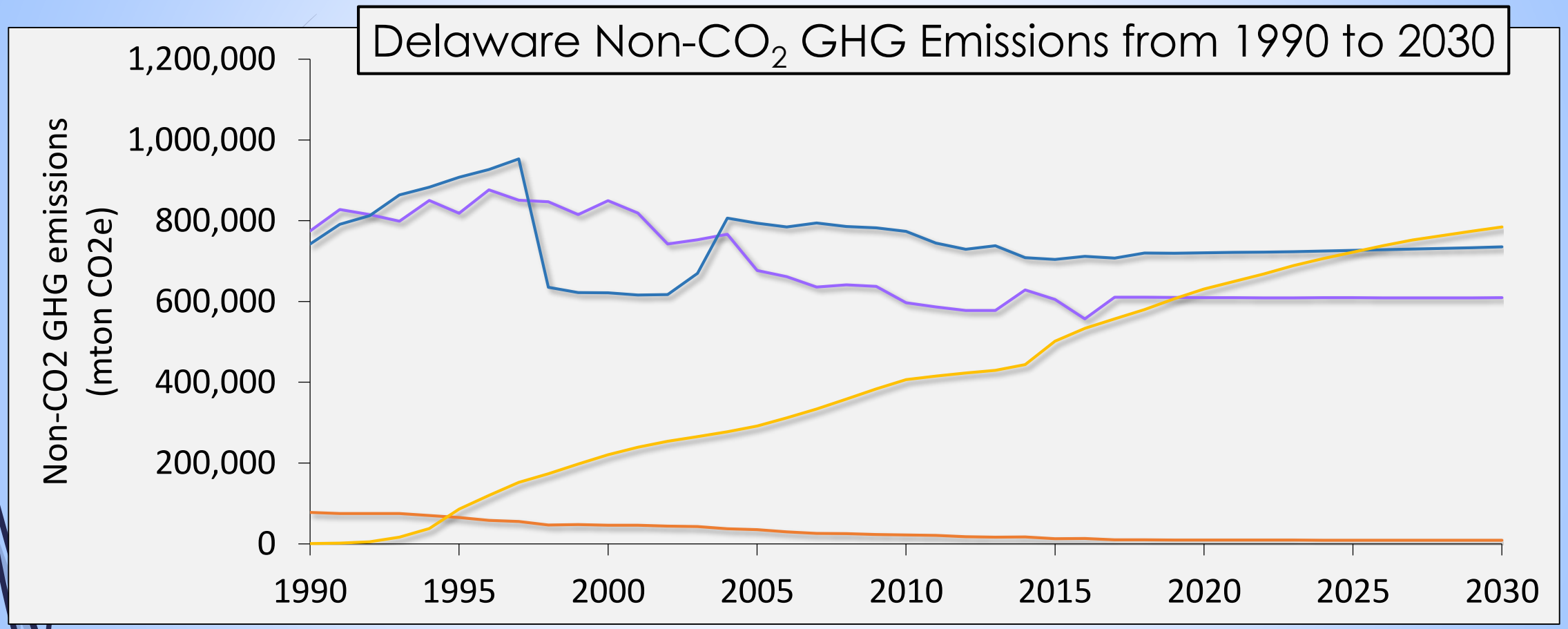
Background and Purpose

- 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 ozone depleting substance to reduce overall risk to human health and environment
- EPA listed various HFCs for use as ozone depleting substance substitutes in final rules added under the SNAP program in 2015 and 2016

