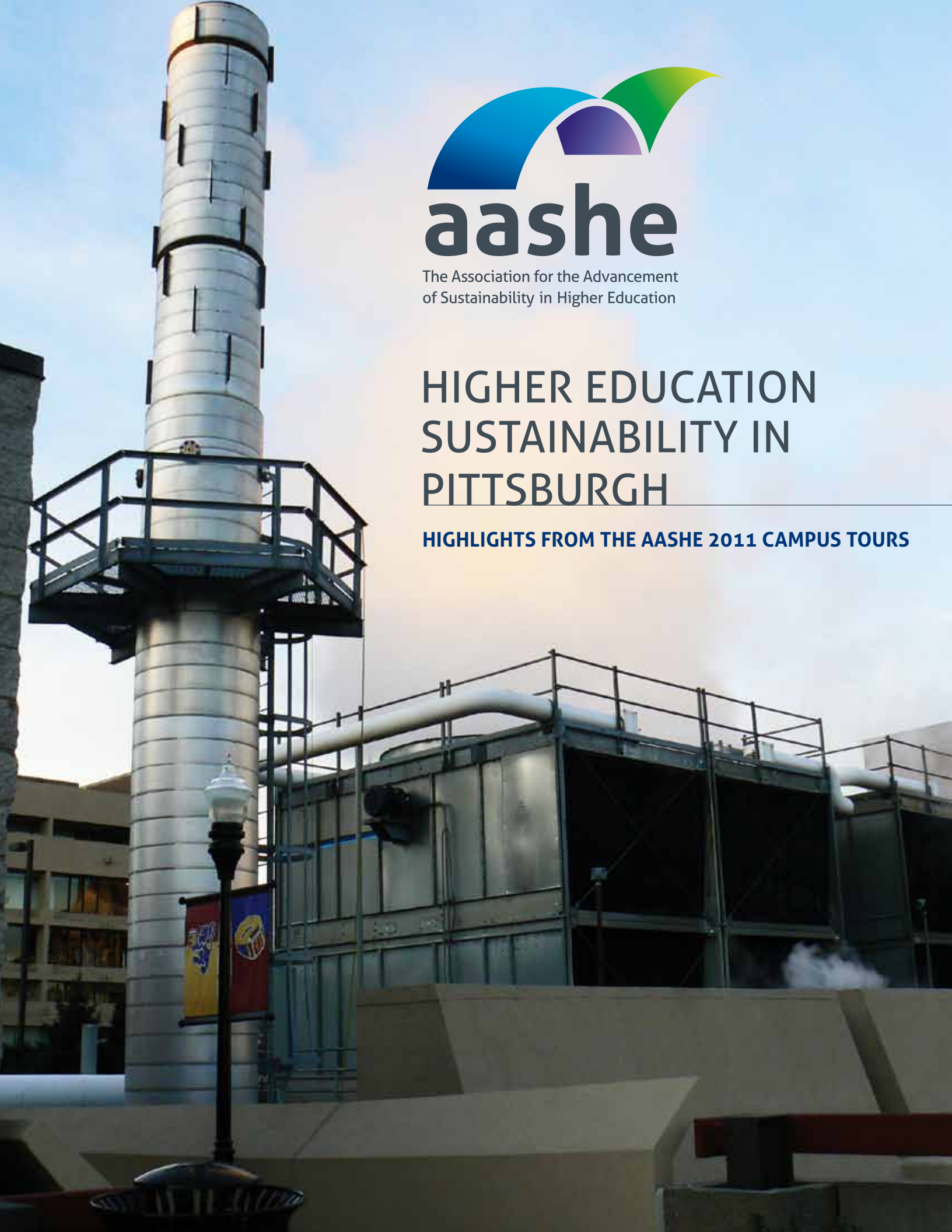




The Association for the Advancement  
of Sustainability in Higher Education

# HIGHER EDUCATION SUSTAINABILITY IN PITTSBURGH

HIGHLIGHTS FROM THE AASHE 2011 CAMPUS TOURS



PRODUCED BY THE ASSOCIATION FOR THE ADVANCEMENT  
OF SUSTAINABILITY IN HIGHER EDUCATION (AASHE)

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COVER PHOTO: Combined heat and power plant at Duquesne University. Courtesy of DU.

The Association for the Advancement of Sustainability in Higher Education (AASHE) is helping to create a brighter future of opportunity for all by advancing sustainability in higher education. By creating a diverse community engaged in sharing ideas and promising practices, AASHE provides administrators, faculty, staff and students, as well as the businesses that serve them, with: thought leadership and essential knowledge resources; outstanding opportunities for professional development; and a unique framework for demonstrating the value and competitive edge created by sustainability initiatives.

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“Sometimes I lose sight of my goal,  
then again it flashes into view,  
filling me with a new determination  
to **keep the vision splendid**  
before my eyes.”

— Rachel Carson

## INTRODUCTION

This quote by ecologist, “Silent Spring” author and Chatham University alum Rachel Carson reminds us of the everyday tenacity needed in working to advance a sustainable and just world. This publication celebrates that tenacity in the higher education sector, specifically among institutions in the Pittsburgh area. Historically known for its steel industry, the second largest city in the U.S. Commonwealth of Pennsylvania is home to institutions that are striving to educate students and the surrounding communities about green building design, waste elimination, alternative transportation options, climate positive goals, community partnerships toward sustainability, and much more.

