



Comments on Draft WaterSense®
Labeled Homes Program, Version 2.0

June 19, 2019

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Commenter: Scott Hawthorne
Affiliation: Shine Bathroom
Comment Date: April 23, 2019

Email Text:

Hello WaterSense Team, here at Shine Bathroom Technologies, we are building a Smart Bathroom Assistant that detects troublesome Silent Water Leaks at the bathroom toilet level.

This is a new Shine product connects with the toilet water supply line through Wi-Fi and Bluetooth to communicate wasting water, or other water type-problem events.

When there is a Silent Leak Detected we send out an alarm notification via an email, text message or out to the Shine Cloud or connected Property Management System for commercial properties.

We are partnering with Marriott Hotels and other hospitality companies to help them save on the high cost of wasting water with Silent Water Leaks they have in 20% of their guest bathrooms.

We can provide new specification and guidelines for consumers to be aware of the ways to stop the Costly Silent Water Leaks in 20% of the homes in the U.S.

Please see our Water Leak Counter showing the amount of water being wasted in the U.S. currently > <https://leakcounter.com/>

We are scheduled to participate in and discuss the draft program documents about the WaterSense labeled homes via the scheduled teleconference and webinar on May 14, 2019, Our goal is to help homeowners better understand water efficiency and how new technology ways will help them control Silent Water Leaks in their home or business.

Please let us know on how we can provide more detailed guidelines for the [WaterSense® Labeled Homes Program, Version 2.0](#).

Thank you. Kind regards. -Scott

Scott Hawthorne
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Shine Bathroom
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Commenter: Robby Schwarz
Affiliation: EnergyLogic
Comment Date: May 22, 2019

Email Text:

Jonah,

Sorry for the delay getting back to you and thank you for the opportunity to comment on WaterSense 2.0.

Conceptually the program structure is interesting, however, my concern is that if there are several WACM then there will not be consistency across HCO. It appears that right now the single issue that RESNET is struggling with is consistency of the HERS ERI score across the nation. This structure seems to me to be following a path toward inconsistency.

If flexibility is desired, It would seem like creating default water budgets for certain size homes would make more sense based on:

- Occupancy which is driving usage
- Number of existing and future fixtures and leaks, which is getting at your mandatory items
- Size of lot with the assumption that the entire lot could be landscaped for simplicity

I am not an expert on this but I think something easy and straightforward would gain more momentum.

Sorry I am not more optimistic.

Best

Robby Schwarz

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EnergyLogic

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Commenter: Karla Butterfield
Affiliation: Steven Winter Associates, Inc.
Comment Date: May 22, 2019

Email Text:

Hi Jonah,

I got feedback from colleagues (Maureen, Jimmy Fera, Robb Aldrich, and Dylan Martello); our responses are below and attached.

Thank you,
Karla

A certification system that outlines requirements for Home Certification Organizations (HCOs) regarding certification, quality assurance, training, and other processes necessary to the integrity of the program:

SWA is currently a WaterSense New Homes Provider, but we do NOT anticipate applying to become a **Home Certification Organization** (HCO). At this time, we don't anticipate the volume of certifications that would make the investment in process worthwhile (the process is fairly complex).

- SWA is very interested in having staff become Verifiers. As such, we would strongly prefer a standard national Verifier credential rather than one developed by individual Home Certification Organizations.
- Most of the new market share SWA anticipates would come from Multifamily projects that can take advantage of changes to the hot water delivery criteria. As such, attention to Multifamily projects including an established Sampling Protocol will be very important to program growth. The lack of a national sampling protocol introduces a great deal of uncertainty to SWA's pricing and our ability to promote the WaterSense program to upcoming projects.
- The HCO model in general introduces a fair amount of market uncertainty and instability, since HCO's could come and go, and since we have no idea what their Certification Methods will look like. This will make it more difficult for organizations like ours who want to participate in the program but not become an HCO to promote WaterSense to our clients, and to give accurate estimates of the time and costs involved.
- EPA should expect a significant lag in enrollment while HCO's work out the kinks, and then again while Verifiers and other Designee organizations decide whether it is worthwhile to participate. For SWA, this unfortunately may kill the momentum we have from the recent changes that would allow multifamily projects to participate much more fully.

The technical requirements (i.e. the specification)

- *A short mandatory checklist:* The brevity of the checklist is a benefit but the first two criteria will be difficult to verify unless the HCO's have specific, standardized test methods (see attached).
- *A requirement that homes be 30% more efficient than typical new construction:* There is no specific way to do this yet, it will ultimately come down to the HCO's proposed certification method (PCM) which leaves uncertainty at this time. We looked at other standards for comparison:
 - LEED Water Reduction Calculator
 - Different way to calculate occupancy, different baselines
 - RESNET HERS H20
 - The draft guidelines for indoor water use show different baselines for each category
 - The outdoor water uses the same % savings for smart controllers, RIC1 adjustments, and commissioning adjustments
 - EPA WaterSense Budget Calculator (outdoor water use)
 - Uses similar calculations, but does not incorporate all opportunities for outdoor water use savings
 - WERS
 - needs further evaluation but doesn't seem like a perfect fit either
- *A technical evaluation write-up that summarizes how we will evaluate potential programs for efficacy (i.e. how they determine if homes will save the required 30%):* HW delivery savings can be attributed to efficient design (small volume in pipes) OR recirc. Not both.
 - Savings based on efficient design involves calculating volume (seems straightforward)
 - Delivery water waste [gal/day] = 1.22 useful draws/(occupant-day) * # occupants * (pipe vol gal)/useful draw
 - Seems the reference/baseline is 0.5 gal in pipe, so get the difference in the proposed volume and 0.5 gal to calculate savings.
 - Savings based on recirc is a very simple equation.
 - Recirc savings [gal/day] = 2.08 * no. occupants

Without the WS hot water delivery requirements we want to be sure we have accurate information about code requirements so based upon your 5/6 email we also reviewed the 2015, 2018 and 2021 (proposed) codes (see attached). The big take-away: IECC-Residential does not have a hot water delivery requirement. However, the changes to the 2021 IECC are being proposed will encourage, though not require efficient HW delivery.

From 5/6 email:

The codes that are of particular concern to us are 2018 Uniformed Plumbing Code or UPC (which is one of two primary based codes used in the U.S.) as well as the 2018 Water Efficiency Standard or WEstand (which is probably the most comparable thing to the IECC on this topic). It's worth noting that as far as base codes go, the UPC does tend to be more popular out West, while in your area the International Plumbing Code or IPC tends to be more common. Still, those organizations (IAPMO and ICC respectively) tend to keep a pretty close eye on one another, so I think you can probably guess what the next few years will look like.

So as I said, your take home is largely accurate in my opinion, that the UPC and WEstand have caught up to what we were trying accomplishment by using a modern sizing method. The nuisance, is that because it's using a much more advanced calculation method, it's really coming at the problem differently. Whereas in programs like WaterSense, ZERH, PHIUS, etc. have traditionally come at this from the standpoint of limiting volume as a way to control time to hot at the point of use; the Water Demand Calculator (WDC) used in these codes is trying to establish the appropriate size for the demand. Most of the time WDC results in more efficient distribution because it downsizes pipe size. But in reality it's agnostic as to volume and time to tap, it will size the pipe at whatever size you need. For example, if you place a large number of fixtures in a remote location (say a 5 piece master bath at the end of a private suite), you'd actually wind up with a very inefficient distribution system. But this is because the design of the house is inherently inefficient.

Karla Butterfield
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Email Attachment

See pages 8 through 13.



WaterSense® Draft Specification for Homes

Version 2.0

April 18, 2019

WaterSense Draft Specification for Homes

1.0 Scope and Objective

This specification establishes the criteria for water-efficient homes (both single-family and multifamily, new and existing construction) under the U.S. Environmental Protection Agency's (EPA's) WaterSense program.

A home must be built by a WaterSense builder partner and meet all of the criteria outlined in this specification to become a WaterSense labeled home.

The intent of this specification is to reduce water usage in residential homes, thereby lowering consumers' utility bills and encouraging water and wastewater infrastructure savings. The EPA's goal is that WaterSense labeled homes will be at least 30 percent more water-efficient than typical new homes.

This specification is not intended to contravene state or local codes and requirements. All homes, landscapes and irrigation systems shall meet all applicable national, state and local regulations. In addition, plumbing and irrigation installers shall meet all applicable state and local licensing requirements.

2.0 Technical Requirements

- 1.1 The home shall meet all requirements indicated in Appendix B: Mandatory Checklist for WaterSense Labeled Homes.
- 1.2 The home shall be at least 30 percent more water-efficient than typical new construction, determined through compliance with a WaterSense Approved Certification Method (WACM), as described in the *WaterSense Home Certification System, Version 2.0*.

3.0 Future Specification Revisions

The EPA reserves the right to revise this specification should technological and/or market changes affect its usefulness to consumers, industry or the environment. Industry partners and other interested parties will be notified in advance of anticipated changes. Revisions to the specification will be made following discussions with industry partners and other interested parties.

4.0 Definitions

Definitions within the *WaterSense Home Certification System, Version 2.0* are included by reference.

Appendix A: Informative Annex for WaterSense Labeling

The following requirements must be met before a home may earn the WaterSense label.

WaterSense Partnership

The homebuilder must have a signed partnership agreement in place with the EPA.

Conformity Assessment

Conformance to this specification must be certified by a Home Certification Organization (HCO) or HCO designee in accordance with the *WaterSense Home Certification System, Version 2.0*.

Appendix B: Mandatory Checklist for WaterSense Labeled Homes

The following requirements within the Mandatory Checklist for WaterSense Labeled Homes (Mandatory Checklist) must be met before a home may earn the WaterSense label, regardless of the features used to meet the efficiency requirement specified in Section 2.2 of the *WaterSense Specification for Homes, Version 2.0* or the WaterSense Approved Certification Method under which the home is pursuing certification.

The Mandatory Checklist is intended to ensure that all WaterSense labeled homes contain a minimum set of features that assure quality performance (the degree to which a home meets the user's expectations relative to these features in typical construction), in addition to efficiency (the amount of water a home uses relative to comparable typical construction).

Mandatory Checklist for WaterSense Labeled Homes

| Item | Requirements | Confirmed |
|-----------------------|---|--|
| Leaks | Pressure-loss test on all water supplies detects no leaks | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from hot water delivery system | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from toilet(s), as determined through visual assessment and by conducting a dye tablet test in each toilet to ensure the flapper is not leaking | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from bathroom faucet(s) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from showerhead(s) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from bathroom tub faucet(s), i.e., tub spout(s), when showerhead(s) is activated, as determine through visual assessment after showerhead has been activated for one minute | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from kitchen and other sink faucet(s) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | Free of visible leaks from other fixtures or appliances (e.g., clothes washers, dishwashers, hose bibs, irrigation systems) at point of use or point of connection to water distribution system | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Toilets | WaterSense labeled* | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Bathroom sink faucets | WaterSense labeled* | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Showerheads | WaterSense labeled* | <input type="checkbox"/> Yes <input type="checkbox"/> No |

HCO's should have very specific, standard testing method
difficult to verify, accept statement or create checklist for plumber

* A listing of WaterSense labeled toilets, bathroom sink faucets and showerheads can be found at: www.epa.gov/watersense/product-search.

Water Sense (WS) requirement (to be eliminate in v2)

No more than 0.5 gallons of hot water stored between heater / HW recirculation loop and the tap. The table below shows the maximum allowable pipe length (by pipe type and size) before this water volume requirement is exceeded.

| Pipe type and distance (ft) required to meet 0.5 US Gallon EPA Water Sense Guideline | | | | | | | | |
|--|----------|----------|----------|----------------|-------------|------------------------|----------|---------------|
| Nominal Diameter Inches (In) | Copper M | Copper L | Copper K | CPVC CTS SDR11 | CPVC SCH 40 | PEX-Al-PEX ASTM F 1281 | PE-AL-PE | PEX CTS SDR 9 |
| 3/8 | 60.38 | 65.98 | 76.19 | n/a | 54.70 | 101.59 | 101.59 | 100.00 |
| 1/2 | 37.87 | 41.29 | 44.14 | 51.20 | 33.86 | 48.85 | 48.85 | 54.24 |
| 3/4 | 18.66 | 19.88 | 22.07 | 23.97 | 18.93 | 18.88 | 18.88 | 27.23 |
| 1 | 11.02 | 11.66 | 12.38 | 14.45 | 11.57 | 11.51 | 11.51 | 16.37 |
| 1 1/4 | 7.36 | 7.66 | 7.91 | 9.68 | 6.63 | 7.54 | 7.54 | 11.02 |
| 1 1/2 | 5.25 | 5.41 | 5.59 | 6.94 | 4.85 | 4.61 | 4.61 | 7.91 |
| 2 | 3.04 | 3.11 | 3.19 | 4.05 | 2.93 | 2.98 | 2.98 | 4.62 |

IECC – Commercial

2015 – must comply with either of the following:

1. Maximum allowable pipe length from heater/HW loop to tap must not be exceeded. If multiple pipe sizes exist for one tap run, you must use requirement the largest size pipe. Here’s the maximums for typical branch pipe sizes (there are requirements for other sizes as well).

Table C404.5.1.

- a. 1/4” pipe max length = 50 ft
- b. 1/2” pipe max length = 43 ft
- c. 3/4” pipe max length = 21 ft

OR

2. No more than 0.5 gallons of hot water stored between heater / HW recirculation loop and the tap. Though similar to WS, the calc is not pipe type specific (like shown in the WS table). There is only one assumption for volume of water at the various pipe sizes.

2018 – no change from 2015

2021 proposed change – still have the option to do either method 1 or 2 outlined in 2015. However, If option 2 is chosen, they want you to now reference the same pipe type and pipe size-specific table that the water sense guidelines reference.

Takeaway – IECC-Com has a hot water delivery requirement that is similar, though not exact to WS. However, the 2021 IECC will have HW delivery requirements that more closely align with WS.

IECC – Residential

2015 – no prescriptive hot water delivery requirements. There is a specific protocol if a project follows the performance path. This doesn’t seem to address efficient HW delivery though.

TABLE R405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

| BUILDING COMPONENT | STANDARD REFERENCE DESIGN | PROPOSED DESIGN |
|---|--|---|
| Service water heating ^{d, e, f, g} | As proposed. Use: same as proposed design. | As proposed Use, in units of gal/day = 30 + (10 × N _{br}) where: N _{br} = number of bedrooms. |

2018 – no change from 2015

2021 proposed changes

- Don't see any prescriptive path proposed changes
- There were many proposed changes to the performance path approach. In particular, Gary Cline proposed one change that I think is most applicable to efficient HW delivery. Without getting into the weeds b/c it's a detailed calc, this change would give credit (in the form of a lower gal/person/day value) to projects that have efficient tap layouts. Reduction can be 5-15% depending on how efficient the layout is.

Takeaway – IECC-Resi does not have a hot water delivery requirement. However, the changes to the 2021 IECC are being proposed will encourage, though not require efficient HW delivery.