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

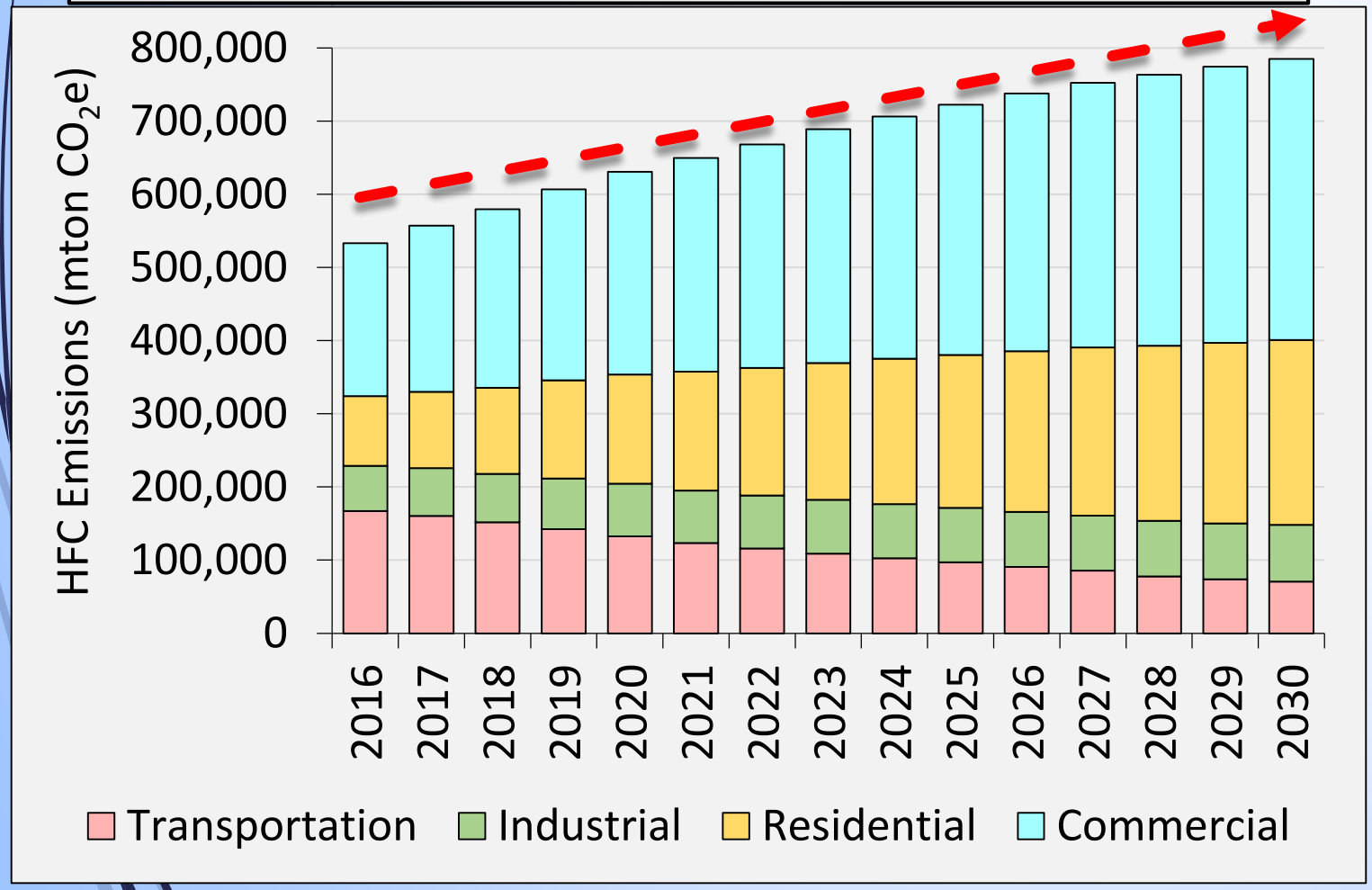
Background and Purpose



