

# EEBA Annual Conference

September 26, 2012

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



**Building Science Solutions –  
Faster and Better**

**Sam Rashkin  
Michael Baechler  
Linda Connell**

# Building America Solution Center Overview

# World Class Research...

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy

## ... at Your Finger Tips



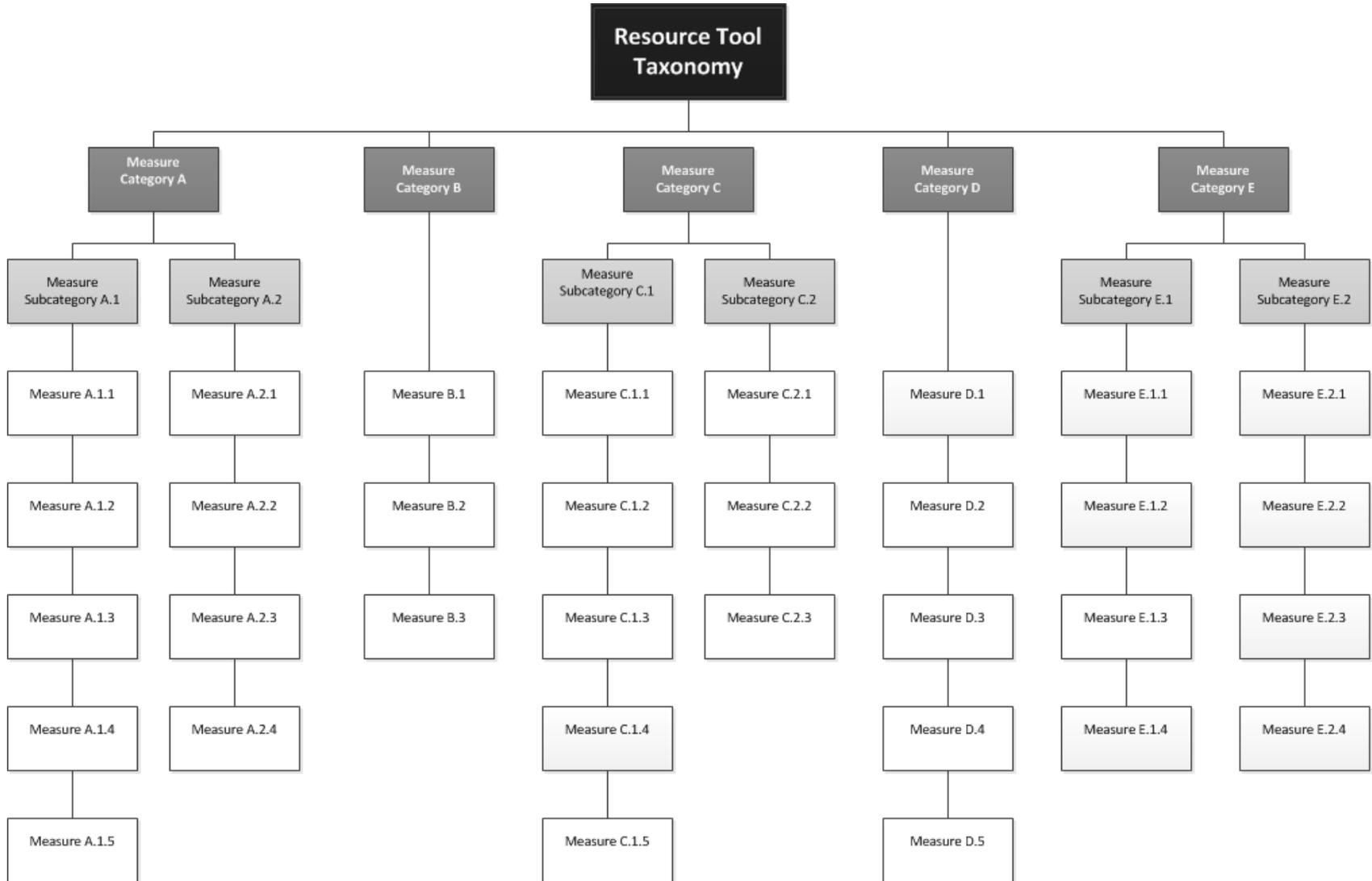
## Is:

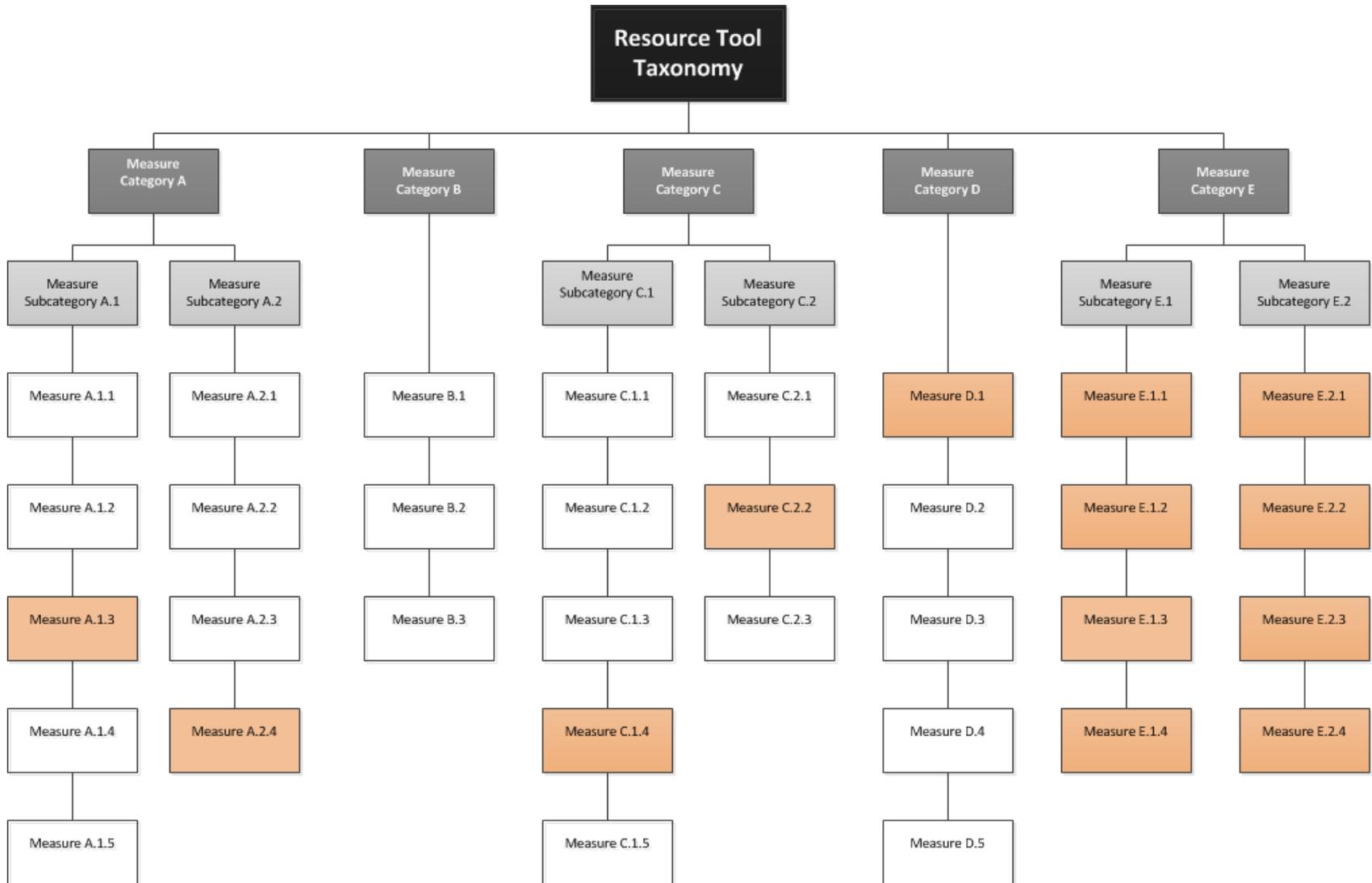
### Easy Access to World-Class Research:

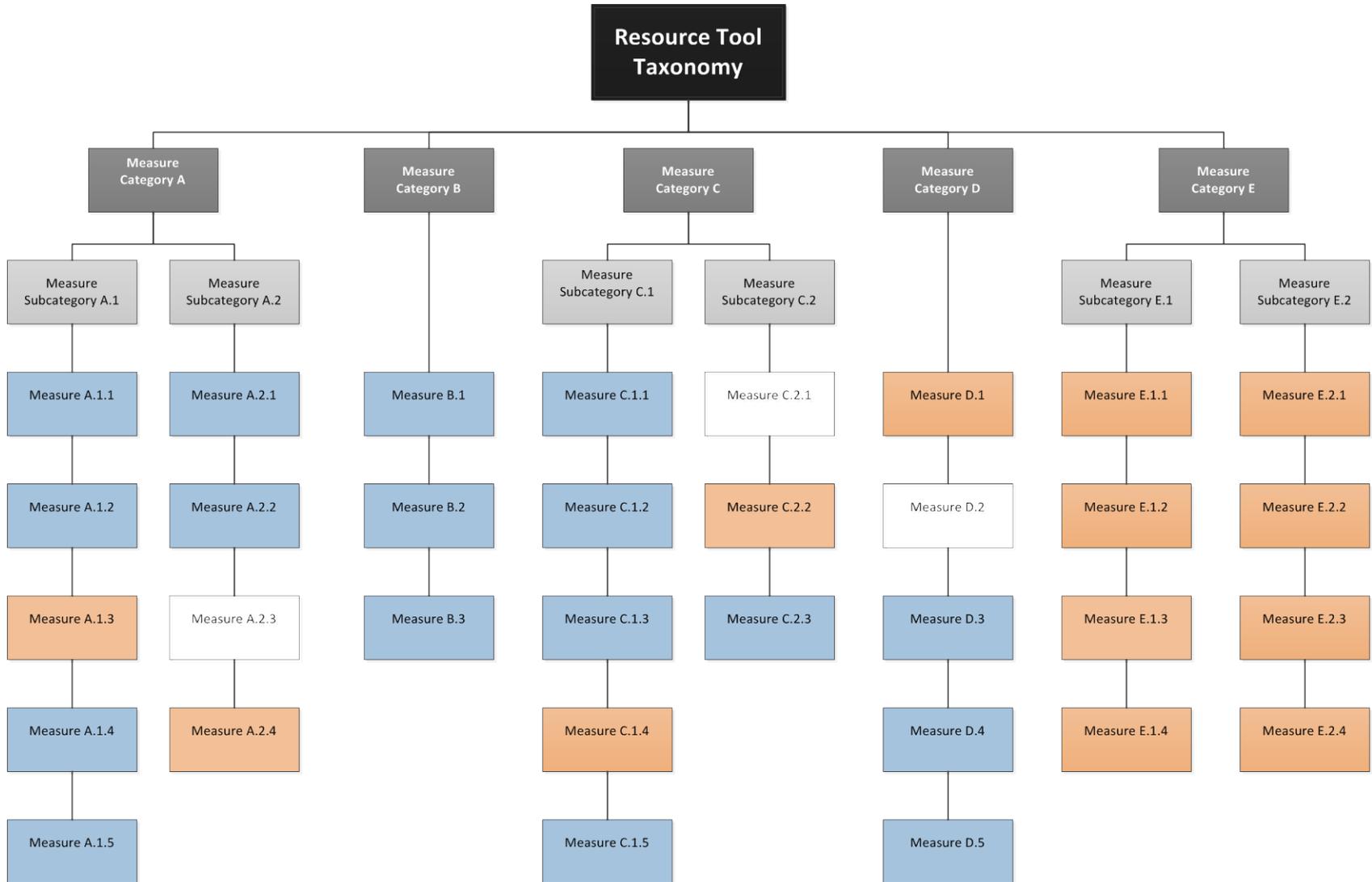
- Guidance for Applying Targeted Energy Measures
- Tool for Users to Prepare Customized Project Content
- Source for Proven Performance
- Link to Full References