2018 Uniform Plumbing Code (UPC)

Could not find specific HW delivery requirements that made sense to me. The only thing I could find that may be related is table 610.4 (p.112), also linked below.

<http://epubs.iapmo.org/2018/UPC/mobile/index.html#p=146>

2017 Water Efficiency Standard (WE.Stand)

Can't access this standard without paying for it.

https://iapm-membership.org/index.php?page=shop.product_details&flypage=flypage_iapmo.tpl&product_id=1143&category_id=75&keyword=Efficiency&option=com_virtuemart&Itemid=3&vmcchk=1&Itemid=3&redirected=1&Itemid=3

Commenter: Emilio Vargas
Affiliation: Intellecty Inc
Comment Date: May 30, 2019

Email Text:

A suggestion:

Add a requirement for smart leak detection and water management.

With systems including ours that are able to notify the homeowner if they are wasting water or are experiencing a water leak, this should be seriously considered.

To clarify I am proposing contact leak detection devices that need to come in contact with water. I am suggesting leak detection devices that can identify a leak in any part of the home's plumbing.

Additionally these devices can drive behavior of the user to stop wasting water, use less and save where possible. All done because the user is seeing their water use in real time and not weeks later when their bill arrives.

I would be happy to get on a conference call to expand and answer your questions.

Thank you

Respectfully,

Emilio Vargas II
CEO, cofounder
Intellecty Inc
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Commenter: Joseph Tsai
Affiliation: Aeon Matrix
Comment Date: June 3, 2019

Email Text:

Hi,

I would like to suggest that all WaterSense labelled smart controller should comply with the Level VI external power adapter requirement from Department of Energy (DoE).

It went into effect in February 2016, however, you can still see many WaterSense labelled smart controllers using Level IV power adapter.

It would make more sense for a water/energy saving device to comply with DoE's standard.

Best Regards,

Joseph Tsai
Founder and CEO



Aeon Matrix

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Commenter: Gabe Maser

Affiliation: International Code Council (ICC)

Comment Date: June 4, 2019

Email Text:

Below please find recommended changes as proposed by the International Accreditation Services (IAS). Additions are proposed in red. Rationale for the proposed additions are included at the end of this email. Thank you for your consideration.

Recommended Changes in the Watersense Draft Home Certification System, Ver 2.:

- 1) Page 4, Section 4, 1st bullet:
HCO Organizational Requirements (Section 4.1): The EPA **or an EPA recognized US based International Laboratory Accreditation Cooperation (ILAC) signatory for product certification** shall evaluate the HCO's organizational structure and processes and procedures in place to conduct the verification, certification and labeling of homes for WaterSense.
- 2) Page 6, Section 4.1.3, 1st bullet:
The HCO **shall utilize an EPA recognized Curriculum and Training agency accredited by a US based accreditation body to** train and authorize verifiers to verify homes in accordance with the WaterSense Specification for Homes, Version 2.0, which includes the Mandatory Checklist and, by reference, the technical requirements of the HCO's WACM. At a minimum, this shall include:....
- 3) **Page 10, Section 4.3, 1st bullet Utilize an American National Standards Institute (ANSI) approved standard.** The technical requirements in the PCM requirements are included in an ANSI approved standard that was developed and approved through an ANSI consensus-based standard development process **or equivalent development process**. The PCM may include additional
- 4) **Page 12, Section 4.4, Line 1 Technical Evaluation Process for the HCO's Certification Method**
The EPA **or an EPA recognized US based ILAC signatory for product certification** shall evaluate the technical efficacy of the PCM in accordance with its *WaterSense Technical Evaluation Process for Approving Home Certification Methods, Version 1.0* to ensure that the PCM can differentiate homes
- 5) **Page 13, Section 5.0, Line 1, 5.0 Procedures and Requirements for HCOs**
The EPA **or an EPA recognized US based ILAC signatory for product certification** shall evaluate an HCO's organizational structure and PCM prior to licensing the HCO to certify and label homes in accordance

Rationale for #1, 4, 5: EPA currently approves private sector accreditation bodies to accredit WaterSense product certifiers. In doing so, EPA recognizes the rigor provided by such organizations and the efficiencies provided by leveraging the private sector for

accreditation services. EPA could enjoy similar benefits by applying this model as proposed above. The proposed language ensures rigor by requiring EPA approval and accreditor being a ILAC signatory, which means the accreditation body has been peer evaluated in accordance with the requirements of ISO/IEC 17011 to demonstrate their competence.

Rationale for #2: Accreditation programs currently exist for training and developing curricula which EPA can use as third party assurance. As discussed in the prior rationale, doing so provides EPA with efficiencies and a means to ensure rigor in curricula and training.

Rationale for #3: OMB Circular A119 governs the federal government's recognition of consensus based standards and the federal government's use of those standards. The federal government has recognized, through OMB Circular A119, a number of consensus based standards that use consensus based processes that differ from ANSI. ANSI is an example of one consensus-based standard development process. EPA should not require one to the exclusion of all others (particularly those already recognized by the federal government).

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Commenter: Ron Wolfarth
Affiliation: Rain Bird Corporation
Comment Date: June 12, 2019

Email Text:

Please find attached Rain Bird Corporation's comment on the WaterSense Homes 2.0 Specification proposal.

Thank you.

Ron Wolfarth
Corporate Communications Manager

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www.rainbird.com

Email Attachment

See page 19.



June 12, 2019

Environmental Protection Agency - WaterSense Homes Program

Via email: watersense-programs@erg.com

RE: Rain Bird Corporation Comment on WaterSense Homes 2.0 Specification

Dear Environmental Protection Agency WaterSense Program:

Rain Bird Corporation (Rain Bird), a California corporation based in Azusa, California, is a leading global manufacturer of irrigation products. From its humble beginnings in 1933 when a Glendora, California citrus farmer invented the impact sprinkler in order to more efficiently use his limited supply of irrigation water, Rain Bird has designed and manufactured high efficiency irrigation products sold around the world.

Rain Bird Corporation (Rain Bird) supports the development of U.S. Environmental Protection Agency (EPA) WaterSense Homes 2.0. Rain Bird is concerned about the number of organizations that might apply to become HCOs, and how stakeholders might become aware of who is applying and developing a WaterSense Approved Certification Method (WACM) so that it might be able to positively influence their program to maximize water efficiency. Even if an HCO uses an American National Standards Institute (ANSI) approved process, it may have the effect of not being an open process if significant stakeholders do not currently have a relationship with that potential HCO. That HCO's efforts at openness may fall short due to the lack of those relationships. We encourage EPA to publish online who is applying to become an HCO and is developing a WACM, so that stakeholders might have the opportunity to participate in the process. This would avoid the circumstance where stakeholders may only discover an organization has become an HCO with an Environmental Protection Agency approved WACM after it is complete.

As an alternative, perhaps the HCO could be guided to send notification of their impending development process to stakeholder national organizations like the Irrigation Association or Alliance for Water Efficiency. Perhaps EPA could provide a list of these organizations (with contact information). This guidance could be included in section 4.3; Table 2; Openness. This would support openness in the development process by giving each industry with a potential interest at least one direct communication from the prospective HCO. That national organization could then choose to share that information with its members. This seems to be a reasonable requirement without much additional burden. This approach may also avoid concerns regarding EPA directly disclosing information about a 'deliberative process'.

Thank you for the consideration of our concerns. We look forward to working with EPA on the Homes 2.0 program.

Respectfully,

Ron Wolfarth
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Commenter: Jean-Francois Bessette

Affiliation: Noflo

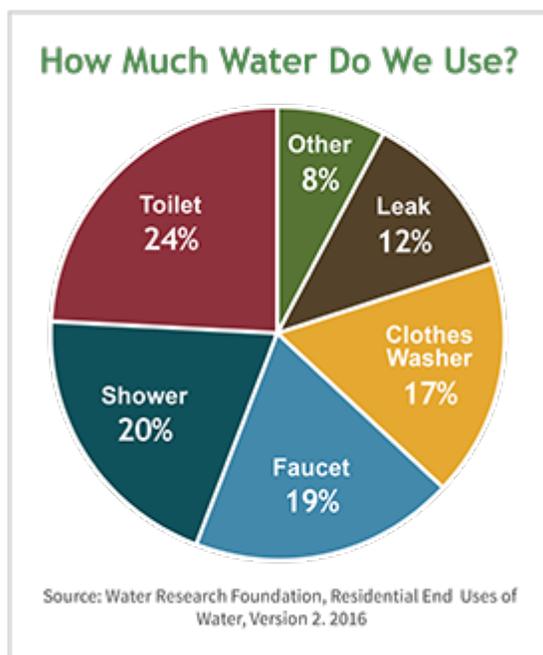
Comment Date: June 14, 2019

Email Text:

Hi, in the Version 2.0, will you add in your approved products, systems that will stop leaks?

Back in early 2016, we wanted to become a WaterSense partner but the product we manufacture was not specified in your list and therefore not eligible at that time. (see below)

Our system includes an electric valve installed right after the main water valve. The valve is normally closed and opens only when a movement detection is signalled to the main unit thus eliminating all leaks while you are away or asleep. The system is also equipped with leak detectors that close the valve if a leak happens while you are present. It also has “panic” On/Off switches in all rooms where water is supplied to reduce to the strict minimum the 12% loss of water due to leaks.



Could you please tell us if our product will be eligible in your new version?
If not, I would like to suggest to add it.

Thank you.

Jean-François Bessette
Vice-président



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Commenter: Sofia Marcus

Affiliation: Los Angeles Department of Water and Power (LADWP)

Comment Date: June 17, 2019

Email Text:

Hello,

The Los Angeles Department of Water and Power (LADWP) appreciates the opportunity to provide comments on the draft revision to the WaterSense Labeled Homes Program. As the largest municipal utility in the United States, and the largest urban retail water provider in the state of California, LADWP is committed to doing its part to promote water conservation and take actions to maximize the beneficial use of potable water supplies. We support the development and implementation of programs like WaterSense Labeled Homes that promote proactive water efficiency in new home development.

Following our review of the *WaterSense Draft Specifications for Homes, Version 2.0*, we offer the following comments for your consideration:

Define Typical Homes and New Construction

The terms “typical home” and “typical new construction” are used throughout the WaterSense Home Certification System documents, including the *Draft Specification for Homes Version 2.0*, *Draft Technical Evaluation Process for Approving Home Certification Methods Version 1.0*, and *Draft Home Certification System Version 2.0*. However, these terms are not clearly defined in these documents. It is important that clarification be provided regarding these terms since one of the primary requirements of the revised WaterSense certification system is to ensure that labeled homes are “at least 30 percent more water-efficient than typical new home construction”. It is difficult for stakeholders to assess the significance of this requirement without being aware of the baseline conditions, “typical new home construction”, that are being considered.

Clearly Define the Baseline

Specific baseline home conditions, as well as the required fixtures and methods of construction, required to achieve WaterSense labeling need to be clearly defined. For reference, baseline conditions were defined in WaterSense Home Version 1.2, which provided builders a clear design path to follow that doesn’t change from region to region, or from year to year. If the intention is to have the proposed baseline values be those utilized as part of the technical evaluation process for all new homes nationwide that are assessed for WaterSense labeling, then that needs to be made clear throughout the document.

Address Potential Baseline Condition Discrepancy Among States

Section 1.0 of *WaterSense Draft Specification for Homes Version 2.0* indicates “This specification is not intended to contravene state and local codes and requirements.” A

“typical new home” in California would have to comply with locally adopted minimum code requirements that are far more stringent than other states. If the intent is for the locally adopted code to be the baseline, then it would be extremely difficult to achieve 30 percent water savings beyond baseline conditions required by existing California Code. This would result in few or no WaterSense labeled homes in California regardless of the fact that California homes’ water consumption rates are amongst the lowest in the nation. How does the EPA intend to address this potential discrepancy?

Address Potential Variations in Code Requirements

Section 1.0 of the *Draft Technical Evaluation Process for Approving Home Certification Methods Version 1.0* includes the statement, “homes that earn the WaterSense label to be at least 30 percent more water-efficient than a comparable home of typical new construction using national codes, standards and common landscape practices.” The applicable national codes, standards, and common landscape practices should be clearly defined in the revised WaterSense certification program documents. There are a number of potentially applicable codes, including the International Plumbing Code (IPC) and the Universal Plumbing Code (UPC). These codes are not universally adopted and implemented throughout the United States, which could lead to inconsistencies and confusion if proposed certification methods (PCM) that are dependent on different standards are approved by the EPA.

Reconsider Revision Cycles

Section 4.0 of the *Draft Technical Evaluation Process for Approving Certification Methods Version 1.0* indicates that the EPA intends to recognize WaterSense Approved Certification Methods (WACM) for a period of five years. This may lead to issues if the WACM is dependent on plumbing codes that are updated more regularly. For example, the revision cycle of the UPC is three years and is not tied to the revision cycle of other codes, so the baseline conditions could potentially change more often than every five years. This could result in a WACM not meeting the target minimum 30 percent reduction following a code revision that alters the baseline conditions. The revised WaterSense certification program documents should add an additional condition for the EPA to reevaluate a WACM if the code it is dependent on is updated.

Standardize Compliance Methodology Through a Stakeholder Process

Through the implementation of the process that has been proposed in the *Draft Specifications for Homes Version 2.0*, it is plausible that there will be a significant number of different PCMs that would be approved for WaterSense labeling. Having this wide variety may lead to inconsistencies in the labeling process, including the possibility that a home could qualify for labeling under one system, but not another. This could cause mistrust among builders in the industry and questioning of the validity of the overall system. Furthermore, builders who are seeking WaterSense labeling would likely

identify the easiest and cheapest WACM that can be implemented in their area, leading to a reduction in competition among available HCOs.

The process of the HCO submitting a PCM for approval by the EPA appears to involve each HCO specifying their own baseline conditions and developing their own separate methods. In order to ensure more consistent designs and certifications, the EPA should define one set of baseline conditions and one verification process for each of the HCOs to follow. This could involve EPA working with HCOs and other stakeholders to establish a standard WACM that could more effectively be applied nationwide. This would still allow for the leveraging of existing home inspection and certification infrastructure, while resulting in a system that is easier for builders to become familiar with and follow. This would also provide participating HCOs with an improved business environment that encourages competition.

Update Baseline ETo Data

It is unclear why the most recent ETo data that is proposed to be utilized for outdoor irrigation calculations is from the year 1990. Excluding more recent data from later years would result in omitting several significant droughts that have occurred in the state of California, including the most significant drought in California history that occurred between 2012 and 2016. Excluding these periods of low precipitation would likely impact the ETo values that are used to calculate irrigation requirements.

Thank you for your consideration of our comments. We look forward to receiving updates as the implementation process for the WaterSense labeling program is further refined.

Sofia Marcus, [MS](#), [PE](#), [D2](#), [WAV](#)

Los Angeles Department of Water and Power
[Water Conservation](#) Regulatory Group
(213) 367-0925
sofia.marcus@ladwp.com

Commenter: Mike Collignon
Affiliation: Green Builder Coalition
Comment Date: June 17, 2019

Email Text:

To whom it may concern:

I wanted to file a comment of support for Section 4.3 – HCO Certification Method Development Process. Not all entities that could and should qualify as a HCO are public agencies, nor have they gone through the ANSI SDO process. On the latter, that is a costly and time-consuming process. While it has its merits, there are other ways to develop methods and standards that are reputable and usable. I applaud the EPA for providing a pathway to acceptance for these certification methods.