Supported by the Heinz Endowments, this report profiles the sustainability innovations of the Pittsburgh institutions that hosted campus tours during the annual conference of the Association for the Advancement of Sustainability in Higher Education (AASHE) in October 2011.

Compiled from tour materials provided by these host institutions, as well as a survey of tour participants and follow-up interviews, this publication reveals the dynamism of higher education sustainability efforts in Pittsburgh. It includes tour participant impressions, and the knowledge they gained and lessons learned to take back home to campuses around the world.



The background of the entire page is a photograph of a large, green, grassy field. In the middle ground, there are two white buildings with red roofs. The building on the left is a long, single-story structure with a red roof and two small cupolas. The building on the right is a two-story house with a red roof and a small porch. A white fence runs across the middle ground, separating the field from the buildings. The sky is a clear, bright blue. The text "AASHE 2011 Campus Tours" is overlaid on the lower half of the image, inside a white rounded rectangle.

# AASHE 2011 Campus Tours

**PITTSBURGH, PA**

*Chatham University's Eden Hall Campus.*

# Carnegie Mellon University

## BACKGROUND / SUSTAINABILITY COMMITMENT

Carnegie Mellon University is located in Pittsburgh's Oakland neighborhood, which is also home to the University of Pittsburgh. The university was founded by industrialist Andrew Carnegie in 1900 as the Carnegie Technical Schools, serving largely the workers of the Pittsburgh area. In 1912 it became the degree-granting Carnegie Institute of Technology, or "Carnegie Tech," and in 1967 Carnegie Tech merged with the Mellon Institute to become Carnegie Mellon University.

Carnegie Mellon bills itself as a "global university" with an emphasis on "solving real-world problems, interdisciplinary collaboration, and innovation." Its more than 9,000 undergraduate and graduate students are distributed among seven colleges and schools: the [Carnegie Institute of Technology](#) (engineering), the [College of Fine Arts](#), the [College of Humanities and Social Sciences](#), the [Mellon College of Science](#), the [Tepper School of Business](#) (formerly the Graduate School of Industrial Administration), the [School of Computer Science](#) and the [H. John Heinz III School of Public Policy and Management](#).

In keeping with its aim to foster work across departmental lines so that its graduates enter the world with the ability to solve complex problems, the university also offers a number of [programs designed to cross disciplines](#).

Carnegie Mellon is committed to sustainability in its operations and learning, particularly the environmental dimensions of sustainability. It bills itself as a "world leader in addressing environmental issues, including global warming, alternative and clean energy sources, sustainable building design, green chemistry and environmental education." In 2003 it built one of the first LEED-Silver residence halls in the country ([Steuer House](#)). Green roofs,



*Green roof at Hamerschlag Hall. Courtesy of CMU.*

advanced energy systems, and advanced water management systems are all part of its building systems, with over 500,000 square feet of LEED-Certified building space (based on 2010 figures).

The institution's Green Practices Committee, with roots dating back to 1999, coordinates campus-wide environmental sustainability efforts. It is charged with developing university practices that "improve environmental quality, decrease waste, and conserve natural resources and energy." In 2010-11, the committee led a campus-wide sustainability assessment using AASHE's Sustainability Tracking, Assessment & Rating System. The resulting [STARS report](#) is available to the public.

Carnegie Mellon's 2012 campus master plan (recently approved) incorporates several principles of sustainability, following a public pledge made by the administration in signing on to the international ISCEN-GULF Charter (developed by the International Sustainable Campus Network and the Global Universities Leaders Forum). The institution's strategic plan (2008) addresses the challenge of "transitioning to an environmentally sustainable society."

Although Carnegie Mellon is not a signatory to the [American College & University Presidents' Climate Commitment](#) – which is a commitment to become a carbon neutral institution — it is a member of Pittsburgh's "Higher Education Climate Consortium" (part of the [Pittsburgh Climate Initiative](#)), and has earned national recognition as a leading purchaser of renewable energy, ranking second among colleges and universities and 39th overall on the U.S. EPA's Green Power Partnership list of top green power purchasers in 2012.



## AASHE 2011 CAMPUS TOUR HIGHLIGHTS

In addition to serving as one of 12 host institutions for the [AASHE 2011 Conference](#), Carnegie Mellon invited conference attendees on a half-day tour of its campus sustainability initiatives and the nearby [Phipps Conservatory and Botanical Gardens](#). The tour was organized and led by Barbara Kviz, co-chair of the Green Practices Committee and environmental coordinator for the university (staffed in Facilities Management Services).

The tour highlighted several campus LEED building projects — new construction as well as commercial interior — on the 145-acre campus, as well as environmental research centers including the [Steinbrenner Institute for Environmental Education and Research](#). Listed below are a few other tour sites:

### UNIVERSITY CENTER GREEN ROOM

Located on the first floor of the University Center, the “Green Room” or Recycling Education Center, is used to educate students, staff and faculty about the basics of recycling. It was designed and built by students in CMU’s Design Department. The different categories of recyclables such as paper, glass, plastics, and cans are shown on the walls, with a short list of common items in each category, and a bin corresponding to each placed below. (Includes batteries, plastic bottles, aluminum cans, steel containers, newspapers, magazines, office paper, phone directories, glass, cardboard, CDs, transparencies, and more.) Two computers show specific locations on campus that recycle particular items, and where and how it is disposed of. The room also has a cardboard box for recycling batteries, cell phones, and many other machines and electronic cords.

