



Indoor airPLUS & Quality Assurance

Designed & Verified for Healthy, High Performance Housing

September 2017

Learning Objectives

- Gain an understanding of Indoor airPLUS' alignment with PHIUS+ certification.
- Identify resources to help you successfully achieve the Indoor airPLUS label.
- Hear what's emerging at EPA with regard to Indoor airPLUS verification.
- Explore successful implementation of Indoor airPLUS quality assurance activities.
- Learn about Indoor airPLUS' alignment with other high-performance programs.



Indoor airPLUS Overview & Alignment with PHIUS+

ENERGY STAR + Indoor airPLUS



- Indoor airPLUS is an EPA label that adds health protections to your ENERGY STAR value proposition



ENERGY STAR + Indoor airPLUS

- Both programs are based on building science principles that use a systems approach to improve home performance issues.
- Both programs require completion of verification checklists by a certified Home Energy Rater.
- Visual inspection items can be verified during the same onsite visits by a certified Home Energy Rater.
- Reporting to EPA follows the same schedule and is completed using the same online program.



High-Performance Home Staircase



Indoor Air Quality (IAQ)

Indoor airPLUS + PHIUS+

Indoor airPLUS qualification can help ensure that tight passive homes do not contribute to unhealthy living environments.

Compatible program values and certification processes:

- Both programs are based on building science principles that use a systems approach to improve home performance issues.
- Both programs require completion of verification checklists by a qualified Home Energy Rater (additional training required for PHIUS).
- Visual inspection items can be verified during the same on-site visit.



Ensuring Multi-Certification Success

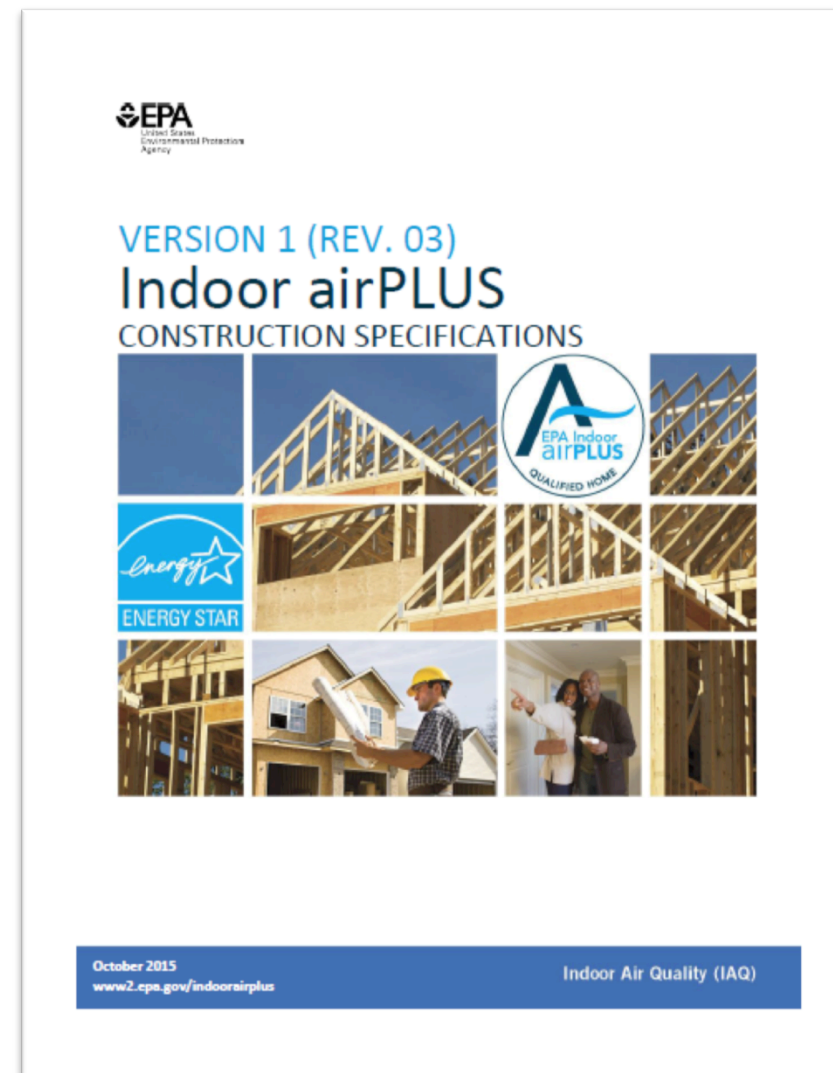
- Get started early—integrate IAP features at the pre-planning and design phases.
- Identify a Home Energy Rater who has training/experience with both IAP and PHIUS+.
 - PHIUS consultants are encouraged to participate in IAP webinars and review online resources to learn more about the program.
www.epa.gov/indoorairplus
- Reach out to Rater, Provider, or EPA ([Indoor airPLUS@epa.gov](mailto:Indoor_airPLUS@epa.gov)) with technical and programmatic questions.
- Recognize that reporting processes differ across programs!



Indoor airPLUS Revision 3

- Released October 2015.
- Further alignment with ENERGY STAR Rev. 8.
- Clarified multiple requirements.
- Provided additional advisories (e.g. adhesives & sealants)
- Updated list of compliant products for Section 6 and developed a new resource, [*How to Find Indoor airPLUS Compliant Low Emission Products.*](#)

Revision 4 coming soon!



Indoor airPLUS Construction Specifications

- Relevant ENERGY STAR checklist items are summarized and referenced at the beginning of each measure.
- Additional Indoor airPLUS requirements are listed separately. These include:
 - Items that provide additional indoor air quality protections.
 - Requirements that exclude an ENERGY STAR exception.
- Advisories, notes and exceptions listed where applicable.

<https://www.epa.gov/indoorairplus/indoor-airplus-program-documents>

4.7 Filtration for Central Forced-Air HVAC Systems

NOTE: Completion of the [ENERGY STAR requirements](#) now satisfies the following Indoor airPLUS requirement:

- ✓ Equip all filter access panels with gasket material or comparable sealing mechanism and ensure access panels fit snugly against the exposed edge of the installed filter when closed to prevent bypass (Rater-F 9.3).

Additional Indoor airPLUS Requirements:

- Install only HVAC filters that are rated MERV 8 or higher according to ASHRAE 52.2-2007 (at approximately 295 fpm).

Advisory: Filters perform best when the filter rack design includes the following features, which are also included in some manufacturers' filter media boxes:

- Flexible, air-tight (e.g., closed-cell foam) gasket material on the surface that contacts the air-leaving (downstream) side of the filter.
- Friction fit or spring clips installed on the upstream side of the filter to hold it firmly in place.

- Upon installation of the air handling unit, include a filter for the remainder of construction activity to protect the unit and/or coil from construction debris and dust. Filter should be clean upon final inspection following construction (see Specification 7.1).

Advisory: To reduce the likelihood of construction dust contaminating the ducts and air handler, limit use of the HVAC system during activities with increased dust (e.g. drywall sanding, floor sanding).

- Do not install any air-cleaning equipment designed to produce ozone (i.e., ozone generators).



