Going Further with High Performance

WaterSense & Indoor airPLUS Labeled Homes

Cindy Wasser, ICF

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# Homebuyers looking for more than energy efficiency …

78% Strongly agreed that low maintenance was an important decision factor

77% Strongly agreed that durability was an important decision factor

59% Strongly agreed that air quality was an important decision factor

37% Strongly agreed that water usage was an important decision factor

2014 Survey – NAHB & GuildQuality

ENERGY STAR & Green Building
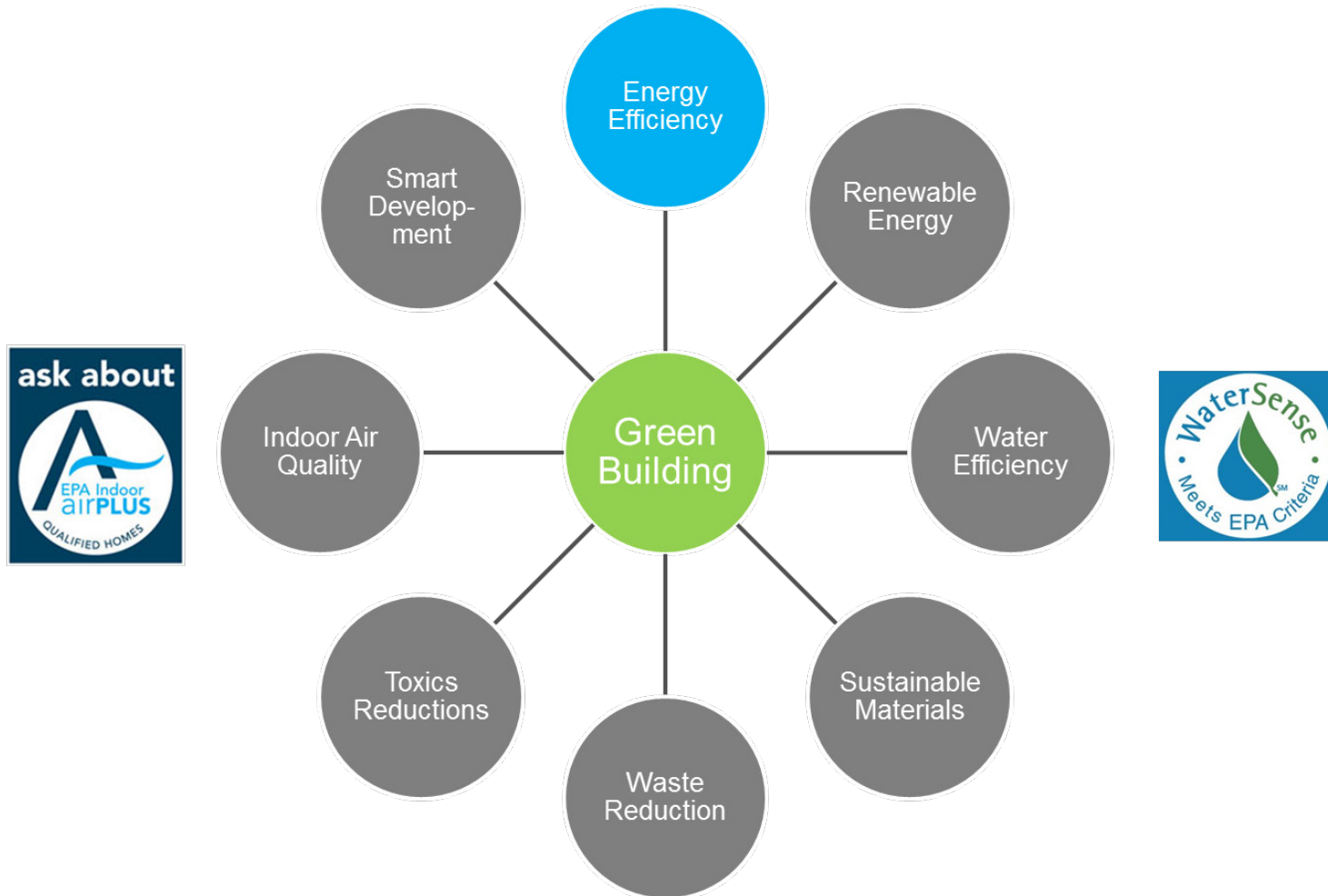
Tap into WaterSense!

Differentiate Your Homes Using U.S. EPA's WaterSense New Home Label

Why Build WaterSense Labeled Homes?

- **Part of the "whole-house" building science approach**
  - WaterSense labeled products provide efficiency *and* performance
  - Entire water delivery system is considered – not just fixtures
  - 3rd-party verification improves quality and reduces call backs

- **Convenience, efficiency, & confidence**
  - Hot water will be delivered to users <u>faster</u> and <u>use less energy</u>
  - Regionally appropriate landscaping – <u>less maintenance</u>