Thank you for the opportunity to comment.

Mike Collignon
Green Builder® Coalition
greenbuildercoalition.org
wers.us

[LinkedIn](#)
[Twitter](#)
[Facebook](#)

Commenter: Mike Cudahy

Affiliation: Plastic Pipe and Fittings Association (PPFA)

Comment Date: June 17, 2019

Email Text:

The PPFA would like to comment on the draft specification, Version 2.0.

The 2.0 draft is certainly more compact and open than the 1.2 version, but we believe there is still a place for structured plumbing systems as was previously listed under section 3.3. We suggest it remain in the document, or at least retained in an appendix as an optional item.

3.3 Hot Water Delivery System – To minimize water wasted while waiting for hot water, the hot water delivery system shall store no more than 0.5 gallons (1.9 liters) of water in any piping/manifold between the hot water source and any hot water fixture. To account for the additional water that must be removed from the system before hot water can be delivered, no more than 0.6 gallons (2.3 liters) of water shall be collected from the hot water fixture before hot water is delivered. Recirculation systems must be demand-initiated. Systems that are activated based solely on a timer and/or temperature sensor do not meet this requirement. See Appendix B to determine the approximate volume of water in piping systems.

PPFA is aware that structural waste (long runs of pipe to frequently utilized fixtures) can lead to behavioral waste (delay in use) over the entire lifetime of the building. We conducted an LCA years ago that examined the use phase of a hot water system, and it was rather dramatic in wasted energy and water when layouts were not properly planned. In our LCA, a medium sized building (2,811 sqft) has more environmental impacts and water waste than a larger home (4,402 sqft) with a better piping layout.

[https://www.ppfahome.org/pdf/Peer Reviewed Pipe Use Phase Report combined Final.pdf](https://www.ppfahome.org/pdf/Peer_Reviewed_Pipe_Use_Phase_Report_combined_Final.pdf)

(see pfd page 120, 7-5 'Unexpected Results')

“While the 4,402 square foot layout has the longest length of pipe overall, the 2,811 square foot layout has the longest length of pipe to many of the primary use points. Use points with the lowest distribution efficiencies and lowest water use efficiencies for the 2,811 square foot layout were the kitchen sink, dishwasher, master bath vanities, and master bath tub/shower. Approximately 60% of total water used is for these use points. Table 7-2 displays the length of pipe from the water heater to these use points for the three layouts. Water use efficiency is influenced in two ways by the pipe distance: Not only does the hot water have a longer distance to travel from the water heater to the point of use, giving it more opportunity to cool during distribution, but once the water cools, there is a greater volume of water in the pipe that must be purged in order to deliver water of the desired temperature at the point of use. It can be concluded that the inefficiency of the 2,811 square foot layout can be attributed to the extra amount of pipe necessary to deliver hot water to these use points.”

There are also new high technology leak detection devices on the market, such as Phyn (<https://www.phyn.com/>), which can predict freezes, leaks, send notifications, and shut water leaks off remotely. We suggest there could be a place for these in Water Sense homes.

Thank you for the opportunity to comment.

Mike Cudahy
Regulations and Sustainability
PPFA

Commenter: John Farner
Affiliation: Irrigation Association
Comment Date: June 18, 2019

Email Text:

Please let me know if you have any questions.

John

John Farner

Government and Public Affairs Director

Irrigation Association

8280 Willow Oaks Corporate Drive, Suite 400 | Fairfax, VA 22031

T: 703.536.7080 | F: 703.536.7019

johnfarner@irrigation.org | www.irrigation.org

Email Attachment

See pages 29 through 31.



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Suite 400
Fairfax, VA 22031-4511
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Fax: 703.536.7019
www.irrigation.org

June 18, 2019

Ms. Veronica Blette
Chief, WaterSense Branch
U.S. Environmental Protection Agency
Washington DC 20460

Dear Ms. Blette:

On behalf of the 1,600 members of the Irrigation Association, thank you for your continued dedication to water-use efficiency and the promotion of WaterSense-labeled technologies and certifications. The IA believes in the value of the WaterSense program and hopes to see even more labeled irrigation products and technologies available in the future. We also appreciate the opportunity to comment on version 2.0 of the WaterSense Draft Specification for New Homes.

When version 1.0 was released in 2009, the Irrigation Association stated in our comments, dated July 7, 2009, that we “recommend to the EPA that decisions impacting landscape irrigation should be driven locally and that the EPA not move forward with the outdoor criteria of the specification until locally driven and clearer outcome-based performance criteria are developed in partnership with qualified stakeholders.” We feel that version 2.0 brings us closer to the goal of locally-driven decisions.

The Irrigation Association believes that the new homes criteria should not only strive to conserve water, but also be simple for Home Certification Organizations and homebuilders to implement. We feel that this was a big challenge for the original versions of the new homes program. The IA also believes that the outdoor criteria should not deter entities from participating in the WaterSense new homes program, while also not discouraging the installation of an irrigation system. The new homes labeling program should promote an efficient irrigation system that saves water relative to a typical system installed in a given area.

The Irrigation Association believes that the new homes specification should have three objectives:

- 1) Promote the value of water conservation in new home construction.
- 2) Save water relative to a typical new home.
- 3) Promote the use of existing WaterSense-labeled technologies, products and certifications in the marketplace.

The Irrigation Association also supports the methodology of “right plant, right place.” And, while the IA believes that significant water savings can be achieved just through efficient irrigation technology design, use, and implementation, we understand the EPA’s desire to promote the concept of “right plant, right place.” However, we do not believe that this concept should deter consumers from investing

in an irrigation system. It is the opinion of the Irrigation Association that no option of the WaterSense new homes program should deter consumers or builders from installing an irrigation system.

Rather than WaterSense placing water savings percentages on irrigation technologies, such as the 22 percent value placed on WaterSense labeled spray sprinkler bodies, WaterSense should mandate that these labeled products be used. The Irrigation Association looks forward to working with WaterSense to expand the portfolio of products and technologies that are labeled by WaterSense, and we expect that the WaterSense new homes program will be a vehicle to promote the use of current and future technologies. The IA believes it is in the industry's and WaterSense's best interest to have WaterSense-labeled irrigation technologies and products installed in an irrigated landscape of a WaterSense-labeled new home. The WaterSense new home labeling program is WaterSense's best vehicle to promote the sale of WaterSense-labeled irrigation products and technologies in the marketplace. Not mandating the use of these technologies seems like a very big missed opportunity.

The Irrigation Association believes that WaterSense is moving in the right direction with providing different options for home builders to participate in the WaterSense new homes program. Allowing for this flexibility provides HCOs the opportunity to build a Proposed Certification Method based on their local climate and market. We feel that this is ultimately beneficial to the success of the program. However, the Irrigation Association requests the following be included in version 2.0 of the new homes specification:

- 1) In an irrigation system installed in a WaterSense new home, WaterSense-labeled technologies should be used where applicable (e.g., spray sprinkler bodies, weather-based irrigation controllers, and any future irrigation technologies that are labeled by WaterSense).
- 2) The WaterSense new home program, including HCOs, should recognize the hard work many water providers, municipalities and (in some cases) state governments have made in both incentivizing or requiring irrigation efficiency measures in new construction.
- 3) All references to "supplemental irrigation" should be changed to "irrigation."
- 4) The Irrigation Association believes in the value of certified irrigation professionals who design, install, manage, and/or audit irrigation systems. We believe that the PCM should again require the use of a certified professional to design, install, and/or audit the irrigation system used in a WaterSense labeled new home.
- 5) The Irrigation Association requests that the HCO develop a transparent method for calculating and estimating outdoor water use, allowing builders and installers the ability to understand how the HCO makes the calculations.
- 6) The Irrigation Association believes in, "right plant, right place," but we feel that significant water savings can occur immediately with efficient irrigation technologies and management. Within the WaterSense new homes program, a greater value should be placed on the benefits of efficient irrigation technologies, in addition to the plants that are being irrigated.

The Irrigation Association appreciates our partnership, and we look forward to working with you to make the revised new home program successful. If you have any questions about our comments or suggestions, please feel free to contact me at johnfarner@irrigation.org or 703.625.2038. Thank you for all of your hard work and continued support of our mission to promote efficient irrigation.

Sincerely,

John Farner
Government and Public Affairs Director

These comments are supported by the following state associations:

Illinois Green Industry Association
Louisiana Irrigation Association
Minnesota Nursery and Landscape Association

Commenter: Michael Luzier
Affiliation: Home Innovation
Comment Date: June 18, 2019

Email Text:

Dear WaterSense team:

On behalf of Home Innovation Research Labs, I am submitting the attached comments from President/CEO, Michael Luzier, regarding the *WaterSense Draft Specification for Homes* and *WaterSense Draft Home Certification System*. Home Innovation favors the market-based approach and increased flexibility in technical requirements, which we believe will open further opportunities for collaboration with other residential labeling programs.

Thank you for the opportunity to review and comment on the proposed changes. Please do not hesitate to contact our team with any questions.

Sincerely,
Cindy



Cindy Wasser, MBA | Senior Manager, Green Building Programs

400 Prince George's Blvd. | Upper Marlboro, MD 20774
cwasser@homeinnovation.com | P: 301.430.6206 | F: 301.430.6180
HomeInnovation.com | Follow us on Twitter [@HomeResearchLab](https://twitter.com/HomeResearchLab)
Find a better place to call home: ngbs.com

Email Attachment

See pages 33 through 35.



June 18, 2019

US Environmental Protection Agency
Office of Wastewater Management (4204M)
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Comments submitted via email: watersense-programs@erg.com.

Dear WaterSense Homes administrators:

On behalf of Home Innovation Research Labs, I respectfully submit comments on *WaterSense Draft Specification for Homes, Version 2.0* and *WaterSense Draft Home Certification System 2.0*. Overall, Home Innovation favors the market-based approach and increased flexibility in technical requirements, which we believe will open further opportunities for collaboration with other residential labeling programs. We view these elements as drivers for program participant and market transformation. In a few minor areas, our team identified requirements that could be strengthened or adjusted to offer more flexibility to potential Home Certifying Organizations.

Proposed Revised Program Structure

Home Innovation supports the proposed program structure, which designates Home Certification Organizations (HCOs) to verify, certify, and label homes for WaterSense. This approach offers builders and developers choice of certifying body and offers a pathway for existing residential labeling programs to deliver verification and oversight to the WaterSense program. Further, as each HCO would apply with their own proposed certification method, there is additional flexibility and opportunity for technical alignment with existing water rating and green building programs. We believe that the proposed program structure offers the ability to attract additional industry stakeholders to WaterSense and further the program's market impact.

Home Innovation sees potential for select practices or chapters of the *ICC/ASHRAE-700 National Green Building Standard (NGBS)* to be analyzed for their water-saving potential and recognized as a WaterSense Approved Certification Method. A shared oversight body and overlapping certification requirements would offer a very streamlined certification experience for builders and developers looking to pursue both NGBS Green certification and the WaterSense for Homes label.

Certification System

Home Innovation was pleased with the HCO Organizational Requirements and HCO Certification Method Development Process components of the Draft Certification System. Home Innovation recognizes that independent oversight, quality assurance, impartiality, and a fair and open standard development

process are critical elements of any reputable third-party certification program, and the requirements proposed by WaterSense are sufficiently clear and robust.

Independent Oversight

While Home Innovation recognizes the importance of independent oversight, we see the stated composition of the independent oversight committee as overly prescriptive and a potential constraint for potential HCOs. Our team is also concerned about the expectation that HCOs share client business information with individuals outside of the HCO and EPA WaterSense team.

The Independent Oversight (section 4.1.1.) text identifies that an HCO maintain an independent oversight committee with at least one-third of the body comprised of representatives from outside the HCO organization. We believe that an internal oversight approach would meet the EPA's goal of fair and impartial oversight while offering quicker response and controlled information-sharing.

Home Innovation believes that a fair and impartial oversight body could be entirely internal to the HCO, if voting members do not have direct vested interest in the outcomes of the certification decision. For the NGBS Green program, Home Innovation convenes an NGBS Green Appeals Board, which is comprised of three individuals who do not have direct oversight of the certification program, specifically the President, CFO, and the NGBS Green Quality Director¹. The NGBS Green program director, who is responsible for the financial success of the program, may participate in the meeting but does not have a vote on the Appeals Committee. This structure is modeled after quality assurance requirements for ISO-17065 accredited certification programs. As all committee members are internal, our team is able to converge, discuss, and evaluate appeal requests quickly, typically within 5 business days. This structure and process also allow us to retain information about specific projects or partner companies confidential to our team, rather than sharing with committee members (who could also have their own business relationships with the parties involved). In any circumstance where the Appeals Board makes a determination regarding an interpretation, program policy, or procedure that is not unique to one specific project Home Innovation will publish the decision and make it available to our program stakeholders. This provides transparency into the program and ensures that future decisions that may affect a project's certification are consistent with the Appeal Board's ruling.

Public Registries of Verifiers & Certified Homes

In the area of record-keeping and reporting, Home Innovation felt that the HCO requirements could be strengthened for increased transparency and market transformation. Home Innovation recommends that WaterSense HCOs maintain public registries of authorized verifiers and certified homes.

By maintaining a public list of authorized verifiers, HCOs can help drive business to their verification professionals, which further supports the growth of the WaterSense program. A public list of verifiers also offers a tool for builders and developers to confirm the validity of an individual's claims of credentialing.

¹ Details about the Appeals Board and review of appeals and complaints can be found within the *NGBS Green Builder's Resource Guide*: www.HomeInnovation.com/BRG.

06/18/2019

Page 3

By maintain a public list of certified homes, HCOs would provide a key resource that real estate professionals and appraisers could consult during real estate transactions to help ensure that homes with water efficient features are properly valued and marketed appropriately. Information-sharing about green home features and certifications is critical to bolstering consumer market demand for WaterSense labeled homes.

Home Innovation supports EPA's proposed structure for the WaterSense New Homes Program, and we look forward to working with you to promote water-efficient home construction. Please do not hesitate to contact Michelle Foster, our Vice President, Innovation Services, at mfoster@homeinnovation.com or 301-430-6205 directly if she can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Luzier". The signature is fluid and cursive, with a large initial "M" and a long, sweeping underline.

Michael Luzier
President & CEO

Commenter: Pete DeMarco

Affiliation: International Association of Plumbing and Mechanical Officials (IAPMO)

Comment Date: June 18, 2019

Email Text:

Dear ERG Team,

Please see the attached comments from IAPMO on the WaterSense Draft Specification V2.0 for Homes.

Thank you,
Pete DeMarco
The IAPMO Group
66 Liberty Drive
Dayton, NJ 08810

P: 732-329-1237

C: 909-996-0220

e: pete.demarco@iapmo.org



Email Attachment

See pages 37 through 38.



