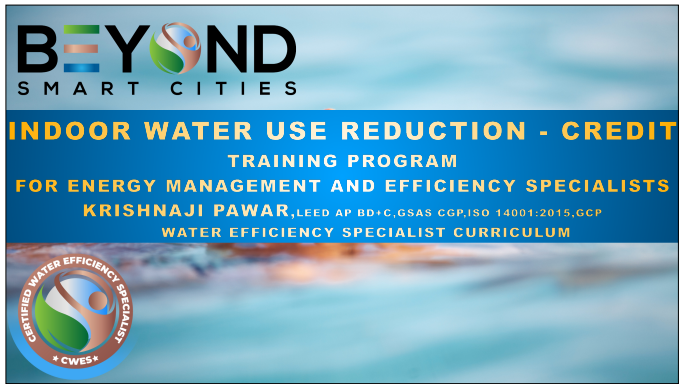
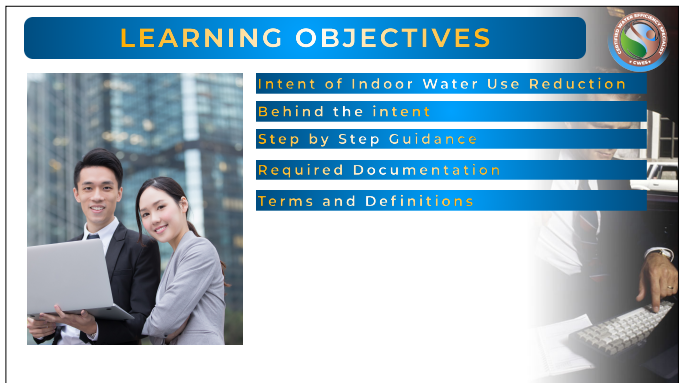








WE- CR(6) - DESIGN

INDOOR WATER USE REDUCTION

INTENT

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

POTENTIAL TECHNOLOGIES & STRATEGIES

When planning the site layout, consider factors such as proximity to water source for optimized irrigation, distance from water meter, and so on. Resolve uncertainties about plants' water requirements by referring to local resources, such as plant guides, state agricultural extension services, or nurseries to classify each plant type as a low, medium, or high water user

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 tenant space (for Commercial Interiors) or project boundary (for New Construction). Points are awarded according to Table 1.

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

IMPLEMENTATION

REQUIRED DOCUMENTATION

Documentation	Features	Appliances	Process water
		(kitchen, bathroom, laundry, and schedule projects only)	
Alternative water source calculations (if applicable)	X		
Pumbing system design drawings (if applicable)	X		
Alternative water narrative	X		
Submittals, manufacturer's information		X	X
Indoor water use calculator	X		

BEHIND THE INTENT

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

Core and Shell (CS) projects now earn up to 4 points under WE credit Indoor Water Use Reduction. CS projects can now earn one additional point under WE credit Outdoor Water Use Reduction and one additional point under WE credit Optimize Process Water Use; this re-allocation intends to better align WE points available with the typical scope of work of CS projects.

STEP-BY-STEP GUIDANCE

STEP 1. COMPLETE CALCULATIONS IN PREREQUISITE

STEP 1. COMPLETE CALCULATIONS IN PREREQUISITE
Follow the instructions in WQ Prerequisite Indoor Water Use Reduction to determine water savings resulting from efficiency of fixtures and fittings.

STEP 2: CONSIDER ALTERNATIVE WATER SOURCES

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Alternatives to potable water include municipally supplied reclaimed water ("purple pipe" water), greywater, 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 extensive treatment.

STEP 3. CALCULATE ADDITIONAL SAVINGS FROM USING NONPOTABLE WATER

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.

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

- 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 or seasonal availability and storage capacity, if the nonpotable water is used for multiple applications (e.g., irrigation, 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 WAY

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 at 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.

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 tenant space (for Commercial Interiors) or project boundary (for New Construction). Points are awarded according to Table 1.

Table 1. Points for reducing water use

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

Schools, Retail, Hospitality, and Healthcare only Meet the percentage reduction requirements above.

REQUIREMENTS +

Table 2. Compliant commercial washing machines

To use Table 2, the project must process at least 120,000 lbs. (67,606 kg) of laundry per year.

Washing machine	Requirement (IP units)	Requirement (SI units)
On-premise, minimum capacity 2,400 lbs. (1,088 kg) per 8-hour shift	Maximum 18 gals per pound *	Maximum 7 liters per 0.45 kilograms *

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

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.

REQUIREMENTS +

Kitchen equipment	Requirement (IP units)	Requirement (SI units)
Dishwasher	ENERGY STAR	ENERGY STAR or performance equivalent
Refrigerator	ENERGY STAR	ENERGY STAR or performance equivalent
Single tank, commercial	ENERGY STAR	ENERGY STAR or performance equivalent
Multiple tank, commercial	ENERGY STAR	ENERGY STAR or performance equivalent
Range	ENERGY STAR	ENERGY STAR or performance equivalent
Food warmer	2 gal/hour/pan including condensate cooling water	7.5 liter/hour/pan including condensate cooling water
Cook-top	5 gal/hour/pan including condensate cooling water	19 liter/hour/pan including condensate cooling water
Combination oven	1.5 gal/hour/pan including condensate cooling water	5.7 liter/hour/pan including condensate cooling water
Steamer	1.5 gal/hour/pan including condensate cooling water	5.7 liter/hour/pan including condensate cooling water
Food waste disposer	0-8 gpm, full load condition, 10 min. estimate, shut-off at 1 gpm, no-load condition	0-30 lpm, full load condition, 10 min. estimate, shut-off at 3.8 lpm, no-load condition
Grease collector	Maximum 2 gpm makeup water	Maximum 7.6 lpm makeup water
Filter	Maximum 2 gpm makeup water	Maximum 7.6 lpm makeup water
Grease recycler	No additional water usage	No additional water usage

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

Table 3. Standards for commercial kitchen equipment
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.

REQUIREMENTS +

Table 4. Compliant laboratory and medical equipment

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

Lab equipment	Requirement (IP units)	Requirement (DP units)
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 120-inch sterilizer, 28.5 liters/DIN tray For 120-inch sterilizer, 28.5 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	

Table 5. Compliant municipal steam systems

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.

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

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		

REFERENCED STANDARDS

- 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
- 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



TERMS AND DEFINITIONS



✓ **Alternative water source** non-potable water from other than public utilities, on-site surface sources, and subsurface natural freshwater sources. Examples include gray water, 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

BEYOND
SMART CITIES

THANK YOU
Water



**THE WORLD'S 1ST GREEN
TECHNOLOGY MARKETPLACE**