

U.S. Regulatory Guide for HVAC

Edition: July 2022

**New Efficiency Standards
Compliance Date: Jan 1, 2023**



KEEPING YOU READY FOR WHAT'S NEXT

The regulation of energy efficiency and emissions continue to spur change in the HVAC industry. Effective in 2023, we will see significant **changes in energy efficiency criteria** and ratings that will affect residential and commercial equipment throughout the U.S. Soon afterward will be the national phase down of hydrofluorocarbon (HFC) refrigerants, which will mean a **transition to lower global warming potential (GWP) refrigerants** for air conditioning.

Regardless of the regulatory challenges, we continue to innovate and deliver Ruud® products that not only meet or exceed requirements, but offer the performance and ease of installation that the industry has come to expect from our trusted brands. We are a leading influencer on industry regulatory issues and are committed to keeping you continually informed and prepared.

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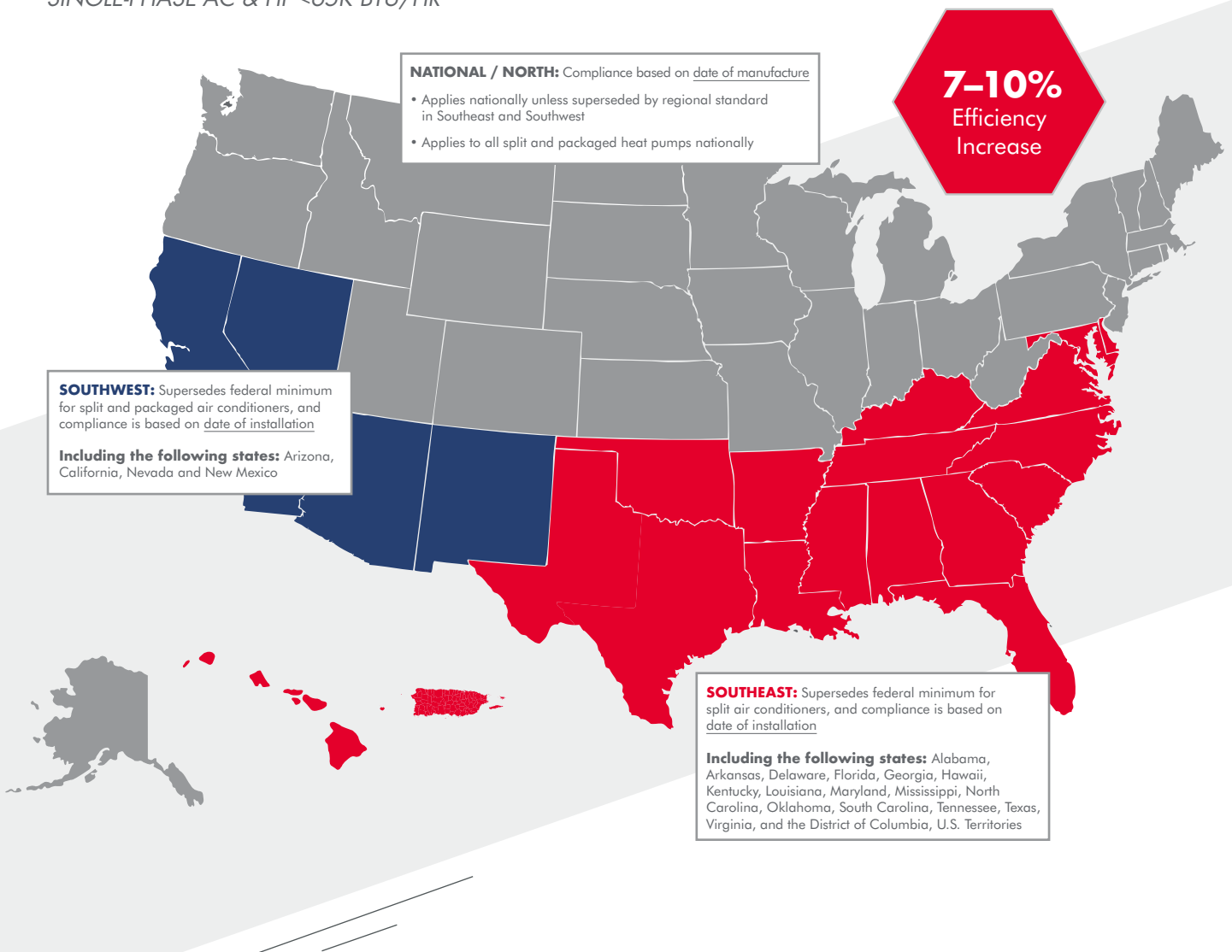


