

## Improving Existing Homes: Air Sealing a Porch Wall

**BUILDING AMERICA  
ENERGY PERFORMANCE BRIEF**



The house wall separating the porch attic from the rest of the house was correctly air sealed in this new home to prevent air from flowing into the home and causing heat loss.

### When to Do This

Any time, if porch wall is accessible, either from the attic or from the porch.

### Durability & Health

If the air barrier is missing, flowing air can carry cold air in; moisture can condense on cold surfaces causing mold.

In homes with a covered porch, the wall area hidden behind the porch ceiling may have been left open, with no air barrier and sometimes no insulation. These open areas can allow air to flow through cracks in the porch ceiling and into the home. This is especially problematic if you have a two-story house with balloon-framed walls because the joist cavity between the floors will be connected to this porch attic. This can occur even if batt insulation has been installed. If the wall sheathing is missing, air can flow through the insulation, robbing it of its thermal insulating properties.

One Building America research team led by Steven Winter Associates, investigated high-energy bill complaints at a 360-unit affordable housing development and found nearly twice the expected air leakage. Infrared scanning revealed an air leakage path on an exterior second-story wall above a front porch. They discovered that the wall between the porch and the attic had been insulated with unfaced fiberglass batts, but wall board had never been installed. The insulation was dirty from years of windwashing as wind carried dust up through the perforated porch ceiling, through the insulation, and into the wall above. Crews used rigid foam to cover and air seal the open wall area. Blower door tests showed the change reduced overall envelope leakage by 200 CFM50. The fix cost only \$267 per unit and resulted in savings of \$200 per year per unit, for a payback of less than two years.



When the wall connecting the porch to the house is properly blocked and air sealed with OSB, dry wall, or rigid foam, a significant source of air and heat loss is removed.

2009 IECC/2009 IRC Code

Requirement for New Construction and Additions

Air barrier and thermal barrier

- Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier.
- Breaks or joints in the air barrier are filled or repaired.
- Air-permeable insulation is inside of an air barrier.

References

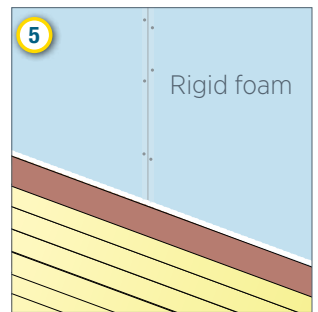
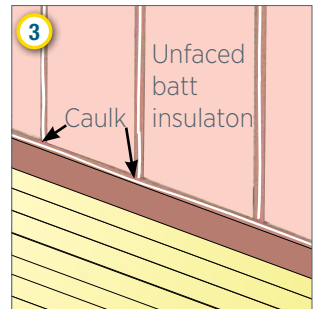
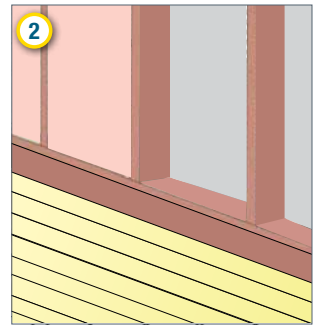
DOE. 2010. *Air Sealing*. Prepared by Pacific Northwest National Laboratory for the U.S. Department of Energy, [www.buildingamerica.gov](http://www.buildingamerica.gov).

Moriarta, Courtney. 2008. "Fixing Air Leakage in Connecticut Town Houses," *Home Energy Magazine* July/Aug 2008, p 28-30, [www.swinter.com/news/documents/FixingAirLeakage.pdf&amp](http://www.swinter.com/news/documents/FixingAirLeakage.pdf&amp)

EPA. 2008. *ENERGY STAR Qualified Homes Thermal Bypass Checklist Guide*. U.S. Environmental Protection Agency, [www.energystar.gov/ia/partners/bldrs\\_lenders\\_raters/downloads/TBC\\_Guide\\_062507.pdf](http://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/TBC_Guide_062507.pdf)

How to Air Seal a Porch Wall

- 1 Access the wall area through the porch roof or house attic.
- 2 Install insulation in the wall cavity, if none is present. If the porch wall adjoins living space, the batt insulation can be aligned with the existing drywall on the house side, before installing the air barrier on the porch side as described below. If the porch wall adjoins attic space and no air barrier is present, install an air barrier on the attic side, then install the insulation. Alternately, the air barrier can be installed on the porch side as described below and spray foam can be applied from the attic side.
- 3 Apply a thick bead of caulk to framing that will be covered.
- 4 Cut wall sheathing to fit the open space (wall sheathing rigid foam insulation, oriented strand board, or plywood). Nail or screw sheathing in place.
- 5 Caulk or spray foam around edges. If there are seams in the sheathing, seal them with caulk or tape.
- 6 Replace the porch ceiling covering.



For More Information

[www.buildingamerica.gov](http://www.buildingamerica.gov)  
 EERE Information Center  
 1-877-EERE-INF (1-877-337-3463)  
[eere.energy.gov/informationcenter](http://eere.energy.gov/informationcenter)

U.S. DEPARTMENT OF **ENERGY** | Energy Efficiency & Renewable Energy

Building America researchers were called to investigate high heating bills at an affordable housing project in Connecticut. Infrared camera imagery revealed high heat loss on a second-story wall above a location where a porch extended from the first-story exterior wall. Researchers opened up the perforated vinyl porch ceiling to find that there was no air barrier covering the batt insulation. Air could flow through the insulation robbing it of its heating value. An air barrier of rigid foam board was put in place with spray foam (Source: Moriarta 2008).