

# OP 3: Water Use

## Rationale

This credit recognizes institutions that are using water efficiently, recovering water for use or reuse, and using green infrastructure to replenish surface water or groundwater.

## Applicability

Applicable to all institutions.

## Points available

A total of either 7 or 6 points are available for this credit as outlined in Table I. Indicator 3.4 is weighted more heavily for institutions located in areas with high levels of water quantity risk and less heavily for institutions in areas with low or medium levels of water quantity risk as determined by the World Resources Institute [Aqueduct Water Risk Atlas](#).

Table I. Points available for water use

Level of water quantity risk	Points available for indicator 3.1	Points available for indicator 3.2	Points available for indicator 3.3	Points available for indicator 3.4	Total points available
Low, Low-medium, or Medium-high	2	2	1	1	6
High or Extremely high	2	2	1	2	7

## Criteria

### 3.1 Potable water use per person

An institution earns 2 points when its annual **potable water** use per **full-time equivalent** of students and employees is less than or equal to a benchmark for its peer group. Incremental points are available based on the institution’s performance between a maximum threshold and the benchmark, and earned as outlined in Tables II through VI.

Table II. Performance range by peer group, potable water per person

Peer group	A. Maximum threshold		B. Benchmark		C. Range
Associate's colleges, short-cycle institutions, and pre-tertiary schools	24,195 liters per person	-	599 liters per person	=	23,596
Baccalaureate colleges and boarding schools	103,202 liters per person	-	3,459 liters per person	=	99,743
Master's colleges and universities	57,784 liters per person	-	3,136 liters per person	=	54,648
Doctoral universities and research institutions	62,530 liters per person	-	4,135 liters per person	=	58,395

Table III. Annual potable water use

Potable water from off-site sources		Potable water from on-site sources		Annual potable water use
	+		=	

Table IV. Full time equivalent students and employees

Full-time equivalent student enrollment		Full-time equivalent of employees		Full-time equivalent students and employees
	+		=	

Table V. Annual potable water use per person (liters)

Annual potable water use (Table III)		Conversion factor		Full-time equivalent students and employees (Table IV)		Annual potable water use per person
	×	1,000	÷		=	

Table VI. Points earned for indicator 1.1

Maximum threshold (Table II, column A)		Annual potable water use per person (Table V)		Range (Table II, column C)		Points available		Points earned
	-		÷		×	2	=	

## Measurement

Report the most recent annual (fiscal or calendar year) data available from within the previous three years. Use the most recent single year for which data is available or an average from throughout the period. Report population figures from the same time period as that from which water use data are drawn, e.g., an average from throughout the performance period or a snapshot at a single representative point.

Include all potable water supplied to or by the institution for its use during the performance period. If data on specific water volumes are not available, an institution may work with its facilities department and/or water utility to estimate figures, e.g., based on billing totals. Water that is recycled on-site, e.g., in closed loop systems, may be counted toward water use once (e.g., at initial withdrawal or procurement from a supplier) and excluded at subsequent uses.

## Documentation

Report the following information in the online Reporting Tool, with water use figures provided in cubic meters. To convert US gallons, multiply by 0.00378541. To convert liters, multiply by 0.001.

- Level of water quantity risk for the institution’s main campus (required). Report the level of PHYSICAL RISKS QUANTITY as determined by the World Resources Institute [Aqueduct Water Risk Atlas](#).
  - Low
  - Low-medium
  - Medium-high
  - High
  - Extremely high
- Performance year for water use (required). The year the performance period ended.
- Peer group (required)
  - Associate’s, short-cycle, and distance learning institutions
  - Baccalaureate colleges and boarding schools
  - Master’s colleges and universities
  - Doctoral universities and research institutions
- Potable water from off-site sources (required). Cubic meters. Report the total annual volume of incoming water that meets or is treated to local or national drinking water standards,

irrespective of its end use (e.g., whether it is used indoors or outdoors). Off-site potable water is typically supplied by a municipality or water utility and documented in utility bills.