Indoor airPLUS Checklist Located within PHIUS+ Workbook

- Track IAP and PHIUS+ requirements side-by-side
- Extract worksheets when ready to submit for certification
- **Tips for success:**
 1. **Confirm that the latest checklist version is being utilized.**
 2. **Cross-check Checklist content with Construction Specification for Advisories, Notes, and Exemptions.**

PHIUS+ Quality Control Workbook v3.0.2 (3-13-14 revision date)

(project name)	(PHIUS+ registration #)
(street address)	(city)
(state/province)	(zip code)
(PHIUS+ Rater name)	(Rater Company Name)
(CPHC)	(Architect)
(Builder Company)	(Builder Responsible Party)
(HVAC company name)	(HVAC responsible party)
(building permit date)	(Building Performance Index)
	<input type="checkbox"/> Rater Verified

Builder is Energy Star Partner
DOE Challenge Home Partner

Cover Sheet | Building Envelope | Ventilation | Heat + Cool | DHW+Lights+Appliances | IAQ | Water Management | Renewable Energy Ready | PRINT - ESV3 TEC | PRINT ...



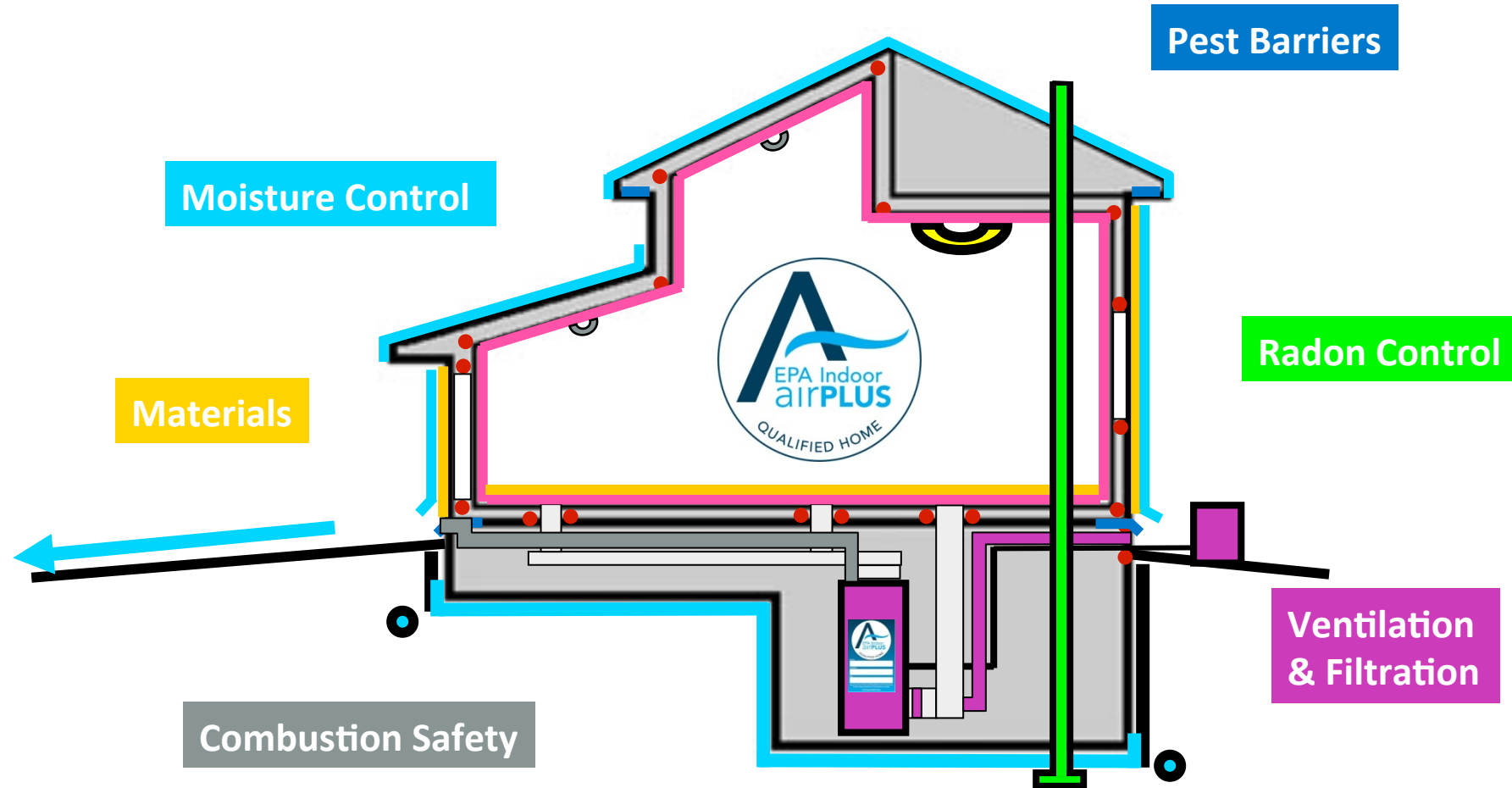
What About Multifamily Dwellings?

- Multifamily dwellings that meet the ENERGY STAR Certified Homes, Version 3 National Program Requirements can pursue Indoor airPLUS.
 - Buildings that would only be eligible for the ENERGY STAR Multifamily High Rise Program are not eligible for Indoor airPLUS at this time.
- Multifamily requirements are the same as single family, with the additions of:
 - Compartmentalization
 - Non-smoking policies




How to Build and Verify Indoor airPLUS Homes

Indoor airPLUS Home



Indoor airPLUS Quality Assurance - Update

 Indoor airPLUS Version 1 (Rev. 03) Rater Quality Assurance Checklist

QA Designee: _____ QA Designee RTIN#: _____ Date of QA Inspection: _____
 Status of home at time of inspection (e.g., under construction, occupied): _____

Rater Company Name: _____ Builder Company Name: _____
 Rater Name: _____ Rater RTIN #: _____ Rater Pre-Drywall Inspection Date: _____
 Rater Name: _____ Rater RTIN #: _____ Rater Final Inspection Date: _____

Note: The Rev. 03 checklist has been modified to reflect only the additional Indoor airPLUS requirements and their corresponding section numbers that must be met after completing the ENERGY STAR requirements. ENERGY STAR remains a prerequisite for Indoor airPLUS qualification.


Home Address: _____ City: _____ State: _____ Zip Code: _____

Action Items / Summary of QA	Yes	N/A
For any item marked "Must Correct," an action summary document shall be attached.	<input type="checkbox"/>	<input type="checkbox"/>

Indoor airPLUS Version 1 (Rev. 03) Verification Checklist

Requirements (Refer to full Indoor airPLUS Construction Specifications for details)	Passed	Must Correct	Photo-Verified	N/A
ENERGY STAR Version 3 Program Requirements must be followed and the home shall be ENERGY STAR certified in conjunction with Indoor airPLUS qualification.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
1. Moisture Control				
1.1 Drain or sump pump installed in basements and crawlspaces (Exception: free-draining soils). In EPA Radon Zone 1, check valve also installed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
1.2 Layer of aggregate or sand (4 in.) with geotextile matting installed below slabs (Exceptions: see spec) AND radon techniques used in EPA Radon Zone 1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.4 Basements/crawlspaces insulated, sealed and conditioned (Exceptions: see spec).	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
1.7 Protection from water splash damage if no gutters (Exceptions: see spec).	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
1.11 Hard-surface flooring in kitchens, baths, entry, laundry and utility rooms, AND piping in exterior walls insulated with pipe wrap.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
2. Radon				
2.1 Radon-resistant features installed in Radon Zone 1 homes in accordance with Construction Specification 2.1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Pests				
3.2 Corrosion-proof rodent/bird screens installed at all openings that cannot be fully sealed (Exception: dryer vents).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	-
4. HVAC Systems				
4.1 Equipment selected to keep relative humidity < 60% in "Warm-Humid" climates (Exception: see spec).	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
4.2 Duct systems protected from construction debris AND no building cavities used as air supplies or returns.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
4.3 No air-handling equipment or ductwork installed in garage AND continuous air barrier in adjacent assemblies.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
4.6 Clothes dryers vented to the outdoors or plumbed to a drain according to manufacturer's instructions.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
4.7 Central forced-air HVAC system(s) have minimum MERV 8 filter AND no ozone generators in home. Temporary filter installed to protect unit from construction dust.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
5. Combustion Pollutants				
5.1 Emissions standards met for fuel-burning and space-heating appliances.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
5.2 CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
5.3 Multifamily buildings: Smoking restrictions implemented AND ETS transfer pathways minimized.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
5.4 Attached garages: Door closer installed on all connecting doors AND in homes with exhaust-only whole-house ventilation EITHER a 70 cfm exhaust fan installed in garage OR a pressure test conducted to verify the effectiveness of the garage-to-house air barrier. See spec for details.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
6. Materials (Photo documentation for each product type must be provided)				
6.1 All composite wood products certified low-emission. See spec.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
6.2 Interior paints and finishes certified low-emission. See spec.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
6.3 Carpet, carpet adhesives, and carpet cushion certified low-emission. See spec.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
7. Final				
7.1 HVAC system and ductwork verified to be dry and clean AND new filter installed.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
7.2 Home ventilated before occupancy.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
7.3 Equipment manuals, Indoor airPLUS label, and certificate provided for buyer.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>