June 18, 2019

Submitted via email to: watersense-programs@erg.com

IAPMO Comments on EPA's WaterSense Draft Specification For Homes Version 2

On behalf of the International Association of Plumbing and Mechanical Officials (IAPMO), we appreciate the opportunity to provide input on EPA's WaterSense Draft Specification for Homes, Version 2. IAPMO is a nearly 100-year old trade association for the plumbing industry. Our members and clients include plumbing and mechanical contractors, inspectors, engineers, code officials, water and energy experts, and manufacturers of plumbing, mechanical, and building products, many of which will be installed in WaterSense labelled homes.

We are the developers of the Uniform Plumbing Code, the Uniform Mechanical Code, the Uniform Solar Energy Code, the Uniform Swimming Pool, Spa and Hot Tub Code and, importantly, the Water-Efficiency and Sanitation Standard (WE•Stand), an American National Standard, which provides safe and effective water efficiency provisions for both residential and commercial buildings.

1. Evaluate IAPMO's WE•Stand Water Efficiency Standard for WaterSense Approved Certification Method (WACM) status. WE•Stand embodies well-considered and effective water efficiency provisions for both residential and non-residential buildings. WE•Stand is developed by a Technical Committee comprised of the foremost and well respected Subject Matter Experts in the United States who work to not only provide for water efficiency, but also to help ensure that the provisions in WE•Stand keep plumbing systems safe and working properly.
2. Evaluate the Water Demand Calculator (WDC): In a recent research effort between IAPMO, the American Society of Plumbing Engineers, the Water Quality Research Foundation and the University of Cincinnati, a new and innovative statistical method for determining water pipe sizing was developed that works to reduce water pipe diameters to be consistent with today's lower water demands from efficient plumbing fixtures and appliances. The new sizing method has been adopted into IAPMO's WE•Stand and Uniform Plumbing Code (UPC). An easy to use Water Demand Calculator (WDC), free to download and use from the IAPMO website, allows for easy application of the new sizing method.

This new method is currently available for use for single- and multi-family dwellings. IAPMO is currently working to calculate volumetric efficiencies associated with utilizing the WDC in new homes of various sizes. Once complete and the data is available for



review, we ask that the efficiencies provided by use of the WDC be factored into the 30 percent threshold requirement calculations used to determine the efficiencies associated with the various Proposed Certification Methods (PCMs).

3. Consensus-based Development for WACMs: Only Proposed Certification Methods (PCMs) that are developed as American National Standards should be considered for WaterSense Approved Certification Method (WACM) status. It's important that EPA's WaterSense Home program conform to the Office of Management and Budget's OMB Circular A-119, which directs Federal agencies to utilize voluntary consensus standards that are developed by voluntary consensus standards bodies through meaningful "involvement from a broad range of parties with no single interest dominating the decision making." Standards that are developed as American National Standards meet OMB A-199 requirements. Standards that are not developed through a true consensus-based process or that allow for one stakeholder type to have final say regarding the technical provisions contained in the published standard should not be considered.
4. The draft specification contains numerous references to a "typical home" as a baseline for comparing the new or modified home achieving a 30% water use reduction. The specifics of what constitutes a "typical home" needs to be more clearly explained such that those who wish to develop PCM's have a clear understanding of baseline values.

IAPMO applauds EPA's efforts to grow the WaterSense labeled homes program nationwide and we look forward to working with the EPA towards the development of an effective and increasingly popular program. Please contact Pete DeMarco at pete.demarco@iapmo.org or Dan Cole at dan.cole@iapmo.org with any questions regarding these comments. Thank you.

Respectfully submitted,

Peter DeMarco, Executive Vice President of Advocacy and Research

Commenter: Mary Ann Dickinson
Affiliation: Alliance for Water Efficiency (AWE)
Comment Date: June 18, 2019

Email Text:

Hello,

Please accept the attached as public comment on the WaterSense® *Draft Specification for Homes, Version 2.0*. Thank you for the opportunity.

Best,

Alliance for Water Efficiency
Chicago, Illinois
AllianceforWaterEfficiency.org



Email Attachment

See pages 40 through 41.

ALLIANCE FOR WATER EFFICIENCY COMMENTS ON THE EPA WATERSENSE DRAFT SPECIFICATION FOR HOMES VERSION 2

Commenter Name: Mary Ann Dickinson, President and CEO

Commenter Affiliation: Alliance for Water Efficiency, Chicago, Illinois

Date of Comment Submission: Tuesday, June 18, 2019

The Alliance for Water Efficiency (AWE) is pleased to have the opportunity to provide comments regarding the US Environmental Protection Agency (EPA) WaterSense® Draft Specification for Homes, Version 2. We applaud EPA's attempt to make the program more attractive to builders and to increase the number of WaterSense labeled homes nationwide. ***This cover letter summarizes our main suggestions regarding the Specification and Certification system; the recommendations have been vetted through the AWE Membership.***

1. The draft specification contains numerous references to a "typical home" as a baseline for comparing the new or modified home achieving a 30% water use reduction. The term "typical home" needs to be more clearly defined as a home built to 1992 EPA standards. This is an important clarification, since most homes are already built to exceed minimum codes, and this will be particularly important to clarify for existing homes that are being modified. We suggest that EPA use the term "baseline home" rather than "typical home" and then define "baseline" to clearly define the water use characteristics of the appliances and plumbing fixtures and fittings. In addition, the landscape and irrigation system of the baseline home should be clearly defined with adjustments for different climates. In our view, EPA should set all parameters of the baseline home, and not allow the HCOs to make this determination.
2. In Version 2, EPA is substituting a performance option, eliminating the former approach of a prescriptive compliance checklist (although a prerequisite list does remain). The current draft specification now no longer includes a prescriptive method to obtain EPA WaterSense Homes certification. While we understand EPA's reasons for wanting to go in this direction, we caution that the water rating systems are for the most part still in their infancy and are still accumulating nationwide experience and verification. Keeping some form of prescriptive checklist as an additional means to obtain certification might be worth considering, particularly as a means to address regional differences like landscape. Some homebuilders may still prefer a simpler means to garner certification than working through an HCO.
3. Only Proposed Certification Methods (PCMs) that are developed as American National Standards should be considered for WaterSense Approved Certification method (WACM) status. It's important that EPA's WaterSense Home program conform to the Office of Management and Budget's OMB Circular A-119, which directs Federal agencies to utilize voluntary consensus standards that are developed by voluntary consensus standards bodies through meaningful "involvement from a broad range of parties with no single interest dominating the decision making." Standards that are developed as American National Standards meet OMB A-199 requirements.
4. The IAPMO WE•Stand (Water Efficiency and Sanitation Standard) contains well-considered and reasonable water efficiency provisions for homes. WE•Stand is developed by a Technical Committee that embodies the foremost and well respected Subject Matter Experts in the United States who work to not only provide for water efficiency, but also to help ensure that the provisions in WE•Stand keep

plumbing systems safe and working properly. The WE•Stand is considered a premier water efficiency standard, and is developed under an ANSI accredited consensus development method that provides for transparency, and further ensures that no single stakeholder group can dominate the development of the provisions contained in the standard. WaterSense labelling for plumbing products and ENERGY STAR® labelling for appliances are requirements for all buildings in WE•Stand. In addition, WE•Stand contains many other unique provisions that provide for increased water efficiencies. Noteworthy is the Water Demand Calculator in WE•Stand that reduces domestic water pipe sizes compared to baseline plumbing code sizing methods. AWE strongly recommends that homes adhering to the requirements of WE•Stand be allowed to qualify for WaterSense labelling, particularly for the indoor component. Additional requirements for landscape efficiency, particularly to address regional climate differences, should be added.

5. In many parts of the country, household outdoor water use exceeds household indoor water use. AWE therefore believes that completing the outdoor landscaping by qualified landscape contractors is as important as completing the installation of indoor plumbing fixtures, fittings and appliances. We recognize that this is problematic for EPA, as most builders leave the backyard unlandscaped when selling a new home to a buyer. To try to address this, AWE recommends that the specification include guidelines for efficient, sustainable landscaping that may be installed subsequent to the official WaterSense labeling of the individual home.
6. AWE recognizes the difficulties that EPA has had in promoting the former WaterSense New Homes program. Might it make sense long-term to combine ENERGY STAR® and WaterSense labeling of homes to demonstrate a clear water-energy efficiency benefit? Such a combination also would have the advantage of showcasing the advantages of both labeling programs and would have the added benefit of reducing the compliance paperwork for a builder. We understand that this may not be a practical consideration for this specification revision, but we urge EPA to consider this option for the future.
7. As a final comment, AWE is concerned about the number of organizations that might apply to become HCOs, and how stakeholders might become aware of who is applying and developing a WACM so that they might be able to positively influence their program to maximize water efficiency. We encourage EPA to publish online who is applying to become an HCO and is developing a WACM, so that stakeholders might have the opportunity to participate in the process. This would avoid the circumstance where stakeholders may only discover an organization has become an HCO with an Environmental Protection Agency approved WACM after it is complete.

We applaud EPA for its efforts to promote water efficiency in new and existing home construction through innovative means. Thank you for the opportunity to comment.

Commenter: Deirdre Irwin
Affiliation: St. Johns River Water Management District
Comment Date: June 18, 2019

Email Text:

Hello,

I have searched the website for the proposed outdoor criteria in version 2.0 but only find the info at this pdf. Am I missing something or is this only an indoor program now?

<https://www.epa.gov/sites/production/files/2019-04/documents/ws-homes-draft-program-factsheet.pdf>

Regards,

Deirdre Irwin

Water Conservation Coordinator

Bureau of Water Supply Planning
St. Johns River Water Management District
P.O. Box 1429 • Palatka, FL 32178-1429
Office: (386) 329-4341 • Cell: (386) 546-8437
Email: dirwin@sjrwmd.com

Website: www.sjrwmd.com

Connect with us: [Newsletter](#), [Facebook](#), [Twitter](#), [Instagram](#), [YouTube](#), [Pinterest](#)

We value your opinion. Please take a few minutes to share your comments on the service you received from the District by clicking this [link](#)

Notices

- Emails to and from the St. Johns River Water Management District are archived and, unless exempt or confidential by law, are subject to being made available to the public upon request. Users should not have an expectation of confidentiality or privacy.
- Individuals lobbying the District must be registered as lobbyists (§112.3261, Florida Statutes). Details, applicability and the registration form are available at <http://www.sjrwmd.com/lobbyist/>

Commenter: Dominic Silva
Affiliation: San Antonio Water System (SAWS)
Comment Date: June 18, 2019

Email Text:

Good afternoon,

Attached are comments from San Antonio Water System (SAWS) Conservation Department for the EPA WaterSense Draft Specification for Homes, Version 2.0.

Thank you!

Dominic Silva
Conservation Planner
San Antonio Water System | Conservation
2800 U.S. 281 | San Antonio, TX 78212
P: (210)233-3320



Email Attachment

See pages 44 through 45.



**San Antonio Water System
Conservation Department**

Comments on: EPA WaterSense® Draft Specification for Homes, Version 2.0

San Antonio Water System (SAWS) Conservation Department is pleased to have the opportunity to provide comments regarding WaterSense Draft Specification for Homes, Version 2.0. We appreciate the efforts of the EPA WaterSense team in getting extensive input and considering ways to make the WaterSense Home program more impactful in the future. Our community is one with significant new home construction taking place beyond city limits where codes and standards are harder to enforce in Texas. We hope the revised WaterSense Homes program will provide guidelines to encourage builders to enhance water savings.

Below are our comments:

1. Outdoor water efficiency standards within the WaterSense Draft Specification for Homes, Version 2.0 do not adequately emphasize the importance of managing outdoor water usage. The current EPA WaterSense “Checklist” does not address irrigation nor landscape. In many parts of the country, outdoor water usage accounts for most of the overall consumption of single family homes. SAWS Conservation Department urges clarification on outdoor water use on the “Checklist.”
 - The checklist and WaterSense Draft Specification for Homes, Version 2.0, lacks emphasis on reduction of water use due to irrigation and landscape
2. Home Certification Organizations (HCO) Proposed Certification Method (PCM) should require following local ordinances and applicable state standards such as irrigator licensing requirements. If following local and state standards related to water efficiency is not required, the program could have the unintended consequence of weakening compliance with existing rigorous standards.
 - Water efficient plumbing fixtures of WaterSense® are in San Antonio’s adopted codes at this time.
 - State of Texas has specific requirements for irrigation systems and for licensing those who install systems. Any HCO PCM process should require these be followed at a minimum in Texas.
 - We are concerned that an HCO PCM process from another state without these standards could be approved for use in Texas. It would be unfortunate to have a new buyer learn that despite WaterSense certification, they have a home not meeting the minimum required fixture or irrigation design standards of Texas.
3. SAWS Conservation Department has reservations on the term “typical home” to meet WaterSense 30% water efficiency savings and requests a clarification of the term other than the current definition of a home built to 1992 EAct standards. We recommend utilizing a home that has a “baseline” that can be clearly defined and compared to new homes undergoing EPA WaterSense certification.
 - Assumptions for square footage of a building and lot do not accurately reflect the homes built in Texas nor the United States
 - Assumptions on outdoor use need to be developed by region – possibly using average summer rainfall data and freeze data as break points.
 - The baseline home should reference results from the most recent Residential End Use Study to help reflect the fact that the majority of homes in the United States do not irrigate to the theoretical irrigation requirement referenced in water budget calculations. Failing to recognize this vastly overstates the amount of water a “typical” home may use in the future. Most worrisome, setting a very high use

expectation for home buyers who may see the water budget numbers might convince people they have succeeded in saving water when they might be among the top water users in their area.

4. On “weather-based irrigation controllers,” the current testing protocol is adequate, but if revisions were made, they should be further tightened; i.e., 90% Irrigation Adequacy (It is important to define “Adequacy” within Irrigation Adequacy). SAWS strongly believes any WaterSense WBIC should:
 - Retain all the current supplemental capability requirements.
 - Have a MAXIMUM LIMIT of 80% of ETo for cool season grass and 60% ETo for warm season grasses. In other words, no 100-125% ETo.
 - WBIC manufacturers should be encouraged to facilitate the deficit irrigation habits that were documented as the norm through the updated Residential End Use Study (REUS). The REUS included comment that the danger of WBIC products for deficit irrigators is that they increase usage. Because most households appear to be deficit irrigators, this is contrary to the goals of attaining additional savings in the future.
 - SAWS finds that current assumptions for Effective Rainfall, Efficiency Allowance, and some Coefficients that are standard within many WBIC products tend to increase usage beyond what most homeowners expect from a WBIC. These assumptions should be easier to change for regional differences.
 - WBIC products should be further distinguished by their ability to manage local conditions. In our pilot studies working with an app-based WBIC product we have been pleased to find that one manufacturer could set defaults for their product to match the needs of our market. An example is defaulting to warm season turf grass instead of cool season turf grass. Absent this intervention a full 30% of the WBIC controllers from this brand were left on cool season settings which results in up to 30% excessive irrigation usage. Having more WBIC products working to this type of capability is important to achieving their savings potential.
5. In “Estimating Outdoor Water Use:”
 - The Effective Rainfall in determining ModNetETo should not be 25% of Total Rainfall but closer to 50% of Total Rainfall. The WaterSense Goal is to minimize Discretionary Supplemental water and assuming that 75% of rainfall is ineffective results in over-irrigation.
 - Likewise, the Efficiency Allowance should be minimized. The assumption from the allowance is that all homeowners “water to the dry spot.” This behavior is rare. Improving the system to avoid the dry spot should be encouraged rather than watering all other areas excessively.
 - WaterSense labeled homes should address the percentage of landscape irrigated with an automatic system as well as average GPM of system with the goal of less land under irrigation and lower GPM.
 - Lastly, estimation should include a metric of plant type and diversity present; demonstrate a knowledge of what plant community (landscape) the irrigation system is being designed for.
6. Allowing a PCM plan that is “no leaks and indoor only” would weaken the WaterSense brand as one that represents significant savings over standard homes.

