

**ANNUAL REPORT ON THE  
IMPLEMENTATION OF THE ENERGY INDEPENDENCE AND SUSTAINABLE CONSTRUCTION ACT OF  
2007**

**SECTION 48-52-800, CODE OF LAWS OF SOUTH CAROLINA**



**Prepared by the South Carolina Budget and Control Board  
South Carolina Energy Office and the Office of the State Engineer  
December 2013**

## Annual Report

### Implementation of the Energy Independence and Sustainable Construction Act

*Submitted to the South Carolina General Assembly in accordance with  
Section 48-52-800, Code of Laws of South Carolina.*

#### INTRODUCTION:

The Energy Independence and Sustainable Construction Act of 2007 (48-52-800 SC Code of Laws) was intended to “promote effective energy and environmental standards for construction, rehabilitation, and maintenance of state-owned buildings, improving the state's capacity to design, build, and operate high-performance buildings and creating new jobs and contributing to economic growth and increasing the state's energy independence” (Section 48-52-820). State agencies establishing Permanent Improvement Projects after June 2007 that meet certain size requirements are required to weigh the life-cycle benefits of constructing to the US Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) or the Green Building Initiative’s Green Globes certification standards.

A provision of the Act requires the Budget and Control Board to submit an annual report on buildings constructed in compliance with the law. |

#### BACKGROUND:

The LEED certification was created by the USGBC in 2000 to provide building owners and operators with a framework for defining green building design, construction, operation and maintenance approaches. As noted on the USGBC website, “LEED certification provides independent, third-party verification that a building, home or community was designed and built using strategies aimed at achieving high performance in key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality.” Buildings may be simply certified, or may achieve greater savings and benefits, resulting in certification levels of Silver, Gold, and in very rare cases, Platinum.

The *SC Energy Independence and Sustainable Construction Act* required the adoption of policies and procedures that:

- (1) optimize the energy performance of buildings throughout this State;
- (2) increase the demand for environmentally preferable building materials, finishes, and furnishings;
- (3) improve environmental quality in this State by decreasing the discharge of pollutants from state buildings and their manufacture;

- (4) create public awareness of new technologies that can improve the health and productivity of building occupants by meeting advanced criteria for indoor air quality;
- (5) improve working conditions and reduce building-related health problems;
- (6) reduce the state's dependence on imported sources of energy through buildings that conserve energy and utilize local and renewable energy sources;
- (7) protect and restore this state's natural resources by avoiding development of inappropriate building sites;
- (8) reduce the burden on municipal water supply and treatment by reducing potable water consumption;
- (9) reduce waste generation and manage waste through recycling and diversion from landfill disposal;
- (10) establish life cycle cost analysis as the appropriate and most efficient analysis to determine a building project's optimal performance level;
- (11) ensure each building project's systems are designed, installed, and tested to perform according to the building's design intent and its operational needs through third-party, post-construction review and verification; and
- (12) authorize the board to pursue ENERGY STAR designation from the United States Environmental Protection Agency to further demonstrate a building project's energy independence.

Accordingly, major facility projects (defined as new construction exceeding 10,000 square feet or renovation which affects more than 50 percent of the replacement value of the building, or a change in ownership, or a tenant fit-out project that is larger than 7,500 square feet of leasable area) must be designed and constructed to meet the LEED Silver standard or Green Building Initiative (Two) Green Globes Standard.

As of August, 2010, owners of proposed buildings seeking LEED certification were required to conduct a life cycle cost analysis to compare the costs and benefits of designing, constructing, maintaining and operating the facility at LEED certification levels versus simply meeting minimum requirements. Owners must then construct the project in the manner that achieves the lowest 30-year life cycle cost.

In order to ensure that energy efficiency is maximized, the legislation further specifies that projects must earn at least 40 percent of the available points for energy performance in LEED or 20 percent of available points for energy performance under Green Globes. If this is not feasible, building owners may request a waiver from the Office of the State Engineer.

## STATUS:

The process of achieving LEED or Green Globes certification begins when a project is registered with the USGBC (for LEED) or the Green Building Initiative (for Green Globes). Once the building has been independently evaluated and certification requirements are confirmed, the building is certified, and also appears on the public list of certified LEED projects. Those state-funded projects required by law to meet LEED or Green Globes requirements which have already been certified appear in Table 1. Table 2 shows all state projects registered or certified regardless of the requirements of the law. This table shows projects certified before the law went into effect, as well as projects registered, but not yet certified.

As of June 30, 2013:

- 77 state buildings have achieved or are in the process of pursuing LEED certification.
- 38 state buildings have been registered to seek LEED certification under the provisions of the law.
- To date, 12 state buildings *required to be certified* received some level of LEED certification based on records provided by the US Green Building Council. They are:
  - Clemson University's Lee Hall Complex (Expansion and Renovation) – LEED Gold
  - Clemson University's Duke Energy Innovation Center (New Construction) – LEED Gold
  - Clemson University's Larry Penley Golf Facility—LEED Silver
  - Coastal Carolina's Student Recreation and Convocation Center (Construction) – LEED Gold
  - College of Charleston's Craig Cafeteria (Conversion and Renovation) – LEED Gold
  - Greenville Technical College's Student Center (Renovation) – LEED Silver
  - MUSC's BioEngineering Building (Construction) – LEED Gold
  - South Carolina School for the Deaf and Blind's Herbert Center—LEED Silver
  - South Carolina State University's Engineering and Computer Science Building—LEED Gold
  - Tri-County Technical College's Occupational Center (Building Replacement) – LEED Silver
  - USC's Patterson Hall (Renovation) – LEED Gold
  - USC's Spigner House Renovation—LEED Gold

Twenty additional buildings, for which construction approval predates the law, and/or which were not required to register due to the size of the building, did so voluntarily. Eleven achieved LEED Gold status, seven have achieved LEED Silver and two are LEED Certified. Two of these projects have been built by the SC Department of Parks, Recreation and Tourism, while the remainder are university projects. Clemson had eleven voluntarily certified projects, USC-Columbia had three and Coastal Carolina, Lander, USC-Upstate, and Winthrop Universities each

had one certified building. In addition, USC-Upstate’s College of Business and Economics was not paid for with state funds, and thus was not required to achieve LEED status. The building was registered and certified nonetheless, and appears in the Appendix.

- Although public schools were not included in the law, it is interesting to note that nine public schools also received LEED certification as of June 30, 2013, according to USGBC records. An additional 16 schools have registered but are not yet certified. These schools are not included in Tables 1 and 2.
  - Bluffton Early Childhood Center, Beaufort School District – Certified
  - Jackson School, Kershaw School District – Gold
  - Langford Elementary, Richland School District Two – Silver
  - MC Riley Early Childhood Center, Beaufort School District – Silver
  - Monarch Elementary, Greenville County Schools – Certified
  - North Charleston Elementary, – Silver
  - Pritchardville Elementary School, Beaufort School District – Silver
  - Riverside High School, Greenville School District – Certified
  - Rocky Creek Elementary School, Lexington District One – Silver
- One project has been certified under the Green Globes requirements as of June 30, 2013. Harper-Elliott Colleges on the USC Horseshoe received Two Green Globes.
- No building owners have requested waivers to the requirements of the law.

*Please see Appendix A for information about specific projects certified in accordance with the provisions of the law.*

### **Expected Savings:**

Because so few buildings are individually metered (see below), it has not been possible to measure savings in renovated buildings before and after construction. However, there are several indicators that assist in judging the savings associated with green construction. Based on national data for buildings of all types, “green buildings cost roughly two percent more to build than conventional buildings—far less than previously assumed—and provide a wide range of financial, health, and social benefits. In addition, green buildings reduce energy use by an average of 33 percent, resulting in significant cost savings.” (US Green Building Council, based on *Greening Our Built World; Cost, Benefits and Strategies*, Greg Kats, 2009, Island Press.)

In 2010, the state’s Joint Bond Review Committee (JBRC) implemented a policy requiring a cost benefit analysis of building to LEED standards. The cost benefit analyses estimate the additional costs attributable to LEED certification, as well as the operational savings expected to result from construction to LEED standards. A study of the 18 analyses submitted for buildings certified to date shows net savings

of over \$30.6 million over 30 years, or over \$1 million per year<sup>1</sup>. The total square footage represented by these 18 projects is 1,109,247, making the average savings per square foot \$28.

## **CONFLICTS, BARRIERS, OPPORTUNITIES FOR IMPROVEMENT:**

It is quite common for multiple buildings on a campus or in a multiple office setting to share water and energy meters and these state buildings are no exception. Very few projects have been equipped with a separate meter, meaning that data for energy and water use cannot be accurately assigned to the new or renovated buildings. While energy and facility managers have long allocated energy use among buildings sharing a meter, it is not an ideal way to determine current energy or water use. Moreover, the lack of individual meters impedes even the use of national benchmarking software such as Portfolio Manager, which is strongly supported by the USGBC and DOE.

The newest version of LEED will require new buildings to have individual meters, and some building owners are realizing the advantages of adding individual meters when major renovations take place. At least one renovated building certified during this period, Patterson Hall, is separately metered. Once it has been occupied for a full year, it will be possible to compare energy and water use pre- and post-renovation, with allowances for changes in occupancy and uses.

If possible, proposals for new or substantially renovated buildings should include funding for separate meters so that building owners will know their actual energy and water use.

Section 48-52-830 of the *SC Code of Laws* requires major facility projects seeking certification under the LEED provision to obtain at least 40 percent of the available points for energy performance under EA Credit 1: Optimize Energy Performance. Under the Green Globes provision, projects must obtain 20 percent of the available credits in the energy performance category. Because LEED standards have undergone several revisions since the South Carolina law was passed, making some formerly optional credits mandatory prerequisites, achieving 40 percent of the available points in EA Credit 1 is much more challenging than it was several years ago. It is possible that the number of requests for waivers to the energy provision will increase as compliance becomes more difficult.

It remains the case that many state entities seek LEED or Green Globes certification for reasons unrelated to state law, such as those colleges and universities such as the University of South Carolina, which have signed national pledges to encourage sustainability. As noted above, an increasing number of public K-12 schools are building LEED certified buildings, although not required to do so by law. School officials quoted below cite student/faculty health and an improved learning environment as positive outcomes from LEED certification.