- **Ability to co-brand with WaterSense**
  - Provides a key market differentiation
  - Visible way for the builder to help meet state goals/mandates
  - Meet the growing demand for a "green" home
  - Access to WaterSense partner resources
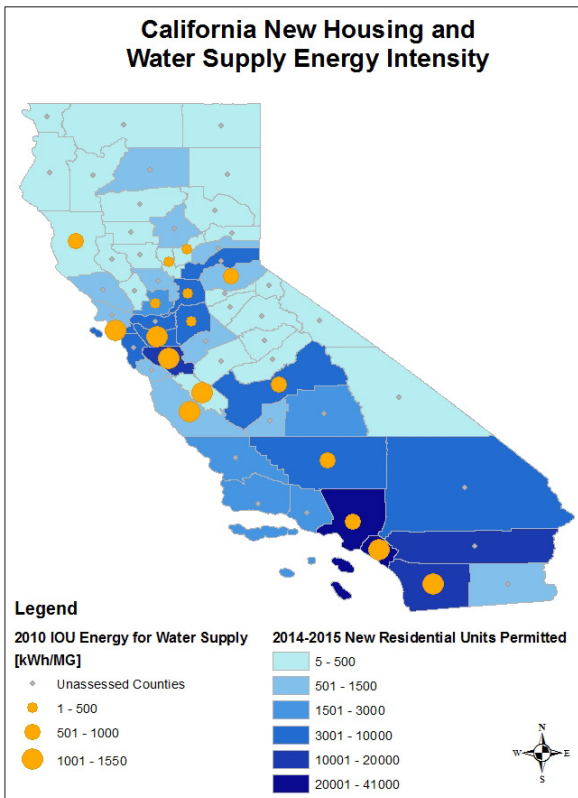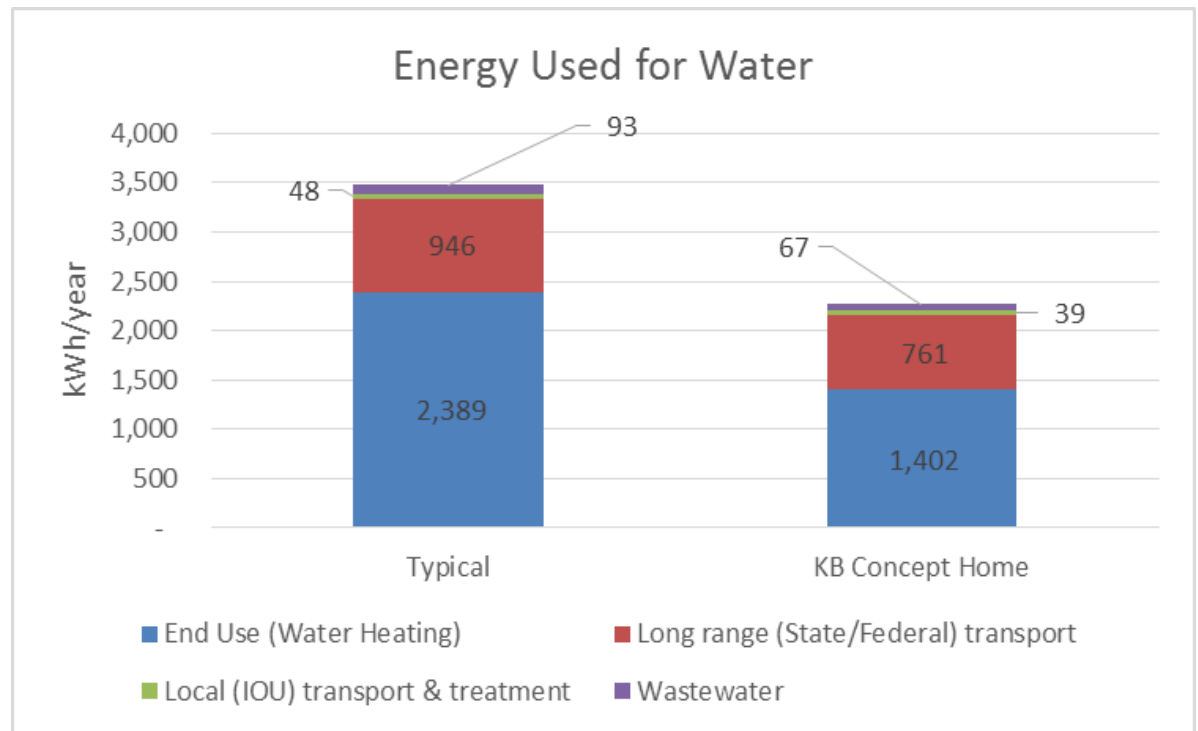 - Eligibility for awards

Need for Water Efficiency

➢ Lower water & energy costs for residents

➢ Reduce growing demand on aging water infrastructure

➢ Increase resiliency, reduce vulnerability to drought issues

Water & Energy Efficiency Nexxus

California New Housing and Water Supply Energy Intensity

Legend

2010 IOU Energy for Water Supply [kWh/MG]
- Unassessed Counties
- 1 - 500
- 501 - 1000
- 1001 - 1550

2014-2015 New Residential Units Permitted
- 5 - 500
- 501 - 1500
- 1501 - 3000
- 3001 - 10000
- 10001 - 20000
- 20001 - 41000

KB Concept Home – Greenbuild 2016

Energy Used for Water

End Use (Water Heating) — Long range (State/Federal) transport
Local (IOU) transport & treatment — Wastewater

Data courtesy of KB Home

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WaterSense Labeled Products

Flushing Urinals

Tank-Type Toilets

we build

WaterSense
Meets EPA Criteria
SM

look for
WaterSense
Meets EPA Criteria

WaterSense
Meets EPA Criteria

More than 10,000 Labeled Product Models

And a label for the _entire home_.

What Makes a WaterSense Labeled Home?

