



LEED CREDIT SCORECARD - SYRACUSE CENTER OF EXCELLENCE

# Syracuse Center of Excellence earns highest LEED certification for green building design and construction

The Syracuse Center of Excellence (SyracuseCoE) headquarters has been awarded LEED® Platinum-level certification, established by the U.S. Green Building Council (USGBC) and verified by the Green Building Certification Institute (GBCI). LEED (Leadership in Energy and Environmental Design) is the nation's preeminent program for the design, construction and operation of high-performance green buildings.

The SyracuseCoE was designed to exemplify the highest level of LEED standards. The result is an iconic, high-performance building that is the realization of a dream shared by leaders in government, industry, and academia to create a world-renowned location for collaborations that address global challenges in clean and renewable energy, indoor environmental quality and water resources.

"Achieving a Platinum LEED rating for the SyracuseCoE headquarters further strengthens our region's reputation as an international leader in clean energy and environmental systems," said Robert Simpson, president of the CenterState Corporation for Economic Opportunity. "At the cutting-edge of sustainable design and performance, the SyracuseCoE provides an optimal venue for emerging companies to develop new technologies and positions local firms to accelerate product development, helping us compete in the global market."

"Buildings are a prime example of how human systems integrate with natural systems," said Rick Fedrizzi, president, CEO & founding chair of USGBC. "The Syracuse Center of Excellence headquarters project efficiently uses our natural resources and makes an immediate, positive impact on our planet, which will tremendously benefit future generations to come."

LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. LEED certification is earned at the levels of certified, silver, gold and platinum.

Dedicated in March 2010, the five-story, 55,000 square-foot SyracuseCoE headquarters was funded by New York State's Empire State Development with the New York State Foundation for Science, Technology, and Innovation (NYSTAR); the New York State Energy Research and Development Authority (NYSERDA); Syracuse University; Carrier Corp.; National Grid; and Otis. Projects at the SyracuseCoE are funded by multiple sources, including the U.S. Department of Energy; U.S. EPA; U.S. Department of Agriculture.

"Achieving a LEED Platinum rating for the design and construction of the Syracuse CoE headquarters is a great accomplishment for New York's Centers of Excellence program," said Kenneth Adams, Empire State Development president, CEO and commissioner. "This is an impressive facility with unique capabilities to springboard research into widespread deployment of innovative technologies."

"The site of the SyracuseCoE headquarters has seen many important developments over the years, including the construction of the Erie Canal, the manufacturing of typewriters by L.C. Smith & Brothers, and the launching of Onondaga Community College," said Ed Bogucz, SyracuseCoE executive director. "After seven generations of use, the site became a surface parking lot on top of a landfill. Earning a LEED Platinum rating for our facility makes clear to the world that the site has been restored to be a healthy, vibrant presence in the community for the next seven generations."

The headquarters sits on a three-acre, EPA-designated brownfield site in downtown Syracuse. The SyracuseCoE construction team dedicated itself to completely remediating the brownfield with careful investment made to clearing the land of environmental contamination and restoring it for sustained use by SyracuseCoE and future generations. The headquarters's earliest construction was sustainable, with the construction team led by LeChase Construction Services of Rochester, N.Y. diverting 98 percent of unused materials from landfills—whereas a typical building construction diverts just 2 percent of unused and waste materials.

Today, the SyracuseCoE houses research laboratories for indoor environmental quality and biomass fuel, classrooms, public spaces and additional lab space for use by SyracuseCoE academic and industry partners. Facilities include the Willis H. Carrier Total Indoor Environmental Quality Lab, the only research facility of its kind in the world dedicated to conducting controlled experiments on the human response to indoor environments—temperature, air quality, odor, light, etc. The 150-foot Urban Ecosystem Observatory takes measurements of outdoor air quality to help research into urban air pollution and the impact of buildings on urban ecosystems.

"It is exciting news that the Center of Excellence has been given the LEED Platinum-level certification," said Sen. John DeFrancisco (R). "Central New York is fortunate to have a unique institution on the brink of catapulting our community to the forefront as a leader in the environmental and energy systems industry. As members of our research, academic and business sectors continue to work together, they will develop innovative ideas and technologies that have tremendous potential to enhance our region's economic health and improve the quality of life for those who live here."

