

## USGBC and LEED®

The U.S. Green Building Council (USGBC) is a non-profit organization committed to expanding sustainable building practices. USGBC is composed of 78 local affiliates, more than 18,000 member companies and organizations, and more than 140,000 LEED Professional Credential holders. This diverse group from across the building industry is working to advance structures that are environmentally responsible, profitable, and healthy places to live and work. Members includes building owners and end-users, real estate developers, environmentalists, facility managers, architects, designers, engineers, general contractors, subcontractors, product and building system manufacturers, government agencies, and nonprofits.

## USGBC's Mission

To transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.

## Introduction: What LEED® Is

The LEED® (Leadership in Energy and Environmental Design) Green Building Rating System™ is a voluntary, internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO<sub>2</sub> emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

Developed by the U.S. Green Building Council (USGBC), LEED provides building owners and operators a concise framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.

## LEED Rating System Products

There are several different products to choose from, depending on the goals, and the type of project being considered.

- New Construction and Major Renovations
- Existing Buildings
- Commercial Interiors
- Core & Shell
- Schools
- Retail
- Healthcare
- Homes
- Neighborhood Development

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## LEED 2009 New Construction

LEED rating systems can be applied to any building type and any building lifecycle phase. They promote a whole-building approach to sustainability by recognizing performance in key areas. There are different product categories to consider meeting the project requirements, and irrigation products contribute similarly to most of them. This document will look specifically at the New Construction and Major Renovations rating system.

The rating system is organized into five environmental categories:

1. Sustainable Sites
2. Water Efficiency
3. Energy & Atmosphere
4. Materials & Resources
5. Indoor Environmental Quality

There are also two other key performance areas:

1. Innovation in Design
2. Regional Priority

Each of the categories has a certain number of points available as follows:

Category	Points
Sustainable Sites	26
Water Efficiency	10
Energy & Atmosphere	35
Materials & Resources	14
Indoor Environmental Quality	15
Innovation in Design	6
Regional Priority	4
Total Points Available	110

There are four different levels of certification available, based on the goals of the project, and the number of points the project earns:

- Certified (40+ Points)
- Silver (50+ Points)
- Gold (60+ Points)
- Platinum (80+ Points)

More information on the rating systems, the process, how to get started, and how to achieve certification are available at the USGBC website: [www.usgbc.org](http://www.usgbc.org).

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## Hunter Irrigation Products and LEED

Hunter supports the overall goals of LEED and strives to provide the irrigation industry with the most water efficient products. We manufacture a variety of irrigation components that can help designers, and owners earn LEED credits for their projects. The LEED system does not certify individual products; however, the selection of products plays an essential role in making a building project meet the requirements to earn points. Hunter's High efficiency landscape irrigation products can contribute to the earning of points for the following Credits in the LEED for New Construction system:

- Water Efficiency Credit 1 (2 Options)
- Innovation in Design Credit 1
- Sustainable Sites Credit 5.1
- Sustainable Sites Credit 6.1
- Sustainable Sites Credit 7.2
- Energy & Atmosphere Credit 1

There are 10 total points available in the Water Efficiency (WE) category, of which 4 points can be earned in Credit 1 if both Options are met by making efficient landscape and irrigation decisions. Irrigation may also effect the 5 other Credits listed above.

Water Efficiency Credit	Credit Title
WE 1 Option 1	Water Efficient Landscaping: Reduce water use by 50%
WE 1 Option 2	Water Efficient Landscaping: No Potable Water Use or Irrigation

Buildings are major users of our potable water supply. The goal of the Water Efficiency credit category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside.

Hunter's high-efficiency irrigation products can aid the designer in producing an efficient irrigation system that can use less water and help to meet the requirements to earn the points for the Water Efficiency category. All documentation and narratives must follow the procedures set forth by the USGBC, to be considered for point awards. The USGBC website ([www.usgbc.org](http://www.usgbc.org)) is the best resource to find forms, and documentation for successful submittals, and certification.

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## Water Efficiency Credit 1 (WE 1):

### Water Efficient Landscaping---Option 1. Reduce by 50% (2 Points)

#### Intent

To limit or eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

#### Requirements

Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case.

Reductions shall be attributed to any combination of the following items:

- Plant species factor
- Irrigation efficiency
- Use of captured rainwater
- Use of recycled wastewater
- Use of water treated and conveyed by a public agency specifically for non-potable uses

#### Potential Technologies & Strategies

Perform a soil/climate analysis to determine appropriated plant material and design the landscape with native or adapted plants to reduce or eliminate irrigation requirements. Where irrigation is required, use high-efficiency equipment and/or climate-based controllers.

#### Calculations

To calculate the percent reduction in potable use for this credit, establish a baseline water use rate for your project, which represents a “typical” landscape that could be found on a similar project in the area. Then, calculate the as-designed water use rate for the project. To complete these calculations, you will need to know the landscape coefficients for the major vegetation types, and the area of each.

