ENERGY STAR® Program Requirements
Product Specification for Water Coolers

Eligibility Criteria
Draft 2 Version 2.0

Following is the **Draft 2 Version 2.0** product specification for ENERGY STAR qualified water coolers. A product shall meet all of the identified criteria if it is to earn the ENERGY STAR.

1) Definitions: Below are the definitions of the relevant terms in this document.

A. Water Cooler: A freestanding device that consumes energy to cool and/or heat potable water.

a. Cold Only Units: Units that dispense cold water only.

b. Hot and Cold Units: Units that dispense both hot and cold water. Some units may also offer room-temperature water.

c. Cook and Cold Units: Units that dispense both cold and room-temperature water.

B. Water Source:

a. Bottle-type: A bottle or reservoir supplies water to the water cooler.

b. Bottom Loading: A bottle-type water cooler where the water source is installed below the faucet(s) and thus the water source is not gravity fed into the water cooler.

c. Point of Use (POU): The water cooler is connected to a pressurized water source.

d. Conversion-type Water Cooler: A unit that ships as either Bottle-type or POU and includes a conversion kit intended to convert the Water Cooler from a Bottle-type unit to a POU unit or to convert a POU unit to a Bottle-type unit.

C. Water Storage:

a. Storage: Thermally conditioned water is stored in a tank in the water cooler and is available instantaneously.

b. On Demand: The water cooler heats water as it is requested, which typically takes a few minutes to deliver.

D. Compartment-type Water Cooler: A water cooler which, in addition to the primary function of cooling and dispensing potable water, includes a refrigerated compartment with or without provisions for making ice.

E. Product Family: A group of product models that (1) are manufactured by the same manufacturer, (2) use the same primary energy source, and (3) have electrical characteristics that are essentially identical, and which do not have any differing physical or functional characteristics that affect energy consumption.

Note: EPA has been asked to provide further clarification with regards to the qualification of models within a product line that differ only in aesthetics or other non-energy characteristics. The product family definition proposed above seeks to reduce manufacturer test burden while ensuring energy savings for the end user. Stakeholders are encouraged to comment on the product family definition and approach to product testing and qualification proposed in Section 4, below.

F. Test Modes:

a. On Mode with No Water Draw: A test that records the 24-hour energy consumption of a water cooler with no water drawn during the test period. This test was formerly known as "Standby".

b. On Mode with Water Draw: A test that records the energy delivered in a water draw and the subsequent energy consumed while recovering from that water draw. Detailed steps can be found in Sections 6.2 and 6.3 of the ENERGY STAR Water Cooler Test Method.

c. On Mode Water Draw Performance (OMP): A metric for water draw performance that compares the energy delivered and energy consumed by the water cooler. The calculation for OMP can be found in Section 7.6 of the ENERGY STAR Water Cooler Test Method.

2) Scope:

A. Included Products: Products that meet the definition of a water cooler as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B.

B. Excluded Products: Units that provide pressurized water and are not free standing (i.e., wall mounted, under sink, or otherwise building integrated) are not eligible for ENERGY STAR. Air-Source units and units with a water source other than bottled or tap water (POU) are not eligible.

3) Qualification Criteria:

A. Energy and Water Consumption Requirements:

Table 1: Energy-Efficiency Criteria for ENERGY STAR Qualified Water Coolers

Water Cooler Category	**Qualification Levels**
On Mode with No Water Draw	
Cold only and Cook and Cold units	≤ 0.16 kWh/day
Cold only and Cook and Cold units – Bottom Loading	≤ 0.16 kWh/day
Hot and Cold units – Storage-type*	≤ 0.81 kWh/day
Hot and Cold units – On Demand	≤ 0.18 kWh/day

**Note: POU, dry storage compartment, and bottled water coolers are included in this category*.

Note: In evaluating new Version 2.0 levels, EPA analyzed the ENERGY STAR Qualified Product List. Some stakeholders expressed concern regarding the quality of data submitted to EPA for ENERGY STAR qualification prior to the new third-party certification requirements taking effect in January 2011. To address these concerns, EPA updated its dataset to only include hot/cold models that have been third party certified as ENERGY STAR and found that the levels proposed in the Draft 1 specification continue to recognize multiple manufacturers and approximately 25% of this dataset, which is reasonably reflective of the current Water Cooler market. EPA also notes that numerous additional units that are expected to be certified in 2013 in anticipation of the Version 2.0 effective date currently meet these levels.