## Is Not:

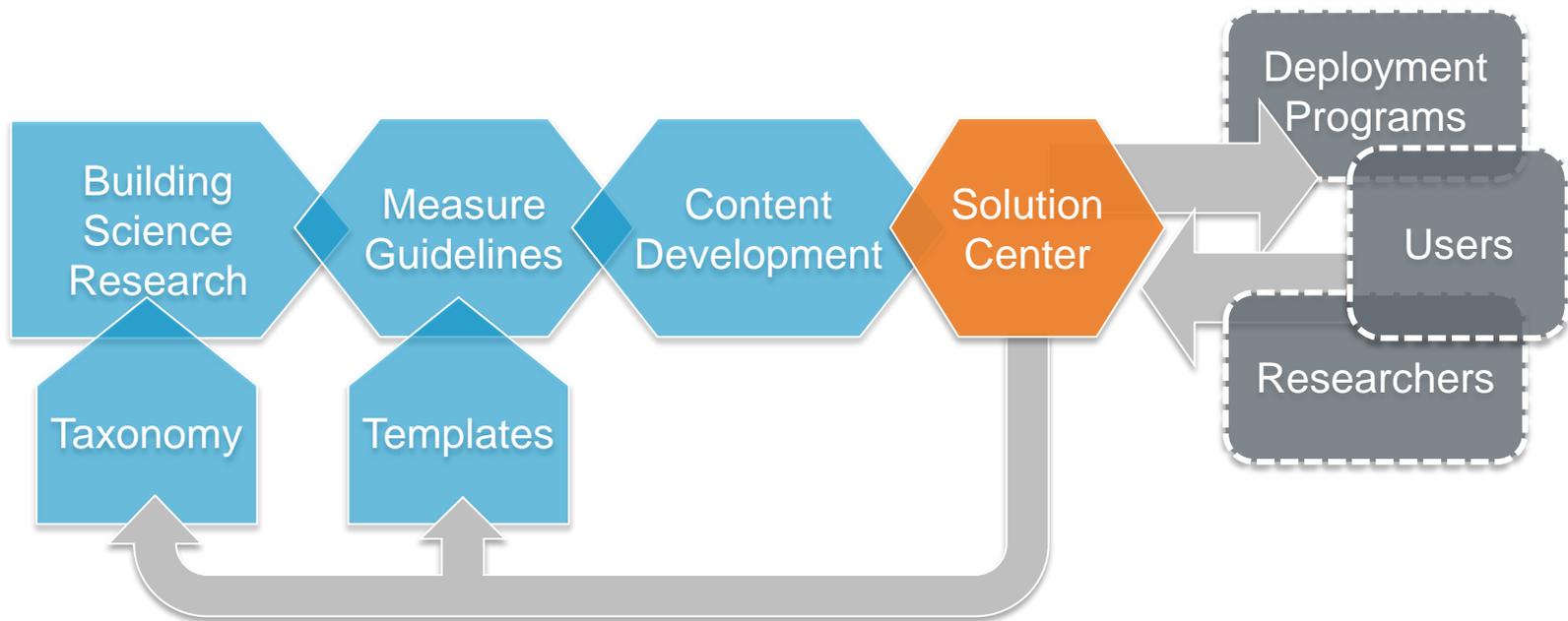
- Design Tool for Customized Energy Packages