In a recent interview with WISTV in Columbia, Principal Matia Goodwin of Jackson Elementary School states: "Our scores are going up with our testing and I know that comes from us being a green school. Students in a healthier environment, they're going to perform better and feel

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<sup>1</sup> Data compiled by Keith Sanders, AIA, LEED AP BD+C

better about their school."<sup>2</sup> Beaufort County School Superintendent Valerie Truesdale agrees. She told Bluffton Today that “It’s wonderful to have a school that’s learning-focused but also includes features that save money and create fewer environmental concerns. This is a building that reflects our Board of Education’s commitment to give students the best – not only when it comes to academics, but also when it comes to their learning environment.” Pritchardville Elementary School is now one of three schools in Beaufort County to be LEED Certified.<sup>3</sup>



*Students at Pritchardville Elementary school helped install their new plaque, designating their school as LEED certified.*

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<sup>2</sup> WIS TV. *Jackson Elementary “LEEDs” the way in green initiatives.* May 14, 2012. <http://www.wistv.com/story/18146651/jackson-elementary-leeds-the-way-in-green-initiatives>

<sup>3</sup> WTOC TV. *Pritchardville Elementary School Earns LEED Certification.* April 9, 2012. <http://www.wtoc.com/Global/story.asp?S=17589838>

**Table 1:**

As of 6/30/13

Owner Organization	LEED Project Name	City	Rating System	Cert Lev	Cert Date	Gross Area (sf)
Clemson University	Duke Energy Innovation Center	Anderson	LEED NC 2.2	Gold	10/1/2011	38,105
Clemson University	Lee Hall Expansion	Clemson	LEED-NC v2009	Gold	6/1/2012	85,080
Clemson University	Larry B. Penley, Jr. Golf Facility	Clemson	LEED-NC v2009	Silver	11/1/2012	7,605
Coastal Carolina Univ.	Student Rec. & Convoc. Center	Conway	LEED NC 2.2	Gold	2/1/2013	126,509
College of Charleston	Craig Hall Renovation	Charleston	LEED CI 2.0	Gold	2/1/2011	19,731
Greenville Tech	Student Center	Greenville	LEED NC 2.2	Silver	7/1/2011	33,350
Medical U. of SC	Bioengineering Building	Charleston	LEED NC 2.2	Gold	1/1/2013	90,000
SC School/Deaf and Blind	Herbert Center	Spartanburg	LEED NC 2.2	Silver	1/1/2013	81,000
SC State University	Engineering/Computer Science Bldg	Orangeburg	LEED-NC-2.2	Gold	5/1/2013	86,500
Tri-County Tech	Occupational Services Building	Easley	LEED-NC v2009	Silver	7/1/2012	41,125
USC - Columbia	Patterson Hall	Columbia	LEED NC 2.2	Gold	10/1/2012	186,690
USC - Columbia	Spigner House Renovation	Columbia	LEED-CI v2009	Gold	12/1/2012	7,015
USC - Columbia	Harper-Elliott College	Columbia	Green Globes	Two	1/3/2013	26,805

**Table 2:**

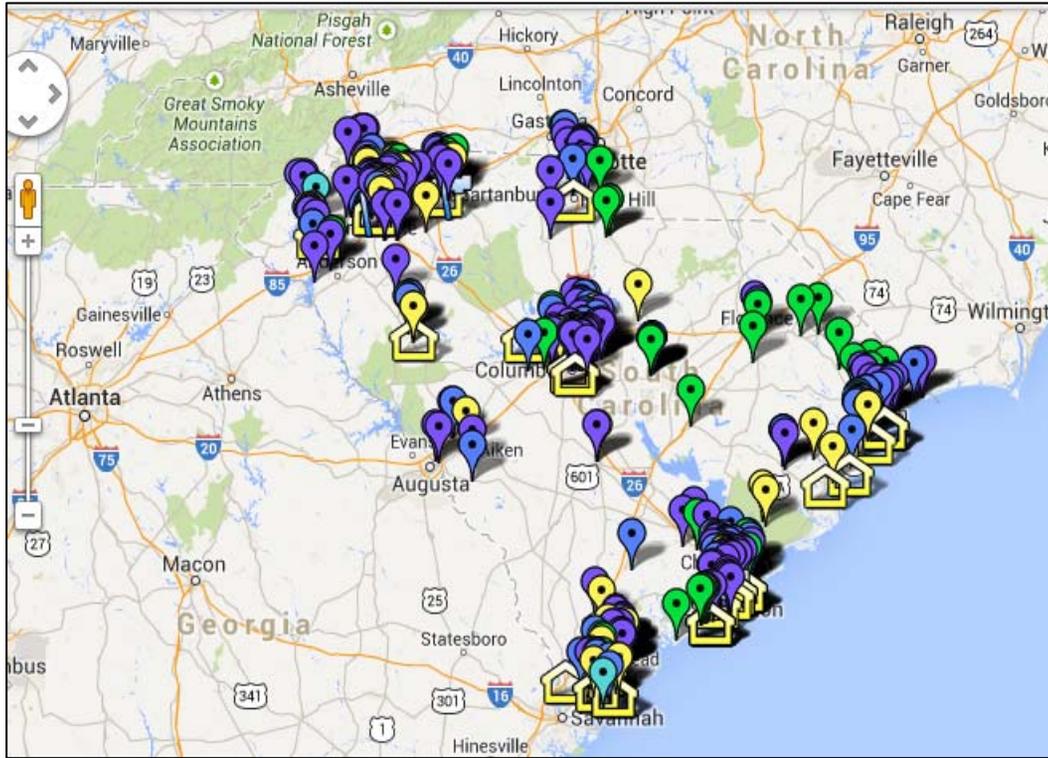
<b>Owner Organization</b>	<b>LEED Project Name</b>	<b>City</b>	<b>Rating System</b>	<b>Cert Level</b>	<b>Cert Date</b>	<b>Gross Area (sf)</b>
<i>Clemson University</i>	Wind Turbine Drive Train Test Facility	N. Charleston	LEED-NC v2009			93,330
<i>Clemson University</i>	Spaulding Paolozzi Center	Charleston	LEED-NC v2009			26,690
<i>Clemson University</i>	Duke Energy Innovation Center	Anderson	LEED NC 2.2	Gold	10/11/2011	38,105
<i>Clemson University</i>	Fraternity Renovations	Clemson	LEED NC 2.1	Silver	1/19/2007	130,000
<i>Clemson University</i>	Advanced Materials Laboratory	Anderson	LEED NC 2.1	Silver	3/11/2005	122,450
<i>Clemson University</i>	(RDA/CURI Research Lab	N. Charleston	LEED NC 2.2			21,000
<i>Clemson University</i>	Freeman Hall Expansion (Ind. Engr)	Clemson	LEED-NC v2009			22,433
<i>Clemson University</i>	Institute of Packaging Design & Graphics	Clemson	LEED NC 2.2	Gold	1/4/2010	28,000
<i>Clemson University</i>	Bioengineering Building (Rhodes Hall)	Clemson	LEED NC 2.2	Gold	12/13/2010	28,426
<i>Clemson University</i>	Baruch Institute - Office	Georgetown	LEED NC 2.2	Gold	3/15/2010	10,575
<i>Clemson University</i>	CU-ICAR Auto Park	Greenville	LEED NC 2.1	Gold	3/2/2009	415,000
<i>Clemson University</i>	Greenville One	Greenville	LEED-CI v2009			57,700
<i>Clemson University</i>	Campbell Graduate Eng (ICAR)	Greenville	LEED NC 2.1	Silver	2/18/2009	89,578
<i>Clemson University</i>	Larry B. Penley, Jr. Golf Facility	Clemson	LEED-NC v2009	Silver	11/27/2012	7,605
<i>Clemson University</i>	Rowing Training Facility	Clemson	LEED NC 2.2	Silver	8/21/2009	12,000
<i>Clemson University</i>	Sandhills Research & Ed. Center	Columbia	LEED NC 2.1	Gold	2/7/2011	15,170
<i>Clemson University</i>	CU-ICAR Collaboration Building 3	Greenville	LEED CS 1.0 Pilo	Gold	11/15/2007	119,000
<i>Clemson University</i>	CU-ICAR Center for Emerging Technologies	Greenville	LEED CS v2009			61,248
<i>Clemson University</i>	Biosceinces/Lifesciences Blg	Clemson	LEED-NC 2.2			97,000
<i>Clemson University</i>	Lee Hall Expansion	Clemson	LEED-NC v2009	Gold	6/11/2012	85,080
<i>Clemson University</i>	Academic Success Center	Clemson	LEED-NC 2.2	Gold	3/00/2013	35,700

<i>Coastal Carolina University</i>	Student Recreation & Convocation Center	Conway	LEED NC 2.2	Gold	2/11/2013	126,509
<i>Coastal Carolina University</i>	CCU Science Annex II	Conway	LEED-NC v2009			64,000
<i>Coastal Carolina University</i>	Baseball Stadium	Conway	LEED-NC v2009			62,448
<i>Coastal Carolina University</i>	Student Center Annex		LEED-NC v2009			46,000
<i>Coastal Carolina University</i>	Student Housing Phase 1	Conway	LEED-NC v2009			176,813
<i>Coastal Carolina University</i>	Athletic Training	Conway	LEED NC 2.2	Gold	12/3/2010	61,944
<i>Coastal Carolina University</i>	Atheneum Hall Renovation	Conway	LEED-CI v2009			10,718
<i>Coastal Carolina University</i>	Swain Science Lab / Office Annex	Conway	LEED-NC 2.2			40,000
<i>Coastal Carolina University</i>	Academic Office/Classroom	Conway	LEED-NC v2009			48,996
<i>Coastal Carolina University</i>	Kimbel Library/Info Commons	Conway	LEED-NC 2.2			10,140
<i>College of Charleston</i>	Dixie Plantation Meeting Barn	Meggett	LEED-NC v2009			3,974
<i>College of Charleston</i>	Craig Hall Renovation	Charleston	LEED CI 2.0	Gold	2/16/2011	19,731
<i>College of Charleston</i>	284 Meeting St.	Charleston	LEED-NC 2.2			10,000
<i>College of Charleston</i>	College of Charleston Building 2	Charleston	LEED NC 2.2			150,000
<i>Florence Darlington TC</i>	Manufacturing Incubator Center	Florence	LEED NC V2009			26,960
<i>Francis Marion University</i>	Fieldhouse	Florence	LEED-NC v2009			9,248
<i>Greenville Tech</i>	Student Center	Greenville	LEED NC 2.2	Silver	7/11/2011	33,350
<i>Greenville Tech</i>	Barton-IT and Logistics Building	Greenville	LEED-NC v2009			32,434
<i>Horry-Georgetown Tech</i>	Confidential (HGTC Speir Allied Health Expar		LEED-NC v2009			23,065
<i>Horry-Georgetown Tech</i>	Speir Bldg Allied Health Expansion	Myrtle Beach	LEED-NC v2009			25,000
<i>Horry-Georgetown Tech</i>	Building 300 - Academic	Conway	LEED-NC v2009			48,605
<i>Lander University</i>	Centennial Residence Hall	Greenwood	LEED NC 2.1	Certified	1/15/2008	21,500
<i>MidlandsTech</i>	Engineering Science Building	Columbia	LEED NC 2.2			82,530
<i>MUSC</i>	Bioengineering Building	Charleston	LEED NC 2.2	Gold	1/8/2013	90,000
<i>Piedmont Tech</i>	Newberry County Center	Newberry	LEED-NC v2009			74,959
<i>SC Criminal Justice Acad.</i>	SCCJA Village	Columbia	LEED NC 2.2			341,510
<i>SC Dept. of Mental Health</i>	Columbia Area CMH Center Phase Two	Columbia	LEED NC 2.2			28,215
<i>SC Dept. Of Transportation</i>	Traffic Management/Richland Signal Bldg	Columbia	LEED-NC v2009			17,627
<i>SC PRT</i>	Edisto Beach State Park Ed. Center	Edisto Beach	LEED NC 2.1	Certified	12/6/2005	7,625