"Congratulations to the Syracuse Center of Excellence on receiving the highest LEED certification for green building design and construction. It is wonderful that the building exemplifies the energy efficiency and cutting edge technology that COE employees research, develop and promote," said Assemblyman William B. Magnarelli (D). "Buildings like this will continue to help Syracuse make a name for itself as a community that leads the state and nation in environmental friendly policies, designs and innovations."

Among the SyracuseCoE's sustainable design, construction and operational features that contributed to LEED Platinum certification are:

- Building Shape and Form - The building is relatively narrow, reducing brownfield site disturbance and excavation, with extensive windows providing a high level of occupant comfort with ample natural light and opportunities for views and natural ventilation;

- Building Orientation - To optimize the building's southern exposure in order to avoid solar energy drain during the colder months, the tower portion of the building is rotated 13-degrees from the urban street grid;
- Structure - The use of substantial cantilevers in the steel structure on the north, south, and west sides of the building reduce the number of columns, overall steel tonnage, and required footings for the building;
- Landscape Design - Large sloping landforms provide a dynamic reflection of the building, as well as a means for safely encapsulating contaminated soil instead of shipping it to a distant landfill;
- Vapor Intrusion System - Ventilation below the foundation prevents underground vapors from entering the building, eliminating a potential source of contaminants in indoor air;
- Storm Water Retention Tank - The southwest corner of the property features a storm water retention tank to control run-off entering the sewer system;
- Demand-Controlled Ventilation - The amount of fresh air delivered to a room varies depending on the number of people who are present, saving energy when rooms are partially occupied;
- Insulation - Solid façades include superior insulation to reduce heating and cooling loads. Interior insulation uses Demilec, a 100% soy-based spray foam. Exterior insulation boards were created from sustainable natural fiber materials;
- Underfloor Ventilation and Raised Flooring - Ventilation is provided close to occupants for improved thermal comfort using a raised floor system, allowing for even air distribution with lower fan speeds. The Tate raised floor system, situated 12 inches above the concrete deck, also provides convenient wire routing;
- Radiant Ceilings - Most of the heating and cooling in rooms is provided via ceiling panels that are embedded with copper piping that efficiently carries warm or cool water;
- Restrooms - Restrooms feature waterless urinals, dual flush low-flow toilets and faucets, and sustainable paper and cleaning products;
- Furniture - Furniture by Haworth and Herman Miller is made from recycled materials and FSC wood and wood products. Furniture is also 100% recyclable by the manufacturers upon return;
- Lighting - High efficiency compact fluorescent and LED lighting, controlled by a daylight harvesting (auto dimming) system and auto shut-off occupancy sensors, are used throughout the building;
- Windows - The south façade features highly insulated glass with integrated electronically controlled blinds that provide solar heat and glare control, capable of operation at 15-degree increments. The ceramic white dots on the windows passively reduce glare and solar heat gain;
- Roof - The building roof on the west tower is designed to reflect most of the sunlight, minimizing solar heat gain and reducing the cooling load. The roof is also designed to allow future installation of photovoltaics, building-scale wind turbines, and roof top HVAC units.

- Green Roof - The roof of the laboratory wing on the east end is covered with a living "green" roof that features six sedum plant species native to the region. The green roof is designed to absorb and retain rainwater, reducing runoff from storms. The green roof also eliminates heat island effect during summer and reduces heat loss during winter.

The headquarter building design and construction team was composed of local and national experts, led by Syracuse-based executive architect Ashley McGraw Architects, and assisted by LeChase and world-renowned design architect Toshiko Mori. Other design team members were Ove Arup & Partners (mechanical, electrical, plumbing, and structural engineering); Hargreaves Associates (landscape architects); Burt Hill (lab planner); Transsolar (climate concepts); Stearns & Wheeler (civil engineering); O'Brien & Gere (environmental engineer); John P. Stopen Engineering (geotechnical engineering); Peterson Engineering (elevators); C&S Companies (commissioning agent); and 7 Group (LEED consultant).