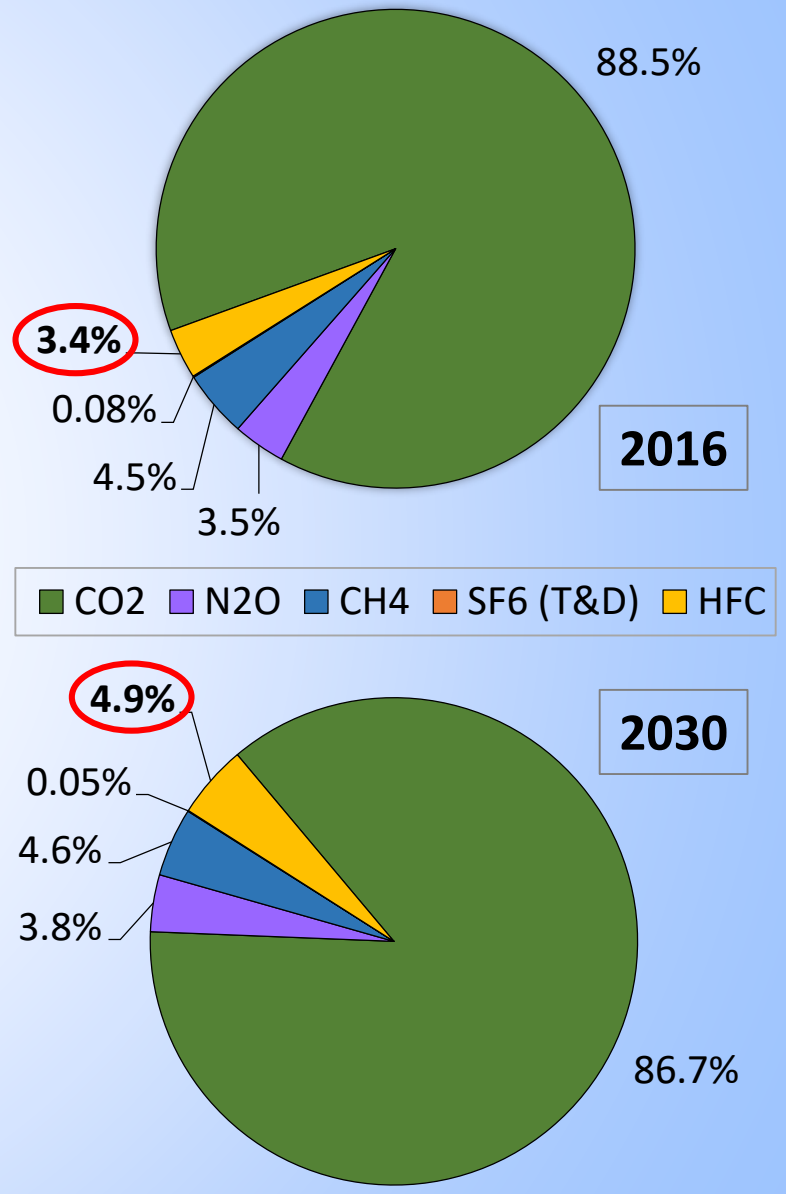
- HFCs are the fastest growing GHG in Delaware
- Emissions are projected to increase by 47% from 2016 to 2030

