2025 REFRIGERANT TRANSITION GUIDE

LENNOX

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HVAC Industry Update

In 2025, a major regulatory change takes effect in the United States, requiring most new HVAC equipment to transition to refrigerants with lower environmental impact. This guide aims to offer valuable insights into the 2025 Low GWP transition, guiding you through the shift to new refrigerants. Count on Lennox Commercial to ensure a seamless transition for you and your business.

Expected Phase-Down of HFCs Through 2050

The anticipated decrease in emissions from the HFC Allocation Program between 2022 and 2050 is estimated to be equivalent to 4.6 billion metric tons of carbon dioxide. This emissions decrease is the exhaust equivalent of 25,360,752 railcars worth of coal being burned.

WHAT ARE HFCS, AND WHY ARE THEY A CONCERN?

HFCs, or hydrofluorocarbons, are a group of manufactured greenhouse gases primarily used in air conditioning, refrigeration, foam blowing, and aerosols as replacements for the older classes of ozone-depleting substances, such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs). HFCs were developed and adopted as an alternative to ozone-depleting substances. Although HFCs succeeded in this regard, their unintended consequence as potent greenhouse gases came into focus. Even though HFCs do not deplete the ozone layer, their high global warming potential (GWP) and contribution to the greenhouse effect have prompted governments to regulate and restrict their usage.

	R-410A	R-454B	R-32
	Non-compliant with new unit manufacturing as of January 1, 2025	Compliant with EPA Technology Transition Rule	Compliant with EPA Technology Transition Rule
GWP	2,088	466	675
Formula	50% R-32/50% R-125	68.9% R-32/31.1% R-1234yf	100% R-32

What qualifies a refrigerant as "low GWP"?

There's no strict legal definition for the term "low GWP" refrigerant, but it generally refers to refrigerants with a global warming potential of 700 or less, per the EPA Technology Transition Rule.

What does A2L mean?

A2L refers to an ASHRAE standard denoting low toxicity and low flammability. Both R-454B and R-32 fall under the category of A2L refrigerants. These ASHRAE standards play a crucial role in the development of codes and in shaping guidelines for safe handling.

Are all HFCs banned?

No – The EPA deliberated on the possibility of banning HFCs by their specific names but ultimately opted to permit the use of HFCs if incorporated into a blend with a Global Warming Potential (GWP) below 700.

What are the implications for Canada?

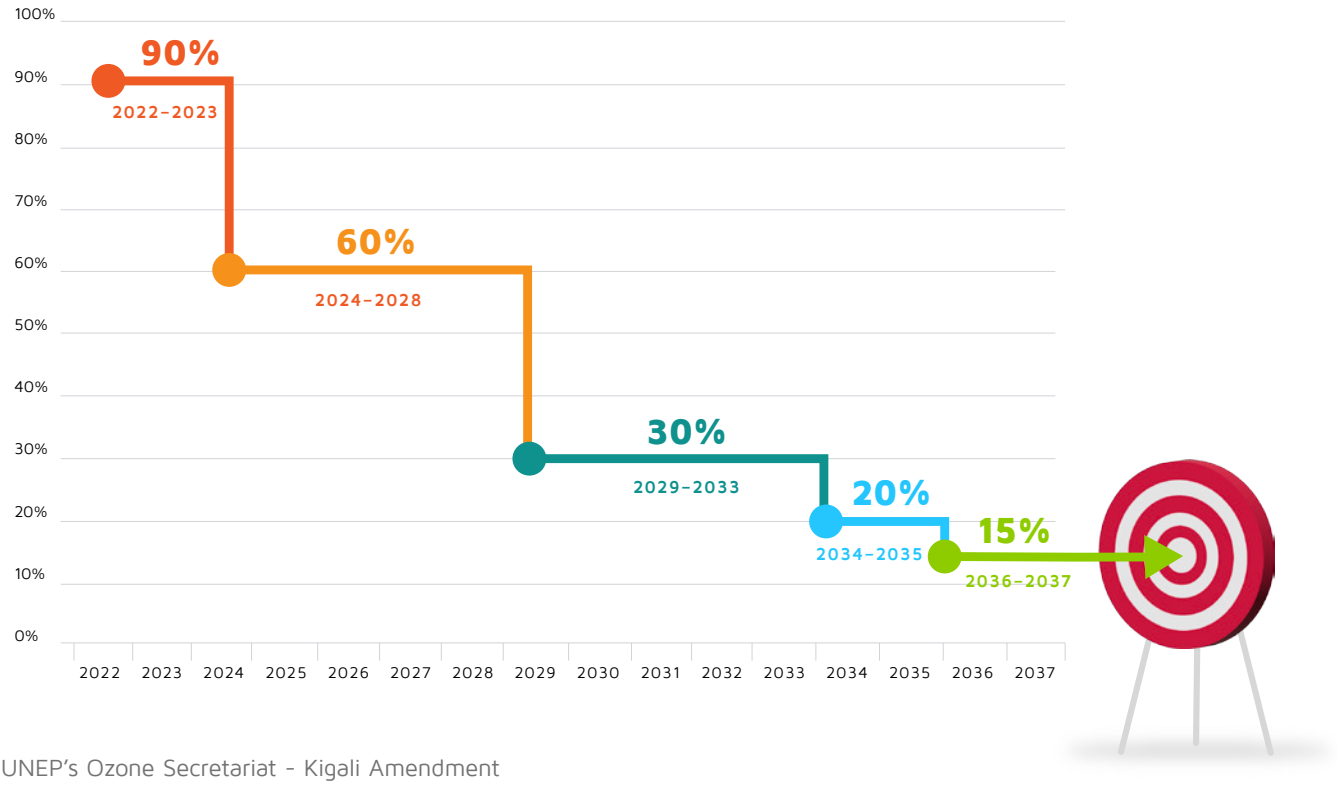
Canadian Federal and Provincial Governments have indicated their desire to reduce global warming impact by moving to more sustainable refrigerants. Due to differences in US and Canadian law, there is no mandated phase-out of higher-GWP refrigerants at this time.