<i>SC PRT</i>	Charlestowne Landing Founder's Hall	Charleston	LEED NC 2.2	Gold	12/12/2010	9,492
<i>SC School for Deaf &amp; Blind</i>	Assessment Center Renovate	Spartanburg	LEED NC 2.2			10,000
<i>SC School for Deaf &amp; Blind</i>	Herbert Center	Spartanburg	LEED NC 2.2	Silver	1/11/2013	81,000
<i>SC State University</i>	Clyburn Center – Emily Clyburn Archives Buil		LEED-NC v2009			25,000
<i>SC State University</i>	Engineering/Computer Science	Orangeburg	LEED-NC 2.2	Gold	5/00/2013	86,500
<i>SC State University</i>	Clyburn Center - Phase 1D	Orangeburg	LEED-NC 2.2			4,978
<i>SCNG</i>	SCNG Florence FMS	Darlington	LEED-NC v2009			13,500
<i>Spartanburg Com. College (Foundation Funded)</i>	142 S. Dean St.	Spartanburg	LEED-NC v2009			107,530
<i>Tri-County Tech</i>	Occupational Services Building	Easley	LEED-NC v2009	Silver	7/30/2012	41,125
<i>Trident Tech</i>	Building 950 Renovation Phase II	N. Charleston	LEED-CI v2009			29,358
<i>Trident Tech</i>	TTC Nursing and Science Building		LEED-NC v2009			100,101
<i>USC - Columbia</i>	Honors College	Columbia	LEED NC 2.1	Gold	12/9/2009	191,123
<i>USC - Columbia</i>	Patterson Hall	Columbia	LEED NC 2.2	Gold	10/15/2012	186,690
<i>USC - Columbia</i>	Womens Quad Renovation	Columbia	LEED-NC v2009			162,000
<i>USC - Columbia</i>	Discovery One Upfit	Columbia	LEED-CI v2009			50,050
<i>USC - Columbia</i>	Athletic Coaches Support Building	Columbia	LEED-NC 2.2			68,713
<i>USC - Columbia</i>	Maxcy College Renovations	Columbia	LEED-NC v2009			44,000
<i>USC - Columbia</i>	Darla Moore School of Business	Columbia	LEED-NC v2009			252,996
<i>USC - Columbia</i>	Spigner House Renovation	Columbia	LEED-CI v2009	Gold	12/7/2012	7,015
<i>USC - Columbia</i>	School of Journalism	Columbia	LEED-NC v2009			56,723
<i>USC - Columbia</i>	West Quad - Living/Learning Center	Columbia	LEED NC 2.0	Silver	8/11/2005	180,000
<i>USC - Columbia</i>	Special Collections Library	Columbia	LEED NC 2.1	Gold	11/1/2010	50,217
<i>USC - Columbia</i>	DeSaussure College	Columbia	LEED-NC v2009			24,989
<i>USC – Lancaster (Foundatio Funded)</i>	Founders Hall	Lancaster	LEED-NC v2009			40,200
<i>USC – Upstate (Foundatio funded)</i>	College of Business and Economics	Spartanburg	LEED NC 2.2	Certified	8/25/2011	56,236
<i>USC - Upstate</i>	Health Education Complex	Spartanburg	LEED NC 2.2	Silver	3/17/2011	144,900
<i>Winthrop University</i>	Lois Rhame West PE Center	Rock Hill	LEED NC 2.1	Silver	4/21/2009	137,750

## Appendix A

### Project Information



While there is no consistent description of expected benefits from a specific LEED or Green Globes certified building, information about the benefits of buildings constructed to LEED standards can be obtained from a variety of sources. These include “scorecards” showing the areas on which the building’s owners and design team chose to focus, which are generally available for buildings certified by the US Green Building Council. Life-cycle analyses for buildings approved after the August, 2010 requirement went into effect will be available in some cases. Finally, building owners, design teams, and the media may have released supplemental information. The following pages present information about the energy, water, and other environmental benefits of green buildings constructed in accordance with the law, based on available information. Please note that the projects included here are only those certified under the provisions of the law and do not include projects registered before the law took effect, or those which are certified, but not required to be so due to size or other consideration.

Distribution of All LEED Certified Projects in South Carolina

Source: USGBC-SC Chapter

Owner: Clemson University  
Building: Duke Innovation Center  
Architect: Goodwin, Mills and Cawood  
Occupancy: March 2011  
Certification: Gold, October 2011  
Square Footage: 39,000



The Duke Energy Innovation Center serves as a high-tech business incubator focusing on the advanced materials industry. Completed in the spring of 2011 as a joint project with the South Carolina Research Authority, the facility serves startup companies with intellectual property coming out of Clemson University as well as the private sector. The innovation center is designed to provide both space and opportunity to entrepreneurs for collaboration and information sharing. The building was designed to reduce the quantity of water needed by at least 40 percent over a comparable standard building through the use of ultra-low flow fixtures. The native plant landscaping requires no irrigation, reducing water used for irrigation by 100 percent. The project was able to divert over 75 percent of construction waste from landfills.

Sources: Clemson University  
<http://www.clemson.edu/facilities/sustainable-building/leed/duke-energy.html>

Owner: Clemson University  
Building: Lee Hall III  
Architect: T. Phifer & Partners/McMillan Pazdan Smith  
Occupancy: July 2012  
Certification: LEED Gold, June 2012  
Square Footage: 85,080



Lee Hall III, an addition that doubles the size of the complex housing the University's architecture and related programs, was designed to teach sustainability to the students and campus community by example. Its 42 geothermal wells installed to a depth of 440 feet provide approximately 80 tons of heating and cooling. The building also has an energy dashboard that provides real-time data on the temperature, humidity, energy, and water use. Natural light is used as much as possible; skylights automatically change angle and aperture depending on the need for lighting. The building also relies on natural ventilation, using both manual and mechanically operated windows that close when temperature and humidity readings reach designated thresholds. The building's 30,000 square foot roof garden is currently the largest university garden roof in the southeast, and should reduce the heat island effect. The University describes the building as "zero energy ready" meaning that as soon as funds are raised, solar panels will be added, making it one of the first net-zero energy classroom buildings in the county.

Source: Clemson University (<http://www.clemson.edu/facilities/sustainable-building/leed/leehall.html> )

## Clemson University - Lee Hall Expansion

**LEED for New Construction and Major Renovations (v2009)** GOLD, AWARDED JUN 2012

### **SUSTAINABLE SITES** AWARDED: 11 / 26

SSc1 Site selection 1 / 1  
SSc2 Development density and community connectivity 0 / 5  
SSc3 Brownfield redevelopment 0 / 1  
SSc4.1 Alternative transportation - public transportation access 6 / 6  
SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1  
SSc4.3 Alternative transportation - low-emitting and fuel-efficient vehicles 0 / 3  
SSc4.4 Alternative transportation - parking capacity 2 / 2  
SSc5.1 Site development - protect or restore habitat 0 / 1  
SSc5.2 Site development - maximize open space 0 / 1  
SSc6.1 Stormwater design - quantity control 0 / 1  
SSc6.2 Stormwater design - quality control 0 / 1  
SSc7.1 Heat island effect - nonroof 0 / 1  
SSc7.2 Heat island effect - roof 1 / 1  
SSc8 Light pollution reduction 0 / 1

### **WATER EFFICIENCY** AWARDED: 3 / 10

WEc1 Water efficient landscaping 0 / 4  
WEc2 Innovative wastewater technologies 0 / 2  
WEc3 Water use reduction 3 / 4

### **ENERGY & ATMOSPHERE** AWARDED: 23 / 35

EAc1 Optimize energy performance 19 / 19  
EAc2 On-site renewable energy 0 / 7  
EAc3 Enhanced commissioning 2 / 2  
EAc4 Enhanced refrigerant Mgmt 2 / 2  
EAc5 Measurement and verification 0 / 3  
EAc6 Green power 0 / 2

### **MATERIAL & RESOURCES** AWARDED: 7 / 14

MRc1.1 Building reuse - maintain existing walls, floors and roof 0 / 3  
MRc1.2 Building reuse - maintain interior nonstructural elements 0 / 1  
MRc2 Construction waste Mgmt 2 / 2  
MRc3 Materials reuse 0 / 2  
MRc4 Recycled content 2 / 2  
MRc5 Regional materials 2 / 2

### **MATERIAL & RESOURCES** CONTINUED

MRc6 Rapidly renewable materials 0 / 1  
MRc7 Certified wood 1 / 1

### **INDOOR ENVIRONMENTAL QUALITY** AWARDED: 10 / 15

EQc1 Outdoor air delivery monitoring 0 / 1  
EQc2 Increased ventilation 1 / 1  
EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1  
EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1  
EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1  
EQc4.2 Low-emitting materials - paints and coatings 1 / 1  
EQc4.3 Low-emitting materials - flooring systems 1 / 1  
EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1  
EQc5 Indoor chemical and pollutant source control 0 / 1  
EQc6.1 Controllability of systems - lighting 1 / 1  
EQc6.2 Controllability of systems - thermal comfort 0 / 1  
EQc7.1 Thermal comfort - design 1 / 1  
EQc7.2 Thermal comfort - verification 1 / 1  
EQc8.1 Daylight and views - daylight 0 / 1  
EQc8.2 Daylight and views - views 1 / 1

### **INNOVATION** AWARDED: 6 / 6

IDc1 Innovation in design 5 / 5  
IDc2 LEED Accredited Professional 1 / 1

### **REGIONAL PRIORITY** AWARDED: 4 / 4

EAc1 Optimize energy performance 1 / 1  
EQc7.1 Thermal comfort - design 1 / 1  
MRc2 Construction waste Mgmt 1 / 1  
SSc4.1 Alternative transportation - public transportation access 1 / 1  
SSc6.1 Stormwater design - quantity control 0 / 1  
WEc3 Water use reduction 0 / 1

### **TOTAL** 64 / 110

40-49 Points  
CERTIFIED  
50-59 Points  
SILVER  
60-79 Points  
GOLD  
80+ Points  
PLATINUM  
1000005974, Clemson, SC

Owner: Clemson University  
Building: Larry Penley Jr. Golf Facility  
Architect: McMillan Pazdan Smith  
Occupancy: October, 2011  
Certification: LEED Silver, November 2012  
Square Footage: 7,605



The new home of Clemson's golf team consists of a physical training room, dining area, meeting room, repair shop, locker rooms, and the coaches' offices. The facility makes use of local materials including stone, heart pine floors and cypress ceilings, as well as natural light and operable windows.