Background and Purpose

Delaware HFC Emissions by sector from 2016 to 2030



Delaware HFC Emissions by gas



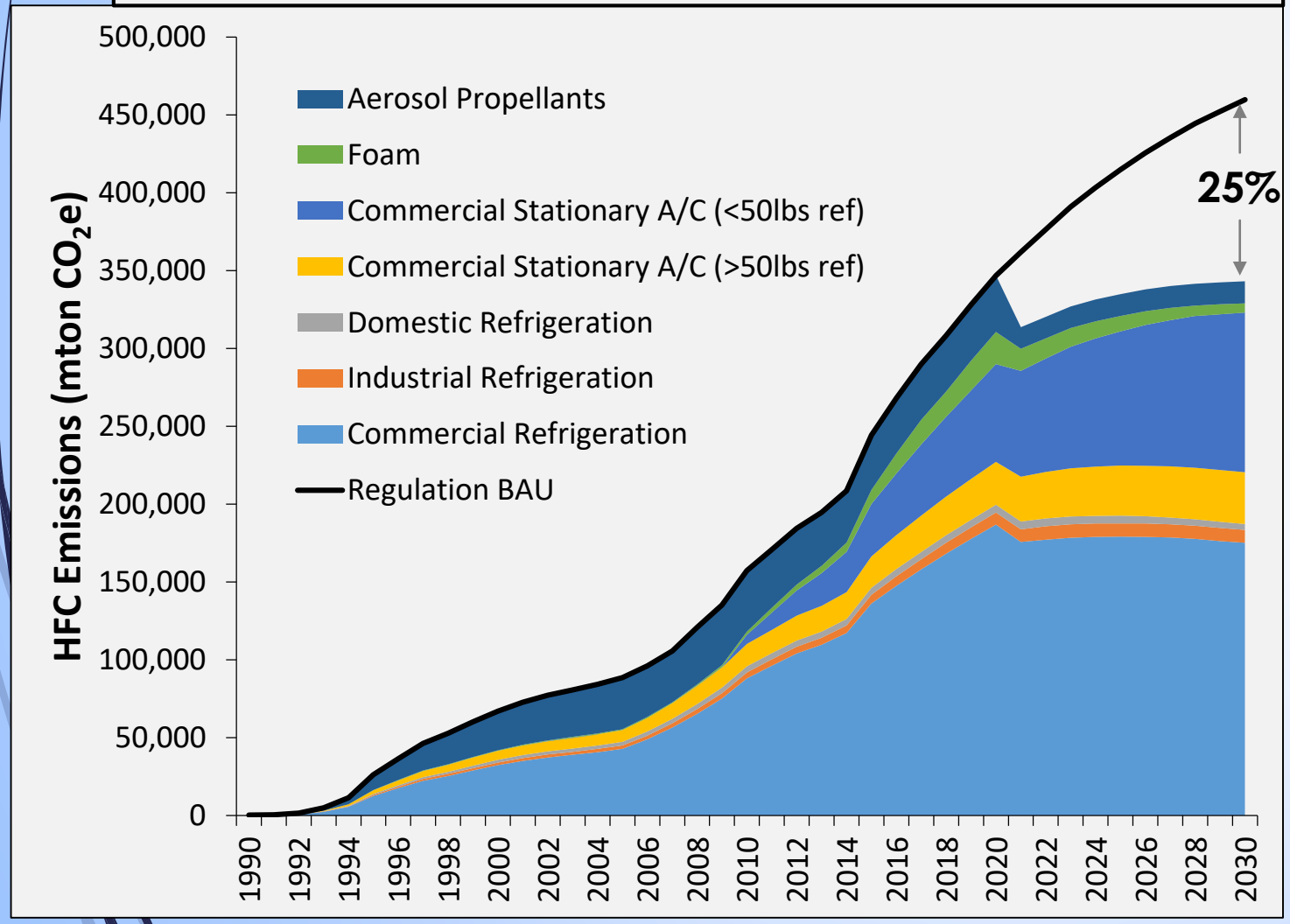
Background and Purpose

- Total HFC emission estimates are calculated for sectors included and not included in this regulation

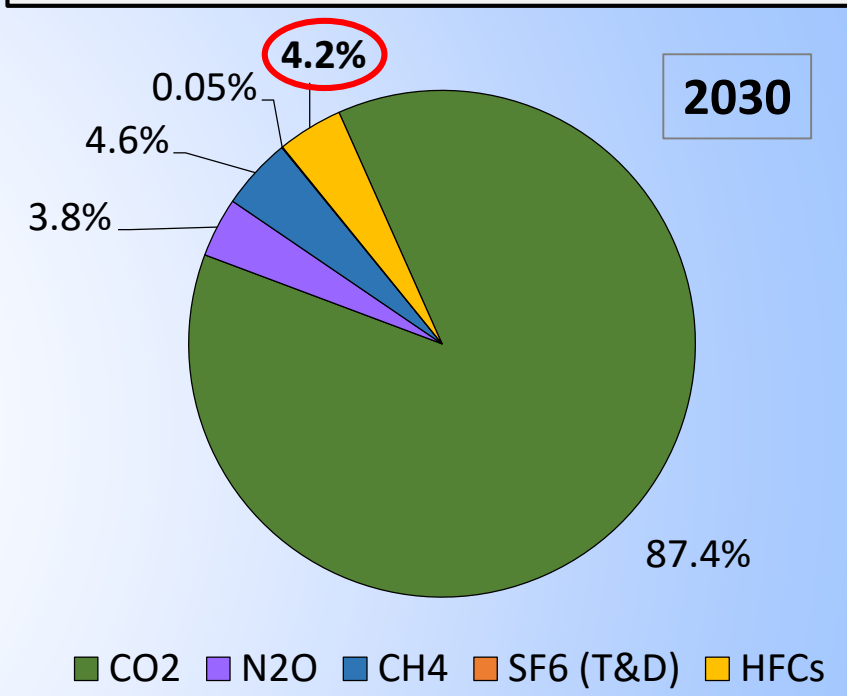
HFC Emissions Sectors		2016 Emissions
Commercial Refrigeration	Included in Regulation	268,000 mtonCO_2e
Industrial Refrigeration		
Domestic Refrigeration		
Commercial Stationary A/C (>50 lb ref)		
Commercial Stationary A/C (<50 lb ref)		
Foam		
Aerosol Propellants		
Other Residential	For future consideration	265,000 mtonCO_2e
Transportation		
Solvents and Fire Suppressant		

