

# Public Comment Submission on WaterSense Draft New Home Specification (Version 1.1)

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**Commenter Affiliation:** Alliance for Water Efficiency, Chicago, Illinois

**Date of Comment Submission:** Friday, May 4, 2012

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**Topic:** Appropriateness of expanding scope of specification to multi-family residential three stories or less in size and residential units in mixed use buildings.

**Comment:** The Alliance for Water Efficiency (AWE) supports expanding scope of specification to multi-family residential three stories or less in size and residential units in mixed use buildings.

**Rationale:** According to the National Homebuilders Association, since the inception of the WaterSense in 2006, 180,000 multi-family units have been built per year on average. Construction in the multi-family residential building sector is likely to increase as land for single-family becomes less available over time thus increasing the importance of installing the water efficient technologies now available for this robust residential sector.

**Suggested Change (or Language):** None

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**Topic:** Affirm appropriateness of WaterSense edits to hot water delivery systems

**Comment:** The proposed language improves the specification.

**Rationale:** By including language specifying what is acceptable in contrast to what is unacceptable, the specification is clarified.

**Suggested Change (or Language):** None

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**Topic:** 3.7 Appliances – If the following types of appliances are financed, installed, or sold as upgrades through the homebuilder, they shall meet these criteria:

**Comment:** The qualifying language “as upgrades” is unnecessarily wide.

**Rationale:** Any appliance sold through the WaterSense builder regardless of whether it is an upgrade or not should be ENERGY STAR® labeled.

**Suggested Change (or Language):** 3.7 Appliances – If the following types of appliances are financed, installed, or sold as upgrades through the homebuilder, they shall meet these criteria:

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**Topic:** 3.7.2 Include ENERGY STAR Commercial Clothes Washers link to the specification

**Comment:** The only link provided in the specification is for ENERGY STAR home-grade clothes washers.

**Rationale:** Home-grade clothes washers are not generally sturdy enough to work well in a multi-family common laundry room.

**Suggested Change (or Language):** Include ENERGY STAR Commercial Clothes Washers link to the specification in addition to the ENERGY STAR Home-grade clothes washer link.

[www.energystar.gov/index.cfm?fuseaction=find\\_a\\_product.showProductGroup&pgw\\_code=CCW](http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=CCW)

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**Topic:** 3.8.1 Evaporative Cooling Systems

**Comment:** WaterSense should develop language that further clarifies that the specification is not for buildings that utilize cooling towers to support cooling systems serving living areas.

**Rationale:** The evaporative cooling systems efficiency requirements appear to assume that if there is an evaporative cooler it is a swamp cooler. This is a reasonable assumption for single-story homes, but there are multi-family dwellings less than three stories that can have cooling towers.. Whereas language in the third bullet seems to effectively address the limits of the specification, the second bullet has no such limiting language. It is important that WaterSense not inadvertently end up allowing in facilities with cooling towers in this specification as there are no water efficiency provisions in the current version of the specification covering cooling towers and it would damage the specifications credibility if this situation occurred.

**Suggested Change (or Language):** Add language under the bulleted sections “Residential areas served by cooling systems utilizing cooling towers are not applicable for this specification.”

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**Topic:** Add “Furnace Mount Humidifiers” to 3.8 Other Equipment

**Comment:** Humidifiers may have been addressed in previous drafts, but there is no mention of them in Draft Version 1.1 WaterSense New Home Specification

**Rationale:** According to the U.S. Census Bureau, an average of 400,000 furnace-mount humidifiers were installed in the U.S. annually over the past 5 years. That’s 2,000,000 new units installed since 2006. When humidifiers operate as designed, they discharge about 4 gallons of water per hour, 96 gallons per day, that is not utilized for humidification. Significant water savings are possible by encouraging new technology.

**Suggested Change (or Language):** That a WaterSense specifications be developed for furnace-mount humidifiers for future insertion in section 3.8 based on studies and tests done in Canada where humidifier rebate programs have been implemented in several areas for several years. The WaterSense threshold of at least 20% reduction of water use in the case of furnace mount humidifiers would be met by equipment that discharges 77 gallons per day or less. The example below shows that product is readily available that meets this criterion:

2011 Water-Efficient Furnace Mounted Humidifier Rebates in Markham, Ontario

The Regional Municipality of York has announced a rebate program for water-efficient furnace mounted humidifiers for eligible residents of York Region including the Town of Markham.