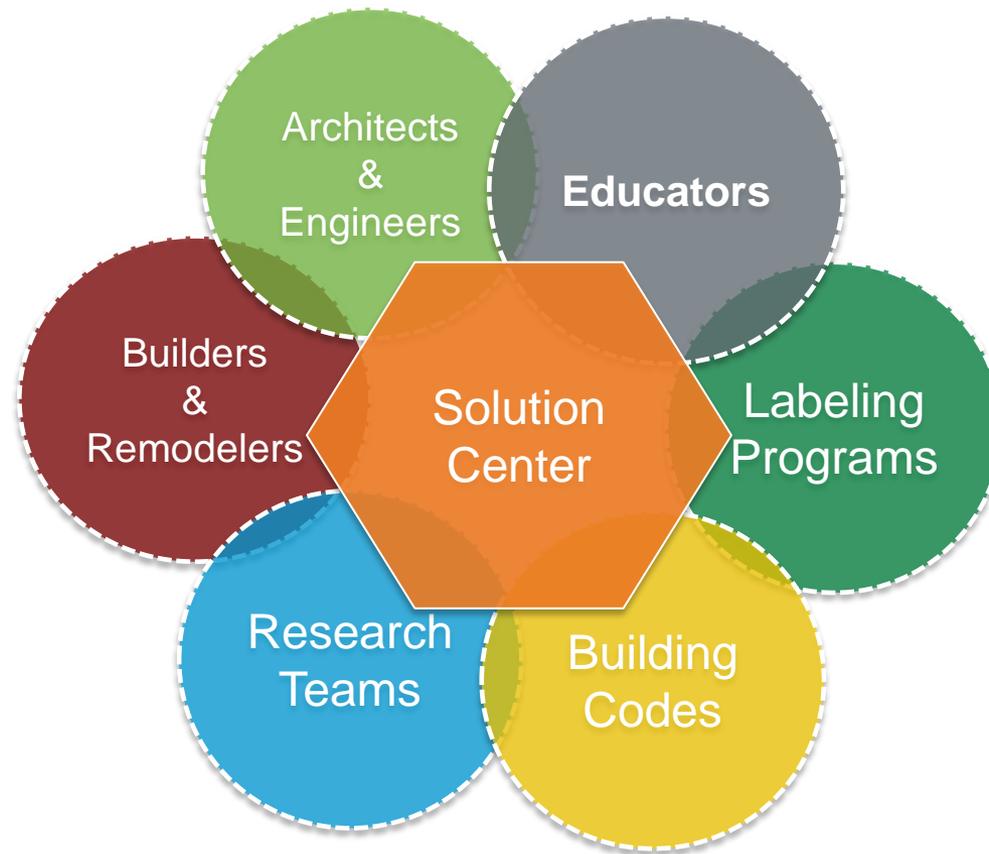




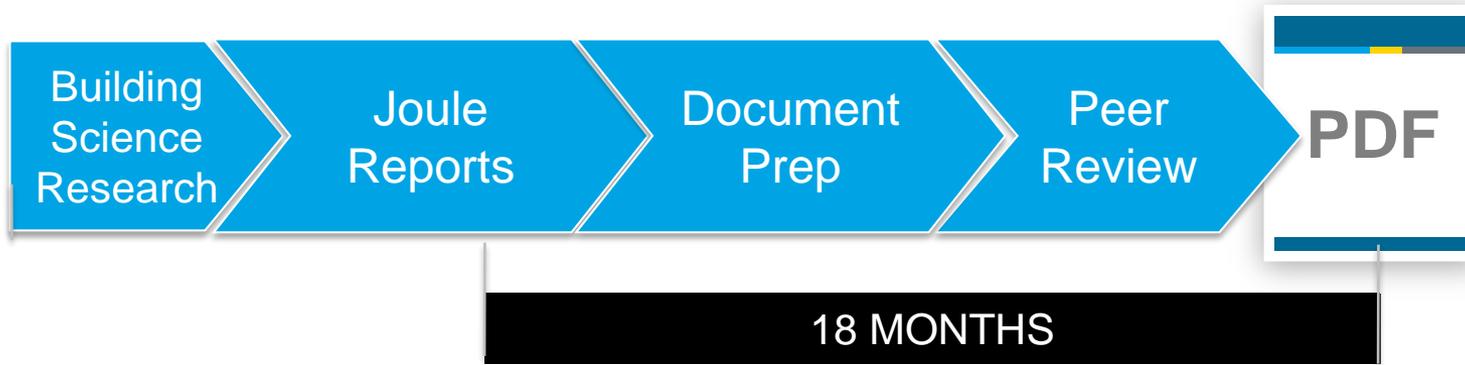
# Content Development Process



## Future Audience Engagement Becomes *Community Driven*



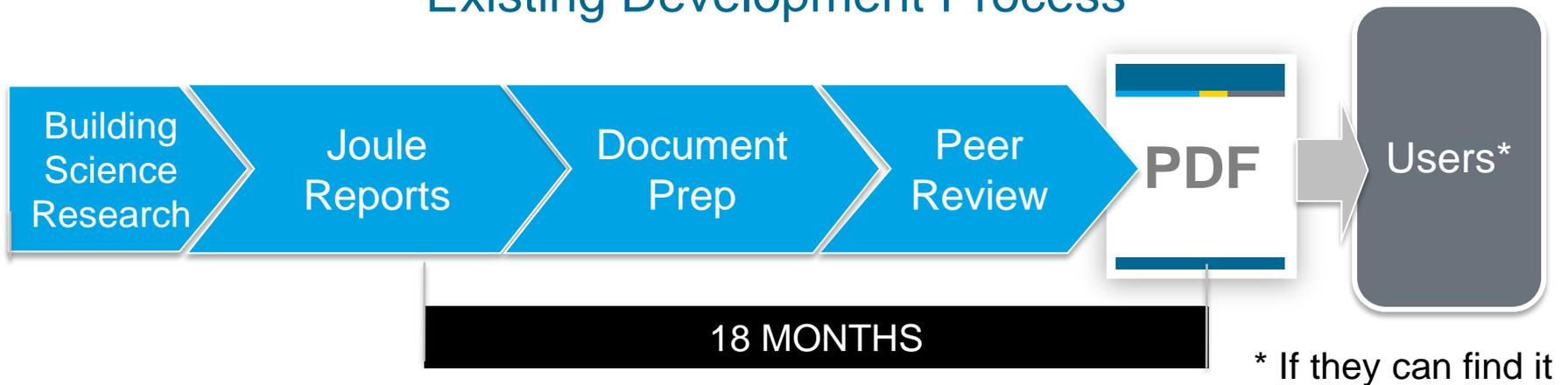
## Existing Development Process



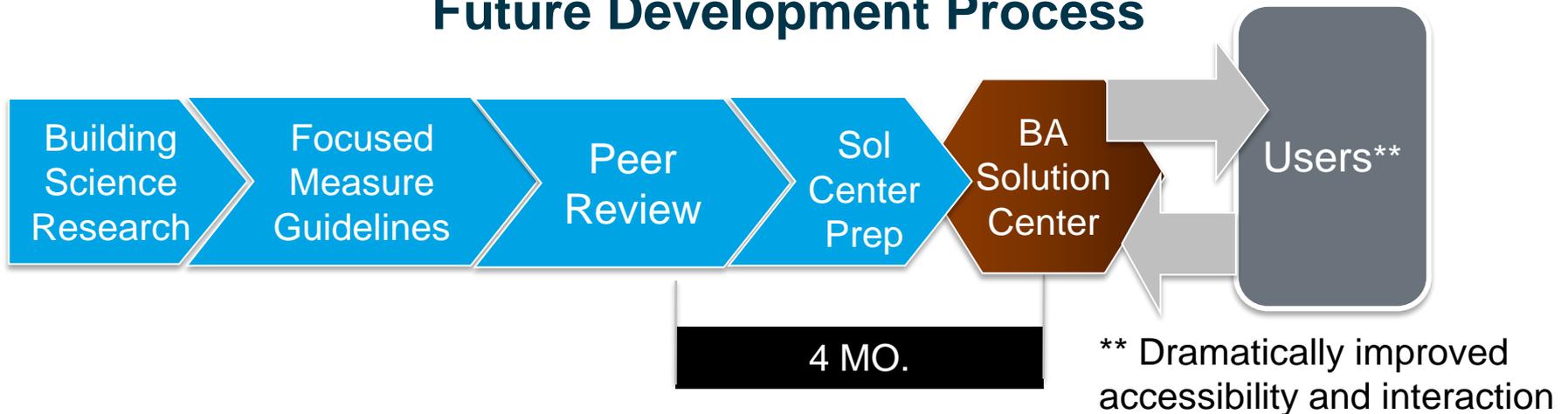
## Future Development Process



## Existing Development Process



## Future Development Process





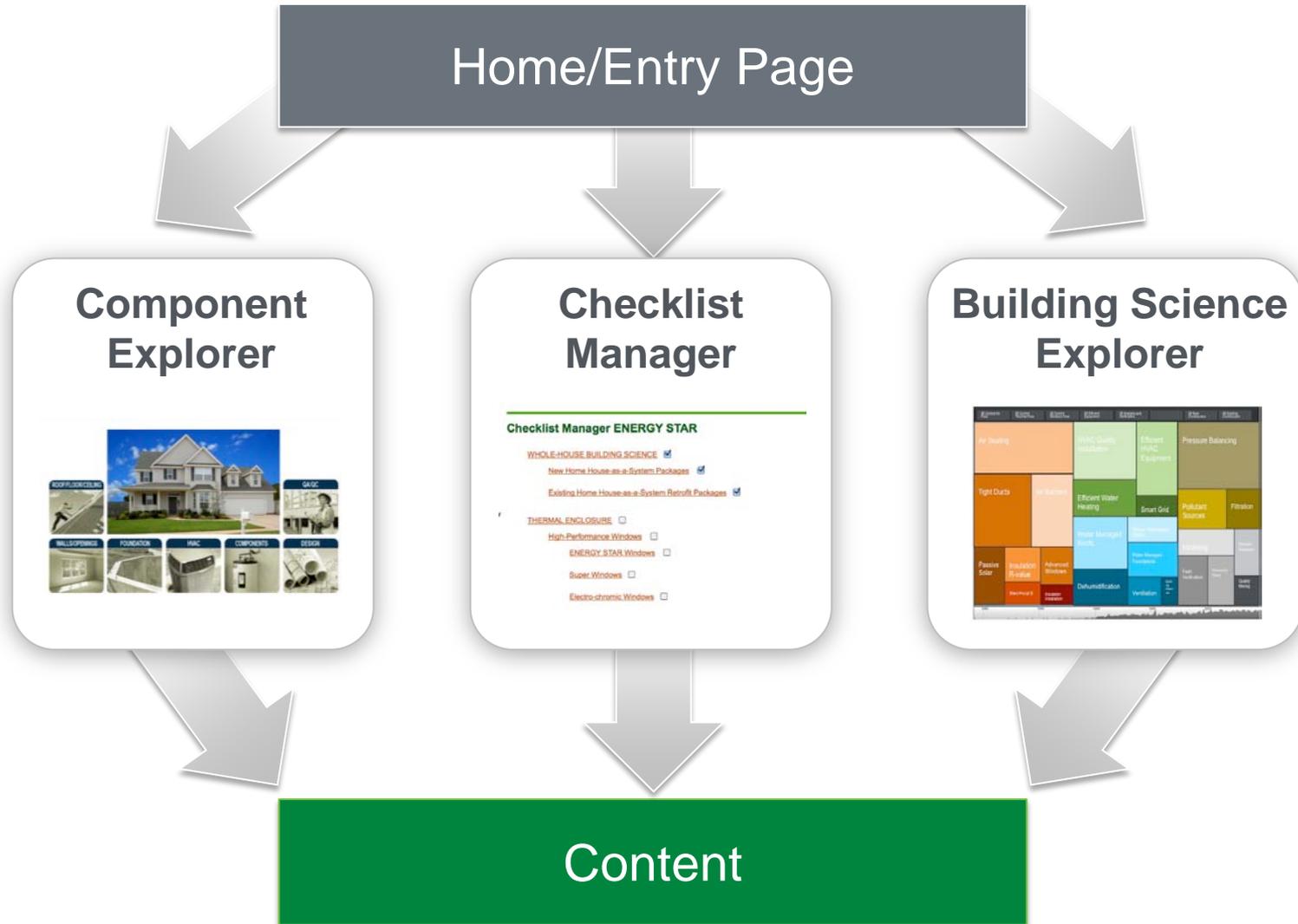
**MOBILE FIELDKIT**

The Building America Field Kit allows you to save items to your profile for review or use on-site.

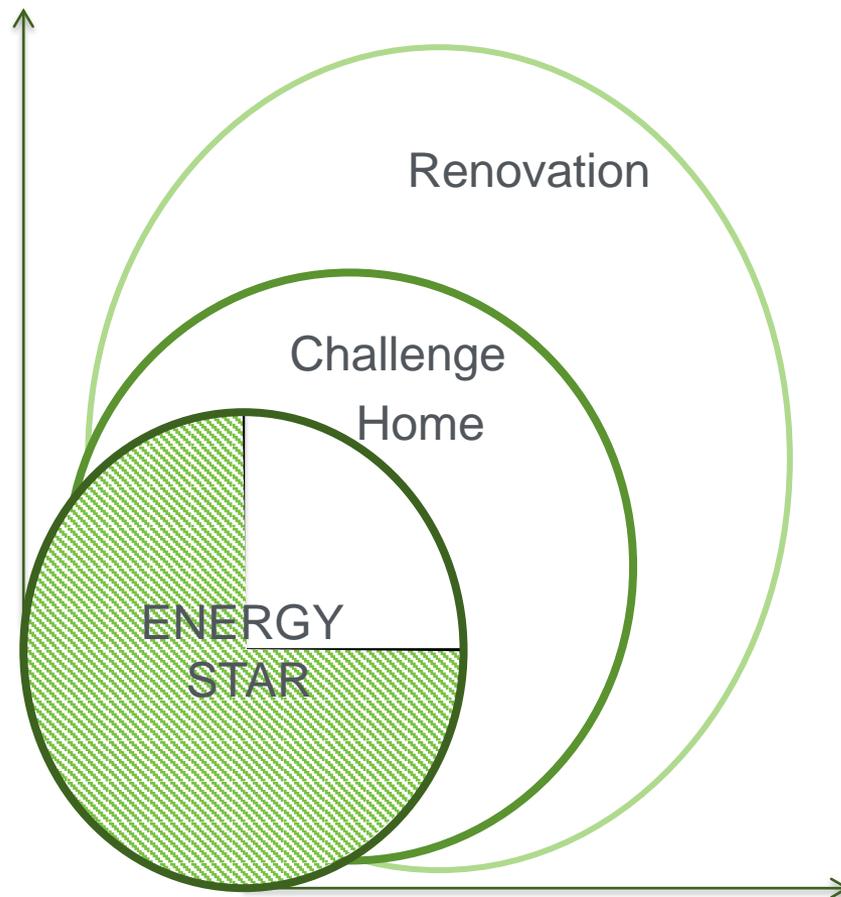
[Sign Up](#)

or

[Log In](#)



- Support ENERGY STAR Version 3.
- Initial content based on existing Building America and ENERGY STAR resources.
- Future Development
  - DOE Challenge Home
  - Existing home renovation



# Building America Solution Center Tour

# Solution Center Tour

Customization

## Building America Solution Center

Search

Login | Register

SEARCH

[Solution Center Search](#) | [Search Help](#)

[EERE](#) » [BTP](#) » [Building America](#) » [Solutions Center](#) »

Bread Crumbs

- Solutions Center Home
- Component Explorer
- Checklist Manager
- Building Science Explorer
- Browser
  - Guides
  - Case Studies
  - Image Gallery
  - CAD Files
- References

Component  
Checklist  
Building Science  
Browser &  
Faceted Search



Recent Content

...At Your Fingertips

The U.S. Department of Energy's Building America program strives to develop integrated energy systems that dramatically reduce annual energy use and peak energy loads in existing and new homes while also improving overall building quality, comfort, safety, and durability.

### RECENTLY ADDED RESOURCE GUIDES

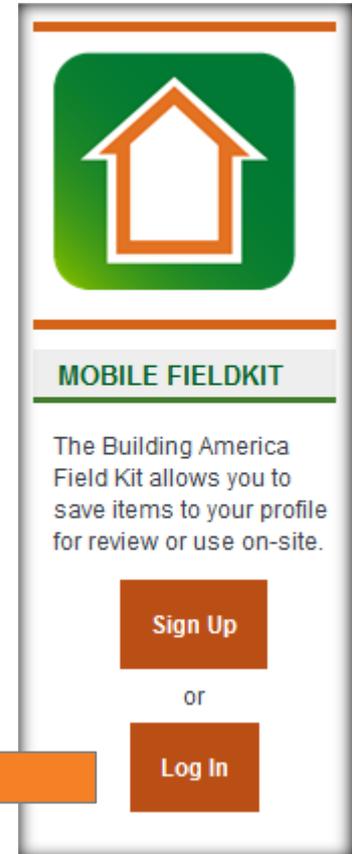
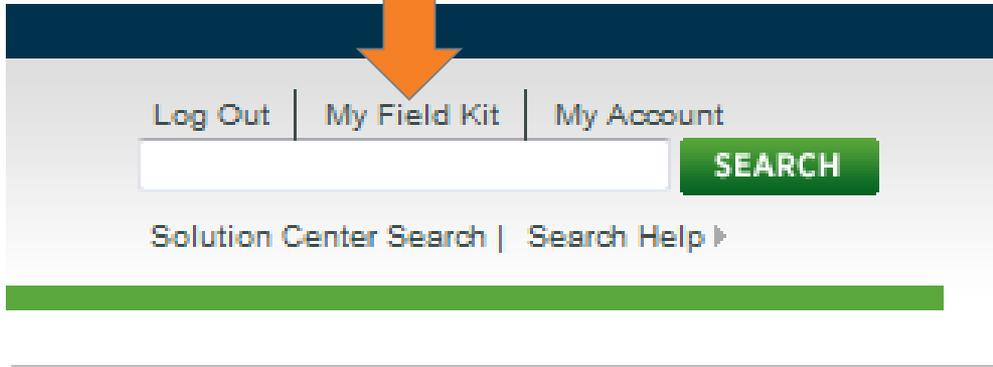
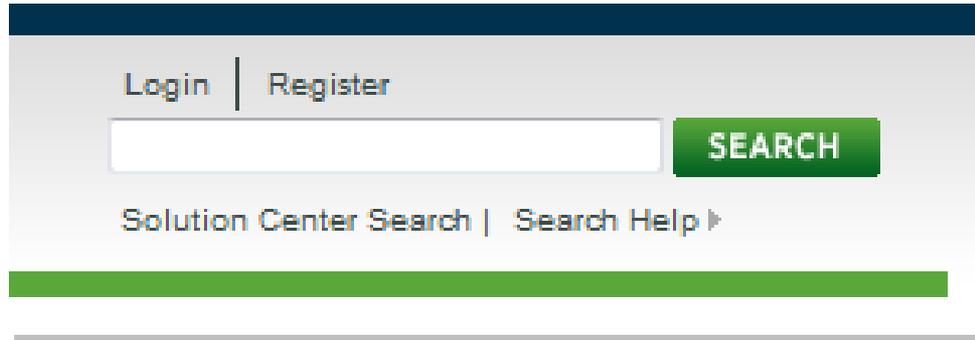
- [Sealed Duct Boots - PVC Ducts](#)  
Posted: August 09, 2012
- [Sealed Duct Boots - Fiber Board Ducts](#)  
Posted: August 09, 2012
- [Sealed Duct Boots - Metal Ducts](#)  
Posted: August 09, 2012
- [More Resource Guides](#)

### RECENTLY ADDED REFERENCES

- [2012 IRC—International Residential Code for One and Two Family Dwellings](#)  
Posted: September 12, 2012
- [2009 IRC—International Residential Code for One and Two Family Dwellings](#)  
Posted: September 12, 2012
- [Energy Renovations: Volume 17: Insulation - A Guide for Contractors to Share with Homeowners](#)  
Posted: July 12, 2012
- [More References](#)



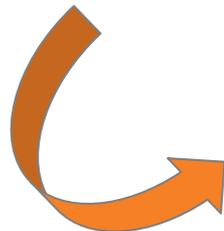
# Log In for Customization





## DEMO'S FIELD KIT

The Building America Field Kit allows you to save items to your profile for review or use on-site.