## CARNEGIE CAFÉ 2008 GOLD COMMERCIAL INTERIORS 2.0 RATING

Formerly known as the Highlander Cafeteria, renovations to the 9,400 square-foot café began in fall 2005 and were completed in summer 2006. The renovations used a variety of green design strategies, including the use of sustainable materials, improving the interior air quality, making energy efficiency enhancements, providing greater access to daylight and views, and upgrading the building’s overall systems.

### STEVER HOUSE (FORMERLY NEW HOUSE)

The first LEED-NC 2.0 Silver Certified university dormitory in the U.S. Many of its programs and experiences are focused on promoting environmentally-friendly practices. Stever House was designed as an extremely energy efficient building, using 30% less energy than a standard comparable residence hall. Because of the proximity to campus and public transportation, no new parking was provided for the building, which allowed for more outdoor green space.

### ROBERT L. PREGER INTELLIGENT WORKPLACE (IW)

The IW is a “living laboratory,” continually being updated to feature advanced systems, components and materials. It’s also a “lived-in” laboratory, occupied by actual workers and organizations. According to CMU architecture professor Vivian Loftness, “the IW is a wonderful place to work, with daylight throughout, fresh air on demand, spectacular views over the campus, and the ability to adapt spaces and technologies as needed.” She added that it is simultaneously “a wonderful place to undertake Ph.D. research projects, to test the impact of the built environment on thermal comfort, air quality,

**Carnegie Mellon** bills itself as a “**global university**” with an emphasis on “solving real-world problems, interdisciplinary collaboration, and innovation.”

acoustic quality, lighting quality and the technologies or organizational changes possible in the workplace of the future.” The IW sits atop Margaret Morrison Carnegie Hall, and is one of several projects of the Center for Building Performance and Diagnostics.

### **HAMERSCHLAG HALL AND DOHERTY HALL GREEN ROOFS**

Carnegie Mellon’s campus boasts six green roofs, each uniquely designed to reduce cooling and heating energy consumption, protect the roof’s structural elements from UV rays, extend the life of the roof, lower storm water waste streams and combat the urban heat island effect. The Doherty Hall East Laboratories green roof doubles as outdoor classroom space. The Hamerschlag Hall roof is equipped with monitoring equipment for staff, faculty and students to monitor benefits.

### **GATES HILLMAN COMPUTER SCIENCE COMPLEX—LEED-CERTIFIED GOLD, HOME OF THE GATES CENTER FOR COMPUTER SCIENCE AND THE HILLMAN CENTER FOR FUTURE-GENERATION TECHNOLOGIES**

Completed in 2009, the modern glass and zinc complex was selected by the American Institute of Architects as one of nine best examples of architectural excellence and urban design in the world for 2012. The award is considered the profession’s highest honor for work in the world. Jurors chose the project for its scale, which nestled it “perfectly within an urban campus and within a uniquely difficult site.” They also observed that the zinc skin and window openings “surprisingly relate beautifully to the campus fabric.” The site includes meticulous hillside landscaping and two major pedestrian bridges. The centers enclose 217,000 square feet of offices, classrooms and collaborative spaces and establish a quadrangle that unites the east and west sides of the campus.

**As they visited each site on the tour, participants were introduced to a diverse array of innovative technologies and programs, including:**

- Rainwater capture for flushing toilets (and other uses)
- Experimental approaches to green roofs and roof gardens
- Examples of “daylighting” interior space
- Intelligent workplace design

- An advanced recycling program handling a wide variety of materials, from tennis shoes to transparencies
- Working linkages between academics, operations, and students
- Green dorm-green room — a student engagement tool that addresses social aspects of sustainability
- An enthalpy wheel — which exchanges heat and humidity from one air-stream into another, providing an alternative to discarding used building air. The enthalpy wheel salvages useful energy and transfers it to the incoming, fresh air. The energy exchangers are generally made of porous materials to increase surface area, which aids in energy transfer.
- Reusable drinking containers – to reduce waste and increase environmental awareness, a reusable cup program encourages everyone on campus to use their own cups and bottles. Participating dining locations offer \$1.00 fountain drinks to those with reusable cups. In addition, first-year students receive metallic water bottles as a gift during Orientation (began in summer 2010).

“The diversity of initiatives stood out for me,” said tour participant Margret Asmuss of the University of Saskatchewan. Added Claudette Barrett at Shortwood Teachers’ College, Jamaica: “The variety and number of initiatives is phenomenal. I am very happy to see that there are many models of sustainability that exist in the U.S. I had no knowledge of this university before today, but I will certainly be talking about it for a long time.”

Many tour participants were impressed with the green dormitory as a student engagement tool that goes beyond environmental sustainability. As one pointed out: “The green dorm concept addresses many of the social aspects of sustainability not normally addressed by operational changes.”

### **KEY TAKEAWAYS**

- How to bring both beauty and high performance into buildings – the two are not mutually exclusive and should work hand-in-hand.
- The “biophilic” potential of indoor vegetated spaces, with complexity and mystery as



suggested by the Phipps Conservatory. Indoor spaces can be made into places that make inhabitants feel good in subconscious and conscious ways.

- How to bring people together, how to form collaborations, and how to work collaboratively across sectors to advance sustainability — this includes formal and informal linkages among academics, operations and students.