The strong Central Upstate New York roots of the majority of the design and construction team is a demonstration of the advanced technical expertise available in the region for green building projects. Specifically, construction for this highly advanced building involved more than 25 companies based in Central Upstate New York.

The U.S. Green Building Council's LEED green building certification system is the foremost program for the design, construction and operation of green buildings. Over 100,000 projects are currently participating in the LEED rating systems, comprising over 8 billion square feet of construction space in all 50 states and 114 countries. By using less energy, LEED-certified buildings save money for families, businesses and taxpayers; reduce greenhouse gas emissions; and contribute to a healthier environment for residents, workers and the larger community. For more information, visit [www.usgbc.org](http://www.usgbc.org).

*"Leadership in Energy & Environmental Design (LEED) is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies intended to improve performance in areas such as energy savings, water efficiency, CO2 emissions reductions, and improved indoor environmental quality."*

# LEED CREDIT SCORECARD - SYRACUSE CENTER OF EXCELLENCE

## Sustainable Sites, Possible Points: 14

	Points Earned	Points Available
<b>SS Prerequisite 1 Construction Activity Pollution Prevention</b> Erosion Prevention & Sedimentation Control plan was prepared and implemented during construction. An Erosion Prevention and Sediment Control plan endeavors to minimize the extent of soil disturbance, control the amount of soil that can run off due to wind and rain and by stabilizing any disturbed soil.		
<b>SS Credit 1 Site Selection</b> This credit is intended to protect sensitive land such as existing parklands, endangered habitats, prime farmland and wetlands and encourages the use of previously developed land.	1	1
<b>SS Credit 2 Development Density &amp; Community Connectivity</b> This credit encourages use of existing infrastructure and tries to reduce environmental impacts of transportation by selecting a site with a higher density of the surrounding neighborhood and occupant access to everyday community services and residential areas.	1	1
<b>SS Credit 2 Brownfield Redevelopment</b> This credit is earned by remediating a designated brownfield site.	1	1
<b>SS Credit 4.1 Alternative Transportation: Public Transportation Access</b> Project earns this credit by its proximity to existing public transportation options. This series of credits is focused on limiting environmental impacts from automobile use.	1	1
<b>SS Credit 4.2 Alternative Transportation: Bicycle Storage &amp; Changing Rooms</b> On site bicycle storage & changing rooms are provided to building occupants.	1	1
<b>SS Credit 4.3 Alternative Transportation: Low-Emitting &amp; Fuel Efficient Vehicles</b> Credit is earned by providing preferred parking for Low Emitting & Fuel Efficient vehicles equal to 5% of capacity	1	1
<b>SS Credit 4.4 Alternative Transportation: Parking Capacity</b> Credit has been earned by providing preferred parking for carpool vehicles equal to 5% of capacity	1	1
<b>SS Credit 5.1 Site Development: Protect or Restore Habitat</b> This credit promotes biodiversity by encouraging project teams to protect existing native habitat or restore the site with native species This Project restored 61% of total site area with native/adaptive vegetation which includes the green roof to a previously developed site.. The selected native and drought tolerant plants require no permanent irrigation therefore contributing to water efficient landscaping; the landscaping design also seeks to minimize site runoff, light pollution and minimize heat islands.	1	1
<b>SS Credit 5.2 Site Development: Maximize Open Space</b> Credit goal is to exceed local open space zoning requirements by 25%. The project has created open space equaling 64,000 square feet exceeding the local zoning requirement of 20,000 square feet. This credit is intended to encourage sites with large areas of vegetated open space that promote biodiversity	N/A	
<b>SS Credit 6.1 &amp; 6.2 Storm water Management: Quantity &amp; Quality</b> Earning these credits requires reducing storm water runoff by 25% from existing developed site conditions by increasing pervious surfaces and increasing the quality of storm water by letting water permeate the ground through increased landscaping and increased pervious areas. Due to concerns about impacting the existing environmental contamination in the soils above the water table the project took the approach to collect as much site and roof storm water runoff as possible and store it in an onsite detention structure for a slow release into the City storm system. While this reduces the burden on the City system it does not sufficiently reduce the total quantity or increase the quality of collected site storm runoff to also earn the credits.	N/A	2
<b>SS Credit 7.1 Heat Island Effect: Non-Roof</b> This credit encourages the design of pervious hardscape and covered or shaded hardscape to reduce the heat island effect. These goals ran counter to the storm water collection strategy outlined in SS6.1&2.Shade trees were confined primarily to non hardscape areas to facilitate snow removal.	1	1
<b>SS Credit 7.2 Heat Island Effect: Roof</b> Project utilized a combined strategy of green roof and light colored roof with a high SRI (Solar Reflective Incidence) to reduce heat island effect. Heat islands can affect communities by increasing summertime peak energy demand, air conditioning costs, air pollution and greenhouse gas emissions.	1	1
<b>SS Credit 8 Light Pollution Reduction</b> Project luminaries, exterior & interior, meet reduced power density requirements and control light trespass. This credit seeks to reduce light pollution that can block our view of the night sky and lighting that isn't efficient or is causing light trespass.	1	1
	<b>11</b>	<b>14</b>

