

BEYOND

SMART CITIES

WATER EFFICIENCY - GREEN BUILDING TECHNOLOGY

TRAINING PROGRAM

FOR GREEN BUILDING AND SUSTAINABILITY SPECIALISTS

KRISHNAJI PAWAR, LEED AP BD+C, GSAS CGP, ISO 14001:2015, GCP

WATER EFFICIENCY SPECIALIST CURRICULUM

CERTIFIED WATER EFFICIENCY SPECIALIST

CWES

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OUTDOOR WATER USE REDUCTION

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LEARNING OBJECTIVES

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Intent of Outdoor Water Use Reduction

Behind the intent

Step by Step Guidance

Required Documentation

Terms and Definitions



WATER EFFICIENCY



The Water Efficiency (WE) section addresses water holistically, looking at indoor use, outdoor use, specialized uses, and metering. The section is based on an "efficiency first" approach to water conservation. As a result, each prerequisite looks at water efficiency and reductions in potable water use alone. Then, the WE credits additionally recognize the use of nonpotable and alternative sources of water

CRITERIA IN THIS CATEGORY

WE PR OUTDOOR WATER USE REDUCTION

WE PR INDOOR WATER USE REDUCTION

WE PR BUILDING-LEVEL WATER METERING

WE CR OUTDOOR WATER USE REDUCTION

WE CR INDOOR WATER USE REDUCTION

WE CR COOLING TOWER WATER USE

WE CR WATER METERING

MAXIMUM POSSIBLE CREDITS : 3 P / 11 C

WE- PR- DESIGN

OUTDOOR WATER USE REDUCTION

INTENT

To reduce outdoor potable water consumption and preserve no and low-cost potable water resources.

POTENTIAL TECHNOLOGIES & STRATEGIES

☒ The landscape water requirement (LWR) can be estimated by developing a water budget that allows landscape professionals to consider the effects of the many design variables, such as plant types, planting density, and irrigation system elements. Using a water budget optimizes water use in landscape designs

REQUIREMENTS

permeable or impermeable pavement, should be excluded from the landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion.
Option 1. No Irrigation Required Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period. OR Option 2. Reduced Irrigation Reduce the project's landscape water requirement by at least 30% from the calculated baseline for the site's peak watering month. Reductions must be achieved through plant species selection and irrigation system efficiency, as calculated by the Environmental Protection Agency (EPA) WaterSense Water Budget Tool.

IMPLEMENTATION

REQUIRED DOCUMENTATION

Documentation	Option 1	Option 2
Site plan showing vegetated areas	X	
Narrative for plant species and water requirements	X	
Site plan showing location and size of landscape zones		X
Water Budget Tool report		X

BEHIND THE INTENT



Landscape irrigation practices consume large quantities of potable water, sometimes accounting for 30% to 70% of the water consumed in nonagricultural use. Potable water is a precious resource globally. For example, in many European cities, groundwater is being used at a faster rate than it can be replenished, according to the World Business Council for Sustainable Development.¹ Good landscape design and use of native, adapted, and drought-tolerant plants can dramatically reduce and even eliminate the need for irrigation while better integrating the building site into its surroundings and attracting native wildlife. Native plants also tend to require less fertilizer and fewer chemical pesticides, which degrade water quality when carried away in stormwater runoff.

The landscape water requirement (LWR) can be estimated by developing a water budget that allows landscape professionals to consider the effects of the many design variables, such as plant types, planting density, and irrigation system elements. Using a water budget optimizes water use in landscape designs.

There are no substantive changes to the prerequisite requirements; refer to the LEED v4 reference guide, with the following addition:



REQUIREMENTS

NC, CS, SCHOOLS, RETAIL, DATA CENTERS, WAREHOUSES & DISTRIBUTION CENTERS, HOSPITALITY, HEALTHCARE

Reduce outdoor water use through one of the following options. Non vegetated surfaces, such as permeable or impermeable pavement, should be excluded from the landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion.

Option 1. No Irrigation Required
Show that the landscape does not require a permanent irrigation system beyond a maximum two-year establishment period.



REQUIREMENTS

OR
Option 2. Reduced Irrigation
Reduce the project's landscape water requirement by at least 30% from the calculated baseline for the site's peak watering month. Reductions must be achieved through plant species selection and irrigation system efficiency, as calculated by the Environmental Protection Agency (EPA) WaterSense Water Budget Tool.



STEP-BY-STEP GUIDANCE

Projects with no landscape area are exempt from this prerequisite.

For U.S. projects, the WaterSense Water Budget Tool automatically derives rainfall and evapotranspiration from the project's zip code. Skip Step 1 and go to Step 2.