Sources: McMillan Pazdan Smith, Yeargin Potter Shackelford Construction

# Larry B. Penley, Jr. Golf Facility

LEED for New Construction and Major Renovations (v2009) SILVER, AWARDED NOV 2012

## SUSTAINABLE SITES AWARDED: 12 / 26

- SSc1 Site selection 1 / 1
- SSc2 Development density and community connectivity 0 / 5
- SSc3 Brownfield redevelopment 0 / 1
- SSc4.1 Alternative transportation - public transportation access 0 / 6
- SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1
- SSc4.3 Alternative transportation - low-emitting and fuel-efficient vehicles 3 / 3
- SSc4.4 Alternative transportation - parking capacity 2 / 2
- SSc5.1 Site development - protect or restore habitat 1 / 1
- SSc5.2 Site development - maximize open space 1 / 1
- SSc6.1 Stormwater design - quantity control 1 / 1
- SSc6.2 Stormwater design - quality control 0 / 1
- SSc7.1 Heat island effect - nonroof 0 / 1
- SSc7.2 Heat island effect - roof 1 / 1
- SSc8 Light pollution reduction 1 / 1

## WATER EFFICIENCY AWARDED: 5 / 10

- WEc1 Water efficient landscaping 2 / 4
- WEc2 Innovative wastewater technologies 0 / 2
- WEc3 Water use reduction 3 / 4

## ENERGY & ATMOSPHERE AWARDED: 15 / 35

- EAc1 Optimize energy performance 8 / 19
- EAc2 On-site renewable energy 0 / 7
- EAc3 Enhanced commissioning 2 / 2
- EAc4 Enhanced refrigerant Mgmt 0 / 2
- EAc5 Measurement and verification 3 / 3
- EAc6 Green power 2 / 2

## MATERIAL & RESOURCES AWARDED: 5 / 14

- MRc1.1 Building reuse - maintain existing walls, floors and roof 0 / 3
- MRc1.2 Building reuse - maintain interior nonstructural elements 0 / 1
- MRc2 Construction waste Mgmt 2 / 2
- MRc3 Materials reuse 0 / 2
- MRc4 Recycled content 1 / 2
- MRc5 Regional materials 2 / 2

## MATERIAL & RESOURCES CONTINUED

- MRc6 Rapidly renewable materials 0 / 1
- MRc7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 9 / 15

- EQc1 Outdoor air delivery monitoring 0 / 1
- EQc2 Increased ventilation 0 / 1
- EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1
- EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1
- EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1
- EQc4.2 Low-emitting materials - paints and coatings 1 / 1
- EQc4.3 Low-emitting materials - flooring systems 1 / 1
- EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1
- EQc5 Indoor chemical and pollutant source control 0 / 1
- EQc6.1 Controllability of systems - lighting 1 / 1
- EQc6.2 Controllability of systems - thermal comfort 1 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- EQc7.2 Thermal comfort - verification 1 / 1
- EQc8.1 Daylight and views - daylight 0 / 1
- EQc8.2 Daylight and views - views 0 / 1

## INNOVATION AWARDED: 4 / 6

- IDc1 Innovation in design 3 / 5
- IDc2 LEED Accredited Professional 1 / 1

## REGIONAL PRIORITY AWARDED: 3 / 4

- EAc1 Optimize energy performance 0 / 1
- EAc2 On-site renewable energy 0 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- MRc2 Construction waste Mgmt 1 / 1
- SSc4.1 Alternative transportation - public transportation access 0 / 1
- SSc6.1 Stormwater design - quantity control 1 / 1
- WEc3 Water use reduction 0 / 1

## TOTAL 53 / 110

40-49 Points  
CERTIFIED  
50-59 Points  
SILVER  
60-79 Points  
GOLD  
80+ Points  
PLATINUM  
1000006094, Clemson,

Owner: Coastal Carolina University  
Building: HTC Student Recreation and Convocation Center  
Architect: Garvin Design Group  
Occupancy: June 2012  
Certification: LEED Gold, February, 2013  
Square footage: 129,000



In 2012, Coastal Carolina built the HTC Student Recreation and Convocation Center which incorporates three distinct elements (a student recreation center, a convocation/athletic venue and the relocated campus bookstore) with support spaces arranged around a central circulation spine. The building is designed to save 45.8 percent in water use over a comparable building, and will save over half the water used for irrigation in a comparable building. One of its major features is providing day lighting and outside views in over 90 percent of regularly occupied spaces.

Source: Garvin Design Group, Hughes Group Architects, AthleticBusiness.com, Coastal Carolina University

# Student Recreation & Convocation Center

LEED for New Construction and Major Renovations (v2.2) GOLD, AWARDED FEB 2013

## SUSTAINABLE SITES AWARDED: 10 / 14

SSc1 Site selection 0 / 1  
SSc2 Development density and community connectivity 1 / 1  
SSc3 Brownfield redevelopment 0 / 1  
SSc4.1 Alternative transportation - public transportation access 1 / 1  
SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1  
SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 1 / 1  
SSc4.4 Alternative transportation - parking capacity 1 / 1  
SSc5.1 Site development - protect or restore habitat 1 / 1  
SSc5.2 Site development - maximize open space 1 / 1  
SSc6.1 Stormwater design - quantity control 1 / 1  
SSc6.2 Stormwater design - quality control 0 / 1  
SSc7.1 Heat island effect - non-roof 0 / 1  
SSc7.2 Heat island effect - roof 1 / 1  
SSc8 Light pollution reduction 1 / 1

## WATER EFFICIENCY AWARDED: 3 / 5

WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1  
WEc1.2 Water efficient landscaping - no potable water use or no irrigation 0 / 1  
WEc2 Innovative wastewater technologies 0 / 1  
WEc3.1 Water use reduction - 20% reduction 1 / 1  
WEc3.2 Water use reduction - 30% reduction 1 / 1

## ENERGY & ATMOSPHERE AWARDED: 6 / 17

EAc1 Optimize energy performance 4 / 10  
EAc2 On-site renewable energy 0 / 3  
EAc3 Enhanced commissioning 1 / 1  
EAc4 Enhanced refrigerant Mgmt 1 / 1  
EAc5 Measurement and verification 0 / 1  
EAc6 Green power 0 / 1

## MATERIAL & RESOURCES AWARDED: 5 / 13

MRc1.1 Building reuse - maintain 75% of existing walls, floors & roof 0 / 1  
MRc1.2 Building reuse - maintain 95% of existing walls, floors & roof 0 / 1  
MRc1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1  
MRc2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1

MRc2.2 Construction waste Mgmt - divert 75% from disposal 1 / 1  
MRc3.1 Materials reuse - 5% 0 / 1

## MATERIAL & RESOURCES CONTINUED

MRc3.2 Materials reuse - 10% 0 / 1  
MRc4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 1 / 1  
MRc4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1  
MRc5.1 Regional materials - 10% extracted, processed and manufactured regionally 1 / 1  
MRc5.2 Regional materials - 20% extracted, processed and manufactured regionally 1 / 1  
MRc6 Rapidly renewable materials 0 / 1  
MRc7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 14 / 15

EQc1 Outdoor air delivery monitoring 1 / 1  
EQc2 Increased ventilation 0 / 1  
EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1  
EQc3.2 Construction IAQ Mgmt plan - before occupancy 1 / 1  
EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1  
EQc4.2 Low-emitting materials - paints and coatings 1 / 1  
EQc4.3 Low-emitting materials - carpet systems 1 / 1  
EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1  
EQc5 Indoor chemical and pollutant source control 1 / 1  
EQc6.1 Controllability of systems - lighting 1 / 1  
EQc6.2 Controllability of systems - thermal comfort 1 / 1  
EQc7.1 Thermal comfort - design 1 / 1  
EQc7.2 Thermal comfort - verification 1 / 1  
EQc8.1 Daylight and views - daylight 75% of spaces 1 / 1  
EQc8.2 Daylight and views - views for 90% of spaces 1 / 1

## INNOVATION AWARDED: 4 / 5

IDc1 Innovation in design 3 / 4  
IDc2 LEED Accredited Professional 1 / 1

**TOTAL 42 / 69**

0010402613, Conway, SC

Building Owner: College of Charleston

Project: Craig Cafeteria Conversion

Architect: Liollo Architects

Occupancy: March 2010

Certification: LEED Gold, February 2011

Square Footage: 19,731



The former Craig Cafeteria was converted to the new Office of Admissions with residence halls occupying the floors above. The building itself dates from 1961, with four significant additions between 1976 and 1991. The College requested a LEED Commercial Interiors renovation with an emphasis on energy and water savings and an improvement in indoor air quality. The renovation reduces water use by an estimated 43 percent through the use of waterless urinals and other water efficient fixtures, as well as xeriscaping to reduce water use to maintain landscaping.

The renovation required architects to meet new standards for indoor air quality, increasing ventilation by 30 percent. In spite of this, energy use is controlled through the use of high efficiency light fixtures, daylight and occupancy sensors, and HVAC controls. The systems “meet the high standards of the Advanced Buildings Energy Benchmark for High Performance Buildings criteria.” Materials used in the renovation contained very low or no volatile organic

compounds (VOCs). To further protect health, the building was “flushed” before opening for use, to remove any pollutants emitted by newly installed materials. The local economy was supported because 23 percent of all materials used were extracted, processed, and manufactured regionally (within 500 miles) or locally. In addition, 75 percent of construction waste was diverted from landfills.

Liollo (now Watson Tate Savory Liollo Architecture), the firm responsible for the College of Charleston’s Craig Cafeteria renovation and conversion, prepared a brochure to educate the campus about the project.

Sources: Liollo Architects, College of Charleston

# Craig Hall Renovation

LEED for Commercial Interiors (v2.0) GOLD, AWARDED FEB 2011

## SUSTAINABLE SITES AWARDED: 5 / 7

SSc1 Site selection 2 / 3

SSc2 Development density and community connectivity 1 / 1

SSc3.1 Alternative transportation - public transportation access 1 / 1

SSc3.2 Alternative transportation - bicycle storage and changing rooms 0 / 1

SSc3.3 Alternative transportation - parking availability 1 / 1

## WATER EFFICIENCY AWARDED: 2 / 2

WEc1.1 Water use reduction - 20% reduction 1 / 1

WEc1.2 Water use reduction - 30% reduction 1 / 1

## ENERGY & ATMOSPHERE AWARDED: 5 / 12

EAc1.1 Optimize energy performance - lighting power 1 / 3

EAc1.2 Optimize energy performance - lighting controls 1 / 1

EAc1.3 Optimize energy performance - HVAC 2 / 2

EAc1.4 Optimize energy performance - equipment and appliances 1 / 2

EAc2 Enhanced commissioning 0 / 1

EAc3 Energy use, measurement and payment accountability 0 / 2

EAc4 Green power 0 / 1

## MATERIAL & RESOURCES AWARDED: 7 / 14

MRc1.1 Tenant space - long-term commitment 1 / 1

MRc1.2 Building reuse - maintain 40% of interior non-structural components 1 / 1

MRc1.3 Building reuse - maintain 60% of interior non-structural components 1 / 1

MRc2.1 Construction waste Mgmt - divert 50% from landfill 1 / 1

MRc2.2 Construction waste Mgmt - divert 75% from landfill 1 / 1

MRc3.1 Resource reuse - 5% 0 / 1

MRc3.2 Resource reuse - 10% 0 / 1

MRc3.3 Resource reuse - 30% furniture and furnishings 0 / 1

MRc4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 1 / 1

MRc4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1

MRc5.1 Regional materials - 20% manufactured regionally 1 / 1

MRc5.2 Regional materials - 10% extracted and manufactured regionally 1 / 1

MRc6 Rapidly renewable materials 0 / 1

MRc7 Certified wood 1 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 12 / 17

