



LEED® Version 3.0

The Intelligent Use of Water.™

LEADERSHIP • EDUCATION • PARTNERSHIPS • PRODUCTS

U.S Green Building Council

- **Formed in 1993 as a nonprofit organization based in Washington, D.C.**
- **Leaders from across the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work**
- **Developer and administrator of the LEED® Green Building Rating system, a voluntary standards and certification program that defines high-performance green buildings**
- **Consensus-driven, representing over 10,700 companies**



- **Leading edge program for designing, constructing, operating, and certifying the world's greenest buildings, developed by the USGBC**
- **Evaluates environmental performance from a whole building perspective over a building's life cycle**
- **Applies only to building projects, not products or services**
- **Development began in 1995, first released in 1999 (LEED for New Construction and Major Renovations)**

» www.usgbc.org

LEED Version 3.0 (V3)

- **LEED 2009 – February 2009 release**
- **LEED Online 3.0**
- **LEED Certification – Green Build Certification Institute (GBCI)**

LEED® 2009 for New Construction

Rating Levels (Revised January 2009)

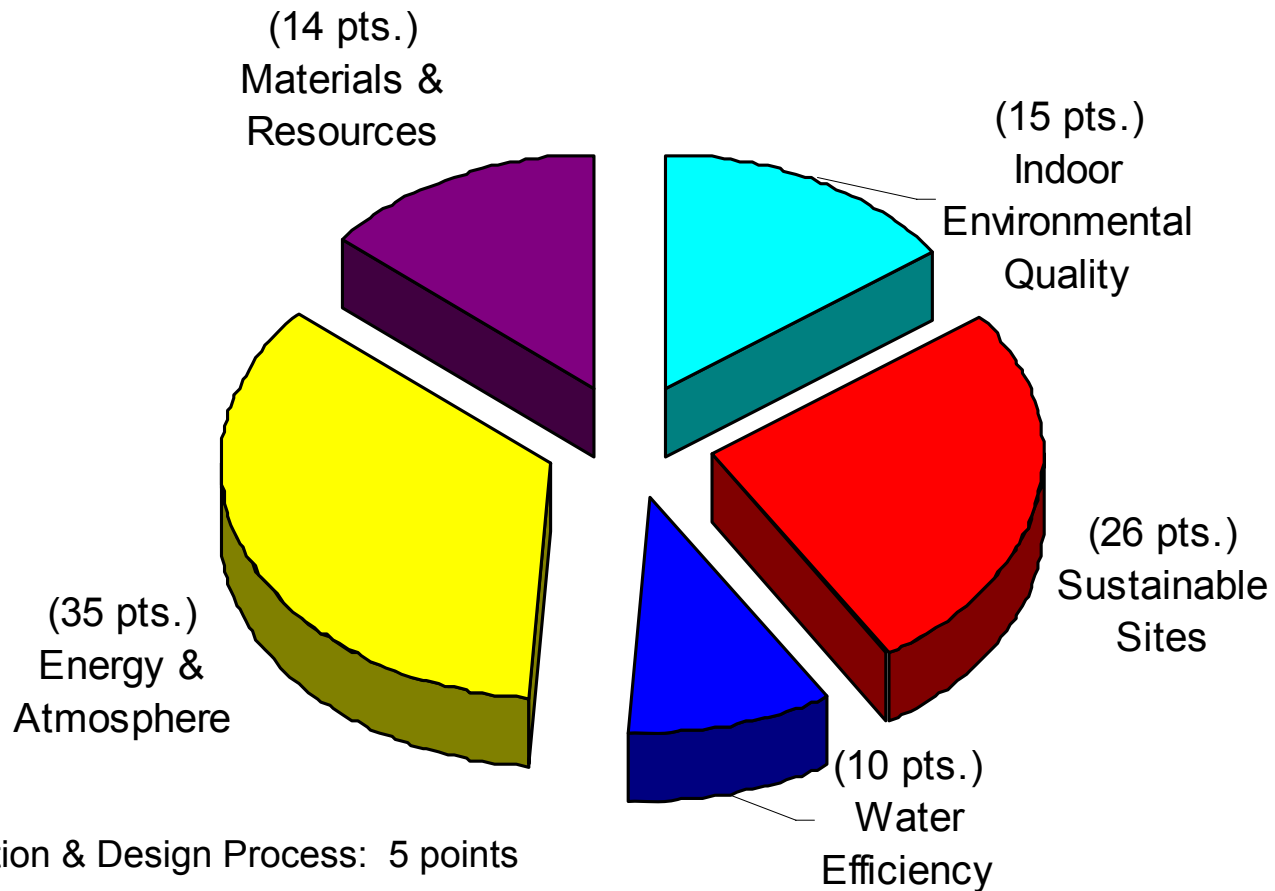
Total Number of Points – 110 (69)