STEP 1. PROJECTS OUTSIDE U.S. ONLY OBTAIN PRECIPITATION AND EVAPOTRANSPIRATION DATA TO DETERMINE IRRIGATION REQUIREMENTS

Gather average monthly precipitation data and evapotranspiration rates (ET) for the project area to determine the site's potential irrigation needs. Precipitation data and ET can be found for most locations around the world (see Further Explanation, International Tips).

- An Excel version of the WaterSense Water Budget Tool can be found under the Resources tab for this credit, at [wsgbtool.org/credits](#).
- Project teams outside the U.S. must complete the tool using IP rather than SI units. Use the conversion calculator found under the Resources tab.

STEP 2. DETERMINE VEGETATED AREAS

On a map, indicate all areas on the project site that will have vegetation.

- The following landscape types may be included or excluded from landscape calculations: vegetated playgrounds, athletic fields, food gardens, and urban agricultural areas.
- When planning the site layout, consider factors such as proximity to water source for optimized irrigation, distance from water meter, and so on.

STEP 3. SELECT PLANT TYPES AND COVERAGE

Identify plant types and coverage that will reduce water use efficiency with the area's intended function.

- Reserve grass for play fields or other activities that require turf using turf for groundcover will make it very difficult to meet permeable and credit thresholds.
- Once established, native and drought-tolerant plants generally require little to no irrigation.
- Consider the U.S. Department of Agriculture plant database and the Lady Bird Johnson Wildflower Center's native plant database as resources. Both databases provide standardized information about native plants—for example, moisture requirements and preferred growing conditions—along with distribution data, plant images, and references.

STEP 4. SELECT ONE OPTION

Select the appropriate option for the project's irrigation needs, as described in the credit requirements.

- Option 1 is for projects that do not require irrigation, based on the location and landscape design.
- Projects that have no landscape area automatically achieve this prerequisite.
- Option 2 is for projects that require irrigation.



Option 1. No Irrigation Required

STEP 1. DEVELOP THE PLANT SPECIES AND WATER REQUIREMENT NARRATIVE

- Describe the plantings and explain why they will not require irrigation beyond their specified establishment periods. Indicate why permanent rainfall will be sufficient.
- A landscaping plan showing native plants may be provided to confirm that irrigation will not be required, based on local rainfall and plants' water demands.

Option 2. Reduced Irrigation

STEP 1. REDUCE IRRIGATION NEEDS BY ALTERING DESIGN

Project teams can dramatically alter irrigation demand by selecting plants that are appropriate for their intended uses.

- Reserve grass for play fields or other activities that require turf, using turf for groundcover will dramatically affect the ability to meet permeable and credit thresholds.
- Restore or plant native species to replace areas requiring intensive irrigation.

STEP 2. CALCULATE LANDSCAPE WATER BUDGET

Calculate water use as a percentage of total irrigation and peak-month irrigation demand using the WaterSense Water Budget Tool (see Further Explanation, About WaterSense, Examples, and International Tips).

- Use the tool for irrigated areas only. Do not include landscapes, whether pervious or impervious, or unvegetated surfaces, such as mulched paths and playgrounds.
- Reserve impervious and plant water requirements by referring to local resources such as plant guides, the state agricultural extension service, or nurseries to classify each plant type as a low, medium, or high water user.
- Projects may not enter zero landscape water consumption for any landscaped area.
- If any part of the site is irrigated, complete the calculation tool—once for the irrigated section, and again for the unirrigated area—and sum the results.
- Additional savings gained by using alternative water sources and smart sensor technologies are addressed in WEC Credit Outdoor Water Use Reduction. No credit is given for alternative water sources in this prerequisite.

CONNECTION TO ONGOING PERFORMANCE



LEED O+M WE credit Water Performance : Designing out the need for a permanent irrigation system, selecting native or adapted plants for project landscaping and/or installing efficient irrigation systems reduces irrigation water use throughout the building life cycle, which may help improve a project's water performance score.

TERMS AND DEFINITIONS



adapted plant vegetation that is not native to a particular region but that has characteristics that allow it to live in the area. Adapted plants do not pose the same problems as invasive species.

combination oven discharge water released from an oven that includes a steam cycle or option

conventional irrigation a region's most common system for providing water to plants by nonnatural means. A conventional irrigation system commonly uses pressure to deliver water and distributes it through sprinkler heads above the ground.

cooling tower blowdown the water discharged from a cooling tower typically because increased salinity or alkalinity has caused scaling. Cooling tower blowdown may be too saline for use in landscape irrigation.

evapotranspiration the combination of evaporation and plant transpiration into the atmosphere. Evaporation occurs when liquid water from soil, plant surfaces, or water bodies becomes vapor. Transpiration is the movement of water through a plant and the subsequent loss of water vapor.

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THANK YOU

Water



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TECHNOLOGY MARKETPLACE**