- Third Party Certification
- WaterSense Labeled Products
- Hot Water Distribution
- Leak Prevention & Service Pressure
- Smart Landscaping & Irrigation

What Makes a WaterSense Labeled Home?

look for
WaterSense
Meets EPA Criteria

Third Party Certification

WaterSense Labeled Products

Smart Landscaping & Irrigation

WaterSense
Meets EPA Criteria

Leak Prevention & Service Pressure

Hot Water Distribution

Indoor Measures

What Makes a WaterSense Labeled Home?

look for

Work with a certified landscape professional

Third Party Certification

WaterSense Labeled Products

Smart Landscaping & Irrigation

Leak Prevention & Service Pressure

Hot Water Distribution

Outdoor Measures

Indoor Measures

What Makes a WaterSense Labeled Home?

Work with a certified landscape professional

Third Party Certification

ENERGY STAR

look for — EPA Indoor airPLUS QUALIFIED HOME

Smart Landscaping & Irrigation

WaterSense Labeled Products

WaterSense Meets EPA Criteria

Outdoor Measures

Indoor Measures

Leak Prevention & Service Pressure

Hot Water Distribution

look for — WaterSense Meets EPA Criteria
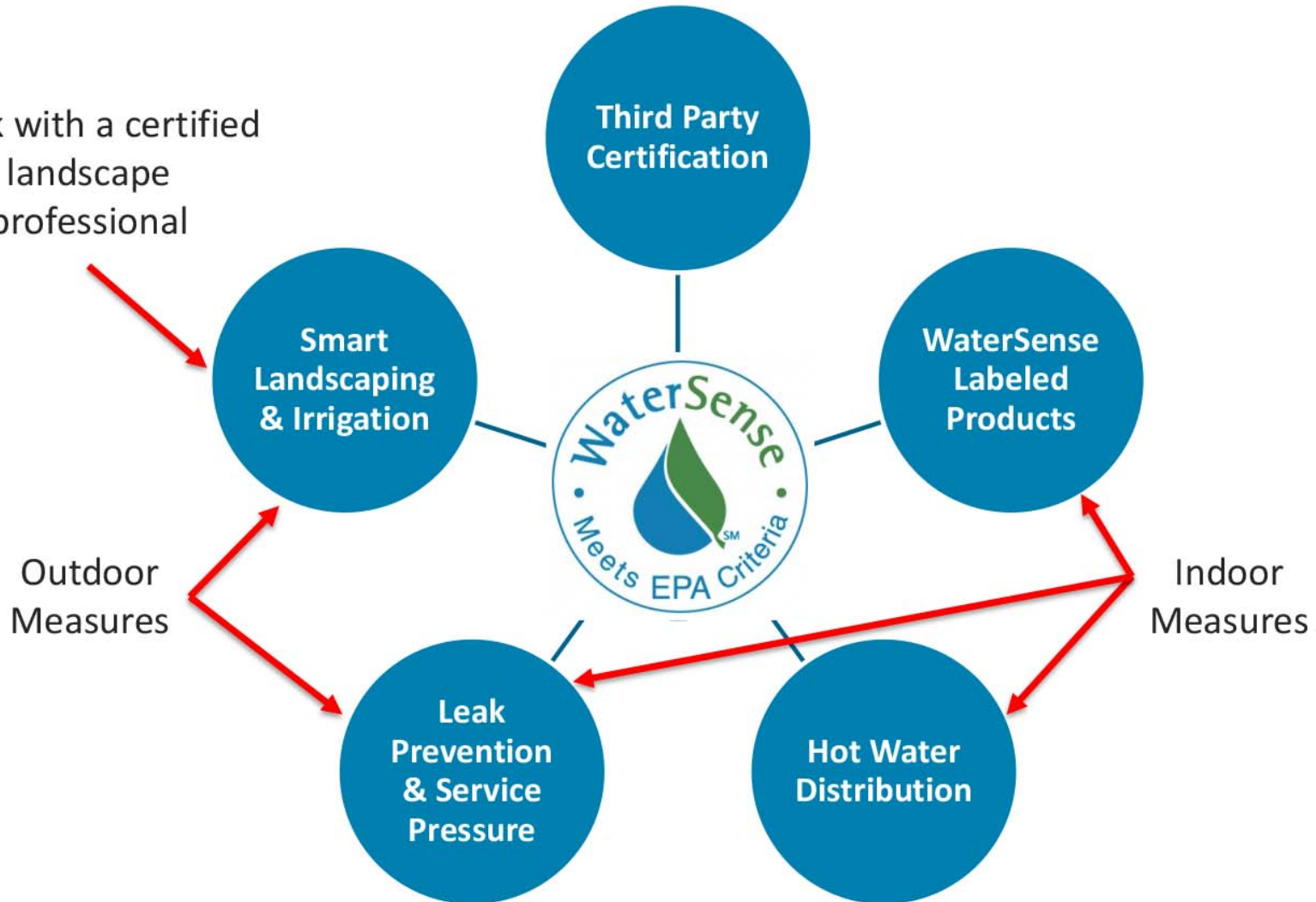
Indoor Criteria

- **Items that require basic on-site verification**
  - **Leak check (pressure loss test)**
  - **Service pressure 60psi**
  - **Toilet dye test**