As an example of the last, a recycling program run by operations at Carnegie Mellon makes extra efforts to link to students and teach them about being sustainable. After seeing the program in action, and hearing the lessons on forming collaborations with other departments and organizations, tour participant Roy Chan from China said: “I discovered first-hand how I could better promote and educate my students back at the University of Hong Kong.” He noted that “CMU has done an excellent job with ‘planning & engagement’ and letting the entire community know that implementing sustainable practices is vastly needed in higher education today.”

Also impressive to the tour audience was seeing how environmental modules using the campus as a living lab could be incorporated into courses. Example modules included measuring storm water runoff from the green roofs and sensing temperatures, and using this data to study what works, or conducting student research on enthalpy followed by the direct application of this technology in campus buildings.

Of the many inspiring lessons from the Carnegie Mellon tour, one that had a particularly strong impact on participants was “the emphasis on the ‘people component’ of the highlighted initiatives.” Whether linking initiatives to experiential learning, widening the circle of sustainability connections on campus, fostering cross-collaboration, or connecting research to implementation, it was clear that for sustainability efforts to succeed, they cannot be the concern of only a few champions. Sustainability requires a rich, evolving, participatory, collaborative, and active system of integrated plans and programs.

At Carnegie Mellon, as one participant summed up, “the engagement and linkages between academics, operations and students is clearly evident” in sustainability initiatives.


### SPOTLIGHT: PHIPPS CONSERVATORY AND BOTANICAL GARDENS

***“Phipps was phenomenal! Thank you so much for including Phipps on the tour. I feel revitalized.”***

— Carol Steele, DePauw University

The Phipps Conservatory, near Carnegie Mellon University, was also included on the tour. The conservatory serves as a model for visitors, institutions, and other public gardens worldwide. Its commitment to conservation, biodiversity, and sustainability is evident in the earth-sheltered Welcome Center (LEED-Silver), the “state-of-the-art” production greenhouses, and the “revolutionary design” of the Tropical Forest Conservatory, all of which were spotlighted on the tour.

Phipps will soon house one of the world’s first “living buildings” — the planned net-zero energy, net-zero water Center for Sustainable Landscapes. Tour leader Barbara Kviz pointed out Phipps’ historic role as one of the nation’s first teaching glasshouse conservatories.

Today it has evolved into a leader in sustainable landscapes and buildings, and is described as a “pace-setting model for advanced green building practices, sustainable development and environmental awareness.” 



*Phipps Campus with LEED Silver Welcome Center.  
Courtesy of Alexander Denmarsh Photography.*

# Chatham University

## BACKGROUND / SUSTAINABILITY COMMITMENT

Chatham University was founded in 1869 by Reverend William Trimble Beatty under the original name of Pennsylvania Female College. Beatty's mission was to provide women with an education comparable to the highest standards that men could receive at the time. In 1890 the name of the institution was changed to Pennsylvania College for Women, and in 1955 the name was changed again to Chatham College in honor of William Pitt, First Earl of Chatham and namesake of the City of Pittsburgh. In 2007, the Commonwealth of Pennsylvania granted university status to Chatham.

Today, the university's certificate, graduate, post-baccalaureate, and professional and continuing studies programs are open to men and women, but its baccalaureate degrees remain open to women only. Empowering women remains a high priority at the university with a [Center for Women's Entrepreneurship](#) that educates, creates economic opportunities, and fosters entrepreneurial thinking for women entrepreneurs, women in business, and students. The [Pennsylvania Center for Women and Politics](#) is devoted to fostering women's public leadership through education, empowerment, and action.

Perhaps Chatham's most famous alum is Rachel Carson, author of "Silent Spring." Documenting the detrimental effects of pesticides on the environment, the book is widely credited with launching the modern environmental movement. Carson graduated from Chatham in 1929 and is still celebrated today at Chatham with sustainability awareness and outreach events at the [Rachel Carson Institute](#). Programming includes women's environmental concerns and leadership in environmental policy and science, environmental education programs for youth, and campus-based programs for environmental stewardship and campus sustainability.



*Sampling greens in the Eden Hall garden.*

Chatham University's [Office of Sustainability](#) is the administrative home of all campus sustainability projects. The office coordinates with university departments, faculty and student groups to take steps to a more sustainable living, learning and working environment for the campus community. As a signatory of the American College & University Presidents Climate Commitment, Chatham has pledged to reach carbon neutrality by 2025. Chatham University has been a member of AASHE since 2008 and a participant of AASHE's STARS program since 2011.

## AASHE 2011 CAMPUS TOUR HIGHLIGHTS

Organized and led by David M. Hassenzahl, Ph.D., the founding dean of the School of Sustainability and the Environment, the half-day tour took AASHE 2011 conference participants to sustainability highlights on Chatham's original, historic Shadyside Campus in downtown Pittsburgh and its new Eden Hall Campus, 25 miles north in Richland Township, Pa.

## ENERGY & OPERATIONS

The tour group walked through the fall colors of the Shadyside Campus, which has a decade-long no

chemical pesticides policy and actively preserves green space. The first stop on the tour was the Research Greenhouse at Buhl, the site of a solar thermal water heating teaching system. In 2009, Chatham received \$113,037 from the Pennsylvania state government to install solar thermal water heating systems on campus. As part of the same project, the university has installed solar thermal heating systems at its Woodland and Fickes dormitories, complete with real-time tracking of energy data for the public.

This solar hot water innovation stood out to many tour participants as something that they could implement on their own campuses. "Seeing the solar arrays for solar hot water was a great experience," said tour participant Marie Fechih-Kich from the Hill School. "This is an everyday way that students, faculty and staff can see sustainability integrated into campus life."

