

STATE OF THE REGULATORY ENVIRONMENT

Regulatory Trends Report

Regulatory changes are ambitious— and they're coming faster than ever

The heating, ventilation and air conditioning (HVAC) industry is, at its core, about creating comfortable environments by controlling indoor ambient conditions. Yet for HVAC professionals, ensuring that the equipment they manufacture, specify, or install meets constantly changing product emission and efficiency mandates can feel anything but controlled. For many, today's regulatory environment can feel more like hurricane season, with business owners bracing for storm after storm. Right when you can see the light at the end of the tunnel of one regulation—working with code officials and permitting authorities to reach compliance, figuring out what to do with remaining inventory, and considering steps for the future—another one comes bearing down.

This report looks at three major regulatory trends facing the HVAC industry—energy efficiency, refrigerant transition and decarbonization—and explores what companies need to know to prepare for each.

THE EVOLUTION OF AN INDUSTRY

Over the last three decades, the HVAC industry has seen significant changes related to efficiency goals, refrigerant safety and warranties. If the residential regulations are any indication, big changes are becoming the norm. Arguably the biggest change in AC (air conditioning) and HP (heat pump) efficiency during that time was 2006's increase in the minimum SEER (Seasonal Energy Efficiency Ratio) rating, from 10 to 13. In 2015, the US DOE (Department of Energy) introduced [varying regional requirements](#). The most recent change is 2023's efficiency increase, including new ratings metrics and test procedures. ENERGY STAR® requirements, incentive programs and state regulations also continue to evolve. All of these changes are aimed at decreasing the impact of heating and cooling equipment on the environment while helping our industry play a role in creating a better, more sustainable future for everyone.

But like extreme weather patterns, regulatory changes appear to be increasing in both frequency and intensity. Success will be closely tied to a business's ability to respond to the changing regulatory environment with innovative strategies—everything from product redesign to capitalizing on federal incentives and educating their team—and the winners will be those that prioritize forward-thinking strategies, operational agility and innovative products and services.

Let's take a look at the impact on the commercial HVAC market of three major regulatory trends:

- Energy efficiency
- Refrigerant transition
- Decarbonization



NEW ENERGY EFFICIENCY STANDARDS

The push to improve energy efficiency standards is ongoing. In 2023, the US DOE's new [Appendix M1](#) went into effect nationwide, establishing new efficiency metrics including SEER2, EER2 and HSPF2 and [new test procedures](#) for measuring efficiency in residential products and single-phase commercial systems less than 65,000 Btu/h. By 2025, these metrics will catch up with [ASHRAE 90.1](#) (American Society of Heating, Refrigerating and Air-Conditioning Engineers), covering three-phase systems under 65,000 Btu/h and three-phase VRF (variable refrigerant flow) rated at less than 65,000 Btu/h. For large commercial projects, the biggest change will come with 2029's 28% to 35% increase in minimum efficiency on all baseline equipment.

How energy efficiency is measured and tested for large commercial HVAC products is also evolving. New metrics and measurement standards are expected to go into effect as early as 2029, targeting comprehensive measurement of energy consumption, including not just mechanical cooling and heating but also that of furnace fans, crankcase heaters, and economizers. Engineers, contractors and owners will need to understand these new standards and how they relate to the metrics we use today. For example, IEER (Integrated Energy Efficiency Ratio) will be replaced with Integrated Ventilation, Economizing and Cooling (IVEC), and Integrated Ventilation and Heating Efficiency (IVHE) will replace COP (coefficient of performance) as an efficiency measurement.

In addition, [2024's IECC](#) (International Energy Conservation Code), which is on track to publish in 2024 after all appeals are resolved, aims to increase overall building performance and reduce emissions by changing efficiency standards in HVAC building codes for new construction. A highlight of the 2024 IECC is a focus on enhanced HVAC controls to support decarbonization. States are encouraged to adopt the model energy code, which includes testing and equipment efficacy requirements for HVAC systems in residential and commercial buildings.