Item	Section	Home or Unit Criteria	Yes	No	NI[*]	Doc[†]
Indoor Water Efficiency Criteria						
Leaks	3.1	Pressure-loss test on all water supplies detected no leaks				
		No visible leaks from hot water delivery system				
		No visible leaks from toilets/urinals				
		No visible leaks from bathroom faucets				
		No visible leaks from kitchen faucets				
		No visible leaks from showerheads				
		No visible leaks from other fixtures or appliances				
Service pressure	3.2	Single-family: Pressure tank installed and set ≤ 60 psi OR				
		Single-family: PRV installed upstream of fixtures and pressure test ≤ 60 psi OR				
		Single-family: Pressure test ≤ 60 psi and written documentation from water supplier that pressure ≤ 60 psi				Req.
		Multi-family: Pressure test ≤ 60 psi				
Hot water delivery	3.3	Acceptable system type				
		10°F temp. change within ≤ 0.6 gallons				
Toilets	3.4.1	WaterSense labeled				Req.
Flushing urinals	3.4.2	WaterSense labeled				Req.
Bathroom sink faucets	3.5.1	WaterSense labeled				Req.
		Measured flow rate—maximum 1.5 gpm (Flow test maximum: 0.25 gallons)				
Kitchen sink faucets	3.5.2	Measured flow rate—maximum 2.2 gpm (Flow test maximum: 0.4 gallons)				
Showerheads	3.6	WaterSense labeled				Req.
		Measured flow rate—maximum. 2.0 gpm water per shower compartment ≤ 2,160 in^2 (Flow test maximum: 0.35 gallons/compartment)				
		Separate controls for showerheads if > 2160 in^2				
Dishwashers	3.7.1	ENERGY STAR qualified				Req.
Clothes washers	3.7.2	ENERGY STAR qualified				Req.
		Water factor ≤ 6.0				Req.
Evaporative cooling system	3.8.1	Acceptable system type				Req.
		Maximum 3.5 gal/water/ton hour cooling, maximum 3 blowdowns in 24 hours				Req.
		Controls blowdown through conductivity or a basin temperature-based controller				Req.
Water softeners	3.8.2	Certified to NSF/ANSI Standard 44, including voluntary efficiency rating standards in Section 7				Req.
Drinking water	3.8.3					Req.

Indoor Requirements & Inspection:
Service Pressure

- *Static pressure for each home or residential unit shall be 60 pounds per square inch (psi) or less.*

- Inspection:
  - For homes supplied by groundwater wells verify that a pressure tank is installed and set to 60 psi.
  - For homes with publicly supplied water:
    - Document whether the home has a pressure-regulating valve downstream of the point of connection.

    OR

    - Check the static pressure using a pressure gauge *AND*
    - Gather written documentation from builder that the pressure supplied by the jurisdiction is 60 psi or less.

www.ci.austin.tx.us/watercon/prvfaq.htm

Hot Water Distribution Systems
Performance Requirement

Requirement:

- *The system shall store no more than 0.5 gallons in any piping/manifold between the hot water source and any hot water fixture.*

Verification:

- *No more than 0.6 gallons of water shall be collected from the fixture before hot water is delivered.*
  - *Accounts for water that must be removed from the system before hot water can be delivered.*

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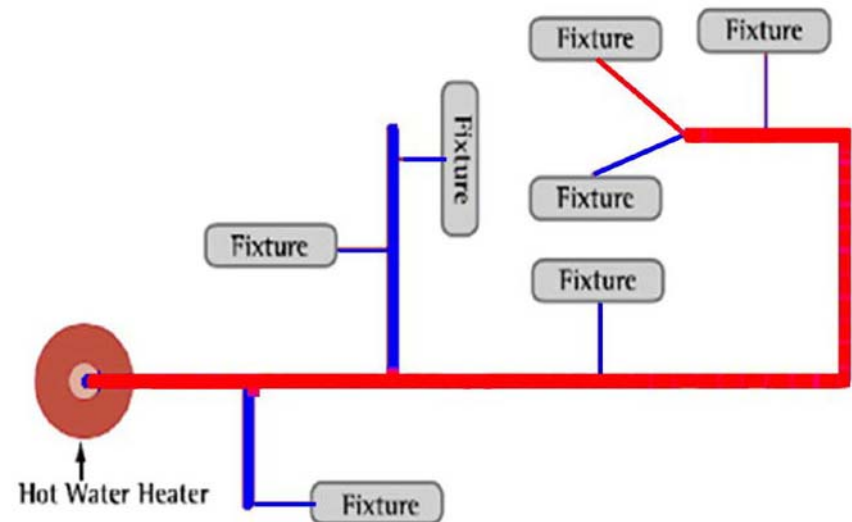
Outdoor & Irrigation Requirements
Overview & Benefits

- Allow for beautiful and functional landscapes

- Provide for regionally appropriate landscapes that are easy to maintain

  – Can cut down on maintenance (time and expense)

  – May survive periods of drought or watering restrictions more readily than conventional landscapes

- Offer efficient irrigation technology with weather based control

  – Only where irrigation is installed (not required)

Outdoor & Irrigation Requirements
Irrigation

- Irrigation is not required
- System shall be <u>designed or installed</u> by a Certified Irrigation Professional
- System shall be <u>audited</u> by a Certified Irrigation Professional
- Uses a WaterSense labeled weather based irrigation controller
  - or a sensor based controller that meets multiple criteria
- Verify there are no leaks or areas of overspray
- Only allows fixed spray on areas of turf grass

Outdoor & Irrigation Requirements
WaterSense Water Budget Tool

STEP 1 Location and Area **STEP 2** Plants and Irrigation **STEP 3** The Results

Congratulations on choosing to design a locally appropriate water-efficient landscape! The WaterSense water budget tool will help you determine if your landscape meets EPA's criteria for efficient outdoor water use in your area.

In order to use the water budget tool, you will need to know some basic information about your landscape:

- The location and zip code
- The total area of applicable landscape
- Types of plants and the total coverage
- Methods of irrigation (if any)

Your landscape will receive a pass/fail based on local climate, plant selection, irrigation methods, and size of the landscape. Follow the instructions on screen to find out if your landscape meets the WaterSense criteria.

