Entire Redesign of Commercial Refrigeration Market

AHRI, NAMA, NAFEM Meeting

with U.S. Department of Energy

June 16, 2023

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NAFEM
North American Association of Food Equipment Manufacturers

Introductions

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Introductions

- DOE
- AHRI
- NAMA
- NAFEM
- Members

Our Industry Has a History of Environmental Stewardship

The products and equipment manufactured by our members require energy – there's no getting around that fact

For more than 50 years, we have prioritized energy efficiency and environmental stewardship

- Our industry has:
- Improved overall efficiency 50 percent over the past 20 years
- Innovated "green" HVACR and water heating products such as geothermal and thermal heat pumps, tankless and solar-powered water heaters, dual-fuel hybrid heating systems, zone controls, ECM motors, variable frequency drives, and lower GWP refrigerants
- Led the development and continued maintenance of the ENERGY STAR ® program for commercial foodservice equipment

Recommended Path Forward

Because of uncertainty caused by refrigerant transition and the current redesigning of the entire commercial refrigeration market by January 1, 2025, we recommend that DOE issue a “No (new) Standard Standard” for these products, which would provide an additional three years before a new standard is promulgated.

Delay would provide time

- Collect actual data on products that are in the market
- Assess the impact of safety mitigation measures required for new refrigerants would be known
- Reduce burden on manufacturers and end-users
- Increase time between product redesign from two years to six years

Refrigerant Transition

- Sector Refrigerant Controls
- EPA Approval of Refrigerants
- Safety Standards Status
- Building Code Status
- Impact of Lack of Coordination

Technology Transition EPA Proposed Rule for Commercial Refrigeration Equipment

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Commercial Refrigeration: January 1, 2025

	Refrigeration Equipment (Proposed Compliance Date 1/1/25)	GWP
Industrial Process Refrigeration	Systems with refrigerant charge capacities of 200 pounds or greater	150
	Systems with refrigerant charge capacities less than 200 pounds	300
	High temperature side of cascade systems	300
	Chillers	700
Retail Food Refrigeration	Stand-alone units	150
	Refrigerated food processing and dispensing equipment	150
	Supermarket systems with refrigerant charge capacities of 200 pounds or greater	150
	Supermarket systems with refrigerant charge capacities less than 200 pounds charge	300
	Supermarket systems, high temperature side of cascade system	300
	Remote condensing units with refrigerant charge capacities of 200 pounds or greater	150
	Remote condensing units with refrigerant charge capacities less than 200 pounds	300
	Remote condensing units, high temperature side of cascade system	300
	Vending machines	150
Cold Storage Warehouse	Systems with refrigerant charge capacities of 200 pounds or greater	150
	Systems with refrigerant charge capacities less than 200 pounds	300
	High temperature side of cascade system	300
	Ice rinks	150
	Automatic commercial ice machines – selfcontained with refrigerant charge capacities of 500 grams or lower (Note: Does not align with petition)	150
	Transport refrigeration – intermodal containers	700
	Residential refrigeration	150

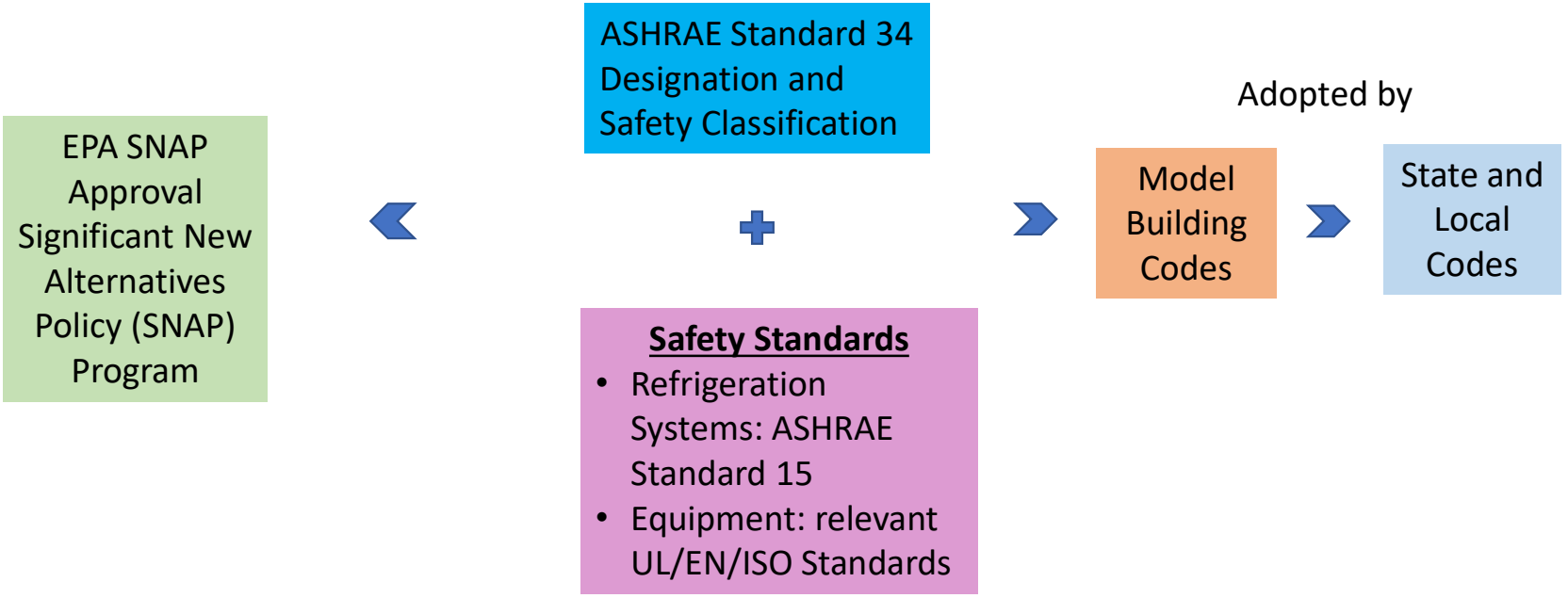
Sector Refrigerant Controls - Foams January 1, 2025