Canadian code officials are publishing updates with the goal of allowing equipment installation using low GWP refrigerants, but that process is still underway at the time of publishing.

WHAT IS CHANGING?

The American Innovation and Manufacturing Act of 2020 empowered the US Environmental Protection Agency to address the environmental impact of refrigerants by maximizing reclamation, minimizing emissions, and ensuring the safety of technicians and consumers.

In October 2023, the EPA published the Technology Transition rule, which implemented a phase-down of HFC refrigerant production and consumption.



*UNEP's Ozone Secretariat - Kigali Amendment
Reference: H.R.5544 - American Innovation and Manufacturing Leadership Act of 2020

The rule also set an end date for the production of HVAC equipment that utilizes refrigerants with a Global Warming Potential, or GWP, over 700. The most popular refrigerant in North America, R-410A, has a GWP of 2,088.

No new unitary HVAC equipment using higher-GWP refrigerants can be manufactured for sale in the United States starting January 1, 2025,* for new products and systems.

Manufacturers are in the process of transitioning their product lines to incorporate new, compliant refrigerants. The majority of leading manufacturers have publicly pledged to adopt either R-454B or R-32 in their upcoming product generations.

*Allocations govern the amount of refrigerant that can be produced or imported compared to a baseline. As allocations decrease, legacy refrigerants will become more scarce.

Safety Classification of New Refrigerants

The most notable difference between today's popular HFC refrigerants and new, lower-GWP gases is their ASHRAE Standard 34 safety classification.

R-410A is classified as an A1 chemical, signifying low toxicity and no flame propagation at 60 degrees Celsius. Both R-454B and R-32 are categorized as A2L refrigerants, characterized by low toxicity and low flammability.

While combustion and flame propagation are unlikely with A2L refrigerants, regulators, code officials, standards-makers, and manufacturers are taking steps to ensure the safety of technicians, consumers, and building occupants.

US HFC Phase-Down

In addition to manufacturing prohibitions on equipment, the EPA has implemented a phase-down of production and import of higher-GWP HFC refrigerants. In 2024, allocations decrease to 60% of the baseline, followed by reductions to 30% in 2029, 20% in 2034, and ultimately 15% in 2036.

*Allocations govern the amount of refrigerant that can be produced or imported compared to a baseline. As allocations decrease, legacy refrigerants will become more scarce.

Other Upcoming Regulations

New EPA Regulations are pending on the handling and disposal of refrigerants. Those rules are not final at the time of this document's publication.

Handling and Transportation of A2L Refrigerants

Refrigerant storage cylinders will have a light green-gray color, with A2L further identified with a red top to indicate the storage of a mildly flammable substance. The containers should also be marked indicating that they contain R-454B refrigerant.

- Cylinders intended for A2L refrigerants feature left-handed threads, in contrast to the right-handed threads used for A1 refrigerants like R-410A. Servicing tools and connections between R-454B and R-410A are not interchangeable.
- A2L cylinders also contain pressure relief valves instead of the A1 rupture disks. The pressure relief valves will only release the overpressure needed to maintain the cylinder's integrity. They will not release potentially excessive amounts of refrigerant into smaller spaces.