2023 Minimum Efficiency Standards

The U.S. Department of Energy (DOE) has the authority to establish minimum efficiency standards for air conditioning (AC) and heat pump (HP) equipment. The next set of energy efficiency increases will impact newly manufactured residential and commercial equipment and will take effect on January 1, 2023. For single-phase residential and light commercial central air conditioning systems, the requirements will vary by region.

DOE New Efficiency Standards by Region

SINGLE-PHASE AC & HP <65K BTU/HR



Appendix M1: A New System of Measurement

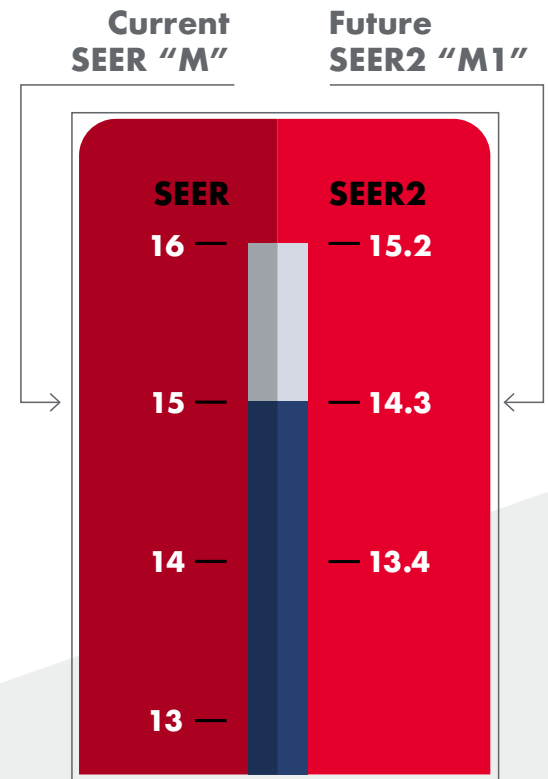
For equipment manufactured after January 1, 2023, not only are the minimum standards changing, but a new test procedure will be required. This new test method is commonly referred to as Appendix M1, replacing Appendix M in the Code of Federal Regulations. For decades, we've used the classic metrics of SEER, EER and HSPF. Going forward, you'll hear these metrics referred to as SEER2, EER2 and HSPF2.

Why is the metric changing?

The DOE test procedure has been updated to be more representative of installations in today's homes and will be used to determine product ratings. This new system of measurement will apply to all single-phase air conditioners and heat pumps <65k BTU/HR.

What about commercial?

Commercial single-phase air conditioners and heat pumps <65k BTU/HR (typically those in the 3-, 4- and 5-ton range) follow the residential standards. Commercial systems ≥65k BTU/HR also have new minimum efficiency levels going into effect in 2023 on a national basis, with compliance based on date of manufacture. Note that while the metrics of IEER and COP are not changing, IEER and COP minimum efficiency levels are increasing from DOE 2018 standard. EER requirements remain unchanged. See the table below for the 2023 requirements. At this time, DOE has not issued a new efficiency standard or metric that applies to the category of small 3-phase systems, 5-ton and below, but these are under consideration.



DOE 2023 6 to 30 tons (≥ 65,000 BTU/HR)

NATIONAL REQUIREMENTS				
Equipment	Rated Capacity (BTU/HR)	Gas/Elec (IEER)	AC (IEER)	HP (IEER/COP)
Commercial Packaged & Splits	≥ 65,000 < 135,000	14.6	14.8	14.1/3.4
	≥ 135,000 < 240,000	14.0	14.2	13.5/3.3
	≥ 240,000	13.0	13.2	12.5/3.2

Navigating Regional Standards

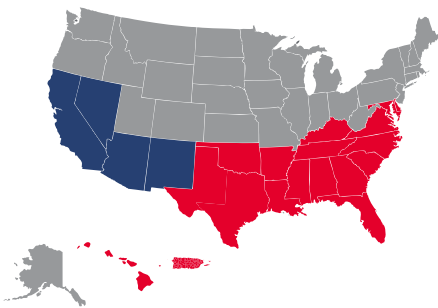
PHASE IN, PHASE OUT: PLANNING IS ESSENTIAL