Background and Purpose

Delaware HFC Emissions estimates and projections



Delaware HFC Emissions by gas



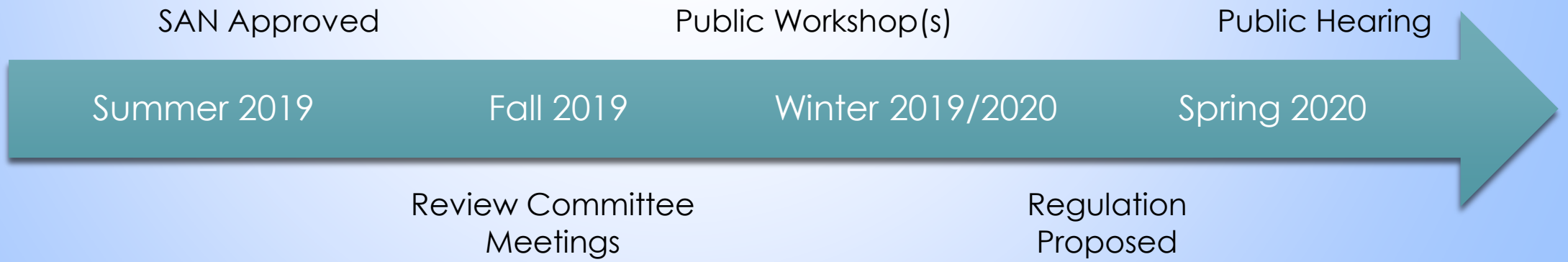
- Regulated sectors under 1151 see an HFC emissions reduction of **25%** by 2030 compared to the BAU case

Background and Purpose

- Phase-down of high-GWP HFCs is necessary to mitigate the adverse effects of climate change
- 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
- Currently, DE is on track to achieve 16% reduction in GHG emissions in 2025 from 2005 levels
  - Regulation 1151 projects to include an additional **0.5% reduction** by 2025
- Though not quantified, US EPA's initial assessment of the SNAP rules suggests alternative low-GWP refrigerants may achieve increases in energy efficiency

Regulatory Timeline

- Start Action Notice approved August 15, 2019
- Review Committee Meetings – September & October 2019
- Public Workshops – December 2019
  - **Public Comments Period ending on January 17, 2020**
- Initial Publication - March 1st Register
- Public Hearing on the Proposal – TBD, 2020



Draft Regulatory Language

Available on DNREC's Regulatory Development Process Website

https://dnrec.alpha.delaware.gov/air/permitting/under-development/

1.0 Purpose

Page 1 of Draft Language

- **Purpose:**

  This regulation establishes the prohibitions and requirements for the use and manufacture of hydrofluorocarbons in the State of Delaware according to their specific end usage (including air conditioning and refrigeration equipment, aerosol propellants, and foam end-uses) and adopts specific United States Environmental Protection Agency Significant New Alternatives Policy Program prohibitions. This regulation is designed to support greenhouse gas emission reductions in the State of Delaware.

2.0 Applicability

Page 1 of Draft Language

- This regulation applies to any person who sells, offers for sale, installs, uses, or manufactures in the State of Delaware, any substance used in end-uses listed in Section 6.0.

- Substances used in end-uses listed in Section 7.0 are exempt from the prohibitions covered in this regulation.

- ***Request for comments on the regulated activities listed.***

3.0 Definitions

Pages 1-7 of Draft Language

- **Request for further comments on the definitions listed in Section 3.0**
- "***Manufacturer***" *means 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.*
- "***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 after the effective date of this regulation, expanded after the effective date of this regulation, to handle an expanded cooling load by the addition of components in which the capacity of the system is increased, including refrigerant lines, evaporators, compressors, and condensers, or replaced or cumulatively replaced after the effective date of this regulation, such that the capital cost of replacing or cumulatively replacing components exceeds 50% of the capital cost of replacing the whole system.*
- "***Use***" *means any utilization of 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.*
- **Request for further comments on any missing definitions**

4.0 Standards (Requirements)

Page 7 of Draft Language

- **Prohibitions**

"No person may sell, install, use or manufacture 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 6.0, and not exempt by Section 7.0."

- **Existing equipment or product:**

"Except where an existing system is retrofit, nothing in this regulation requires a person that acquired a product or equipment containing a prohibited substance prior to an effective date of the prohibition in Section 6.0 to cease use of that product or equipment."

- **Sell Through Provision:**

"Products or equipment manufactured prior to the applicable effective date of the restrictions specified in Table 1 of subsection 6.1.1 of this regulation (including spray foam systems not yet applied on site) may be sold, imported, exported, distributed, installed, and used after the specified date of prohibition."

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- Intent is to inform the buyer on the product/equipment's compliance
- Significant stakeholder input, highlighting the practical concerns and existing practices in their respective end-uses, was gathered
- Four disclosure statements categories are proposed to address industry concerns:
  - Refrigeration and air-conditioning equipment that are neither factory-charged nor pre-charged with a refrigerant
  - Refrigeration and air-conditioning equipment that are factory-charged or pre-charged with a refrigerant
  - Foam
  - Aerosol propellants
- **Request for further comments on the proposed categories for the Disclosure Statement.**

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 1) For refrigeration and air-conditioning equipment that are neither factory-charged nor pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend:
  - Requirement to include a Disclosure Statement or Label Stating:

"This equipment is prohibited from using any substance on the "List of Prohibited Substances" for that specific end-use, in accordance with State regulations for hydrofluorocarbons."