Chatham has purchased renewable power either directly or through renewable energy credits since 2002, and now purchases 15 percent of its total electricity usage from a Green-E Certified mix of renewable energy that is primarily wind power.

#### WASTE ELIMINATION

In fall 2011, Chatham eliminated the sale of plastic water bottles and implemented a reusable take-out food container program for students. Tour participants received a food container to bring home after a lunch in the campus dining hall, which provides vegan and vegetarian selections at all meals, and is committed to purchasing 20 percent of its food from local sources.

In 2009, after the success of Trayless Tuesdays, the dining hall eliminated the use of cafeteria trays altogether, reducing energy use by an estimated

25 percent without the need to wash trays. The dining hall also composts both pre- and post-consumer food, averaging about 45 pounds of food per person on campus each year.

#### TRANSPORTATION

Chatham maintains a fleet of biodiesel shuttle buses that transport students between its Shadyside and Eastside campuses and offers a \$20 a month tax credit to employees who bike to work. Tour-goers wondered about transportation to and from the new Eden Hall campus, 25 miles from downtown Pittsburgh, and how that might impact Eden Hall's climate positive goal. The Campus Master Plan cites shuttles as the most likely short-term solution, and longer-term plans for commuter rail, expanded bus service, and car sharing programs as alternatives to single-occupancy vehicles. Also, Eden Hall has limited vehicular access with the intent that visitors and campus members will leave their cars at the perimeter and experience the site by foot, bicycle, or via a campus-wide shuttle system. Eventually, a campus-wide trail system will connect the major campus districts and accommodate convenient pedestrian and bicycle movement. Students and faculty will be able to traverse the central campus within five minutes and the entire campus in 10-15 minutes.

#### SPOTLIGHT: EDEN HALL CAMPUS

Chatham University is honoring Rachel Carson's vision for an environmentally and socially just future with plans for a climate positive [Eden Hall Campus](#). Chatham received the land for this 388-acre campus in 2008 as a gift from Eden Hall Foundation. Originally a farm and retreat for the working women of H.J. Heinz Company, the campus will be home to the university's new graduate [School of Sustainability and the Environment](#).

As a signatory of the American College  
& University Presidents Climate  
Commitment, **Chatham has pledged to  
reach carbon neutrality by 2025.**





*Reusable take-out food container at Chatham dining hall.*

Eden Hall farm and retreat was the vision of Sebastian Mueller who immigrated to Pittsburgh from his native Germany in 1884 to work for his cousin Henry J. Heinz in his fledgling food processing operation, then called "The House of Heinz." He headed the company's manufacturing operations, served on its board of directors and ran the organization during Heinz' absence. Mr. Mueller was generous in providing Heinz' female employees with medical care and financial assistance and his estate became a retreat for generations of Pittsburgh's working women.

### **SUSTAINABILITY IN THE CURRICULUM**

Today, the Eden Hall Campus is undergoing a transformation to become a living and learning community that promotes the study and advancement of sustainable development based on restorative principles. Students and faculty of the School of Sustainability and the Environment (SSE) will explore fundamentally different approaches to how humans occupy the land, design buildings, interact with our communities, fuel our economies, and design systems for energy, waste, water, transportation and food.

Currently, Eden Hall hosts small cohorts for the university's Master of Arts in food studies and a two-week summer program, "Food, Farm & Field." In addition, SSE offers an online certificate in

sustainable management and, in fall 2012, the school will welcome its first cohort into the Master of Sustainability program. These students will help design the Eden Hall Campus.

### **CLIMATE POSITIVE GOALS**


While Chatham has big plans for Eden Hall's innovative curriculum, the aspiration for the campus to be climate positive—where on-site net greenhouse gas emissions will be less than zero—is what stood out to tour participants the most. The new campus is expected to generate all energy and treat all wastewater on site. To connect the campus to its "place" and enable the possibility of a zero carbon footprint, the campus will preserve and repurpose all viable existing structures. These plans are an "excellent example of integrating the old buildings with new technology to create a sustainable campus," said tour participant Jim Gaston, director of Duke University's Smarthome Program.

### **KEY TAKEAWAYS**

In their tour surveys, many participants said that they wanted to come back and see Eden Hall in 5-10 years to see how it has grown and implemented the ideas in its Master Plan.

The administrative support for honoring the legacy of Carson and sustainability in general at Chatham left a lasting impression on the tour participants. "Institution-wide, Chatham is united on every level around sustainability and that shows in the success of their initiatives," said Meredith College's Betsy Matthews. "Sustainability is a visible part of its mission."

The high level of administrative support for sustainability initiatives stood out to Beth Mercer-Taylor with the University of Minnesota-Twin Cities as well, a support that "certainly helps with pulling together a message for a new sustainability program" like the Eden Hall Campus, she said.

"Chatham University is a college that is keeping the unique legacy of Rachel Carson alive through critical inquiry, adaptation of local solutions and life-long learning," declared National Wildlife Federation's Julian Keniry after the tour. 



# Duquesne University

## BACKGROUND / SUSTAINABILITY COMMITMENT

Duquesne University has a long-standing reputation as an esteemed Catholic university in the United States. But this urban university, situated in downtown Pittsburgh, has also put itself on the map with its commitments to integrating sustainability into its campus operations. Duquesne describes its sustainability initiatives as having three main dimensions: education; energy and operations; and community involvement. Key initiatives include the natural gas-burning Combined Heat and Power plant (CHP) which meets 85 percent of the campus' electricity needs; the Center for Environmental Research and Education (CERE) housing research and environmental science programs; and the volunteer initiatives completed by students who contribute more than 200,000 hours annually. See the [Sustainability Report](#) for more information.