And once the technology and equipment that meets the new standards is in place, the efficiency bar will be raised—and the cycle of innovation and change will start again. In fact, the 2027 IECC code cycle is already under way.

REFRIGERANT TRANSITION AND THE AIM ACT

On Oct. 24, 2023, the US EPA (Environmental Protection Agency) published a final rule in the [Federal Register](#) outlining global warming potential (GWP) limits in various applications that use hydrofluorocarbons (HFCs). This action was expected as part of the [American Innovation and Manufacturing](#) (AIM) act of 2020, which sets global warming potential (GWP) limits for air conditioning using HFCs (hydrofluorocarbons). The rule establishes GWP limit restrictions on HFCs by application, setting a GWP limit of 700 for AC, HP and dehumidifier units of all sizes by Jan. 1, 2025, and for VRF by Jan. 1, 2026.

While many of the final rule details were consistent with earlier proposals, one surprising stipulation was that compliance for split AC and HP would be based on the date of system installation rather than factory manufacture. Stakeholders quickly united to petition EPA to consider the significant industry hardship resulting from requiring all existing R-410A inventory be installed by Jan. 1, 2025. Based on those challenges, the EPA finalized an interim final rule on December 20th, effectively amending the regulation entitled **Restrictions on the Use of Certain Hydrofluorocarbons Under the American Innovation and Manufacturing Act of 2020**. The amendment allows one additional year, until Jan. 1, 2026, for the installation of new air conditioning and heat pump systems using components manufactured or imported prior to Jan. 1, 2025. Incorporating changes from the December interim final rule, the key takeaways for Packaged and Split air conditioning and heat pump systems are:

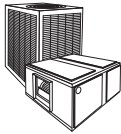
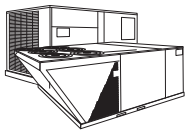
- New split air conditioning and heat pumps manufactured before Jan. 1, 2025, and containing R-410A refrigerant, can be installed until Jan. 1, 2026, allowing one additional year for the installation of new air conditioning and heat pump systems.
- For components intended to service existing systems, an exception from prohibitions—allowing, for example, continued use of R-410A compressors and condensing units.
- Allows for compliance of self-contained and packaged products based on date of manufacture or import, with a sell-through period of three years after the compliance date of Jan. 1, 2025.

We will continue to engage with industry partners, trade associations and the EPA to advance the interest of our downstream customers. For in-depth information on this rule from the EPA, see [Restrictions on the Use of Certain HFCs under Subsection \(i\) of the AIM Act](#).

There's also regulatory activity at the state level, which in some cases can be more stringent than federal requirements. For example:

- **California** GWP limits took effect for room AC in 2023. The state also passed a law setting limits for refrigerant used in service of existing equipment—for example, a GWP limit of 1,500 by 2030, which effectively bans use of virgin R-410A for service after that date.
- **Washington** recently finalized its HFC regulation, setting GWP limits on AC and refrigeration that largely align with the EPA rule—with the exception of an earlier compliance date for room AC of Jan. 1, 2024, and different sell-through and component provisions.
- **New York** has proposed an HFC regulation that establishes a 100% reclaimed refrigerant use requirement by 2028 and an ultra-low GWP limit for AC by 2034.

Updates to local and state building codes are key to both reducing GWP and allowing installation of A2L refrigerant systems in homes and buildings. The work of reviewing, updating and adopting safety standards into building codes is accelerating, and we're optimistic that all states will be ready by 2025.

	Split Air Conditioning and Heat Pump Systems	Packaged and self-contained AC and Heat Pump products
		
GWP Limit	700	700
Effective Date	Jan. 1, 2025	Jan. 1, 2025
Sell-through Deadline	Jan. 1, 2026, for systems manufactured before Jan.1, 2025	Jan. 1, 2028

- Split AC and HP: Install-date compliance by Jan. 1, 2025, with an additional one year to install previously manufactured components.
- Packaged systems: Manufacture-date compliance by Jan. 1, 2025, with three-year sell-through period.
- All US produced equipment must comply, even if intended for export.