Rating	Number of Points
Certified	40 (26)
Silver	50 (33)
Gold	60 (39)
Platinum	80 (52)

NOTE: LEED NC 2.2 points in parentheses.

LEED for New Construction

Point Categories



Innovation & Design Process: 5 points
LEED Accredited Professional: 1 point
Regional Priority: 4 points

LEED® Certification Process

Three step process:

- **Step 1: Project Registration On-line**
 - www.usgbc.org under “Register Your Project”
- **Step 2: Submit documentation**
- **Step 3: Building certification**
 - Upon documentation submittal and GBCI review

LEED® Certification Process

- **Green Building Certification Institute (GBCI) – Certifying body for LEED rating systems certification.**
- **GBCI also administering LEED AP**
- **GBCI certification bodies:**
 - ABS Quality Evaluations, Inc.
 - BSI Management Systems America, Inc.
 - Bureau Veritas North America, Inc.
 - DNV Certification
 - Intertek
 - KEMA-Registered Quality, Inc.
 - Lloyd's Register Quality Assurance Inc.
 - NSF-International Strategic Registrations
 - SRI Quality System Registrar, Inc.
 - Underwriters Laboratories-DQS Inc.

Certification Benefits

- **Third party validation of achievement**
- **Qualify for growing number of state and local government incentives**
- **Receive recognition and marketing exposure through USGBC web site, case studies, media announcements**
- **Contributes to a positive environmental image to the community and potential cost savings over the life of the project**
- **Growing requirements in multiple states and a number of global communities.**

LEED® Rating Systems

LEED® Rating Systems

LEED covers many different types of buildings and construction.

These are covered under the following LEED rating systems:

- LEED for Existing Buildings (Released: Oct. 2004, Rev. 2005)
- LEED for New Construction (Released: 1999, Rev. Jan 2009)
- LEED for Commercial Interiors (Released in 2004, Rev. 2005)
- LEED for Core and Shell (Released July 2006)
- LEED for Schools (Released April 2007)
- LEED for Retail (In final review phase)
- LEED for Healthcare (In public comment phase)
- LEED for Homes (Released January 2008)
- LEED for Homes – Midrise Multi-family (In pilot phase)
- LEED for Neighborhoods (In pilot phase)

LEED® Rating Systems

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- LEED for Existing Buildings (Released: Oct. 2004, Rev. 2005)
- **LEED for New Construction** (Released: 1999, Rev. Jan 2009)

Same Water Efficiency Credits apply to the following:

- LEED for Commercial Interiors (Released in 2004, Rev. 2005)
- LEED for Core and Shell (Released July 2006)
- LEED for Schools (Released April 2007)
- LEED for Retail (In final review phase)
- LEED for Healthcare (In public comment phase)
- LEED for Healthcare (In public comment phase)
- LEED for Homes (Released January 2008)
- LEED for Homes – Midrise Multi-family (In pilot phase)
- LEED for Neighborhoods (In pilot phase)

LEED for New Construction (NC) Rating System Credits

Categories for LEED for New Construction

- **Total of 10 possible points in Water Efficiency (WE) category**
- **Category includes:**
 - WE Credit 1: Water Efficient Landscaping (4 points)
 - WE Credit 2: Innovative Wastewater Technologies (2 point)
 - WE Credit 3: Water Use Reduction 30% Reduction (2-4 points)

Categories for LEED for New Construction

- **Total of 10 possible points in Water Efficiency (WE) category**
- **Category includes:**
 - WE Credit 1: Water Efficient Landscaping (4 points)
 - WE Credit 1.1: Reduce by 50% (2 Points)
 - WE Credit 1.2: No Potable Water Use or No Irrigation (2 Points in addition to WE Credit 1.1)

WE Credit 1.1: Water Efficient Landscaping: Reduce by 50% (2 Points)

Intent

- 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, density and microclimate 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

Groundwater seepage that is pumped away from the immediate vicinity of building slabs and foundations can be used for landscape irrigation to meet the intent of this credit. However, it must be demonstrated that doing so does not affect site stormwater management systems.