The residential humidifier rebate program offers:

- \$30 rebate for an approved, furnace mounted humidifier that sends 10 to 50 litres [2.6 to 13.2 gallons] of water to the drain per day
- \$70 rebate for an approved, furnace mounted humidifier that sends less than 10 litres [2.6 gallons] of water to the drain per day

There are a number of terms and conditions that must be followed. Only eligible models qualify. Purchases must be made between January 1, 2011 and December 31, 2011 and submission deadlines must be met.

The application forms and complete details are available at the York Region Water for Tomorrow website at [www.waterfortomorrow.ca/en/athome/humidifierrebates.asp](http://www.waterfortomorrow.ca/en/athome/humidifierrebates.asp)

For further information about the rebate program, call 1-888-967-5426

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**Topic:** 3.9 Metering – In multi-family buildings, each unit must be individually metered or equipped with an alternate technology capable of tracking water use and making the information available to the residents of the individual unit.

**Comment:** The meter is a primary water conservation tool therefore it must be accurate and should be accessible to the resident without special arrangements.

**Rationale:** Meters and alternate technologies have a variable performance record therefore an accuracy expectation should be included in the specification.

**Suggested Change (or Language):** 3.9 Metering – In multi-family buildings, each unit must be individually metered or equipped with an alternate technology capable of accurately tracking water use. Any measurement technology or meter must meet or exceed AWWA metering accuracy standard C700 or the AWWA standard for the type of meter used. and making the information available to the residents of the individual unit must be able to read the meter without requesting access from manager or building owner.

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**Topic:** 4.1.1 Landscape design – Design of the landscaped area shall be developed using the *WaterSense Water Budget Tool*. The tool and *WaterSense Water Budget Approach* can be found at [www.epa.gov/watersense/water\\_budget](http://www.epa.gov/watersense/water_budget) for single-family homes, pools, spas, and other water features shall be treated as turfgrass.

For multi-family buildings, common-use pools/spas and all areas that are reserved for private use of a particular residence/unit (such as areas deeded, identified as limited-use common elements, or otherwise restricted by building management) are excluded from the landscapable area. Additional criteria apply to pools/spas in section 4.1.4.

**Comment:** The multi-family exemption of outdoor pools and spas from inclusion in the landscape ET water budget calculation is problematic from a water conservation perspective.

**Rationale:** Separate metering does not compensate for water lost to evaporation from pools or spas in light of the fact that they will likely not be covered even when not in use so that the pool/spa is available for use by residents during daylight hours.

**Suggested Change (or Language):** 4.1.1 Landscape design – Design of the landscaped area shall be developed using the *WaterSense Water Budget Tool*. The tool and *WaterSense Water Budget Approach* can be found at [www.epa.gov/watersense/water\\_budget](http://www.epa.gov/watersense/water_budget). For single-family homes, pools, spas, and other water features shall be treated as turfgrass.

~~For multi-family buildings, common-use pools/spas and all areas that are reserved for private use of a particular residence/unit (such as areas deeded, identified as limited-use common elements, or otherwise restricted by building management) are excluded from the landscapable area. Additional criteria apply to pools/spas in section 4.1.4.~~

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**Topic:** 4.1.1 and 4.1.1.2 Landscape design

4.1.1 Landscape design - Design of the landscaped area shall be developed using the *WaterSense Water Budget Tool*. The tool and *WaterSense Water Budget Approach* can be found at [www.epa.gov/watersense/water\\_budget](http://www.epa.gov/watersense/water_budget). For single-family homes, pools, spas, and other water features shall be treated as turfgrass.

~~4.1.1.2 Option 2 – Turfgrass shall not exceed 40 percent of the landscaped area.~~

**Comment:** WaterSense should exercise great care in considering exclusive use of the Water Budget for purposes of determining landscape design. The most pressing consideration is the lack of clear definitions of plantings respective water use. Without clear definitions, the potential risk of compromising water savings is quite real. Turfgrass can currently be classified a low water use plant using the online water budget tool, yet there is no supporting evidence that true low water use grasses (with crop coefficients in the 0.3 range) are used as turf in the United States.