In 2009, Duquesne completed its second [Greenhouse Gas Emissions Inventory](#), conducted by the university's

[Center for Environmental Research and Education \(CERE\)](#) which functions as both a source of research as well as undergraduate and graduate academic programs. From 2006 to 2008, Duquesne attributes most of its emissions reductions to the purchasing of renewable energy certificates. However, the 2009 GHG inventory recommended that henceforth the university shift focus to achieving "an improved process and operational energy efficiency (to reduce demand on the cogeneration plant)" in addition to "purchasing carbon offsets for university-sponsored travel, working to change student and faculty commuting habits, and further exploration of on-campus renewable energy."

## AASHE 2011 CAMPUS TOUR HIGHLIGHTS

In keeping with its commitment to campus sustainability, Duquesne volunteered to be a host campus at [AASHE's 2011 Conference](#), and also opened up its campus for a tour of the institution's sustainability efforts. The focus of the AASHE 2011 Conference tour of Duquesne's campus was on the progressive energy initiatives taken by the campus, mainly the combined heat and power (CHP) plant, which received the state's first EPA Combined Heat and Power Award.



*Combined heat and power plant at Duquesne University. Courtesy of DU.*


### SPOTLIGHT: COMBINED HEAT AND POWER PLANT

The feature that many tour participants cited as being the most impressive was the use of ice to cool the water used in the CHP plant. There are 28 storage tanks in which ice is created at night (during off-peak hours). The ice then melts, creating chilled water that is distributed across campus.

Duquesne continues to be powered 100 percent by renewable sources, with 85 percent of energy (lighting, heating, and cooling) being supplied by the CHP plant. The remainder is attributed to green power purchasing. The CHP plant serves as an example of how innovative thinking and strategic cross-

campus collaboration can pose significant financial and environmental benefits for a higher education institution.

### KEY TAKEAWAYS

According to Jennifer Sellers, sustainability coordinator at Coastal Carolina University, the tour “provided an excellent behind-the scenes view of the operations of a central energy plant” and was “valuable for my personal understanding and education about energy, especially sources that are on-campus.” Coastal Carolina is working on its own central energy plant with an estimated completion date of October 2012. 

**Duquesne** continues to be **powered 100 percent by renewable sources**, with 85 percent of energy being supplied by the CHP plant.



*Combined heat and power plant at Duquesne University. Courtesy of DU.*

# Pennsylvania State University

## BACKGROUND / SUSTAINABILITY COMMITMENT

Pennsylvania State University was founded at the request of the Pennsylvania State Agricultural Society with the goal of applying scientific principles to farming. Agriculturist and ironmaster James Irvin of Bellefonte gifted 200 acres for the new college in Centre County. In 1863, the Agricultural College of Pennsylvania became the Commonwealth's only land-grant institution. By 1882, the college was renamed to the Pennsylvania State College and had become one of the nation's ten largest undergraduate engineering schools.

In the 1930s, a series of branch campuses were created throughout Pennsylvania for students of the Depression era who could not afford to leave home for college. Correspondence courses focused on empowering farmers with scientific knowledge to find more efficient ways of growing crops and raising livestock. The college also worked with local and federal governments to implement a statewide system of agricultural and home economics agents who advised on issues including family life, nutrition and food preservation.

In 1953, the college became Pennsylvania State University and today, alongside traditional degrees like agribusiness management and agricultural science, the university's agricultural curriculum has branched out to include sustainability-focused options like agroecology and environmental resource management. The university's [Center for Sustainability](#) also hosts a [community garden program](#) that provides students and community members the chance to attend workshops and put in practice local and organic food production methods, with students in leadership roles.

In addition to community gardens, the university's Center for Sustainability offers several programs

for students interested in hands-on, experiential sustainability-focused learning, including:

- [American Indian Housing Initiative](#): Focuses on the application of sustainable building technologies including strawbale construction, solar energy systems and residential energy assessments on American Indian reservations.
- [Grid Smart Training and Application Resource](#) (GridSTAR) Center: Provides continuing education and train-the-trainer programs in advanced power systems design, energy economics, cyber security, distributed energy systems and building vehicle-grid systems. The center also complements the new Clean Energy Application Center and Solar Education and Training Centers initiated in 2009.
- [Hybrid and Renewable Energy Systems](#) (HyRES) lab: Used to study energy related technologies and strategies on the residential scale.
- [Minor in sustainability leadership](#): Offered for students in any major who wish to integrate social, economic and environmental concepts of sustainability into their degree program.



*Students work in the Penn State community garden on opening day. Courtesy of Penn State Center for Sustainability.*

- [MorningStar Solar Home](#): Used in sustainable housing education efforts through research and outreach activities. The net-zero home will eventually serve as a residence for a graduate student to test the house systems in real life conditions.
- [RENEW Crew](#): An award-winning student service program created to provide clean innovative



energy solutions to communities in Central America. College students and electrical contractors work together on these renewable energy projects.

- [Mid-Atlantic Solar Resource and Training Center](#): Supports a comprehensive training infrastructure for design, installation, commissioning, service and sales of both solar PV and solar heating and cooling technologies.