All calculations must be based on irrigation during the month with the highest evapotranspiration (ET) rate. Local ET<sub>o</sub> values are available from the EPA’s [WaterSense](#) website.

You will also need to document the Irrigation Efficiency (IE) for each landscape area, based on the type of irrigation used. Standard numbers for Sprinkler and Drip are given in the LEED reference guide, and should be used to calculate the baseline case water use.

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## Water Efficiency Credit 1

### Calculations (continued)

Irrigation Efficiency for the Design case may use different numbers than in the Baseline case based on the efficiency numbers of the products selected for the irrigation plan.

Controller Efficiency (CE) is another number that may have to be determined, and is defined as the percent reduction in water use from any weather-based controllers or moisture sensor-based systems. It is equal to 1 minus the estimated percentage of overall irrigation water saved by the controller ( $CE = 1 - \% \text{ Savings}$ ). As an example, if a Hunter I-Core Controller is installed on a project with a Hunter Solar Sync ET Sensor, and the estimated water savings is 20%, the CE would be 0.8 ( $CE = 1 - 0.2 = 0.8$ ).

Since there are a number of variables that influence the savings percentage one might expect, Hunter has developed a spreadsheet that can aid the designer in estimating the potential savings, and therefore the CE number required in the calculations. This spreadsheet looks at the savings possible over an entire irrigation season, as much of the expected savings occurs in the spring and fall months. Please contact your local Hunter Industries Sales Representative if you would like to receive a copy of this spreadsheet.

If applicable, the volume of reuse water (captured rainwater, re-cycled graywater, or treated wastewater) available in the month with the highest irrigation demand can be added into the savings of potable water.

Once the water savings based on vegetation types, irrigation efficiency, controller efficiency, and reuse water are calculated; the total percentage reduction of potable water use must be equal to or greater than 50% to earn WE Credit 1, Option 1. The Reference Guide, and the USGBC website contain detailed explanations, examples, worksheets, and forms required to complete the calculations for all LEED Credits.

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## Hunter Water Efficient Products

The table below lists the Hunter products that a designer can use to help achieve the required 50% reduction to earn the points for this Credit Option.

Product Category	Hunter Model	Water Savings Percentage	Reference
Rotating Stream Sprinklers	MP Rotator	30%	<i>Performance and Water Conservation Potential of Multi-Stream, Multi-Trajectory Rotating Sprinklers for Landscape Irrigation</i> K. H. Solomon, J.A. Kissinger, G.P. Farrens, J. Borneman
Pressure Regulating Spray Head Bodies	Pro-Spray PRS-30 and PRS-40	5 to 50+% (based on pressure differential)	Pressures above the manufacturer's stated optimum pressure can cause sprinkler inefficiencies in distribution pattern, misting, overspray, and higher volume. Savings percentages vary with the difference in pressure between the optimum and the actual pressure. Pressure regulation helps to bring the operating pressure into the optimum range, and reduces water usage by approximately 1 to 2% for every 1 PSI reduction in pressure. See: <a href="#">Bernoulli's Equation</a>
Valve Pressure Regulation	Accu-Sync	5 to 50+% (based on pressure differential)	See Above Pressure Reference
Micro Irrigation	Hunter PLD Landscape Drip Line	20 to 40%	Drip irrigation has an average efficiency of 90% compared to sprinkler irrigation's averages of 50% for sprays, and 70% for Rotors, because it applies the water directly to the root zone of the plants. See: <a href="#">Efficient Irrigation</a>
Micro Irrigation	Root Zone Watering System (RZWS)	Up to 40%	Pressure compensating bubbler irrigation has a similar efficiency to drip irrigation, as it applies water directly to the root zone. Savings percentage is based on the difference between spray sprinkler efficiency and drip efficiency.
Check Valves	Pop-up Spray and Rotor Sprinklers	5+%	Any amount of slope to the piping system can lead to water draining out the lowest point of the system. In-sprinklers check valves save water by holding the water in the piping system when the irrigation system is not operating. Potential savings depends on the amount of piping in the ground, and slope in the sprinkler zone.

Note: Irrigation component performance depends on proper design, installation, management, and maintenance of the entire irrigation system. These factors along with site weather conditions, soils, plant material, and previous irrigation management practices will influence the amount of savings realized. The percentages given here, are representative of potential savings, and may not be the actual savings achieved.

