



WHAT TO KNOW ABOUT THE NEW
REFRIGERANTS

FIRE & ICE: What to Know About The New Refrigerants

Let's cut to the chase.

If you have an air conditioning system that runs on the standard refrigerants used for new HVAC equipment for the past two decades, you should know things are changing fast, and in ways that might present a problem.

The good news? There has never been a better time for economical, energy-saving solutions.

What's the big deal?

Yours is an older system, sure. But it works, right? Maybe. But here's the thing. This is the final year manufacturers can *even make* equipment with the popular refrigerant (R410a) that has been utilized for the past two decades as a replacement to Freon, also known as R22.

Starting on January 1, 2025, every air conditioning unit made will need to use a newer, replacement refrigerant that has a lower Global Warming Potential than R410a. This means that equipment makers will need to shut down their production lines in 2024 to make the switch, and it's likely that they'll have to raise prices to cover the cost of the new equipment design and the downtime in their factories. Many of these new refrigerants are also more flammable than their predecessors, meaning units so equipped will also need leak detectors, adding to their cost.



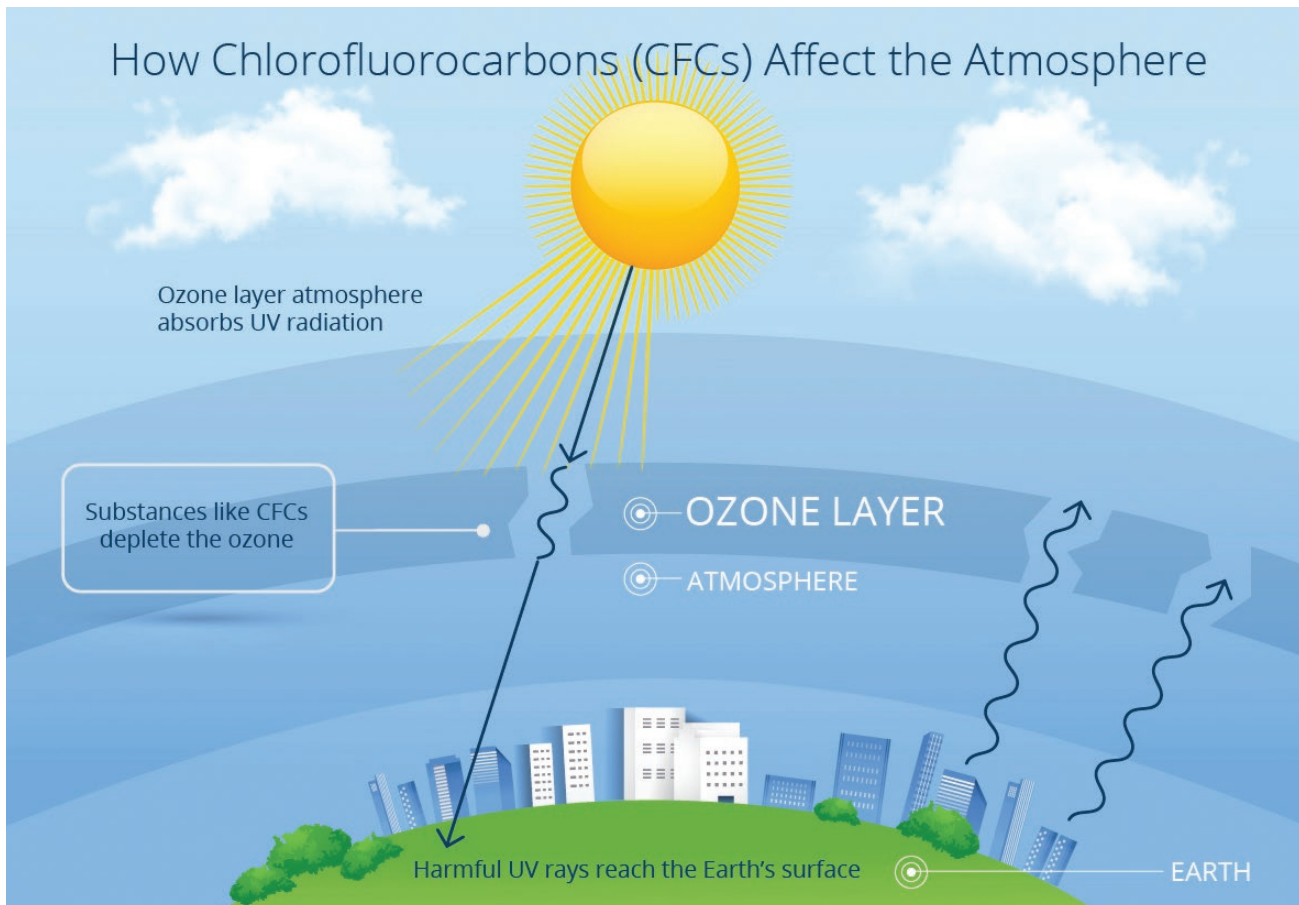
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In other words, if you don't replace this equipment now, any new commercial HVAC system is likely to become even more expensive later.