For what purpose is the tool being used? What are you landscaping?

WaterSense Labeled Home(s) ▼

How many sites?

☐ Development of Multiple Landscapes   ☒ Single Site

Is there an irrigation system?

☒ Yes   ☐ No

Enter Zip Code

75751

Enter Landscaped Area for a Single Home or Site[i]

5000 Sq. Ft.

Enter Multi-Home/Development Landscaped Area Range[i]

[____] to [____] Sq. Ft.

NEXT STEP >

*Required for all homes except for lots with total landscapable areas equal to or less than 1,000 square feet.

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What's Left?

Item	Section	Home or Unit Criteria	Yes	No	NI[*]	Doc[†]
Homeowner or Resident and Building Management Education Criteria						
Single-family/ occupant operating manual	5.2	Written operating and maintenance manual (or chapter) for all water-using equipment/controls installed in house, unit, yard, or common use outdoor area				
		General information on water-efficient dishwashers and clothes washers if they are not installed				
Building operating manual	5.3	Multi-family: Manual for all water-using equipment and controls outside of individual dwellings or inside of individual dwellings that are maintained by building management				
Irrigation system	5.2	Schematic, itemized list of irrigation components, copies of irrigation schedules, and information on reprogramming schedules included in operating manual for homeowners of single-family homes and for building managers for multi-family buildings				
Pools/spas	4.1.4	Multi-family: Detailed information on filtration equipment and manufacturer's recommended maintenance schedule to building management				

Marketing Tools

- Consumer Brochures

- Marketing toolkit

  - Press release templates

  - Web site language

  - Artwork templates

- Online materials

  - Text and ideas for builder Web sites

  - Programmed "widget" updated regularly with water-efficiency tips from WaterSense
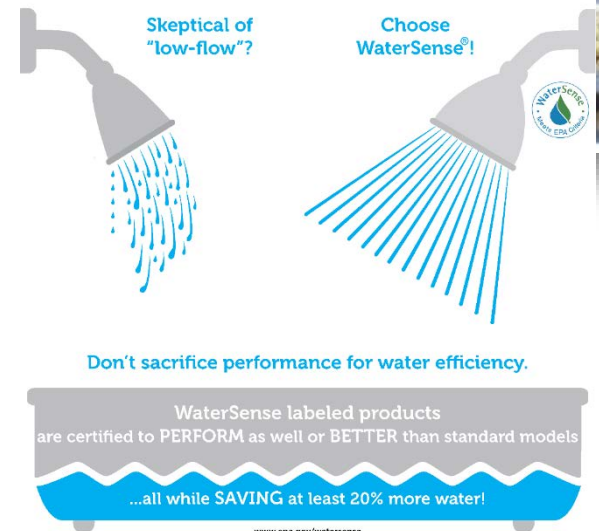
Partner of the Year Awards

WaterSense Awards

You will need Adobe Acrobat Reader to view some of the files on this page. See EPA's PDF page to learn more about PDF, and for a link to the free Acrobat Reader.

2015 WaterSense Partners of the Year

On October 8, 2015, the 2015 WaterSense Sustained Excellence Award winner, Partners of the Year, and Excellence Award winners were announced at the WaterSense and Alliance for Water Efficiency Awards Luncheon. The luncheon was held at the WaterSmart Innovations Conference and Exposition EXIT Disclaimer.

Since the program began in 2006, WaterSense labeled products have helped Americans save 1.1 trillion gallons of water and $21.7 billion in water and energy bills. In 2014 alone, WaterSense labeled products saved 346 billion gallons of water. By working together, WaterSense partners across the country continue to make a difference every day.

WaterSense recognizes four Sustained Excellence Award winners, seven WaterSense Partners of the Year, and six Excellence Award winners for helping to advance and promote WaterSense and water efficiency throughout 2014.

EPA
WaterSense
2015 PARTNER OF THE YEAR

Next Steps for Builders

1. Partner with WaterSense
2. Find an Irrigation Professional and work with a WaterSense Inspector
3. Market your Commitment

To become a WaterSense partner, visit:
www.epa.gov/WaterSense/partners/become_a_watersense_partner.html

WaterSense Labeled New Homes
More Information

WaterSense New Homes (Main Page):
www.epa.gov/watersense/new_homes

WaterSense New Homes Certification System:
http://www.epa.gov/watersense/new_homes/cert_new_homes.html

WaterSense New Homes Technical Materials:
http://www.epa.gov/watersense/new_homes/homes_final.html

E-mail: watersense@epa.gov

Office Hours

Tues 4:00-5:15PM

Wed 4:30-5:30PM

Jonah Schein – WaterSense (Labeled Homes)

Beth Livingston – WaterSense (Consumer Outreach)

Water & Energy Efficiency Action Lab

Thurs 2:30-3:15PM

VERSION 1 (REV. 03)

Indoor airPLUS

Indoor Air Quality (IAQ)

ENERGY STAR + Indoor airPLUS

ASK ABOUT ENERGY STAR

| Envelope |
| HVAC |
| Moisture |
| CO |

+

we sell — EPA Indoor airPLUS QUALIFIED HOME

| Radon |
| Pests |
| Materials |
| CO + |
| HVAC + |
| Moisture + |

=

Comprehensive
Indoor Air Quality
Protection

Indoor airPLUS adds additional health protections to your ENERGY STAR value proposition

EPA Indoor airPLUS — Indoor Air Quality (IAQ)

What Does Indoor airPLUS Cost?