WaterSense fixture certifications have been a boon to conservation efforts in the United States. With the current trend toward becoming standard fixtures in homes, the bar needs to be higher than “no leaks” and “WaterSense fixtures.” Having this as a minimum with required additional savings appears to be where WaterSense Homes is heading. We encourage EPA WaterSense to be firm that there must be additional efforts beyond the minimum standards set.

7. Multiple Showerhead bathroom designs are concerning and standards should be set to discourage this trend in WaterSense Homes.

We encourage considering a standard that would require one showerhead per minimum area of a shower area. This would discourage adding extra heads to a standard shower as an inexpensive upgrade to homes.

Thank you for the opportunity to comment.

Commenter: Darrell Lehman

Affiliation: Triconic

Comment Date: June 18, 2019

Email Text:

Dear Jonah Schein,
WaterSense
U.S. Environmental Protection Agency,

Thank you for this opportunity to comment on the proposed WaterSense® Draft Specification for Homes, Version 2. Triconic supports the draft WaterSense® Specification for Homes, Version 2 but recommends that EPA forgo defining yet another certification scheme such as a WaterSense® Approved Certification Method (WACM) and consider a certification structure and Home Certification Organization (HCO) definition that corresponds to the voluntary third-party conformity assessment process already in use throughout the United States for products and systems.

Triconic is also responding to the EPA Energy Star Program regarding a similar analysis of programmatic changes to the process for certification of Energy Star homes. We believe that a useful step would be to seek alignment between the structures of the two programs. The challenges of providing energy efficiency and water conservation involve similar analytical process and attention to technical characteristics of a home, including its appliances, fixtures, and building materials. There is potential synergy between the two EPA programs that could increase market value and adoption of both WaterSense® and Energy Star in residential construction. Maintaining divergent processes will ensure that bundling of these worthy programs will be less likely to occur and less useful to builders.

We attach a proposed draft combining relevant programmatic changes to the process for certification of WaterSense® and Energy Star homes in the file titled "HCO and VOO alignment v1.pdf".

While EPA has established a proposed timetable for implementation of the draft specifications and changes to requirements for becoming an HCO, the EPA should consider immediate acceptance of willing nationally recognized certifiers as WaterSense® certifiers. Immediate EPA WaterSense® acceptance of nationally recognized certifiers and WaterSense® certification incumbents should then be on equal footing as they prepare for meeting the new HCO requirements.

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Email Attachment

See pages 48 through 54.

Note: The following is Triconic’s proposed alignment of relevant portions EPA’s WaterSense® Home Certification Organization (HCO) and WaterSense Approved Certification Method (WACM) requirements with Triconic’s proposed feedback to EPA’s Verification Oversight Organization (VOO) requirements. Any opinions or views expressed in this document are solely of the author and may be subject to revision. This document may include logos and titles that are trademark property of the owners thereof.

EPA RECOGNITION OF Home Certification Organizations (HCOs)

EPA’s WaterSense® Specification for Homes, Version 2.0 requires third-party¹ certification² of the water efficiency ratings of single-family and multifamily, new and existing construction homes to WaterSense® requirements. For WaterSense® certified homes, conformity to WaterSense® requirements is determined by entities that can be collectively referred to as ‘Verifiers.’

A Home Certification Organization (HCO) is an EPA recognized organization operating a WaterSense® certification Scheme³ used by Verifiers. An organization seeking to become an EPA recognized HCO must demonstrate to EPA that it meets EPA’s WaterSense® HCO eligibility criteria defined herein and can successfully perform all HCO required roles and responsibilities, including oversight of the credentialing, quality control, and technical and administrative processes used by Verifiers in the WaterSense® certification of single-family and multifamily, new and existing construction homes.

ELIGIBILITY CRITERIA for Home Certification Organizations (HCOs):

1. Demonstration of Impartial Governance

HCOs must be organized and operated to safeguard the objectivity of their activities and maintain policies to ensure that potential conflicts of interest are identified and avoided. To be

¹ ISO/IEC 17000 *Conformity assessment — Vocabulary and general principles*: third-party conformity assessment activity (2.4)

² ISO/IEC 17000 *Conformity assessment — Vocabulary and general principles*: certification (5.5)

³ ISO/IEC 17067, *Conformity assessment — Fundamentals of product certification and guidelines for product certification schemes*: certification scheme (3.2)

eligible for recognition, a HCO's WaterSense® Certification Scheme⁴ must operate pursuant to an accredited certification scheme covered by an appropriate scope of International Classification for Standards (ICS), such as ISO/IEC 17065 "Conformity Assessment: Requirements for bodies certifying products, processes, and services." Also, the HCO's WaterSense® Certification Scheme must demonstrate ability to show a home's conformance to the WaterSense® Specification for Homes, Version 2.0. Accreditation of the HCO WaterSense® Certification Scheme shall be received from an accreditor that is a signatory to the International Accreditation Forum (IAF) Multilateral Recognition Agreement (MLA). The HCO may maintain a not-for-profit, or for-profit corporate form.

In addition to impartiality outlined in ISO/IEC 17065⁵, the HCO must also demonstrate, at a minimum, the following impartial governance practices:

- The policies and procedures under which the HCO WaterSense® Certification Scheme operates, and the administration of them, shall be non-discriminatory. Procedures shall not be used to impede or inhibit any applicant's access to certification to WaterSense® Specification for Homes, Version 2.0.
- The HCO shall make its WaterSense® Certification Scheme accessible to all WaterSense® builder and developer partners and access to the HCO's WaterSense® Certification Scheme shall not be conditional upon the size of the builder or developer partner, nor membership in any association or group.
- The HCO shall take all necessary steps to ensure that Scheme activities for WaterSense® are undertaken impartially, including, but not limited to, establishing an organizational conflict of interest policy, and identifying and eliminating risks to impartiality that arise from the HCO's activities and its relationships.

2. Demonstration of Operations for HCO

⁴ ISO/IEC 17065, *Conformity assessment — Requirements for bodies certifying products, processes and Services: Management of impartiality* (3.9)

⁵ ISO/IEC 17065, *Conformity assessment — Requirements for bodies certifying products, processes and Services: Management of impartiality* (4.2)

Organizations applying for recognition as an HCO must demonstrate the ability to provide its WaterSense® Certification Scheme on a level⁶ consistent with its scope. This must be demonstrated, at a minimum, through the following:

- Maintaining competence in providing oversight of Verifiers and technical expertise in building science across the U.S.;
- Maintaining a pool of HCO personnel capable of providing oversight of geographically distributed Verifiers and WaterSense® builder and developer partners; and
- Maintaining a quality assurance and oversight mechanism for Verifiers.

ROLES AND RESPONSIBILITIES for Home Certification Organizations (HCOs):

To be recognized as an HCO for WaterSense®, an organization shall agree in writing to the following roles and responsibilities, and apply for recognition that provides a detailed description of the organization's proposed approach to each specified area:

1) General Requirements and Responsibilities:

- a. Maintain legally enforceable policies and procedures related to, and be responsible for, the granting and withdrawal of WaterSense® certifications.
- b. Have publicly available information about the HCO's WaterSense® Certification Scheme online and in hard-copy format for current or prospective certification program participants (i.e., WaterSense® builder, developer, and Verifier partners).
- c. Allow EPA, at its discretion and cost, to audit certification and inspection activities.
- d. Notify EPA of any change in its ISO/IEC 17065 accreditation.

2) HCO Responsibilities. The HCO applicant shall provide a detailed narrative and process description of the following:

- a. Verifier Training/Credentialing and Listing of Approved Verifiers:

⁶ EPA may consider allowing regional or national scope HCO applications from organizations for specific states or regions where unique geographic situations or code structures warrant different oversight models. National scope may also be demonstrated through partnerships and collaborative models.

- i. Develop, maintain, or recognize training, examination, credentialing, and continuing education program requirements for Verifiers that conduct WaterSense® inspection and verification activities generally, and more specifically, to WaterSense® requirements.
 - ii. Ensure that only Verifiers meeting the training/credentialing requirements of (2)(a)(i) above perform verification of homes certified to WaterSense®.
 - iii. Maintain a publicly available online list or database of credentialed Verifiers.
- b. Code of Conduct, Dispute Resolution, and Quality Control/Quality Assurance
- i. Describe the HCO’s business code of ethics, including a conflict of interest policy, and ethics complaint resolution process that includes procedures for investigation of complaints, suspension or revocation of Verifiers by the HCO, and an appeals process.
 - ii. Maintain a dispute resolution process for participating Verifiers that includes procedures for probation, suspension, and revocation; and inform EPA when disciplinary action is taken against a Verifier and/or when a Verifier’s status with the HCO has changed⁷.
 - iii. Provide Verifiers that do not have active formal quality control systems with a process to build quality control systems within the Verifier organization. Such guidance shall provide a pathway and timetable for the Verifier to improve functional quality control and implement internal process and procedure improvements consistent with accredited inspection process.⁸
 - iv. For Verifiers that are not separately accredited as an inspection agency, such as “ISO/IEC 17020 Conformity Assessment – Requirements for the

⁷ EPA reserves the right to terminate the WATERSENSE Partnership Agreement of Verifiers that violate the terms of their partnership or the Federal WATERSENSE trademark.

⁸ Guidance provided to Verifiers by a HCO should be consistent with and functionally designed for eventual compliance with ISO/IEC 17020: Conformity Assessment – Requirements for the operation of various types of bodies performing inspection.

operation of various types of bodies performing inspection” competent to perform inspection services, the HCO shall provide oversight of those Verifiers consistent with the requirements of ISO/IEC 17065 “Conformity Assessment: Requirements for bodies certifying products, processes, and services” to include ongoing quality assurance and auditing services.

- v. Develop, establish and implement quality assurance systems and procedures for HCO oversight of participating Verifiers related to the conduct of all applicable WaterSense® requirements and documentation, including both file reviews and field inspections at least once every 12 months.
- vi. Maintain a web page that allows homeowners to submit inquiries or concerns regarding the WaterSense® certification of their home or apartment.

3) Database of WaterSense® Certified single-family and multifamily, new and existing construction homes:

- a. Maintain a database of single-family and multifamily, new and existing construction homes that are certified to WaterSense® requirements, and provide EPA with summary reports, as needed, to allow the Agency to track partners’ participation in WaterSense® as well as obtain general aggregate information about the energy-efficiency features being used in WaterSense® certified homes and apartments.

4) Coordination with EPA:

- a. Work collaboratively with EPA to facilitate the comprehensive and coordinated investigation and response to:
 - i. Findings resulting from the routine quality assurance activities conducted by the HCO that may impact the WaterSense® program.
 - ii. Certification discrepancies identified or referred to the HCO by EPA that arise as part of EPA’s administration of WaterSense®.

- iii. Certification review requests and other inquiries from homeowners or renters regarding the WaterSense® certification received by the HCO. This will be undertaken in a manner that is consistent with a process defined by EPA.
- iv. Maintain open lines of communication with EPA to address questions and concerns promptly and provide annual reports regarding program administration, quality assurance, and dispute resolution activities (or more frequently, upon request by EPA).
- v. Demonstrate to EPA's satisfaction adequate availability of personnel and the ability to provide requested information in a timely manner, including participation in meetings related to WaterSense® as EPA deems necessary.

TERMS OF RECOGNITION for Home Certification Organizations (HCOs)

Modifications

EPA reserves the right to modify or amend the eligibility criteria, or roles and responsibilities for HCOs as needed to ensure the value and integrity of WaterSense®. HCOs previously recognized by EPA will be given at least 180 days to implement any policies or procedures needed to comply with new EPA requirements.

Rejection/Termination

EPA reserves the right to reject any application that the Agency believes cannot meet the eligibility criteria, including demonstration of a national scope of operations. If, after recognition, EPA determines that a HCO is no longer meeting all of the required eligibility criteria including maintaining a national scope of operations, the required roles or responsibilities, and/or the HCO has demonstrated a pattern of actions that may negatively impact consumer and industry confidence in, or the integrity of, EPA's WaterSense®, the Agency will provide the HCO with written notification and allow 30 days to resolve identified issues and provide EPA with a written response summarizing the changes made. If the

organization fails to submit a satisfactory response to EPA that addresses the deficiencies identified, EPA reserves the right to suspend or terminate the HCO's recognition.

###

Commenter: Jaclyn S. Toole

Affiliation: National Association of Home Builders (NAHB)

Comment Date: June 18, 2019

Email Text:

Please find NAHB's comment letter attached.

Thank you for the opportunity to comment on the revised program documents.

If you have any questions or concerns, please contact me.

Best-

Michelle Diller



MICHELLE DUSSEAU DILLER, PE, PMP, CGP
Program Manager, Sustainability & Green Building

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Email Attachment

See pages 56 through 71.

June 18, 2019

Jonah Schein
Water Infrastructure Division
U.S. Environmental Protection Agency
1201 Constitution Avenue NW
Washington, DC 20460

(Submitted electronically via email watersense-programs@erg.com)

Re: Comments on the Draft documents for the WaterSense® Specification for Homes, Version 2.0

Dear Mr. Schein,

On behalf of more than 140,000 members, the National Association of Home Builders (NAHB) submits these comments to the U.S. Environmental Protection Agency (EPA) on the *WaterSense® Draft Specification for Homes, Version 2.0* and supporting program documents¹ published in April 2019.

The EPA is inviting comments from interested parties on the WaterSense program's draft specification, certification system and technical evaluation process. The EPA's goal with the proposed revisions to the program specification and new program structure is to better align and work in tandem with existing green home building programs to promote a national ethic of water efficiency. The proposed revisions are intended to increase the use of the WaterSense Program Certification by increasing flexibility in the technical requirements, streamlining the program requirements and certification, adapting to a changing home building market and encouraging the exploration and utilization of emerging technologies and practices.

NAHB is a Washington, D.C. based trade association that works to ensure housing is a national priority and that all Americans have access to safe, decent and affordable housing. The federation includes more than 700 state and local associations representing more than 140,000-member firms nationwide. NAHB's members are involved in home building, remodeling, multifamily construction, land development, property management and light commercial construction. Collectively, NAHB's members employ more than 1.26 million people and construct about 80 percent of all new housing units constructed within the United States each year.

