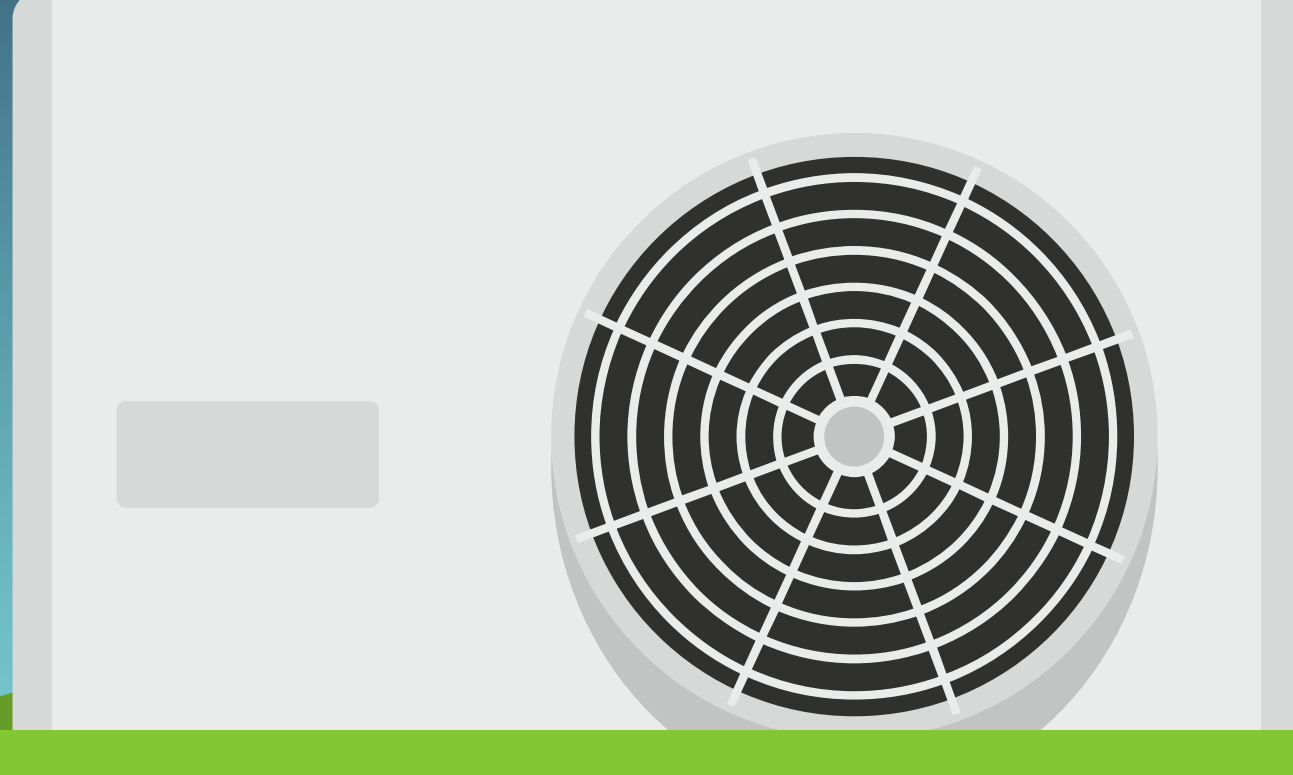


RISKY BUSINESS

What You Need To Know About...