Note: Additional checklist items may be inspected for quality assurance and included in the additional checklist items report.

 Indoor airPLUS Version 1 (Rev. 03) Rater Quality Assurance Checklist

Additional Checklist Items - Use this space to list additional items reviewed (attach additional pages, if needed)

Checklist Name	Item #	Notes	Passed	Must Correct	Not Visible	N/A
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>

Notes:

QA Designee Signature: _____ Date: _____



Indoor airPLUS Quality Assurance - Update



Indoor airPLUS Version 1 (Rev. 03) Rater Quality Assurance Checklist

QA Designee: _____	QA Designee RTIN#: _____	Date of QA Inspection: _____
Status of home at time of inspection (e.g., under construction, occupied): _____		
Rater Company Name: _____		Builder Company Name: _____
Rater Name: _____	Rater RTIN #: _____	Rater Pre-Drywall Inspection Date: _____
Rater Name: _____	Rater RTIN #: _____	Rater Final Inspection Date: _____

Note: The Rev. 03 checklist has been modified to reflect only the additional Indoor airPLUS requirements and their corresponding section numbers that must be met after completing the ENERGY STAR requirements. ENERGY STAR remains a prerequisite for Indoor airPLUS qualification.

Home Address: _____ City: _____ State: _____ Zip Code: _____

Action Items / Summary of QA	Yes	N/A		
For any Item marked "Must Correct," an action summary document shall be attached.	<input type="checkbox"/>	<input type="checkbox"/>		
Indoor airPLUS Version 1 (Rev. 03) Verification Checklist				
Requirements (Refer to full Indoor airPLUS Construction Specifications for details)	Passed	Must Correct	Photo-Verified	N/A
ENERGY STAR Version 3 Program Requirements must be followed and the home shall be ENERGY STAR certified in conjunction with Indoor airPLUS qualification.	<input type="checkbox"/>	<input type="checkbox"/>	-	-
1. Moisture Control				
1.1 Drain or sump pump installed in basements and crawlspaces (Exception: free-draining soils). In EPA Radon Zone 1, check valve also installed.	<input type="checkbox"/>	<input type="checkbox"/>	-	<input type="checkbox"/>
1.2 Layer of aggregate or sand (4 in.) with geotextile matting installed below slabs (Exceptions: see spec) AND	-	-	-	-



Indoor airPLUS Quality Assurance - Update

6. Materials (Photo documentation for each product type must be provided)

6.1 All composite wood products certified low-emission. See spec.

6.2 Interior paints and finishes certified low-emission. See spec.

6.3 Carpet, carpet adhesives, and carpet cushion certified low-emission. See spec.



2.1 Radon Control



✓ *Air seal all sump covers.*



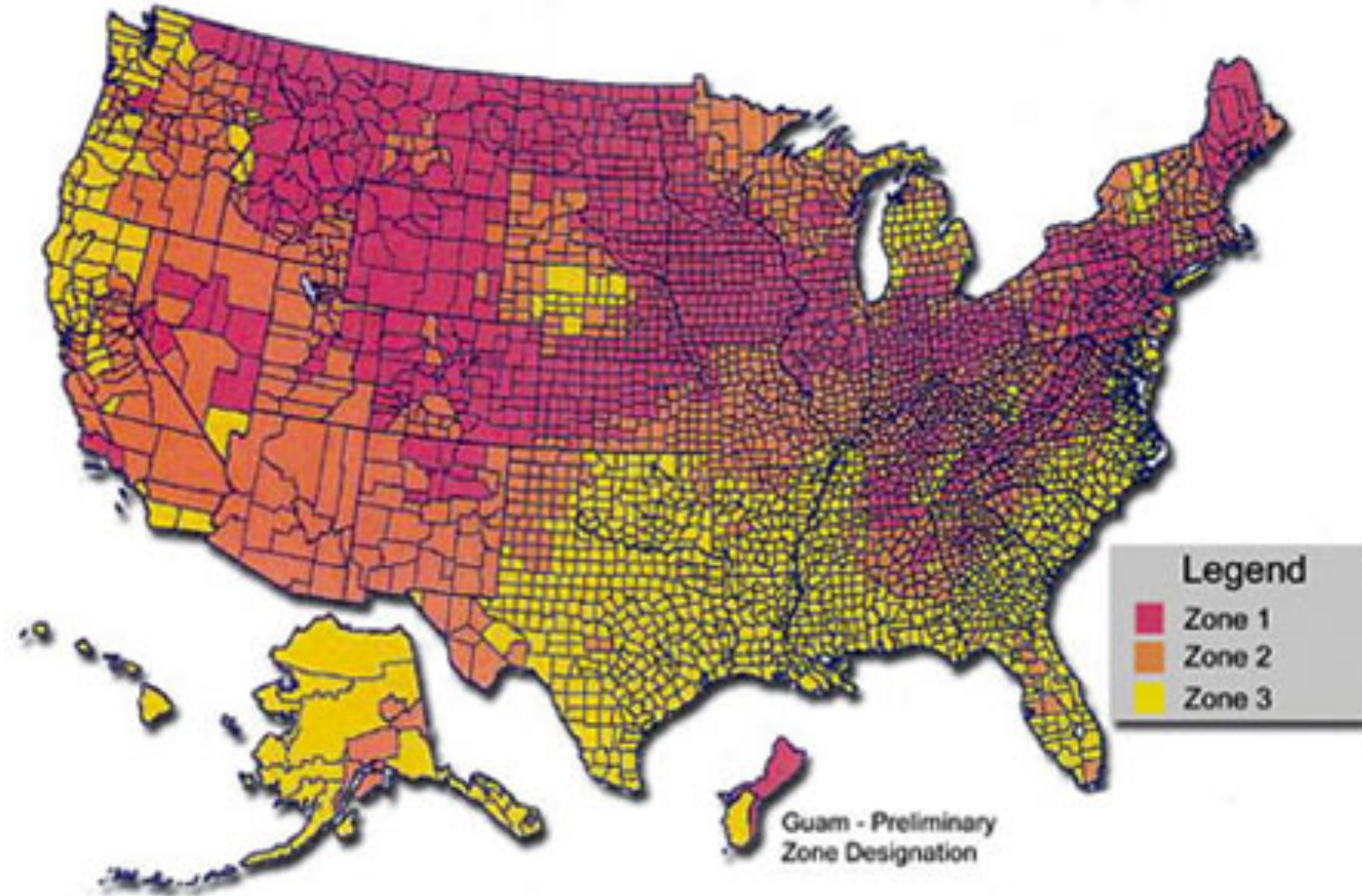
- Construct homes built in EPA Radon Zone 1 with radon-resistant features.
- Advisory:
 - Passive Systems recommended in Zones 2-3.
 - Educate homeowners.