Water efficiency has become increasingly popular with homeowners over the past few decades, confirming that consumers value savings achieved through practicing conservation and using efficient fixtures. For example, 45% of 4,000 recent and prospective home buyers surveyed by NAHB last year were willing to pay \$1,000 or more for a green certification showing their home met an above-code standard for water efficiency. In that same survey, 21% of respondents were aware of the WaterSense program², which

¹ <https://www.epa.gov/watersense/homes-specification#versionzhomes>

² "What Home Buyers Really Want, 2019 Edition", NAHB Economics and Housing Policy Group.

demonstrates independent, third-party certification of those features and systems can offer additional credibility when marketing homes.

In addition, 80% of single-family homes built after 1999 have ENERGY STAR clothes washers, 24% use a hot water recirculating system, 71% have toilets with flow rates of less than or equal to 1.6 gallons per flush (gpf), and 51% of those are ≤ 1.28 gpf³. Outdoors, 66% of single-family homes had sprinkler systems and 25% of those used drip irrigation systems. The above percentages are all significantly higher than for homes built before 1999, showing that voluntary programs such as WaterSense are positively impacting the market’s use of water efficiency strategies.

NAHB promotes sustainable and green home building, including water efficient strategies, through the implementation of voluntary, above-code practices, such as certification to the National Green Building Standard (NGBS). Knowing that one-size never fits most, NAHB applauds EPA for working to increase the flexibility of the revised WaterSense program. It is also imperative for EPA to maintain brand credibility, and to ensure that there is consistency among Home Certification Organizations (HCO). It continues to be important that builders have choices when it comes to these types of programs, so they can best meet the needs of their client, the project, and any other certifications while also having the confidence that each choice maintains a consistent level of rigor, provides quality output and remains cost-effective. To do so, NAHB requests EPA to consider the following comments for the next iteration of the WaterSense program:

Overall Comments

I. WaterSense Program Reference Documents

(WaterSense Draft Home Certification System Version 2.0, Page 4)

Table 1. Documents applicable to the verification, certification and labeling of homes for WaterSense

| Full Title of Document | Purpose |
|---|--|
| <i>WaterSense Specification for Homes, Version 2.0</i> | Establishes the criteria for water-efficient homes to be eligible for the WaterSense label, including compliance with 1) the Mandatory Checklist, and 2) the water efficiency requirement, as verified through compliance with an HCO’s WACM. Note that from this point forward, references to the <i>WaterSense Specification for Homes, Version 2.0</i> are inclusive of the Mandatory Checklist and, by reference, the technical requirements of an HCO’s WACM. |
| <i>WaterSense Technical Evaluation Process for Approving Home Certification Methods</i> | Explains the EPA’s process and assumptions used to assess the technical efficacy of the HCO’s proposed certification method in differentiating homes that meet the water efficiency requirement in the <i>WaterSense Specification for Homes, Version 2.0</i> . |
| <i>WaterSense Home Certification System, Version 2.0</i> | Articulates the parties involved in, and process for, certifying and labeling homes for WaterSense. |
| <i>WaterSense Program Guidelines</i> | Provides guidance on eligibility criteria, conditions for participation, and general information about WaterSense. |
| <i>WaterSense Program Mark Guidelines</i> | Establishes guidelines for using WaterSense program marks in order to ensure promotion of a consistent WaterSense brand. Partners are required to adhere to these guidelines. |

³ Paul Emrath, “Residential Water Use.” www.HousingEconomics.com, October 2017, NAHB.

NAHB Comments:

NAHB commends the EPA for reducing the number of program reference documents to increase ease of use for all stakeholders, however, the naming convention for the documents remains confusing, with long, similar names and different version numbers. Table 1 of the “WaterSense Draft Home Certification System, Version 2.0” is an example - not all document titles match the draft documents provided for review, and the table only appears in one of the four reference documents. NAHB recommends clearly identifying each document in the series as part of the WaterSense for Homes Version 2.0 program with shorter titles, a brief summary and purpose statement of each document, and a preface within each document referencing the additional documents in the series.

II. Existing WaterSense Tools & Credentials

NAHB Comments:

The revised program is silent on the WaterSense Water Budget Tool that is part of Version 1.2. The status of the EPA Certified Irrigation Professional program is also unclear. Both are currently referenced in one or more green building standards, including the National Green Building Standard (NGBS) and Leadership in Energy and Environmental Design (LEED). NAHB encourages EPA to work with the administrators of these programs and other potential impacted green building standards to determine how the elimination of these tools and credential may impact existing programs and resolve any issues that it may create before they are done away with.

WaterSense Draft Specification for Homes Supporting Statement Document Comments

I. Timing

(Section 8.0, Specification Transition, Page 11)

“Homes pursuing the WaterSense label under WaterSense New Home Specification, Version 1.2, must be permitted for construction within 6 months of the publication of the WaterSense Specification for Homes, Version 2.0. The final inspection must be completed for homes pursuing the WaterSense label under Version 1.2 of the specification within 12 months (1 year) of publication of the WaterSense Specification for Homes, Version 2.0.

The WaterSense Specification for Homes, Version 2.0, will become effective 6 months following its publication. After that time, builders designing homes intended for WaterSense certification shall follow the requirements of the final WaterSense Specification for Homes, Version 2.0, and the WACM under which they would like to receive the WaterSense label.”

NAHB Comments:

It is unclear what the procedure will be for homes that cannot meet this construction/inspection schedule. NAHB recommends that a grace period be established for homes that are being constructed during the transition period to allow a building that is permitted before or within 6 months of publication after Version 2.0 to use Version 1.2 if they choose (without the final inspection requirement) or to use Version 2.0 if they choose.

WaterSense Draft Specification for Homes, Version 2.0 Document Comments

I. Additional Clarity to the Requirements to Earn WaterSense Label

(Appendix A: Informative Annex for WaterSense Labeling, Page A-1)

“WaterSense Partnership

The homebuilder must have a signed partnership agreement in place with the EPA.

Conformity Assessment

Conformance to this specification must be certified by a Home Certification Organization (HCO) or HCO designee in accordance with the WaterSense Home Certification System, Version 2.0.”

NAHB Comments:

While appreciating the brevity of the document, NAHB recommends including summary information about the overall program requirements (meeting the mandatory checklist and demonstrating a minimum 30 percent improved efficiency) and a brief description of the process (HCOs will use an approved WACM to administer the program), rather than only pointing the reader to the document “WaterSense Home Certification System, Version 2.0.”

WaterSense Draft Home Certification System, Version 2.0 Document Comments

I. HCO Eligibility and WACM Requirements

(Section 4.0, Pages 4-12)

This section outlines the procedure for evaluating and approving the HCO, including EPA’s review and approval of an HCO’s Proposed Certification Method (PCM). Since this is the first introduction of the term (PCM), NAHB recommends giving more context to explain the method and how it relates to the WaterSense Approved Certification Method (WACM), to clearly establish the relationship between the two documents.

II. HCO Organizational Requirements

(Section 4.1 HCO Organizational Requirements; 4.1.2 Quality Assurance, Page 5)

“The HCO shall implement quality assurance procedures that ensure that verifiers consistently inspect and document compliance in accordance with the WaterSense Specification for Homes, Version 2.0, which includes the Mandatory Checklist and, by reference, the technical requirements of the HCO’s WACM. At a minimum, the quality assurance shall include: Auditing WaterSense labeled homes; Ensuring qualified verifiers; Disciplining Verifiers; Resolving Complaints; and Maintaining Quality Assurance documentation.”

NAHB Comments:

As mentioned in our previous comment letter on the WaterSense® Specification for Homes Version 2 Concept Paper⁴, quality assurance is of the utmost importance to NAHB. Responsibilities are designated to approved HCOs with minimal umbrella oversight by the EPA. Additional quality

⁴ <https://www.epa.gov/sites/production/files/2018-10/documents/ws-homes-v2-concept-paper.pdf>

assurance requirements have been added for HCOs in this draft, better defining their responsibilities, but more direction by EPA would further increase program credibility. NAHB urges the EPA to include a defined path for filing a complaint directly with EPA regarding a HCO, to develop a procedure for conflict resolution and to establish a procedure and parameters for disciplining verifiers.

III. Home Verification Protocols

(Section 4.1 HCO Organizational Requirements; Section 4.1.4, Home Verification Protocols, Page 7)

“Sampling Protocol. *The HCO may offer builder partners the opportunity to participate in a sampling protocol if a builder partner intends to certify multiple homes within the same subdivision, planned community or multifamily building. Sampling protocols could allow a builder to seek the WaterSense label for a group of homes based on pre-analysis of building plans and subsequent verification of a sample set of the homes. If the HCO chooses to offer a sampling protocol for home certification, the protocol shall outline eligibility requirements for a builder partner to participate in the sampling protocol and ensure that verification occurs on a representative sample of homes constructed by the builder partner. The protocol shall also establish processes for revoking eligibility for sampling based on failure to meet certification and quality assurance requirements.”*

NAHB Comments:

EPA has identified home verification protocols as one of six components of certification “to ensure a HCO has a structure in place to effectively certify homes and issue and maintain the integrity of the WaterSense label.” As part of this component, there is a sampling protocol option that has been expanded from Version 1.2. NAHB supports the continued option for builders to use a sampling protocol if that builder intends to certify multiple homes within the same subdivision, planned community or multifamily building. This program flexibility is a good example of encouraging builder participation by offering cost-effective paths to certification.

IV. Messaging and Reporting

(Section 4.0 HCO Eligibility and WACM Requirements; Section 4.1.6, Messaging & Reporting, Page 8)

“Quarterly reporting to WaterSense. *The HCO shall report home certification information to WaterSense at least quarterly. At minimum, the HCO shall provide the following information regarding the homes certified and WaterSense labels issued in accordance with the WaterSense Specification for Homes, Version 2.0:*

- *Builder partner name*
- *Number of certified homes*
- *General location”*

NAHB Comments:

While minimum requirements for HCO messaging and reporting back to EPA have been established in this draft, NAHB encourages EPA to provide a more detailed database requirement for HCOs. The

database should minimally include builder partner company name, physical address, date, energy rating index, verifier name, company, contact information, version of WaterSense, and software version used. These required data points will allow for uniformity across HCOs and enable EPA to easily compare all WaterSense home certifications. This requirement has the potential to increase program visibility, and to provide more avenues for consistent data-sharing with organizations like the Multiple Listings Services (MLS).

WaterSense Draft Technical Evaluation Process for Approving Home Certification Methods Document Comments

I. Landscape Calculations

(Section 3.0 Technical Evaluation Details & Assumptions, Section 3.2 Reference Home Design, Page 3)

“The EPA identified features to include in the reference home designs from the U.S. Department of Housing and Urban Development (HUD) 2017 Survey of Construction. U.S. Census data were reviewed to inform the range of typical design features—such as number of bedrooms, bathrooms and lot size—that were included in the reference home designs. The EPA has established the landscape area for single-family reference homes based on a best fit equation that was developed using observed field data from Residential End Uses of Water, Version 2. Where the lot size of the reference home is less than 7,000 square feet, landscape area is calculated according to Equation 1. Where the lot size of the reference home is greater than or equal to 7,000 square feet, the landscape area is calculated according to Equation 2.”

Equation 1: Landscape Area for Single-Family Reference Homes With Lot Size Less Than 7,000 Square Feet

Landscape area = Lot size × (0.002479 × Lot size^{0.6157})

Equation 2: Landscape Area for Single-Family Reference Homes With Lot Size Greater Than or Equal to 7,000 Square Feet

Landscape area = Lot size × 0.577

NAHB Comments:

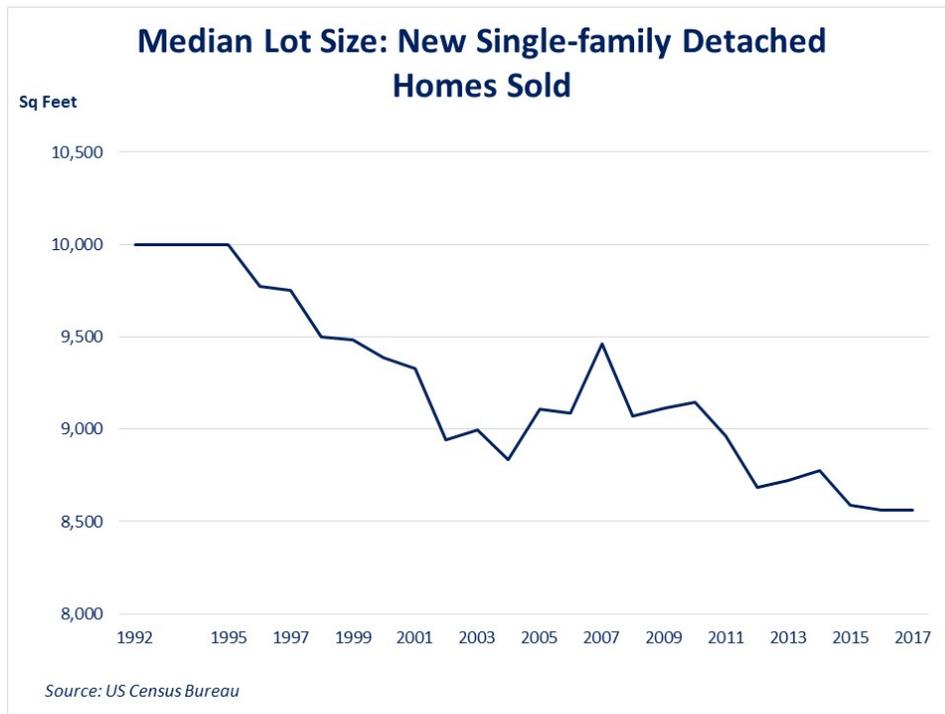
A. In this document the reference cited for the two proposed landscape area equations is the RESNET Draft Standard PDS-01, BSR/RESNET/ICC 1101-201X, Water Rating Index5. That draft standard (note that there is a more recent version than the one cited by EPA) does not cite the Residential End Uses of Water, Version 2 (REUW2), provide any background regarding the development of the equations, or explain why a 7,000 square feet lot was chosen as the breakpoint between the two equations. The full REUW2 report and data cannot be accessed without a subscription, and therefore the field data referenced by EPA cannot be reviewed and the ‘best fit’ equation cannot be verified. While NAHB is not opposed to the incorporation by reference of specific standards, the standard must nonetheless be freely available and allowed to be freely used by the public. However, an important distinction exists between obtaining a standard and the application of that standard.

B. NAHB analyzes lot size for new single-family homes based on the information in the Census Bureau’s Survey of Construction (SOC). The SOC information summarized in NAHB Reference Figure 1 shows the

⁵ <https://www.resnet.us/about/standards/resnet-ansi/draft-pds-01-bsr-resnet-icc-1101-201x-water-rating-index/>

median lot size to be larger than the 7,000 square foot threshold established in the equations. The median lot size in 2017 (on a national level) was 8,560 square feet⁶, 18% larger than the 7,000 square feet breakpoint chosen for the calculations. This may result in the landscape area, and therefore the outdoor water use, of the baseline reference home to be underestimated, skewing the true water savings of a home being evaluated for certification.