VARYING APPROACHES TO DECARBONIZATION

Many national, state and local jurisdictions have committed to the gradual reduction of greenhouse gases, but there is little consistency in their approaches.

- **Global and national trends** are converging toward carbon neutrality mandates, with many countries worldwide targeting a 2050 deadline. In the United States, the Department of Energy (DOE) is advocating for national energy codes that prioritize higher efficiency and variable speed for demand response. The DOE has also initiated a [cold-climate heat pump challenge](#), successfully completed by our parent, Rheem, and several other heat pump manufacturers, further evidence of the growing interest in cold-climate heat pumps, which aligns with the electrification movement that aims to replace fossil fuels like natural gas and oil with electricity for heating. Manufacturers today are responding with inverter-driven variable speed heat pumps that not only excel in extreme cold conditions but also guarantee effective heating down to -13°F, positioning heat pumps as competitive alternatives to traditional gas furnaces and oil heaters.
- **State and local trends** indicate a shift towards all-electric policies, particularly exemplified by a 2023 [commitment by the US Climate Alliance](#) to decarbonize buildings across America and quadruple heat pump installations by 2030, a 2024 [Multistate Memorandum of Understanding](#) on Accelerating the Transition to Zero-Emission Residential Buildings that aims to have 65% of all new residential HVAC and hot water heating systems be electric heat pumps by 2030, and California's Title 24 draft energy code for 2025. In addition to promoting all-electric buildings, California aims for statewide zero emissions by 2030, and certain air districts will aim for zero nitrogen oxide (NOx) emissions from furnaces by 2029. Similar NOx bans are under consideration in Colorado, New York and Maryland. Recently, some of these initiatives have been challenged successfully in court. The City of Berkeley's ban on new gas infrastructure, though initially enacted, has been reversed in the courts, and in Washington state, the implementation of all-electric building codes has been delayed for further evaluation. Additionally, certain states are enacting laws to prevent complete gas bans, citing the importance of preserving consumer choice. Activity at the state and local level will likely continue, making it necessary for HVAC professionals to stay current with the latest initiatives.
- **Utilities and energy efficiency organizations** are establishing guidelines and offering rewards for more climate-friendly products through a variety of programs nationwide. ENERGY STAR®, for example, has excluded gas appliances from its top-rated ENERGY STAR Most Efficient

GWP safety considerations

Low-GWP substitutes for air conditioning are mildly flammable, introducing new safety considerations. The AHRI (Air-Conditioning, Heating, and Refrigeration Institute), along with other trade organizations, has developed training materials to communicate new handling and storage requirements. For example, A2L cylinders will have a red band, left-handed threads on the fittings and a reseating relief valve instead of the traditional rupture disc. While service vehicle placards won't change, cylinders may need to be transported in an upright position to keep their relief valves in the vapor space. HVAC professionals are advised to check with the refrigerant cylinder manufacturer to confirm the cylinder storage needs for A2L refrigerants. Warehouse storage of AC units containing A2L refrigerants won't change, but the regulation introduces spacing requirements for bulk refrigerants. Finally, while there's no change to AC and HP equipment transportation for units with up to 25 lbs. charge, above that HAZMAT shipping or a DOT exemption permit is required. We have already been granted a manufacturer special permit, allowing all our HVAC products to ship the same as A1 refrigerants.

Our team of industry leaders and technical experts is already educating our partners and contractors in the field about what HVAC professionals need to know for successful installation and service of A2L refrigerants. Learn more with our [A2L Awareness Resources](#).

list and is considering removing air conditioners from the program altogether. In the future, only heat pumps and other electric products may meet the proposed 2025 ENERGY STAR ratings for HVAC equipment. The [Consortium for Energy Efficiency](#) (CEE) is modifying its criteria for federal tax credits, while the [Northwest Energy Efficiency Alliance](#) (NEEA) and the [Northeast Energy Efficiency Partnerships](#) (NEEP) are advocating for specific standards for cold-climate heat pumps and working with local utilities to offer residential and commercial customers rebates and incentives for choosing higher efficiency and more eco-friendly products like heat pumps.