"N/A= Not Attempted"

**Water Efficiency, Possible Points: 5**

**WE Credit 1.1-1.2 Water Efficient Landscaping**

Water efficient landscaping is designed with native plants and drought tolerant species which do not require permanent irrigation systems.

**WE Credit 2 Innovative Wastewater Technologies**

This credit endeavors to reduce the quantity of potable water used for flush fixtures by 50%. The project was able to achieve a 75% reduction. Project utilizes an 8,000 gallon rainwater harvesting and grey water system to flush all fixtures.

**WE Credit 3.1-3.2 Water Use Reduction**

Project's water consumption is reduced 68% from baseline calculations by utilizing low flow water closets, shower heads, kitchen sinks, dual flush water closets, waterless urinals and rain water re-use.

Points Earned	Points Available
2	2
1	1
2	2
<b>5</b>	<b>5</b>

**Energy & Atmosphere, Possible Points: 17**

**EA Prerequisite 1 Fundamental Commissioning of the Building Energy Systems**

Commissioning (Cx) is the process of verifying that the building's systems operate as intended and according to the owner's requirements as set forth in project documents. The project utilized an independent commissioning consultant to develop a CX plan and verify the installation and performance of building energy systems.

**EA Prerequisite 2 Minimum Energy Performance**

Project meets minimum industry standards for energy performance, additional optimization points are earned by credit EA1  
An independent computer simulation model is utilized to demonstrate compliance

**EA Prerequisite 3 Fundamental Refrigerant Management**

Non-CFC refrigerants are utilized .

**EA Credit 1 Optimize Energy Performance**

Project demonstrated 35% energy costs savings utilizing energy model for design and baseline case per ASHREA 90.1-2004  
That large number of available points reflects the great importance LEED places on reducing energy use and forestalling climate change.  
Energy efficiency measures include an improved thermal envelope, high efficiency glazing system, reduced interior lighting power density, daylighting control, high efficiency water source heat pumps and ground source geothermal heat exchange.

**EA Credit 2 On-Site Renewable Energy**

Infrastructure for on site Photo Voltaic (PV ) installation has been provided for a future 20KW installation which would provide 2.9% of building electrical use.

**EA Credit 3 Enhanced Commissioning**

In addition to fundamental verification of building energy systems the commissioning agent is engaged to be involved in all design phase reviews, specification review, equipment submittal review, verification of operator training and review of building operation 10 months after occupancy.

**EA Credit 4 Enhanced Refrigerant Management**

Project endeavors to minimize refrigerant use and emissions.  
The project has a total of eight pieces of equipment that utilize refrigerants R-410A & R-407C.  
The calculated Average Refrigerant Atmospheric Impact is 34 which is less than the LEED threshold of 100 for this credit.