- **Reclaimed water from off-site sources (required).** Cubic meters. Report the total annual volume of incoming wastewater that has been diverted for a beneficial use such as irrigation. Off-site reclaimed water is typically supplied by a municipality or water utility and documented in utility bills.
- **Other off-site water sources (required).** Cubic meters. Include surface water, groundwater, and seawater piped to the institution that does not or may not meet local or national drinking water standards.
- **Potable water from on-site sources (required).** Cubic meters. Report the total annual volume of water from wells, surface water, and other sources within the institutional boundary that meets or is treated to local or national drinking water standards, irrespective of its end use (e.g., whether it is used indoors or outdoors).
- **Other on-site water sources (required).** Cubic meters. Include water withdrawn from on-site wells, bore wells, other groundwater sources, and surface water (e.g., lakes and streams) that does not or may not meet local or national drinking water standards. Rainwater harvested on-site for storage and use and water recovered on-site for reuse is excluded.
- Full-time equivalent student enrollment (required)
- Full-time equivalent of employees (required)

The Reporting Tool will automatically calculate the following three figures:

- Annual potable water use. Cubic meters.
- Full-time equivalent students and employees
- Annual potable water use per person. Liters.

### 3.2 Potable water use per square meter

An institution earns 2 points when its annual potable water use per gross square meter of floor area is less than or equal to a benchmark for its peer group. Incremental points are available based on the institution’s performance between a maximum threshold and the benchmark and earned as outlined in Tables VII through IX.

Table VII. Performance range by peer group, potable water use per square meter

Peer group	A. Maximum threshold		B. Benchmark		C. Range
Associate’s colleges, short-cycle institutions, and pre-tertiary schools	1,529 liters per square meter	-	57 liters per square meter	=	1,472

Baccalaureate colleges and boarding schools	1,855 liters per square meter	-	108 liters per square meter	=	1,747
Master's colleges and universities	1,725 liters per square meter	-	202 liters per square meter	=	1,523
Doctoral universities and research institutions	2,011 liters per square meter	-	362 liters per square meter	=	1,649

Table VIII. Annual potable water use per square meter (liters)

Annual potable water use (Table III)		Conversion factor		Gross floor area of building space		Annual potable water use per square meter
	×	1,000	÷		=	

Table IX. Points earned for indicator 1.2

Maximum threshold (Table VII, column A)		Annual potable water use per square meter (Table VIII)		Range (Table VII, column C)		Points available		Points earned
	-		÷		×	2	=	

## Measurement

Report gross floor area of building space from the same time period as that from which water use data are drawn, e.g., an average from throughout the performance period or a snapshot at a single representative point.

## Documentation

Report the following information in the online Reporting Tool, with the gross floor area figure provided in square meters. To convert square feet, multiply by 0.09290304.

- **Gross floor area of building space** (required). Square meters. Parking structures excluded.

The Reporting Tool will automatically calculate the following figure:

- Annual potable water use per unit of floor area. Liters per square meter.

### 3.3 Systems for water recovery and return

An institution earns 1 point when it has systems on-site to A) harvest rainwater, B) recover water for reuse, and C) collect and return water to surface water or groundwater through on-site **green infrastructure (GI)**. Partial points are available and earned as outlined in Table X.

Table X. Points earned for indicator 3.3

Criterion	Points available	Points earned
A. Institution harvests rainwater on-site for storage and use.	0.33	
B. Institution recovers water on-site for reuse.	0.33	
C. Institution collects and returns water to surface water or groundwater through on-site green infrastructure (GI).	0.33	
Total points earned →		

#### Measurement

Report on current practices and existing infrastructure.

#### Documentation

Report the following information in the online Reporting Tool.

- Does the institution harvest rainwater on-site for storage and use? (required)
  - If Yes, the following field is also required:*
    - Narrative and/or website URL providing an overview of the institution’s on-site rainwater harvesting systems
- Does the institution recover water on-site for reuse? (required). Examples include the recovery and reuse of greywater, sump pump water, air-cooling condensate, reject water from water purification systems, and wastewater.
  - If Yes, the following field is also required:*
    - Narrative and/or website URL providing an overview of the institution’s on-site water recovery and reuse systems
- Does the institution collect and return water to surface water or groundwater through on-site green infrastructure? (required). Examples include rain gardens, bioswales, permeable pavement, and nature-based wastewater systems.

If Yes, the following field is also required:

- Narrative and/or website URL providing an overview of the institution’s on-site green infrastructure

### 3.4 Ratio of water recovered/returned to total water withdrawal

An institution earns the maximum points available for this indicator when the estimated annual volume of water recovered and/or returned on-site is equal to 100 percent or more of its total **water withdrawal**. Incremental points are available and earned as outlined in Tables XI through XIII.

