

OP 4: Building Design and Construction

3 points available

A. Credit Rationale

This credit recognizes institutions that have incorporated environmental features into their design and construction projects. Decisions made during the design phase, such as where to locate the building and how it is oriented, can yield significant energy savings and reduce impacts on the site. By designing and building for enhanced indoor environmental quality (IEQ), institutions can ensure their buildings provide safe, healthy, and productive spaces for the campus community. While other credits also capture many of the impacts of green buildings (e.g., on campus energy consumption and water use), this credit recognizes institutions that have comprehensive green construction and renovation programs and that pursue third party certification of new campus buildings.

B. Criteria

Institution-owned buildings that were constructed or underwent major renovations in the previous five years are:

- 1) Certified under a green building rating system for new construction and major renovations, e.g. [LEED®](#): Building Design & Construction (BD+C)
- 2) Certified Living under the [Living Building Challenge](#)
And/or
- 3) Designed and built in accordance with published [green building codes](#), guidelines and/or policies that cover one or more of the following:
 - Impacts on the surrounding site (e.g., guidelines to reuse previously developed land, protect environmentally sensitive areas, and otherwise minimize site impacts)
 - Energy consumption (e.g., policies requiring a minimum level of energy efficiency for buildings and their systems)
 - Building-level energy metering
 - Use of environmentally preferable materials (e.g., guidelines to minimize the life cycle impacts associated with building materials)
 - Indoor environmental quality (i.e., guidelines to protect the health and comfort of building occupants)
 - Water consumption (e.g., requiring minimum standards of efficiency for indoor and outdoor water use)
 - Building-level water metering

Building space that meets multiple criteria listed above should not be double-counted.

C. Applicability

This credit applies to institutions that have new construction and renovation projects completed within the previous five years that are eligible for certification under a green building rating system for new construction. See "[Eligible building space \(design and construction\)](#)" in G. Standards and Terms.

D. Scoring

Institutions earn the maximum of 3 points for this credit by having all eligible building space completed during the previous five years certified at the highest achievable level under a green building rating system for new construction and major renovations used by an [Established Green Building Council](#) (GBC) (e.g., LEED BD+C, certification level Platinum) and/or certified Living under the Living Building Challenge. Incremental points are awarded based on the percentage of eligible building space that is certified at various levels and/or designed and constructed in accordance with green building policies or guidelines. For example, an institution that had 100 percent of its eligible building space certified at the minimum level would earn 1.5 points for this credit, while an institution that had 50 percent of its eligible building space certified at the minimum level would earn 0.75 points.

Points for this credit are calculated automatically in the STARS Reporting Tool as follows:

Design and construction level	Factor		Floor area of building space certified at each level		Total floor area of newly constructed and renovated building space		Points earned
Certified Living under the Living Building Challenge	3.5	×	_____	÷	_____	=	
Certified LEED BD+C Platinum or at the highest achievable level under another GBC rating system	3		_____				
Certified LEED BD+C Gold or at the 2nd highest level under another 4- or 5-tier GBC rating system	2.5		_____				
Certified at mid-level under a 3- or 5-tier GBC rating system (e.g., BREEAM, CASBEE, DGNB, Green Star)	2		_____				
Certified LEED BD+C Silver or at a step above minimum level under another 4- or 5-tier GBC rating system	1.875		_____				
LEED BD+C Certified or certified at minimum level under another GBC rating system	1.5		_____				

Certified at any level under a non-GBC rating system (e.g., Green Globes NC, Certified Passive House)	1.5		_____			
Not certified, but constructed according to green building guidelines or policies	0.18 -1.25*		_____			
Total points earned →						Up to 3

* The factor used to calculate points earned for an institution reporting floor area that is not certified, but that was designed and constructed in accordance with published green building design and construction guidelines and policies varies as follows:

Institution's published green building design and construction guidelines and policies cover:	Factor	Factor to be applied
Impacts on the surrounding site	0.18	
Energy consumption	0.18	
Building-level energy metering	0.18	
Usage of environmentally preferable materials	0.18	
Indoor environmental quality	0.18	
Water consumption	0.18	
Building-level water metering	0.18	
Total factor to be applied →		Up to 1.25

E. Reporting Fields

Required

- ☐ Total floor area of newly constructed or renovated building space (include projects completed within the previous five years) (square feet/metres)
- ☐ Floor area of newly constructed or renovated building space certified Living under the Living Building Challenge (square feet/metres)
- ☐ Floor area of newly constructed or renovated building space certified at each level under a rating system for design and construction used by an Established Green Building Council (GBC) (square feet/metres):
 - ☐ Certified LEED BD+C Platinum or at the highest achievable level under another GBC rating system for design and construction

- Certified LEED BD+C Gold or at the 2nd highest level under another 4- or 5-tier GBC rating system for design and construction
- Certified at mid-level under a 3- or 5-tier GBC rating system for design and construction (e.g., BREEAM, CASBEE, DGNB, Green Star)
- Certified LEED BD+C Silver or at a step above minimum level under another 4- or 5-tier GBC rating system for design and construction
- LEED BD+C Certified or certified at minimum level under another GBC rating system for design and construction
- Floor area of newly constructed or renovated building space certified under a non-GBC rating system for design and construction (e.g., Green Globes NC, Certified Passive House) (square feet/metres)

If reporting certified space, provide:

- A brief description of the green building rating system(s) used and/or a list of certified buildings and ratings
- Floor area of newly constructed or renovated building space that is NOT certified, but that was designed and constructed in accordance with published green building guidelines and policies (square feet/metres)

If reporting published green building guidelines or policies, provide:

- A copy of the green building guidelines or policies (text or upload)
- Do the green building guidelines or policies cover the following?
 - Impacts on the surrounding site (e.g. guidelines to reuse previously developed land, protect environmentally sensitive areas, and otherwise minimize site impacts)
 - Energy consumption (e.g., policies requiring a minimum level of energy efficiency for buildings and their systems)
 - Building-level energy metering
 - Use of environmentally preferable materials (e.g., guidelines to minimize the life cycle impacts associated with building materials)
 - Indoor environmental quality (i.e., guidelines to protect the health and comfort of building occupants)
 - Water consumption (e.g., requiring minimum standards of efficiency for indoor and outdoor water use)
 - Building-level water metering
- A brief description of the green building guidelines or policies and/or a list or sample of buildings covered
- A brief description of how the institution ensures compliance with green building design and construction guidelines and policies

Optional

- The website URL where information about the programs or initiatives is available
- Additional documentation to support the submission (upload)
- Data source(s) and notes about the submission

- Contact information for a responsible party (a staff member, faculty member, or administrator who can respond to questions regarding the data once it is submitted and available to the public)

F. Measurement

Timeframe

Report on the current certification status of buildings at the time of submission. Buildings for which certification is pending should not be counted as certified space, and these buildings may be excluded from the institution's profile for up to 2 years following registration with a rating system.

This credit focuses on buildings for which construction was completed within the five years prior to the anticipated date of submission.

Sampling and Data Standards

Include all buildings that meet the criteria for eligible building space (design and construction) as defined in G. Standards and Terms; reporting on a sample or subset of buildings is not allowed.

An institution may use any standard definition of floor area (e.g., ASHRAE, ANSI/BOMA, IECC), as long as it uses the same definition for both the total floor area of eligible building space and the floor area of building space that is certified and/or sustainably designed and constructed.