WE Credit 1.1: Water Efficient Landscaping: Reduce by 50% (2 Points)

Potential Technologies & Strategies

- Perform a soil/climate analysis to determine appropriate 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.

LEED Water Calculator

- **Tool to compare a typical plant / irrigation install to one which would use plants that are more drought tolerant, and / or irrigation technology which is more water efficient**
- **Takes into account types of vegetation, microclimates, and irrigation**
- **Compares Baseline Case to Design Case**
- **Can be used to demonstrate you have designed a system which reduces potable water use by 50% over baseline case.**

LEED Water Calculator

Evapotranspiration Table

ET ₀	[in]
July	6.00

Design Case Table

Landscape Type	Area [SF]	Species Factor (k _s)	Density Factor (k _d)	Micro climate Factor (k _{mc})	K _L	ET _L	IE	TPWA [gal]
Trees	100	Low ▼ 0.2	Avg ▼ 1.0	Avg ▼ 1.0	0.2	1.20	Drip ▼ 0.900	133
Shrubs	100	Low ▼ 0.2	Avg ▼ 1.0	Avg ▼ 1.0	0.2	1.20	Drip ▼ 0.900	133
Groundcovers	100	Low ▼ 0.2	Avg ▼ 1.0	Avg ▼ 1.0	0.2	1.20	Drip ▼ 0.900	133
Mixed	100	Low ▼ 0.2	Avg ▼ 1.1	Avg ▼ 1.0	0.2	1.32	Drip ▼ 0.900	147
Turfgrass	100	Avg ▼ 0.7	Avg ▼ 1.0	Avg ▼ 1.0	0.7	4.20	Sprin ▼ 0.625	672
		--	--	--	0.0	0.00	Sprin ▼ 0.625	0
		--	--	--	0.0	0.00	Sprin ▼ 0.625	0
		--	--	--	0.0	0.00	Sprin ▼ 0.625	0

Total	500							Subtotal [gal]	1,219
							July Graywater Harvest [gal]		
							Net GPWA [gal]	1,219	

Irrigation Potable Water Use Reduction

54%

Anatomy of a Water-Efficient Residential System

This residental design guide highlights Rain Bird product and technology solutions for a healthy landscape that uses less water.



Sprays

In-Spans Pressure Regulation

Material optimizes water pressure. Every 5 psi reduction in pressure reduces water usage by 6-8%. A 70 psi system reduced to a recommended 30 psi can provide more than 50% in water savings.

- 1800-PRS Spray
- 1800-SAM-PRS Spray

High Efficiency Nozzles

Provide more uniform distribution of water and eliminate over-spray which can result in 30%+ water savings.*