Capacity & Temperature: Some stakeholders have commented that higher flow rate models able to provide larger quantities of hot and cold water to consumers over a period of time, will use more energy during the test. EPA welcomes written comments describing the physical mechanism(s) that associate water draw rates with test results for the On Mode with No Water Draw Test. Stakeholders also commented that higher hot tank temperature settings and lower cold tank settings will result in more energy use during the On Mode with No Water Draw Test. The ENERGY STAR Water Cooler test procedure requires testing at the "as-shipped" temperature settings. EPA welcomes comments and test data on how significant the impact of different temperature settings can be during a test. For example, what is the difference in test results for (1) a unit tested with a hot tank temperature setting that just meets the test procedure requirements vs. (2) the same unit set to the maximum hot tank temperature setting possible. If stakeholders believe the difference is substantial, EPA also welcomes suggestions on how test results could be used to account for differences in tank temperature settings during testing.

Hot and Cold - On Demand: One stakeholder pointed out that since hot water is not drawn at all in these types of units during standby, the heater is not engaged and therefore, the limit should be the same as Cook and Cold i.e., 0.16 instead of 0.18. EPA has limited data on these product types but may be in favor of the change if sufficient justification can be provided. EPA is actively seeking feedback from stakeholders to provide data and information that supports or challenges this suggestion.

Commercial vs. Residential Applications: Some stakeholders shared concern that most of the models currently able to meet the new Version 2.0 levels are designed for residential applications and products intended for commercial use with higher volume and a longer lifetime are at a disadvantage. EPA's intent is to provide consumers with a tool to identify the most energy-efficient models for their intended application, both in the residential and commercial markets. In reviewing models available at retail or through bottled water distributors, EPA has found that in many cases the same water cooler unit is offered for both residential as well as commercial use. EPA is interested in reviewing data or other information that suggests revisions to these levels are needed.

Bottom Loading Water Coolers: EPA received a request, and is in favor of, creating a separate Bottom Loading Water Cooler subcategory under the Cold Only and Cook and Cold category with separate energy consumption requirements. A stakeholder suggested a qualification level of 0.19 kWh/day; however, EPA has placed the level at 0.16 kWh/day. Pump controls, pressure sensors, or thermal losses could account for the difference but EPA has not received data suggesting that these features have a significant impact on daily energy consumption. EPA would like to analyze data to determine the inherent drivers for higher consumption in bottom loading water coolers. Manufacturers are encouraged to provide feedback on this issue and the proposed bottom loading water cooler definition in Section 1.

Water Coolers with Refrigerated Compartments: A single stakeholder requested that EPA consider an allowance for water coolers that include a dedicated refrigerated compartment. These products differ from other water coolers that cool the compartment at the same time the water is delivered. EPA anticipates that market share for this product type is minimal at this time and does not plan to accommodate this feature in this Version 2.0 specification. EPA is amenable to further feedback from stakeholders on the need for accommodating water coolers with refrigerated compartments.

On Mode with Water Draw: In the Draft 1 specification, EPA indicated an interest in reviewing data submitted by manufactures using the On Mode with Water Draw test procedure presented in the ENERGY STAR Water Cooler Test Method (Rev. Sept-2012). EPA also encouraged stakeholders to submit data on the cost associated with testing On Mode with Water Draw. To date, EPA has received limited data on the energy consumed in On Mode with Water Draw. In addition, no cost data from manufacturers or distributors has been submitted with regards to associated testing costs. Furthermore, EPA has received several questions regarding how to use the new test method. Therefore, EPA has removed the placeholder in Table 1 for On Mode with Water Draw requirements while preserving the On Mode with Water Draw procedure within the ENERGY STAR Test Method (Rev. Sept-2012) to allow stakeholders more time to review and apply the Test Method. To qualify for Version 2.0, water coolers will only need to meet minimum On Mode with No Water Draw requirements. EPA may consider including On Mode with Water Draw requirements in subsequent versions of the specification if data shows that significant savings could be realized by including the OMP metric.