EQc1 Outdoor air delivery monitoring 1 / 1

EQc2 Increased ventilation 1 / 1

EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1

EQc3.2 Construction IAQ Mgmt plan - before occupancy 1 / 1

EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1

EQc4.2 Low-emitting materials - paints and coatings 1 / 1

EQc4.3 Low-emitting materials - carpet systems 1 / 1

EQc4.4 Low-emitting materials - composite wood and laminate adhesives 1 / 1

EQc4.5 Low-emitting materials - systems furniture and seating 1 / 1

EQc5 Indoor chemical and pollutant source control 0 / 1

EQc6.1 Controllability of systems - lighting 1 / 1

EQc6.2 Controllability of systems - temperature and ventilation 0 / 1

EQc7.1 Thermal comfort - compliance 1 / 1

EQc7.2 Thermal comfort - monitoring 1 / 1

EQc8.1 Daylight and views - daylight 75% of spaces 0 / 1

EQc8.2 Daylight and views - daylight 90% of spaces 0 / 1

EQc8.3 Daylight and views - views for 90% of seated spaces 0 / 1

## INNOVATION AWARDED: 5 / 5

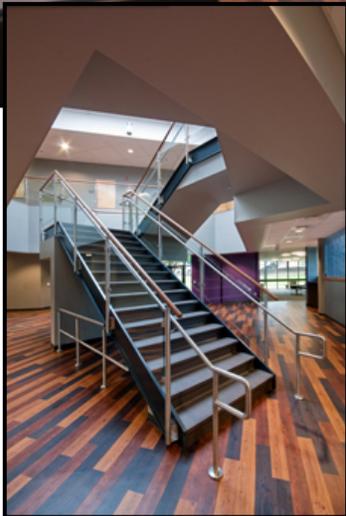
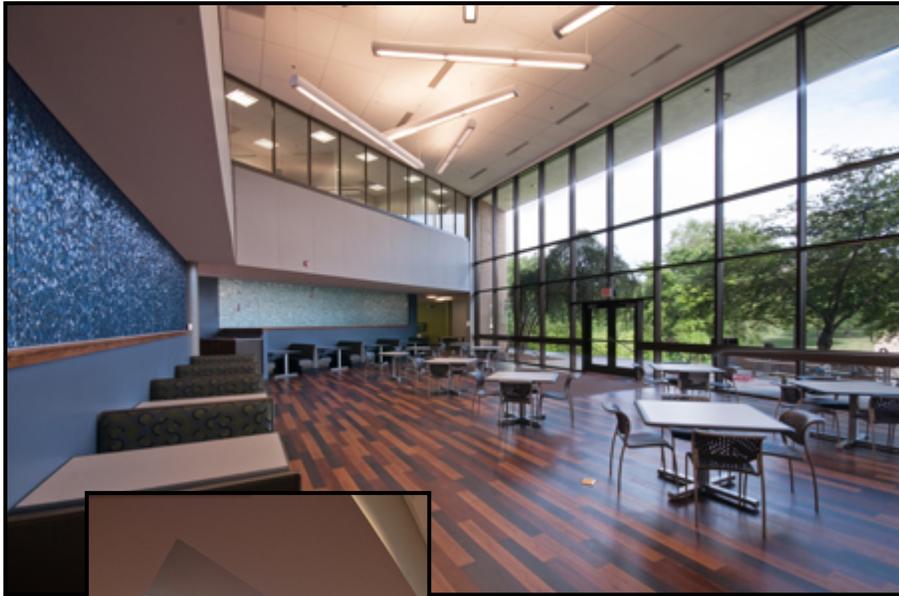
IDc1 Innovation in design 4 / 4

IDc2 LEED Accredited Professional 1 / 1

**TOTAL 36 / 57**

0010318400, Charleston, SC

Owner: Greenville Technical College  
Project: Barton Campus Student Center  
Architect: Craig Gauden Davis  
Occupancy: August, 2010  
Certification: LEED Silver, July 2011  
Square Footage: 33,350



Greenville Technical College's Barton Campus Student Center reopened in August of 2010. The facility now houses dining for students and faculty, as well as a lounge area, student organizations and Student Disability Services. In its previous condition in FY 2009, the building had a total annual energy usage of 2,811,938 kBtu, or 87.45 kBtu/sq.ft. The renovated building consumed 2,255,291 kBtu, or 70.14 kBtu/sq.ft. This represents a 20 percent reduction in annual energy use. The total annual water use prior to the renovation was 150,848 gallons, dropping to 125,480 gallons after the renovation. This represents an annual water savings of 25,368 gallons, or a 17 percent reduction in annual use. The Facilities Manager at Greenville Tech notes that the building is not separately metered for either utility type, but the estimates are based on allocated values from combined building totals. Other factors contributing to the building's LEED certification include use of low VOC and renewable products, promotion of alternative transportation and other environmental considerations.

Sources: Greenville Technical College

# Greenville Tech Student Center

LEED for New Construction and Major Renovations (v2.2) SILVER, AWARDED JUL 2011

## SUSTAINABLE SITES AWARDED: 7 / 14

- SSc1 Site selection 1 / 1
- SSc2 Development density and community connectivity 0 / 1
- SSc3 Brownfield redevelopment 1 / 1
- SSc4.1 Alternative transportation - public transportation access 0 / 1
- SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1
- SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 1 / 1
- SSc4.4 Alternative transportation - parking capacity 1 / 1
- SSc5.1 Site development - protect or restore habitat 1 / 1
- SSc5.2 Site development - maximize open space 1 / 1
- SSc6.1 Stormwater design - quantity control 0 / 1
- SSc6.2 Stormwater design - quality control 0 / 1
- SSc7.1 Heat island effect - non-roof 0 / 1
- SSc7.2 Heat island effect - roof 0 / 1
- SSc8 Light pollution reduction 0 / 1

## WATER EFFICIENCY AWARDED: 4 / 5

- WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1
- WEc1.2 Water efficient landscaping - no potable water use or no irrigation 1 / 1
- WEc2 Innovative wastewater technologies 0 / 1
- WEc3.1 Water use reduction - 20% reduction 1 / 1
- WEc3.2 Water use reduction - 30% reduction 1 / 1

## ENERGY & ATMOSPHERE AWARDED: 4 / 17

- EAc1 Optimize energy performance 3 / 10
- EAc2 On-site renewable energy 0 / 3
- EAc3 Enhanced commissioning 1 / 1
- EAc4 Enhanced refrigerant Mgmt 0 / 1
- EAc5 Measurement and verification 0 / 1
- EAc6 Green power 0 / 1

## MATERIAL & RESOURCES AWARDED: 7 / 13

- MRc1.1 Building reuse - maintain 75% of existing walls, floors & roof 1 / 1
- MRc1.2 Building reuse - maintain 95% of existing walls, floors & roof 1 / 1
- MRc1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1
- MRc2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1
- MRc2.2 Construction waste Mgmt - divert 75% from disposal 1 / 1

MRc3.1 Materials reuse - 5% 0 / 1

## MATERIAL & RESOURCES CONTINUED

- MRc3.2 Materials reuse - 10% 0 / 1
- MRc4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 2 / 1
- MRc4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1
- MRc5.1 Regional materials - 10% extracted, processed and manufactured regionally 1 / 1
- MRc5.2 Regional materials - 20% extracted, processed and manufactured regionally 0 / 1
- MRc6 Rapidly renewable materials 0 / 1
- MRc7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 8 / 15

- EQc1 Outdoor air delivery monitoring 1 / 1
- EQc2 Increased ventilation 0 / 1
- EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1
- EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1
- EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1
- EQc4.2 Low-emitting materials - paints and coatings 1 / 1
- EQc4.3 Low-emitting materials - carpet systems 1 / 1
- EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1
- EQc5 Indoor chemical and pollutant source control 0 / 1
- EQc6.1 Controllability of systems - lighting 0 / 1
- EQc6.2 Controllability of systems - thermal comfort 0 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- EQc7.2 Thermal comfort - verification 1 / 1
- EQc8.1 Daylight and views - daylight 75% of spaces 0 / 1
- EQc8.2 Daylight and views - views for 90% of spaces 0 / 1

## INNOVATION AWARDED: 5 / 5

- IDc1 Innovation in design 4 / 4
- IDc2 LEED Accredited Professional 1 / 1

**TOTAL 35 / 69**

0010480590, Greenville, SC

Owner: Medical University of South Carolina  
Building: BioEngineering Building  
Architects: Stevens & Wilkinson with Goody Clancy  
Occupancy: November 2011  
Certification: LEED Gold, January, 2013  
Square Footage: 90,000



MUSC's BioEngineering Building provides research and teaching facilities serving multiple departments on campus. Research labs have unusual requirements which by definition make them high energy users. For example, their complex HVAC systems require 100 percent outside air, they have high energy process loads, and require very high light levels. This makes it hard to achieve LEED certification at all, making the Gold designation particularly significant. According to its architects, "the Bioengineering Building is one of a few research labs in the country to reach this level of certification, and we believe it to be the largest LEED Gold facility in South Carolina."

The building is projected to reduce water consumption by approximately 40.6 percent over a similar standard building. It was also designed to decrease energy use, with the expectation that it will achieve 21.5 percent energy cost savings. Specific measures include flow restrictors, occupancy lighting sensors, a high-reflectance roof, double-pane windows, efficient exterior lighting, and extra thick insulation for heating/cooling. The project utilized

enhanced commissioning -- verifying that certain energy-related systems were installed, accounted for, and are performing consistent with the project's requirements.

Sources: MUSC, Stevens & Wilkinson Nomination for USGBC-SC 2013 Leadership Award

## MUSC Bioengineering Building

**LEED for New Construction and Major Renovations (v2.2) GOLD, AWARDED JAN 2013**

**SUSTAINABLE SITES AWARDED: 8 / 14**

- SSc1 Site selection 1 / 1
- SSc2 Development density and community connectivity 1 / 1
- SSc3 Brownfield redevelopment 0 / 1
- SSc4.1 Alternative transportation - public transportation access 1 / 1
- SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1
- SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 0 / 1
- SSc4.4 Alternative transportation - parking capacity 1 / 1
- SSc5.1 Site development - protect or restore habitat 0 / 1
- SSc5.2 Site development - maximize open space 1 / 1
- SSc6.1 Stormwater design - quantity control 0 / 1
- SSc6.2 Stormwater design - quality control 0 / 1
- SSc7.1 Heat island effect - non-roof 1 / 1
- SSc7.2 Heat island effect - roof 1 / 1
- SSc8 Light pollution reduction 0 / 1

**WATER EFFICIENCY AWARDED: 3 / 5**

- WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1
- WEc1.2 Water efficient landscaping - no potable water use or no irrigation 0 / 1
- WEc2 Innovative wastewater technologies 0 / 1
- WEc3.1 Water use reduction - 20% reduction 1 / 1
- WEc3.2 Water use reduction - 30% reduction 1 / 1

**ENERGY & ATMOSPHERE AWARDED: 7 / 17**

- EAc1 Optimize energy performance 5 / 10
- EAc2 On-site renewable energy 0 / 3
- EAc3 Enhanced commissioning 1 / 1
- EAc4 Enhanced refrigerant Mgmt 0 / 1
- EAc5 Measurement and verification 0 / 1
- EAc6 Green power 1 / 1

**MATERIAL & RESOURCES AWARDED: 6 / 13**

- MRC1.1 Building reuse - maintain 75% of existing walls, floors & roof 0 / 1
- MRC1.2 Building reuse - maintain 95% of existing walls, floors & roof 0 / 1
- MRC1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1