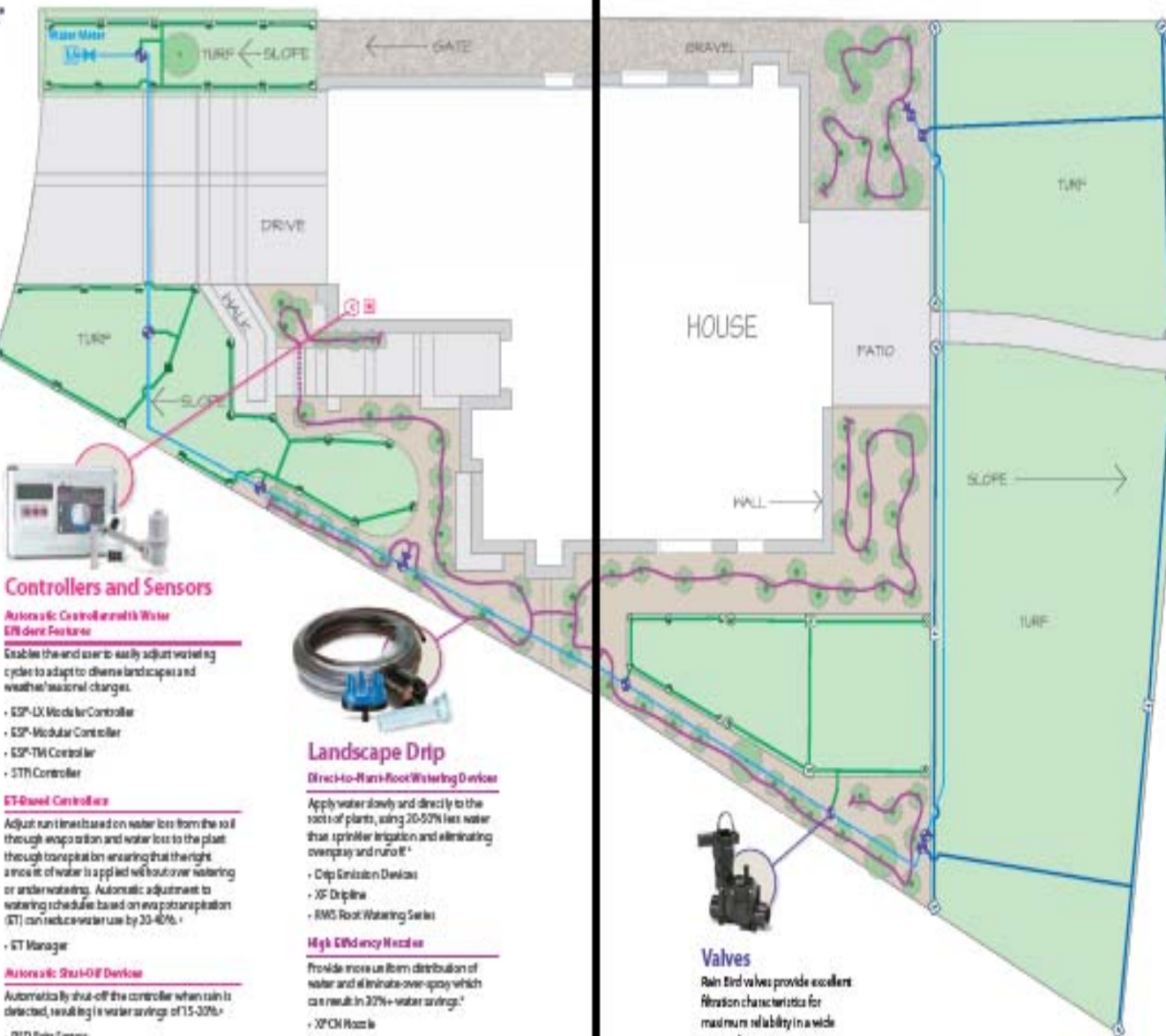
- Rotary Spray Nozzles
- U-Series Spray Nozzles
- Matched Precipitation Rate (MPR) Nozzles

Check Valve Devices

Prevent water from draining out of the system at the lowest sprinkler, which eliminates erosion and runoff.

- 1800-PRS Spray
- 1800-SAM-PRS Spray

*Based on average residential irrigation system design. Actual results may vary based on system design, soil conditions, and other factors. Rain Bird is not responsible for any damage or injury resulting from the use of its products. © 2010 Rain Bird Corporation.



Controllers and Sensors

Automatic Controller with Water Efficient Features

Enables the end user to easily adjust watering cycles to adapt to diverse landscapes and weather/seasonal changes.

- ESP-LX Modular Controller
- ESP-Modular Controller
- ESP-TM Controller
- STI Controller

ET-Based Controllers

Adjust run times based on water loss from the soil through evaporation and water loss to the plant through transpiration ensuring that the right amount of water is applied without over watering or under watering. Automatic adjustment to watering schedule based on evapotranspiration (ET) can reduce water use by 30-40%.

