



WATER EFFICIENCY CREDIT

Indoor Water Use Reduction

This credit applies to:

New Construction (1-6 points)

Core and Shell (1-6 points)

Schools (1-7 points)

Retail (1-7 points)

Data Centers (1-6 points)

Warehouses and Distribution Centers (1-6 points)

Hospitality (1-6 points)

Healthcare (1-7 points)

INTENT

To reduce indoor water consumption.

REQUIREMENTS

Further reduce fixture and fitting water use from the calculated baseline in WE Prerequisite Indoor Water Use Reduction. Additional potable water savings can be earned above the prerequisite level using alternative water sources. Include fixtures and fittings necessary to meet the needs of the occupants. Some of these fittings and fixtures may be outside the project boundary. Points are awarded according to Table 1.

TABLE 1. Points for reducing water use

Percentage reduction	Points (BD+C)	Points (Schools, Retail, Hospitality, Healthcare)
25%	1	1
30%	2	2
35%	3	3
40%	4	4
45%	5	5
50%	6	—

SCHOOLS, RETAIL, HOSPITALITY, AND HEALTHCARE ONLY

Meet the percentage reduction requirements above.

AND**APPLIANCE AND PROCESS WATER**

Install equipment within the project scope that meets the minimum requirements in Table 2, 3, 4, or 5. One point is awarded for meeting all applicable requirements in any one table. All applicable equipment listed in each table must meet the standard.

Schools, Retail, and Healthcare projects can earn a second point for meeting the requirements of two tables.

To use Table 2, the project must process at least 120,000 lbs (57 606 kg) of laundry per year.

TABLE 2. Compliant commercial washing machines

Washing machine	Requirement (IP units)	Points (Schools, Retail, Hospitality, Healthcare)
On-premise, minimum capacity 2,400 lbs (1 088 kg) per 8-hour shift	Maximum 1.8 gals per pound *	Maximum 7 liters per 0.45 kilograms *

* Based on equal quantities of heavy, medium, and light soil laundry.

To use Table 3, the project must serve at least 100 meals per day of operation. All process and appliance equipment listed in the category of kitchen equipment and present on the project must comply with the standards.

TABLE 3. Standards for commercial kitchen equipment

Kitchen equipment		Requirement (IP units)	Requirement (SI units)
Dishwasher	Undercounter	ENERGY STAR	ENERGY STAR or performance equivalent
	Stationary, single tank, door	ENERGY STAR	ENERGY STAR or performance equivalent
	Single tank, conveyor	ENERGY STAR	ENERGY STAR or performance equivalent
	Multiple tank, conveyor	ENERGY STAR	ENERGY STAR or performance equivalent
	Flight machine	ENERGY STAR	ENERGY STAR or performance equivalent
Food steamer	Batch (no drain connection)	≤ 2 gal/hour/pan including condensate cooling water	≤ 7.5 liters/hour/pan including condensate cooling water
	Cook-to-order (with drain connection)	≤ 5 gal/hour/pan including condensate cooling water	≤ 19 liters/hour/pan including condensate cooling water
Combination oven	Countertop or stand	≤ 1.5 gal/hour/pan including condensate cooling water	≤ 5.7 liters/hour/pan including condensate cooling water
	Roll-in	≤ 1.5 gal/hour/pan including condensate cooling water	≤ 5.7 liters/hour/pan including condensate cooling water
Food waste disposer	Disposer	3-8 gpm, full load condition, 10 minute automatic shutoff; or 1 gpm, no-load condition	11-30 lpm, full load condition, 10-min automatic shutoff; or 3.8 lpm, no-load condition
	Scrap collector	Maximum 2 gpm makeup water	Maximum 7.6 lpm makeup water
	Pulper	Maximum 2 gpm makeup water	Maximum 7.6 lpm makeup water
	Strainer basket	No additional water usage	No additional water usage

gpm = gallons per minute gph = gallons per hour lpm = liters per minute lph = liters per hour

To use Table 4, the project must be a medical or laboratory facility.

TABLE 4. Compliant laboratory and medical equipment		
Lab equipment	Requirement (IP units)	Points (Schools, Retail, Hospitality, Healthcare)
Reverse-osmosis water purifier	75% recovery	75% recovery
Steam sterilizer	For 60-inch sterilizer, 6.3 gal/U.S. tray For 48-inch sterilizer, 7.5 gal/U.S. tray	For 1520-mm sterilizer, 28.5 liters/DIN tray For 1220-mm sterilizer, 28.35 liters/DIN tray
Sterile process washer	0.35 gal/U.S. tray	1.3 liters/DIN tray
X-ray processor, 150 mm or more in any dimension	Film processor water recycling unit	
Digital imager, all sizes	No water use	

To use Table 5, the project must be connected to a municipal or district steam system that does not allow the return of steam condensate.

TABLE 5. Compliant municipal steam systems	
Steam system	Standard
Steam condensate disposal	Cool municipally supplied steam condensate (no return) to drainage system with heat recovery system or reclaimed water
OR	
Reclaim and use steam condensate	100% recovery and reuse

BEHIND THE INTENT

See *Behind the Intent* in WE Prerequisite Indoor Water Use Reduction.