It is important to note that the 2023 requirements apply nationally—*unless* they are superseded by a regional standard. The regional standards apply in the Southeast and Southwest, and there is a key difference between the national and regional standards when it comes to enforcement. While both have a compliance deadline of January 1, 2023, the national deadline is based on equipment **date of manufacture**, while compliance to the regional standards is based on **date of installation**. Heat pumps do not have regional efficiency criteria, so the national criteria apply in all states. One helpful way to keep track of the requirements by region is to remember the general rule of 3-2-1.

Regional Standards, the 3-2-1

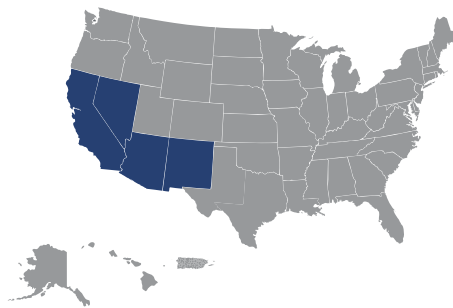
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Three different efficiency levels for
SPLIT AIR CONDITIONERS



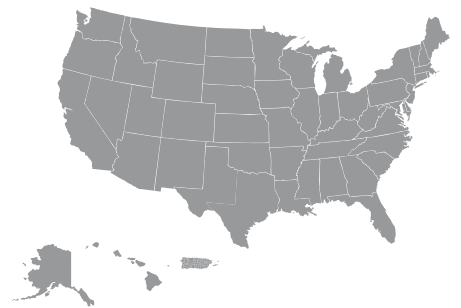
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Two different efficiency levels for
PACKAGED AC AND GAS/ELECTRIC



1

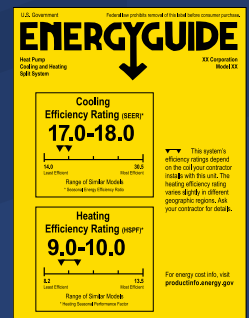
One efficiency level for
SPLIT AND PACKAGED HEAT PUMPS



Compliance for Existing Inventory

AFTER JANUARY 1, 2023:

Outdoor AC units manufactured prior to January 1, 2023, rated using Appendix M, can be installed in the Southeast and Southwest Regions, if the lowest FTC label rating (coil-only) is at or above the new minimum efficiency requirements on a conversion basis. Ratings based on Appendix M will need to be cross-referenced with the corresponding Appendix M1 values.



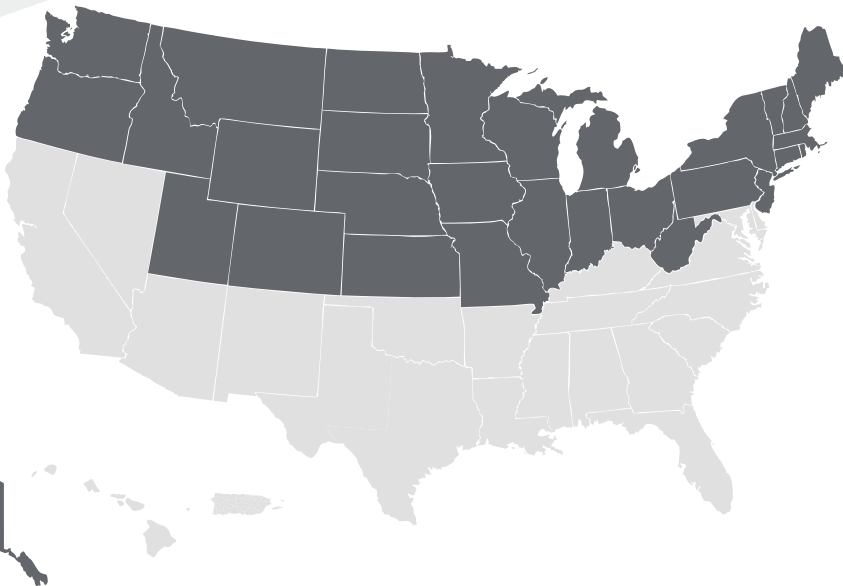
North Region

Understanding Compliance in Your Region

For the states in the North region, compliance is based on **date of manufacture**. Therefore, if a product, as part of an AHRI-rated matched system, was compliant on the day it was produced, it can continue to be sold and installed anywhere in the North region.

