



HVAC upgrades

If your heating, ventilation and air conditioning (HVAC) equipment is more than 10 years old, struggles to keep your home comfortable or needs frequent repairs, it might be time to replace it. When you replace your old system with a high-efficiency system, you could save up to 20% on your heating and cooling costs. TVA EnergyRight® and your local power company make it easy to hire with confidence for your HVAC improvements when you choose a TVA-approved contractor—trained, licensed and insured to upgrade your HVAC the right way—through our Quality Contractor Network (QCN).

What size HVAC system do I need?

Your HVAC equipment works best when it's properly sized for your home's needs. An oversized heat pump or air conditioner wastes energy and costs you money. We'll connect you with a QCN member who can accurately calculate your home's heating and cooling needs and then determine the right equipment size for your space.

What factors affect the performance of my new HVAC system?

Nearly half of the energy used in your home comes from heating and cooling. To get the most out of your new HVAC system, you want to make sure the rest of your home is energy efficient. Insulate ceilings and walls to recommended R-values. Seal and insulate any ducts located in attics, crawl spaces and unheated basements. Air-seal the home. When you make these energy efficiency improvements, you may be able to install a smaller HVAC unit. A smaller system is more affordable and saves you money on your energy bills. Improper installation or the wrong size unit can reduce your system's efficiency by up to 30%.

How is heat pump energy efficiency rated?

Heat pumps have two efficiency ratings: Seasonal Energy Efficiency Ratio (SEER) for the cooling mode and Heating Seasonal Performance Factor (HSPF) for the heating mode. Higher SEER and HSPF numbers equate to higher levels of energy efficiency. Higher efficiency heat pumps have a SEER of 14.0 or greater for packaged units and 14.5 or greater for split units, and a HSPF of 8.0 or greater for packaged units and 8.2 or greater for split units. Equipment efficiency degrades over time. A 15-year-old unit rated SEER 12.0 might operate more like a SEER 10.0 unit.

How is air conditioner energy efficiency rated?

Air conditioner efficiency is rated by Seasonal Energy Efficiency Ratio, or SEER. Today's air conditioners typically have a SEER of 14.0 to 18.0. Older models, like those 10 or more years old, might have a SEER of 10.0. Higher efficiency air conditioners have a SEER of 14.0 or greater for packaged units and 14.5 or greater for split units. Expect a SEER 16.0 air conditioner to use about 33% less energy compared to a SEER 12.0 air conditioner.

TVA installation requirements for HVAC replacement*

HVAC replacement

- Resolve moisture issues before work begins.
- Balance point not to exceed 35F (heat pump only).
- Contractor to size, select and install equipment according to Manual J and TVA requirements.
- Total cooling capacity to be between 95% and 125% of total cooling load (sensible and latent) or the next largest nominal piece of equipment.
- Equipment operating capacity to be within 10% of equipment-rated capacity.
- All equipment to be AHRI-certified and meet TVA Minimum Efficiency Requirements for Heating and Cooling.
- Outdoor units to meet TVA clearances for air intake (18 inches) and discharge (four feet), and are not to be located within four feet of kitchen or laundry exhausts.
- Airflow to be within the manufacturer's recommended range (normally 350 cubic feet per minute [cfm] to 450 cfm per ton).
- Supply registers to have an average face velocity between 400 feet per minute (fpm) and 700 fpm, or per manufacturer's recommendations.
- Where possible, the return to have a maximum average face velocity of 500 fpm.
- Vapor (suction) lines to be continuously wrapped in a minimum of 3/8 inch insulation and vapor sealed.
- Condensate drain to be at least 3/4 inch, trapped at unit and made of copper or plastic. Condensate to always drain to the exterior.
- First 6 feet of condensate line to be insulated.
- Float switch to be installed on auxiliary drain pan or condensate drain.

Ducts

- New and existing ducts to be securely supported; supports are not to constrict ducts or duct installation.
- Ducts are not to touch the ground.
- Exterior ducts to meet all applicable TVA Duct System Standards.
- Maintain a minimum of one return air grille on each level of the home.
- Contractor to visually inspect duct system for damage and provide customer with a quote for making repairs.
- Contractor to advise customer to install a working carbon monoxide (CO) monitor if the home has any gas appliances or an attached garage.

Go to **EnergyRight.com** to register your home and connect to the Quality Contractor Network.

**This sheet is not a substitute for the TVA Standards.*



ENERGY SAVING TIPS

- Air-seal the home, including attic access opening, recessed lights, and penetrations in the ceiling, basement and crawl space.
 - Insulate attic access opening to a minimum R-10.
 - All windows should have two layers of glass.
 - Install attic insulation to R-38.
 - Change your air filter every month.
 - Tune up your HVAC equipment every year.
 - Install a programmable thermostat set to ENERGY STAR settings.
 - Keep fan in "auto" position on thermostat.
 - Keep outdoor unit free of obstructions (such as bushes and fences).
 - Seal ducts in unconditioned or semi-conditioned space with mastic.
 - Insulate ducts in unconditioned or semi-conditioned space to R-8.
 - Insulate all refrigerant lines (vapor and liquid) when installed in high-temperature areas.
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