- No fee to participate in the EPA program.
- Additional Rater charge for verification.
- Cost of additional Indoor airPLUS features will vary based on:
  - Local code requirements and typical building practices
  - Type of foundation (e.g., below grade foundation or slab on grade)
  - Climate Zone (e.g., some exceptions in dry climates)
  - Radon Zone (passive system required in Radon Zone 1)
  - Availability of suppliers and cost of materials
- Cost of additional features could be a few hundred dollars in dry, non-Radon Zone 1 areas or up to a few thousand dollars in moist climates in Radon Zone 1.

EPA Indoor
airPLUS

Indoor Air Quality (IAQ)

Revision 3
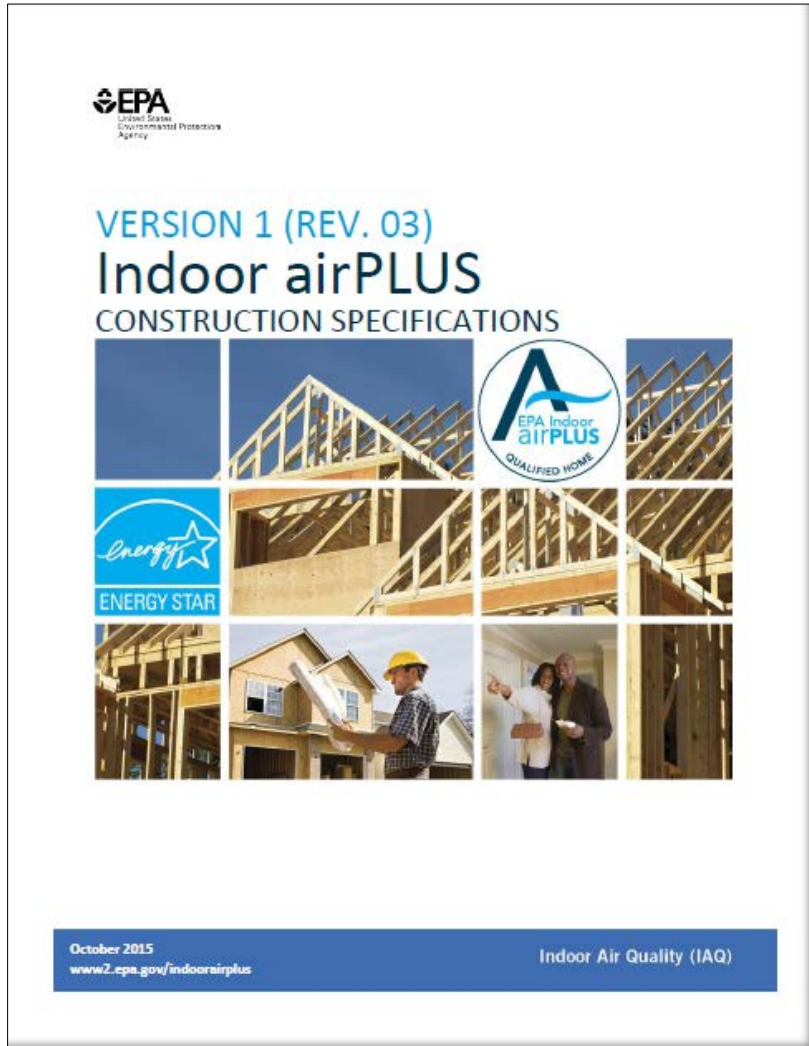
- Released October 2015.

- 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.*

Indoor airPLUS Partnership

Indoor airPLUS Builder 1115

Indoor airPLUS Verifier 494
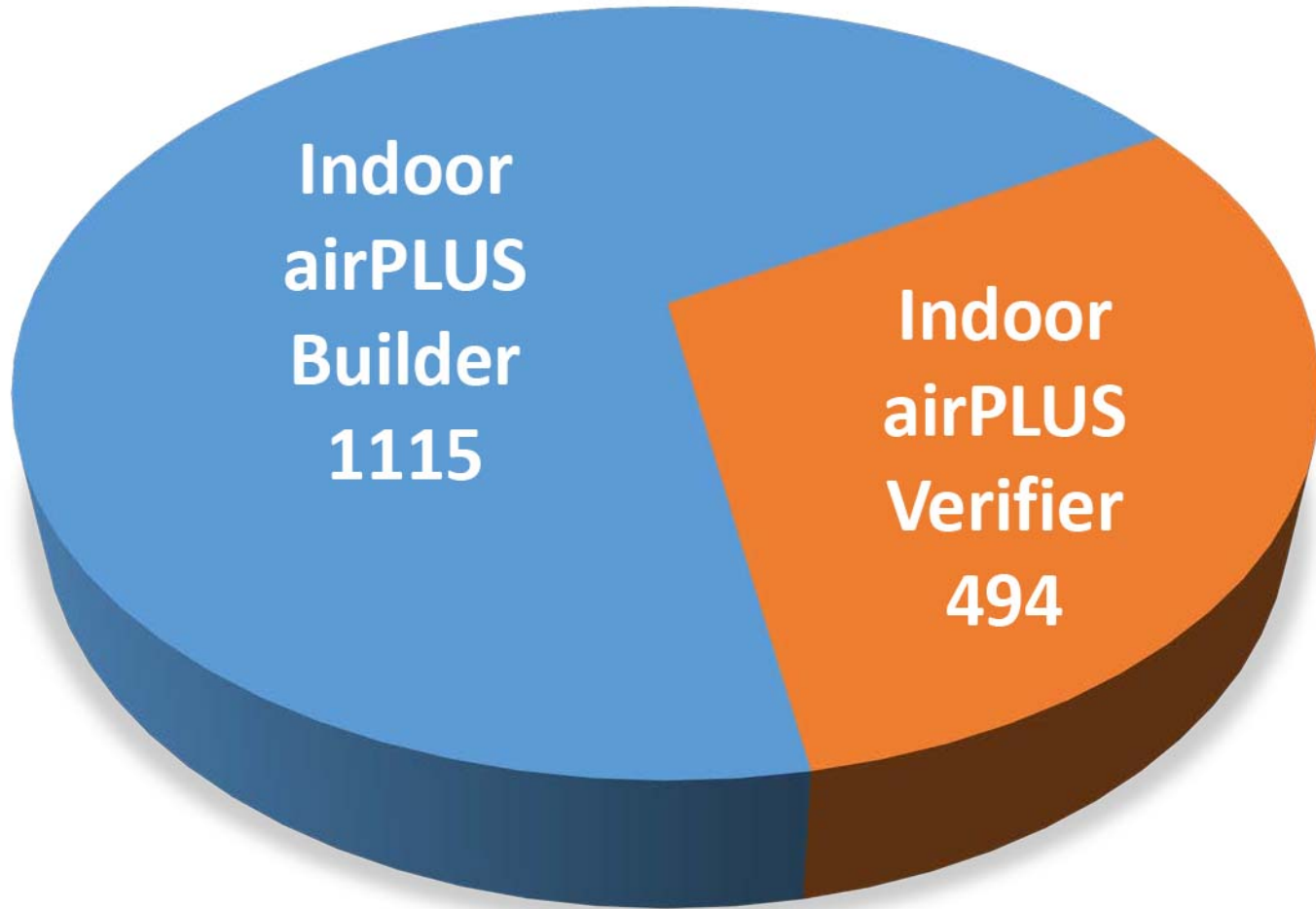
Builder partnerships have increased 300% in last 3 years.