NORTH REGION		
PRODUCT CATEGORY	2023 Efficiency Requirements Using Appendix M1	
	SEER2	HSPF2
SPLIT AC < 45k BTU/HR	13.4	
SPLIT AC ≥ 45k BTU/HR	13.4	
SPLIT HP	14.3	7.5
SINGLE PACKAGED AC/GE	13.4	
SINGLE PACKAGED HP	13.4	6.7

NOTE: The above table applies to system matchups and not individual components. Consult the AHRI directory for the most current matchups.



NATIONAL / NORTH: Compliance based on date of manufacture

- Applies nationally unless superseded by regional standards in Southeast and Southwest
- Applies to all split and packaged heat pumps nationally

NORTH REGION EXISTING INVENTORY:

Units manufactured prior to 1/1/2023 can continue to be installed, provided the equipment was compliant at the time it was produced.

Southeast Region

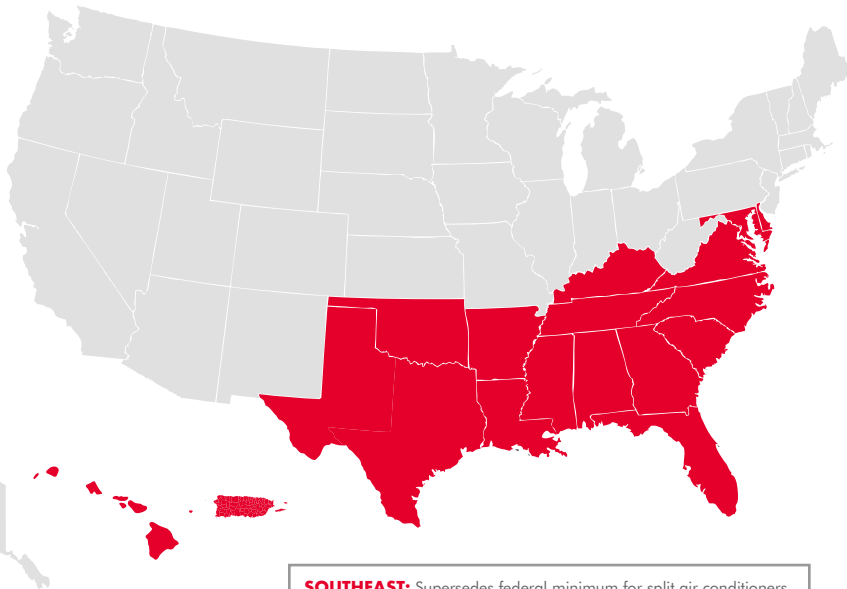
Understanding Compliance in Your Region

For split air conditioner systems in the Southeast states, a regional standard (as highlighted in red below) supersedes the national requirements. Therefore, compliance for that product type is based on **date of installation**. Compliance for all other product types is based on **date of manufacture**.

SOUTHEAST REGION		
PRODUCT CATEGORY	2023 Efficiency Requirements Using Appendix M1	
	SEER2	HSPF2
SPLIT AC < 45k BTU/HR	14.3	
SPLIT AC ≥ 45k BTU/HR	13.8	
SPLIT HP	14.3	7.5
SINGLE PACKAGED AC/GE	13.4	
SINGLE PACKAGED HP	13.4	6.7

Supersedes
Split AC national
standard of
13.4 SEER2

NOTE: The above table applies to system matchups and not individual components. Consult the AHRI directory for the most current matchups.



SOUTHEAST: Supersedes federal minimum for split air conditioners, and compliance is based on date of installation

Including the following states: Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and the District of Columbia, U.S. Territories

SOUTHEAST REGION EXISTING INVENTORY:

The least efficient coil-only rating listed on the EnergyGuide Label, of any AC split system installed on or after 1/1/2023, must meet 2023 Efficiency Requirements on a cross-reference basis for SEER.

Heat pumps and packaged AC systems manufactured prior to 1/1/2023 can continue to be installed, provided the equipment was compliant at the time it was produced.