It wasn't always thus. In the 1970s and 80s, Freon (the trade name for a group of chlorofluorocarbons (CFCs) that include the infamous R22 and R500) was prized for its stability, safety and effectiveness in heat transfer. This stuff was a key component in the cooling cycles for refrigerators, freezers, and air conditioning systems in both residential and commercial buildings. As it absorbed and released heat efficiently, it was the refrigerant of choice for most commercial air conditioning systems. Freon was also used in everything from aerosol propellant deodorants, hairspray and many household and commercial solvents, as its composition allowed it to be evenly dispersed from cans.



Then researchers conclusively determined that the release of these CFCs into the atmosphere contributed to ozone depletion. You may be old enough to remember the panic over the ozone layer, a phenomenon that resulted



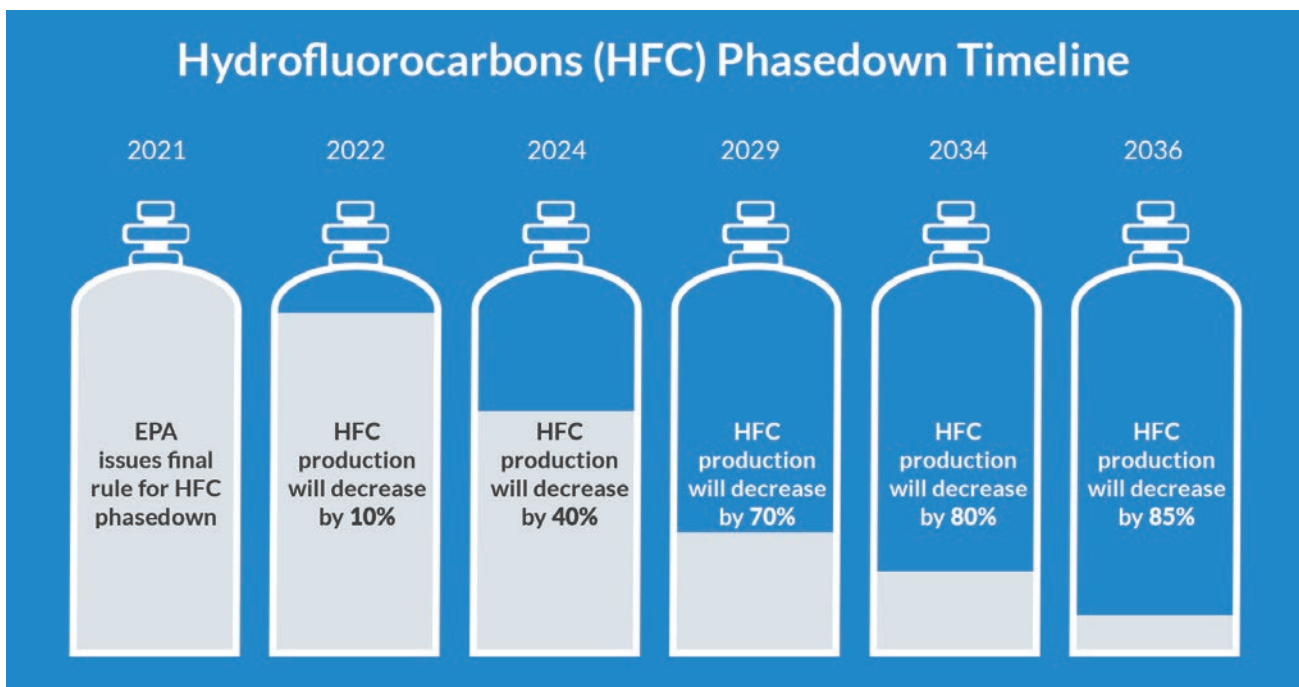
in increased and significant ultraviolet radiation reaching the Earth's surface. The growing publicity surrounding R22's dangers prompted regulatory action. The most significant result of this newfound awareness was the **Montreal Protocol**, an international treaty adopted in 1987 to phase out the production and use of ozone-depleting substances, including R22 and similar CFCs, completely and worldwide.



