



## Baseline's Guide to the Outdoor Water Use Reduction Credits in LEED® v4

The United States Green Building Council® (USGBC) launched the LEED® green building program in 2000. Since that time, the program has gone through a number of revisions. LEED v4, released in late 2013, is the current version of LEED.

With LEED's focus on sustainability and environmental performance, water efficiency has always been important in LEED rating systems. A primary goal of LEED v4 is to "Protect and Restore Water Resources."

### Summary

In LEED v4, the prerequisites and credit requirements for the Outdoor Water Use Reduction credit have changed, and they vary based on building and project type.

- The calculator used for the prerequisite was modified, and the alternative water source credit and smart sensor irrigation were moved to the prerequisite.
- The Outdoor Water Use Reduction credit requires at least a 50% from the calculated baseline for the site's peak watering month. Reductions must first be achieved through plant species selection and irrigation system efficiency as calculated in the Environmental Protection Agency (EPA) WaterSense® Water Budget Tool ([http://www.epa.gov/watersense/water\\_budget/](http://www.epa.gov/watersense/water_budget/)).
- Additional reductions beyond 30% may be achieved using any combination of efficiency, alternative water sources, and smart scheduling technologies.
- There is a new credit for Water Metering that rewards projects for submetering at least two water end uses.
- In the Building Operations and Maintenance (O+M) project type, which applies to existing buildings that are undergoing renovations or improvements, installing an irrigation meter can contribute to helping achieve the credits for Outdoor Water Use Reduction.

### Strategies for Reducing Outdoor Water Use with Baseline Products

Baseline controllers equipped with soil moisture sensors, in conjunction with an appropriately designed irrigation system with distribution uniformity (DU) of 45% or more, will reduce water use by 30% compared to average implementations of conventional controls.

Baseline controllers with soil moisture sensors can replenish ET with zero error or drift, allowing a properly configured system to achieve near perfect irrigation management. Correct application of water will also improve plant efficiency through the promotion of deeper root systems, which improves both water efficiency and plant health and beauty.

### Smart Scheduling Technologies

Baseline’s Soil Moisture Sensors (SMS) are ideal tools to reduce water use. Through proper design and implementation, a Baseline irrigation controller can reduce seasonal water use by up to 70%<sup>1</sup>. LEED further requires that peak (July) water use be reduced by 50% in order to achieve the Outdoor Water Use Reduction credit. With built-in water management features, automatic calibration of sensor thresholds, and in conjunction with appropriately designed distribution systems with a distribution uniformity (du) of 45% or higher, all Baseline controllers with Soil Moisture Sensors will meet or exceed LEED requirements for Outdoor Water Use Reduction.

All water savings figures are predicted for peak seasonal use (July).

Category	Model	Water Savings	Summary
Irrigation Controllers	BaseStation 1000 BL-1000  BaseStation 3200 BL-3200	15%	Average savings seen using integrated water management features included in Baseline controllers. Key features include intelligent soak cycling and day interval calendar.
Soil Moisture Sensors	BL-5315B	35%-45%	Average <u>additional</u> savings for using soil moisture sensors with Baseline controllers. A distribution uniformity of 45% or greater is required to achieve target results.
Soil Moisture Sensor Add-on Device	WaterTec S100	Up to 50%	Average savings for using soil moisture sensors with a properly configured irrigation timer

1 – Dukes, M. et. al., (2008) Evaluation of Soil Moisture-Based on-demand Irrigation Controllers

### Alternate Water Sources

Baseline irrigation controllers have watering features to control and support multiple types of alternate water sources.

Using irrigation products designed for operation in non-potable systems can contribute to this credit. The following Baseline products meet these requirements:

Category	Model	Non-Potable Water Applicability
Irrigation Controllers	BaseStation 1000 BL-1000  BaseStation 3200 BL-3200	Advanced control algorithms and soil moisture sensors allow minimum water use from water storage systems, collection cisterns or ponds. Flexible and powerful programming features allow intelligent use of secondary water.