**Rationale:** The AWE is neutral with respect to WaterSense’s decision to remove the uniform turfgrass limitation option but suggests great care if pursuing this path to avoid compromising program water savings. Some of the suggested language below can help to avoid this outcome by minimally bounding plant water use classifications, but careful consideration of the range of possible ways to address landscape design is advisable. Simpler approaches may further extend the program’s interest to a wider range of potential stakeholders. Note that alongside this change, the online version of the tool would require slight modification to prevent such misclassifications as well.

**Suggested Change (or Language):** 4.1.1 Landscape design - Design of the landscaped area shall be developed using the *WaterSense Water Budget Tool*. The tool and *WaterSense Water Budget Approach* can be found at [www.epa.gov/watersense/water\\_budget](http://www.epa.gov/watersense/water_budget). For single-family homes, pools, spas, and other water features shall be treated as turfgrass. Under no circumstances shall turfgrass be classified as a low water use plant unless third-party testing data demonstrating a particular variety has a summer crop coefficient of 0.3 or less is submitted to and approved for such use by WaterSense. No cool-season grasses shall be classified as other than high water use unless third-party testing data demonstrating a particular variety has a summer crop coefficient of 0.7 or less is submitted to and approved for such use by WaterSense.

**Topic:** 4.1.1 and 4.1.1.2 Landscape design

4.1.1 Landscape design - Design of the landscaped area shall be developed using the *WaterSense Water Budget Tool*. The tool and *WaterSense Water Budget Approach* can be found at [www.epa.gov/watersense/water\\_budget](http://www.epa.gov/watersense/water_budget). For single-family homes, pools, spas, and other water features shall be treated as turfgrass.

**4.1.1.2 Option 2** — Turfgrass shall not exceed 40 percent of the landscaped area.

**Comment:** WaterSense should exercise great care in considering exclusive use of the Water Budget for purposes of determining landscape design. The most pressing consideration is the lack of clear definitions of plantings respective water use. Without clear definitions, the potential risk of compromising water savings is quite real. Scientifically determined crop coefficients do not exist for most plantings at this time meaning the great majority of determinations of plant water use are subjective decisions. A simplified water budget option may yield similar outcomes at a fraction of the subjectivity and correlate program risk.

**Rationale:** The AWE is neutral with respect to WaterSense’s decision to remove the uniform turfgrass limitation option, but suggests great care if pursuing this path to avoid compromising water savings. Some of the suggested language below can help to avoid this outcome, but careful consideration of the range of possible ways to address landscape design is advisable. Simpler approaches may further extend the program’s interest to a wider range of potential stakeholders.

The following option provides for similar outcomes to fair and judicious use of the water budget in most if not all parts of the country without the subjectivity and risk of having to rely on user inputted water demand classifications for site plantings. The same source evapotranspirational data estimation architecture that currently exists for the WaterSense online budget tool is easily applied to this alternative compliance option.

**Suggested Change (or Language):** 4.1.2 Simplified landscape design option - High Demand Areas<sup>1</sup> allowance shall be based upon the Estimated Supplemental Irrigation Demand (ESID) percentage. ESID is the net difference between historic monthly evapotranspiration (ET) rates in the region and historic average precipitation and shall be calculated using the High Demand Areas<sup>1</sup> Allowance Table. Where ESID percentage is 60 or more, the property shall be allowed to have up to 40 percent of the installed landscape areas as High Demand Areas<sup>1</sup>. In no cases shall the property have more than 80 percent of the installed landscape areas as High Demand Areas<sup>1</sup>.

**HIGH DEMAND AREAS ALLOWANCE TABLE**

| MONTH    | HISTORIC EVAPOTRANSPIRATION RATE (HET <sub>o</sub> ) OR (INCHES/MONTH OR MM/MONTH) | NORMAL PRECIPITATION (NP) (INCHES/MONTH OR MM/MONTH) | ESTIMATED SUPPLEMENTAL IRRIGATION DEMAND (ESID=( HET <sub>o</sub> ) (INCHES/MONTH OR MM/MONTH) |
|----------|--|--|--|
| January  |  |  |  |
| February |  |  |  |
| March    |  |  |  |
| April    |  |  |  |
| May      |  |  |  |

|  |  |  |  |
|--|--|--|--|
| June   |  |  |  |
| July   |  |  |  |
| August   |  |  |  |
| September  |  |  |  |
| October  |  |  |  |
| November   |  |  |  |
| December   |  |  |  |
| Sum<br>Columns   |  |  |  |
| ESID Percentage = (Sum ESID / Sum HET <sub>o</sub> OR NPE)   |  |  |  |
| High Demand Areas <sup>1</sup> Allowance (1-ESID Percentage) |  |  |  |

High Demand Areas<sup>1</sup> include areas with irrigated turfgrass, pools, spas, and other water features.