For more on radon-resistant construction, see:
<https://www.epa.gov/radon/radon-resistant-construction-basics-and-techniques>



2.1 Radon Control

EPA Map of Radon Zones

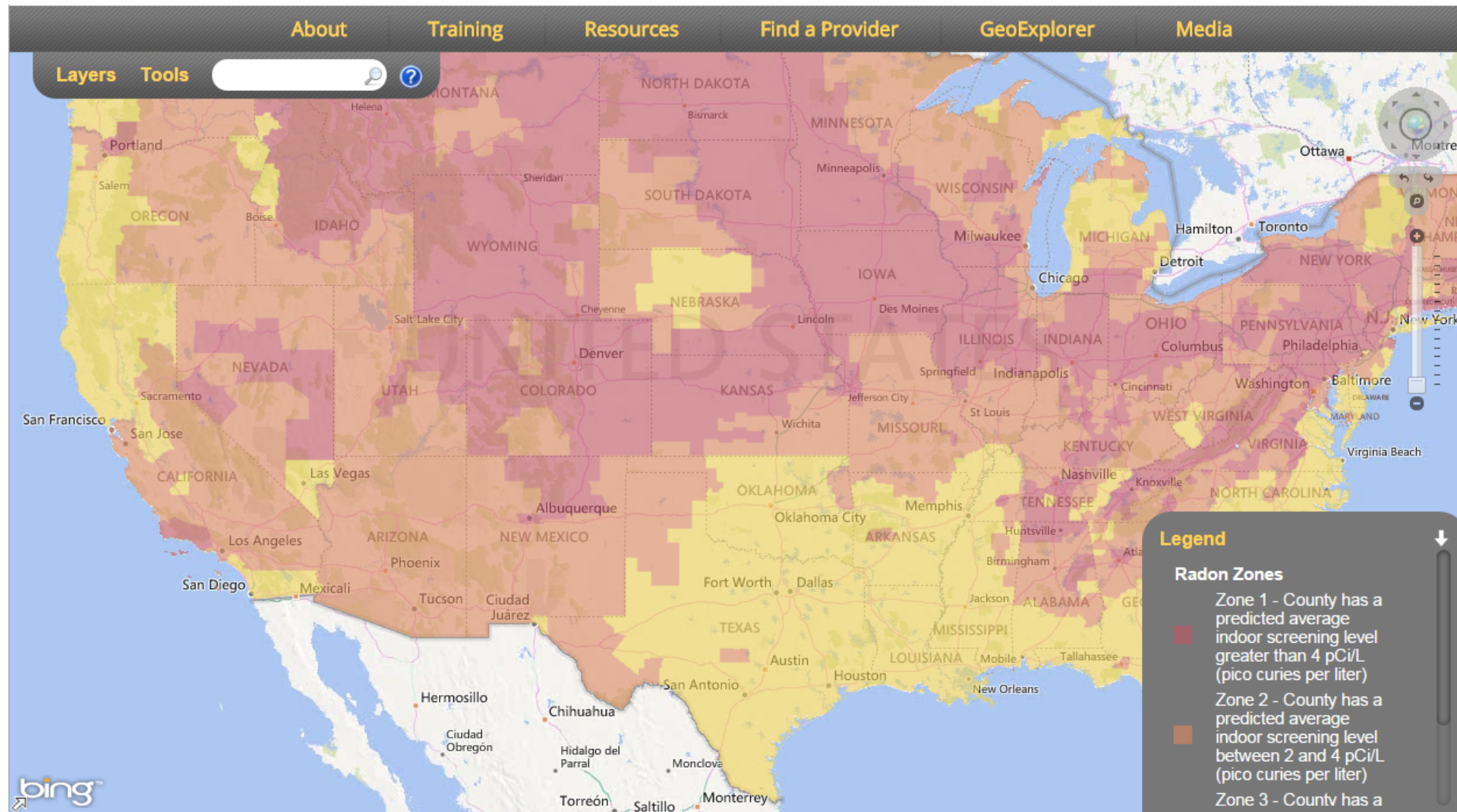


Note: These maps indicate average risk by county. However, high levels of radon can be found in any home.
See: www.epa.gov/radon/zonemap.html or for an interactive map, see: <http://www.wxplushealth.org/geoexplorer>.



Radon Zones

For an easy to use map: Weatherization plus Health GeoExplorer www.wxplushealth.org/geoexplorer



Indoor Air Quality (IAQ)

2.1 Radon Resistant Construction - Verification

- Can be builder or Rater verified.
- **Verify documentation before the start of construction** of an approved radon mitigation system.
- The aggregate layer, connected to a vent pipe under overlapped polyethylene sheeting, should be **visually verified before pouring the slab**.
- The fully connected vent pipe, fan/electrical receptacle, and foundation air sealing should be **visually verified at pre-drywall inspection**.

Section	Requirements (Refer to full Indoor airPLUS Construction Specifications for details)	Must Correct	Builder Verified	Rater Verified	N/A
Radon	2.1 Radon-resistant features installed in Radon Zone 1 homes in accordance with Construction Specification 2.1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Radon & Passive Construction

- Radon is an important concern for all home types:
 - Existing & new construction
 - Tightly-sealed & leaky homes
- Research has not yet been performed to evaluate whether passive construction affects radon mitigation
- Labeling programs take precautionary approach toward radon mitigation

- IAP specification only stipulates radon controls for homes within Zone 1
- Passive radon controls are sufficient; active systems not required
- Passive controls will not decrease the energy efficiency of the home



Homes with Vaulted or Sealed/Conditioned Attics

2 options:

1. Radon fan installed in an approved exterior location (active system)
2. Electrical receptacle installed in an accessible attic or other exterior location near the radon vent pipe

Resource: *ANSI/AARST CCAH-2013 Reducing Radon in New Construction of One & Two Family Dwellings and Townhomes*



Technical Resource and Tools: Building America Solution Center

<https://basc.pnnl.gov/checklists/epa-indoor-airplus>

The screenshot shows the Building America Solution Center website. The header includes the U.S. Department of Energy logo and navigation links for Log In, Register, and My Account. A search bar is present with the text "Enter your keyword" and a "SEARCH" button. The main content area is titled "EPA Indoor airPLUS" and features a circular logo with a stylized 'A' and the text "EPA Indoor airPLUS QUALIFIED HOME". Below the logo is a paragraph of text explaining the checklist's purpose and providing links to technical guides, EPA's Construction Specifications document, and the DOE Zero Energy Ready Home Website. A list of checklist items is displayed in a vertical column, each with a right-pointing arrow:

- ENERGY STAR for Homes Baseline
- Moisture Control
- Radon
- Pests
- HVAC Systems
- Combustion Pollutants
- Materials
- Final

The left sidebar contains navigation links for Solution Center Home, Help, and various resource categories under "FIND YOUR TOPIC BY:" and "FIND PUBLICATIONS:".



Indoor Air Quality (IAQ)



Indoor airPLUS

A new opportunity for leading builders to create better environments inside and out.