HOW LENNOX IS MANAGING THE TRANSITION

Lennox is committed to making the transition to new A2L refrigerants simple and safe.

Product Line Updates

Beginning in late 2024, Lennox will introduce refreshed product lines featuring new, lower-GWP refrigerants. R-454B is our refrigerant of choice for unitary commercial HVAC products.

The new equipment will comply with the latest safety codes, such as UL 60335, including design enhancements to detect and mitigate against refrigerant leaks and ignition.

In case of any leak within a unit cabinet, we've implemented logic to reduce the concentration of refrigerant below 11.8% in the air, reducing the potential for ignition. This is achieved through a collaborative integration of intelligent sensing and unit control measures.

Prioritizing the isolation of ignition sources and selecting components less prone to triggering events that could lead to ignition is paramount to us. Additionally, our products encompass the capability to notify occupants of leaks.

Transition Planning

Lennox will communicate the final order and shipment dates for R-410A equipment well in advance, allowing customers time to plan.

Education and Training

Lennox will be providing a comprehensive set of training materials aimed at educating contractors, engineers, building owners, and other industry experts about the refrigerant change. The training program will cover various aspects such as regulatory compliance, safety protocols, troubleshooting, charging procedures, reclamation, and more.

Helping You Prepare

As you begin planning for 2025, it's crucial to consider the impending regulatory changes that will impact project timing, budget, and performance. We are excited to help your business navigate the upcoming regulatory changes.

SELL-THROUGH RULES

Equipment produced before the January 1, 2025 deadline can, under certain circumstances, be legally sold and installed. The EPA aims to prevent inventory abandonment to mitigate the adverse environmental and economic consequences. The charts below provide guidance regarding the definition and sell-through dates applicable to HVAC products, systems, and components.

R-410A PRODUCTS

DEFINITION	3-YEAR SELL-THROUGH
Sealed & charged refrigerant circuit from the factory	R-410A products cannot be installed in the United States after December 31, 2027.

Examples: Residential & Light Commercial packaged units
Our Products: Model L™, Enlight, Xion™, Raider®, Energence®, LRP14.

R-410A SYSTEMS

DEFINITION	1-YEAR SELL-THROUGH
Assembled and charged in the field by connecting multiple components	A "system" cannot be installed in the United States after December 31, 2025.

Examples: Ducted and ductless Residential & Commercial Split Systems
Our Products: ELXP, ELXC, ELXA, ML14XC, ML14XP, ML18XC2, SSB, SPB, VPB and VPC.
This does not apply to 3 phase VRF products.

R-410 COMPONENTS

DEFINITION	INFINITE SELL-THROUGH
Individual indoor or outdoor unit used to repair an existing system	"Components" can be manufactured and installed in the United States indefinitely.

Examples: Ducted & ductless heat pump, air conditioner, air handler and coil
Our Products: ELXP, ELXC, ELXA, ML14XC, ML14XP, ML18XC2, SSB, SPB.
Items marked by the manufacturer as a component for Service Only are subject to these sell- through rules.

FREQUENTLY ASKED QUESTIONS

Why is this change happening?

In December 2020, the U.S. President signed the AIM Act, a wide-ranging set of climate laws that empowered the Environmental Protection Agency to reduce the harmful impacts of many chemicals. Acting on that legislation, the EPA has introduced various regulations focused on reducing the potential harm of refrigerants used in HVAC and other industries.

What does the GWP number indicate?

The GWP, or Global Warming Potential, is a metric to assess a chemical's environmental impact relative to carbon dioxide. Carbon dioxide, or CO2, has a GWP of 1. In comparison, the R-410A refrigerant has a GWP of 2,088, indicating that a pound of R-410A has a global warming impact of 2,088 times greater than a pound of carbon dioxide.

What are the implications on equipment design?

Effective January 1, 2025, the manufacturing of HVAC products and systems designed for use with higher-GWP refrigerants will be discontinued. *See Sell-Through Rules*

What's a product, a system, and a component, and why do they matter?

EPA introduced new definitions to govern the manufacture and sell-through of HVAC equipment.

- A "product," as defined in the regulation, constitutes HVAC equipment that is shipped from the factory in a fully functional state. For instance, this encompasses commercial packaged rooftop units.
- A "component" is one piece that, when combined with one or more additional components, forms a functional system. Example: Air handler or condensing unit.
- A "system" is the combination of two or more components. Example: an Air Handler and Condensing Unit installed together to make a functional system.