- ET Manager

Automatic Shut-Off Device

Automatically shut-off the controller when rain is detected, resulting in water savings of 15-30%.

- RSD Rain Sensor



Landscape Drip

Direct-to-Plant Root Watering Device

Apply water slowly and directly to the roots of plants, using 20-50% less water than sprinkler irrigation and eliminating overspray and runoff.*

- Drip Emitters
- XP DripLine
- RMS Root Watering Series

High Efficiency Nozzles

Provide more uniform distribution of water and eliminate over-spray which can result in 30%+ water savings.*

- XP-ON Nozzle



Valves

Rain Bird valves provide excellent filtration characteristics for maximum reliability in a wide range of environments.



Rotors

In-Spans Pressure Regulation

Prevent water loss caused by uneven water pressure. Every 5 psi reduction in pressure reduces water usage by 6-8%. The 5000PRS Series Rotor has documented 15-45% water savings.

- 5000-5000 Plus Series Rotor with PRS
- TSPRS Swing Joints

High Efficiency Nozzles

RainCurtain™ nozzle technology delivers thick water droplets in a uniform, consistent pattern, eliminating over-spray which results in water savings.

- 2500 and 5000 Series Rotors

Check Valve Device

Prevent water from draining out of the system at the lowest sprinkler, which eliminates erosion and runoff.

- 2500 and 5000 SAM Series Rotors

WE Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation (2 Points in addition to WE Credit 1.1)

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

- Achieve WE Credit 1.1 AND:

OPTION 1

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

OR

OPTION 2

- Install landscaping that does not require permanent irrigation systems. Temporary irrigation systems used for plant establishment are allowed only if removed within one year of installation.
 - *If the Percent Reduction of Potable Water is 100% AND the Percent Reduction of Total Water is equal to or greater than 50%, WE Credit 1.2 is earned in addition to WE Credit 1.1.*

WE Credit 1.2: Water Efficient Landscaping: No Potable Water Use or No Irrigation (2 Points in addition to WE Credit 1.1)

Potential Technologies & Strategies

- Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Consider using stormwater, greywater, and/or condensate water for irrigation.

Categories for LEED for New Construction

- **Total of 10 possible points in Water Efficiency (WE) category**
- **Category includes:**
 - WE Credit 1: Water Efficient Landscaping (4 points)
 - WE Credit 2: Innovative Wastewater Technologies (2 point)
 - OPTION 1
 - Reduce potable water use for building sewage by 50% by using water-conserving fixtures or non-potable water (captured rainwater, recycled greywater, and on-site or municipally treated wastewater).
 - OR
 - OPTION 2
 - Treat 50% of wastewater on-site to tertiary standards. Treated water must be infiltrated or used on-site.

Categories for LEED for New Construction

- **Total of 10 possible points in Water Efficiency (WE) category**
- **Category includes:**
 - WE Credit 1: Water Efficient Landscaping (4 points)
 - WE Credit 2: Innovative Wastewater Technologies (2 point)
 - WE Credit 3: Water Use Reduction (2-4 points)
 - WE Prerequisite 1: Water Use Reduction: 20% Reduction is REQUIRED
 - Employ strategies that in aggregate use 30%-40% (2-4 points) less water than the water use baseline calculated for the building (**not including irrigation**).
 - 30% reduction, 2 points
 - 35% reduction, 3 points
 - 40% reduction, 4 points

RP Credit 1: Regional Priority Credit (1–4 Points)

Intent

- To provide incentive for the achievement of credits that address geographically-specific environmental priorities.

Requirements

- Earn one of the six Regional Priority credits – to a maximum of 4 credits per project (credits identified as having additional regional environmental importance by the USGBC Regional Councils and Chapters for the project’s location). A database of Regional Priority credits and their geographic applicability is available on the USGBC website – www.usgbc.org.
- One point is awarded for each Regional Priority credit earned. No more than 4 Regional Priority credits may be earned. Non-U.S. projects are not eligible for Regional Priority credits.

Potential Technologies & Strategies

- Determine the prioritized credits for the project’s location. Pursue the prioritized credits for the project’s location.