B. Allowance for Energy Saving Devices: If the unit has a feature designed to reduce the energy consumption when no water is drawn, and energy saving features can be disabled, a credit can be applied for purposes of qualification of that unit following the procedure below.

   a. Test the unit with the energy saving feature disabled and calculate the No Water Draw Energy Consumption in accordance with Sections 6.1 and 7.1 in the ENERGY STAR Test Method.(Q_{24hr})

   b. Repeat the test with the energy saving feature enabled ($Q_{24hr\ EnergySaving}$). Water temperatures do not need to conform to Section 4.O during this testing.

   c. The modified test result with the energy saving credit incorporated, for purposes of qualification with the On Mode with No Water Draw levels provided in Table 1, shall be calculated as follows:

   $$Q_{24hr}\ Modified = 0.5 * Q_{24hr} + 0.5 * Q_{24hr\ EnergySaving}$$

Note: Some stakeholders questioned whether EPA should give water coolers equipped with energy saving devices an allowance as this feature could be disabled in the field. EPA's intent in offering the allowance was to encourage manufacturers to find innovative ways to further reduce energy consumption, offering end users additional energy saving opportunities. Requiring these features to be enabled at the time of shipment makes it likely that the end user experiences these savings at the time of installation. EPA shares stakeholder concerns if, in practice, these features are being permanently disabled and therefore, encourages manufacturers that sell water coolers with energy saving devices to provide feedback on ways in which these savings might be assured post shipment.

EPA continues to support energy saving devices; however, providing an allowance without documented energy savings associated with such features does not comply with the ENERGY STAR guiding principles. To date, EPA has received no data from stakeholders. EPA encourages stakeholders to provide the energy savings associated with the energy saving features of their water coolers, specifically the delta savings in watts to show a clear value in their usage. EPA will not support an allowance without additional data.

C. Significant Digits and Rounding:

a. All calculations shall be carried out with actual measured or observed values. Only the final result of a calculation shall be rounded. Calculated results shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

b. Unless otherwise specified, compliance with specification limits shall be evaluated using exact values without any benefit from rounding.

4) Test Requirements:

A. A representative model shall be selected for testing per the following requirements:

a. For qualification of an individual product model, the representative model shall be equivalent to that which is intended to be marketed and labeled as ENERGY STAR.

b. For qualification of a product family, any model within that product family can be tested and serve as the representative model.

Note: For purposes of choosing a unit for testing, and in support of the Product Family definition proposed in Section 1, EPA has revised the representative model criteria in 4A above.

B. When testing water coolers, the following test method shall be used to determine ENERGY STAR qualification.

Table 2: Test Methods for ENERGY STAR Qualification

ENERGY STAR Requirement	Test Method Reference
On Mode with No Water Draw	ENERGY STAR Test Method for Water Coolers (Rev. Sept-2012)

C. Manufacturers have the choice of conducting an additional test with energy saver features enabled. If, and only if, these features are enabled when shipped, the test may be rerun in its entirety with previously disabled energy saver features enabled following completion of the ENERGY STAR Water Cooler Test Method (Rev. Sept-2012). Water coolers that ship with these features enabled are eligible to receive the allowance for Energy Saving Devices presented in Section 3.B., above. For this retesting the provisions in Section 4.O of the test method shall be disregarded.

5) Effective Date: The ENERGY STAR Water Cooler Specification shall take effect on December 1, 2013. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the model's date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.

Note: EPA anticipates finalizing the specification by March 2013. The effective date proposed above allows manufacturers 9 months to work with certification bodies and update product literature, as needed, to comply with the new requirements.

As of the effective date for this specification, only those models that have been third-party certified by an EPA recognized Certification Body will remain on the ENERGY STAR Qualified Product List. Upon finalization, manufacturers can immediately begin qualifying models to the new Version 2.0 specification. More information regarding product qualification will be provided along with the Final Draft specification. For more information on third party certification visit: www.energystar.gov/3rdpartycert.

6) Future Specification Revisions: EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model.