Heat Pumps

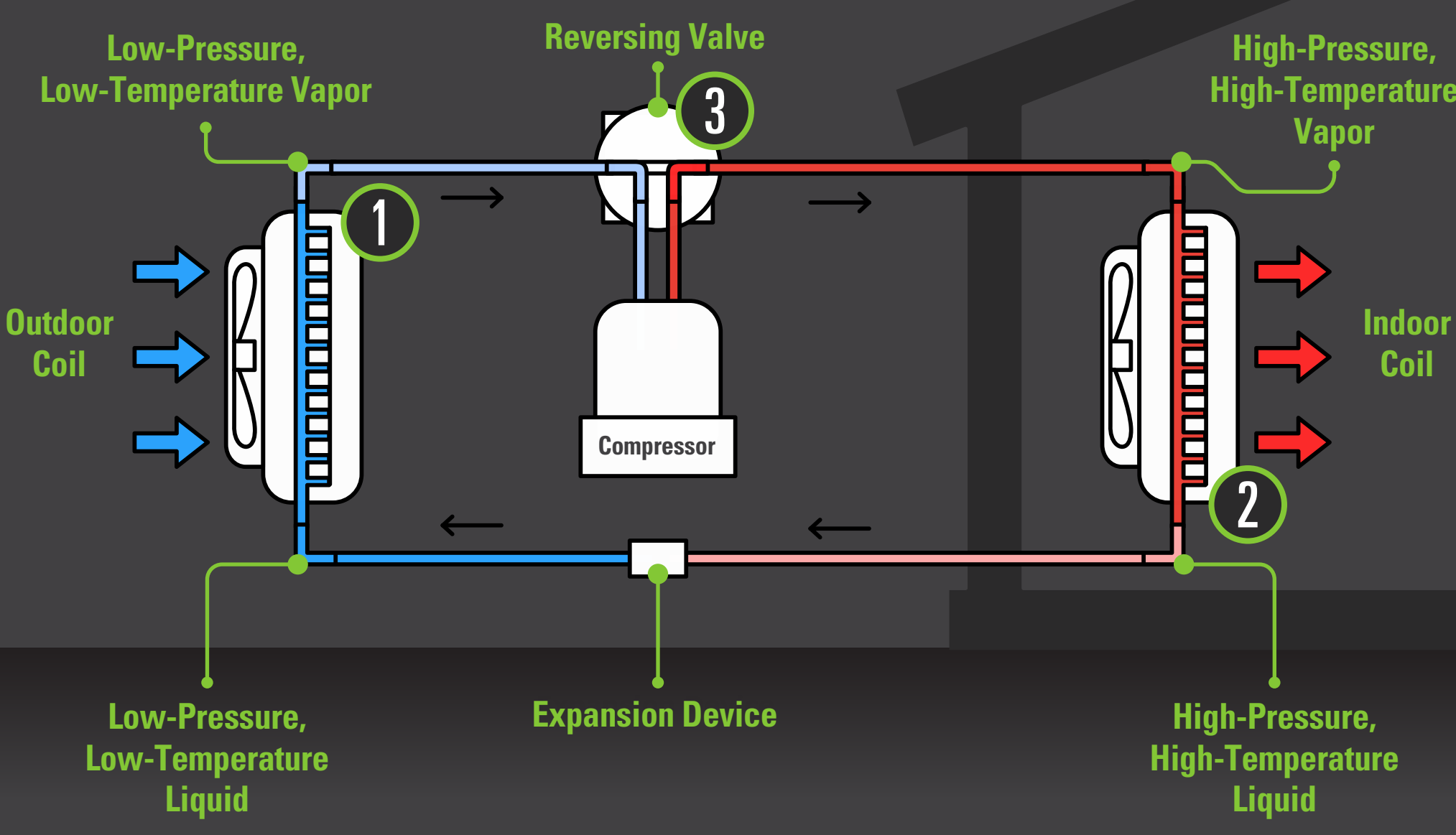
By 2022 it is expected that heat pumps will comprise **27 percent** of the overall global HVAC equipment demand.¹

The increase in demand is driven by the need to reduce dependency on fossil fuels and find more energy-efficient alternatives to furnaces and air conditioners. Since heat pumps move heat rather than generate it, they can provide equivalent space conditioning at as little as one-quarter of the cost of operating conventional heating or cooling appliances.²



HOW THEY WORK:

Heat pumps are vapor-compression refrigeration systems whose indoor/outdoor coils are used reversibly as condensers or evaporators, depending on the need for heating or cooling.






