

Air Sealing

Air sealing with caulk, weather stripping and other appropriate materials is a fundamental step in making your home more energy efficient. Individual gaps may appear minor, but collectively they can have the same effect as leaving a window open all year long. According to the Department of Energy, proper air sealing of gaps and holes in the attic, crawlspace, and other breaks in the thermal boundary can save 10 percent or more on your energy bills.

Why is air sealing important?

Air sealing the envelope or shell of your home, including the exterior walls, ceiling, windows, doors and floors, is often one of the most cost effective ways to improve your home's energy efficiency and comfort. Air sealing should always be performed before any insulation is added. It can save 10 percent or more on your total annual energy bills.

What does air sealing improve?

- Reduces energy bills
- Improves comfort, especially during winter and summer months
- Reduces noise from the outside
- Prevents allergens, dust, contaminants and insects from entering your home
- Improves indoor air quality
- Improves humidity control

What areas should be air sealed?

Many air leaks and drafts are easy to find because they are easy to feel, such as those around windows and doors. Holes hidden in attics, basements, and crawlspaces, however, are usually bigger problems. For example, penetrations in ceilings and floors for electrical wires, plumbing, ducts, chimneys, flue pipes, and recessed lights can be major sources of air leakage and are often not visible. Proper air sealing materials (e.g., caulk, expanding foam, rigid foam board, weather stripping, etc.) will vary depending on the nature of the leak and the surface to be sealed. Let your contractor know if there are any excessively drafty areas in your home.

Windows

By using proper air sealing methods, old windows usually can be made more energy efficient at a significantly lower cost than replacement windows. Jambs and trim must be adequately air sealed to optimize energy efficiency potential of both new and old windows. If new windows are installed, they should contain energy efficiency features, such as low-e coatings and gas filling. Look for the ENERGY STAR label on new windows.



Subject to TVA Installation Requirements (see reverse side).

Homes with unvented combustion appliances that are the primary heat source for the home are not eligible for program upgrade installations.

For more details, call 1-855-2eScore (1-855-237-2673) or go to www.2eScore.com

TVA Installation Requirements for Air Sealing*

General Standards

- Roof leaks and moisture issues shall be repaired before work begins.
- Major penetrations in the ceiling, basement, and crawlspace shall be sealed.
- If foundation perimeter is sealed, then the installation must meet all TVA Standards for Closed Crawlspaces.
- Non-airtight recessed lights, if accessible, shall be sealed with an airtight recessed baffle trim as long as the work does not require cosmetic ceiling repairs.
- Bath fan-light combo units should be sealed like a non-airtight recessed light.
- Attic access shall have an airtight cover. Minimum R-10 insulation is recommended.
- Seams, cracks, joints, penetrations, and connections shall have a continuous seal.
- Installing contractor shall ensure that there is enough fresh air in the home for the occupants.
- Exposed rigid foam or spray foam insulation shall have a fire barrier per local code requirements.
- Do not block or seal openings required for combustion ventilation.
- Quality Contractor Network (QCN) member shall advise participant to install a working carbon monoxide (CO) monitor if the home has any gas appliances or an attached garage.

Caulking, Sealants, Backers, and Glazing Materials

- Surfaces shall be clean, dry, and repaired prior to installing caulk or glazing.
- Sealants shall be compatible with intended surfaces.
- No material shall be installed within 3" of a heat source (6" for single wall vent pipe) unless it is fireproof (fire-rated caulk, metal flashing, mineral wool).
- Depth of caulk shall not be greater than the width of the joint; use appropriate backer materials as needed to minimize hole size.
- Foam products shall be protected from direct sunlight.
- Support material shall be installed if air barrier spans wider than 24", or as rated.
- Excess caulk and sealants shall be removed from adjoining areas.
- Ineffective glazing shall be replaced; glazing points shall be no further than 12" apart and within 3" of each corner of glass.

Weather Stripping and Thresholds

- Weather stripping shall be high quality with a minimum 20-year life expectancy.
- Weather stripping shall be permanently attached with approved hardware and caulk, and shall create an effective air seal.
- Sash locks, eye hooks, or other hardware may be necessary to achieve air seal.
- Threshold shall be metal with vinyl insert or metal saddle with door shoe.
- Threshold shall be secured with screws or bolts to achieve a good air seal.
- Door or window shall open and close properly.

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



RECOMMENDED BEST PRACTICES

- Also air seal attached garage, walls, windows, and doors.
- Caulk gaps smaller than ¼".
- Foam gaps ¼" to 1½".
- Use a backer for gaps larger than 1½".
- Maintain a continuous air barrier around building envelope.
- Sealants in visible areas should be limited to low sheen clear caulks or paintable caulks.
- Air seal perimeter of crawlspace or basement near water pipes at risk of freezing.
- If some areas are inaccessible, strategic dense-pack and/or foam insulation should be considered to reduce air leakage.
- Install mechanical ventilation if less than 0.35 ACH.
- Ensure combustion safety carbon monoxide (CO).
- MSDS sheets for air sealing materials should be on each job site.