Pause & Pump Relay biCoders	BL-5402 and BL-5201PR, used with BL-1000 BL-3200 controllers	A multi-purpose pause biCoder used with a float switch or similar device, and a pump relay biCoder used to protect the pump and control fill for alternate water sources such as rainwater or condensate collection cisterns or open air collection ponds. For use in conjunction with BaseStation 1000, 1000R, 3200, or 3200R, which have pump management and advanced scheduling features to support these uses.
Flow biCoders	BL-5308 BL-5309	Flow biCoders for use with industry standard flow sensors or meters, including controlled flow systems for use with greywater applications as required and regulated in some markets. Used in conjunction with integrated overflow protection algorithms in BaseStation 1000, 1000R, 3200, or 3200R controllers.

Contact Baseline for more information on watering using secondary water sources, cisterns, or collection ponds.

### Measuring Water Use

Baseline’s flow solutions enable you to take precise control over the water at your site. Baseline’s irrigation flow sensors and flow meters are accurate across all ranges of flow so you’ll know without a doubt how much water you’re using. Baseline’s Flow biCoders™ ensure compatibility between virtually any third-party flow device and any Baseline irrigation controller.

Category	Model	Water Metering Applicability
Irrigation Controllers	BaseStation 1000 BL-1000  BaseStation 3200 BL-3200	When properly configured with a flow device, the BaseStation 1000 or BaseStation 3200 can provide an extensive set of flow monitoring and management capabilities to help understand how water is being used and to reduce the effects of pipeline breaks and sprinkler malfunctions. It can monitor actual water flow rates and then compare them against the expected or design flow rates and provide alerts and perform actions when limits or boundaries are exceeded.
PFS Series Irrigation Flow Sensors	BL-PFS100 BL-PFS150 BL-PFS200 BL-PFS300 BL-PFS400	The Baseline PFS Series Flow Sensors have a unique low drag, a lightweight impeller design, and a specially engineered tee cavity and impeller placement to ensure smooth flow and precise performance at the lowest flow rates. Every Baseline PFS Series Flow Sensor is two-wire ready with a Flow biCoder built into the tee insert. Because a Flow biCoder is built into each flow sensor, every device comes pre-configured with the correct K and offset values. The PFS Series Flow Sensors are available in 1½” to 4” sizes.

Baseline's Guide to the Water Efficiency Credits in LEED v3/2009

BFS Brass Flow Sensor	BL-BFS150	The Baseline BFS Brass Flow Sensor has a unique low drag, a lightweight impeller design, and a specially engineered tee cavity and impeller placement to ensure smooth flow and precise performance at the lowest flow rates. Every Baseline BFS Series Flow Sensor is two-wire ready with a Flow biCoder built into the tee insert. Because a Flow biCoder is built into each flow sensor, every device comes pre-configured with the correct K and offset values. The BFS Brass Flow Sensor is available in 1½”.
BFM Series Irrigation Flow Meters	BL-BFM075 BL-BFM100 BL-BFM150	Baseline’s BFM Series Flow Meters are small, rugged, and highly reliable flow meters that are Baseline two-wire ready. The flow meter is available in ¾” to 1 ½” pipe sizes. The K and Offset values are preconfigured in the flow meters.
BHM Series Irrigation Hydrometers	BL-BHM150 BL-BHM150-NO BL-BHM200 BL-BHM200-NO BL-BHM300 BL-BHM300-NO BL-BHM400 BL-BHM400-NO	Baseline’s BHM Series Hydrometer is a Flow Meter and Master Valve combination and is available in Normally Open and Normally closed Configurations. The Hydrometer is available in 1½” to 4” pipe sizes and every meter is two-wire ready with a built-in Flow biCoder and pre-configured K and offset values.
Flow biCoders	BL-5308 BL-5309	Flow biCoders for use with industry standard flow sensors or meters, including controlled flow systems. Used in conjunction with integrated overflow protection algorithms in BaseStation 1000, 1000R, 3200, or 3200R controllers.