- MRC2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1
- MRC2.2 Construction waste Mgmt - divert 75% from disposal 1 / 1
- MRC3.1 Materials reuse - 5% 0 / 1

**MATERIAL & RESOURCES CONTINUED**

- MRC3.2 Materials reuse - 10% 0 / 1
- MRC4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 2 / 1
- MRC4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1
- MRC5.1 Regional materials - 10% extracted, processed and manufactured regionally 1 / 1
- MRC5.2 Regional materials - 20% extracted, processed and manufactured regionally 1 / 1
- MRC6 Rapidly renewable materials 0 / 1
- MRC7 Certified wood 0 / 1

**INDOOR ENVIRONMENTAL QUALITY AWARDED: 11 / 15**

- EQc1 Outdoor air delivery monitoring 1 / 1
- EQc2 Increased ventilation 0 / 1
- EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1
- EQc3.2 Construction IAQ Mgmt plan - before occupancy 1 / 1
- EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1
- EQc4.2 Low-emitting materials - paints and coatings 1 / 1
- EQc4.3 Low-emitting materials - carpet systems 1 / 1
- EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1
- EQc5 Indoor chemical and pollutant source control 0 / 1
- EQc6.1 Controllability of systems - lighting 1 / 1
- EQc6.2 Controllability of systems - thermal comfort 1 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- EQc7.2 Thermal comfort - verification 1 / 1
- EQc8.1 Daylight and views - daylight 75% of spaces 0 / 1
- EQc8.2 Daylight and views - views for 90% of spaces 0 / 1

**INNOVATION AWARDED: 5 / 5**

- IDc1 Innovation in design 4 / 4
- IDc2 LEED Accredited Professional 1 / 1

**TOTAL 40 / 69**

0010198247, Charleston, SC

Owner: SC School for the Deaf and Blind  
Building: Herbert Center  
Architects: DP3 Architects  
Occupancy: November 2011  
Certification: LEED Silver, January, 2013  
Square Footage: 81,000



The Herbert Center houses students who have multiple disabilities, and is designed to help them reach their full potential. The renovation included classrooms, a therapy pool, additional dormitory space, administrative offices, a new sprinkler system, an expanded infirmary, an enhanced training kitchen for independent living, and a residential multimedia room. The gym, cafeteria and building ramps were also renovated. According to the school, the project improves energy efficiency and enables the school to save on annual operating costs.

Sources: DP3 Architects, SC School for the Deaf and Blind

# SCSDB Herbert Center

LEED for New Construction and Major Renovations (v2.2) SILVER, AWARDED JAN 2013

## SUSTAINABLE SITES AWARDED: 8 / 14

- SSc1 Site selection 0 / 1
- SSc2 Development density and community connectivity 0 / 1
- SSc3 Brownfield redevelopment 0 / 1
- SSc4.1 Alternative transportation - public transportation access 0 / 1
- SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1
- SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 1 / 1
- SSc4.4 Alternative transportation - parking capacity 1 / 1
- SSc5.1 Site development - protect or restore habitat 1 / 1
- SSc5.2 Site development - maximize open space 1 / 1
- SSc6.1 Stormwater design - quantity control 1 / 1
- SSc6.2 Stormwater design - quality control 0 / 1
- SSc7.1 Heat island effect - non-roof 0 / 1
- SSc7.2 Heat island effect - roof 1 / 1
- SSc8 Light pollution reduction 1 / 1

## WATER EFFICIENCY AWARDED: 3 / 5

- WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1
- WEc1.2 Water efficient landscaping - no potable water use or no irrigation 1 / 1
- WEc2 Innovative wastewater technologies 0 / 1
- WEc3.1 Water use reduction - 20% reduction 1 / 1
- WEc3.2 Water use reduction - 30% reduction 0 / 1

## ENERGY & ATMOSPHERE AWARDED: 7 / 17

- EAc1 Optimize energy performance 5 / 10
- EAc2 On-site renewable energy 0 / 3
- EAc3 Enhanced commissioning 0 / 1
- EAc4 Enhanced refrigerant Mgmt 1 / 1
- EAc5 Measurement and verification 0 / 1
- EAc6 Green power 1 / 1

## MATERIAL & RESOURCES AWARDED: 5 / 13

- MRc1.1 Building reuse - maintain 75% of existing walls, floors & roof 1 / 1
- MRc1.2 Building reuse - maintain 95% of existing walls, floors & roof 1 / 1
- MRc1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1
- MRc2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1

MRc2.2 Construction waste Mgmt - divert 75% from disposal 0 / 1

MRc3.1 Materials reuse - 5% 0 / 1

## MATERIAL & RESOURCES CONTINUED

- MRc3.2 Materials reuse - 10% 0 / 1
- MRc4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 1 / 1
- MRc4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1
- MRc5.1 Regional materials - 10% extracted, processed and manufactured regionally 0 / 1
- MRc5.2 Regional materials - 20% extracted, processed and manufactured regionally 0 / 1
- MRc6 Rapidly renewable materials 1 / 1
- MRc7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 10 / 15

- EQc1 Outdoor air delivery monitoring 1 / 1
- EQc2 Increased ventilation 0 / 1
- EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1
- EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1
- EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1
- EQc4.2 Low-emitting materials - paints and coatings 1 / 1
- EQc4.3 Low-emitting materials - carpet systems 1 / 1
- EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1
- EQc5 Indoor chemical and pollutant source control 0 / 1
- EQc6.1 Controllability of systems - lighting 1 / 1
- EQc6.2 Controllability of systems - thermal comfort 0 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- EQc7.2 Thermal comfort - verification 1 / 1
- EQc8.1 Daylight and views - daylight 75% of spaces 0 / 1
- EQc8.2 Daylight and views - views for 90% of spaces 1 / 1

## INNOVATION AWARDED: 2 / 5

- IDc1 Innovation in design 1 / 4
- IDc2 LEED Accredited Professional 1 / 1

**TOTAL 35 / 69**

0010432988, Spartanburg, SC

Owner: SC State University  
Building: Engineering and Computer Science Complex  
Architect: The Freelon Group, with McMillan Smith and Partners  
Occupancy: 2/1/2013  
Certification: LEED Gold, May, 2013  
Square Footage: 86,500



The complex houses the nuclear engineering program, and the departments of Civil and Mechanical Engineering Technology, Mathematics and Computer Science, and Industrial and Electrical Engineering Technology. It also includes SC State's Center for Energy Studies and the Center for Modern Manufacturing. The Center for Energy Studies serves as a pioneer for alternative energy with the study and production of biodiesel fuel, hydrogen fuel cells, solar energy initiatives, and the production of hydrogen by its evolution from switchgrass and agricultural waste products. The Center for Modern Manufacturing includes robotics, mechatronics and rapid prototyping. The energy and indoor air quality demands created by the laboratories and technology used throughout the building make achievement of LEED Gold even more difficult and thus more impressive.

Source: SC State News Archive

# SCSU Engineering/Computer Science

LEED for New Construction and Major Renovations (v2.2) GOLD, AWARDED MAY 2013

## SUSTAINABLE SITES AWARDED: 9 / 14

SSc1 Site selection 1 / 1  
SSc2 Development density and community connectivity 1 / 1  
SSc3 Brownfield redevelopment 1 / 1  
SSc4.1 Alternative transportation - public transportation access 0 / 1  
SSc4.2 Alternative transportation - bicycle storage and changing rooms 0 / 1  
SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 1 / 1  
SSc4.4 Alternative transportation - parking capacity 1 / 1  
SSc5.1 Site development - protect or restore habitat 0 / 1  
SSc5.2 Site development - maximize open space 1 / 1  
SSc6.1 Stormwater design - quantity control 0 / 1  
SSc6.2 Stormwater design - quality control 1 / 1  
SSc7.1 Heat island effect - non-roof 1 / 1  
SSc7.2 Heat island effect - roof 1 / 1  
SSc8 Light pollution reduction 0 / 1

## WATER EFFICIENCY AWARDED: 4 / 5

WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1  
WEc1.2 Water efficient landscaping - no potable water use or no irrigation 1 / 1  
WEc2 Innovative wastewater technologies 0 / 1  
WEc3.1 Water use reduction - 20% reduction 1 / 1  
WEc3.2 Water use reduction - 30% reduction 1 / 1

## ENERGY & ATMOSPHERE AWARDED: 6 / 17

EAc1 Optimize energy performance 4 / 10  
EAc2 On-site renewable energy 0 / 3  
EAc3 Enhanced commissioning 0 / 1  
EAc4 Enhanced refrigerant Mgmt 1 / 1  
EAc5 Measurement and verification 0 / 1  
EAc6 Green power 1 / 1

## MATERIAL & RESOURCES AWARDED: 6 / 13

MRc1.1 Building reuse - maintain 75% of existing walls, floors & roof 0 / 1  
MRc1.2 Building reuse - maintain 95% of existing walls, floors & roof 0 / 1  
MRc1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1  
MRc2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1

MRc2.2 Construction waste Mgmt - divert 75% from disposal 1 / 1  
MRc3.1 Materials reuse - 5% 0 / 1

## MATERIAL & RESOURCES CONTINUED

MRc3.2 Materials reuse - 10% 0 / 1  
MRc4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 2 / 1  
MRc4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1  
MRc5.1 Regional materials - 10% extracted, processed and manufactured regionally 1 / 1  
MRc5.2 Regional materials - 20% extracted, processed and manufactured regionally 1 / 1  
MRc6 Rapidly renewable materials 0 / 1  
MRc7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 11 / 15

EQc1 Outdoor air delivery monitoring 1 / 1  
EQc2 Increased ventilation 0 / 1  
EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1  
EQc3.2 Construction IAQ Mgmt plan - before occupancy 1 / 1  
EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1  
EQc4.2 Low-emitting materials - paints and coatings 1 / 1  
EQc4.3 Low-emitting materials - carpet systems 1 / 1  
EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1  
EQc5 Indoor chemical and pollutant source control 1 / 1  
EQc6.1 Controllability of systems - lighting 1 / 1  
EQc6.2 Controllability of systems - thermal comfort 0 / 1  
EQc7.1 Thermal comfort - design 1 / 1  
EQc7.2 Thermal comfort - verification 1 / 1  
EQc8.1 Daylight and views - daylight 75% of spaces 0 / 1  
EQc8.2 Daylight and views - views for 90% of spaces 0 / 1

## INNOVATION AWARDED: 5 / 5

IDc1 Innovation in design 4 / 4  
IDc2 LEED Accredited Professional 1 / 1

**TOTAL 41 / 69**

0010357012, Orangeburg, SC

Owner: Tri-County Technical College  
Building: Occupational Services facility  
Architect: LS3P  
Occupancy: September 2010  
Certification: LEED Silver, July, 2012  
Square footage: 41,125



The Occupational Services facility functions as an anchor building on the new 25-acre Easley campus, providing higher education programs to Anderson, Oconee, and Pickens counties. The 42,000 square foot building includes classrooms, science labs, conference rooms, industrial labs, student lounge, library, and academic services all under one roof.

The combined use of high-efficiency mechanical equipment, high performance glazing, occupancy sensors and “cool roof” technology aided in the project receiving the Silver certification level.