**EA Credit 5 Measurement & Verification**

Project has developed a Measurement and Verification (M&V) plan to record actual energy use over the course of occupancy and compare that data with the estimated energy use seen in the design. Plan will utilize permanent sub metering equipment as well as data collection capabilities of the Building Management system (BMS).

**EA Credit 6 Green Power**

To achieve this credit 35% of power purchased must be green power. The University currently purchases 20% green power for all facilities campus wide.

8	10
1	3
1	1
1	1
1	1
N/A	1
<b>12</b>	<b>17</b>

"N/A= Not Attempted"

## Materials & Resources, Possible Points: 13

### MR Prerequisite 1 Storage & Collection of Recyclables

Building is provided with local and centralized collection points for recycling.

### MR Credit 1.1-1.2 Building Reuse

This credit is awarded for reusing portions, 75% to 95%, of an existing building's walls, floors & roof. These credits were not available for the SyracuseCoE project because there was no existing building at the site to reuse.

### MR Credit 1.3 Building Reuse, Non-Structural

This credit is awarded if a building renovation project reuses 50% or more of existing interior elements. This credit was not available for the SyracuseCoE project because there was no existing building at the site to reuse.

### MR Credit 2 Construction Waste Management

Over 96% of construction waste was diverted from landfill disposal. Total waste generated was 1,515 tons of which 1,470 tons were recycled or diverted from landfill disposal. Materials recycled include; Concrete, Metals, Wood, Cardboard & Paper, Gypsum, Asphalt & Plastic HDPE Pipe.

### MR Credit 3 Resource Reuse

This credit encourages the use of salvaged materials from the site or off site. We did attempt to reuse onsite fill materials where remediation was not a concern and accepted recycled concrete as structural fill from the facility that accepted our concrete waste. We did not utilize sufficient quantities that would qualify for this credit, requiring 2.5% materials by cost.

### MR Credit 4 Recycled Content

At least 21% of new material contained recycled content. Total value of post consumer content is estimated at \$986,192.00 and pre consumer content of \$417,657.00. Major material contributors to this credit include; Structural Steel, Gypsum Board, Plastic Lockers, Acoustical Ceiling Tile, Aluminum Framing and Metal Doors & Frames.

### MR Credit 5 Regional Materials

At least 14% of new materials qualified as regional materials; those that are extracted, harvested, and manufactured within 500 miles of the project site. Materials and assemblies contributing to this credit include; Concrete, Stone Fill, Masonry Units, Insulation, Access Flooring and Curbing

### MR Credit 6 Rapidly Renewable Materials

This credit encourages the use of rapidly renewable materials which must have a harvest cycle of 10 years or fewer. The project did utilize some rapidly renewable materials such as soy and rubber. We did not utilize sufficient quantities that would qualify for this credit, requiring 2.5% materials by cost.

### MR Credit 7 Certified Wood

More than 95% of wood utilized on site was FSC Certified, a minimum of 50% is required for credit.

Points Earned	Points Available
N/A	2
N/A	1
2	2
N/A	2
2	2
1	2
N/A	1
1	1
<b>6</b>	<b>13</b>

## Indoor Environmental Quality Possible Points: 15

### EQ Prerequisite 1 Minimum IAQ Performance HVAC Engineer

Project meets the baseline IAQ performance utilizing a mechanical ventilation to provide outdoor air to buildings in order to maintain good indoor air quality and keep occupants comfortable and healthy.

### EQ Prerequisite 2 Environmental Tobacco Smoke (ETS) Control

This project conforms to the Campus no smoking policy

### Credit 1 Outdoor Air Delivery Monitoring

Fresh air delivery is monitored by carbon dioxide (CO<sub>2</sub>) and outdoor airflow monitors that signal when CO<sub>2</sub> concentrations deviate from design requirements. The utilization of sensors and monitors allows ventilation to be delivered on demand only when required, potentially saving a lot of energy during unoccupied hours in spaces with varying occupancy.