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 2) For refrigeration and air-conditioning equipment that are factory-charged or pre-charged with a hydrofluorocarbon or hydrofluorocarbon blend:
  - Requirement to include a Disclosure Statement or Label Stating:
    - The date of manufacture; and
    - The refrigerant and foam blowing agent the product or equipment contains.
  - **Except** for products and equipment with existing labeling required by state building codes and safety standards which contain the information required

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 3) For foam products
  - Requirement to include a Disclosure Statement or Label Stating:
    - OPTION 1
      - The date of manufacture; and
      - The hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

      OR
    - OPTION 2
      - "Where sold, compliant with State HFC regulations."

- **Request for comments on whether to specify that Option 2 should be a label or a sticker applied to product packaging.**

4.2 Disclosure Statement

Pages 7-8 of Draft Language

- 4) Aerosol Propellants
  - Requirement to include a Disclosure Statement or Label Stating:
    - OPTION 1
      - The date of manufacture or a date code representing the date, shall be indicated on the label, lid, or bottom of the container. If the manufacturer uses a date code for any product, the manufacturer shall file an explanation of each code to the Department; and
      - The hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product, or a reference to a Safety Data Sheet (complying with 29 CFR 1910.1200 requirements), if the latter identifies the hydrofluorocarbon the product contains or the hydrofluorocarbon used to make the product.

      OR
    - OPTION 2
      - "Where sold, compliant with State HFC regulations."
  - **Request for further comments on the feasibility of having the MSDS properly referenced to the buyer.**

6.0 List of Prohibited Substances

Table 1 on pages 8-12 of Draft Language

- Cover the following end-use categories:
  - **Aerosol propellants**: Effective Date of Prohibition January 1, 2021
  - **Air Conditioning**: Effective Date of Prohibition January 1, 2024
  - **Refrigeration**:
    - Effective Dates of Prohibition vary between January 1, 2021 to January 1, 2023
  - **Foams**: Effective Date of Prohibition January 1, 2021
- Aligned with EPA SNAP Rules 20 and 21 intended timeline
  - All SNAP effective dates prior to December 31st 2020 were adjusted to January 1st, 2021
  - New vending machines effective date was revised to January 1st, 2022.

6.1.2 Proposed modification to the List of Prohibited Substances

Page 12 of Draft Language

- Industry stakeholder request to include language exempting two foam products, provided that the EPA approves an HFCs blend under SNAP.
- *Proposed Language*

"A person subject to the list of prohibited substances in Section 6.0 of this regulation may request that the Department modifies the regulation to exclude hydrofluorocarbon blends with a global-warming-potential of 750 or less in rigid polyurethane low-pressure two-component spray foam and polystyrene extruded boardstock and billet. The request shall contain the following information:

- *A detailed description of the end-use category for which the modification is requested; and*
- *A demonstration that the U.S. EPA has approved the hydrofluorocarbon blend under the Significant New Alternatives Policy under section 7671(k) of the Clean Air Act."*

- ***Request for further comments on the proposed language.***

7.0 End-use and prohibited substances exemptions

Table 2 on pages 14-15 of Draft Language

- List of the Acceptable Uses for Prohibited Substances in End-Use Category
  - Aerosol propellants
  - Air Conditioning
  - Foams – Except Rigid polyurethane (PU) spray foam
  - Rigid polyurethane (PU) two-component spray foam

Please Submit your Comments by COB January 17, 2020

- By email to:

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ajo.rabemiarisoa@delaware.gov
(302) 739-9402

Christian Wisniewski
christian.wisniewski@delaware.gov
(302) 739-9402

Cool Switch Program – Low Impact Refrigerant Program

Goal

To incentivize the use of refrigerants with lower Global Warming Potential (GWP) refrigerants, to help accelerate the transition away high GWP refrigerants

For questions or additional information,

- Visit: https://dnrec.alpha.delaware.gov/climate-coastal-energy/
- Contact: Ed Synoski, Edward.Synoski@delaware.gov - (302) 735-3358

Thank you!

Questions and Discussion

Regulatory Development Process Website

https://dnrec.alpha.delaware.gov/air/permitting/under-development/