



ADDRESSING EPA'S NEW REFRIGERANT RULE

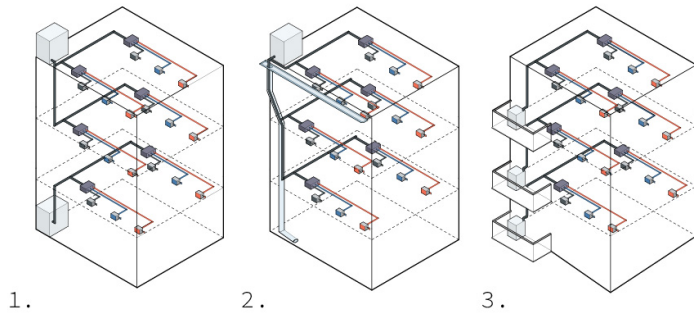
The EPA signed a final rule Oct. 5, 2023, restricting the use of refrigerants that are currently commonplace in the market and includes transitioning from R-410A to R-32 and/or R454B. The final rule restricts the sale, distribution, import, and export of products of the refrigerants to three years after the manufacturer restriction date. Compliance dates for stationary residential and light commercial AC and heat pumps are:

- Manufacture and import: Jan. 1, 2025
- Installation for all except VRF: Jan. 1, 2025
- Installation for VRF: Jan. 1, 2026

R-32 and R-454B refrigerants are classified as low flammability with the code requiring that these systems be in a fire-rated, ventilated shaft if they penetrate more than two floor assemblies. The refrigerant pipe also must be protected or shielded, and insulation of the shaft is recommended if it is routed within a conditioned space.* It also is recommended that the fire-rated shaft be located near or adjacent to the HVAC units they serve.

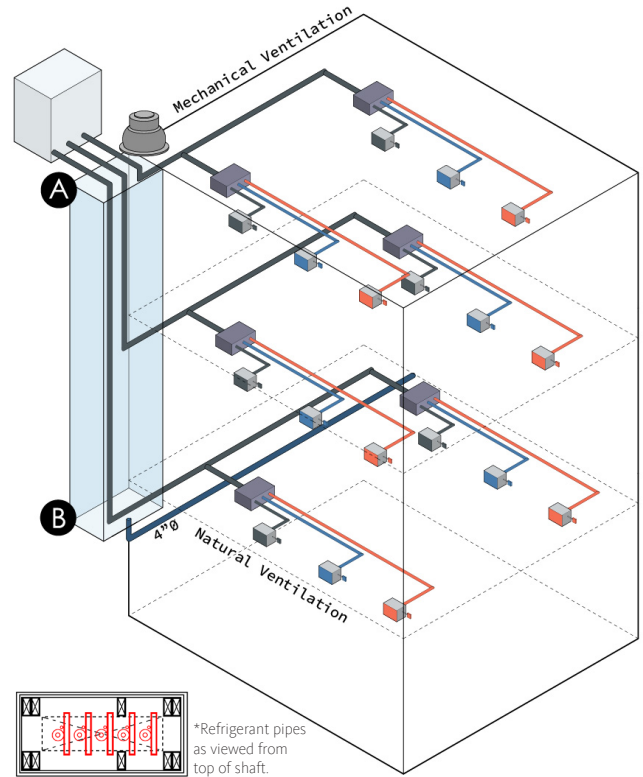
Meeting these requirements can be costly, but options exist that avoid requiring a fire-rated shaft.

1. Restrict refrigerant line penetrations to two floors. Example: Have rooftop condensing units serve the top two floors and on-grade condensing units serve the bottom two floors.
2. Route piping on the building exterior and hide it in an architectural feature (e.g., a false gutter downspout). This could be used in conjunction with Option 1, with the bottom floors' refrigerant lines on the exterior or in an open breezeway.
3. Locate condensing units on the balcony of the floors they serve. Cassette-type condensing units are recommended.



A fourth option is to use VTAC units (or similar product) with self-contained refrigerant circuits.

As you analyze your options, factor in the impacts that a fire-rated shaft will have on your structural system and space layout. Regardless of your approach, verify the refrigerant line lengths do not exceed the maximum length as published by the manufacturer.



DESIGNING A FIRE-RATED SHAFT

A. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe vents outdoors.

B. Natural ventilation (1109.3.2) of refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall have a pipe, duct, or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors.

For more guidance on this topic, contact your IMEG consultant.