Table XI. Annual volume of water recovered and/or returned

Source or method	Volume
A. Reclaimed water from off-site sources (from indicator 3.1)	
B. Rainwater harvested on-site for storage and use (if estimate is available)	
C. Water recovered on-site for reuse (if estimate is available)	
D. Water collected and returned through on-site green infrastructure (if estimate is available)	
<b>Total →</b>	

Table XII. Total water withdrawal

Source (all figures from indicator 3.1)	Volume
A. Potable water use from off-site sources	
B. Reclaimed water from off-site sources	
C. Other off-site water sources	
D. Potable water use from on-site sources	

E. Other on-site water sources	
Total →	

Table XIII. Points earned for indicator 3.4

Annual volume of water recovered and/or returned (Table XI)		Total water withdrawal (Table XIII)		Points available		Points earned
	÷		×	See Table I	=	

### Measurement

Report on current practices and the most recent annual (fiscal or calendar year) data available from within the previous three years.

On-site water recovery and return may be estimated based on measured performance (e.g., metered use or changes in water storage), the design specifications of the systems used, and/or modeling tools such as those listed by the [US Environmental Protection Agency](#) (EPA).

### Documentation

Report the following information in the online Reporting Tool, with water use figures provided in cubic meters. To convert US gallons, multiply by 0.00378541. To convert liters, multiply by 0.001.

- Does the institution have methodologies in place to estimate or model the annual volume of water recovered and/or returned on-site? (required)

*If Yes, the following narrative field and at least one of the three quantitative fields are also required.*

- Narrative outlining the methodologies used to estimate or model the annual volume of water recovered and/or returned on-site
- Estimated volume of rainwater harvested on-site for storage and use. Cubic meters.
- Estimated volume of water recovered on-site for reuse. Cubic meters.
- Estimated volume of water collected and returned through on-site green infrastructure. Cubic meters.

The Reporting Tool will automatically calculate the following three figures:

- Annual volume of water recovered and/or returned. Cubic meters.
- Total water withdrawal. Cubic meters.

- Ratio of water recovered/returned to total water withdrawal

## Glossary

**Full-time equivalent (FTE)** – A unit used to measure employed persons or students in a way that makes them comparable although they may work or study a different number of hours per week. An institution should report its best estimates for FTE figures, annualized as feasible and calculated according to relevant national, regional or international standards. IPEDS, for example, calculates the number of FTE staff by summing the total number of full-time staff and adding one-third of the total number of part-time staff. [Adapted from the definition used by Eurostat.]

**Green infrastructure (GI)** – Systems and practices that use or mimic natural processes to infiltrate, evapotranspire (the return of water to the atmosphere either through evaporation or by plants), or reuse stormwater or runoff on the site where it is generated. Examples include rainwater harvesting, downspout disconnection, rain gardens, bioswales, permeable pavements, green streets and alleys, green roofs, nature-based wastewater systems, and urban tree canopy. [Adapted from the work of the US Environmental Protection Agency (EPA).]

**Gross floor area of building space** – The total amount of building space that is included within the institutional boundary. Any standard definition of building space may be used (e.g., ASHRAE, ANSI/BOMA, IECC) as long as it is used consistently. Unless otherwise specified, unoccupied buildings and parking structures are excluded. Buildings within the overall STARS boundary that the institution leases entirely (i.e., the institution is the only tenant) should be included. Buildings that are not owned by the institution and in which the institution is one of multiple tenants may be excluded. If the institution chooses to include such buildings, it must include all multi-tenant buildings that are included in the institution's overall STARS boundary and in which the institution is a tenant; an institution cannot choose to include some leased spaces and omit others. If an institution chooses to include leased spaces, the institution should count only the square footage of building space it occupies and not the entire building.

**Potable water** – Water that meets local and/or national drinking water standards (also known as “finished water”). By contrast, non-potable water is water that does not - or may not - meet drinking water quality standards.

**Water withdrawal** – The total volume of water (potable and non-potable) taken from groundwater, surface water, seawater, and off-site sources. [Adapted from the definition used by the Global Reporting Initiative (GRI).]