After the sell-through period ends, can I sell an R-410A component to replace a piece of a failed system?

Generally, yes. The EPA allows for the continued manufacture and installation of R-410A components to replace failed components of existing systems. In the United States, a component cannot be used to create a new system once the sell-through period ends.

What are the differences between R-454B and R-32?

Both refrigerants qualify for the new EPA GWP limits. R-454B is a blend of R-32 and R-1234yf, whereas R-32 is a single-molecule refrigerant. They have similar handling and safety characteristics. Their performance may vary based on equipment design and application.

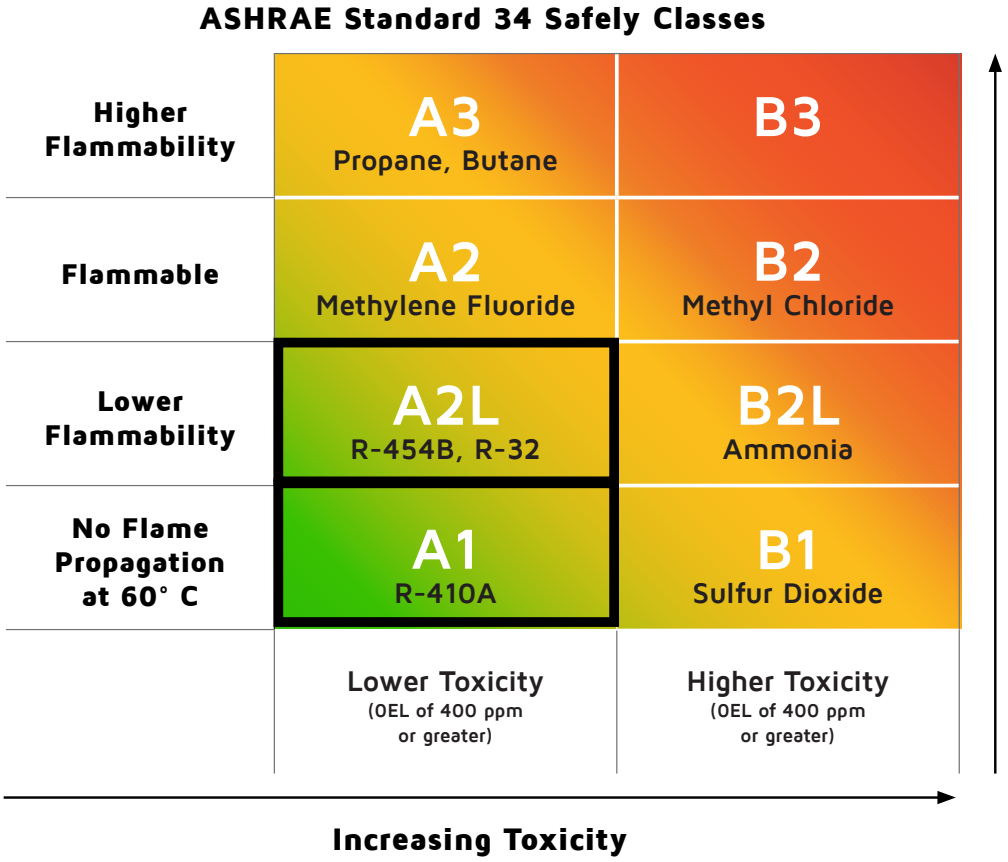
We moved from R-22 to R-410A. Why change again?

R-22 is categorized as an HCFC, standing for hydrochlorofluorocarbon. Due to the severe impact of chlorinated chemicals on the ozone layer, there has been a significant phase-out of such substances. Although HFCs like R-410A do not pose harm to the ozone layer, they are potent greenhouse gases. Governments focused on reducing climate change are implementing regulations to phase out HFCs to protect the environment.

How flammable are the new refrigerants?

Under certain conditions, many standard building products are flammable. A2L-classified refrigerants can ignite under certain circumstances, but the Safety Standards require products to be designed to prevent these conditions from occurring.

R-454B and R-32 are classified as an A2L because they have low flammability. Their ignition potential is much less than A3 flammable refrigerants like propane or butane.



How can you begin to prepare?

As you begin planning for 2025, it's important to factor in the upcoming regulatory changes related to project timing, budget, and performance.

We are excited to help your business navigate the upcoming regulatory changes.

For more information, contact your Lennox sales representative.

Stay up to date with the latest regulations and changes.