NAHB Reference Figure 1

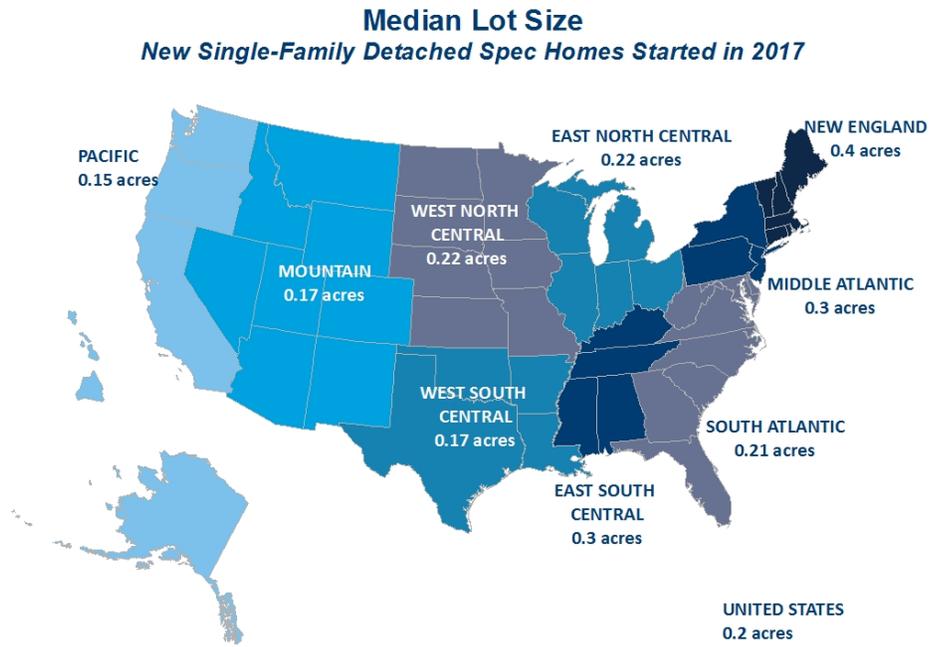


Additionally, there are significant regional differences in lot sizes, as shown Figure 2⁷, which have been present consistently over time. The proposed landscape area calculations do not account for regional differences and no requirements for HCOs to address this in their PCMs. Failure to recognize the significant median lot size differences by region impacts the EPA's attempt to define the minimum requirements a home must meet to achieve the PCM's certification threshold. 2017 median lots in the Pacific region are 0.15 acres, or 6,534 square feet – almost 7% smaller than the 7,000 square feet breakpoint, while median lots in New England are 0.4 acres, or 17,424 square feet – over 50 percent larger than the calculation breakpoint. NAHB recommends that EPA reevaluate the methodology for the landscape area lot size and consider using regional median lot size in the calculations to better represent reference homes in different areas of the country for the PCM/WACM reviews.

⁶ <http://eyeonhousing.org/2018/08/lot-size-remains-record-low/>

⁷ <http://eyeonhousing.org/2018/08/lot-size-remains-record-low/>

NAHB Reference Figure 2



Source: 2017 Survey of Construction, NAHB Estimates

II. Reference Home Design: Single-Family

(Section 3.0 Technical Evaluation Details and Assumptions, Section 3.2 Reference Home Design, Pages 5-8)

Table 3-1. Single-Family Reference Homes

| Feature | Single-Family Reference Home 1: | Single-Family Reference Home 2: | Single-Family Reference Home 3: | Single-Family Reference Home 4: |
|-------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | Small Footprint and Large Lot | Small Footprint and Small Lot | Large Footprint and Large Lot | Large Footprint and Small Lot |
| Bedrooms | 2 | 2 | 4 | 4 |
| Bathrooms | 1 | 1 | 2.5 | 2.5 |
| Footprint (sq. ft.) | 1,000 | 1,000 | 2,500 | 2,500 |
| Lot size (sq. ft.) | 22,000 | 4,400 | 22,000 | 4,400 |
| Landscaped area (square feet) | 12,694 | 1,910 | 12,694 | 1,910 |
| Number of toilets | 1 | 1 | 3 | 3 |
| Number of showerheads | 1 | 1 | 2 | 2 |
| Number of lavatory faucets | 2 | 2 | 5 | 5 |
| Number of kitchen faucets | 1 | 1 | 1 | 1 |
| Number of clothes washers | 1 | 1 | 1 | 1 |

NAHB Comments:

- A. NAHB provides quarterly analyses of data from the Census Quarterly Starts and Completions by Purpose and Design⁸ and there is discrepancy in footprint size. The “large footprint” home used by EPA is about the average size of a new home being built in the United States, as illustrated in the table below. The table shows 2017-2018 values as compared to the 1Q 2019 data for reference. Please note, however, that the square footage of median new home starts has been larger than 2,300 square feet and the average square footage of new home starts has been larger than 2,500 square feet since mid-2011. Using 2,500 as a ‘large footprint’ reference home may not represent the ‘least efficient home’ at the larger end of the new housing scale. A more accurate evaluation would be to use 2,500 square feet home as an ‘average footprint’ reference home and determine a reasonable larger footprint for the ‘large footprint’ home based on existing data. The reference

⁸ https://www.census.gov/construction/nrc/pdf/quarterly_starts_completions.pdf

home designs should be revised to reflect the square footage in new home construction to more accurately quantify water savings in homes seeking WaterSense certification.

| Single-Family New Home Size | 1Q 2019⁹ | 2017-2018 |
|------------------------------------|----------------------------|------------------|
| Average (sq. ft) | 2584 | 2574 |
| Median (sq. ft) | 2355 | 2368 |

- B.** The ‘small footprint’ single-family reference home in Table 3-1 is a 2-bedroom, 1-bathroom home. This is not representative of a smaller typical new home in the United States. Only 10 to 12 percent of new single-family homes were constructed with 2 bedrooms or less from 2005 to 2015¹⁰. During this same time period, as shown in NAHB Reference Figure 3, 45 to 50 percent of housing starts were 3-bedroom homes, and 30 to 35 percent were 4-bedroom homes. In 2017, only 4 percent of new single-family homes started had 1 bathroom, with 1-bathroom homes having comprised less than 10 percent of new home starts dating back to at least the year 2000.¹¹ In 2017, 60 percent of new home starts had 2 full bathrooms and 27 percent had 3 full bathrooms¹². The ‘small footprint’ reference home design should be revised to reflect the number of bathrooms and bedrooms in new home construction, to more accurately quantify water savings in homes seeking WaterSense certification.

Based on NAHB data shown in Figures 3 through 5, the number of bathrooms and bedrooms in the ‘large footprint’ home (4-bedroom, 2.5 bath) are a fair representation of larger new home construction trends. Four-bedroom homes represent 30 to 35 percent of housing starts since 2005, and 60 to 70 percent of housing starts since 2007 have 2 bathrooms, with almost half of those homes also containing one half-bath.

⁹ <http://eyeonhousing.org/2019/05/new-single-family-home-size-first-quarter-2019-data/>

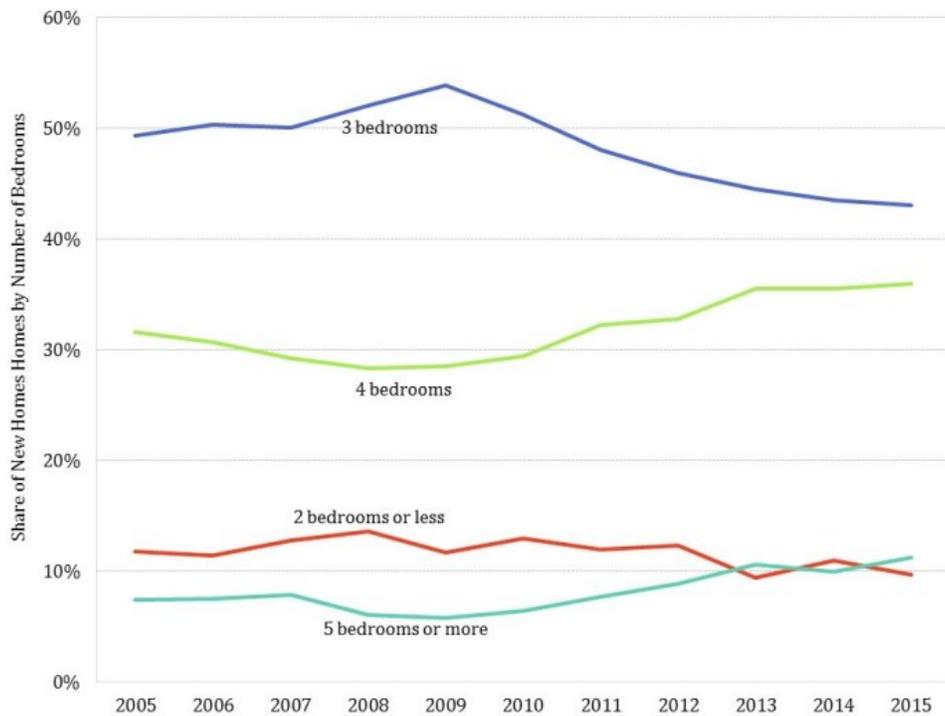
¹⁰ <http://eyeonhousing.org/2016/09/new-single-family-homes-started-in-2015-have-more-bedrooms/>

¹¹ <http://eyeonhousing.org/2018/11/number-of-bathrooms-in-new-homes-2/>

¹² <http://eyeonhousing.org/2018/11/number-of-bathrooms-in-new-homes-2/>

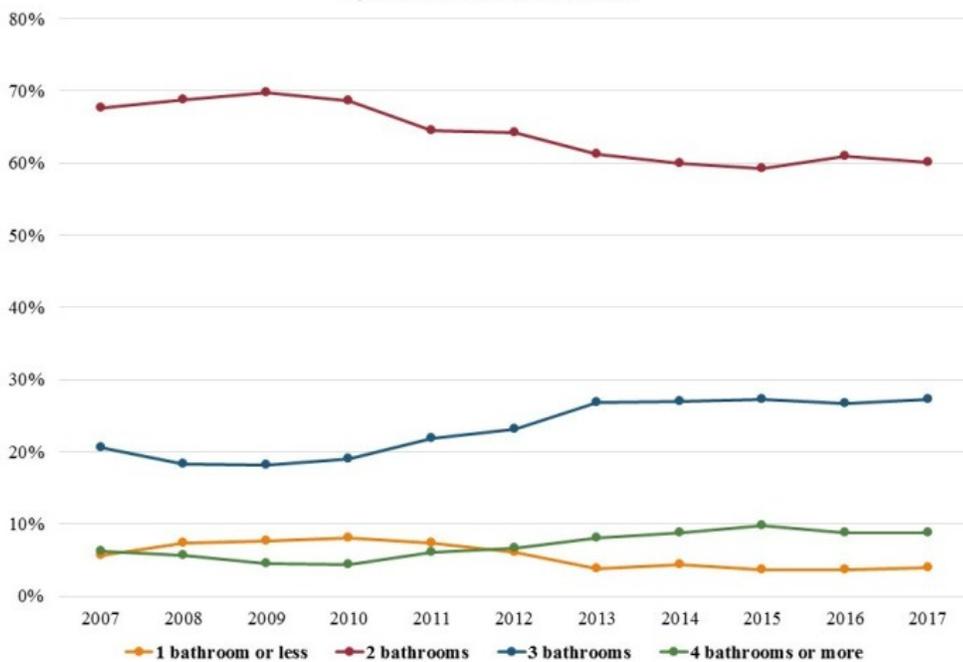
NAHB Reference Figure 3

Share of New Single-Family Homes Started by Number of Bedrooms, 2005 to 2015

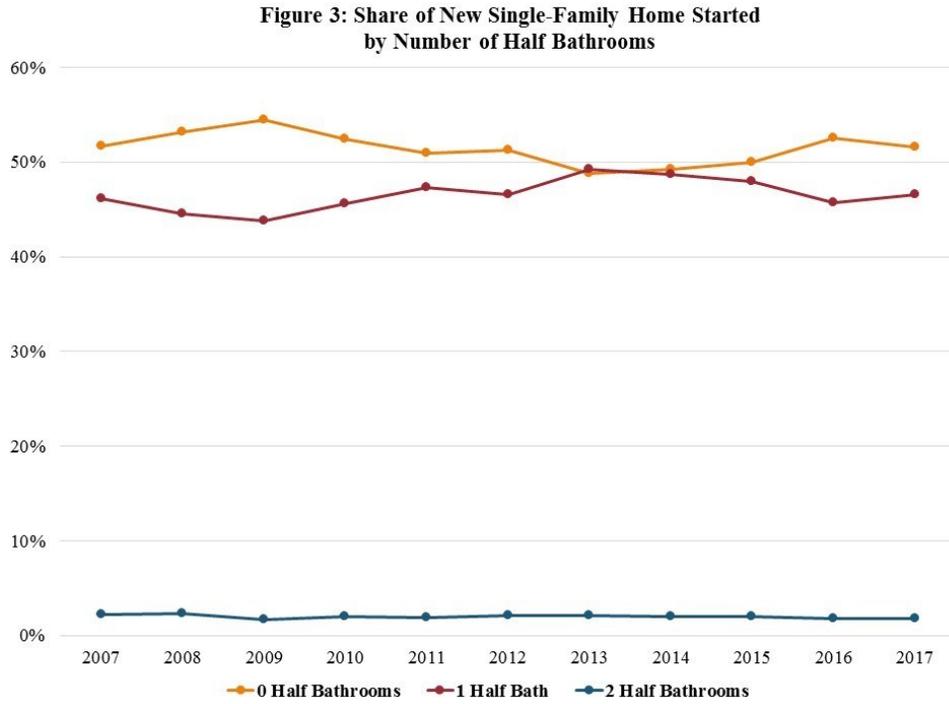


NAHB Reference Figure 4

Figure 1: Share of New Single-Family Home Started by Number of Full Bathrooms



NAHB Reference Figure 5



III. Reference Home Design: Multifamily

(Section 3.0 Technical Evaluation Details and Assumptions, Section 3.2 Reference Home Design, Pages 5-8)