The momentum behind decarbonization efforts will likely increase with time, challenging manufacturers to design

HVAC solutions capable of emissions reduction without compromising market-driven standards and the comfort needs of our customers. As part of the Rheem Family of Brands, we have been proactively addressing this challenge since we announced our sustainability goals in 2019: introduce a line of heating, cooling, and water heating products with 50% fewer greenhouse gas emissions by 2025, reduce our greenhouse gas emissions by 50% and achieve zero waste to landfill in our global manufacturing operations. By incorporating decarbonization principles and increased sustainability practices throughout our business, we have been able to accomplish these ambitious goals and are committed to continuous improvement for a better future.

Indoor Air Quality, Extended Producer Responsibility and more

Around the world, governments and industries are increasing scrutiny of factors affecting both indoor air quality and the larger environment. The HVAC industry is likely to have a major impact in both areas, and must stay abreast of any applicable regulations and laws. Examples range from legislation limiting the use and effects of chemicals to programs that encourage and reward the use of technology that improves a building's indoor air quality. Examples of such programs and standard include:

- The US Green Building Council's [LEED® certification program](#) which includes requirements for IAQ, IEQ and ventilation that contribute to a building's overall LEED certification score.
- The International WELL Building Institute's [WELL Building Standard®](#), focused on building health and wellness and includes provisions for air quality, ventilation design, construction pollution management, air quality monitoring and awareness, and air filtration along with other standards for sound and thermal comfort.
- [The fitwel® Rating System](#), created through a joint effort by the Center for Active Design, the Center for Disease Control, and the US General Service Administration for building owners and managers looking to promote health and wellness of building occupants and focuses on IAQ and HVAC system design.
- [The RESET® Air Standard](#), a sensor-based and performance-driven indoor air quality standard developed for buildings with a strong focus on improving occupant comfort and air quality with a stringent set of requirements that prioritize occupant health.

The industry must also address concerns regarding products and packaging materials, a broad area of regulations that goes beyond HVAC equipment and affects all manufacturers. Examples of this type of regulation include:

- [California's Proposition 65](#) which requires labeling of products that contain harmful chemicals
- The [US SEC disclosure rule for conflict minerals mined from politically unstable areas](#)
- [Extended Producer Responsibility](#) (EPR) policies which hold manufacturers responsible for the impact of chemicals contained in their products throughout the product lifecycle