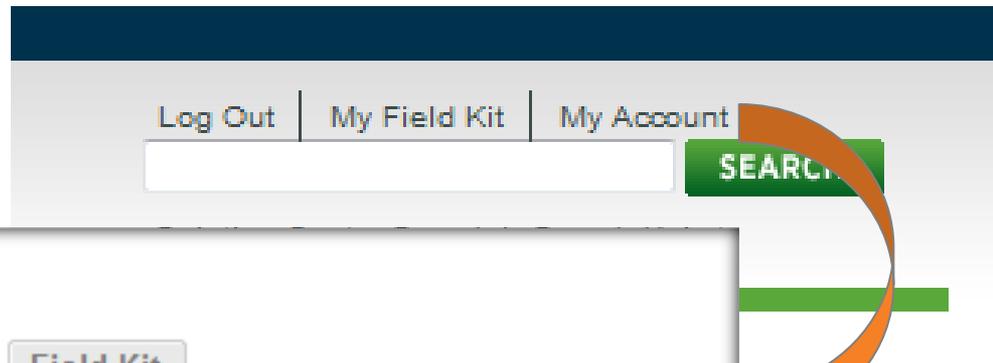
## demo's Field Kit

[View](#) [Edit](#) [Field Kit](#)

The Building America Field Kit allows you to save items to your profile for review or use on-site.

Type	Title
CAD File	<a href="#">Air barrier at garage band joist - 1 inch rigid insulation with 1x3 wood furring</a>
CAD File	<a href="#">2 foot plan layout with wall elevation</a>
CAD File	<a href="#">2-stud corner with 1x4 backer</a>
Image	<a href="#">Air barrier is present between the dropped ceiling/soffit and the attic</a>
Image	<a href="#">Neatly cut holes have been properly sealed with caulk and foam</a>
Resource Guide	<a href="#">Walls Behind Fireplaces</a>
Resource Guide	<a href="#">Garage Rim/Band Joist Adjoining Conditioned Space</a>
Resource Guide	<a href="#">Cantilevered Floor</a>
Resource Guide	<a href="#">Jump Ducts</a>
Resource Guide	<a href="#">Step and Kick-Out Flashing at Roof-Wall Intersections</a>

- Look for the Field Kit icon to add content
- **COMING:** Mobile access to your Field Kit.



## Heavy Membranes at Eaves in Cold Climates

This measure may not be appropriate for your climate. Please see the climate tab for more information.

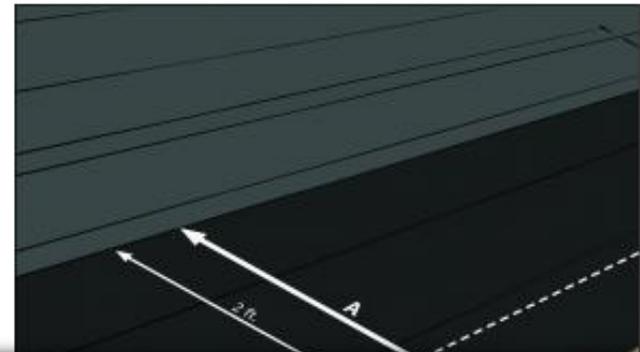
[Feedback](#)

Scope | Description | Ensuring Success | Climate | Training | CAD | Compliance | More Info.

### Scope

#### Water Managed Roof Assembly

In 2009 IECC [Climate Zones 5 and higher](#), self-sealing bituminous membrane or equivalent over sheathing at eaves from the edge of the roof line to > 2 feet up roof deck from the interior plane of the exterior wall.



## Attic Knee Walls

Please [Register](#) or [Login](#) to Provide Feedback.

Scope Description Ensuring Success Climate

### Scope

#### Fully Aligned Air Barrier

A. Install a top and bottom plate or blocking at the top and bottom of all knee wall cavities.

## Attic Knee Walls

[Feedback](#)

Scope Description En

### Scope

#### Fully Aligned Air Barrier

A. Install a top and bottom plate or blocking

## Feedback

Measure or page name

Do you have suggestions to improve this measure content?

Did this page resolve your question or help you learn?

- Yes  
 Maybe  
 No (please explain below)

Other Comments

Submit

- Build and track your Field Kit
- Customize content to your climate
- Track your searches
- Provide comments and content
- Help DOE understand how the tool is used

Login | Register

air barrier

Solution Center Search | Search Help

- Search is based on keywords, titles, components and component subcategories
- Search Help provides techniques for advanced searches

## Search

Enter your keywords

### Search results

1. **Sealing Air Barrier Penetrations**

Lstiburek, J. 2009. Sealing Air Barrier Penetrations. Information Sheet 405. Prepared by the Building Science ... Building America Program. Link: Sealing Air Barrier Penetrations Authors: Lstiburek ...

chrissi - 2012-07-30 12:50

2. **Fluid-Applied Air and Vapor Barrier**

Air Barrier Association of America (ABAA). 2012. Fluid-Applied Air and Vapor Barrier . ABAA 07262. Air Barrier Association of America, ...

chrissi - 2012-07-31 09:18

3. **Closed Cell, Medium-Density Spray Polyurethane Foam Air Barrier**

Air Barrier Association of America (ABAA). 2011. Closed Cell, Medium-Density Spray Polyurethane Foam Air Barrier . ABAA 07263. Air Barrier Association of America, Walpole, MA. ...

Search results include Guides, Images, Case Studies, References, and anything else associated with a Guide

# Navigation Terminology: Taxonomy

- The Solution Center is organized around a single, hierarchical taxonomy.
- All content is associated with at least one taxonomy term, but can be associated with many terms.
- All Guides fall into a parent (highest level) taxonomy category.
- When a Guide is loaded, an icon is used to identify this parent.



**Thermal Enclosure**



**HVAC**



**Water Management**

## Attic Knee Walls

Please [Register](#) or [Login](#) to Provide Feedback.

Taxonomy:  
Thermal  
Enclosures



### MOBILE FIELDKIT

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or

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Scope Description Ensuring Success Climate Training CAD Com

### Scope

#### Fully Aligned Air Barrier

- Install a top and bottom plate or blocking at the top and bottom of all knee wall cavities.
- Back attic knee walls with a rigid air barrier or other supporting material to prevent insulation from sagging and create a continuous thermal barrier\*
- Seal all seams, gaps, and holes of the air barrier with caulk or foam.
- Install insulation without misalignments, compressions, gaps, or voids in all knee wall cavities.



The screenshot shows the 'Building America Solution Center' website. At the top, the breadcrumb trail is: [EERE](#) » [BTP](#) » [Building America](#) » [Solution Center](#) » [Resource Guides](#) » [Fully Aligned Air Barriers](#) » [Floor Above Garage](#). Below the breadcrumbs is a sidebar with navigation links like 'Solutions Center Home', 'Component Expl', 'Checklist Manag', 'Building Science Explorer', 'Browser', 'Guides', 'Case Studies', 'Image Gallery', 'CAD Files', and 'References'. The main content area is titled 'Floor Above Garage' and includes a 'Feedback' link. Below this is a tabbed interface with tabs for 'Scope', 'Description', 'Ensuring Success', 'Training', 'CAD', 'Compliance', and 'More Info.'. The 'Scope' tab is active, showing the title 'Fully Aligned Air Barriers' and two instructions: 'A. Install a continuous rigid air barrier on top of supporting material to separate the garage from the conditioned space.\*' and 'B. Seal all seams, gaps, and holes of the air barrier with caulk or foam and complete...'. To the right of the text is a 3D architectural diagram of a roof structure with insulation and air barriers, with white arrows pointing to specific components.

Bread crumbs take you to EERE, BTP, Building America, and the Solution Center Home page.

Bread crumbs also help you know how you got here....

- The Component Explorer displays images representing eight building-related component areas
- Each component is further organized into Component Subcategories (e.g., air sealing, insulation, etc.)
- After selecting a subcategory, all guides associated with that subcategory are displayed.



# Component Explorer (cont.)



## Foundation

[Water Managed Foundation](#)  
[Minimum Thermal Bridging](#)  
[Insulation](#)  
[Air Sealing](#)  
[Fully Aligned Air Barriers](#)

Click a component to display subcategories  
Click subcategories to display Guides

## Component Explorer

Foundation » Insulation

[IECC Code Level Insulation](#)

[Insulation Installation \(RESNET Grade\)](#)

[Slab Edge Insulation](#)

## Slab Edge Insulation

Please [Register](#) or [Login](#) to Provide Feedback.

Scope

Description

Ensuring Success

Climate

Training

CAD

Compliance

More Info.

### Scope

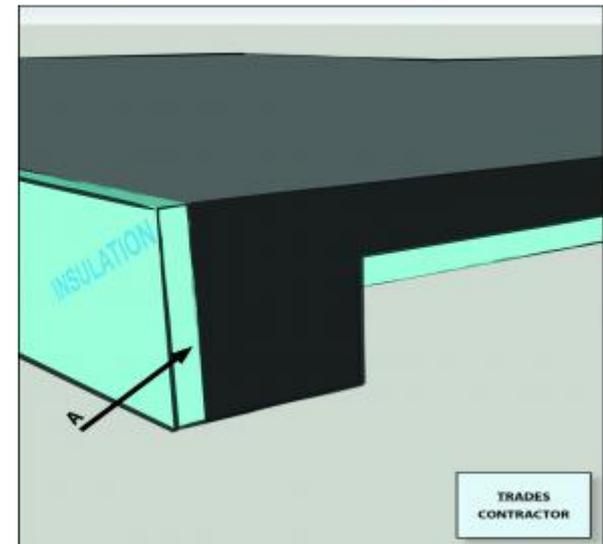
#### Reduced Thermal Bridging

For slabs on grade in [Climate Zone 4 and higher](#), 100% of the slab edge is insulated to  $\geq$  R-5 at the depth specified by the 2009 IECC and aligned with thermal boundary of the walls.

- A. Install slab edge insulation to extend to the top of the slab so it provides a complete thermal break.

#### Notes:

Consistent with the 2009 IECC, slab edge insulation is only required for slab-on-grade floors with a floor surface less than 12 inches below grade. Slab insulation shall extend to the top of the slab to provide a complete thermal break. If the top edge of the insulation is installed between the exterior wall and the edge of the interior slab, it shall be permitted to be cut at a 45-degree angle away from the exterior wall.



- The Checklist Manager currently allows exploration of content specific to ENERGY STAR Version 3 checklists.
- The Checklist Manager does not provide pathways to additional, non-related data .
- Topics are displayed in the same order as they appear on the ENERGY STAR checklists.
- Users can drill down into the checklist to display Guides associated with each requirement.
- Checklists supporting other programs will be added in the future.

## Checklist Manager

ENERGY STAR Qualified Homes, Version 3 (Rev .05)

▼ Thermal Enclosure System Rater Checklist

**Prescriptive Path: Fenestration shall meet or exceed ENERGY STAR requirements**

**ENERGY STAR Windows**

[Read more](#)

### ENERGY STAR Windows

Please [Register](#) or [Login](#) to Provide Feedback.