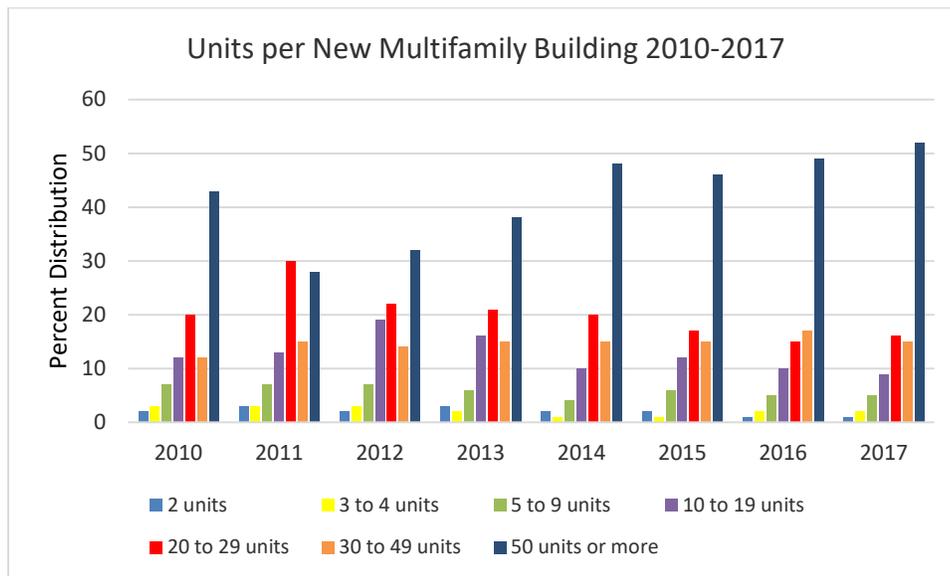
Table 3-2. Multifamily Reference Buildings

| Feature | Multifamily Reference Home 1: | Multifamily Reference Home 2: | Multifamily Reference Home 3: | Multifamily Reference Home 4: |
|-------------------------------|-----------------------------------|------------------------------------|------------------------------------|------------------------------------|
| | Small Building; No Irrigated Area | Small Building With Irrigated Area | Large Building; No Irrigated Area | Large Building With Irrigated Area |
| Bedrooms | 20 units x 1 bedroom/unit = 20 | 20 units x 1 bedrooms/unit = 50 | 300 units x 2 bedrooms/unit = 600 | 300 units x 2 bedrooms/unit = 600 |
| Bathrooms | 1 bathroom per unit | 1 bathroom per unit | 2 bathrooms per unit | 2 bathrooms per unit |
| Landscaped area (square feet) | None | 40,000 | None | 600,000 |
| Number of toilets | 20 units x 1 bathroom/unit = 20 | 20 units x 1 bathroom/unit = 20 | 300 units x 2 bathrooms/unit = 600 | 300 units x 2 bathrooms/unit = 600 |
| Number of showerheads | 20 units x 1 bathroom/unit = 20 | 20 units x 1 bathroom/unit = 20 | 300 units x 2 bathrooms/unit = 600 | 300 units x 2 bathrooms/unit = 600 |
| Number of lavatory faucets | 20 units x 1 bathroom/unit = 20 | 20 units x 1 bathroom/unit = 20 | 300 units x 2 bathrooms/unit = 600 | 300 units x 2 bathrooms/unit = 600 |
| Number of kitchen faucets | 20 units x 1 kitchen/unit = 20 | 20 units x 1 kitchen/unit = 20 | 300 units x 1 kitchen/unit = 300 | 300 units x 1 kitchen/unit = 300 |

NAHB Comments:

- A. Two types of multifamily reference buildings are shown in Table 3-2 – a ‘small building’ with 20 units and a ‘large building’ with 300 units. NAHB request EPA to provide more context as to why the larger reference building is defined by 300 units, when the Census Bureau’s website on the Characteristics of New Housing¹³ tracks the number of units in new multifamily buildings by grouping all buildings with 50 or more units together. Figure 6 shows the unit distribution for multifamily buildings from 2010-2017.

NAHB Reference Figure 6

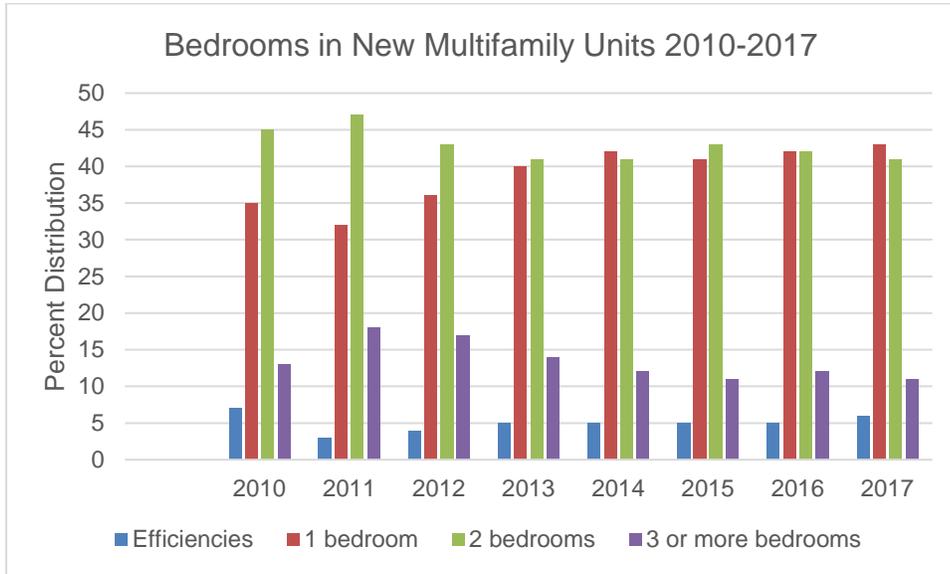


The small building assumes 1-bedroom/1-bathroom units, while the large building assumes 2-bedroom/2-bathroom units. The Census Bureau data analyzed by NAHB suggest a different unit distribution would be more representative of current multifamily starts. NAHB recommends that EPA revisit this distribution and include explanations of the reference buildings chosen for the PCM review process in the final document.

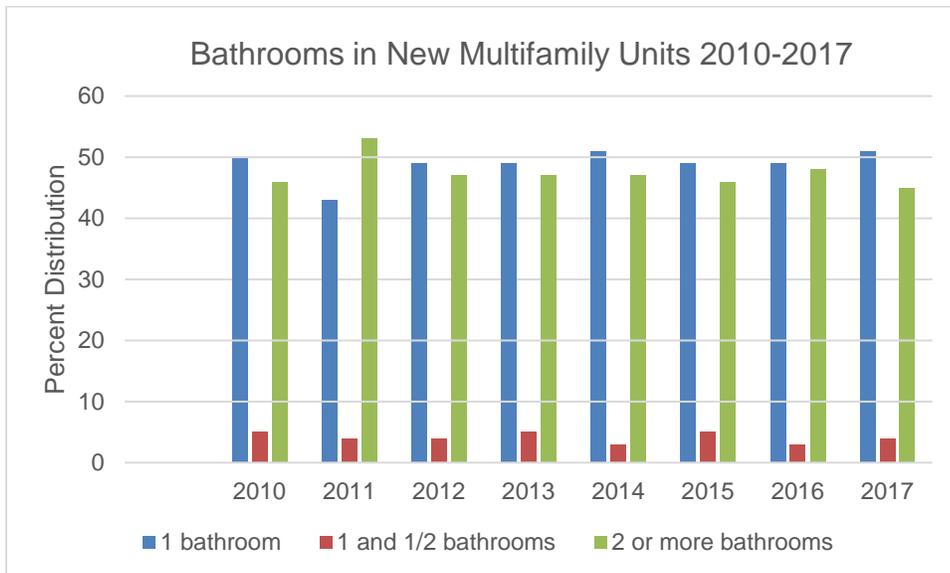
- B. The Census Bureau data show that in 2017, 41 percent of multifamily units had 2 bedrooms, while 41 percent had 1 bedroom. This nearly even distribution has been trending since 2013. The data also showed that in 2017, 45 percent of units with 2 or more bedrooms had 2 bathrooms and 51 percent had 1 bathroom. This is a shift from pre-2013, when 2 bathrooms were twice as common as 1-bath units. Bedroom and bathroom trends from 2010-2017 are seen in Figures 7 and 8.

¹³ <https://www.census.gov/construction/chars/mfu.html>

NAHB Reference Figure 7



NAHB Reference Figure 8



NAHB recommends that EPA revisit the multifamily unit configurations being used in the reference buildings.

IV. Evaluating Outdoor Water Use

(Section 3.0 Technical Evaluation Details and Assumptions, Section 3.4 Evaluating Outdoor Water Use, Page 27)

Table 3-3. Landscape Parameters⁵⁶

| Landscape type | Species Coefficient (K _{species}) | Irrigation Efficiency Allowance (Eff _i) | Combined Factor |
|--|---|---|-----------------|
| Entire lot | NA | NA | NA |
| Non-turf plants with spray irrigation ^a | 0.65 | 71% | 0.92 |
| Pool or fountain | 1.25 | 100% | 1.25 |
| Cool season turf | 0.8 | 71% | 1.13 |
| Warm season turf | 0.6 | 71% | 0.85 |
| Vegetable garden | 0.8 | 71% | 1.13 |
| Xeriscape | 0.3 | 90% | 0.33 |
| Non-turf plants with microirrigation ^b | 0.65 | 90% | 0.59 |
| Non-irrigated ground | 0 | 0% | 0 |

^a The EPA modified this row to clarify that the combination is for non-turf plants irrigated with spray irrigation.
^b The EPA added this row to the table. This type of landscape (non-turf plants) watered with microirrigation is not included in *Residential End Uses of Water, Version 2*. The EPA incorporated this additional combination because it is a common practice in irrigated landscapes. While *Residential End Uses of Water, Version 2* includes xeriscape with an irrigation efficiency allowance assumed to be equated with microirrigation (90 percent), The EPA is reserving the species coefficient associated with xeriscape plants for only those regions in warm, arid climates; and therefore, needed a combination representing other non-turf plants that are watered with microirrigation. The EPA selected 0.65 as the species coefficient and 90 percent as the irrigation efficient allowance to remain consistent with *Residential End Uses of Water, Version 2*.

NAHB Comments:

Outdoor water use is influenced by climate, irrigated area, irrigation and landscape features. Additionally, the ratio of indoor/outdoor water use varies by region in the U.S. NAHB applauds EPA for removing the mandatory outdoor water use reduction measures to increase flexibility for builders to choose how to best meet water efficiency goals on their projects.

Several landscape parameters are presented in Table 3-3 for use in calculating plant water requirements. One parameter is xeriscaping, a landscaping method that uses water-conserving techniques (such as the use of drought-tolerant plants, mulch, and efficient irrigation). While originally developed for arid and semi-arid climates, the concept has been adapted to more diverse climates, including areas like Florida¹⁴. Limiting use of the xeriscape landscape type to arid and semi-arid climates deprives builders in other areas of the country who are using these techniques. Providing a “non-turf plants with microirrigation” option with a more than double species coefficient (K_{species}) (0.65 rather than the 0.3 allowed for xeriscaping) does not give equal compensation for this restriction. NAHB recommends that EPA expand the options for use of the xeriscaping choice to all climates, creating subcategories with different K_{species} as appropriate.

¹⁴ <http://livinggreen.ifas.ufl.edu/landscaping/xeriscaping.html>

Conclusion

NAHB supports voluntary, above-code programs that encourage water-efficient construction practices in new and existing single-family, multifamily and remodeled homes. The proposed WaterSense program changes reduce the number of mandatory requirements from the previous version, recognize that outdoor water use is climate-zone dependent, and provide opportunity for increased flexibility in program methodologies. Program flexibility is increased in how the required water efficiency threshold is achieved as well as who may administer the certification and how the process is administered. NAHB urges EPA to maintain high quality assurance standards so that program oversight and management of the HCOs to ensure consistency and rigor among providers is achieved.

NAHB has provided data in this comment letter regarding the parameters used for the reference home designs that differs from the data currently being used by EPA. NAHB recommends that EPA re-evaluate the mandatory 30% improvement in efficiency requirement to determine if it is still appropriate or if it is too stringent in consideration of the new data provided.

NAHB appreciates the opportunity to provide comments on the *WaterSense Draft Specification for Homes, Version 2.0* and supporting program documents. Our members remain hopeful that the Administration's focus on regulatory reform and reducing burdens will provide meaningful relief for the industry and that voluntary, above-code programs such as WaterSense will continue to provide avenues for members to demonstrate their achievements in high-performance building, while also setting themselves apart in their local market. Please contact my colleague Michelle Dusseau Diller, at (202)266-8375 or mdiller@nahb.org if you have any questions regarding this letter. NAHB looks forward to future opportunities to engage with the EPA and the WaterSense Labeled Homes Program.

Sincerely,

A handwritten signature in black ink, appearing to read 'JST', with a long horizontal flourish extending to the right.

Jaclyn S. Toole, Assoc. AIA, CGP
Assistant Vice President, Sustainability & Green Building

Commenter: Darrel McMaster
Affiliation: Sustainable Homes, Inc.
Comment Date: June 18, 2019

Email Text:

First Name: Darrel
Last Name: McMaster
Title: CEO
Organization Name: Sustainable Homes Inc
Organization Type:
Builder Email Address: sustainablehomes@gvtc.com
Phone Number: 2108439828 Street Address: 224 rolling view dr
City: Boerne
State: Texas
Country: United States
Zip Code: 78006
Receive the WaterSense e-mail updates and newsletters? Yes

Message:

My comment is in regards to the new 2.0 version and where your data comes from. I am a builder who builds homes that run 100% on collected rainwater.

We have close to 100 of these homes and have water meters on every one of these homes. We also have meters on all irrigation for landscapes and meters on the swimming pools if we install them. My point is this, your numbers are nowhere close to what we have found in 14 years of keeping records.

Contacting an outside firm that contacts water companies to basically guess at the number of people in the home and the water used is in no way accurate.

My suggestion is to work with other builder programs to have them install meters that are hooked to the internet that are installed just prior to water going into the home. There are a number of programs available that we could get to be a part of this. Information can go straight to EPA, NAHB etc so the information could be shared. As for our information I can tell you by age and gender the amount of inside use that is used. Houses with Watersense and houses without and the difference. Houses with structured plumbing and those without (side note: I know structured plumbing was to save energy, water savings exceeds energy savings) We just feel that there are enough programs out there that we can ask the builders to add a meter just for domestic use.

We have thousands of homes available to collect accurate data from.

McMaster

Commenter: Mike Collignon
Affiliation: Green Builder Coalition
Comment Date: June 19, 2019

Email Text:

To whom it may concern:

I wanted to file a comment in regards to Section 4.3, Table 2 of [this document](#). I would encourage the EPA to consider language or guidance for methods that are already well-established in the marketplace through 3rd party use. (Meaning, a jurisdiction or green building program has adopted a PCM for use within their community or program.) While a PCM may have used some or all of the criteria listed in Table 2, alignment might not be 100%. It would be a shame to preclude certain existing PCMs that don't comply with a vetting process they were not asked to nor needed to follow when undergoing initial development.

How could such PCMs be allowed? Perhaps a "grandfathering" policy is applicable based on how long a PCM has been operating, or how many projects have utilized a PCM. Perhaps a letter(s) of recommendation from a jurisdiction, water utility and/or green building program could be submitted. If not, then maybe probational approvals is a route to take. For an existing PCM that hasn't gone through a formal or public comment period, or that hasn't established an appeals process, the existing PCM could be approved in WaterSense for Homes 2.0 but under the condition they hold public comments and a revision cycle within a certain number of months/years from the date of EPA approval.

Mike Collignon
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[Twitter](#)
[Facebook](#)