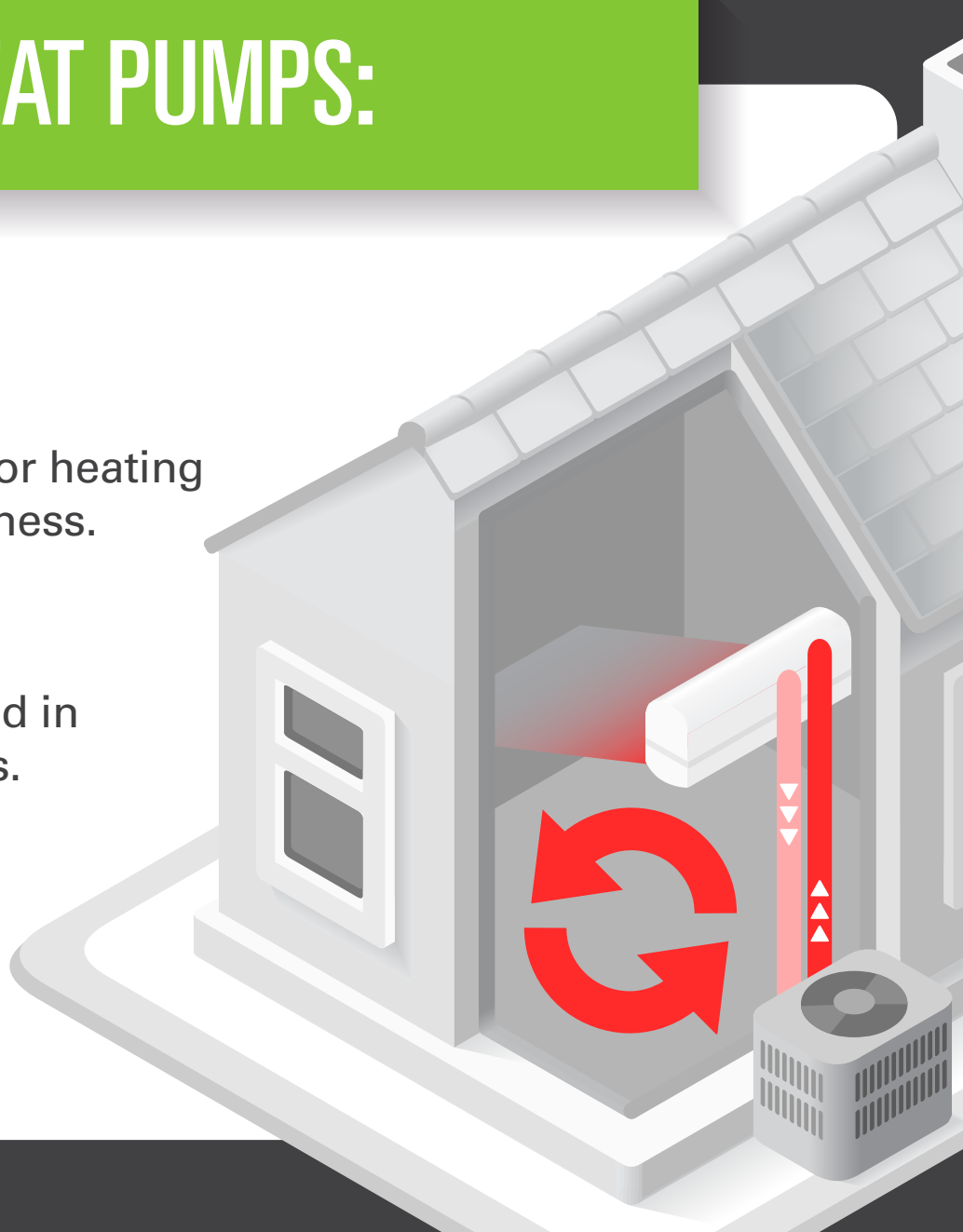
A heat pump's refrigeration system consists of a compressor and two coils made of copper tubing (one indoors and one outside), which are surrounded by aluminum fins to aid heat transfer.

- 1** In heating mode, liquid refrigerant in the outside coils extracts heat from the air and evaporates into a gas.
- 2** The indoor coils release heat from the refrigerant as it condenses back into a liquid.
- 3** A reversing valve, near the compressor, can change the direction of the refrigerant flow for cooling as well as for defrosting the outdoor coils in winter.³

TYPES OF HEAT PUMPS:

There are 3 main types of heat pumps:

-  **Air-Source:** Most commonly used for heating and cooling a home or small business.
-  **Water-Source:** Most commonly used in applications such as water heaters.
-  **Ground-Source:** Most commonly used in geothermal applications.



HEAT PUMP FACTS:



Air-to-Water heat pumps offer the greatest energy savings of up to 47 percent compared to a natural gas boiler.⁵







About 12.1 million households use heat pumps, of which about 77 percent are located in the Southeastern United States.⁴



In the Northeast/Mid-Atlantic region alone, adoption of Air-Source heat pumps in homes that currently use electric heat could provide annual energy cost savings of approximately \$1.2 billion and avoid over 7 million metric tons of annual carbon emissions (equivalent to the annual carbon emissions associated with the energy used by nearly 350,000 homes).⁶

PREVENTIVE MAINTENANCE:

Suggestions for heat pump loss prevention

-  Set your thermostat at one temperature. Constant adjusting can cause higher utility costs, especially in the winter.
-  Check air filters monthly and replace as needed. Dirty filters, coils and fans reduce airflow through the system, which decreases system performance and can damage your system's compressor.
-  Clean outdoor coils whenever they appear dirty; occasionally, turn off power to the fan and clean it; remove vegetation and clutter from around the outdoor unit.
-  Clean the supply and return registers in your home. Straighten the fins if bent.
-  Have a professional technician service your heat pump at least every year to maintain efficient operation. A neglected heat pump will consume 10 to 25 percent more energy.
-  Keep outdoor units clear of snow, ice and debris.



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