Southwest Region

Understanding Compliance in Your Region

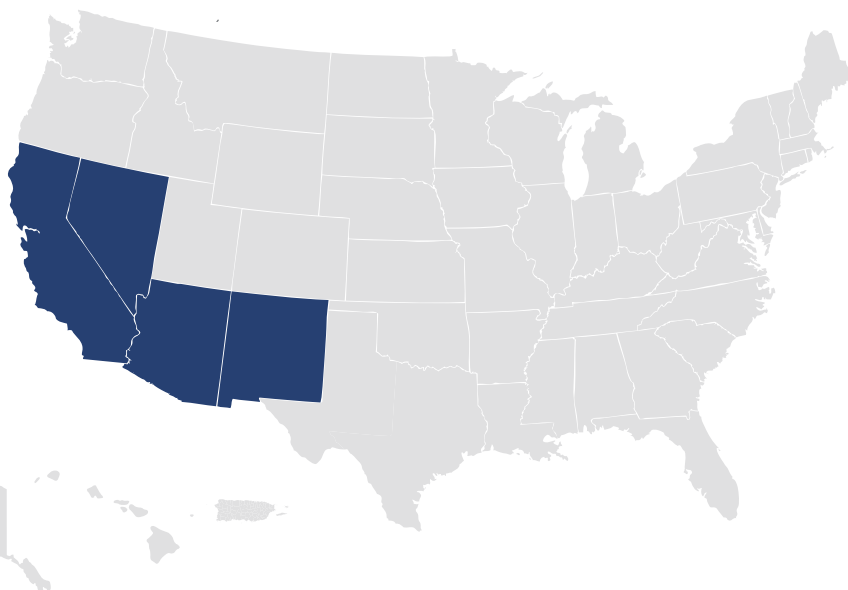
For split and packaged AC and packaged gas/electric (GE) in the Southwest states, a regional standard (as highlighted in blue below) supersedes the national requirements. Therefore, compliance for those product types is based on **date of installation**. Compliance for the other product types is based on **date of manufacture**.

SOUTHWEST REGION			
PRODUCT CATEGORY	2023 Efficiency Requirements Using Appendix M1		
	SEER2	EER2	HSPF2
SPLIT AC < 45k BTU/HR	14.3	11.7/9.8 ¹	
SPLIT AC ≥ 45k BTU/HR	13.8	11.2/9.8 ¹	
SPLIT HP	14.3		7.5
SINGLE PACKAGED AC/GE	13.4	10.6	
SINGLE PACKAGED HP	13.4		6.7

Supersedes Split AC national standard of 13.4 and includes EER2 requirements

¹ The lower EER2 requirements are for equipment at or above 15.2 SEER2.

NOTE: The above table applies to system matchups and not individual components. Consult the AHRI directory for the most current matchups.



SOUTHWEST: Supersedes federal minimum for split and packaged air conditioners, and compliance is based on date of installation

Including the following states: Arizona, California, Nevada and New Mexico

SOUTHWEST REGION EXISTING INVENTORY:

The least efficient coil-only rating listed on the EnergyGuide Label, of any split and packaged AC system or packaged GE system installed on or after 1/1/2023, must meet 2023 Efficiency Requirements on a cross-reference basis for SEER and EER.

Heat pumps manufactured prior to 1/1/2023 can continue to be installed, provided the equipment was compliant at the time it was produced.

Enforcement

HOW THE U.S. GOVERNMENT WILL ENSURE COMPLIANCE

The DOE may impose stiff penalties for violators of the new regulations. For both contractors and distributors, it is unlawful to knowingly sell or install non-compliant equipment. Ultimately, it's the seller's responsibility to check and ensure that the equipment for sale complies with the regulations in the region in which the equipment will be installed.