Sources: LS3P Architects

# Occupational Services Building

LEED for New Construction and Major Renovations (v2009) SILVER, AWARDED JUL 2012

## SUSTAINABLE SITES AWARDED: 13 / 26

- SSc1 Site selection 1 / 1
- SSc2 Development density and community connectivity 0 / 5
- SSc3 Brownfield redevelopment 0 / 1
- SSc4.1 Alternative transportation - public transportation access 0 / 6
- SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1
- SSc4.3 Alternative transportation - low-emitting and fuel-efficient vehicles 3 / 3
- SSc4.4 Alternative transportation - parking capacity 2 / 2
- SSc5.1 Site development - protect or restore habitat 0 / 1
- SSc5.2 Site development - maximize open space 1 / 1
- SSc6.1 Stormwater design - quantity control 1 / 1
- SSc6.2 Stormwater design - quality control 1 / 1
- SSc7.1 Heat island effect - nonroof 1 / 1
- SSc7.2 Heat island effect - roof 1 / 1
- SSc8 Light pollution reduction 1 / 1

## WATER EFFICIENCY AWARDED: 6 / 10

- WEc1 Water efficient landscaping 4 / 4
- WEc2 Innovative wastewater technologies 0 / 2
- WEc3 Water use reduction 2 / 4

## ENERGY & ATMOSPHERE AWARDED: 10 / 35

- EAc1 Optimize energy performance 4 / 19
- EAc2 On-site renewable energy 0 / 7
- EAc3 Enhanced commissioning 2 / 2
- EAc4 Enhanced refrigerant Mgmt 2 / 2
- EAc5 Measurement and verification 0 / 3
- EAc6 Green power 2 / 2

## MATERIAL & RESOURCES AWARDED: 5 / 14

- MRc1.1 Building reuse - maintain existing walls, floors and roof 0 / 3
- MRc1.2 Building reuse - maintain interior nonstructural elements 0 / 1
- MRc2 Construction waste Mgmt 1 / 2
- MRc3 Materials reuse 0 / 2
- MRc4 Recycled content 2 / 2
- MRc5 Regional materials 2 / 2

## MATERIAL & RESOURCES CONTINUED

- MRc6 Rapidly renewable materials 0 / 1
- MRc7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 11 / 15

- EQc1 Outdoor air delivery monitoring 1 / 1
- EQc2 Increased ventilation 0 / 1
- EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1
- EQc3.2 Construction IAQ Mgmt plan - before occupancy 1 / 1
- EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1
- EQc4.2 Low-emitting materials - paints and coatings 1 / 1
- EQc4.3 Low-emitting materials - flooring systems 1 / 1
- EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1
- EQc5 Indoor chemical and pollutant source control 1 / 1
- EQc6.1 Controllability of systems - lighting 1 / 1
- EQc6.2 Controllability of systems - thermal comfort 0 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- EQc7.2 Thermal comfort - verification 1 / 1
- EQc8.1 Daylight and views - daylight 0 / 1
- EQc8.2 Daylight and views - views 0 / 1

## INNOVATION AWARDED: 3 / 6

- IDc1 Innovation in design 2 / 5
- IDc2 LEED Accredited Professional 1 / 1

## REGIONAL PRIORITY AWARDED: 3 / 4

- EAc1 Optimize energy performance 0 / 1
- EQc7.1 Thermal comfort - design 1 / 1
- MRc2 Construction waste Mgmt 1 / 1
- SSc6.1 Stormwater design - quantity control 1 / 1
- WEc3 Water use reduction 0 / 1

## TOTAL 51 / 112

40-49 Points

CERTIFIED

50-59 Points

SILVER

60-79 Points

GOLD

80+ Points

PLATINUM

1000001400, Easley, SC

Owner: University of South Carolina  
Building: Patterson Hall Renovation  
Architect: Garvin Design Group  
Occupancy: August 2012  
Certification: LEED Gold , October 2012  
Square Footage: 186,690



Patterson Hall was originally built in 1962 and was renovated in 2011, converting the traditional-style hall to a suite-style arrangement. Notable was the fact that the 186,990 square foot renovation included four new towers to meet the seismic requirements of current building codes. Patterson Hall houses 544 residents, has over 186,000 square feet, and has attained LEED Gold certification.

The residence hall features a kitchen on every floor, multiple community rooms, two classrooms, laundry facilities, and a cyber lounge. One unique feature is the "WattStopper" lighting control program which allows University Housing to set specific hours for lights to be on and off, helping to conserve more energy. Other energy saving measures include heat recovery systems to pre-cool and pre-heat the ventilation air with the exhaust air and energy captured off the building's lighting systems. Demand control ventilation uses carbon dioxide monitors to measure when people are in the large public spaces, so that the units begin providing

extra ventilation to maintain good indoor air quality. This also allows the systems to reduce the ventilation air when people are not present and ventilation is not needed. Variable speed motors are utilized in the dormitory room fan coils and in the main building air handlers. This reduces the energy used by the fans when cooling and heating are not needed. The use of ultra-high performance glass, with a U-value of .21 and a Solar Heat Gain Coefficient of .28 provides drastic improvement over the previous un-insulated glass windows and block walls. The roof system has a high reflectivity and emissivity value thus reducing the heat island effect and maximizing energy savings and building performance. Low fixtures in rooms, kitchens and laundry facilities as well as an irrigation system tied to rain gauges result in 40 percent greater water efficiency than in a conventional building.

Sources: University of South Carolina, Garvin Design Group nomination for USGBC-SC 2013 Leadership Award

## USC - Patterson Hall Renov & Additions

LEED for New Construction and Major Renovations (v2.2) GOLD, AWARDED OCT 2012

### SUSTAINABLE SITES AWARDED: 7 / 14

SSc1 Site selection 1 / 1  
SSc2 Development density and community connectivity 1 / 1  
SSc3 Brownfield redevelopment 0 / 1  
SSc4.1 Alternative transportation - public transportation access 1 / 1  
SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1  
SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 0 / 1  
SSc4.4 Alternative transportation - parking capacity 1 / 1  
SSc5.1 Site development - protect or restore habitat 0 / 1  
SSc5.2 Site development - maximize open space 1 / 1  
SSc6.1 Stormwater design - quantity control 0 / 1  
SSc6.2 Stormwater design - quality control 0 / 1  
SSc7.1 Heat island effect - non-roof 0 / 1  
SSc7.2 Heat island effect - roof 1 / 1  
SSc8 Light pollution reduction 0 / 1

### WATER EFFICIENCY AWARDED: 3 / 5

WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1  
WEc1.2 Water efficient landscaping - no potable water use or no irrigation 0 / 1  
WEc2 Innovative wastewater technologies 0 / 1  
WEc3.1 Water use reduction - 20% reduction 1 / 1  
WEc3.2 Water use reduction - 30% reduction 1 / 1

### ENERGY & ATMOSPHERE AWARDED: 10 / 17

EAc1 Optimize energy performance 9 / 10  
EAc2 On-site renewable energy 0 / 3  
EAc3 Enhanced commissioning 1 / 1  
EAc4 Enhanced refrigerant Mgmt 0 / 1  
EAc5 Measurement and verification 0 / 1  
EAc6 Green power 0 / 1

### MATERIAL & RESOURCES AWARDED: 6 / 13

MRc1.1 Building reuse - maintain 75% of existing walls, floors & roof 1 / 1  
MRc1.2 Building reuse - maintain 95% of existing walls, floors & roof 1 / 1  
MRc1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1  
MRc2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1

MRc2.2 Construction waste Mgmt - divert 75% from disposal 1 / 1

MRc3.1 Materials reuse - 5% 0 / 1

### MATERIAL & RESOURCES CONTINUED

MRc3.2 Materials reuse - 10% 0 / 1

MRc4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 0 / 1

MRc4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1

MRc5.1 Regional materials - 10% extracted, processed and manufactured regionally 1 / 1

MRc5.2 Regional materials - 20% extracted, processed and manufactured regionally 1 / 1

MRc6 Rapidly renewable materials 0 / 1

MRc7 Certified wood 0 / 1

### INDOOR ENVIRONMENTAL QUALITY AWARDED: 11 / 15

EQc1 Outdoor air delivery monitoring 0 / 1

EQc2 Increased ventilation 1 / 1

EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1

EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1

EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1

EQc4.2 Low-emitting materials - paints and coatings 1 / 1

EQc4.3 Low-emitting materials - carpet systems 1 / 1

EQc4.4 Low-emitting materials - composite wood and agrifiber products 0 / 1

EQc5 Indoor chemical and pollutant source control 0 / 1

EQc6.1 Controllability of systems - lighting 1 / 1

EQc6.2 Controllability of systems - thermal comfort 1 / 1

EQc7.1 Thermal comfort - design 1 / 1

EQc7.2 Thermal comfort - verification 1 / 1

EQc8.1 Daylight and views - daylight 75% of spaces 1 / 1

EQc8.2 Daylight and views - views for 90% of spaces 1 / 1

### INNOVATION AWARDED: 4 / 5

IDc1 Innovation in design 3 / 4

IDc2 LEED Accredited Professional 1 / 1

**TOTAL 41 / 69**

0010402571, Columbia, SC

Owner: University of South Carolina  
Building: Spigner House Renovation  
Architect: The Boudreaux Group  
Occupancy:  
Certification: LEED Gold , December 2012  
Square Footage: 7,015



Constructed in 1915 and conveyed to the University in 1964, the Spigner House is located within the University Architectural Conservation District. The interior renovation and adaptive reuse converted the vacant home into a meeting and conference space for the University. The renovation included new heating, air conditioning, ventilation, and lighting systems, all of which are energy efficient and appropriate to the historic character of the building. Insulation was added to further reduce energy use. New plumbing reduced water usage 30 percent over a baseline tenant space. The project also incorporated certified wood and low emitting materials to enhance indoor air quality. Ninety percent of construction materials were recycled.