**Topic:** 4.1.5 Ornamental water features – Ornamental water features financed, installed, or sold as upgrades by the homebuilder must recirculate water and serve a beneficial use.

**Comment:** Beneficial use is a vague term. Now that the specification has been widened to include multi-family properties, this needs to be defined more specifically.

**Rationale:** Size of ornamental water features were somewhat limited due to single-family residential lot size.

**Suggested Change (or Language):** 4.1.5 Ornamental water features – Ornamental water features financed, installed, or sold as upgrades by the homebuilder must recirculate water ~~and serve a beneficial use.~~

The total water use or surface area of outdoor ornamental water features on a multi-family building site shall not exceed a catch basin volume of 100 gallons or 25 square foot surface area. No automated make-up water connection may be allowed.

**Topic:** 4.1.2 Slopes – Slopes in excess of 4 feet of horizontal run per 1 foot vertical rise (4:1) shall be vegetated.

**Comment:** It is odd that this specification would require vegetation. Perhaps this section was intended to disallow turfgrass in steeply sloped areas. [Related: See following comment regarding rise over run vs. run over rise.]

**Rationale:** If this requirement is due to a concern about erosion, there are other ways to mitigate other than vegetation. In fact, one could argue that vegetation is the last choice for erosion control in areas with very steep slopes. Alternatively, if this section is not about erosion control, we recommend deletion.

**Suggested Change (or Language):** 4.1.2 Slopes – Slopes in excess of 4 feet of horizontal run per 1 foot vertical rise (4:1) shall ~~be vegetated~~ be landscaped to prevent erosion. Vegetation plantings on such slopes must utilize erosion prevent techniques that will remain in place until vegetation is established.

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**Topic:** 4.1.2 Slopes – Slopes in excess of 4 feet of horizontal run per 1 foot vertical rise (4:1) shall be vegetated.

and

4.2.8 Sprinkler irrigation – Sprinkler irrigation, other than as a component of a micro-irrigation system, shall not be used to water plantings other than maintained turfgrass. Sprinkler heads shall have a 4-inch or greater popup height and matched precipitation nozzles. Sprinkler irrigation shall not be used on strips of turfgrass less than 4 feet wide nor on slopes in excess of 4 feet of horizontal run per 1 foot vertical rise (4:1).

**Comment:** The slope in both sections should be noted as rise over run rather than run over rise.

**Rationale:** Mathematical and engineering conventions indicate the formula as rise over run.

**Suggested Change (or Language):** 4.1.2 Slopes – Slopes in excess of ~~4 feet of horizontal run per 1 foot vertical rise (4:1)~~ 1 foot vertical rise per 4 feet of horizontal run (1:4) shall be vegetated.

and

4.2.8 Sprinkler irrigation – Sprinkler irrigation, other than as a component of a micro-irrigation system, shall not be used to water plantings other than maintained turfgrass. Sprinkler heads shall have a 4-inch or greater popup height and matched precipitation nozzles. Sprinkler irrigation shall not be used on strips of turfgrass less than 4 feet wide nor on slopes in excess of ~~4 feet of horizontal run per 1 foot vertical rise (4:1)~~ 1 foot vertical rise per 4 feet of horizontal run (1:4).

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**Topic:** 4.2 Irrigation System, Section 4.2.8 Sprinkler Irrigation

**Comment:** Although the language recognizes the need for pop-up heights greater than 4 inches for turf species in some regions it could be incorrectly interpreted to mean a minimum of 4 inches is appropriate. [Related: See preceding comment regarding rise over run vs. run over rise.]

**Rationale:** For grass species that can exceed 4 inches between mowing (i.e. tall fescue in northern California) the language should be clear that a minimum 6 inch (or greater) pop-up height is appropriate to prevent spray pattern blockage.