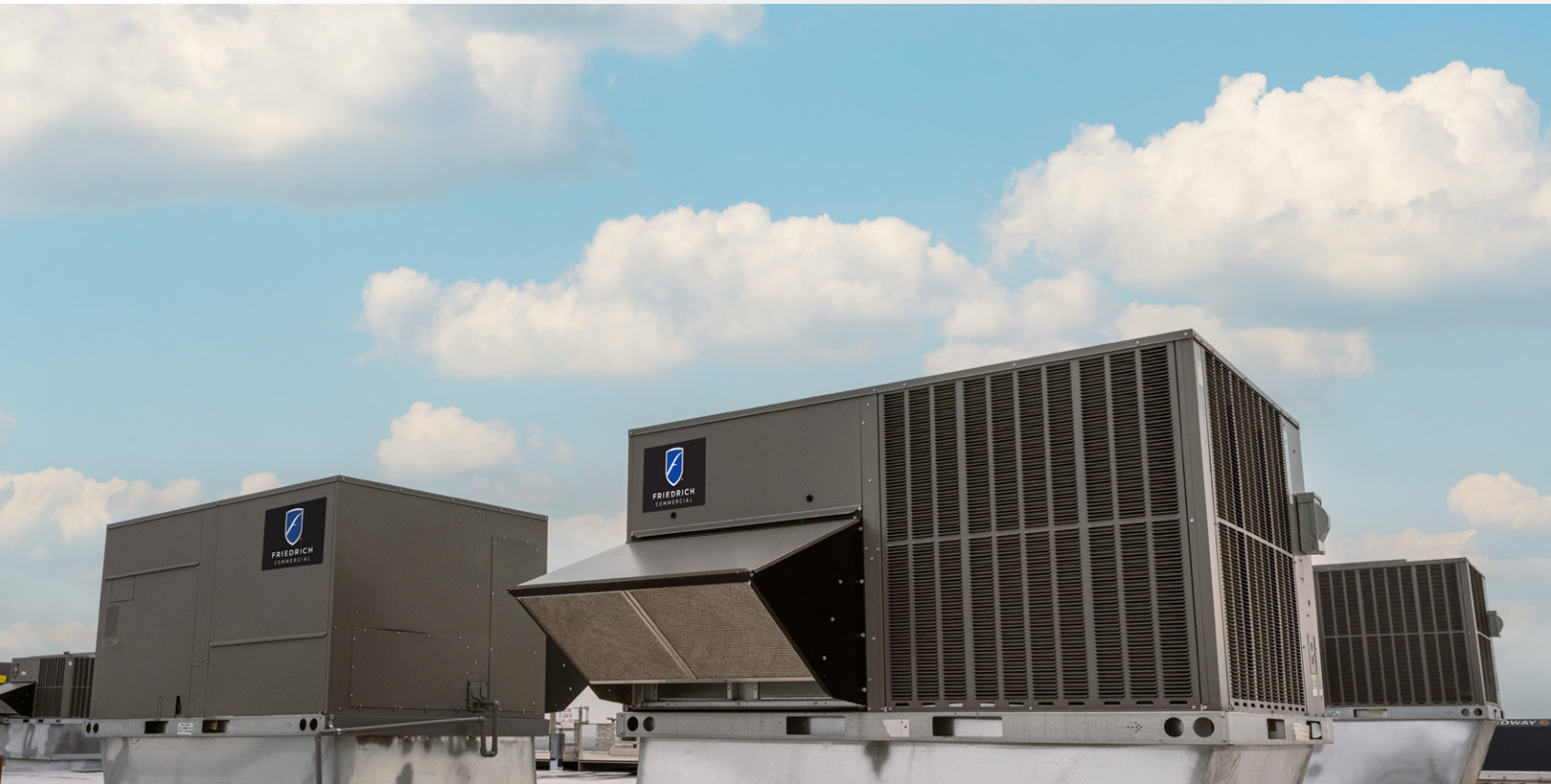
For now, some of these policies are limited to specific states, but local policy often serves as a template for more far-reaching change. HVAC professionals should stay in the know about local regulatory trends, even those outside their service areas, as well as national regulation.



Positioning our industry for the future

It's widely accepted that ensuring we have access to clean air and water—for ourselves and for future generations—is important. With our greater scientific understanding of the factors that help ensure such access, the pace, frequency and intensity of regulatory changes will likely only increase over time. It is crucial for HVAC professionals, spanning from designers and engineers to installers and maintenance technicians, to remain abreast of evolving local and national regulatory trends and customer needs for better indoor air quality, building wellness and occupant health. A proactive and agile approach enables us to strategically prepare for the future, encompassing endeavors such as enhancing product efficiency, navigating the industry's transition to low-GWP refrigerants (A2L), and embracing the ongoing initiatives for decarbonization and electrification.

As part of the Rheem Family of Brands, we're participating actively in the regulatory process at all levels—negotiating standards, influencing building codes and driving increased industry certainty. We remain committed to designing innovative products that meet today's standards and help commercial buildings meet their efficiency and sustainability goals well into the future. And we'll continue to help you and your clients prepare for tomorrow's challenges, reduce emissions and capitalize on incentives. Together, we can design and build practical, sustainable buildings that continue to deliver on comfort, profitability and reliability while helping to protect the environment.



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