### Credit 2 Increased Ventilation

Project exceeds by 30% the minimum outside air requirements for occupied spaces of the building. This increased ventilation helps reduce concentrations of carbon dioxide produced by occupants, and pollutants produced by off-gassing of construction materials and furnishings

### Credit 3.1 Construction IAQ Management Plan; During Construction

Project developed and implemented an IAQ construction phase management plan which included; covering ductwork; utilizing temporary filters on HVAC equipment; rigorous house cleaning and exclusive use of low VOC products.

### Credit 3.2 Construction IAQ Management Plan; Before Occupancy

Project implemented third party IAQ pre occupancy testing to verify IAQ. Test is performed after construction is complete, but prior to installation of loose furniture.

1	1
1	1
1	1
1	1

		Points Earned	Points Available
<b>Credit 4.1</b>	<b>Low Emitting Materials: Adhesives &amp; Sealants</b> Low VOC (Volatile Organic Compounds) adhesives & sealants are used to promote the indoor air quality. examples	1	1
<b>Credit 4.2</b>	<b>Low Emitting Materials: Paints &amp; Coatings</b> Low VOC (Volatile Organic Compounds) paints and coatings are used to promote the indoor air quality.	1	1
<b>Credit 4.3</b>	<b>Low Emitting Materials: Carpet Systems</b> Low VOC (Volatile Organic Compounds) flooring systems are used to promote the indoor air quality.	1	1
<b>Credit 4.4</b>	<b>Low Emitting Materials: Composite Woods &amp; Agrifiber</b> Low VOC (Volatile Organic Compounds) composites are used to promote the indoor air quality.	1	1
<b>Credit 5</b>	<b>Indoor Chemical &amp; Source Control</b> Project provided walk off mats at main entry. Dedicated ventilation provided at Copier Rooms and Janitors Closets. Provided MERV 13 filters on HVAC equipment. These efforts cumulatively help keep pollutants out of the indoor air.	1	1
<b>Credit 6.1</b>	<b>Controllability of Systems: Lighting</b> Project provides controllability of light fixtures and task lighting at individual work stations.	1	1
<b>Credit 6.2</b>	<b>Controllability of Systems: Thermal Comfort</b> Thermal controls are provided for individual work stations (TIEQ) and appropriate controls are provided in multi occupancy spaces.	1	1
<b>Credit 7.1</b>	<b>Thermal Comfort: Design</b> Project HVAC design meets the requirements of ASHRAE Standard 55-2004, which deals with thermal comfort of building occupants addressing air temperature, radiant temperature, humidity, and air speed.	1	1
<b>Credit 7.2</b>	<b>Thermal Comfort: Verification</b> Post occupancy survey will document and verify thermal comfort goals are met.	1	1
<b>Credit 8.1</b>	<b>Day lighting &amp; Views: 75% of Spaces</b> Project integrates relationship of building orientation, floor plate, and envelope to optimize daylighting & views.	1	1
<b>Credit 8.2</b>	<b>Day lighting &amp; Views: 90% of Spaces</b> Project integrates relationship of building orientation, floor plate, and envelope to optimize daylighting & views.	1	1
		<b>15</b>	<b>15</b>
<b>Innovation &amp; Design Process, Possible Points 5</b>			
<b>Credit 1.1</b>	<b>Innovation In Design - Water Use Reduction - Exemplary Performance</b> Project achieves 68% water savings maximizing water efficiency within the building to reduce the burden on municipal water supply and waste water systems.	1	1
<b>Credit 1.2</b>	<b>Innovation In Design - Construction Waste Management</b> Project set a goal of 95% recycle/salvage rate and was able to achieve a rate of 96.95%.	1	1
<b>Credit 1.3</b>	<b>Innovation In Design - Certified Wood</b> Project set a goal of 95% utilization rate of FSC wood and was able to achieve a rate of 95.2%.	1	1
<b>Credit 1.4</b>	<b>Innovation In Design</b> Only three innovation credits were pursued	N/A	1
<b>Credit 2</b>	<b>LEED Accredited Professional</b> A LEED Accredited Professional (LEED AP) is an integral member of the project team.	1	1
		<b>4</b>	<b>5</b>
		<b>53</b>	<b>69</b>

"N/A= Not Attempted"



[www.syracusecoe.org](http://www.syracusecoe.org)