### AASHE 2011 CAMPUS TOUR HIGHLIGHTS

Deno De Ciantis, Ed.D., director of the [Penn State Center: Engaging Pittsburgh](#), led a walking tour of community buildings in Pittsburgh that are working with Pennsylvania State University to become greener. Connecting and engaging the university with local partners, the Penn State Center's efforts are targeted to programmatic areas that are unique strengths of the College of Agricultural Sciences including biomass and alternative energies, entomology and plant pathology, urban agriculture and food production, urban/community greening, and brownfield remediation.

### GREEN ROOFS/RAINWATER GARDENS

The Penn State Center, in partnership with the County of Allegheny Chief Executive's office, Pennsylvania Environmental Council, 3 Rivers Wet Weather and Highmark, promotes the use of green roofs in the highly impervious Pittsburgh and Allegheny County communities. The tour visited some of these rooftops that are being used as experimental, data gathering sites—complete with energy monitoring to capture energy savings—to help inform Pennsylvania State's [Center for Green Roof Research](#).

Focusing on stormwater mitigation, energy balance, plant selection, plant performance, media components, roof system components and management, and materials testing, the Center for Green Roof's research is being applied to the region in the form of workshops and seminars on the construction and benefits of green roofs. The university itself currently has four large-scale green roofs on its University Park campus.

Based on what he learned on the tour about the "myriad benefits" of green roofs, Jay Price, environmental coordinator at the University of Tennessee-Knoxville's Facilities Services Department, hopes to push forward some of the student-led green roof projects that are currently at a standstill.

Several tour participants from as far away as Mexico also took note of the benefits found through monitoring green roofs including stormwater retention and heat gain. Elena Moons from Dominican University called this portion of the tour a "great example for those looking into this option."

### SPOTLIGHT: ADAPTIVE REUSE OF THE FORMER CONNELLY TECHNICAL SCHOOL FACILITY

In partnership with Pittsburgh Gateways, Inc., the Penn State Center's Pittsburgh Green Innovators program aims to develop a trained green collar workforce, educate and engage the community, create K-12 learning experiences, promote and showcase new technologies, and build and convert businesses. The cornerstone of this green job training program is the adaptive reuse of the former Connelly Technical School facility as a certified Platinum LEED building.



*The former Connelly Technical School facility.*



Formerly a vocational technical high school (with a spot on the U.S. National Register of Historic Places), the Connelly building's history will be honored as the university's new hub of clean, green innovation. This project engages teams from business, labor, government, nonprofits, universities and sustainability science experts from around the world.

Objectives for this project include:


- Education for the consumer
- Maintaining an adequate and appropriately trained green collar workforce
- Growing new companies
- Developing and promoting new technologies

"I am happy to see that a university has really stepped up to make that space available (both figuratively and literally) [as a place] where people can go and learn more about green jobs in a location that was originally set up as a vocational training center," said Price. "It's really a perfect setting for the work of so many of the nonprofit groups they plan to attract to the building once it opens.

I've never really seen that level of involvement and engagement in a community project from a university. It was a breath of fresh air to see people at the university pushing green businesses and green job training...it was just really exciting to see!"

This enthusiasm was echoed by many tour participants. Jennifer Sellers at Coastal Carolina University learned that "no matter the location or size of your campus, economic revitalization is an integral component of sustainability." Sellers said she would look into applying downtown preservation and collaboration at her institution as a result of the tour.

### KEY TAKEAWAYS

Understanding the benefits of fostering education and community engagement was the largest overall takeaway for tour participants. "No matter how you are attached or connected to an institution of higher education, this tour was a great opportunity to learn about sustainability in another community and understand what sustainability means in your own community," said University of Tennessee-Knoxville's Samantha Wentworth. 



*Penn State's net-zero MorningStar solar research residence. Courtesy of Christie Clancy.*

# University of Pittsburgh

## BACKGROUND / SUSTAINABILITY COMMITMENT

The University of Pittsburgh, located in the city's vibrant and diverse Oakland neighborhood, opened its doors to AASHE 2011 conference participants with a half-day campus tour. Among the top research universities in the country, "Pitt" has integrated sustainability into many of its programs and practices.

In both 2007 and 2009 the university was recognized for its greening initiatives with an [Allegheny County Health Department's Enviro-Star Award](#). In 2011, Pitt's Facilities Management division released an updated report, [Sustainability at the University of Pittsburgh](#) (PDF) which outlines operational strategies to reduce the ecological footprint of the 132-acre campus.

On campus, the [Pittsburgh Student Environmental Coalition](#) (PSEC) is actively involved in organizing sustainability-related events and initiatives, including partnering with AASHE on the 2011 Student Summit community service event.

## AASHE 2011 CAMPUS TOUR HIGHLIGHTS

Led by several Ph.D. fellows at the [Mascaro Center for Sustainable Innovation](#) (MSCI) and Dr. Melissa Bilec, MSCI's assistant director of education and outreach (and assistant professor of civil and environmental engineering), the tour took participants to MSCI and the Carrillo Street Steam Plant.



*Mascaro Center for Sustainable Innovation. Courtesy of UP.*

The presence and involvement of students in the tour was indicative of the university's emphasis on cross-campus collaboration and student engagement in sustainability initiatives. Each of the five Ph.D. fellows, along with a lead faculty member, ran a portion of the tour, giving participants an idea of the various research initiatives taking place at MSCI including: water management for Marcellus Shale development; microbial fuel cells; super hydrophobic surfaces; a hydrokinetic project; and smart insulation.

