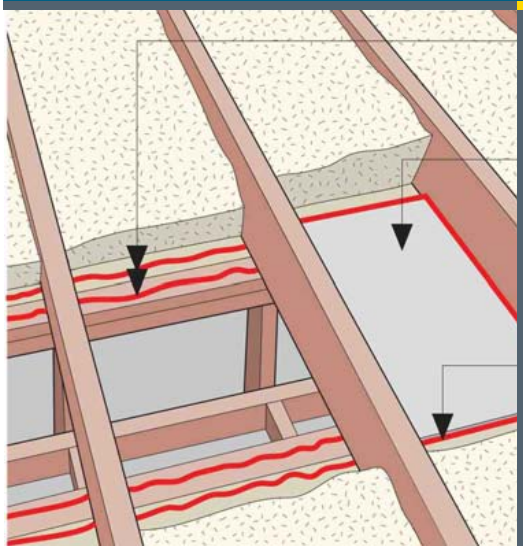


BUILDING AMERICA TOP INNOVATIONS HALL OF FAME PROFILE

INNOVATIONS CATEGORY:

3 Effective Guidance and Tools Solutions

3.1 High-Performance Home Solutions

Attic Air Sealing Guidelines

The *Guide to Attic Air Sealing* includes detailed drawings and step-by-step instructions for air sealing common air leaks into attics.

The widely disseminated, DOE-sponsored *Guide to Attic Air Sealing* provides critical best practices for attic retrofits. The guide has had 21,000 views and 13,000 downloads since it was posted to the Building Science Corporation website. This broad interest provides strong evidence the guide is being extensively used by builders, contractors, and homeowners across the United States.

BUILDING AMERICA TOP INNOVATIONS

Recognizing Top Innovations in Building Science – The U.S. Department of Energy's Building America program was started in 1995 to provide research and development to the residential new construction and remodeling industry. As a national center for world-class research, Building America funds integrated research in market-ready technology solutions through collaborative partnerships between building and remodeling industry leaders, nationally recognized building scientists, and the national laboratories. Building America Top Innovation Awards recognize those projects that have had a profound or transforming impact on the new and retrofit housing industries on the road to high-performance homes.

One of the most effective energy measures for retrofitting homes across the United States is attic air sealing. The Building America-sponsored Guide to Attic Air Sealing provides much needed instruction essential to achieving effective energy savings while avoiding pitfalls that can lead to combustion safety and indoor air quality issues.

The U.S. Department of Energy's Building America program sponsored development of *A Guide to Attic Air Sealing*, which was written by Building America research partner Building Science Corporation in 2011 and made available via its website at www.buildingscience.com/documents/guides-and-manuals/gm-attic-air-sealing-guide/view.

Attic air sealing is one of the biggest opportunities for saving energy in existing homes because attics are often accessible, they represent a critical interface between conditioned and unconditioned space, and they typically contain extensive holes, cracks, and penetrations. The guide lays out an important sequence that is necessary for many retrofit projects, but is often overlooked: 1) Safety must be addressed first by ensuring adequate combustion air is available for gravity-exhausted furnaces and water heaters or by switching to power vent or direct vent equipment. This is essential because pressure imbalances can be greater in tighter homes.
2) Whole-house ventilation needs to be installed to ensure adequate fresh air before the home becomes tighter and better insulated. 3) Air sealing all major leaks must be a pre-cursor to installing insulation to ensure the leaks are sealed before they become inaccessible.
4) Insulation should be installed properly and in the right quantity. It is not uncommon for many homeowners to go in the reverse order, starting home improvements with insulation and often missing these other essential steps altogether.

"The Building Science Corporation out of Massachusetts has put together one of the best air sealing guides that I have come across. Air sealing your attic is probably the most effective thing you can do for home energy efficiency. This document is a stellar assembly of the different techniques and considerations applicable to the craft."

AN ENERGY AUDITOR BLOGGER

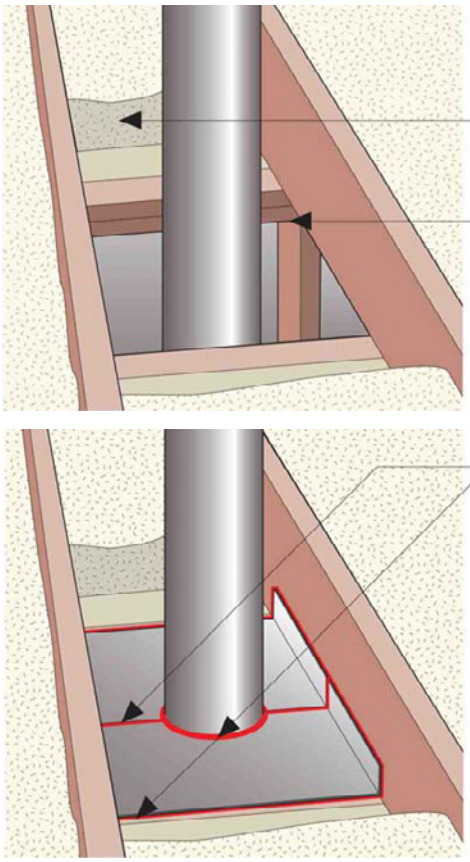
www.myenergyauditblog.com/2011/06/home-performance-tips-air-sealing.html

The guide offers work plans to assist readers through these steps. The guide also includes detailed drawings and step-by-step instructions for air sealing 19 common sources of air leakage into attics.

This guide provides important background information to home remodelers, builders, general contractors, insulation and HVAC contractors, and homeowners for making informed decisions about how to proceed with energy retrofits.

Although the guide is aimed at retrofit applications, much of the information, especially specific air sealing details, would be helpful to new construction builders as well.

Building America also sponsored development of *Building America Best Practices Series, Volume 10: Air Sealing; A Guide for Contractors to Share with Homeowners*. The guide was developed by Pacific Northwest National Laboratory and is based on the research and measures described in the *Guide to Attic Air Sealing* as well as other research developed by Building Science Corporation and other Building America research teams.



Drawings and instructions in the guide show contractors the proper way to air seal around typical breaks in the ceiling. Here, sheet metal and fire-rated caulk provide air sealing around a flue pipe.

ATTIC AIR SEALING DETAILS

The guide provides detailed how-to drawings for the following:

ATTIC ACCESS

- Attic Hatch, Access Panel
- Pull Down Stair Opening

FRAMING

- Balloon-Framed Gable Wall
- Common Wall
- Dropped Soffits
- Exterior Top Plate at Soffit
- Kneewalls
- Top Plate Joints and Penetrations (Electrical/Plumbing)
- Two-Story Wall

MECHANICAL AND ELECTRICAL PENETRATIONS

- Bath Fan
- Chimney Chase – Masonry
- Chimney Chase – Metal Pipe
- Duct Boot
- Electrical Box
- Plumbing Stack
- Recessed Can Ceiling Light
- Rigid or Flex Duct and Chase

"This [guide] includes excellent information on attic ventilation, building dynamics, and a wonderful set of schematics for air sealing different features commonly found in attic spaces."

Flathead Electric Cooperative
Kalispell, MT

www.flatheadelectric.com/energy/PDF/AddResource.pdf

REFERENCES

Lstiburek, J. 2010. *Guide to Attic Air Sealing*. Building Science Corporation. www.buildingscience.com/documents/guides-and-manuals/gm-attic-air-sealing-guide/view

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