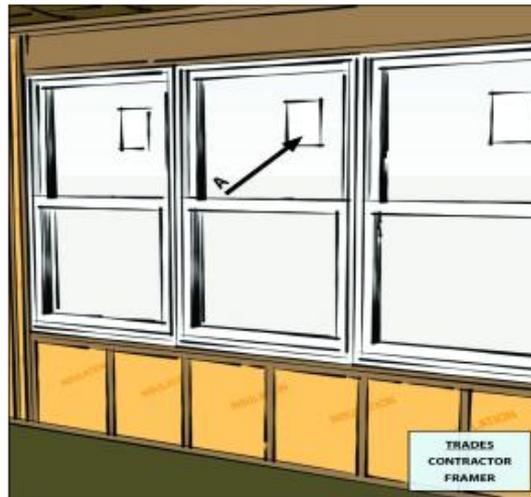
Scope Description Ensuring Success Climate Training CAD Compliance More Info.

#### Scope

##### ENERGY STAR Windows

**Prescriptive Path: Fenestration shall meet or exceed ENERGY STAR requirements**

- A. Select windows, doors, and skylights to meet ENERGY STAR program requirements for windows, doors, and skylights.
- B. Note that the U-value and the Solar Heat Gain Coefficient (SHGC) for doors apply to the whole door, not just the glazing portion.



- **COMING:** Additional checklists will be added
  - DOE Challenge Home Checklists
  - Existing homes



## Checklist Manager

ENERGY STAR Qualified Homes, Version 3 (Rev .05)

- ▶ Thermal Enclosure System Rater Checklist
- ▶ HVAC System Quality Installation Rater Checklist
- ▶ Water Management System Builder Checklist
- ▶ HVAC System Quality Installation Contractor Checklist

Scope

Description

Ensuring Success

Climate

Training

CAD

Compliance

More Info.

## Scope

### Fully Aligned Air Barrier

- A. Install a top and bottom plate or blocking at the top and bottom of all knee wall cavities.
- B. Back attic knee walls with a rigid air barrier or other supporting material to prevent insulation from sagging and create a continuous thermal barrier\*
- C. Seal all seams, gaps, and holes of the air barrier with caulk or foam.
- D. Install insulation without misalignments, compressions, gaps, or voids in all knee wall cavities.



**Scope:** Clearly defines and bounds the building topic in a way builders and remodelers can use to contractually obligate their subcontractors.

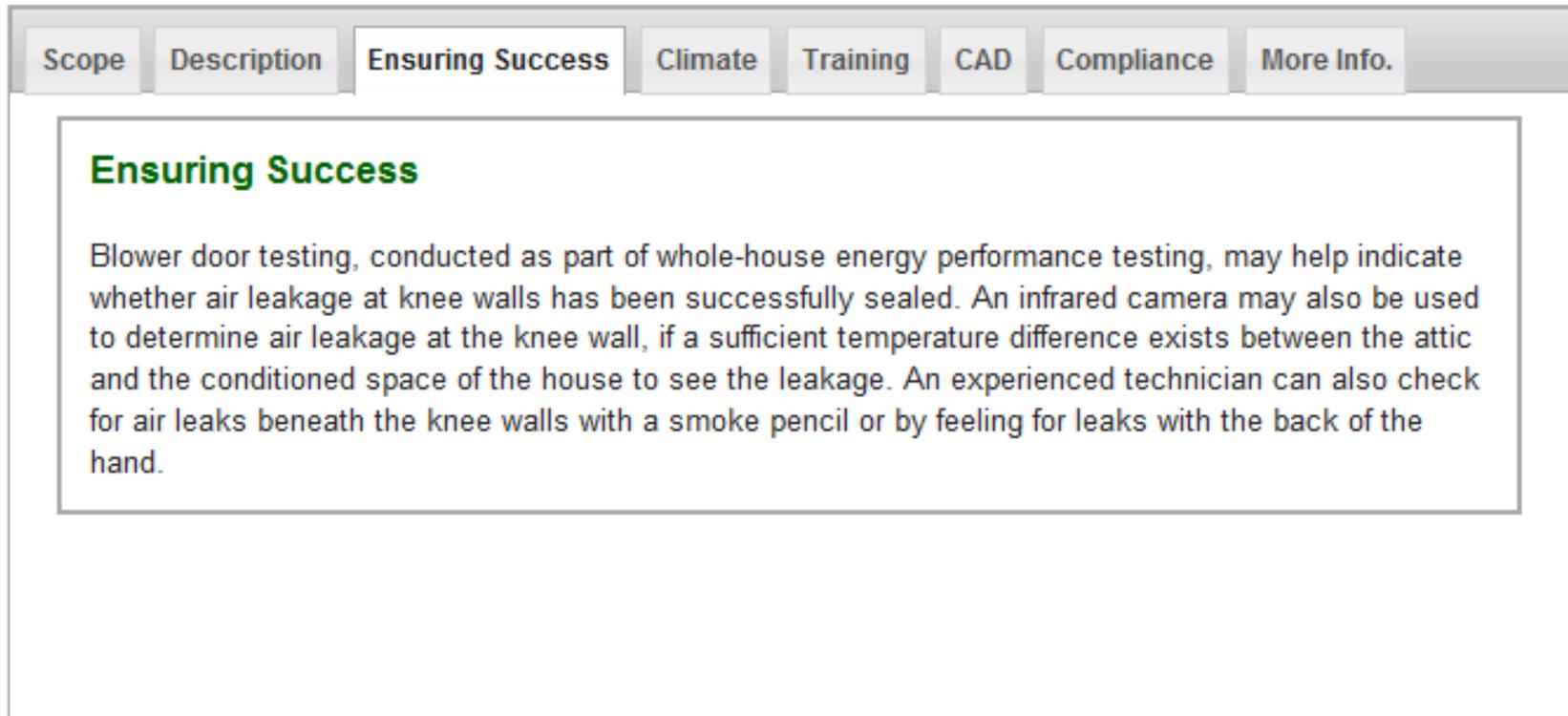
**Description:**  
Provides an explanation of the building topic and specific “how-to” steps for implementing.

Scope Description Ensuring Success Climate Training CAD Compliance More Info.

### Description

In two-story homes with covered porches, builders may sometimes forget to sheathe the wall area that will be hidden when the porch ceiling is installed, because the porch is framed before the wall sheathing is installed. If there is no exterior sheathing, blown insulation cannot be installed. Even if batt insulation is installed, if there is no exterior sheathing that is caulked in place to serve as an air barrier, the insulation is subject to wind washing from outside air, especially if the porch ceiling is vented or is not air tight.

The diagram illustrates a cross-section of a two-story house with a covered porch. The house has a dark grey gabled roof. The porch is on the left side, with a grey porch ceiling and a light grey porch floor. The main house walls are light grey with four windows (two on each floor). The interior wall layers are labeled as 'Drywall' and 'Insulation'. A pink line highlights the exterior wall sheathing. An arrow points to the junction between the porch ceiling and the exterior wall, labeled 'Missing Air Barrier', indicating a gap in the exterior sheathing. The entire house is labeled 'Two-Story House'.



The screenshot shows a web interface with a navigation menu at the top. The menu items are: Scope, Description, Ensuring Success, Climate, Training, CAD, Compliance, and More Info. The 'Ensuring Success' tab is selected and highlighted. Below the menu is a content box with the following text:

**Ensuring Success**

Blower door testing, conducted as part of whole-house energy performance testing, may help indicate whether air leakage at knee walls has been successfully sealed. An infrared camera may also be used to determine air leakage at the knee wall, if a sufficient temperature difference exists between the attic and the conditioned space of the house to see the leakage. An experienced technician can also check for air leaks beneath the knee walls with a smoke pencil or by feeling for leaks with the back of the hand.

**Ensuring Success:** A big-picture discussion of health, safety, durability, performance issues, test-in/test-out requirements, and scheduling and sequencing considerations.

Scope Description Ensuring Success **Climate** Training CAD Compliance More Info.

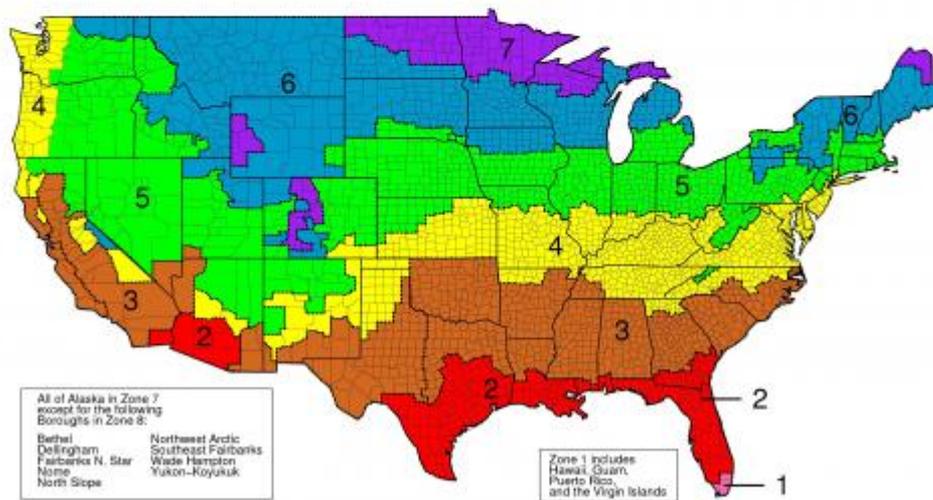
## Climate

### ENERGY STAR Version 3. (Rev. 5)

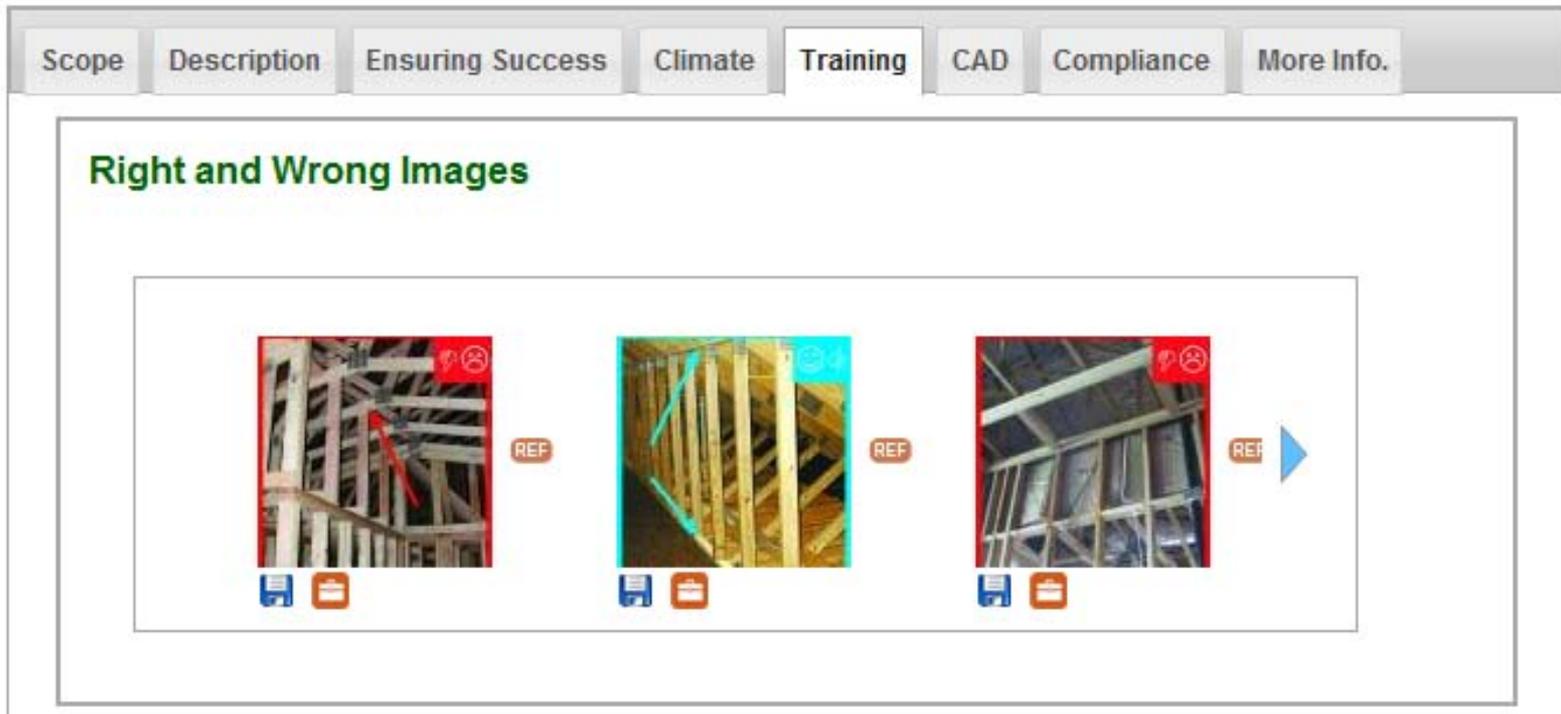
Thermal Enclosure Checklist, Fully-Aligned Air Barriers. A complete air barrier shall be provided that is fully aligned with the insulation at exterior surface of walls in all climate zones; and also at interior surface of walls for Climate Zones 4-8.