EPA Indoor airPLUS

Indoor Air Quality (IAQ)

1. Moisture Control

- Moisture is a leading cause of health, comfort and durability concerns in homes.

- 19% of U.S. households have at least one person with asthma.

- There is a 20-50% increased risk of asthma in damp houses.

- The economic cost of asthma amounts to more than $56 billion annually.

- Mold grows where there is moisture.

- Molds produce allergens, irritants, and in some cases, potentially toxic substances.

EPA Indoor airPLUS

Indoor Air Quality (IAQ)

2. Radon

- Radon is a cancer-causing radioactive gas created by the natural breakdown of uranium in soil.

- Radon can be found all over the US.

- 1 in 15 homes have radon above 4 pCi/L.

- You are most likely to get your greatest exposure to radon at home.

- Radon is the second leading cause of lung cancer after smoking.
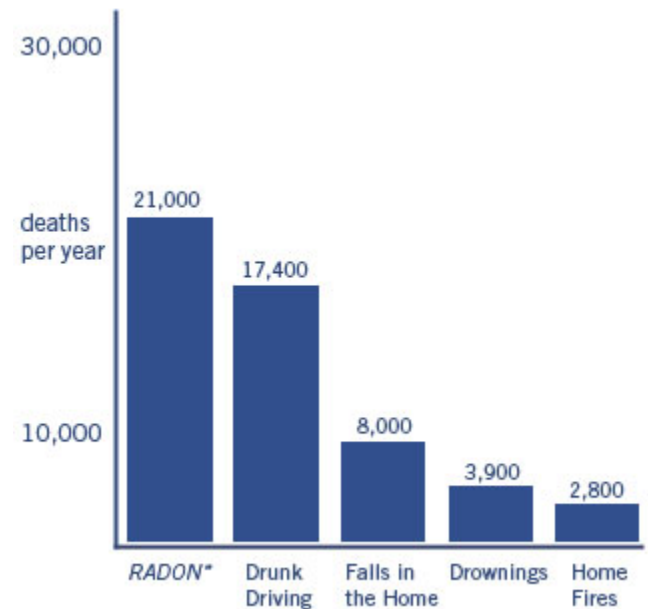
3. Pest Barriers

Pest Barriers

Indoor Air Quality (IAQ)

4. HVAC Systems

- Indoor relative humidity greater than 60% can encourage mold growth and attract organisms such as dust mites or other pests.

- HVAC components in wall cavities and garages can expose occupants to mold, carbon monoxide, hydrocarbons, nitrogen oxides, radon, pesticides and other contaminants.

- Ordinary residential panel filters collect less than 20 percent of the particles between 3 and 10 microns. A MERV 8 filter collects more than 70% of the particles in this range.

Indoor Air Quality (IAQ)

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.

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.

How to Find Indoor airPLUS Compliant Low Emission Products

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".

6.3 – Carpet and Carpet Adhesives

CRI Green Label

6.4 – Adhesives and Sealants

Recommended but not yet required.