Today, the ozone layer is in much better shape.

In fact, scientists predict that it will be repaired by 2050. Great! But what about the darn air conditioning in your office? Well, we can explain.

To replace these toxic CFCs, manufacturers began incorporating other refrigerants into their systems. The refrigerant R410a became the coin of the realm. HVAC systems continued to be made, the ozone layer began to heal, and everyone moved on to worry about other issues. Now, environmental concerns focus on global warming. And today, in response, the R410a refrigerant must be phased out in favor of newer, more environmentally friendly products. If you really want to impress your friends with your HVAC expertise, refer them to the Montreal Protocol's Kigali Amendment, which sets out a timeline for reducing HFC consumption by 80-85% by the late 2040s.



The news shouldn't be completely unwelcome. This new generation of refrigerants works even more effectively than the older ones do. Its use will save you real money in utility costs and also add a huge new measure of energy efficiency to your commercial HVAC system. This translates into immediately lower operating expenses to provide the same or even better cooling throughout your commercial building. Your equipment will also be able to reach a desired temperature more quickly, resulting in less wear and tear on the system and greater indoor comfort.

All of these new products will also have what is referred to as a lower GWP, or Global Warming Potential. This GWP is a measure of how much heat a greenhouse gas traps in the atmosphere over a particular length of time (commonly, 20, 100, or 500 years), when compared to the same amount of CO₂, which has a GWP of 1. For reference, R410a, the refrigerant being phased out, has a GWP of 2,088.



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Let's take a look at some of these newer refrigerants:



R-32 (HFC Difluoromethane)

- **R-32 has a GWP of 675.** It is more energy-efficient and requires less refrigerant charge than older products.
- It's already widely used in many residential and commercial air conditioning systems.
- It is mildly flammable (A2L classification), and thus requires careful handling and installation. Having a qualified HVAC professional supervising maintenance and usage of your system is a must.



R-454B

- **R-454B has a GWP of 466**, making it a more sustainable option. It has similar performance characteristics to R-410A but with lower environmental impact.
- It allows for high performance in the newer HVAC systems designed to accommodate it.
- Slightly flammable (A2L classification), it requires safety measures during use and installation.
- Blend of HFC R32 & HFO R1234yF



R-466A

- **R-466A has a GWP of 733** and is non-flammable, providing a safer alternative to other low-GWP refrigerants.
- It is designed as a direct replacement for R-410A in existing systems, requiring few system modifications.
- This one is non-flammable (A1 classification), making it easier to handle and install compared to other options. Your E.P.A certified HVAC tech can give you more information.
- Blend of HFC R32 & HFC R125 & CF3I



R-447A

- **R-447A has a GWP of 600.**
- It is designed to be used in new medium & low temperature HVAC systems designed for this refrigerant.
- Again, this is described by its manufacturers as having a “mildly flammable (A2L classification),” requiring appropriate safety measures where needed.
- Blend of HFC R32 & HFC R125 & HFO R1234ze

So there you have it. Old products are being phased out, and more environmentally friendly and energy efficient products are being phased in, with real indications that their prices will increase quickly over time. This information alone might be enough for you to consider upgrading your commercial HVAC system. But, there's another, even greener reason to think about new equipment this year: more money in your pocket!