G. Standards and Terms

Eligible building space (design and construction)

"Eligible building space (design and construction)" includes the total floor area of all building space that is eligible for certification under a green building rating system for new construction and for which construction or major renovation was completed during the previous 5 years. To be included, building space must meet the minimum program requirements of a rating system for new construction and major renovations. See, for example [LEED BD+C Minimum Program Requirements](#) and other LEED ratings systems for new construction and major renovation: Core & Shell, Schools, Retail, Hospitality, Data Centers, Warehouses & Distribution Centers, Healthcare, Commercial Interiors, and Retail and Hospitality.

Projects that are not intended for occupancy and/or are designed to serve less than 1 Full Time Equivalent (FTE) occupant should be excluded (e.g., parking garages and sheds).

Established Green Building Council

An [Established Green Building Council](#) (GBC) has been granted 'Established' membership status by the World Green Building Council (WGBC). Rating systems for existing buildings used by Established GBCs include LEED, BREEAM, CASBEE, DGNB, Green Star, and IGBC. Further information about GBCs and rating systems/tools is available on the [WGBC website](#).

Green building codes

Consistent with the [U.S. Department of Energy](#), green building codes:

...go beyond minimum code requirements, raising the bar for energy efficiency. They can serve as a proving ground for future standards, and incorporate elements beyond the scope of the model energy codes, such as water and resource efficiency. As regional and national green building codes

and programs become more available, they provide jurisdictions with another tool for guiding construction and development in an overall less impactful, more sustainable manner.

Examples include the International Green Construction Code (IgCC), ASHRAE Standard 189.1 for the Design of High-Performance Green Buildings, and regional codes such as the California Green Building Standards Code (CALGreen Code).

LEED

[LEED](#) (Leadership in Energy and Environmental Design) is described by the U.S. Green Building Council as “a voluntary, consensus-based, market-driven program that provides third-party verification of green buildings”. LEED rating systems include Building Design + Construction (BD+C), Interior Design + Construction (ID+C), Building Operations + Maintenance (O+M), and Neighborhood Development (ND).

Living Building Challenge

The Living Building Challenge (LBC) is a program of the [International Living Future Institute](#), a “non-governmental organization (NGO) committed to catalyzing a global transformation toward true sustainability”. The [Living Building Challenge](#), a philosophy, advocacy tool and certification program that addresses development at all scales. It is comprised of seven performance areas (Site, Water, Energy, Health, Materials, Equity and Beauty), which are further subdivided into a total of twenty Imperatives.

Scoring Example: Building Operations and Maintenance

Example Community College has completed construction on the following four buildings in the past three years:

- 1) A 500 m² building that was not designed and built in accordance with formal green building policies or guidelines nor certified under a green building rating system.
- 2) A 1,000 m² building that was not certified, but that was designed and built in accordance with formal green building policies or guidelines that cover all of the topics outlined in B. Criteria.
- 3) A 500 m² building that is certified under LEED BD+C, certification level Silver.
- 4) A 2,000 m² building that is certified under LEED BD+C, certification level Platinum.

Total eligible building space = 500 m² + 1,000 m² + 500 m² + 2,000 m² = 4,000 m²

Design and construction level	Factor		Floor area of building space certified at each level		Total floor area of newly constructed or renovated building space		Points earned
Certified Living under the Living Building Challenge	3.5		<u>0</u>				0
LEED BD+C Platinum Certified	3		<u>2,000</u>				1.5
LEED BD+C Gold Certified	2.5		<u>0</u>				0
LEED BD+C Silver Certified	1.875	×	<u>500</u>	÷	<u>4,000</u>	=	0.234
LEED BD+C Certified	1.5		<u>0</u>				0
Certified at any level under a non-GBC rating system (e.g., Green Globes NC, Certified Passive House)	1.5		<u>0</u>				0

Not certified, but constructed according to green building guidelines or policies	1.25*		<u>1,000</u>				0.313
Total points earned →							2.05
<p>* The factor used to calculate points earned for an institution reporting floor area that is not certified, but constructed in accordance with formal green building guidelines and policies varies based on the extent of the guidelines and policies (see D. Scoring).</p>							