### DOE Challenge Home

Exhibit 2: DOE Challenge Home Target Home. Infiltration (ACH50): Zones 1-2: 3; Zones 3-4: 2.5; Zones 5-7: 2; Zone 8: 1.5. Envelope leakage shall be determined by an approved verifier using a RESNET-approved testing protocol.

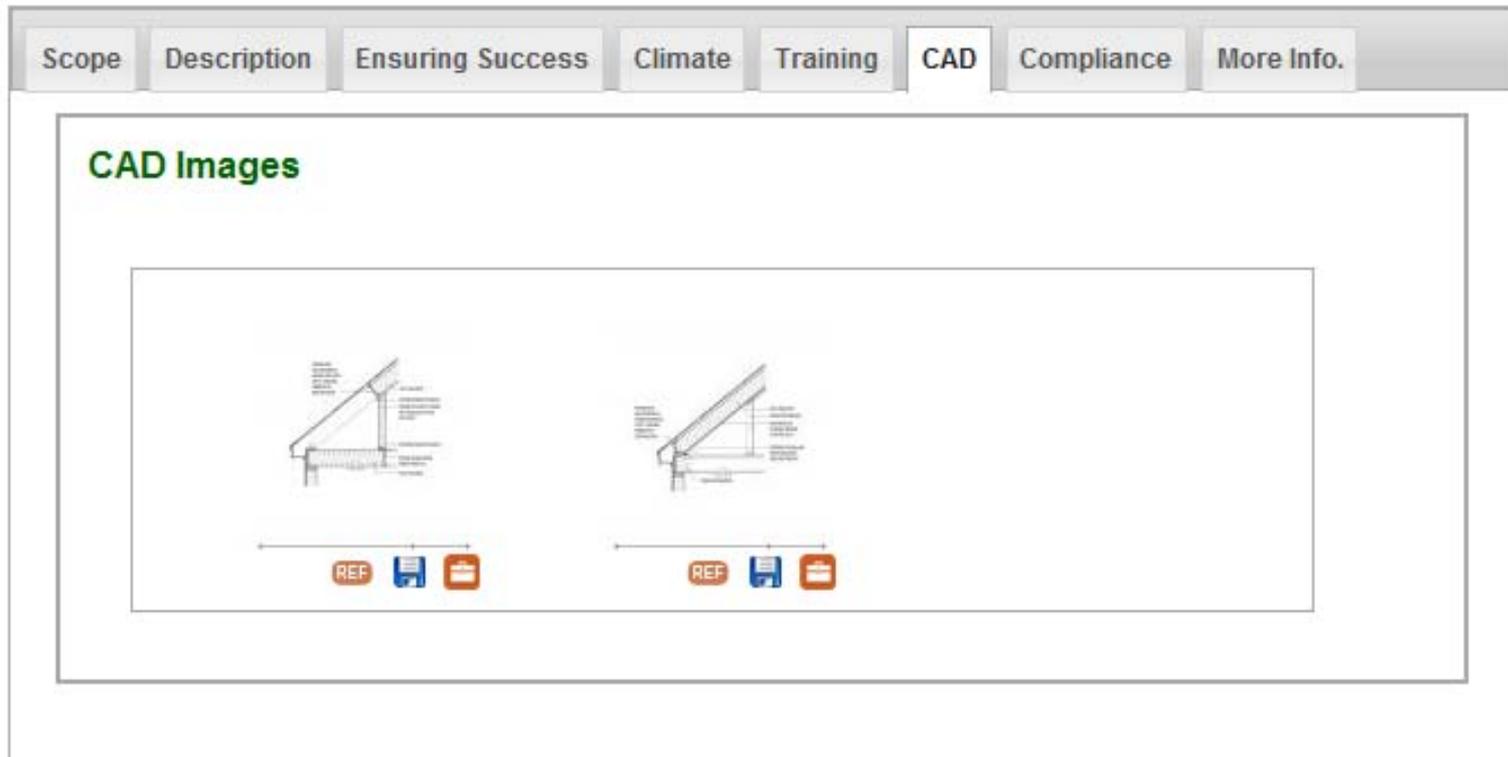


**Climate:** Cites climate-specific codes, standards, ENERGY STAR, and Challenge Home guidance.



**Training:** Includes educational resources such as Right/Wrong photographs of proper and improper installation.

**COMING:** Videos and presentations



**CAD:** Includes Architectural CAD files of the building topic in DWG and PDF forms.

Scope	Description	Ensuring Success	Climate	Training	CAD	Compliance	More Info.
<h2>Compliance</h2> <p><b><u>ENERGY STAR Version 3, (Rev. 5)</u></b> <i>Thermal Enclosure Checklist, Fully-Aligned Air Barriers.</i> A complete air barrier shall be provided that is fully aligned with the insulation at exterior surface of walls in all climate zones; and also at interior surface of walls for Climate Zones 4-8. All insulated vertical surfaces are considered walls (e.g., exterior walls, knee walls) and must meet the air barrier requirements for walls.</p> <p><b><u>DOE Challenge Home</u></b> <i>Exhibit 2: DOE Challenge Home Target Home.</i> Certified under ENERGY STAR Qualified Homes Version 3. Infiltration (ACH50): Zones 1-2: 3; Zones 3-4: 2.5; Zones 5-7: 2; Zone 8: 1.5. Envelope leakage shall be determined by an approved verifier using a RESNET-approved testing protocol. Building envelope assemblies, including exterior walls and unvented attic assemblies (where used), shall comply with the relevant vapor retarder provisions of the 2012 International Residential Code.</p> <p><b><u>ASTM E1677-11</u></b> <i>Standard Specification for Air Barrier (AB) Material or System for Low-Rise Framed Building Walls.</i> This specification covers minimum performances and specification criteria for an air barrier material or system for framed, opaque walls of low-rise buildings. The provisions are intended to allow the user to design the wall performance criteria and increase air barrier specifications for a particular climate location, function, or design.</p>							

**Compliance:** Provides specific compliance references from applicable codes and standards.

Scope Description Ensuring Success Climate Training CAD Compliance **More Info.**

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### Case Studies

- David Weekley Homes: Eagle Springs & Waterhaven, Houston, TX**  
PNNL. 2012. Building America Case Study: David Weekley Homes, Eagle Springs & Waterhaven, Houston, TX, PNNL-SA-87333, prepared by the Pacific Northwest National Laboratory for the U.S. Department of Energy.  
[Link to Document](#) 

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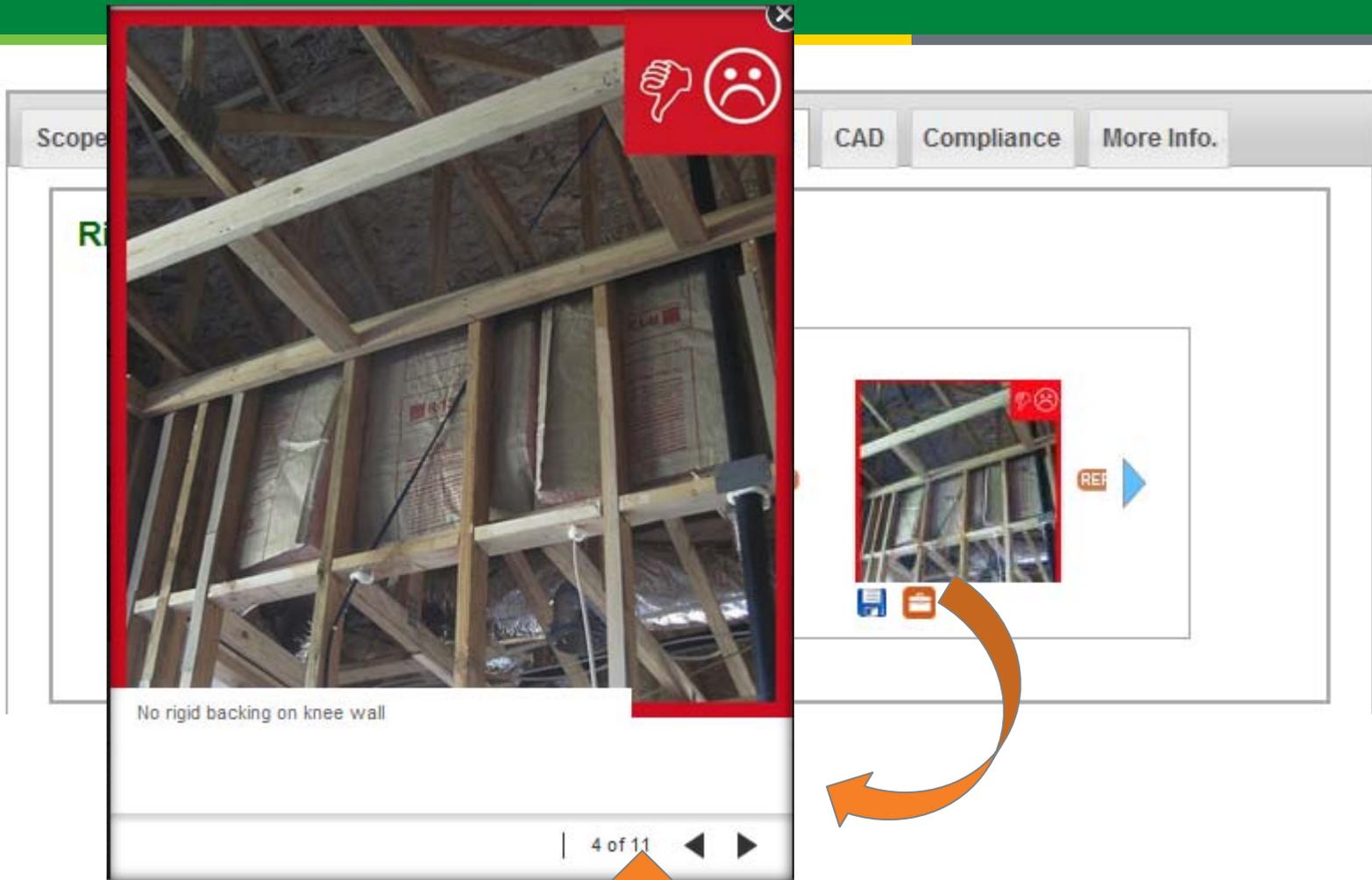
### References

- 2009 IECC—International Energy Conservation Code**  
*2009 IECC, International Energy Conservation Code*. International Code Council, Washington, D.C.  
[Link to Document](#)

## More Info:

- References - Full citations with links for content.
- Case Studies - Summaries of Building America teams and builders who have applied best practices.
- Resources - Relevant information not previously cited as references.
- **COMING: Innovations**

# Guides (cont.)



Click on any image within the Guide to enlarge it in a sliding window.  
Scroll through all images in the Guide.