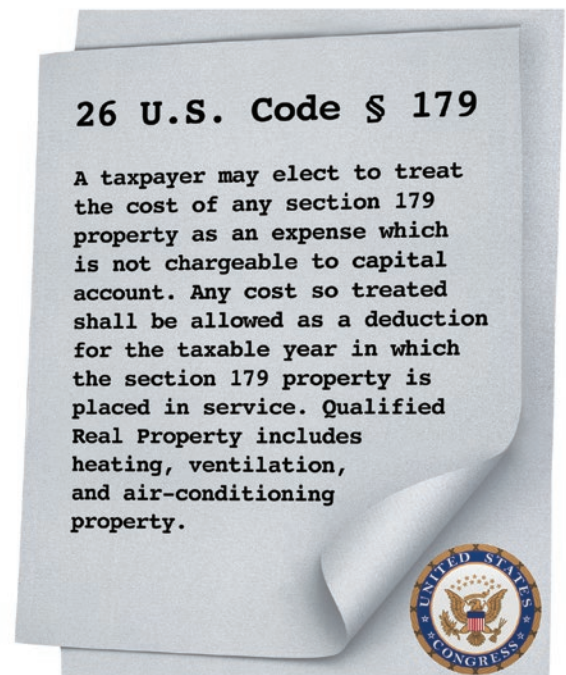
Remember, there are still significant tax incentives in 2024 on equipment replacement and HVAC upgrades. Designed to promote energy conservation and environmental sustainability, these programs can substantially offset the initial investment costs of upgrading your heating and air conditioning system.

Here are some key tax benefits that commercial property owners should think about leveraging in 2024. Keep in mind there is no guarantee these options will be extended into future years. We'll limn out the basics here. Consult a tax professional to find out more.

Section 179 Deduction

This is the Internal Revenue Service's 800 pound gorilla when it comes to primary tax benefits for businesses investing in new HVAC. The provision allows commercial property owners to deduct the full purchase price of qualifying equipment, including HVAC systems, from their gross income in the year the equipment is placed in service, rather than depreciating the cost over several years.

For 2024, the maximum deduction is \$1,160,000, with a phase-out threshold of \$2,890,000. This deduction can result in significant upfront tax savings, encouraging businesses to invest in modern, energy-efficient HVAC systems that can lead to long-term operational savings.





DEPRECIATE



Bonus Depreciation

Businesses can benefit from bonus depreciation. Under the Tax Cuts and Jobs Act (TCJA), businesses can depreciate 60% of the cost of qualifying HVAC equipment acquired and placed in service before January 1, 2025. This bonus depreciation applies to both new and used equipment, providing substantial tax relief. This depreciation is set to phase down to 40% next year, and continue declining in subsequent years after that. Today, it presents a significant opportunity for immediate tax savings on a new HVAC investment.

State and Local Incentives

In addition to federal tax benefits, California and Los Angeles County offer additional incentives for energy-efficient upgrades, including rebates, grants, and tax credits for new HVAC systems. These incentives can also significantly reduce the net cost of your investment. Your Air-Tro consultant and tax professional can help you identify available programs.



There is talk of changes to the tax code. But any savvy commercial property owner should be aware of both the ways in which HVAC equipment is changing, and how best to take advantage of the resources available to leverage these benefits.

At Air-Tro, we have your back. Don't hesitate to reach out to us for more information. After all, knowledge is power, and indoor comfort is king.



Robert Helbing, PE
President, **Air-Tro, Inc.**
1630 S. Myrtle Ave., Monrovia, CA 91016
626.357.3535 | airtro.com
service@airtro.com

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Robert Helbing, PE, is President of Air-Tro Heating and Air Conditioning Company. He is a Caltech-degreed aeronautical engineer (yes – a rocket scientist!), as well as a 4th generation contractor and 3rd generation engineer. He is a past-president of the Institute of Heating and Air Conditioning Industries (IHACI); Air Conditioning Contractors of America (ACCA) Contractor of the Year, 2011; and a 15-year member of Excellence Alliance Industries, a membership organization committed to the development and improvement of HVACR companies nationwide. Bob is also a founding member and past committee chair for the Western HVAC Performance Alliance, a council of stakeholders in the Energy industry which includes utilities, regulators, manufacturers and contractors. He currently serves on two committees for the WHPA: Commercial Quality Installation and the Existing Buildings Energy Efficiency. He can be reached at 626.357.3535 and bobhelbing@airtro.com.

For more information, visit our commercial section on the web at airtro.com/commercial