RP Credit 1: Regional Priority Credit (1–4 Points)

74 Regional Chapters in U.S.

Alabama Chapter	Detroit Regional Chapter	Los Angeles Chapter	Northern California Chapter
Arizona Chapter	East Tennessee Chapter	Louisiana Chapter	Northern Gulf Coast Chapter
Arkansas Chapter	Flatwater Chapter	Maine Chapter	Northwest Ohio Chapter
Baltimore Regional Chapter	Florida Capital Region Chapter	Memphis Regional Chapter	Oklahoma Chapter
CA Central Coast Chapter (C4)	Florida Gulf Coast Chapter	Middle Tennessee Chapter	Orange County Chapter
Cascadia Region Green Building Council	Georgia Chapter	Mississippi Chapter	Piedmont Triad (NC) Chapter
Central California Chapter	Greater Houston Area Chapter	Mississippi Headwaters (MN) Chapter	Redwood Empire Chapter
Central Florida Chapter	Hampton Roads Green Building Council	Missouri Heartland Chapter	Rhode Island Chapter
Central Illinois Chapter	Hawaii Chapter	Montana Chapter	San Diego Chapter
Central Texas-Balcones Chapter	Heart of Florida Chapter	National Capital Region Chapter	South Carolina Chapter
Charlotte Region Chapter	Idaho Chapter	Nevada Chapter	South Florida Chapter
Chicago Chapter	Indiana Chapter	New Jersey Chapter	Southwest Virginia Chapter
Chihuahuan Desert Chapter	Inland Empire Chapter	New Mexico Chapter	St. Louis Regional Chapter
Cincinnati Regional Chapter	Iowa Chapter	New York Chapter	U.S. Caribbean Chapter
Colorado Chapter	James River Green Building Council	New York Upstate Chapter	Utah Chapter
Connecticut State Chapter	Kansas City Chapter	North Carolina Triangle Chapter	Vermont Green Building Network
Delaware Valley Green Building Council	Kentucky Chapter	North Florida Chapter	West Michigan Chapter
	Long Island Chapter	North Texas Chapter	

Additional LEED® Rating Systems with WE Points

All follow same WE requirements as LEED for New Construction

- 50% reduction in potable water use for irrigation (2 points)
- No potable water use or no irrigation (2 points)
- LEED for Commercial Interiors
- LEED for Core and Shell
- LEED for Schools
- LEED for Retail (not released)
- LEED for Healthcare (not released)

Additional LEED® Rating Systems with WE Points

LEED for Existing Buildings

WE Credit 1: Water Performance Measurement (2 points)

- WE Credit 1.1: Have in place a permanently installed water meter that measures total water use for the entire building and associated grounds (1 point)
- WE Credit 1.2: Meet the requirement for WE 1.1 and have in place permanently installed water sub-meter serving at least 80% of the irrigated landscape area on the grounds excluding “non-routine” irrigated areas. (1 point)

Additional LEED® Rating Systems with WE Points

LEED for Existing Buildings

WE Credit 3: Water Efficient Landscaping (3 points)

- WE Credit 3.1: 50% reduction in potable water use for irrigation over conventional means of irrigation (1 point)
- WE Credit 3.2: 75% reduction in potable water use for irrigation over conventional means of irrigation (2 points)
- WE Credit 3.3: 100% reduction in potable water use for irrigation over conventional means of irrigation (3 points)

Additional LEED® Rating Systems with WE Points

LEED for Homes/Midrise Multi-family (Not Yet Released)

- **WE Credit 1 Water Reuse: Max 5 pts.**
 - Percentage of total water demand supplied by water reuse: $\geq 10\%$ = 1 point; $\geq 20\%$ = 2 points; $\geq 30\%$ = 3 points; $\geq 40\%$ = 4 points; $\geq 50\%$ = 5
 - Strategies:
 - Use rainwater harvesting system for landscape irrigation or indoor water use or
 - Use greywater reuse system for landscape irrigation or indoor water use or
 - Use of municipal recycled water system for irrigation system
- **WE Credit 2 Irrigation System: Max 2 points.**
 - Credit 2.1 High-efficiency irrigation system (0.5-2 points) and/or
 - Credit 2.2 Reduce overall irrigation demand by at least 45% (0.5-2 points)
- **Additional LEED Points in Sustainable Sites “Landscaping” category (Max 3 points) for:**
 - Prerequisite 2.1 No invasive plants
 - Credit 2.2 Basic landscape design (1 point) and/or
 - Credit 2.3 Limit use conventional turf (2 points) and/or
 - Credit 2.4 Drought tolerant plants (1 point) or
 - Credit 2.5 Reduce overall irrigation demand by at least 20% (3 points)