Building Science Explorer

0 of 112 Resource Guides Highlighted in Green | [CLEAR HIGHLIGHTS](#)

Find

## WORD PATTERNS

air wall foam barrier	40
wall thermal walls energy	31
duct leakage ducts floor	15
air insulation install seal	14
system exhaust fans hvac	12

## CATEGORIES

Taxonomy	Component	Component Subcategory	Keywords
Ducts	HVAC	Installation	checklist
Grade	Walls/Op	Sealing	checklist
Cracks	Foundati	Space	checklist
Foundati	Roof/Flo	Ducts	sealing
Space/E	Quality/D	Insulation	Walls

## CATEGORY BLOCKS

Categorize by:  >



## ARTICLES

- [Export](#)
- All Other Ceilings
  - Attic Access Panels/Doors...
  - Attic Eave Minimum Insula...
  - Attic Knee Walls
  - Back-Draft Dampers at Sh...
  - Bathroom and Kitchen Ex...
  - Bathroom Exhaust
  - Bathroom Fan Ratings
  - Building Cavities Not Used...
  - Cantilevered Floor
  - Capillary Break Beneath...
  - Common Exhaust Duct No...

Building Science Explorer visualizes the content and its semantic mark-up. It allows a user to explore the classification of content, and to drill down to specific Guides.

# Building Science Explorer: CATEGORY BLOCKS

The screenshot displays the 'CATEGORY BLOCKS' interface. At the top, there is a 'Categorize by:' dropdown menu currently set to 'Component'. A secondary dropdown menu is open, showing options: 'Taxonomy', 'Component' (highlighted), 'Component Subcategory', and 'Keyword'. To the right of the main interface is a 'Component Subcategory' dropdown menu, which is pointed to by a large orange arrow. The main area is filled with various colored blocks representing different building science categories, including HVAC, Roof/Floor/Ceiling, Foundation, and Quality/Diagnostics. Each block contains sub-labels such as 'HVAC Quality Instz', 'Ducts in Condui', 'Air Sealing', 'Insulation', 'Minimum The', 'Tight Ducts', 'Efficient HVAC Eq', 'Indoor Env', 'Controls', 'Water Manag', 'Ventilation', 'Pressure I', 'Filtration', 'Fully Aliç', 'Water Manag', 'Minimum Thei', 'Quality Ma', and 'Water M'.

Change content categorizations

# Building Science Explorer: CATEGORY BLOCKS

The screenshot displays the 'CATEGORY BLOCKS' interface. At the top, there are two dropdown menus: 'Component' and 'Component Subcategory'. Below these, a grid of colored blocks represents different building science categories. The 'Walls/Openings' category is highlighted in green, and an orange arrow points from this category to the 'ARTICLES' list on the right. The 'ARTICLES' list contains various article titles, with those linked to the selected category highlighted in green. The 'Export' button is visible at the top of the articles list.

**CATEGORY BLOCKS** Categorize by: **Component** > **Component Subcategory**

**HVAC**

- HVAC Quality Instz
- Ducts in Conduit
- Efficient HVAC Eq
- Tight Ducts
- Indoor Env
- Controls
- Ventilation
- Pressure I
- Filtration

**Walls/Openings**

- Air Sealing
- Insulation
- Minimum The
- Fully Aligned Air
- Water Mana

**Roof/Floor/Ceiling**

- Insulation
- Air Sealing
- Insulation
- Fully Aliç
- Water Manag
- Minimum Thei

**Foundation**

- Water Ma
- Insulation
- Water Ma

**Quality/Diagnostics**

- Quality Ma
- Water M

**ARTICLES** [Export](#)

- Attic Access Panels/Doors...
- Attic Eave Minimum Insula...
- Cantilevered Floor
- Dropped Ceiling/Soffit Bel...
- Floor Above Garage
- Floor Above Unconditione...
- Insulation Below Attic Platf...
- All Other Ceilings
- Attic Knee Walls
- Back-Draft Dampers at Sh...
- Bathroom and Kitchen Ex...
- Bathroom Exhaust

Select categories to highlight articles linked to that category

### WORD PATTERNS

air wall foam barrier	40
wall thermal walls energy	31
duct leakage ducts floor	15
air insulation install seal	14
system exhaust fans hvac	12

### CATEGORY BLOCKS

### CATEGORIES

Taxonomy	COUNT	Component	COUNT	Component S	COUNT	Keyword	COUNT
Flex Ducts	11	HVAC	46	HVAC Qua...	42	ENERGY ...	45
Walls Abo...	9	Walls/Openings	39	Air Sealing	32	ENERGY ...	45
Cracks	7	Foundation	12	Ducts in C...	31	ENERGY ...	21
Water Man...	7	Roof/Floor/C...	12	Tight Ducts	28	Air sealing	16
Penetratio...	6	Quality/Diagn...	3	Insulation	23	Walls	15
Fiber Boar...	5			Fully Align...	15	Fully-align...	14
Kitchen Ex...	5			Ventilation	14	Duct leakage	12
Metal Ducts	5			Minimum T...	12	Reduced t...	12
PVC Ducts	5			Efficient H...	10	Distributio...	10
Water Man...	5			Water Man...	10	Flex ducts	10
Walls	4			Water Man...	9	Water-ma...	9
Water Man...	4			Indoor Env...	5	Duct insul...	8

### ARTICLES

[Export](#)

- Attic Access Panels/Doors...
- Attic Eave Minimum Insula...
- Cantilevered Floor
- Dropped Ceiling/Soffit Bel...
- Floor Above Garage
- Floor Above Unconditione...
- Insulation Below Attic Platf...
- All Other Ceilings
- Attic Knee Walls
- Back-Draft Dampers at Sh...
- Bathroom and Kitchen Ex...
- Bathroom Exhaust

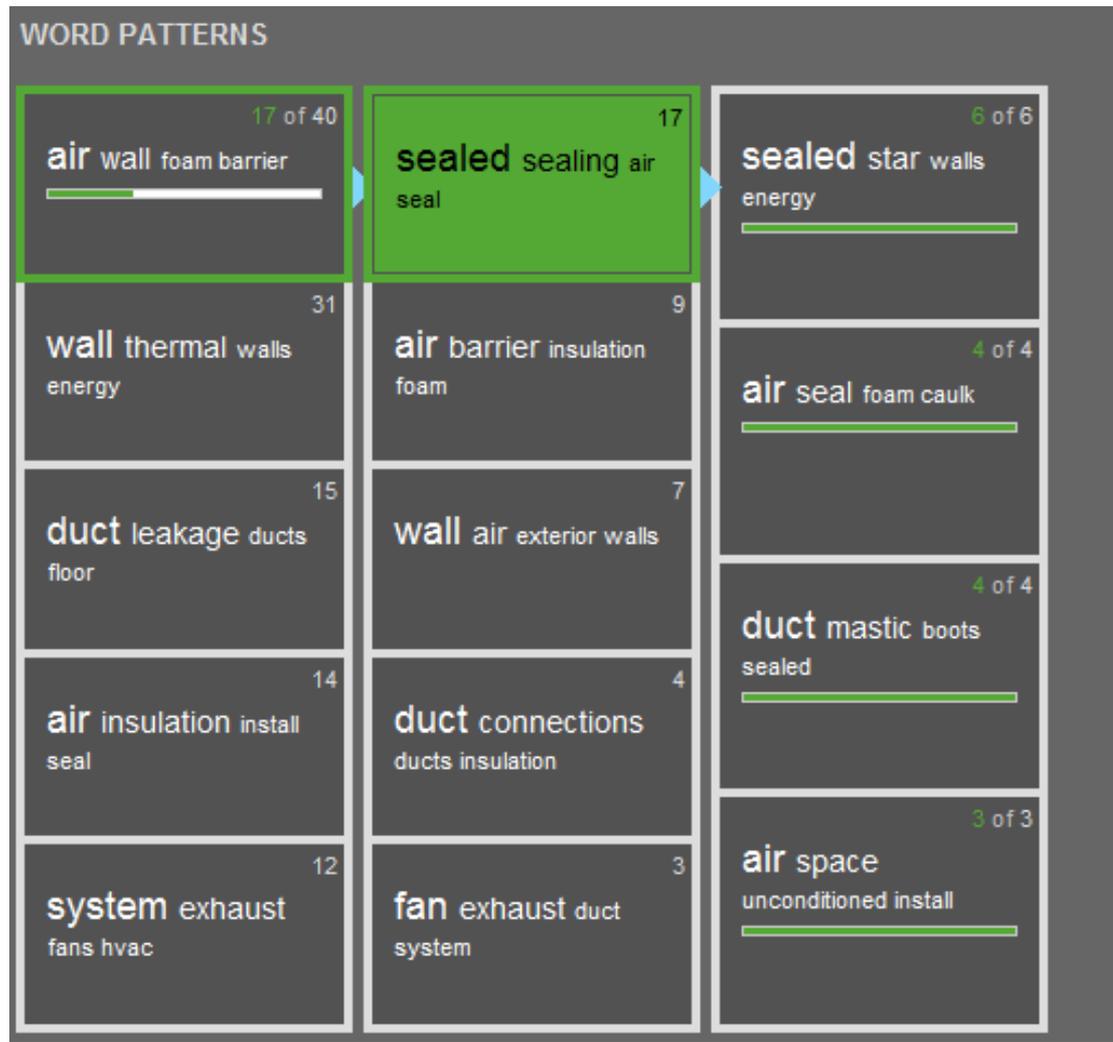
Select maximize icons to switch views.

# Building Science Explorer: CATEGORIES

Taxonomy	COUNT ▲	Component	COUNT ▲	Component SCOUNT ▲	Keyword	COUNT ▲
Floors	3	Roof/Floor/Ceiling	7	Insulation	ENERGY ...	7
Attic Access ...	1			Air Sealing	Fully-align...	4
Ceilings	1			Fully Aligned ...	Floors	3
Reduced The...	1			Minimum The...	Reduced t...	2
Reduced The...	1				Air sealing	1
					Other ope...	1
					Ceilings	1
					Attic access	1
					Attic eave ...	1
					Cantilever...	1
					Dropped c...	1
					Floor abov...	1

- After selecting Insulation, the related content is displayed
- E.g. seven guides related to Insulation can be found under the Component Explorer Roof/Floor/Ceiling component

# Building Science Explorer: WORD PATTERNS



Word Patterns explores word grouping in the content tagging.

# Building Science Explorer: ARTICLES

ARTICLES Export

Title ^	Taxonomy	Construction Type	Component	Component Subcategory	Category	ENERGY STAR
Sealed Duct...	PVC Ducts	New Homes	HVAC	Tight Ducts,...	ENERGY ST...	Duct b <b>OPEN</b>
Ducted Re	Sealed Duct Boots - PVC Ducts	Homes	HVAC	HVAC Qualit...	ENERGY ST...	Bedrooms pr...
Shafts (e.g....	Penetrations...	New Homes	Walls/Openi...	Air Sealing	ENERGY ST...	Duct / flue s...
Insulated He...	Walls, Advan...	New Homes	Walls/Openi...	Minimum Th...	ENERGY ST...	All headers...
Insulated Co...	Walls, Advan...	New Homes	Walls/Openi...	Minimum Th...	ENERGY ST...	All corners in...
Dropped Cei...	Ceilings	New Homes	Roof/Floor/C...	Insulation, F...	ENERGY ST...	Dropped ceil...
Cantilevered...	Floors	New Homes	Roof/Floor/C...	Insulation, F...	ENERGY ST...	Cantilevered...
Garage Rim/...	Walls Above...	New Homes	Walls/Openi...	Air Sealing,...	ENERGY ST...	Garage rim /...
Skylight Shaf...	Walls Above...	New Homes	Walls/Openi...	Air Sealing,...	ENERGY ST...	Skylight shaf...
Obvious Ven...	Ventilation C...	New Homes	HVAC	HVAC Qualit...	ENERGY ST...	Function of v...
Attic Knee W...	Walls Above...	New Homes	Walls/Openi...	Air Sealing,...	ENERGY ST...	Attic knee walls
Continuously...	Ventilation C...	New Homes	HVAC	HVAC Qualit...	ENERGY ST...	Continuously...
Thermostat...	Ventilation C...	New Homes	HVAC	HVAC Qualit...	ENERGY ST...	Air flow is pr...
Total Duct L...	PVC Ducts	New Homes	HVAC	Tight Ducts,...	ENERGY ST...	Total Rater-...
Total Duct L...	Fiber Board	New Homes	HVAC	Tight Ducts	ENERGY ST...	Total Rater

Articles takes you directly to the Guides (Insulation selected)

## Browse content by media type

Browser

Guides



Case Studies



Image Gallery



CAD Files



References



**Resource Guides**

[All Other Ceilings](#)

**CAD Files**

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**References**

[2009 IECC—International Energy Conservation Code](#)  
Author: International Code Council  
Organization: International Code Council

*2009 IECC, International Energy Conservation Code.* International Code Council, Washington, D.C.