- Guidance on identifying compliant low-emission products and 3rd party labels.
- https://www.epa.gov/indoorairplus/indoor-airplus-compliant-low-emission-products

Indoor Air Quality (IAQ)

Communicating Value to the Homebuyer

Average New Home	ENERGY STAR Certified Home	Indoor airPLUS Qualified Home	
Minimum Code	Enduring Quality	Enduring Quality	
	Peace of Mind	Peace of Mind	
	Wall-to-wall Comfort	Wall-to-wall Comfort	Comprehensive Indoor Air Quality Protection
	Proven Value	Proven Value	
		Health	
		Safety	

Builders are recognizing that buyers care about health and are looking for this benefit in a new home.
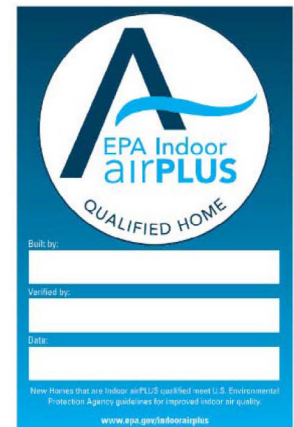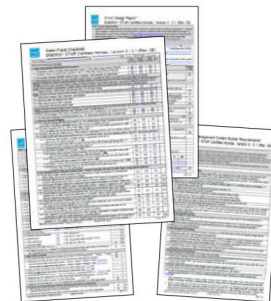
Indoor Air Quality (IAQ)

Resources and Tools
Marketing and Technical Support for Partners
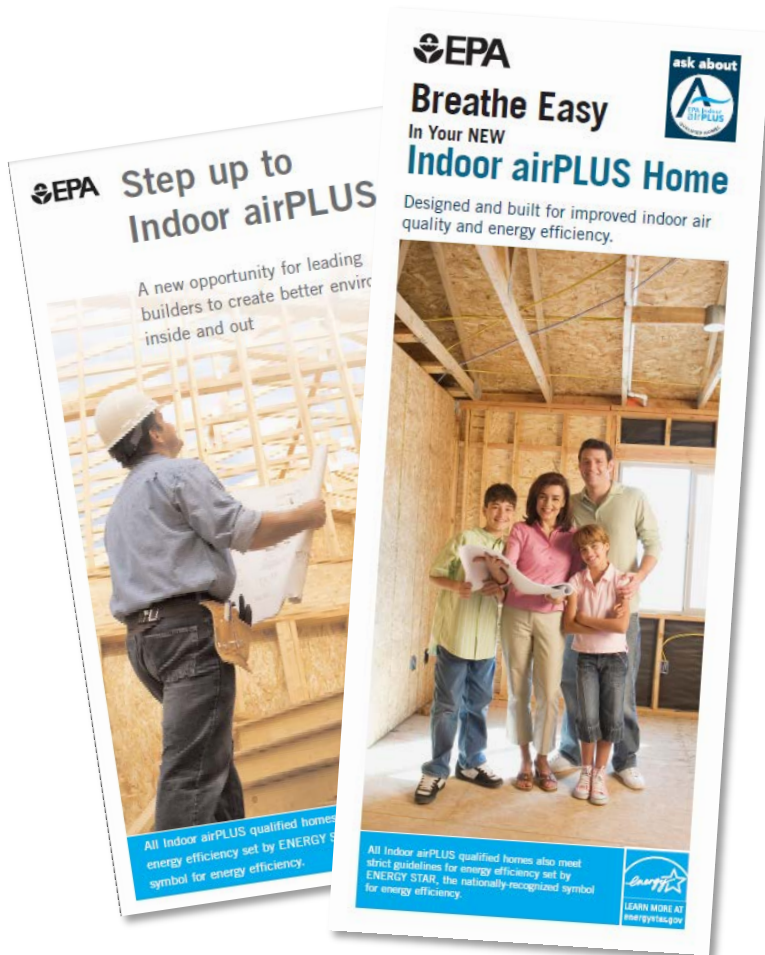
- Builder and consumer resources

- Partner locator

- Mobile App

- Construction requirements

- Technical guidance

- Podcasts

www.epa.gov/indoorairplus

Indoor Air Quality (IAQ)

100% Commitment Now Available!

- Commit to labeling 100% of your homes to Indoor airPLUS

- Access to 100% logo and a new designation on the partner locator!

- Early enrollment now open for 2017 through your My ENERGY STAR Account (MESA)

Builders must also be 100% Committed to Building ENERGY STAR – a great way to offer homebuyers BOTH energy efficiency and indoor air quality.

Indoor Air Quality (IAQ)

Discover Indoor airPLUS Homes Customizable Booklet

- Designed with home buyers in mind to help you show clients the features and benefits of an Indoor airPLUS home
- Space for company specific information, including logos, home images and a company story
- Downloadable from your MESA account

Indoor Air Quality (IAQ)

Indoor airPLUS Sales Training Kit

- Educate your sales team and sell more Indoor airPLUS homes.
  - Improve sales agent's ability to effectively communicate the value of improved indoor air quality.
  - Gain knowledge and talking points on the features and benefits of the Indoor airPLUS Program.
- Included in the Sales Training Kit:
  - Trainers Guide and a Participant Guide
  - Interactive Activities
  - Scoring Matrix

Indoor Air Quality (IAQ)

Become an Indoor airPLUS Partner

- For *current* ENERGY STAR Partners:
  - Log into your My ENERGY STAR Account (MESA) www.energystar.gov/mesa
    - If you don't know your user name and password, click the link or email energystarhomes@energystar.gov for assistance.
- After accessing your account, click "Join Indoor airPLUS".

2016 Indoor airPLUS Leader Award Winners

Indoor airPLUS Leader Awards

MANDALAY HOMES

thrive HOME BUILDERS

Habitat for Humanity® Saint Louis

Ei

Steven Winter Associates, Inc.

Greenhill Contracting
Builder of Zero Energy Homes

FULTON HOMES

C & B CONSTRUCTION
a division of C&B Custom Homes, Inc.
Lic. #115300 B-1 Commercial #39973 - B Residential

E3 Energy A Building Science Company

INTEGRAL BUILDING + DESIGN

ASERusa Building Performance

EPA Indoor airPLUS

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