Foam Blowing Agents (Proposed Compliance Date 1/1/25)	GWP
Polystyrene – extruded boardstock and billet	150
Phenolic insulation board and bunstock	150
Rigid polyurethane – slabstock and other	150
Rigid polyurethane – appliance foam	150
Rigid polyurethane – commercial refrigeration and sandwich panels	150
Rigid polyurethane – marine flotation foam*	150
Rigid polyurethane – low pressure, twocomponent spray foam	150
Rigid polyurethane – one-component foam sealants	150
Flexible polyurethane	0
Integral skin polyurethane	0
Polystyrene – extruded sheet	0
Polyolefin	0
Rigid polyurethane and polyisocyanurate laminated boardstock	0

Proposed Refrigerant Bans for Refrigeration Applications

Refrigeration Refrigerant Bans (Proposed Compliance 1/1/25)	
Automatic commercial ice machines – self-contained with refrigerant charge capacities more than 500 grams	R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B, R-407A, R-410A, R-442A, R-417C, R-407F, R- 437A, R-407C, RS-24 (2004 formulation), HFC134a
Automatic commercial ice machines – remote	R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B
Transport refrigeration – road systems	R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B
Transport refrigeration – marine systems	R-404A, R-507, R-507A, R-428A, R-422C, R-434A, R-421B, R-408A, R-422A, R-407B, R-402A, R-422D, R-421A, R-125/R-290/R134a/R-600a (55/1/42.5/1.5), R-422B, R-424A, R-402B, GHG-X5, R-417A, R-438A, R-410B

U.S. Path For Using Flammable Refrigerants



Bottom Line: EPA SNAP approval + building codes requires compliance with safety standards

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EPA SNAP Approval

- SNAP 25 Final Rule
  - Final rule published May 2023
  - R-1150 (ethylene) approved for new VLT
- SNAP 26 Proposed Rule
  - Comments due July 10th
  - Proposed A2L approvals for CRE
  - Charge limit increase for A3s that are needed for some self-contained CRE products
- SNAP 27 Proposed Rule
  - Proposed rule possible by end of 2023

Status of UL-60335-2-89

- UL 60335-2-89 Second Edition was published October 27, 2021
- UL 471 is being replaced by UL 60335-2-89
- As of Sept. 29, 2024, new CRE products can only be certified to UL 60335-2-89 and any significant product modifications must be certified to UL 60335-2-89
- Products using A2L refrigerant, or A3 with charge larger than 150 grams, can only be certified to UL 60335-2-89
- UL 60335-2-89 requires significantly more testing to meet safety requirements
- Substantial modifications may be needed to meet safety requirements for products and components
- UL 60335-2-89 includes significant new requirements for product markings and instructions
- NRTLs and manufacturers are still learning the requirements for UL 60335-2-89, and there is still a lack of clear interpretation in some areas

Status of UL-60335-2-89

- Second Edition Published October 2021
  - New requirements for electrical and refrigerant safety
- Certification Labs Use Latest Version of Standards to Test Equipment
- 2024 IMC has been Updated
  - References 2nd edition in 2024 International Mechanical Code
- 2024 UMC References First Edition
  - AHRI is submitting a Tentative Interim Agreement (TIA) to IAPMO to update the Uniform Mechanical Code's reference of the standard to the 2nd edition

Status of Building Code Adoption for Commercial Refrigeration Equipment

- States that have building codes *and* legislation complete: 1
- States that only have legislation: 22
- States that only have codes done: 7
- 20 states still need legislation or codes changes for commercial refrigeration.
- *Note: None of the U.S. territories are complete (for residential or commercial)*

Impact of Lack of Coordination

- Uncertainty
- Less Optimized Equipment
- Higher Costs for Manufacturers *and* Consumers
- Lack of Laboratory Availability/Testing Capacity
- Availability of Components

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