Rain Bird products & LEED

Six Key Technologies to Conserve Water

<p>1. Operates Based on Weather and Evapotranspiration (ET)</p> <ul style="list-style-type: none"> ✓ Central Controls ✓ ET Manager 	<p>2. Flow Sensing and Leak Detection/Prevention</p> <ul style="list-style-type: none"> ✓ Central Control ✓ SAM Check Valves 	<p>3. Pressure Regulation</p> <ul style="list-style-type: none"> ✓ PRS Sprays & Rotors ✓ PRS Swing Joint ✓ PRS-Dial ✓ Booster Pumps
<p>4. High-Efficiency Nozzles</p> <ul style="list-style-type: none"> ✓ U-Series ✓ Rotary Nozzle ✓ MPR ✓ Rain Curtain 	<p>5. Low Volume and Direct to Root</p> <ul style="list-style-type: none"> ✓ Landscape Drip ✓ Root Watering Series 	<p>6. Durability / Low Maintenance to Perform as Specified</p> <ul style="list-style-type: none"> ✓ Technology for long life and low maintenance

Other Credits Associated with Irrigation

ID Credit 1: Innovation in Design (1-5 points)

- Provide design teams and projects the opportunity to be awarded points for exceptional innovative performance above the LEED requirements (e.g. *substantially exceed performance in water efficiency*) and/or innovative performance in categories not specifically addressed by LEED.
- Example: Create an actively instructional educational program that includes on-site signage to call attention to water-conserving landscape features and/or develop a manual and/or an educational outreach program/tour.

Other Credits Associated with Irrigation

ID Credit 2: LEED Accredited Professional (1 point)

- At least one principal participant of the project team shall be a LEED Accredited Professional (AP).

MR Credit 5.1/5.2: Materials and Resources (Recycled Content) (1-2 points)

- Use materials with recycled content
- Example: Rain Bird's black valve box bodies and black lids contain 100% recycled HDPE (high-density polyethylene) to qualify for this credit.

LEED 2009 ROLL-OUT SCHEDULE

(subject to change)

FEBRUARY 2009

- Roll out of new LEED 2009 Workshops and Reference Guides
- LEED Green Assoc. & LEED AP – Operations and Maintenance Exam – (Beta)

MARCH 2009

- LEED 2009 ONLINE goes live
- LEED AP – Homes Exam – (Beta)

SPRING 2009

- LEED Green Associate Exam - Launch
- LEED AP – Operations and Maintenance Exam - Launch
- LEED AP – Design and Construction/Interior Design and Construction – (Beta)

SUMMER 2009

- LEED AP – Homes Exam - Launch
- LEED AP – Design and Construction/Interior Design and Construction – (Beta)
- New Credentialing Maintenance Program – Launch

SEPTEMBER 2009

- Roll out complete

Summary

- LEED is becoming mainstream
- Irrigation points can help to achieve higher rating
- Irrigation designers and project owners need to be involved in projects at early stage to provide water use, storage, pump, and pressure requirements
- Rain Bird has a complete solution of production that promote water efficiency and can help to meet LEED Water Efficiency requirements

LEED Resources

- Your local Rain Bird representative.
- More training with Rain Bird Academy: www.rainbird.com/training
- Rain Bird Catalog: www.rainbird.com
- CAD Details: www.rainbird.com
- Water Saving Calculators: www.rainbird.com
- Local USGBC Chapter
- LEED Training Courses www.gbci.org
- LEED Online V3 www.leedonline.org— requires account to log-in.
- Case Studies, Economic Analyses, White Papers on USGBC Website: www.usgbc.org
- World Green Building Council: www.worldgbc.org