



WATER EFFICIENCY - GREEN BUILDING TECHNOLOGY

TRAINING PROGRAM

FOR GREEN BUILDING AND SUSTAINABILITY SPECIALIST

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

WATER EFFICIENCY SPECIALIST CURRICULUM





WATER EFFICIENCY OVERVIEW

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LEARNING OBJECTIVES



Overview of Water Efficiency

Cross Cutting Issues

LEED v4.1 can help reduce water waste in an era of global scarcity.

Conserving water is not optional

The Water Efficiency category in LEED v4.1

The Rainwater Management credit in LEED v4.1

The future of green buildings



OVERVIEW



The Water Efficiency (WE) section examines water holistically, examining indoor consumption, outdoor use, special uses, and metering. The section is based on a "first efficiency" approach to water conservation. Consequently, each criterion focuses solely on water efficiency and reductions in potable water consumption. Additionally, WE credits acknowledge the use of non-potable and alternate water sources.

Only 3% of the Earth's water is fresh, and of that, little more than two-thirds is trapped in glaciers, making water conservation and innovative reuse essential. 1 Typically, the majority of a building's water is recycled and subsequently discharged as



OVERVIEW +



In developed nations, potable water often comes from a distant public water supply system, and wastewater must be piped to a processing plant before being released into a distant body of water.

This pass-through system decreases streamflow in rivers and depletes freshwater aquifers, resulting in falling water tables and dry wells. In sixty percent of European towns with over one hundred thousand inhabitants, groundwater is depleted faster than it can be replaced.



OVERVIEW +



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OVERVIEW +



Buildings account for 13.6% of potable water use in the United States, the third largest category after thermoelectric power and irrigation. By incorporating native landscapes that eliminate the need for irrigation, installing water efficient fixtures, and reusing wastewater for non-potable water needs, designers and builders can construct green buildings that use significantly less water than conventional construction.

In addition, the energy necessary to purify water for drinking, transport it to and from a building, and process it for disposal comprises a significant portion of energy use that is not caught by a building's utility meter. According to research conducted in California, water treatment and pumping utilize around 19% of all energy used in this state.

CROSS-CUTTING ISSUES



Indoor water (used by fixtures, appliances, and processes such as cooling), irrigation water, and water metering make up the three key components of the WE category. Depending on the project's specific water-saving techniques, these components may require a variety of documentation.

✓ Plans are used to record the location and size of vegetated areas, as well as the locations of meters and submeters. The position of fixtures, appliances, and process water equipment (such as cooling towers and evaporative condensers) as well as indoor submeters are depicted on the building's floor plans. The same paperwork can be used to earn credits for Sustainable Sites.

CROSS-CUTTING ISSUES +



- ✓ **Using fixture cutsheets or manufacturer literature, projects must document their fixtures (and appliances, as applicable). This documentation is utilized for the prerequisite and credit for Indoor Water Use Reduction.**
- ✓ **Alternative water sources: A project that includes graywater reuse, rainwater harvesting, municipally supplied wastewater (purple pipe water), or other reused water sources is eligible for WE Credit Outdoor Water Use Reduction, WE Credit Indoor Water Use Reduction, WE Credit Cooling Tower Water Use, and WE Credit Water Metering credit. However, the team cannot apply the same water to several credits unless the water source has adequate volume to meet all the demands (e.g., irrigation plus toilet flushing demand).**

CROSS-CUTTING ISSUES +



- ✓ **Using fixture cutsheets or manufacturer literature, projects must document their fixtures (and appliances, as applicable). This documentation is utilized for the prerequisite and credit for Indoor Water Use Reduction.**
- ✓ **The Indoor Water Use Reduction prerequisite and credit need estimations based on occupants' water consumption. In addition to using project occupancy calculations, the Location and Transportation and Sustainable Sites categories also utilize project occupancy calculations. Review the "Getting Started" section titled "Occupancy" to learn how residents are classed and counted. See also WE Prerequisite Indoor Water Use Reduction for additional WE-specific guidelines.**

LEED V4.1 CAN HELP REDUCE WATER WASTE IN AN ERA OF GLOBAL SCARCITY



- ✓ According to the United Nations, more than 40 percent of the global population is affected by water scarcity, and the Environmental Protection Agency predicts that U.S. states will have water shortages by 2024. Humans require access to clean water to preserve their health and food supply, but pollution, drought, and waste are putting a strain on the world's resources in ways that will only intensify.
- ✓ The US Green Building Council (USGBC) has held the WaterBuild Summit for three consecutive years, bringing together professionals from around the world to discuss solutions to water concerns. The Living Standard campaign, which emphasizes the right of all people to health, safety, and well-being, was launched in 2019. The most recent edition of the LEED grading system, LEED v4.1, tackles these challenges by establishing a high standard for water conservation.



WATER CONSERVATION IS NOT OPTIONAL



- ✓ The LEED rating system promotes water conservation, rainwater management, and the use of non-potable water sources for non-potable purposes. In addition, it addresses the core causes—climate change aggravating water scarcity—with an emphasis on carbon reduction.
- ✓ Outdoor Water Use Reduction, Indoor Water Use Reduction, and Building-level Water Metering are prerequisites for Water Efficiency (WE) credits in LEED v4.1 for Building Design and Construction (BD+C).



THE WATER EFFICIENCY CATEGORY IN LEED V4.1



The WE prerequisites and credits in LEED v4.1 BD+C include the following priorities:

- ☑ Teams are urged to submeter water subsystems in addition to installing permanent water meters that measure the total potable water use for the project.
- ☑ Through the use of native or adapted plants for landscaping, alternative water sources for irrigation, or irrigation efficiency methods, it must be demonstrated that irrigation of outdoor spaces is either unneeded or reduced by at least 30 percent compared to normal statistics.

THE WATER EFFICIENCY CATEGORY IN LEED V4.1



- ✓ The installation of WaterSense-certified, low-flow fixtures is required in order to reduce indoor water consumption, as does the use of water-efficient appliances.
- ✓ A new option inside the previous Cooling Tower Water Use Credit covers water utilized for mechanical processes. This credit encourages the recycling and reuse of nonpotable water for mechanical and cooling purposes.



THE RAINWATER MANAGEMENT CREDIT IN LEED V4.1



- ✓ The LEED v4.1 BD+C Rainwater Management credit in the Sustainable Sites category encourages projects to deal with rainwater runoff pollution in a responsible way on-site.
- ✓ At least 80% of the water from regional or local rain events can be stored with the help of rain gardens, vegetated roofs, permeable paving, and water collection features like cisterns.
- ✓ Projects with a zero lot line must treat water that runs off of hard surfaces so that less pollution gets into nearby waterways.



THE FUTURE OF GREEN BUILDINGS



✓ **New things are likely to change the future of green buildings and the materials used to make them. New scientific fields like virtual reality, chaos theory, and holographic philosophy will change how people see the world and how buildings are made.**

✓ **Some of the needs of modern buildings may also change because of how computers are used. This is because the way people work is changing a lot. The loss of natural resources could cause an energy crisis that would have a huge effect on how buildings are built and how much energy they use.**

THE FUTURE OF GREEN BUILDINGS +



- ☑ This could lead to a search for buildings that use less energy. Green buildings that use renewable sources of energy like wind are the answer.
- ☑ Buildings are now more than just places to live and be safe. Buildings today show that people care about the environment and the economy. There could be social, environmental, and economic factors in the buildings of the future.
- ☑ When we can see changes as they happen, we can take steps to stop them, like in the case of global warming. This is possible because there are quick ways to get feedback from users, process it, and send it back to them.

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SMART CITIES

THANK YOU

WATER

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