Learn more at:

www.epa.gov/indoorairplus

OR contact the Indoor airPLUS Team at

indoor_airPLUS@epa.gov



A photograph of a wooden building's roof truss system under construction. The image shows a complex network of light-colored wooden beams forming a gabled roof structure. The background is a clear blue sky. The text "Partnership and Promotion" is centered over the image, flanked by two horizontal white lines. The overall lighting is bright, suggesting a sunny day.

Partnership and Promotion

Becoming an Indoor airPLUS Partner

Note: Builders and Raters must also be active ENERGY STAR partners to report Indoor airPLUS homes

- For new ENERGY STAR and Indoor airPLUS Partners, visit: www.energystar.gov/newhomesPA

Join ENERGY STAR as a Residential New Construction Partner

Becoming an ENERGY STAR partner is easy. Simply fill out an ENERGY STAR Partnership Agreement by following the appropriate link below. There is no cost to partner with ENERGY STAR or use ENERGY STAR promotional materials.

▼ HOME BUILDERS, MULTIFAMILY DEVELOPERS, AND FACTORY BUILDERS

This Partnership Agreement is for companies or individuals that plan to construct one or more ENERGY STAR certified homes, either for sale or personal use.

- **Site Builders** – Builders of single-family homes and low rise multifamily buildings that are constructed on-site.
- **Multifamily High Rise Developers** – Companies or individuals that construct multifamily buildings and plan to participate in the ENERGY STAR Multifamily High Rise program.
- **Factory Builders** – Manufacturers of single-family homes that are fully constructed in a factory environment.

To complete your Partnership Agreement, you will need to:

1. Review the Terms and Commitments – Familiarize yourself with the requirements of the ENERGY STAR Partnership Agreement(s) that are applicable to your organization:
 - [Site and Factory Builders](#) and for [Multifamily High Rise Developers](#).
2. Determine a Signatory – Ensure that you have identified a company representative to serve as the official signatory of your ENERGY STAR Partnership Agreement and is authorized to bind the organization to its terms.
3. Identify your Verification Organization – If you are a Site Builder, you will be required to select a HERS Rating Company or Rating Provider who will work with you to ensure that your homes are properly certified to meet ENERGY STAR program requirements and reported to EPA. ENERGY STAR will verify your selection with the organization that you identify prior to approving your Partnership Agreement.

Home Builders may also choose to participate in:

100% Commitment Option

EPA offers special recognition to builders who commit to building 100% of their homes to meet ENERGY STAR program requirements. This commitment is denoted with a special 100% icon, as well as priority listing on the ENERGY STAR Partner Locator (once demonstrating progress toward fulfilling the commitment). Builders can track the number of ENERGY STAR certified homes reported to EPA by their HERS Rater or Rating Provider by visiting their [My ENERGY STAR Account \(MESA\)](#).

EPA's Indoor airPLUS Program

This program recognizes newly built homes that include a comprehensive set of indoor air quality measures. The [Indoor airPLUS Program](#) is a great way for ENERGY STAR builder partners to further differentiate themselves. Indoor airPLUS is well aligned with the ENERGY STAR Certified Homes program, and verification can be performed by the same HERS Rater in conjunction with the standard ENERGY STAR inspections and testing. To learn more about construction specifications and about becoming an Indoor airPLUS Partner, visit the [Indoor airPLUS website](#). The option to partner with the Indoor airPLUS Program will be available at the end of your ENERGY STAR partnership application process.

**Please note: if you are already an ENERGY STAR Partner and would like to sign an Indoor airPLUS Partnership Agreement, please log in to your [My ENERGY STAR Account](#).

BEGIN APPLICATION →

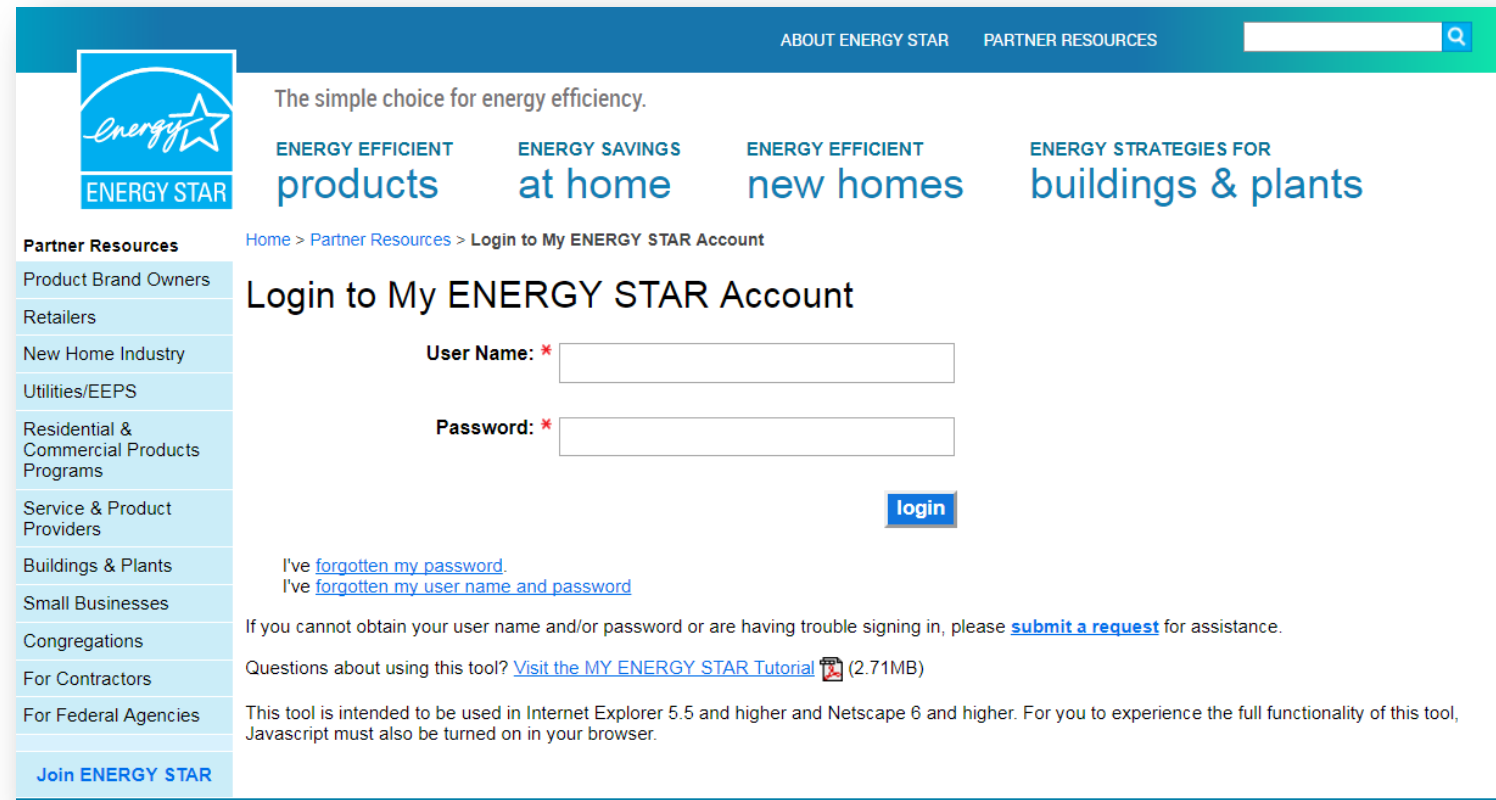
▶ RESIDENTIAL VERIFICATION ORGANIZATIONS (HERS RATERS AND PROVIDERS)

▶ ARCHITECTS/HOME PLAN DESIGNERS

▶ UTILITIES AND OTHER SPONSORING PROGRAMS

Becoming an Indoor airPLUS Partner

- For current ENERGY STAR Partners:
 - Log into your My ENERGY STAR Account (MESA)
www.energystar.gov/mesa
 - Username and password can be recovered if forgotten



The screenshot shows the ENERGY STAR website interface. At the top, there is a blue navigation bar with the ENERGY STAR logo on the left and links for "ABOUT ENERGY STAR" and "PARTNER RESOURCES" on the right. Below the navigation bar, the main content area features the ENERGY STAR logo and the tagline "The simple choice for energy efficiency." To the right of the logo are four categories: "ENERGY EFFICIENT products", "ENERGY SAVINGS at home", "ENERGY EFFICIENT new homes", and "ENERGY STRATEGIES FOR buildings & plants".