STEP-BY-STEP GUIDANCE

STEP 1. COMPLETE CALCULATIONS IN PREREQUISITE

Follow the instructions in WE Prerequisite Indoor Water Use Reduction to determine water savings resulting from efficiency of fixtures and fittings.

STEP 2. CONSIDER ALTERNATIVE WATER SOURCES

Alternatives to potable water include municipally supplied reclaimed water (“purple pipe” water), graywater, rainwater, stormwater, treated seawater, condensate, foundation dewatering water, used process water, and reverse osmosis reject water.

- Untreated water sources ineligible for this credit include raw water from naturally occurring surface bodies of water, streams, rivers, groundwater, well water, and water discharged from an open-loop geothermal system.
- When choosing alternative sources of water, target the uses that require the least treatment first. In most cases, water can be reused outside the building (for irrigation) or inside (for toilet flushing) with minimal treatment, but other uses will require more energy-intensive treatment.

STEP 3. CALCULATE ADDITIONAL SAVINGS FROM USING NONPOTABLE WATER


If the project is using an alternative, nonpotable water source, calculate the total annual projected water savings, using Equation 1.

EQUATION 1. Indoor water-use reduction with nonpotable supply

$$\text{Total water savings} = \left\{ \frac{\text{Annual baseline water consumption} - \left(\text{Annual design case water consumption} - \text{Annual nonpotable water supply} \right)}{\text{Annual baseline water consumption}} \right\} \times 100$$

- Prepare documentation, including a narrative describing the nonpotable water source, plumbing system design drawings that highlight the nonpotable water system, and supply and demand calculations that confirm the available quantity of nonpotable water.
- Address any change to the calculated usage demand of seasonal availability or storage capacity. If the nonpotable water is used for multiple applications—for example, flush fixtures and landscape irrigation—a sufficient quantity must be available to meet the demands of all uses. The amount of nonpotable water meant for indoor and outdoor uses cannot exceed the total annual nonpotable water supply.

STEP 4. SELECT HIGH-EFFICIENCY SPECIALIZED APPLIANCE AND PROCESS WATER SYSTEMS, WHERE APPLICABLE (RETAIL, HEALTHCARE, HOSPITALITY & SCHOOLS PROJECTS ONLY)

Retail, Healthcare, and Schools projects may earn 1 point (up to 2 points) by meeting the requirements of one or two of the appliance and process water tables in the credit requirements (see *Further Explanation, Example*). Hospitality projects may earn 1 point for meeting the requirements of one of the appliance and process water tables in the credit requirements. In all cases, appliance and process water-use equipment installed in the project must meet the requirements of Table 2 of the prerequisite requirements. 



FURTHER EXPLANATION

➤ CALCULATIONS

See calculations in *Step-by-Step Guidance* and in the indoor water use calculator provided by USGBC.

➤ EXAMPLE

Foxhill School has a cafeteria that serves about 600 meals per day and a gymnasium with a commercial washing machine for washing uniforms, towels, and other linens with a capacity of more than 120,000 pounds per year (54,431 kilograms per year) of laundry.

- The school meets the qualification requirements for Tables 2 and 3 of the credit requirements.
- The kitchen includes some but not all of the items listed in Table 3 of the credit requirements:
 - Dishwasher, under counter (1), ENERGY STAR-labeled
 - Dishwasher, single tank, conveyor (1), ENERGY STAR-labeled
 - Combination oven, roll-in (2), using 1.0 gallons per hour per pan (3.8 liters per hour per pan), including condensate cooling water
 - No food steamer
 - No food waste disposer
- The gymnasium laundry uses 1.6 gallons per pound of laundry (12.4 liters per kilogram of laundry).

The school can earn 2 points for appliance and process water savings, in addition to the savings from its fixtures.

➤ RATING SYSTEM VARIATIONS

Core and Shell

Include in the credit documentation all plumbing fixtures necessary to meet the occupants' needs whether they will be installed as part of the project's scope of work or not. For example, include at a minimum all necessary restroom fixtures (toilets, urinals, and lavatories) to meet the project occupants' needs, and showers when seeking LT Credit Bicycle Facilities. Assume that the as-yet-uninstalled (future) fixtures have the baseline water consumption rates. Kitchen sinks must be included in the credit calculations if installed in the project's scope of work or if addressed in a tenant sales or lease agreement. However, if future kitchen sinks are not installed as part of the project's scope of work or are not addressed in a tenant sales or lease agreement, they may be excluded from the credit calculations. A core and shell project can earn credit for the plumbing fixtures installed as part of the project's scope if all fixtures necessary to meet occupants' needs are included in the calculations and if all occupants of the incomplete tenant spaces are included in the calculations.

A project team may earn credit for the efficiency of not-yet-installed future plumbing fixtures by submitting a legally binding tenant sales or lease agreement. The agreement, signed by both owner and tenant, must state the performance requirements for the future fixtures, including the maximum water flush or flow rates and the WaterSense label (or a local equivalent for projects outside the U.S.) for all newly installed fixtures eligible for labeling. The project cannot earn credit this way unless the tenant sales or lease agreement is fully executed.