Source: The Boudreaux Group

# USC Spigner House Renovation

LEED for Commercial Interiors (v2009) GO

**SUSTAINABLE SITES AWARDED: 21 / 21**

SSc1 Site selection 5 / 5

SSc2 Development density and community connectivity 6 / 6

SSc3.1 Alternative transportation - public transportation access 6 / 6

SSc3.2 Alternative transportation - bicycle storage and changing rooms 2 / 2

SSc3.3 Alternative transportation - parking availability 2 / 2

**WATER EFFICIENCY AWARDED: 6 / 11**

WEc1 Water use reduction 6 / 11

**ENERGY & ATMOSPHERE AWARDED: 19 / 37**

EAc1.1 Optimize energy performance - lighting power 0 / 5

EAc1.2 Optimize energy performance - lighting controls 0 / 3

EAc1.3 Optimize energy performance - HVAC 5 / 10

EAc1.4 Optimize energy performance - equipment and appliances 4 / 4

EAc2 Enhanced commissioning 5 / 5

EAc3 Measurement and verification 0 / 5

EAc4 Green power 5 / 5

**MATERIAL & RESOURCES AWARDED: 3 / 14**

MRC1.1 Tenant space - long-term commitment 0 / 1

MRC1.2 Building reuse - maintain interior nonstructural elements 0 / 2

MRc2 Construction waste Mgmt 2 / 2

MRc3.1 Materials reuse 0 / 2

MRc3.2 Materials reuse - furniture and furnishings 0 / 1

MRc4 Recycled content 0 / 2

MRc5 Regional materials 0 / 2

MRc6 Rapidly renewable materials 0 / 1

MRc7 Certified wood 1 / 1

**INDOOR ENVIRONMENTAL QUALITY AWARDED: 10 / 17**

EQc1 Outdoor air delivery monitoring 0 / 1

EQc2 Increased ventilation 1 / 1

EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1

EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1

EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1

EQc4.2 Low-emitting materials - paints and coatings 1 / 1

EQc4.3 Low-emitting materials - flooring systems 1 / 1

EQc4.4 Low-emitting materials - composite wood and agrifiber products 1 / 1

EQc4.5 Low-emitting materials - systems furniture and seating 0 / 1

EQc5 Indoor chemical and pollutant source control 0 / 1

EQc6.1 Controllability of systems - lighting 1 / 1

EQc6.2 Controllability of systems - thermal comfort 0 / 1

EQc7.1 Thermal comfort - design 1 / 1

EQc7.2 Thermal comfort - verification 1 / 1

EQc8.1 Daylight and views - daylight 0 / 2

EQc8.2 Daylight and views - views 1 / 1

**INNOVATION AWARDED: 3 / 6**

IDc1 Innovation in design 2 / 5

IDc2 LEED Accredited Professional 1 / 1

**REGIONAL PRIORITY AWARDED: 3 / 4**

EQc7.1 Thermal comfort - design 1 / 1

SSc1 Site selection 0 / 1

SSc3.1 Alternative transportation - public transportation access 1 / 1

WEc1 Water use reduction 1 / 1

**TOTAL 65 / 110**

40-49 Points

CERTIFIED

50-59 Points

SILVER

60-79 Points

GOLD

80+ Points

PLATINUM

1000019237, Columbia, SC

Owner: University of South Carolina  
Building: Harper and Elliott College  
Architect: CJMW  
Occupancy: 2012 Margaret Jordan  
Certification: Two Green Globes, January 2013  
Square Footage: 7,015



Harper and Elliott College, once separate residence halls, now are joined and house both a residence hall and the South Carolina Honors College offices. Located on the historic Horseshoe, Harper, built in 1848, and Elliott, built in 1837, underwent significant renovations during the summers of 2011 and 2012. At that time the buildings' structure along with the mechanical, electrical, and plumbing systems were upgraded.

University Housing worked with contractors and architects to develop a plan for Harper-Elliott that utilized recycled materials, added environmentally-friendly amenities and reduced energy and water consumption. Harper-Elliott is home to 48 students living in apartment-style residences as well as the Honors College offices. The work earned the buildings the two Green Globes rating.

Energy Ace provided Green Globes consulting, energy modeling and commissioning

Source: USC, CJMW

Green Globes 3rd Party Assessment Score Summary -Harper Elliott College							
Initial	Self-	3d Party	3d Party	Diff.			Point Change
Possible	Evaluation	Possible	Assessed	in Points	Areas/Sub-Areas		Remark
Points	Score	Points	Score	or %	of Assessment		
50	50	50	50	100%	<b>1-Project Management</b>		
20	20	20	20		1.1 Integrated Design Process		
10	10	10	10		1.2 Environmental Purchasing		
15	15	15	15		1.3 Commissioning Plan		
5	5	5	5		1.4 Emergency Response Plan		
88	46	115	73	63%	<b>2-Site</b>		
30	30	30	30		2.1 Development Area		
23	16	30	23		2.2 Minimize Ecological Impact		Light trespass from NA +7 to Y +7
15	0	15	0		2.3 Enhance Watershed Features		
20	0	40	20		2.4 Enhancement of Site Ecology		Landscape Plan NA +20 to Y +20
361	213	375	233	62%	<b>3-Energy</b>		
100	40	100	40		3.1 Building Energy Performance		
109	71	109	81		3.2 Energy Demand Minimization		Orient N to Y +8;Envelope N to Y +2
66	42	66	42		3.3 Energy-Efficient Systems		
20	0	20	0		3.4 Renewable Sources of Energy		
66	60	80	70		3.5 Energy-Efficient Transportation		Alt fuel NA +4 to N;Chang.Fac. N to Y +10
42	36	62	46	74%	<b>4-Water</b>		
30	24	30	24		4.1 Water Performance		
12	12	22	22		4.2 Water-Conserving Features		Water eff. Irrigation NA +10 to Y +10
0	0	10	0		4.3 Minimize Off-Site Water Treat		Greywater NA +10 to N
100	47	100	47	47%	<b>5-Resources, Materials and Solid Waste</b>		
35	0	35	0		5.1 Systems/Materials Low Impact		
16	8	16	8		5.2 Materials Min Res Consum.		
20	20	20	20		5.3 Reuse of Existing Buildings		
14	4	14	4		5.4 Durability/Adapt./Disassembly		
5	5	5	5		5.5 Reuse/Recycling C&D Waste		
10	10	10	10		5.6 Recycling/ Composting Facilities		
40	30	30	30	100%	<b>6-Emissions, Effluents, Other Impacts</b>		
0	0	0	0		6.1 Minimization of Air Emissions		
20	20	20	20		6.2 Minimize Ozone Depletion		
0	0	0	0		6.3 Contaminate Sewers/Waterways		
20	10	10	10		6.4 Pollution Minimization		Storage for haz and flamm mat to NA -10
160	134	170	144	85%	<b>7-Indoor Environmental Quality</b>		
45	39	50	39		7.1 Ventilation		IAQ monitor NA +5 to N
35	35	40	40		7.2 Source Control Indoor Pollutants		Cooling towers NA +5 to Y +5
35	25	35	30		7.3 Lighting		Glare measures N to Y +5
20	20	20	20		7.4 Thermal Comfort		
25	15	25	15		7.5 Acoustic Comfort		
841	556			66%	Self-Assessment		
		902	623	69%	3rd Party Assessment	Assessment Result: Two Green Globes	

Owner: University of South Carolina – Upstate  
Building: College of Business and Economics  
Architect: D. Schwartz Architects/McMillan Smith  
Occupancy: February 2009  
Certification: LEED Gold, December 2012  
Square Footage: 56,236

Note: Because this project was paid for by the University Foundation, it was not required to be LEED certified but the University chose to pursue LEED nonetheless.



The new George Dean Johnson Jr. College of Business and Economics is located in downtown Spartanburg, a move designed to both assist with redevelopment of the urban core and give students more direct access to the region's business community. The building includes a state of the art stock trading lab, fully equipped technology spaces, smart classrooms and lecture halls.

Sources: USC Upstate, McMillan Pazdan Smith

# USC-Upstate College of Bus. and Econ

LEED for New Construction and Major Renovations (v2.2) CERTIFIED, AWARDED AUG 2011

## SUSTAINABLE SITES AWARDED: 6 / 14

- SSc1 Site selection 1 / 1
- SSc2 Development density and community connectivity 0 / 1
- SSc3 Brownfield redevelopment 0 / 1
- SSc4.1 Alternative transportation - public transportation access 1 / 1
- SSc4.2 Alternative transportation - bicycle storage and changing rooms 1 / 1
- SSc4.3 Alternative transportation - low emitting and fuel efficient vehicles 1 / 1
- SSc4.4 Alternative transportation - parking capacity 0 / 1
- SSc5.1 Site development - protect or restore habitat 0 / 1
- SSc5.2 Site development - maximize open space 0 / 1
- SSc6.1 Stormwater design - quantity control 0 / 1
- SSc6.2 Stormwater design - quality control 0 / 1
- SSc7.1 Heat island effect - non-roof 1 / 1
- SSc7.2 Heat island effect - roof 1 / 1
- SSc8 Light pollution reduction 0 / 1

## WATER EFFICIENCY AWARDED: 2 / 5

- WEc1.1 Water efficient landscaping - reduce by 50% 1 / 1
- WEc1.2 Water efficient landscaping - no potable water use or no irrigation 0 / 1
- WEc2 Innovative wastewater technologies 0 / 1
- WEc3.1 Water use reduction - 20% reduction 1 / 1
- WEc3.2 Water use reduction - 30% reduction 0 / 1

## ENERGY & ATMOSPHERE AWARDED: 5 / 17

- EAc1 Optimize energy performance 2 / 10
- EAc2 On-site renewable energy 0 / 3
- EAc3 Enhanced commissioning 1 / 1
- EAc4 Enhanced refrigerant Mgmt 1 / 1
- EAc5 Measurement and verification 0 / 1
- EAc6 Green power 1 / 1

## MATERIAL & RESOURCES AWARDED: 4 / 13

- MRC1.1 Building reuse - maintain 75% of existing walls, floors & roof 0 / 1
- MRC1.2 Building reuse - maintain 95% of existing walls, floors & roof 0 / 1
- MRC1.3 Building reuse - maintain 50% of interior non-structural elements 0 / 1
- MRC2.1 Construction waste Mgmt - divert 50% from disposal 1 / 1

- MRC2.2 Construction waste Mgmt - divert 75% from disposal 1 / 1

- MRC3.1 Materials reuse - 5% 0 / 1

## MATERIAL & RESOURCES CONTINUED

- MRC3.2 Materials reuse - 10% 0 / 1

- MRC4.1 Recycled content - 10% (post-consumer + 1/2 pre-consumer) 1 / 1

- MRC4.2 Recycled content - 20% (post-consumer + 1/2 pre-consumer) 0 / 1

- MRC5.1 Regional materials - 10% extracted, processed and manufactured regionally 1 / 1

- MRC5.2 Regional materials - 20% extracted, processed and manufactured regionally 0 / 1

- MRC6 Rapidly renewable materials 0 / 1

- MRC7 Certified wood 0 / 1

## INDOOR ENVIRONMENTAL QUALITY AWARDED: 8 / 15

- EQc1 Outdoor air delivery monitoring 1 / 1

- EQc2 Increased ventilation 0 / 1

- EQc3.1 Construction IAQ Mgmt plan - during construction 1 / 1

- EQc3.2 Construction IAQ Mgmt plan - before occupancy 0 / 1

- EQc4.1 Low-emitting materials - adhesives and sealants 1 / 1

- EQc4.2 Low-emitting materials - paints and coatings 1 / 1

- EQc4.3 Low-emitting materials - carpet systems 1 / 1

- EQc4.4 Low-emitting materials - composite wood and agrifiber products 0 / 1

- EQc5 Indoor chemical and pollutant source control 0 / 1

- EQc6.1 Controllability of systems - lighting 0 / 1

- EQc6.2 Controllability of systems - thermal comfort 0 / 1

- EQc7.1 Thermal comfort - design 1 / 1

- EQc7.2 Thermal comfort - verification 1 / 1

- EQc8.1 Daylight and views - daylight 75% of spaces 0 / 1

- EQc8.2 Daylight and views - views for 90% of spaces 1 / 1

## INNOVATION AWARDED: 5 / 5

- IDc1 Innovation in design 4 / 4

- IDc2 LEED Accredited Professional 1 / 1

TOTAL 30 / 69

0010242722, Spartanburg, SC.

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