The main content area is titled "Login to My ENERGY STAR Account" and includes a breadcrumb trail: "Home > Partner Resources > Login to My ENERGY STAR Account". The login form consists of two input fields: "User Name: *" and "Password: *", both with red asterisks indicating required fields. A blue "login" button is positioned below the password field. Below the login form, there are two links: "I've forgotten my password." and "I've forgotten my user name and password".

At the bottom of the page, there is a section for "Partner Resources" with a list of categories: Product Brand Owners, Retailers, New Home Industry, Utilities/EEPS, Residential & Commercial Products Programs, Service & Product Providers, Buildings & Plants, Small Businesses, Congregations, For Contractors, and For Federal Agencies. A "Join ENERGY STAR" button is located at the bottom left of the page.

Becoming and Indoor airPLUS Partner

- After accessing your account, select “Join Indoor airPLUS”.

You are invited to navigate directly to other ENERGY STAR tools and sites, change your password for your password-protected ENERGY STAR tools, or update contact information for you, your organization, and your colleagues.

To-Do List:

New Homes Builder Training

Andrew Fonowich completed the training on 10/23/2014. The builder training was updated in November 2014. We encourage you to review the updated Builder Training.

[Review Training](#)

(Internet Explorer or Firefox are the preferred browsers for this training. Please turn off your browser pop-up blocker.)

My ENERGY STAR Tools:

- [Logo Downloads](#)
- [EPA Policies for Responding to Misuse of the ENERGY STAR Brand New](#)

ENERGY STAR Certified Homes Resources:

- [Linking Opportunities](#)
- [Consumer Videos](#)
- [Co-brandable Consumer Brochure](#)
- [Co-brandable Banners](#)
- [Co-brandable Yard Signs](#)
- [Sales Training Kit](#)

Indoor airPLUS Resources:

- [Join Indoor airPLUS](#)
- [Sales Training Kit](#)



Becoming an Indoor airPLUS Partner

- When your partnership is activated, you'll have access to Indoor airPLUS logos, customizable sales training, and marketing materials.



You are invited to navigate directly to other ENERGY STAR tools and sites, change your password for your password-protected ENERGY STAR tools, or update contact information for you, your organization, and your colleagues.







<p>To-Do List:</p> <p>New Homes Builder Training Dennis Webb completed the training on 01/25/2011. The builder training was updated in November 2014. We encourage you to review the updated Builder Training.</p> <p>Review Training</p> <p>(Internet Explorer or Firefox are the preferred browsers for this training. Please turn off your browser pop-up blocker.)</p>	<p>My ENERGY STAR Tools:</p> <ul style="list-style-type: none">• Logo Downloads• EPA Policies for Responding to Misuse of the ENERGY STAR Brand New
<p>ENERGY STAR Certified Homes Resources:</p> <ul style="list-style-type: none">• Linking Opportunities• Consumer Videos• Co-brandable Consumer Brochure• Co-brandable Banners• Co-brandable Yard Signs• Sales Training Kit	<p>Indoor airPLUS Resources:</p> <ul style="list-style-type: none">• Indoor airPLUS Co-brandable Consumer Brochure• Discover Indoor airPLUS Homes Customizable Booklet New• Sales Training Kit





Becoming an Indoor airPLUS Partner

- Use the logos to promote your partnership and commitment to offering safer, healthier, more durable homes

Indoor airPLUS Certification Mark	
	
Indoor airPLUS Certification Mark (vertical) EPS JPG	Indoor airPLUS Certification Mark (vertical) EPS JPG

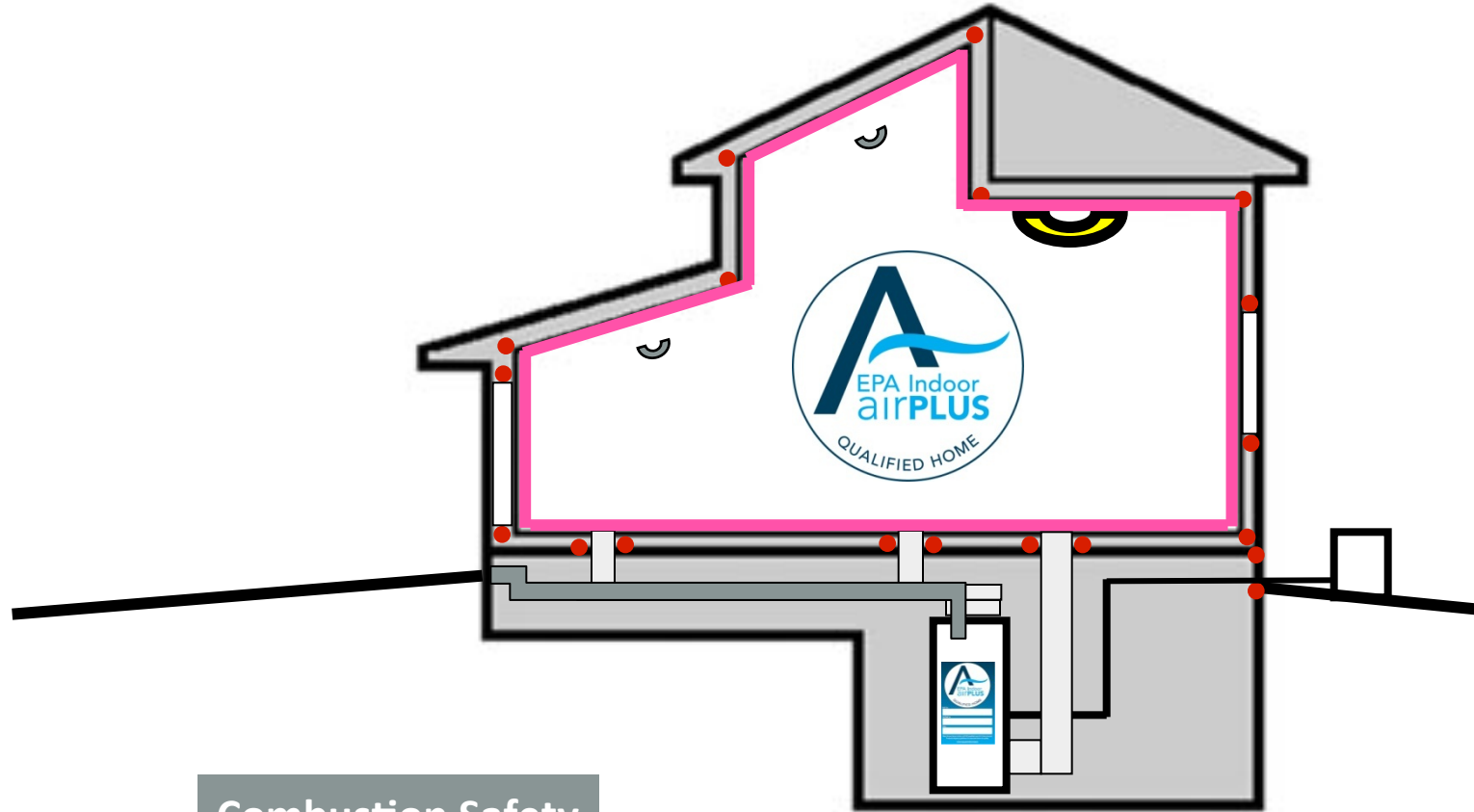
Indoor airPLUS Promotional Marks					
					
Indoor airPLUS Promotional Marks (vertical) EPS JPG	Indoor airPLUS Promotional Marks (vertical) EPS JPG	Indoor airPLUS Promotional Marks (vertical) EPS JPG	Indoor airPLUS Promotional Marks (vertical) EPS JPG	Indoor airPLUS Promotional Marks (vertical) EPS JPG	Indoor airPLUS Promotional Marks (vertical) EPS JPG