➤ PROJECT TYPE VARIATIONS

Additions

For credit compliance, include in the credit documentation all plumbing fixtures necessary to meet the occupants' needs whether they will be installed as part of the project's scope of work or not. Include at a minimum all necessary restroom fixtures (toilets, urinals, and lavatories) to meet the project occupants' needs, and showers when seeking LT Credit Bicycle Facilities. The WaterSense label requirement does not apply to fixtures that are outside of the scope of the LEED project.

Mixed-Use Projects

If a mixed-use project uses the same fixtures throughout the building, complete a single calculation of building water use. If the spaces use different fixtures or have dramatically different patterns of occupancy or varying annual days of operation, complete the indoor water use calculator with a separate fixture group for each space type.

Multifamily Residential

Use residential occupancy.

INTERNATIONAL TIPS

For fixtures that require the WaterSense label in countries where the label is unavailable, look up acceptable WaterSense substitutes at usgbc.org. Projects in unlisted countries must comply with the 20%-below-baseline requirement but have no additional performance requirements.

For appliances that require the ENERGY STAR label, a project outside the U.S. may install products that are not labeled under the ENERGY STAR program if they meet the ENERGY STAR product specifications, available on the ENERGY STAR website. All products must meet the standards of the current version of ENERGY STAR as of the date of their purchase.

CAMPUS

Group Approach

Eligible. The percentage reduction can be based on the total combined water use reduction in all LEED project buildings. The baseline adjustment for year of substantial system completion should be averaged based on all plumbing fixtures in all buildings. If nonpotable water systems will be shared by multiple projects, ensure adequate supply to meet the demands of all projects using nonpotable water. The nonpotable water may not be double-counted among projects. Submit separate documentation for each building, as required for WE Prerequisite Indoor Water Use Reduction.

Campus Approach

Ineligible. Each LEED project may pursue the credit individually.

REQUIRED DOCUMENTATION

Documentation	Fixtures	Appliances	Process water
		(Retail, Healthcare, Hospitality, and Schools projects only)	
Alternative water source calculations (if applicable)	X		
Plumbing system design drawings (if applicable)	X		
Alternative water narrative	X		
Cutsheets, manufacturers' information	X	X	X
Indoor water use calculator	X		

RELATED CREDIT TIPS

WE Prerequisite Building-Level Water Metering. Metering of potable water usage allows facilities management staff to monitor changes as efficiency measures are implemented.

WE Credit Water Metering. Submetering of water-using systems provides water efficiency performance data so that facilities operators can optimize water consumption.

CHANGES FROM LEED 2009

- Appliance and process water savings can earn credit under the Retail, Healthcare, Hospitality, and Schools rating systems.
- The WaterSense label requirements, merely recommended in LEED 2009, are now mandatory in the U.S., with local equivalencies allowed elsewhere.

- Duration-based savings from autocontrol faucets with automatic fixture sensors or metering controls are no longer allowed in the design case. Studies have shown that autocontrol faucets do not save water because users frequently reactivate the faucet after initial use or stop washing before the cycle ends.
- To earn points, project teams must include fixtures necessary to meet the occupants' needs. When no facilities are available within project boundaries, the closest available restrooms must be included in credit calculations. These additional restrooms can be excluded from prerequisite compliance requirements.

REFERENCED STANDARDS

The Energy Policy Act (EPAct) of 1992 and as amended: eere.energy.gov/femp/regulations/epact1992.html

EPAct 2005: eere.energy.gov/femp/regulations/epact2005.html

International Association of Plumbing and Mechanical Officials Publication IAPMO / ANSI UPC 1-2006, Uniform Plumbing Code 2006, Section 402.0, Water-Conserving Fixtures and Fittings: iapmo.org

International Code Council, International Plumbing Code 2006, Section 604, Design of Building Water Distribution System: iccsafe.org

ENERGY STAR: energystar.gov

WaterSense: epa.gov/watersense

IgCC/ASHRAE 189.1 – cooling tower and evaporative condenser requirements:
ashrae.org/resources--publications/bookstore/standard-189-1

EXEMPLARY PERFORMANCE

Achieve 55% water use reduction.

DEFINITIONS

alternative water source nonpotable water from other than public utilities, on-site surface sources, and subsurface natural freshwater sources. Examples include graywater, on-site reclaimed water, collected rainwater, captured condensate, and rejected water from reverse osmosis systems (IgCC).

baseline water consumption a calculated projection of building water use assuming code-compliant fixtures and fittings with no additional savings compared with the design case or actual water meter data

potable water water that meets or exceeds U.S. Environmental Protection Agency drinking water quality standards (or a local equivalent outside the U.S.) and is approved for human consumption by the state or local authorities having jurisdiction; it may be supplied from wells or municipal water systems

nonpotable water water that does not meet drinking water standards

process water water that is used for industrial processes and building systems, such as cooling towers, boilers, and chillers. It can also refer to water used in operational processes, such as dishwashing, clothes washing, and ice making.