The students' presentations were well received by participants, as exemplified by Suzie Huminski, a professor at Southern Connecticut State University, who remarked: "I was tremendously impressed by the Pitt students' poise and clarity. They did an excellent job tailoring their explanations to allow me, a former humanities major, to understand the basics of their research."

Another focus of the tour was the [Carrillo Street Steam Plant](#), with six boilers that are designed to operate on natural gas or oil (if needed). It is slated to significantly contribute to pollution and emissions

Among the top research universities in the country, **"Pitt" has integrated sustainability into many of its programs and practices.**

reductions. The plant is currently serving about 50 percent of the steam requirements for the university, and is slated to be responsible for a 47 percent reduction in steam-related CO2 emissions.

### **SPOTLIGHT: MASCARO CENTER FOR SUSTAINABLE INNOVATION**


In 2010, the University of Pittsburgh completed construction of the Mascaro Center, now considered a leading hub of sustainability education and research. MCSI is housed within the university's Swanson School of Engineering, and has faculty and Ph.D. fellows conducting research that falls under three main categories: 1. green buildings and construction, 2. infrastructure, and 3. materials. (Each has an assigned lead faculty member.)

MCSI's faculty members are involved in developing interdisciplinary curriculum for graduate degree programs within the Swanson school. Partnerships with the Heinz Endowments and the estate of George M. Bevier also allow for the [annual seed grants](#) offered at MCSI for sustainability-related research.

### **KEY TAKEAWAYS**

While the inside walls of lecture halls and labs are essential for building the foundation of knowledge, what happens beyond these walls is also integral to an education in sustainability. Tours such as these demonstrate that the campus is the ideal space to challenge students in real-time to apply and expand upon what they are learning.

When real-life applications are unavailable on campus, it may be that a neighboring university or college can serve as a model. Huminski commented that "a field experience which opens students' eyes to the possibility of a sustainable energy future would provide a glimpse of the variety of innovation that is needed. There are many levels at which these types of experiences have educational value."

Whether from the perspective of an educator or sustainability professional or student, involving students in tours is an effective way to not only shed light upon ongoing research, but to allow for essential cross-discipline and inter-campus collaboration. 



*Touring the Mascaro Center for Sustainable Innovation. Courtesy of UP.*



# CONCLUSION

From community collaboration on sustainability to innovations in education to energy saving initiatives (including green roofs, high performing power plants, and net zero campuses), higher education institutions in Pittsburgh are busily working toward a sustainable future. “Unique and fantastic,” “innovative,” “progressive,” and “well beyond my expectations” were commonly echoed phrases among tour participants in their surveys of the five AASHE 2011 host institutions.

According to a study by Carnegie Mellon University, the City of Pittsburgh emitted 6.6 million of tons of carbon dioxide in 2003. Part of these institutions’ commitment toward a sustainable world is their involvement in the [Pittsburgh Climate Initiative](#), which aims to help the city reach its goal of eliminating 1.3 million tons of annual greenhouse gas emissions by 2023. The initiative engages Pittsburgh’s governments, businesses, higher education institutions and residents in taking actions that will reduce greenhouse gas emissions and their impact on the local economy and human well-being.

Pittsburgh’s colleges and universities are an integral part of the city’s success toward its goal.

From developing the next generation of leaders to innovative sustainability research and solutions, these institutions play a critical role. All are members of the [Higher Education Climate Consortium \(HECC\)](#) — part of the Pittsburgh Climate Initiative — which meets quarterly in an effort to address the short-term (within 2 years), medium-term (within 5 years) and long-term (beyond 5 years) recommendations on how colleges, universities and their 70,000 students can reduce their greenhouse gas emissions. For the Pittsburgh Climate Action Plan Version 2.0, HECC developed a series of recommendations addressing energy use; transportation; recycling and waste management; and general sustainability.

Beyond greening their own campuses and educating their own students, the AASHE 2011 host institutions and their campus sustainability champions are actively involved in transitioning their entire region to a more sustainable future. As University of Pittsburgh tour participant Beth Mercer-Taylor put it: “There were really amazing people on this tour that should make the university and Pittsburgh proud. And it’s hard to tell you this as a former Cleveland.”



*Carnegie Mellon's 'Green Room' for recycling education. Courtesy of CMU.*



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The Howard Heinz Endowment and the Vira I. Heinz Endowment were each the product of a family commitment to community that began with H. J. Heinz.

## Heinz: History of the Company

The H.J. Heinz Company was founded by entrepreneur Henry John Heinz in 1869. What began in a two-story farmhouse has grown into an \$11.6 billion global business that serves 200 countries around the world with sauces, meals, snacks, infant/nutrition and, most famously, ketchup.

Today, Heinz is “dedicated to the sustainable health of people, the planet and our Company,” according to its website. The company aims to reduce its greenhouse gas emissions, solid waste, water usage and energy consumption 20 percent by 2015 (from a 2005 baseline?). As of fiscal year 2011, the company had reduced its global energy consumption by 15.1 percent since 2005 and was on track to meet or exceed the 20 percent goal.

In addition to its environmental goals, community support is a large part of the company’s commitment to corporate social responsibility. The H.J. Heinz Company Foundation was established in 1951 to make a positive impact in the global community through strategic investments to improve nutrition, foster healthy communities and promote diversity in areas where its employees live and work.