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## Hunter Water Efficient Products (continued)

Product Category	Hunter Model	Water Savings Percentage	Reference
Automatic Controllers	X-Core, XCH, Pro-C, PCC, ICC, I-Core, ACC	Up to 10%	Hunter controllers have the programming flexibility to accommodate a wide variety of landscape materials and climate types, as well as adjust for seasonal weather changes. Savings are based on manufacturer testing, and rely on user input for programming and seasonal changes.
Rain Sensors	Mini-Clik, Rain-Clik, Wireless Rain-Clik	Up to 20%	Rain sensors automatically preempt or stop irrigation when sufficient precipitation has occurred, and the sensor is activated. Water savings is dependent on the number of rain events, and the quantity of rain that occurs during the irrigation season. See: <a href="#">Rain Sensor Study</a>
Wind and Freeze Sensors	Freeze-Clik, Wind-Clik	Less than 5%	Above-ground spray irrigation systems that run during windy conditions or during freezing temperatures can waste water. Savings percentage is dependent on the number of times a system would be prevented from watering when undesirable conditions prevail.
Flow Sensors Flow Meters	Flow-Clik (All Controllers) HFS (ACC and I-Core Controllers)	Varies	Flow sensors can automatically stop irrigation when a high flow condition is detected. High flows can be the result of a broken sprinkler, a missing nozzle, a lateral line break, or a main line break. Water savings is dependent on the type of problem causing the high flow, and the amount of time the issue goes without detection or resolution.
ET Sensors	Solar Sync ET System	20 to 40%	An ET Sensor, when paired with the proper Hunter controller, can monitor the on-site weather, and adjust the controller based on the conditions at the site. Average savings is dependent on many variables, but averages of 30% are documented in many studies. See: <a href="#">ET Controller Study</a>
Central Control	IMMS 3.0	Up to 40%	Central Control allows the manager of a large site, or multiple sites to control and monitor many automatic irrigation controllers from one location. Average water savings of 20 to 50% can be achieved, depending on current management practices. The addition of ET Sensors to the satellite controllers in this type of system can help achieve savings toward the upper end of this range. See: <a href="#">Project Profiles</a>

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Note: Irrigation component performance depends on proper design, installation, management, and maintenance of the entire irrigation system. These factors along with site weather conditions, soils, plant material, and previous irrigation management practices will influence the amount of savings realized. The percentages given here, are representative of potential savings, and may not be the actual savings achieved.

## Water Efficiency Credit 1 (WE 1):

### Water Efficient Landscaping---Option 2. No Potable Water Use or No Irrigation (2 Points)

#### Intent

Eliminate the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

#### Requirements

Meet the requirements for WE Credit 1, Option 1.

AND

PATH 1

Use only captured rainwater, recycled wastewater, recycled graywater, or water treated and conveyed by a public agency specifically for non-potable uses for irrigation.

-OR-

PATH 2

Install landscaping that does not require permanent irrigation systems. Temporary irrigation systems used for plant establishment are allowed only if removed within a period not to exceed 18 months of installation.

#### Potential Technologies & Strategies

Perform a soil/climate analysis to determine appropriated plant material and design the landscape with native or adapted plants to reduce or eliminate irrigation requirements. Where irrigation is required, use high-efficiency equipment and/or climate-based controllers.

*If the Percent Reduction of Potable Water is 100% AND the Percent Reduction of Total Water is equal to or greater than 50%, both Option 1 and Option 2 are earned.*

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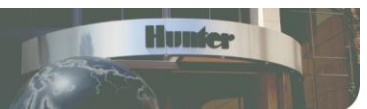


## Hunter Products for use in Non-Potable Water Irrigation Systems

The list below contains Hunter products that are designed to be used in irrigation systems that use non-potable water. If attempting to achieve WE Credit 1, Option 2, many local codes require that systems be installed with proper identification to alert the public to the use of non-potable water. Actual part numbers are available on the Hunter [website](#).

Product Category	Hunter Model	Non-Potable Water Identification
Spray Sprinklers MP Rotator	PROS-00 Pro-Spray Pro-Spray PRS-30 Pro-Spray PRS-40	PROS-00 molded in purple All Pro-Spray pop-up models have an optional factory-installed Reclaimed water ID cap. The cap may be ordered separately and field-installed. There is also a purple snap-on cover for field installation if desired.
Rotor Sprinklers	PGJ, PGP Ultra, I-20, I-25, I-35, I-40, I-60, I-90	Purple Reclaimed water ID covers are available as a factory installed option.
Valves	SRV, PGV, PGV-JT, PGV-ASV, ICV, IBV (tag)	All Hunter Valves with Flow-Control have purple Reclaimed Water ID Handles available. There is also a plastic tag available that may be installed on the valve, which is purple in color, and has language that denotes the use of non-potable water.
Quick Coupling Valves	HQ-33, HQ-44, HQ-5	The Hunter quick-coupling valves listed are available with an optional locking TuffTop™ cover, molded in purple, and with language that denotes the use of non-potable water.
Micro Irrigation	PLD RZWS ACZ, PCZ, ICZ	Professional Landscape Dripline is available in Reclaimed versions that are purple in color, and have the universal "Do Not Drink" symbol.  The Root Zone Watering System has a locking reclaimed purple cap available for the -18 and -36 models.  The Drip Zone Control kits have optional reclaimed water ID handles available for installation on the valves.