Indoor airPLUS Complimentary Program Mark	
	
Indoor airPLUS Complimentary Program Mark (vertical) EPS JPG	Indoor airPLUS Complimentary Program Mark (vertical) EPS JPG



Indoor Air Quality (IAQ)

5. Combustion Pollutants



Combustion Safety



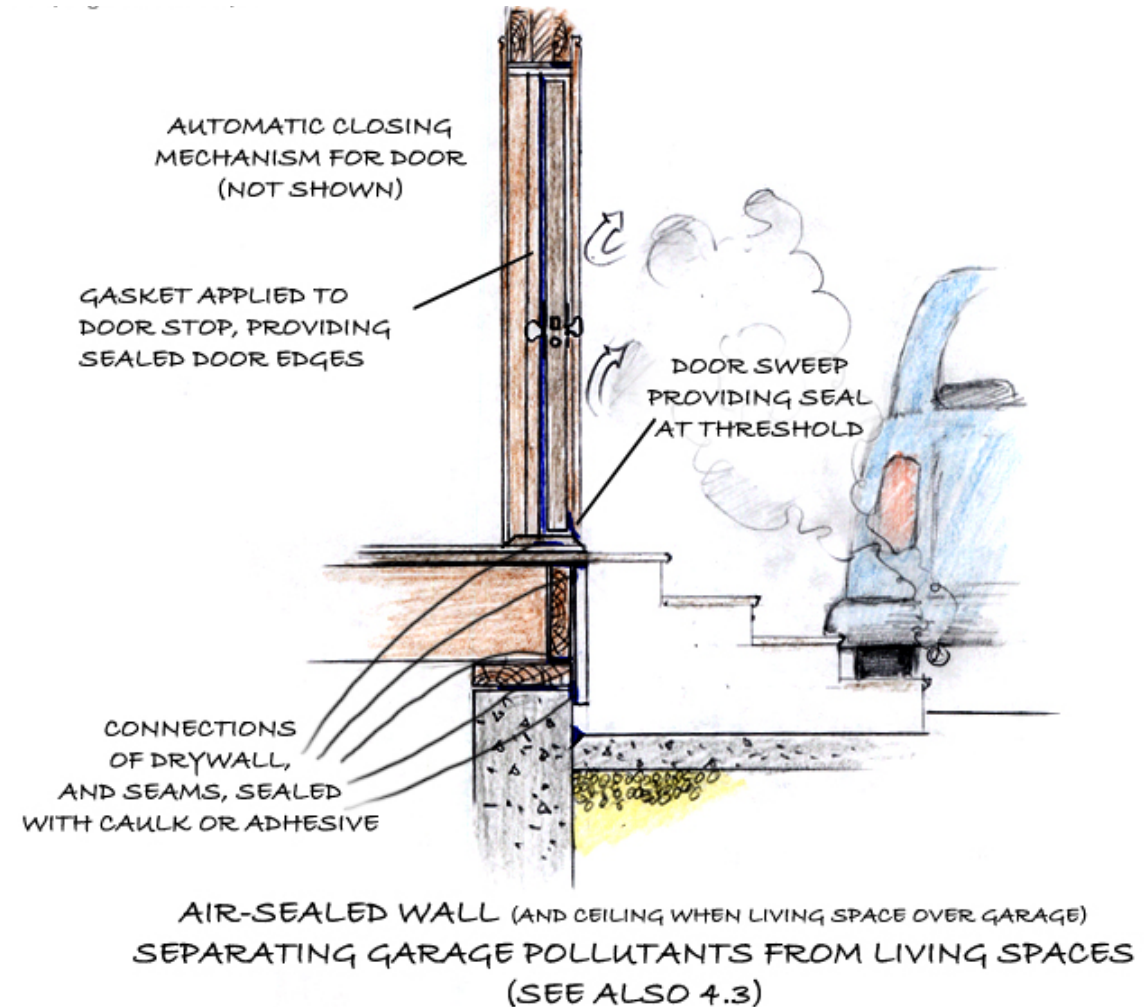
5. Combustion Pollutants

- Accidental carbon monoxide (CO) poisoning kills an average of 439 persons annually.
- (CDC; MMWR; 12/21/2007)
- Carbon monoxide, an odorless, colorless gas, which can cause sudden illness and death, is produced any time a fossil fuel is burned.



5.4 Attached Garages

1. **Isolated** from conditioned spaces:
 - Common walls and ceilings are **air-sealed**.
 - **No HVAC equipment or ducts** in garage.
 - **Weather stripping and an automatic door closer** is installed on connecting doors between living space and garage.
2. **Appropriate ventilation strategy or pressure testing** ensures separation from living space.



5.4 Attached Garages



- ✓ *Isolate attached garages from conditioned spaces:*
 - ✓ *Air-seal common walls and ceilings.*
 - ✓ *Use weather stripping on all doors between living spaces and attached garages.*



- Install an automatic door closer on all connecting doors between living spaces and attached garages.
- In homes with exhaust-only whole-house ventilation either:
 - Equip the attached garage with an exhaust fan with a minimum installed capacity of 70 cfm that is vented directly outdoors; OR
 - Conduct a pressure test to verify the effectiveness of the garage-to-house air barrier.



Self-Closing Door Mechanisms

- Not expected for overhead door, just door between garage and living space
- Self-closing/spring hinge is sufficient
- Many low costs options available



5.4 Attached Garages- Verification

- Must be Rater verified.
- Rater should **verify proper functioning of the automatic door closer** at final inspection.
- In homes with **exhaust only ventilation system**, at final inspection Rater should:
 - **Visually verify at final inspection** that an appropriate garage fan has been installed.
 - If the garage is ventilated by a ducted fan, a Rater should perform a flow test to confirm the required CFM is being met.