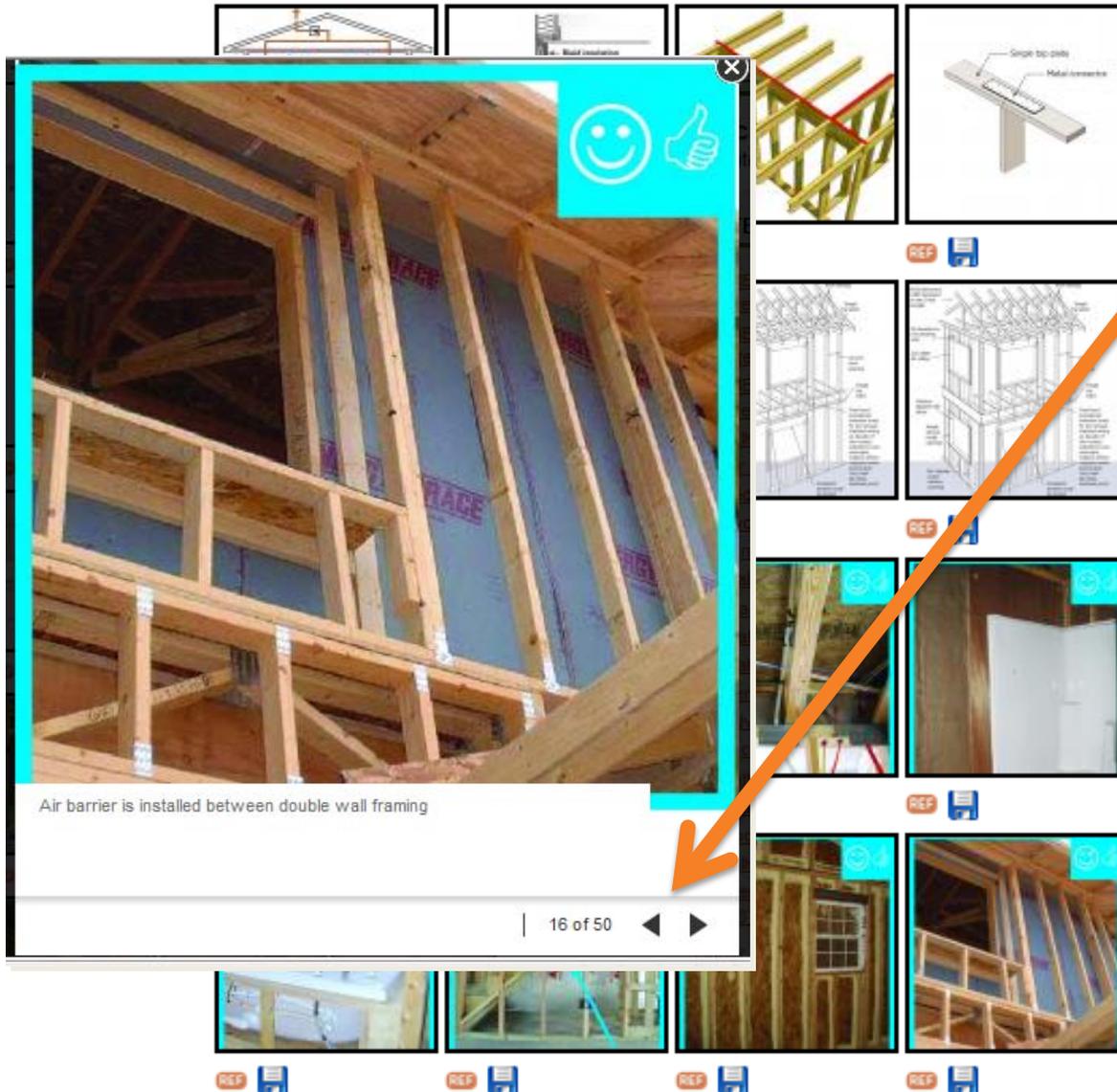
[2009 IRC—International Residential Code for One and Two Family Dwellings](#)  
Author: International Code Council  
Organization: International Code Council

*2009 IRC, International Residential Code for One and Two Family Dwellings.* 2009. Fifth Printing. International Code Council, Washington, D.C.

[2012 IECC—International Energy Conservation Code](#)  
Author: International Code Council  
Organization: International Code Council

*2012 IECC, International Energy Conservation Code.* International Code Council, Washington, D.C.

# Browser: Image Gallery



- Click an image to enlarge in a sliding window.

## High Performance Building Details: Garage Band Joist Air Barrier

Consortium for Advanced Residential Buildings (CARB). 2010. *High Performance Building Details: Garage Band Joist Air Barrier*. Prepared by Steven Winter Associates for the U.S. Department of Energy, Building America Program.

### Link:

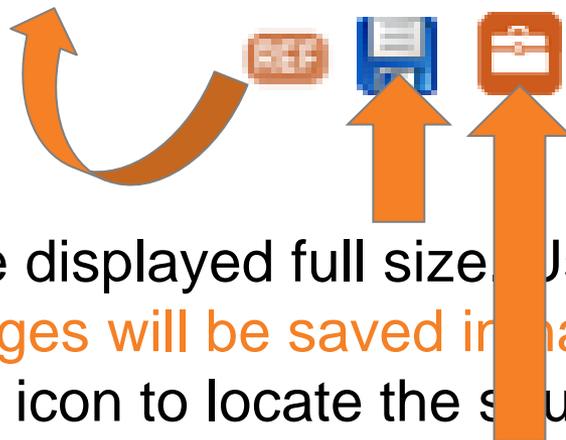
[High Performance Building Details: Garage Band Joist Air Barrier](#) 

### Authors:

[Consortium for Advanced Residential Buildings](#)

### Organization:

[Consortium for Advanced Residential Buildings](#)



- Images can be displayed full size. Use Save As to save to file.
- **COMING:** Images will be saved in native/original format
- Use the “REF” icon to locate the source of the image
- Select the Field Kit icon to add to your Field Kit

AIR SEAL AT CABINET SOFFIT / SINGLE-STORY

GreenBuildingAdvisor.com  
© BuildingGreen, LLC 2016

Scale: 1/12" = 1'-0"

5-01027

Air seal at cabinet soffit - single-story

11 of 50

- Click the CAD file image to load in a slider window.

## Building Plans for the ENERGY STAR Thermal Bypass Checklist

Green Building Advisor. 2011. Building Plans for the ENERGY STAR Thermal Bypass Checklist. Green Building Advisor, Newtown, Connecticut, The Tanton Press.

**Link:**

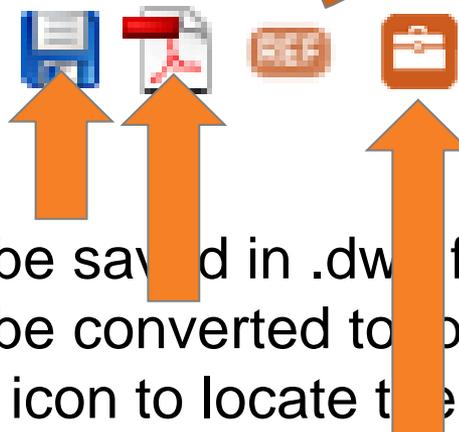
[Building Plans for the ENERGY STAR Thermal Bypass Checklist](#)

**Authors:**

[Green Building Advisor](#)

**Organization:**

[Green Building Advisor](#)



- CAD files can be saved in .dwt format
- CAD files can be converted to pdf
- Use the “REF” icon to locate the source of the CAD file
- Save CAD files directly to your Field Kit

# Faceted Search

All Browser media can be searched using faceted search or simply browsed.

Search filters include:

- Taxonomy
- Component Subcategory
- Climate Zone
- Keywords
- Author
- Organization

## CURRENT SEARCH

Search found 112 items

[all items]

### FILTER BY TAXONOMY

[Walls Above Grade \(9\)](#)

[Cracks \(7\)](#)

[Water Managed Site and Foundation \(7\)](#)

[Flex Ducts \(6\)](#)

[Penetrations to Unconditioned Space/Exterior \(6\)](#)

[Kitchen Exhaust \(5\)](#)

### FILTER BY CLIMATE ZONE:

[Zone 5 \(111\)](#)

[Zone 6 \(111\)](#)

[Zone 7 \(111\)](#)

[Zone 8 \(111\)](#)

[Zone 4 \(110\)](#)

### FILTER BY COMPONENT SUBCATEGORY

[HVAC Quality Installation \(42\)](#)

[Ducts in Conduit Space \(31\)](#)

[Tight Ducts \(28\)](#)

## Resource Guides

[Back-Draft Dampers at Shared Common Exhaust Duct](#)

[Bathroom Exhaust](#)

[Common Exhaust Duct Not Shared by Fans in Separate Dwellings](#)

[Kitchen Exhaust](#)

[Proper Clothes Dryer Venting](#)

### CURRENT SEARCH

Search found 5 items

[all items]

Kitchen Exhaust

### FILTER BY TAXONOMY

Kitchen Exhaust

### FILTER BY CLIMATE ZONE:

[Zone 1 \(5\)](#)

[Zone 2 \(5\)](#)

[Zone 3 \(5\)](#)

[Zone 4 \(5\)](#)

[Zone 5 \(5\)](#)

[Zone 6 \(5\)](#)

[Zone 7 \(5\)](#)

[Zone 8 \(5\)](#)



Recently added Guides automatically show up on the home page.

## RECENTLY ADDED GUIDES

[Sealed Duct Boots - PVC Ducts](#)

Posted: August 09, 2012

[Sealed Duct Boots - Fiber Board Ducts](#)

Posted: August 09, 2012

[Sealed Duct Boots - Metal Ducts](#)

Posted: August 09, 2012

[More Resource Guides](#) ▶

All Guides can be quickly accessed as a list.

Recently added References automatically show up on the home page.

## RECENTLY ADDED REFERENCES

[Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings \(ANSI/ASHRAE 62.2-2010\)](#)

Posted: September 17, 2012

[2012 IRC—International Residential Code for One and Two Family Dwellings](#)

Posted: September 12, 2012

[2009 IRC—International Residential Code for One and Two Family Dwellings](#)

Posted: September 12, 2012

[More References](#) ▶

All References can be quickly accessed as a list.

# Building America Solution Center Wrap-Up

- At its core, the Solution Center is web-accessible, structured data base of Building America best practices.
- The user interface consists of a number of tools to find focused content and to support partnering programs.
- Registered users are emphasized to give them more relevant information.
- The first priority has been developing tools and content to support ENERGY STAR Version 3.
- Initial content has been based on legacy information. New content will flow from Building America research.
- The Solution Center is a living database that will be continually populated and updated.

- Public launch: January 2013
- DOE Challenge Home upgrade: October 2013
- Existing home renovation: 2014
- Content will be continuously populated and updated

- Please be sure to sign the attendance sheet to receive more information about the Solution Center launch.