**Suggested Change (or Language):** 4.2.8 Sprinkler irrigation – Sprinkler irrigation, other than as a component of a micro-irrigation system, shall not be used to water plantings other than maintained turf grass. Sprinkler heads shall have a ~~4-6~~-inch or greater popup height (based on the sprinkler clearing the maximum turf height between mowing) and matched precipitation nozzles. Sprinkler irrigation shall not be used on strips of turf grass less than 4 feet wide nor on slopes in excess of 4 feet of horizontal run per 1 foot vertical rise (4:1).

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**Topic:** 7.0 Definitions – Hot water source – The container in which water is stored and/or heated such as a hot water heater or a demand-controlled recirculation loop.

**Comment:** The water heater heats cold or cool water, not hot water.

**Rationale:** This would be a more accurate description of the equipment.

**Suggested Change (or Language):** Hot water source – The container in which water is stored and/or heated such as a ~~hot~~ water heater or a demand-controlled recirculation loop.

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**Topic:** 7.0 Definitions – Front yard – Use local code definitions when available. Otherwise, the front yard means the portion of the lot extending across the full width of the lot between the front lot line and the front walls of the house.

**Comment:** As currently defined, the front yard is the front yard.

**Rationale:** A more accurate description would be helpful.

**Suggested Change (or Language):** Front yard – Use local code definitions when available. Otherwise, the front yard means the portion of the lot extending across the full width of the lot between the ~~front~~ lot line and the ~~front~~ walls of the ~~house~~ building that are parallel to the public right of way.

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**Topic:** 7.0 Definitions – Micro-irrigation system - The frequent application of small quantities of water on or below the soil surface as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line. Micro-irrigation encompasses a number of methods or concepts such as bubbler, drip, trickle, mist, or spray and subsurface irrigation. For purposes of this specification, micro-irrigation includes emission devices that have flow rates less than 30 gallons per hour (113.6 liters per hour).

**Comment:** This definition is much too wide to be an accurate definition of water efficiency expected of micro-irrigation systems. “Frequent” is an irrigation management term, not a hardware term.

**Rationale:** A bubbler, drip, trickle or subsurface irrigation product rated at 30 gallons per hour would apply 0.5 gallons per minute per emitter. Micro-spray irrigation emitters must apply greater gallons per minute than products that apply water directly to the soil or under the soil, but also cover much more area.

**Suggested Change (or Language):** Micro-irrigation system - The ~~frequent~~ application of small quantities of water on or below the soil surface as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line. Micro-irrigation encompasses a number of methods or concepts such as bubbler, drip, trickle, mist, or spray and subsurface irrigation. For purposes of this specification, emitters that apply water directly to the soil, within four inches of the soil/mulch or subsurface shall have flow rates equal to or less than 4 gallons per hour; micro-irrigation includes emission devices that micro-spray products shall be installed at least four inches from the soil/mulch surface and shall have flow rates less than 30 gallons per hour (113.6 liters per hour).

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**Topic:** APPENDIX D: Section 3, 3.7.2 Include ENERGY STAR Commercial Clothes Washers link to the specification

**Comment:** This link in the multi-family building appendix is to the residential ENERGY STAR clothes washer search engine.



**Rationale:** Home-grade clothes washers are not generally sturdy enough to work well in a multi-family common laundry room.

**Suggested Change (or Language):** Include ENERGY STAR Commercial Clothes Washers link to the specification in addition to the ENERGY STAR Home-grad clothes washer link.

[www.energystar.gov/index.cfm?fuseaction=find\\_a\\_product.showProductGroup&pgw\\_code=CCW](http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductGroup&pgw_code=CCW)

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**Topic:** APPENDIX D: Section 3, 3.9 Metering – In multi-family buildings, each unit must be individually metered or equipped with an alternate technology capable of tracking water use and making the information available to the residents of the individual unit.

**Comment:** The meter is a primary water conservation tool therefore it must be accurate and should be accessible to the resident without special arrangements.

**Rationale:** Meters and alternate technologies have a variable performance record therefore an accuracy expectation should be included in the specification.

**Suggested Change (or Language):** 3.9 Metering – In multi-family buildings, each unit must be individually metered or equipped with an alternate technology capable of accurately tracking water use. Any measurement technology or meter must meet or exceed AWWA metering accuracy standard C700 or the AWWA standard for the type of meter used. and making the information available to the rResidents of the individual unit must be able to read the meter without requesting access from manager or building owner.