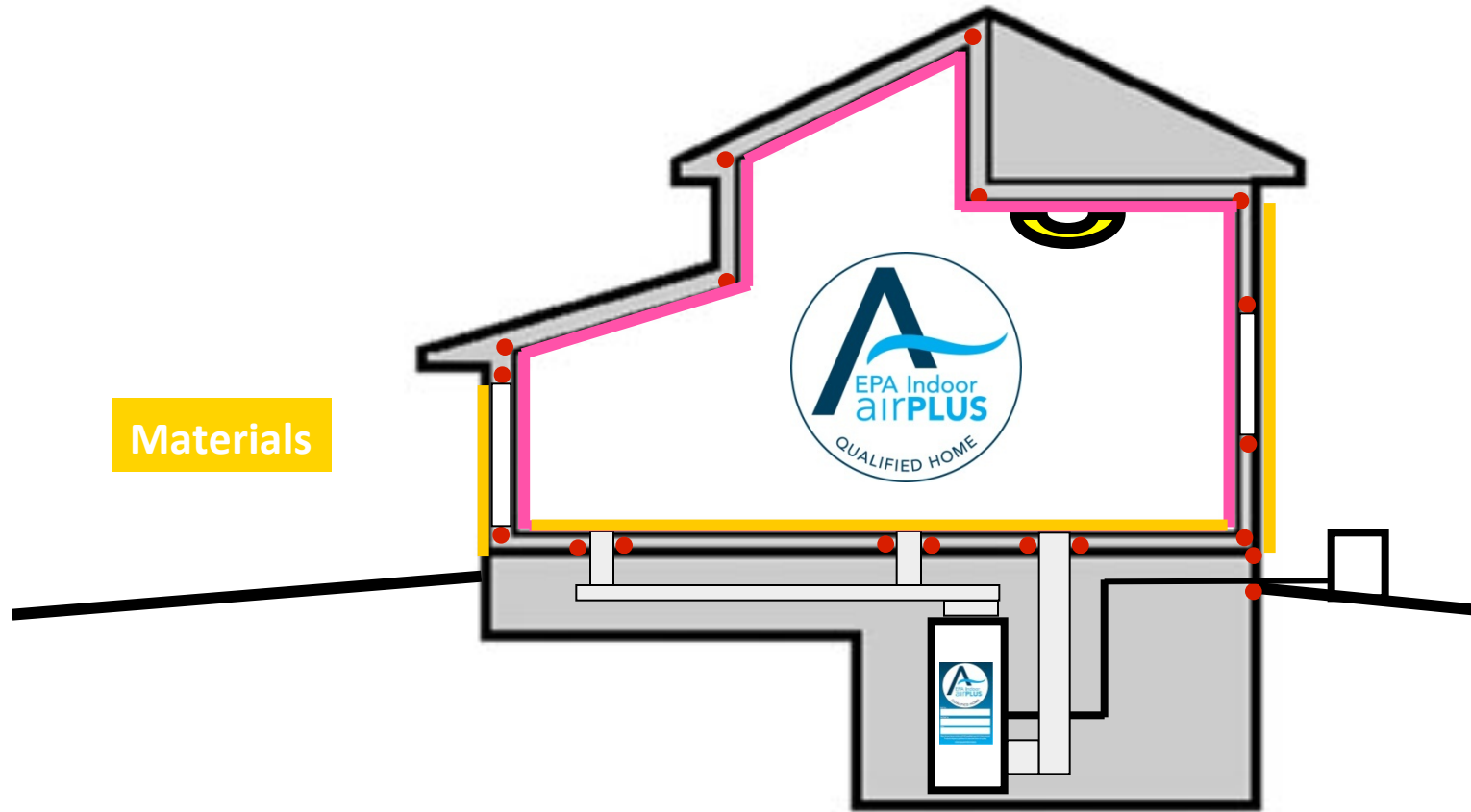
OR

- **Conduct 45 Pascal pressure test** with all garage openings closed to verify the garage-to-house air barrier.
 - Test can be performed during required ENERGY STAR blower door test.
 - If garage-to-house air barrier does not pass pressure test, additional air sealing or a garage fan required.

Section	Requirements (Refer to full Indoor airPLUS Construction Specifications for details)		Must Correct	Builder Verified	Rater Verified	N/A
Combustion Pollutants	5.1	Emissions standards met for fuel-burning and space-heating appliances.	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	5.2	CO alarms installed in each sleeping zone (e.g., common hallway) according to NFPA 720.	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
	5.3	Multifamily buildings: Smoking restrictions implemented AND ETS transfer pathways minimized.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5.4	Attached garages: Door closer installed on all connecting doors AND in homes with exhaust-only whole-house ventilation EITHER a 70 cfm exhaust fan installed in garage OR a pressure test conducted to verify the effectiveness of the garage-to-house air barrier. See spec for details.	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>



6. Low Emission Materials



6. Low Emission Materials

Potential Issues:

- Indoor levels of many chemical pollutants can be **2-5 times higher than outdoor levels.**
- Volatile Organic Compounds (**VOCs**) include a variety of chemicals, some of which may have short- and long-term adverse health effects, including eye, nose and throat irritation, headaches, loss of coordination, nausea, damage to liver, kidney, and central nervous system.



What are the Requirements?

6.1 – Composite Wood

Structural panels, cabinetry, shelving, trim, doors, stair treads, flooring, etc.

6.2 – Interior Paints and Finishes
Site-applied coatings only, but not simply “low-VOC”.

Indoor airPLUS – Section 6
Low-emission Materials

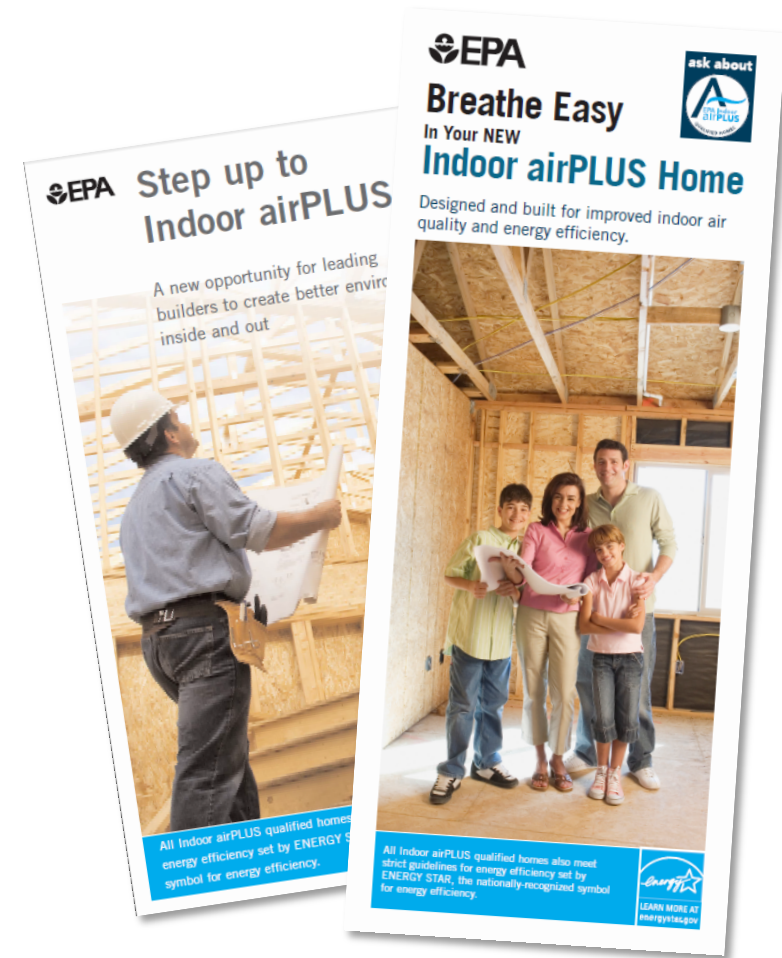
6.4 – Adhesives and Sealants
Recommended but not yet required.

6.3 – Carpet and Carpet Adhesives
CRI Green Label



Resources and Tools

- Builder and consumer resources
- Partner locator
- Website widgets
- Construction requirements
- Technical guidance





Indoor airPLUS

A new opportunity for leading builders to create better environments inside and out.

Learn more at:

www.epa.gov/indoorairplus

OR contact the Indoor airPLUS Team at

indoor_airPLUS@epa.gov