- **CONTRACTORS**
 - › If contractors install equipment that doesn't meet the new standards, they will be required to cover all costs associated with replacing the equipment, and they may be subject to additional DOE penalties
 - › Repeat offenders may be placed on a national do-not-sell registry
- **DISTRIBUTORS**
 - › If distributors knowingly supply non-compliant equipment to contractors, including those who intend to cross regional lines, they may be subject to the same enforcement, plus a per-unit monetary penalty
- If either contractors or distributors are found to be routinely selling or installing non-compliant equipment, they may be prohibited from purchasing any of the covered classes of equipment:
 - › Split-system air conditioners
 - › Split-system heat pumps
 - › Single-packaged air conditioners
 - › Single-packaged heat pumps
 - › Small-duct, high-velocity systems
 - › Space-constrained air conditioners
 - › Space-constrained heat pumps
- **CUSTOMERS**
 - › If a customer believes their contractor has installed an illegal air conditioner, they may report it to DOE at EnergyEfficiencyEnforcement@doe.gov or 202-287-6997

Learn more <https://www.energy.gov/gc/office-assistant-general-counsel-enforcement>.

NOTE: The information provided does not, and is not intended to, constitute legal advice; instead, all information and content are for general informational purposes only.

FAQs

Q. Why are the efficiency metrics changing (from SEER to SEER2 or HSPF to HSPF2)?

ANSWER:

The newly revised test procedure is an entirely different way of calculating energy efficiency, thereby it has a different metric altogether. The new test procedure is more representative of system operation in typical home installations.

Q. What is the efficiency increase of the new standards?

ANSWER:

It varies by equipment type and region, but generally, minimum efficiencies are increasing by about 7–10%, or 1 SEER in the traditional system.

Q. How will the efficiency standards be enforced?

ANSWER:

Just as it is today, the DOE relies on reporting of suspected violations by distributors, dealers and contractors. The DOE investigates credible complaints and may assess penalties for violators.

Q. Will I still be able to access ratings information for products made prior to January 1, 2023?

ANSWER:

Yes. Even if a product is moved to “production stopped” or “discontinued” in the AHRI directory, ratings are still available for a period of time after the status change.

Q. Is Canada planning to adopt the DOE efficiency standards and M1 test procedure?

ANSWER:

*Canada has signaled that they plan to harmonize the requirements with that of the 2023 DOE standards in time for January 1, 2023. They also indicated that they plan to have some cold-climate-specific requirements for heat pumps.**

Q. Will the 2023 regulations affect 3-Phase equipment <65k BTU/HR?

ANSWER:

No. The new efficiency standards and metrics do not apply to 3-phase equipment less than 65k BTU/HR at this time.

Q. How does DOE define system installation?

ANSWER:

According to the definition in the Code of Federal Regulations, “Installation of a central air conditioner” means the connection of the refrigerant lines and/or electrical systems to make the central air conditioner operational.

*For more information visit: <https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-regulations/planning-and-reporting/central-air-conditioners-and-heat-pumps/23613>

On the Horizon for 2025 – Refrigerant Change

TAKING AIM AT HFCs

In 2020, a bipartisan senate bill known as the American Innovation and Manufacturing (AIM) Act was enacted into law. It authorizes a 15-year phasedown of hydrofluorocarbons (HFCs) across a variety of applications, including HVAC. The bill gives the U.S. EPA the authority to prescribe the HFC phase down, with rulemaking underway.

When the EPA takes the expected action of setting a 750 GWP limit for air conditioning in 2025, it means that R-410A, with a GWP of 2,088, will no longer be able to be used in new equipment manufactured after the compliance date. The most common low-GWP alternatives to R-410A are classified by ASHRAE as mildly flammable, or A2L. Due to their mildly flammable characteristics, A2L refrigerants require updates to standards and building codes to allow for their safe installation. As a leading influencer on regulatory issues, we are actively involved in the discussions and will continually keep you informed and prepared.

ASHRAE Standard 34 Safety Groups

Higher Flammability	A3 Propane, Butane	B3
Lower Flammability	A2	B2
	A2L R-454B R-32	B2L Ammonia
No Flame Propagation	A1 R-410A	B1 R-123, SO2
	Lower Toxicity	Higher Toxicity

Increasing Flammability

Increasing Toxicity

Why choose Ruud?

Rather than viewing the regulatory changes as a problem to be solved, we are embracing them as an opportunity to innovate new coil technology, compressor technology, electronics and connected solutions to create an even better Ruud® line for the contractor and the consumer.



[Ruud.com/HVACKnowZone](https://ruud.com/HVACKnowZone)

Ruud • 5600 Old Greenwood Road, Fort Smith, AR 72908

In keeping with its policy of continuous progress and program improvement, Ruud® reserves the right to make changes without notice.