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## Other LEED Credits

There are several other Credits where irrigation products and landscape strategies can be used to achieve points.

### **Sustainable Sites Credit 5.1: Site Development—Protect and Restore Habitat (1 Point)**

Landscape design, and the use of efficient irrigation components can play a pivotal role in protecting and restoring habitats previously disrupted, or newly constructed sites. Re-establishing native vegetation, and meeting the percentage landscape requirements for this Credit could entail designing appropriate irrigation for plant establishment and maintenance. Vegetated roof surfaces may also apply to the requirements for this Credit.

### **Sustainable Sites Credit 6.1: Stormwater Design—Quantity Control (1 Point)**

The intent of this Credit is to limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, and managing stormwater runoff. Landscape design that directs water to the landscape instead of off the site, pervious pavement, and appropriate landscape materials to increase on-site infiltration can help to achieve this credit. Captured rainwater on the site can be dispersed by an irrigation system to minimize runoff, and increase infiltration.

### **Sustainable Sites Credit 7.2: Heat Island Effect—Roof (1 Point)**

The constructed environment tends to increase thermal gradient differences compared to undeveloped areas. One option in this Credit is to install a vegetated roof for a certain percentage of the total roof area. Efficient irrigation products such as Hunter PLD Dripline, or MP Rotator can be used to effectively irrigated plant material on these roofs.

### **Energy and Atmosphere Credit 1: Optimize Energy Performance (1—19 Points)**

The intent of this Credit is to achieve increasing levels of energy performance above a baseline standard, to reduce environmental and economic impacts associated with excessive energy use. Appropriate landscape design can aid in the sheltering of buildings from winter winds, and also shading from the summer sun. These strategies can help to reduce the heating and cooling loads, saving energy, and the impacts that energy generation can have. The surrounding landscape of the building can also have an effect on the ambient temperature near buildings, effecting energy usage. Green walls and mature trees to shade the building, and appropriate turf areas to cool the immediate area around structures, can be helpful to meet the requirements. Efficient irrigation can be important in supporting the plant material for optimum benefit.

### **Innovation in Design Credit 1: Innovation in Design (1—5 Points)**

The intent of this Credit is to provide design teams and projects the opportunity to achieve exceptional performance above the requirements set, and/or innovative performance in Green Building categories not specifically addressed by the system. Creative use of irrigation or in the overall landscape strategy which leads to environmental benefits that are quantifiable, and surpass any of the existing LEED requirements, may be considered for points in this Credit.

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## Other LEED Credits (continued)

### **Materials and Resources Credit 4: Recycled Content and Credit 5: Regional Materials**

Customers often ask if Hunter products can help them meet the requirements of the Materials and Resources (MR) credits. Specifically, they want to know if we have the recycled material content necessary to meet the qualifications for the Recycled Content Credits, or if our products meet the requirements for the Regional Materials Credit. The answer is that Hunter products do not meet the requirements they are specifying in either of those Credits.

The main reason our products cannot help in these credits, is that mechanical, electrical, and plumbing components are specifically excluded from the calculations necessary to meet the requirements. The main concern in the MR Credits mentioned above, is in the actual materials that make up the bulk of a building project, namely, steel, wood, stone, and concrete. Minor, removable components used in a project are not to be included in the calculations necessary to achieve these points.

## Hunter and the Environment

As a company dedicated to making the world a greener place, Hunter Industries takes particular pride in adopting environmentally responsible policies. Extensive testing is conducted on all Hunter products to ensure maximum reliability, which can require the use of vast amounts of fresh water. Hunter's Design Verification Facility reuses virtually all of this water, resulting in savings of over 2.5 million gallons each day.

As essentially all Hunter's products contain plastic components, injection molding constitutes an important part of our manufacturing process. Strict guidelines and procedures have resulted in the recycling of 98% of the extra plastic resulting from molding operations, greatly reducing our contributions to local landfills.

In order to reduce the use of corrugated cardboard during assembly, reusable plastic containers have replaced boxes used to direct components around the plant. Packaging for our products is fabricated from 30-80% recycled paper.

Hunter also maintains its own electrical generators, which utilize clean-burning natural gas, to power our facilities and reduce the load on our local power grid.

When it came time to expand our facilities, the company built a LEED Certified Gold building to house our warehousing operations, and provide a comfortable office space for some of our workers. Our facilities team is also in the process of trying to achieve LEED Certification for our existing buildings on our San Marcos, California campus.

As our company grows, so too will our commitment to the environment we all share.

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